



Reasons for acceptance or refusal of Human Papillomavirus Vaccine in a California pediatric practice



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ABSTRACT

Despite the effectiveness and availability of the Human Papillomavirus (HPV) vaccine, HPV remains the most common sexually transmitted infection in the United States and has the lowest initiation rate of any routinely recommended teen vaccine. In January 2015, we surveyed parents at a Southern California pediatric private practice about reasons they accept or refuse HPV vaccine for their children. Of the 200 consecutive parents that had HPV vaccine initiation recommended for their child, 123 (61.5%) children were male and 38.5% were female. The overall age range of children was 10–17 years (median 12 years). Of the 164 (82.0%) who accepted the vaccine, a higher percentage were male (88.6% vs 71.4%, $p=0.001$). The most common reasons for accepting was strength of provider recommendation (84.1%) and available information (63.4%). The most common (52.8%) reason for refusing was wanting to learn more about the vaccine. These results further support the importance of both the strength of physician recommendation and improving public education about the vaccine.

1. Introduction

Human Papillomavirus (HPV) remains the most common sexually transmitted infection in the United States, with 14 million newly infected individuals identified every year [1]. The leading cause of cervical cancers amongst women in the United States, HPV also causes cancer of the vulva, vagina, penis, anus, and oropharynx [2–4]. In 2006, the Food and Drug Administration (FDA) licensed the HPV-4 vaccine for females [5]; vaccinations were FDA licensed for males in 2009 but not routinely recommended for males until 2011 [6]. The efficacy of the vaccine is well-established [7], with a recent study confirming a significant reduction in HPV infections among females within 6 years of vaccine introduction (i.e., a 64% decrease in females aged 14–19 years; and 34% in females aged 20–24 years) [8].

Despite proven effectiveness and ready availability, the HPV vaccine continues to have the lowest initiation rate of any routinely recommended teen vaccine in the United States. According to the Center for Disease Control and Prevention (CDC) 2015 data, 62.8% of females and 49.8% of males have received at least 1 HPV vaccine dose [5]. Coverage is better for other vaccines recommended for the same age group: tetanus, diphtheria, acellular pertussis vaccine (Tdap) coverage is 86.4% and quadrivalent meningococcal conjugate vaccine

(MCV4) is 81.3% across genders [5].

In an effort to explore causes of the low HPV vaccine uptake, several studies have looked at vaccine hesitancy and acceptability among parents [9–12]. Findings suggest common factors influencing parents', as well as adolescents', intent to vaccinate are first strength of physician recommendation, followed by the availability of information regarding the vaccine [12–15].

This study is the first to look at both acceptors and refusers during the same provider office encounter, following up on a letter to the editor published on a subset of the data [16]. Specifically, this study aims to highlight parents' reasons for accepting or refusing the HPV vaccine following physician recommendation to vaccinate.

2. Methods

2.1. Study design and population

In January 2015, we began a year-long study surveying parents' reasons for agreeing or refusing initial HPV vaccination following a practitioner recommendation during an office encounter. Participants were patients of 6 pediatricians in a Southern California private practice; patients seen at this practice are typically middle class, and

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culturally and ethnically diverse. Almost all children have some form of medical health insurance. The pediatricians in the study are strong advocates of all recommended vaccines, including HPV for males and females beginning at the age of 11 years. Study materials and procedures were provided with an exemption by the UC Riverside Institutional Review Board.

2.2. Questionnaire

During the pediatric office visit, vaccine history was reviewed and appropriate vaccine administration (including HPV vaccine) was discussed and recommended to parents who then decided whether or not to vaccinate their children. Following this decision, a nurse provided respondents with a one page survey requesting no personal information, only patient age, gender, and if there was any family or friend cervical or female organ cancer history. Parents who agreed to begin HPV vaccination for their children received a survey with 6 options of reasons for their decision. Parents who refused to begin HPV vaccination received a different survey with 12 options of reasons for their decision. Parents were instructed to select as many factors as appropriate for making their decision and to also select the most influential reason for their decision. Parents who selected a single reason for acceptance or refusal had that reason listed as their most influential reason. All survey questions were based on a similar published survey study for influenza vaccine [17].

2.3. Statistical analysis

Univariate descriptive statistics were used to examine age, gender, familial/friend diagnosis, and reasons for or against vaccination. Chi-square tests were conducted to assess variable association with vaccine acceptance and refusal. All analyses were conducted using Stata Version 12.0 (Stata Corp.). We excluded children over the age of 18 years.

3. Results

Of the 201 parents approached to complete the survey, only one refused to participate. Of the 200 children, 123 (61.5%) were male and 77 (38.5%) were female. The overall age range of children was 10–17 years; with an average of 12.8 years (median 12 years). Overall, 164 (82.0%) parents accepted initiating the HPV vaccination series. A significantly higher percentage of parents of male teens accepted HPV vaccination compared to parents of females (88.6% vs 71.4%, $p < 0.01$); age had no significant impact ($p=0.79$) on vaccine acceptance. The acceptance rate among males under the age of 13 was 88.5%, and among males over the age of 13 was 88.7% ($p=0.97$). Similarly, the acceptance rate among females under the age of 13 was 75.9%, and among females over the age of 13 was 60.9% ($p=0.18$).

Among those who accepted ($N=164$), 136 listed their most influential reason for accepting vaccine and an additional 22 chose only one reason (which was assigned the most influential reason). The most common (84.1%) and the most influential (48.1%) reason parents accepted the vaccination was the strength of the provider recommendation. The second most influential reasons related to the publicity around the importance of the vaccine (having read or heard about the importance of the vaccine (21.5%). This was followed by the CDC and AAP recommendation (19.0%) (Table 1).

Among those who refused ($N=36$), 12 listed their most influential reason for refusal and an additional 21 chose only one reason (which was assigned the most influential reason). The most common (52.8%) and influential (48.5%) reason chosen by approximately half of the refusing parents was “I want to learn more about this vaccine”, while 25.0% reported their child was too young for the vaccine (Table 1). Six parents who reported their children as too young to get the vaccine indicated they would vaccinate their children when they are older.

Nearly all ($N=195$) parents answered a question regarding whether they had a friend or family member diagnosed with cervical cancer. Of those who answered, 26 (13.0%) said yes. Furthermore, of those who said yes, a vast majority (24/26, 92.3%) accepted the vaccine, while 2 refused the vaccine (7.7%).

Parents had the option to provide written reasons for their vaccine decisions (Table 2). Among acceptors, some parents believed the vaccine was mandatory (even though it is not in CA), would prevent disease, and vaccinating was a precaution in case children were not abstinent before marriage. Among refusers, some parents reported their child would be back at a later date, they were not old enough, or they had received too many vaccines already at the visit.

4. Discussion

4.1. Acceptance versus Refusal

The overall acceptance rate of HPV vaccine initiation in this study is significantly higher than the latest CDC data. Most parents who accepted the HPV vaccine ranked their physician's recommendation as the major decision factor (84.1%), and nearly half reported it as the most influential reason. This confirms other studies demonstrating the strength of the physician recommendation as the most important factor in parental vaccine acceptance [15,18–20].

The second most common and influential, reason for accepting HPV vaccination was exposure to information regarding the importance of the vaccine. The most common reason for refusing the HPV vaccine was the need to further research the vaccine. These data highlight and emphasize the relevance of publicity regarding the role and importance of HPV vaccines.

4.2. Males versus females

Gender differences in HPV vaccination initiation rates between females and males in our study vary from the latest CDC national data (i.e., 49.8% for males and 62.8% for females ages 13–17 years) [5] and the published literature [21,22]. Our result was approximately 20% higher for males than females. These study results are compatible with other studies suggesting a major factor for a much lower national male vs. female HPV vaccination rates may be due to practitioner preference and not parental choice [21–24].

4.3. Limitations

This study contained a relatively small sample size, and not all participants listed their most influential reason for vaccination. Since some demographic data (i.e., ethnicity, parental income, which parent was present at the office visit) was not collected from participants, analysis cannot provide complete insight regarding correlations between parental factors and vaccine acceptance. In addition, we did not collect information on provider communication differences regarding recommending HPV vaccine and if some providers had more success than others. Finally, survey data from this study may not be generalizable outside the scope of the clinic where the study took place.

5. Conclusion

The results of our study further support the value and strength of the physician recommendation for initiating HPV vaccination in both males and females during an office encounter as well as the importance of physician and public education about HPV disease and the value of vaccinating for its prevention. One potentially overlooked piece of public health data generated by this study is that in our population, males have about a 50% higher opportunity for receiving this recommended teen vaccine. One possible explanation for this variance is more males than females come in for office visits that have vaccinating

Table 1
Parental reasons for accepting and refusing HPV vaccine.

Reasons for accepting vaccine ^a	Total (n=164) N (%)	Male (n=109) N (%)	Female (n=55) N (%)
My doctor felt it was important to protect against future HPV infection	138 (84.1) ^a	94 (86.2)	44 (80.0)
I have read or heard that this is an important vaccine to give my child	104 (63.4) ^b	70 (64.2)	34 (61.8)
I am very pro-vaccine and this is a recommended vaccine by the American Academy of Pediatrics and the Centers for Disease Control	74 (45.1) ^c	55 (50.5)	19 (34.5)
My insurance covers all or most of the cost of the vaccine	42 (25.6)	31 (28.4)	11 (20.0)
I have had or know someone that had HPV disease or cervical (female organ) cancer.	23 (14.0)	14 (12.8)	9 (16.4)
Other	9(5.5)	5 (4.6)	4 (7.3)
Reasons for refusing vaccine ^a	Total (n=36) N(%)	Male (n=14) N(%)	Female (n=22) N(%)
I want to research the vaccine more	19 (52.8) ^a	9 (64.3)	10 (45.5)
My child is too young for this vaccine	9 (25.0) ^b	4 (28.6)	5 (22.7)
I do not think the vaccine is safe	6 (16.7)	1 (7.1)	5 (22.7)
My spouse/partner/child's other parent does not want this child vaccinated against HPV	5 (13.9)	0	5 (22.7)
I worry that vaccinating against HPV may make my child more likely to engage in sexual activity	4 (11.1)	2 (14.3)	2 (9.1)
My child does not want to get this vaccine	4 (11.1)	0	4 (18.2)
My child is not likely to get disease from the HPV virus	1(2.7)	0	1 (4.5)
I do not think the vaccine is effective	1 (2.7)	0	1 (4.5)
Other	6 ^c (16.7)	3 (21.4)	3 (13.6)

^a Participants were able to choose more than one response.

^a Most influential reason.

^b Second most influential reason.

^c Third most influential reason.

Table 2
Parent quotes for accepting or refusing HPV vaccine.

Reasons for getting vaccine
"It is mandatory"
"My son is an older teen and I thought he should have it in case he makes a poor decision to fornicate"
"I don't want to die from cancer"
"I am an oncologist and aware of HPV"
"I have HPV"
"Don't want my son to end up with penile cancer"
"Originally, I decided not to because we believe in abstinence before marriage and by getting the vaccine I felt that I would be telling my child that promiscuity is okay. But I have thought through you can get the virus other ways than intercourse"
"Family history of cancer"
Reasons against getting vaccine
"My child will come back to get at a later date"
"My child tends to pass out with shots, already passed out today. We will do this on a future visit"
"Now getting Tdap and meningitis, will return later for HPV"
"Waiting for next year"
"Auto immune disease runs in our families as well as allergies"
"I promised my other daughter to get it when she is 11 years old"

opportunities (e.g., sports physicals, ADHD checks, summer camp and Boy Scout physicals). If confirmed, and now that there are 3 vaccines strongly suggested for age 11–12, perhaps it is time to level the gender vaccine playing field by adding a routine well check at age 11–12 similar to the required visit for school entry.

Conflict of Interest

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. Dr. Harry Pellman has received speaker training from Merck, and Dr. Brown has received an investigator initiated study grant from Merck MISP in the past 36 months.

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