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Acceptability of human papillomavirus vaccines among women older than 26 years

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ABSTRACT

Objective: To examine older women's (>26 years) acceptance of the human papillomavirus (HPV) vaccine, and factors associated with this outcome.
Study design: A convenience sample of 872 women age 26–77 years were surveyed regarding the likelihood they would accept the HPV vaccine if offered to them by their provider, and factors associated with this outcome. Binomial regression, Chi square and MacNemar's analyses were used to determine associations of this outcome with demographic, attitudinal, and experiential variables.
Results: The response rate was 60.8%. Half the respondents indicated they would want the vaccine, even if they had to pay for it. In multivariable analyses, the only factor associated with wanting the vaccine was higher self-reported knowledge about HPV (risk ratio 1.43, 95% Confidence Interval 1.12, 1.83). A majority of participants also believed that older women in general would want the vaccine if it were covered by insurance. However, this perspective was significantly diminished if the vaccine had to be paid for out of pocket (97% vs. 22% for 26–45 year olds; 84% vs. 20% for 46–65 year olds, 60% vs. 8% for 66+ year olds, $p < 0.001$). Nearly all (93%) believed primary care physicians should routinely discuss the vaccine with older women.
Conclusions: A high proportion of women over 26 would want the HPV vaccine if offered by their provider, even if they had to pay for it out of pocket. This suggests that if providers were to routinely offer the HPV vaccine to their older patients, many women would choose to get vaccinated.

1. Introduction

For U.S. females the human papillomavirus (HPV) vaccine is licensed for ages 9–26 years. This upper age cut off corresponds to the age of women in the main clinical trials evaluating the vaccine's efficacy [1–3]. Demonstrating clinical efficacy of the vaccine becomes more difficult as women age because there are fewer HPV-naïve women to evaluate, and fewer incident HPV-associated cervical abnormalities to assess as clinical trial endpoints. However, there are data to support the safety and usefulness of the vaccine among older women (defined here as women over the age of licensure (26 years) in the U.S.), with efficacy reported as high as 83.4% in some studies [4–6]. Some countries have already licensed the vaccine for women age 27 to 45 years [7,8]; however, in 2011 the U.S. FDA decided not to license the vaccine for this age group, citing a lack of effectiveness in preventing cervical cancer [9].

Studies in the early 2000s, many of which occurred before the vaccine was licensed, found broad acceptability for the HPV vaccine among women over 26, but also identified barriers such as insurance coverage and costs for this age group [10]. Little research has been done in more recent years on the attitudes about HPV vaccines among women older than 26 years. Such research is important because older women are still significantly impacted by HPV-related diseases, and can also serve as a reservoir for spreading the infection to others [11]. In the U.S. insurance coverage for vaccines generally mirrors licensure specifications [12]. Thus, because HPV vaccines are only licensed up to age 26, women older than this who want the vaccine would likely have to pay for it out of pocket. Out of pocket cost has been cited as a barrier to getting the vaccine among those lacking insurance coverage, regardless of age [13]. Given this, medical practitioners are much less likely to discuss the HPV vaccine with their older patients and potentially miss offering it to women who may benefit from the vaccine and be willing to pay for it [14].

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Understanding whether women over the age of 26 would want to be vaccinated against HPV, even if they had to pay out of pocket, is important as this knowledge may reveal a population that would benefit from the vaccine but for whom the vaccine is not currently being routinely discussed or offered. The goals of this study therefore were to investigate older women's attitudes about HPV vaccines for themselves and for other women over the age of 26, how these attitudes may be influenced by whether a woman would have to pay out of pocket for the vaccine, and whether older women think that primary care providers in general should routinely discuss the vaccine with their older female patients.

2. Materials and methods

The study population consisted of a convenience sample of 872 women attending one of nine private obstetrics and gynecology (ob-gyn) practices in the central Colorado area (6 urban, 3 rural). Women were eligible for the study if they had agreed to be contacted for a follow-up survey after completing a previous paper-based survey on a different topic, provided a working email address, were over the age of 26 years, and could complete the survey in English. A web-based survey administered via REDCap (Research Electronic Data Capture) [15] was provided to women at their contact email address beginning in February 2014. Women who had not completed the survey within one week of the initial email received up to 8 additional reminder emails and one automated phone call over a period of 9 weeks. A $5 incentive was provided to women completing the survey. All study activities were approved by Colorado's Multiple Institutional Review Board.

Before answering survey questions, participants were provided with a brief synopsis of HPV infection and vaccination. This paragraph described the likelihood of getting HPV and its potential clinical sequelae, the efficacy of the vaccine in younger women, and a suggestion that the vaccine may also be effective for older women ("*Based on what is known, it is expected that the vaccine would potentially be beneficial to older women – especially those who have had only a small number of lifetime sexual partners and thus less exposure to the virus*"). It also explained that vaccination for those over the age of 26 years would not likely be covered by insurance ("*Because of the age restrictions for insurance coverage, if a woman older than 26 gets the vaccine, she would have to pay for the vaccine herself. The vaccine costs about $150/dose. Three doses of the vaccine are needed for protection so the patient's total cost would be about $450*"). A full version of the survey is available upon request.

The main outcome assessed was a woman's desire to get the HPV vaccine for herself if the vaccine was recommended by her ob-gyn, which was asked specifically among women who indicated they had not received any prior doses of the vaccine (94% [498/527] of respondents). This was measured using a 4-point Likert scale ("definitely would want" to "definitely would not want" the vaccine) in response to the question "*Given the information provided, how much would you personally want to receive the HPV vaccine if your OB/GYN provider had it available and recommended it for you?*" This response was later dichotomized to definitely/probably would want vs. definitely/probably would not want given the data's distribution, and because the ultimate decision to receive a vaccine is a yes or no decision.

A variety of secondary outcomes among all respondents (i.e. those with and without prior HPV vaccine doses, $n = 527$) were also assessed. Participants' perceptions of other women wanting the vaccine were measured using the same 4-point Likert scale, and were assessed for three different hypothetical age categories (27–45 years, 46–65 years, and 66+ years), with and without hypothetical insurance coverage for the vaccine. Participants were also queried about how much they felt they knew about HPV (nothing/a little vs. some vs. a lot), whether they had ever discussed the HPV vaccine with their primary care provider, whether primary care providers in general should "*routinely talk about the HPV vaccine with their female patients who are over age 26*" (4-point Likert from strongly agree to strongly disagree), a variety of reasons why they would or would not want the HPV vaccines for themselves, and whether "*they or anyone close to them*" had experience with a variety of HPV-related diseases (defined in this study as "personal experience with HPV"). A 7-item series of true/false questions about the virus was used to generate a HPV knowledge 'score' for each participant that was later divided into three HPV knowledge categories (low – <58% correct, moderate – 58–83% correct and high – >83% correct) based on the distribution of correct answers.

Demographic characteristics assessed included age of the participant (categorized later as 26–34, 35–44, 45–54, and 55+ years), education level (later consolidated to some high school/high school grad vs. some college/college grad vs. advanced degree), household income (later consolidated to <$50 k vs. $50 k–$99,999 k vs. $100 k+), race (later dichotomized to white vs. other), insurance type (later consolidated to public vs. private vs. other), whether they were currently the parent of an adolescent son or daughter, whether or not they had a chronic health condition (defined as any health condition lasting longer than 3 months), and what type of medical provider they saw as their primary care doctor (later categorized as ob-gyn vs. internal/family medicine vs. other).

Descriptive statistics were generated for all survey questions. The association between the various outcome measures and predictor variables was assessed using Chi-square, Fisher's exact or MacNemar's tests as appropriate. Univariable and multivariable log binomial regression analyses were used to identify independent predictors of participants wanting the HPV vaccine for themselves. The multivariable model included items that were found to be possibly significantly associated ($p \leq 0.1$) with this outcome in univariable analyses plus race, age, education, and insurance type, as these have been shown in studies of younger women to be important predictors of HPV vaccination [16,17]. Given the high prevalence of the main outcome, risk ratios (RR) were chosen as the reporting measure rather than OR. Trends of vaccine acceptance across the three age categories for hypothetical older women were assessed using generalized estimating equations to account for repeated measures among participants, and included only those participants who provided an answer for all three hypothetical age categories. All analyses were performed in SAS 9.2 (Cary, NC).

3. Results

Less than 1% (5/872) of our survey sample was unable to be reached via email (i.e. email bounce backs). Of those reached, 527 responded to the survey for a response rate of 61%. There were 29 women (5.6% of the total sample) who indicated they had already received the HPV vaccine series, and were therefore excluded from analyses regarding wanting the vaccine for themselves. There was no difference between responders and non-responders in age, pregnancy status or whether they had received the HPV vaccine previously. Table 1 shows the demographic characteristics of 527 respondents.

Most women had heard of HPV previously (Table 2). Only 17% of women felt they knew "a lot" about HPV. Consistent with previous studies [11,18–20] a high proportion (76%) of women or "someone close to them" had experienced HPV infection and related sequelae (Table 2).

Half of the unvaccinated women in our study indicated they would "probably" or "definitely" get the vaccine if it their provider had it available and recommended it for them. Prevention of cervical cancer was the most common reason endorsed by women