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Human papillomavirus vaccine acceptability: Is multimedia education ready for prime time?

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The human papillomavirus (HPV) is one of the most common sexually transmitted infections in the United States [1] and [2]. Approximately 6.2 million individuals develop genital HPV infections each year [3]. It is estimated that 24% of 15-year-old girls, 38% of 16-year-old girls, and 62% of 18-year-old women have had sexual intercourse [4]. The highest rates for HPV infection occur in women between the ages of 18 and 28 [1]. In addition, those at increased risk for cervical cancer, including minorities and individuals in low socioeconomic groups frequently begin sexual activity at a younger age [4] and [5].

Interestingly, HPV infection is the first virus proven to cause a solid tumor [6]. In addition to cervical, vaginal and vulvar cancer, HPV causes cervical, vulvar and vaginal dysplasia and condylomatous disease. Up to 80% of patients with intraepithelial neoplasia show evidence of HPV infection [7] and [8]. Almost all cases of invasive cervical cancer are associated with HPV infection [9] and [10].

The development of the HPV vaccine (Gardasil®) and its approval by the United States Food and Drug Administration provide a unique opportunity to help prevent cervical and other cancers, in addition to preventing benign disease of the external genital tract. Widespread vaccination of women who tend to be affected more by cervical cancer, namely minority and low income women, could have a significant impact upon cervical cancer rates in these populations.

The study by Chapman et al. published in this issue was performed to assess the use of multimedia as an educational tool to improve HPV vaccine acceptability. An initial 32-question survey addressing HPV knowledge and vaccine acceptability was administered, followed by an 8-min educational video. Participants then completed an 11-question post survey and post video assessment. The effect of video intervention upon overall HPV vaccine acceptability, views on vaccine mandates, school vaccination, and acceptable age for vaccination were assessed. The authors reported statistically significant increases in individual vaccine acceptability, support of mandatory HPV vaccination, school vaccination, and acceptance of vaccine if it were free after the educational intervention. Additionally, they noted that 56.5% of participants stated that they would vaccinate their child at age 15

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The authors has no conflict of interest to declare.

years or younger before they saw the video. After the video, 94.1% of participants approved of vaccination from age 9 ($p < 0.0001$).

To date, this pilot study is only one of three published studies assessing the impact of an educational intervention upon HPV and the HPV vaccine. Neither of the other two studies evaluated the impact of education upon the willingness of parents to accept the HPV vaccine [11] and [12]. Consistent with the findings of the other two studies, this study demonstrates a need for more education regarding HPV and the HPV vaccine, despite the media flurry around this issue. It also demonstrates the ability to perform this type of research in minority and low socioeconomic status women. In this project, the study population consisted of more than 65% minorities. Therefore, a population of women who have traditionally been underrepresented in research was included. Additionally, the authors reported that Hispanics, Blacks, and those with combined incomes <\$50K comprised the subgroups more likely to initially decline the vaccine, but after the intervention accept vaccination for their children. This finding is significant, as these data demonstrate the effectiveness of an educational video tool in a population of women most at risk for cervical cancer. As illustrated in Tables 2 and 3, the results of this study underscore two important points: (1) Despite current educational efforts, a disparity in knowledge about both HPV and the HPV vaccine still exists; and (2) Educational initiatives can increase patient knowledge and willingness to participate in cancer prevention measures.

Although the above findings demonstrate the feasibility of video-based education, the study has several limitations which should be discussed. First, 256 people agreed to participate, but there is no mention of the total number of women approached nor of their specific reasons for declining participation. Although no details were provided regarding the average time it took participants to complete the study, the authors did mention that the majority of women who declined participation stated that “it would take too much time.” In a clinic setting with a relatively “captive audience,” how long did the study take and why did participants decline?

The authors acknowledged the limited applicability of the study given that the research was conducted in only one city (Boston). They also noted that the majority of participants were recruited from gynecology and/or colposcopy hospital-based clinics, while additional participants were recruited from regularly held community health education meetings. While the authors identified this potential source of bias, it is important to realize that women who do not seek care at these clinics or who do not attend such meetings may have extremely limited interest in and knowledge about health issues including HPV and cervical cancer. Educational efforts much reach out to these women, as they are not an insignificant proportion of the population, and they may have other social issues prohibiting participation (cannot find a babysitter; cannot afford the gas to go to the meeting; working several jobs and have no spare time to take care of themselves, etc.). Limited knowledge and limited resources may be negative prognostic indicators for those who need vaccination the most.

In the Discussion, the authors noted that the age range of participants was 18–80. The breakdown of participation by age was not, however, described in the demographic characteristics table. While this is a feasibility study, targeting educational tools such as

those used in this project to women who are either of reproductive-age or who are mothers would seem to be more efficient than sampling a group of individuals with such a wide variety in age.

One of the questions asked was... “Has the participant ever heard about HPV?” In a population where only 28% of the women had bachelor’s degrees or higher, one must question the validity of equating “hearing about HPV” with comprehension of what HPV “actually is.” There can be a significant difference between hearing about something and actually understanding what that specific something is. A discrepancy in baseline knowledge can certainly affect the answers to the subsequent questions in this survey. If a participant lacks fundamental knowledge about HPV, how can she provide educated/informed answers about subsequent HPV-related survey questions? The addition of a multiple choice question asking the participant to define or describe HPV would be a good place to start, since it would allow future researchers to target an appropriate foundation for the specific educational initiative.

In paragraph 3 of the Discussion, the authors stated that the lowest acceptance rate after the video was acceptance of a school vaccination requirement for HPV vaccination. This is an incorrect statement, because the *actual* question (see Table 2) was “Would you vaccinate your child if the vaccine were given at school?” *not* if the parent would vaccinate if it was a school requirement. Perhaps the authors should consider adding an additional question to assess this area of interest.

Despite these limitations, this study is important because it demonstrates the feasibility of using a video-based educational tool to provide information about a relatively sensitive topic to a group of women often excluded from this type of research. While these results suggest that video-based tools are effective, it is important to realize that education is not a “one size fits all” field and that other educational modalities may be more effective with other groups or in other settings. As the authors state, conducting future studies targeting both men and women of different ages, races, social backgrounds and community settings will serve as a critical step in determining which interventions are most effective for specific groups of individuals. As Gynecologic Oncologists, our mission is not only to treat cancer, but also help prevent it. We must use appropriate educational strategies to help us target successful educational interventions for specific sub-groups of girls and women. Studies such as this provide an important first step in help making this happen.

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