Vaccine 33 (2015) 1620–1624

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

HPV vaccine acceptance among adolescent males and their parents in two suburban pediatric practices

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ARTICLE INFO

Article history:
Received 17 August 2014
Received in revised form 11 January 2015
Accepted 16 January 2015
Available online 7 February 2015

Keywords:
Adolescent male
HPV vaccine
Vaccine acceptance
Attitudes
Genital warts
Cervical cancer

ABSTRACT

Purpose: To measure HPV vaccine acceptance among unvaccinated adolescent males and parents and correlate acceptance with knowledge, awareness, and personal experience.
Methods: Adolescent males ages 11–21 years old and their parents completed questionnaires measuring attitudes and knowledge about HPV vaccination and personal experience. *Acceptance* was defined as wanting the vaccine and *conditional acceptance* as wanting the vaccine if it would protect against genital warts or cervical cancer.
Results: Adolescent ($n = 154$) and parent ($n = 121$) vaccine acceptance was low (16% and 34%, respectively); however, conditional acceptance was higher. While adolescents had similar conditional acceptance for a vaccine against genital warts and cervical cancer, parents reported higher conditional acceptance for protection against genital warts. Independent predictors of acceptance included personal experience and demographic variables.
Conclusions: HPV vaccine acceptance among adolescents and parents was low. Conditional acceptance levels highlight the importance of education about a few important benefits of HPV vaccination, which may increase vaccination rates.

1. Introduction

Human Papillomavirus (HPV) is the most common anogenital infection in the United States. Vaccination against HPV is the most effective way to prevent transmission [1,2]. Despite recommendations for universal HPV vaccination of adolescent females and males [3], only 14% of American boys have completed the 3-dose HPV vaccine series, far too low to provide herd immunity [4].

Little is known about adolescent males' and their parents' knowledge and attitudes toward HPV vaccination, including as a prevention strategy for males and their partners. We hypothesized that HPV vaccine acceptance was associated with awareness, knowledge, and personal experience; and that conditional acceptance, wanting the vaccine if told it would protect against genital warts or cervical cancer, was higher than HPV vaccine acceptance without this information.

2. Methods

2.1. Sample and procedures

In a cross-sectional study, eligible adolescent males (unvaccinated 11–21-year olds) and their parents were recruited by pediatricians between April 2011 and February 2012 during medical visits at two private solo practitioner general pediatric practices in Maryland suburbs. Clinic one, serving privately insured patients, had no visible adolescent vaccine promotional material and a policy of adolescent visit time without parents. Clinic two included publicly insured patients, displayed Gardasil promotional material, and did not have a policy of separate time with adolescents. Neither clinic monitored vaccination rates. HPV vaccination was covered by public and private insurance at this time. Adolescents and parents were recruited together at acute and well visits. If adolescents were under 18 years, parents provided consent for them and completed

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http://dx.doi.org/10.1016/j.vaccine.2015.01.038
0264-410X/

self-administered surveys in exam rooms with adolescents. The study was approved by the Lifebridge Health Institutional Review Board.

2.2. Survey content

Surveys measured sociodemographic characteristics; awareness of HPV and the HPV vaccine; knowledge of HPV infection and disease; personal experience; and acceptance and conditional acceptance of the HPV vaccine.

Sociodemographic characteristics included sex, age, education, and race/ethnicity. Parents indicated marital status and family income. *Awareness* was defined as having heard of HPV or the HPV vaccine. Participants answered 5 questions about HPV transmission, disease, and natural course; the number of questions answered correctly was their *knowledge score*. *Personal experience* items measured whether participants had a history of sexual activity or a sexually transmitted infection (STI); and whether they knew someone previously vaccinated against HPV, or with HPV-associated disease. *Acceptance* of HPV vaccination was defined as wanting the vaccine and *conditional acceptance* was defined as wanting the vaccine if told it would protect against genital warts or cervical cancer.

2.3. Data analysis

Parent and child responses were analyzed independently. We generated descriptive statistics and then examined the associations between acceptance and other sample characteristics using analysis of variance (ANOVA) and chi-square tests for continuous and categorical variables, respectively. We then used logistic regression to determine which variables were independently associated with HPV vaccine acceptance (yes vs. no/don't know). We constructed unadjusted regression models and built an adjusted regression model including all variables significant in unadjusted models ($p < 0.1$), removing non-significant variables ($p > 0.05$) one by one. A complete case analysis was conducted because percentages of missing data were low. Data were analyzed using SPSS 21.0.

3. Results

3.1. Sample characteristics

Approximately 97% of approached individuals (154 adolescent males and 121 parents) agreed to participate. The adolescent mean age was 15 years. Overall, participants were college educated, Caucasian, and middle-class. Vaccine acceptance did not vary significantly by sociodemographic characteristics (Tables 1 and 2).

3.2. Acceptance

Approximately 16% of adolescents wanted to receive the HPV vaccine; nearly one-third did not want the vaccine; and more than half were unsure if they wanted the vaccine (Table 1). One-third of parents wanted their child to receive the HPV vaccine; 19% did not; and half were unsure (Table 2).

Adolescent conditional acceptance levels for a vaccine against genital warts (61%) and a vaccine against cervical cancer (61%) were higher than acceptance (16%; Table 1). The majority of the adolescents who were unsure about wanting the vaccine indicated they would like to get the vaccine if it protected against genital warts (60%) or against cervical cancer in women (65%). Parent conditional acceptance levels were also higher than acceptance levels. More parents reported conditional acceptance for the vaccine if it protected against genital warts (71%) than cervical cancer (64%; Table 2). Sixty-eight percent of parents who were unsure if they wanted the vaccine reported conditional acceptance for protection against genital warts, and 62% reported conditional acceptance for a vaccine to protect against cervical cancer.

3.3. Predictors of acceptance and conditional acceptance

Among adolescents, in the adjusted model, only history of sexual activity was associated with vaccine acceptance. Adolescents who reported being sexually active were four times more likely to accept the HPV vaccine ($p = 0.005$; Table 3). Vaccine awareness and history of sexual activity were associated with greater odds of acceptance for a vaccine against genital warts ($p = 0.030$ and $p = 0.043$, respectively; Table 3), and only knowing someone who had received the vaccine was a significant predictor of conditional acceptance for a vaccine protecting females against cervical cancer (OR = 8.34, $p = 0.044$).

In the adjusted model, knowing family or friends who had received the vaccine made parents three times more likely to accept the HPV vaccine ($p = 0.017$); knowing someone with genital warts was associated with 3.5 times greater odds of acceptance ($p < 0.007$). Asian race was associated with lower odds of conditional acceptance compared with Caucasian race ($p < 0.001$); and income above $75,000 was associated with higher odds of conditional acceptance of a vaccine against genital warts compared with income less than or equal to $75,000 ($p = 0.011$). Knowing someone previously vaccinated against HPV made parents more likely to accept the vaccine for their sons if it protected against genital warts ($p = 0.045$). HPV awareness ($p = 0.058$) and knowing someone previously vaccinated ($p = 0.023$) were associated with increased odds of accepting the HPV vaccine for their sons to protect women from cervical cancer.

4. Discussion

Vaccine acceptance was low among adolescent males and their parents, and the majority of participants were uncertain if they wanted the vaccine. Greater acceptance among parents than adolescents was possibly due to feelings of parental responsibility to protect one's child through vaccination. Conditional acceptance was notably higher than acceptance among adolescent males and parents. Differences between acceptance and conditional acceptance show that with limited basic information about the vaccine's health benefits, adolescent males and parents were more likely to accept it, particularly among those who were uncertain about being vaccinated against HPV.

Adolescent males were equally as interested in vaccinating to protect themselves from genital warts as to protect women from cervical cancer, which is consistent with previous data on young men's acceptance [5,6]. It is not clear, however, whether adolescent males were more likely to accept vaccination to protect women because of greater altruistic disposition or because preserving the wellbeing of future partners was in their own interest. Understanding motivations underlying conditional acceptance to protect women may need further study.

A higher proportion of parents accepted the vaccine if it would protect against genital warts than if it would protect women against cervical cancer, possibly because parental responsibility is to protect one's own rather than others' children. Vaccine promotion efforts for parents may be more effective if they emphasize the direct health benefits to sons.

The most consistent and salient predictors of vaccine acceptance were related to personal experience with the vaccine, genital warts, and sexual activity, rather than knowledge, echoing previous research [7–10]. Because we cannot know when adolescents will initiate sexual activity, it is critical to vaccinate before sexual debut.