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Why do low-income, minority parents choose HPV vaccination for their daughters?

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Abstract

Objective—To explore low-income, minority parents' attitudes, intentions, and actions with regards to human papillomavirus (HPV) vaccination for their daughters.

Study design—Semi-structured interviews were conducted in English and Spanish with parents of girls aged 11–18 who were attending clinic visits in an urban medical center and a community health center. We assessed intention with formal scales, probed parents' attitudes regarding vaccination with open-ended questions, and used medical record review to determine vaccination rates. Data were analyzed using descriptive statistics and qualitative methods.

Results—Seventy-six parents participated: 43% Black, 28% Latino, 26% White. Most were mothers, had completed high school and described themselves as religious; nearly one-half were immigrants. Intention correlated highly with vaccine receipt: 91% of parents intended to vaccinate their daughters against HPV, and 89% of girls received vaccination within 12 months of the interview. Qualitative analysis revealed that most parents focused on the vaccine's potential to prevent cervical cancer. Some parents expressed concerns about unknown side-effects and promoting unsafe sexual practices, but these concerns did not hinder acceptance in most cases.

Conclusions—Most low-income, minority parents viewed HPV vaccination as a means of protecting their daughters from cancer, and thus chose to vaccinate their daughters.

Almost one-quarter of 14–19 year-olds in the U.S. are infected with human papillomavirus (HPV) (1), and the estimated lifetime prevalence is 80% (2). Low-income, minority women have higher rates of HPV infection (3) and are less likely to access screening and treatment services for precancerous lesions of the cervix associated with HPV than the general population (4). As a result, the cervical cancer incidence and mortality are markedly higher for African-Americans and Latinas compared with Whites (5, 6). HPV vaccination has the potential to reduce healthcare disparities in cervical cancer rates if current guidelines are followed and all girls are vaccinated prior to sexual debut (7–10). However, widespread adoption of HPV vaccination could be hindered by public concerns regarding the vaccine's

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efficacy, safety, or affordability, along with fears of promoting precocious sexual behavior when given to adolescent girls (11). Racial or ethnicity-based variation in these impediments could further worsen disparities in cervical cancer rates.

Data from the Centers for Disease Control and Prevention indicate that 37% of age-eligible girls were vaccinated in 2008 (12), lower than reported rates of parents' intention to vaccinate which ranged from 46%–75% (13–16). Some studies report higher acceptance among Latinos and lower acceptance among African-Americans both compared with non-Latino Whites (16, 17). However, other studies report no racial differences in vaccine acceptance rates (13). Thus, we conducted an in-depth examination of low-income, minority parents' decisions and attitudes regarding HPV vaccination using a combination of structured assessments and open-ended qualitative questions.

Methods

We interviewed parents or legal guardians accompanying their 11–18 year old daughters for preventive care or problem-related visits between June 2007 and February 2008. Subjects were recruited from Pediatric, Adolescent, and Obstetrics and Gynecology practices in an urban academic medical center and an affiliated community health center. Parents/guardians who spoke English or Spanish were eligible for inclusion. We sought to explore both recent and anticipated thinking about HPV vaccination. Thus, parents whose daughters had initiated the 3-injection vaccination sequence were included along with those whose daughters had not been vaccinated. Trained research assistants reviewed practice schedules to determine eligible patients and recruited parents in the waiting areas before scheduled visits. We sought a diverse sample of Black (parents who self-identified as Black in our study included African-American, non-Latino Afro-Caribbean, and African), White, and Latino parents/legal guardians. Interviews were conducted in English or Spanish by native speakers. Both structured and qualitative questions were translated into Spanish and then back-translated to ensure equivalent meanings. Responses to quantitative questions were recorded by the interviewer. Responses to qualitative questions were audiotaped and transcribed. Spanish responses were transcribed in Spanish, translated to English by one bilingual investigator, and then reviewed by a second bilingual investigator to ensure the adequacy of translation. Subjects received a \$15 gift certificate as compensation for their participation. This study was approved by the Boston University Medical Center Institutional Review Board for research.

Interviews were designed to elicit demographic information, HPV-related knowledge, intention to vaccinate, personal experience with HPV disease, and parents' views of vaccination. HPV-related knowledge was assessed with eight previously-validated true/false questions (18). Twelve additional items were devised to assess comparable knowledge about chicken pox, hepatitis B, and pertussis. After knowledge was assessed, parents received a short educational paragraph (approximately 100 words) about each of the diseases. Intention to vaccinate was assessed by asking parents to rate their likelihood of accepting vaccination for their daughters on a 4-point scale.

Qualitative questions were developed on the basis of previous studies (19) and tailored for cultural relevance to our population. We asked about opinions of childhood vaccines, sexually transmitted infection vaccines in general, and HPV vaccine specifically. Questions included: *“Can you think of any concerns that parents might have about vaccinating their children [against routine childhood diseases]?”* *“What kind of information do you want to know about a vaccine before your child gets vaccinated?”* *“Can you think of reasons why parents might (might not) want to vaccinate adolescents against a sexually transmitted*

disease (HPV)?” Moreover, parents were asked to explain their reasons for either accepting or declining HPV vaccination in their own words.

To determine the relationship between intention and actual vaccination rates, electronic medical records were reviewed twelve months following the interview to determine whether the daughters had actually initiated HPV vaccination. Documentation of HPV vaccination in the child’s immunization record, a nursing note describing vaccine injection, or a pharmaceutical order for Gardasil were considered evidence of vaccination.

Data Analysis

Descriptive statistics were used to analyze demographic data, knowledge data, intention to vaccinate, and actual vaccination rates. Fisher exact tests were used to evaluate the associations between demographic variables, intention to vaccinate and actual vaccination rates; the relationship between HPV-related knowledge and intention to vaccinate was assessed with t-tests. Analyses were performed using SAS statistical software Version 8.2 (SAS Institute Inc., Cary, North Carolina, U.S.A.); $p < 0.05$ was considered significant. Qualitative data were analyzed using methods informed by grounded theory and content analysis. Common themes, issues, and language usage were noted and placed into broader coding categories based on similarity of content. Content and language categories were evaluated to assess if generalizations could be made. The investigators discussed independent analyses, and a summary of the relevant concepts was produced by consensus. We evaluated the associations between themes and race/ethnicity and also between themes and intention to vaccinate against HPV as well as receipt of HPV vaccination.

Results

Of 98 parents approached, 76 agreed to participate (33 Black, 21 Latino, 20 White, and 2 other races; Table). The most common reason for declining to participate was time constraints, and participation did not differ by age, sex, or race. Parents’ mean age was 43, and their daughters’ mean age was 15. Most parents were mothers with a high school or some college education; approximately half were married. Consistent with the populations our institution serves, almost one-half of our participants were born outside of the United States, and only one-third spoke English as their primary language. Most expressed a religious affiliation, the majority of whom were Catholic, and nearly one-half attended services at least weekly. More than one-half of participants had a personal history of an abnormal Pap smear or knew someone with an abnormal Pap smear, and 30% either had experienced or knew someone with cervical cancer. Experience with genital warts was rare. Only 8% of parents had declined a recommended vaccine of any type in the past.

Intention to receive HPV vaccination and actual HPV vaccine receipt

Nearly all of the parents stated that they were “somewhat” or “very likely” to accept HPV vaccination for their daughters (91%; $n=69$). Acceptance did not vary by race/ethnicity or history of abnormal Pap smear or genital warts, but acceptance was greater among parents who had a personal history of cervical cancer or knew someone with the disease. Vaccination records for one year following the interview date were available for 71 patients. Almost all (95%) of the daughters whose parents expressed acceptance were indeed vaccinated: 14 prior to the interview, 28 on the day of the interview, and 19 in the ensuing year. In contrast, the daughters of only 2 of 7 parents (28%) who were disinclined to vaccinate received HPV vaccination within 12 months of the interview. Parental intention to vaccinate among girls who had not received vaccination was significantly associated with subsequent vaccination ($p < 0.001$).

Knowledge of HPV and other vaccine-preventable diseases

Most parents (79%) had heard of HPV, compared with 100% who had heard of chicken pox, 88% who had heard of hepatitis B, and 84% who had heard of pertussis. Factual knowledge of these vaccine-preventable diseases ranged from 65–66% correct answers regarding chicken pox and HPV, to 51% and 49% correct for pertussis and hepatitis B, respectively. Most (83%) subjects who had heard of HPV were aware of a vaccine against HPV, 76% knew that HPV caused abnormal Pap smears, and 66% knew that HPV caused cervical cancer. However, only 53% knew that HPV was a sexually transmitted infection, and only 39% knew that HPV caused genital warts. Knowledge scores were similar among those who did intend to vaccinate their daughters (65% correct on average) and those who did not (75% correct on average; $p=0.22$).

Parents' elaborations of their views

Views on vaccination in general—Parents viewed vaccines in general as a way to prevent disease and protect their children, as in one immigrant parent's explanation:

“In my country [newborns] have to get [vaccines] at 15 days of age... because if that baby does not get the vaccine it won't live, it will die. Of course we accept if the doctor gives the vaccine. ...If there is a new vaccine to prevent a disease, we won't oppose it because we are preventing a disease.”

Yet parents also tempered their acceptance with reservations about possible side effects, ranging from mild (arm swelling, rash, fever, scar) to severe (autism, allergy, seizure, illness and death). Virtually all parents felt that the most reliable information about vaccines came from their children's' physicians.

Views on HPV vaccines—Regarding HPV vaccination in particular, parents who intended to vaccinate their daughters appreciated the protection it afforded their daughters against diseases including cervical cancer. One parent felt *“grateful [that the HPV vaccine was available] because, as parents, we want the best for our children. Thank God science has discovered new medicines to prevent diseases.”* The vaccine gave *“peace of mind,”* because *“at least I know she is not going to die because of [cervical] cancer.”* Many parents felt that vaccination had no downside: *“If it's going to help prevent them from getting cervical cancer, why shouldn't they get it?”* Nonetheless, parents expressed reservations about potential unknown side-effects of this new vaccine. One mother explained, *“Probably in a few years I will think differently about [the HPV vaccine]. By then the kids who have received it, they would have monitored, and they would know if there are any long-term effects, you know, and the reactions to those vaccinations.”*

Concerns about adolescent sexuality associated with HPV vaccinations—Most parents expressed concern that adolescents were sexually active at an early age, using statements like *“They're precocious,”* and *“The generation is moving rapid.”* They also reiterated timeless truisms about adolescents and their lack of judgment with sexual decision-making: *“[Teens] don't think about what they're going to do when they're going to do it.”* *“Sometimes they want to have sexual experiences without much information, or they act on instinct without weighing the consequences.”*

Most parents did not believe that HPV vaccination would promote sexual activity. They assumed that young teens were active, and viewed vaccination as a way to protect their daughters from acquiring a sexually transmitted infection. One mother stated, *“We can give [our children] sexual education, give them advice. But they make their own decisions. Then, we can prevent them from [getting] diseases by giving them the vaccine.”* Another parent

gave her view: “*They should take a mini-van filled up with the vaccine and go through where I live and give shots to everyone.*”

A few parents, however, feared that their daughters would “*misinterpret [vaccination as] a green light to have sex, a form of permission*” and equated it to “*giving condoms in school.*” They worried that vaccination might cause teens to take sexual risks because they falsely believed that they were protected against all sexually transmitted infections: “*They will start earlier, won’t be cautious, all of that, because they believe they are invincible.*”

Views on the timing of vaccination—Nearly all parents understood that vaccination must occur prior to HPV exposure to be effective, with 95% stating that vaccination must occur before sexual activity. When asked at what age they would prefer to vaccinate their daughters, the median response was age 12, with a range from 10 to 17. Most parents felt that vaccination should occur well in advance of sexual debut: “*I’d say probably [vaccination should happen at age] 11 or 12... definitely before they have sex. I think while they’re still in early middle school. Once they get to the eighth grade and high school they’re already into puberty and thinking. The temptation is out there.*” A few parents, however, did not want to address teenage sexuality until absolutely necessary, and preferred to vaccinate as close as possible to sexual debut: “*If [the vaccine] were proven effective and without side effects, I would say [vaccinate at age] 15... I think that that’s where a lot of activity begins.*”

Parental decision-making around vaccination—The parents who intended to vaccinate their daughters did not cite consistently different concerns from those who declined, rather they weighed concerns differently: “*I still think I worry about the newness of the vaccination, but at the same time, she is going to be sexual at some point and I would rather have her protected than get infections or diseases.*” Some parents struggled with how to protect their daughters from HPV while still asserting that they should refrain from pre-marital sex. A parent who feared that her daughter would misinterpret HPV vaccination as permission to begin sexual activity wished to vaccinate her without fully explaining the vaccine’s effects: “*When she has the capacity of assimilating the information I would give it to her, but I wouldn’t give her all the information.*”

Discussion

The great majority (91%) of low-income, minority parents in our study intended to accept vaccination for their daughters, and nearly all followed through on this intent: 89% of all girls received vaccination within 1 year of study participation. Black, White, and Latino parents all expressed high levels of support for HPV vaccination, and racial differences in vaccine acceptance were not apparent. In addition, pre-existing knowledge of HPV did not seem to impact vaccine acceptance. Our qualitative data provided an opportunity for parents to expand upon formal attitude assessments. Although several expressed concerns about possible side-effects and discussed complex feelings associated with vaccinating against a sexually transmitted infection, for the most part these concerns did not prevent them from vaccinating their girls.

Parents’ intention to vaccinate was high compared with hypothetical acceptance rates published prior to HPV vaccine availability (13–16, 21), and the proportion of girls receiving HPV vaccine in our cohort exceeded the national average (12). Some of this difference may be due to healthcare access. All girls ages 11–18 at our institution have insurance coverage for HPV vaccination, vaccine is ordered easily through the electronic medical record, and it is stocked in the pediatric and adolescent clinics. In addition, our qualitative data indicated that most parents were excited to be able to prevent cervical cancer with HPV vaccination, and they were not inhibited about vaccination because HPV is

sexually transmitted. In fact, some parents strongly favored HPV vaccination because of the stigma associated with contracting a sexually transmitted infection. Studies with different populations have also found that most parents who support vaccination are primarily concerned with protecting their daughters from diseases (16, 18), but emphasized different reasons for declining vaccination, including a low perceived risk of infection, which was rarely raised by our participants.

If high levels of parental acceptance for HPV vaccine among minority parents translate into high vaccination rates on a national level, health disparities in cervical cancer incidence and mortality could be reduced. Over 90% of children in the U.S. receive routine childhood immunizations, and, although poverty has been associated with undervaccination, some studies suggest that vaccination rates are similar among different racial/ethnic groups (19, 20). In addition, vaccination has successfully reduced racial disparities in other diseases (9). Current cervical cancer prevention practices require asymptomatic, adult women to present for frequent vaginal examinations. Because minority women often have lower levels of health insurance coverage (21–24) and may be skeptical of medical interventions (25,26) or hold fatalistic attitudes towards cervical cancer screening (27, 28), childhood vaccination may be more successful than Pap smear screening for reducing disparities in cancer rates among vulnerable women.

Our findings have several limitations. We studied a small, non-randomized sample of parents attending medical visits with their children, and the results may not generalize to other populations or settings. Parents who agreed to participate in the study may also have held more positive views toward vaccination than those who did not wish to participate or those not presenting with their daughter for care. As all parents were seeking medical care for their children, results may not be applicable to parents who do not access the healthcare system. However, our study was performed in a large safety-net hospital in a state where everyone is required to have health insurance; in addition to the variety of private and public options, our institution also provides care to uninsured illegal immigrants, which allowed us to speak with parents who would not have had healthcare access in other settings. The small number of parents who declined vaccination limited our ability to assess the independent contributions of factors such as race, country of origin, education, religion, or the age of the daughter or parent on parental views toward HPV vaccination. Such questions are better answered by well-designed population-level surveys. We did not assess vaccine completion rates in this study because different factors may be involved with series completion than with initiation, such as clinical scheduling practices and patient reminder systems. Our goals with this qualitative study were to understand in depth how a cohort of low-income and minority parents views HPV vaccination and to create an interpretation of ideas which might be useful to understand why parents in other settings may accept or decline HPV vaccination.

We did not seek to intervene with these parents. However, they were provided with a 100 word informational paragraph about HPV prior to asking their opinion on HPV vaccination so that they could understand the questions being asked, as is commonly done in studies of HPV vaccine acceptance (16, 21, 29). We obtained the information used in our paragraph from the CDC Vaccine Information Sheet on HPV vaccine (30); these sheets are routinely given at medical visits when vaccines are recommended. The possibility of influencing HPV vaccine acceptability via the educational paragraph could be considered a limitation. However, recent literature indicates that knowledge does not correlate well with vaccine acceptance (14, 31), and written information, such as that given in our study, does not appear to influence HPV vaccine acceptance (19).

If replicated in larger studies, positive opinions toward HPV vaccination among low-income and minority parents could be leveraged when designing public health programs that use vaccination to reduce racial disparities in cervical cancer incidence.

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Table 1

Parents' demographic characteristics and relevant personal history

Variable	Mean (range) or Percent (n)
Ethnicity	
<i>Black</i>	43% (33)
<i>Latino</i>	28% (21)
<i>White</i>	26% (20)
<i>Other</i>	3% (2)
Age	43.2 (31–62)
Years of education	12.75 (0–20)
Marital Status	
<i>Married</i>	45% (34)
<i>Divorced/Widowed</i>	21% (16)
<i>Single</i>	33% (25)
Country of Origin	
<i>United States</i>	53% (40)
<i>Other³</i>	47% (36)
Years in U.S. (for those born in other countries)	15.9 (4–33)
Primary Language	
<i>English</i>	65% (49)
<i>Spanish</i>	25% (19)
<i>Other²</i>	11% (8)
Religious affiliation	
<i>Yes⁴</i>	82% (62)
Religious service attendance	
<i>At least weekly</i>	40% (25)
<i>1–3 times per month</i>	32% (20)
<i>Less than once per month</i>	27% (17)
Relationship to child	
<i>Mother¹</i>	83% (63)
Age of child	15.0 (11–18)
Previously declined a recommended vaccine	8% (6)
Personal experience or known someone with abnormal Pap test	55% (42)
Personal experience or known someone with genital warts	12% (9)
Personal experience or known someone with cervical cancer	30% (23)

¹Other relatives included Aunt (n=2), Father (n=4), Grandma (n=1), sister (n=1)

²Other languages included Bosnian, Cape Verdean, Haitian Creole, Chinese, Swahili

³Other countries of origin included Antigua, Bahamas, Barbados, Bosnia, Canada, Cape Verde, China, Colombia, Dominican Republic, El Salvador, Haiti, Nigeria, Puerto Rico, Tanzania, Trinidad

⁴Religions included Baptist (n=7), Catholic (n=37), Christian (n=6), Episcopal (n=1), Jehovah's witness (n=3), Pentecostal (n=4), Protestant (n=3)