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Young Women's Sexual and Reproductive Health Post HPV Vaccination

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Abstract

In the present study the authors sought to explore, in greater depth, the impact that HPV vaccination has on college-aged women's reproductive and sexual health. Qualitative interviews were conducted with 30 HPV-vaccinated, college women and analyzed for reoccurring themes. Although findings revealed that women's HPV-related knowledge was suboptimal, most women correctly believed that they were still at risk for HPV after having received the vaccination. Women indicated that having the HPV vaccine made them more aware of sexually transmitted infections and prompted them to continue to take care of their sexual health. Women reported that having the HPV vaccine did not influence their condom use or birth control choices, and they believed that obtaining Pap smears was still important. These results help us to understand the impact of HPV vaccination on women's reproductive and sexual health. These findings are promising and reinforce the importance of educating women about behaviors that will help them maintain reproductive and sexually healthy lives.

Keywords

HPV vaccination; sexual health; reproductive health; college women; cervical cancer; Pap smear

Human papillomavirus (HPV) is the most common sexually transmitted virus in the United States, and at least 50% of sexually active people will contract an HPV infection at some

point in their life (Centers for Disease Control and Prevention [CDC], 2012). There are over 40 different types of HPV known to infect the genital region of women and men, including infection of the anus, skin of the penis, vulva, vagina, cervix, and rectum (CDC, 2012). The virus is also found in the throat and neck. High-risk HPV types cause over 90% of cervical (and anal) cancer cases, and they are associated with 60-70% of oropharynx cancers; low-risk HPV types can result in cervical abnormalities and genital and respiratory tract warts (CDC, 2013).

HPV is a highly infectious, sexually transmitted virus that does not require full penetration intercourse for transmission. Although the correct and consistent use of condoms can reduce the chances of transmission, if the virus is present on areas not covered by the condom, transmission can still take place through genital skin-to-skin contact. The peak incidence of HPV infection typically occurs between the ages of 16 and 20 years (CDC, 2012) when sexual activity is initiated, which makes HPV a serious health concern among adolescent and young women. For example, a prevalence rate of 25.9% for high-risk (oncogenic) and low-risk (genital warts) HPV types has been reported among sexually experienced girls aged 14 to 19 (Forhan et al., 2009).

Two vaccines, Gardasil and Cervarix, have been demonstrated to be safe and effective in preventing two high-risk types of HPV (i.e., types 16 and 18), which are responsible for 70% of cervical cancer cases (National Cancer Institute [NCI], 2012). Gardasil also provides protection against HPV types 6 and 11, which together cause 90% of genital wart cases (NCI, 2012). Both vaccines are administered in a series of three injections over a 6-month time period. Currently 44% of adolescent girls, aged 13 to 17 years, have received at least one dose of the HPV vaccines, and 27% have completed the three-dose regimen required for maximal efficacy (NCI, 2011). In a study that analyzed data from the 2009 National College Health Assessment given by the American College Health Association, 45% of college women, aged 18 to 24 had received the HPV vaccine (Lindley, Elkind, Landi, & Brandt, 2013).

Although widespread HPV vaccination has the potential to reduce HPV infection, a percentage of women who have received the HPV vaccine will still be exposed to HPV types not covered by the vaccine. Therefore, cervical cancer screening (i.e., Pap smear) continues to play an important role in HPV-vaccinated women's sexual and reproductive health. This is a particularly important issue for college women because one study showed that, although college women were more likely than a community sample to have received the HPV vaccine, they were less likely to have had a Pap smear (Wolwa, Blavo, Shah, Fleisher, & Espinal, 2013). The current recommendations are that, regardless of HPV vaccine status, women 21-65 years of age should participate in cervical cancer screening every 3 years (U.S. Preventive Services Task Force [USPSTF], 2012). In addition to preventing cancer, cervical cancer screening appointments afford opportunities for general gynecological exams, which may be used to test for, and treat, other sexually transmitted infections (STIs) in young women who might not otherwise seek care. As HPV vaccine programs become more widely accepted and available in the United States, it is increasingly important to understand HPV vaccine recipients' knowledge, attitudes, and behaviors regarding continued HPV prevention.

Since the debut of the vaccine, HPV vaccine critics have warned against adverse consequences of the vaccines on young girls' attitudes and behaviors; however, recent researchers (Caskey, Lindau, & Alexander, 2009; Kuitto, Pickel, Neumann, Jahn, & Metelmann, 2010; Liddon, Leichliter, & Markowitz, 2011; Mather, McCaffery, & Juraskova, 2012) have found no evidence to suggest a detrimental impact of vaccination on cervical screening and sexual behavior. In fact, some (Kuitto et al., 2010; Mather et al., 2012) have suggested that the decision to be vaccinated against HPV reflects a positive attitude toward sexual health. For instance, Liddon and colleagues (2011) found that vaccinated women used condoms more consistently than their unvaccinated counterparts.

Despite these encouraging outcomes, researchers continue to document concerns among the public regarding the vaccines' promotion of premature sexual activity and riskier sexual practices (Blumenthal, Heyman, Trocola, & Slomovitz, 2013; Constantine, Jerman, & Huang, 2006; Marlow, Forster, Wardle, & Waller, 2008). Others have suggested that the vaccines might preclude the need for regular cervical cancer screening or safe-sex practices among vaccinated women (Henderson et al., 2011; Kulasingam, Pagliusi, & Myers, 2007). For example, Mortensen (2010) found that college-aged women in Denmark were under the impression that the HPV vaccines could provide complete protection against cervical cancer if received before initiation of sexual activity. Although this belief may promote HPV vaccine uptake, it might also encourage a false sense of security against HPV infection. A false sense of security among HPV-vaccinated women could lead to declines in cervical cancer screening as well as declines in safe sex practices (e.g., condom usage).

According to the Health Belief Model, an established Health Psychology theory, women's likelihood of participating in cervical cancer screening and preventive behaviors (i.e., safer sex) include 1) whether they perceive themselves as at risk for HPV infection and cervical cancer, 2) whether they believe that HPV infection and cervical cancer are serious, 3) whether the benefits of engaging in cervical cancer screening and preventive behaviors outweigh the costs, and 4) whether there are cues in their environment that encourage them to participate in screening and safer sex behaviors (Rosenstock, 1974). Because adequate knowledge of HPV infection and the HPV vaccine precedes women's ability to make informed decisions regarding their reproductive and sexual health, as well as their ability to make accurate risk assessments, HPV-related knowledge among vaccinated women is an area that needs more attention. This is particularly so because multiple studies (e.g., Allen et al., 2009; Brewer & Fazekas, 2007; Mortensen, 2010) have documented that levels of HPV knowledge and perceived risk remain low across various populations, including young women.

Until recently, few studies had examined HPV knowledge and/or the perceived risk and benefit of participating in preventive behaviors among women who have been vaccinated against HPV (Agius, Pitts, Smith, & Mitchell, 2010; Henderson et al., 2011; Mullins et al., 2012). In a cross-sectional study of HPV-vaccinated girls and women aged 13 to 21, most perceived a continued need to use condoms consistently and to have fewer sexual partners (Mullins et al., 2012). Agius and colleagues (2010) found that Australian women who had received the HPV vaccine had significantly higher knowledge and awareness of HPV than did those who had not been vaccinated, but other researchers (Conroy et al., 2008;

Ratanasiripong, Cheng, & Enriquiz, 2013) have not found differences in HPV knowledge or perceived HPV risk (Licht et al., 2009) between women who have been vaccinated and those who have not. Thus, the relationship between vaccination and behavior remains unclear. More information is needed to understand the relationship between women's perceptions of risk and their HPV vaccination status. Equally important is a better understanding of the underlying factors that explain the correlation between HPV vaccination status and sexual health behaviors among women. As a result, researchers (e.g., Ratanasiripong, 2012) have called for the need to examine the relation between HPV vaccine uptake and sexual health behaviors in order to inform successful public health interventions.

Because most of the research to date has focused on analyses of survey data, which can limit in-depth understanding of the positive relationship between HPV vaccination and sexual health, we sought to address the gaps in understanding the relationship of HPV vaccination and health outcomes through interviews with HPV-vaccinated women. Open-ended questions allow for an in-depth exploration of participants' experiences, knowledge, and attitudes toward cervical cancer and HPV, and allowed us to explore how (and why) receipt of the HPV vaccine has influenced college-aged women's sexual and reproductive health behaviors and how women perceive their HPV risk post HPV vaccination.

Method

Participants

Thirty, English-speaking women, ($M=20.87$ years) who had received all three doses of the HPV vaccine were recruited from a large, northeastern university in the United States. The average age at HPV vaccination was 16 years. Slightly more than 60% of the women reported that they have had a Pap smear since getting the HPV vaccine, and their average age at first Pap smear was 17.74 years. Approximately 75% of the participants were sexually active, and the majority (75%) had never tested positive for an STI. See Table 1 for additional demographic information.

Materials

The interview guide consisted of approximately 25 questions and was developed based on the cervical cancer literature (Henderson et al., 2011; Kulasingam et al., 2007; Licht et al., 2009; Liddon et al., 2012; Marlow et al., 2008; Mather et al., 2012; Mortensen, 2010; Ratanasiripong, 2012), the Health Belief Model (Rosenstock, 1974), as well as consultation with experts in the field. Open-ended questions were used during the interview process to understand complex ideas and behaviors without imposing a priori categorizations, which can limit the scope of inquiry. Domains of interest included knowledge about HPV, perceived HPV risk, importance of cervical screening, and sexual health behaviors. Sample interview questions are: "How has getting the HPV vaccine changed your life? Your romantic relationships? Sexual activity/behaviors?" and "How important do you think getting a Pap smear is given that you have received the HPV vaccine? Why?" HPV knowledge and perceived risk questions included: "Now that you have been vaccinated

against HPV, do you think you could get HPV? Cervical Cancer? Genital warts? Other STIs? Why?” and “What is HPV? HPV vaccine? Pap smear?”

Procedure

Participants were recruited through an online, university-affiliated, research participation system from January-March 2013. Any student taking any Psychology course had access to the online system. The present study consisted of two components: an online survey, and a follow-up interview. Students received course research credit for completing the online survey and an additional \$10 if they completed the interview, which was thought to be a meaningful amount that compensated the participants for their time, but was not so great that it was coercive.

After having given informed consent, participants provided demographic information (e.g., age, income, education) and health information (e.g., birth control method, date of HPV vaccination) via the online survey, and then scheduled a phone interview with the first author, who has extensive training and experience with interviewing. Individual telephone interviews were conducted in private areas and lasted approximately 30 minutes. The dialogues were audio-recorded and transcribed by psychology undergraduate research assistants, and then reviewed for completeness by a graduate-level research assistant. Throughout the data collection process, notes were taken to describe initial impressions and constructs. A thematic analysis of the data was conducted; recurring themes were identified within and between each interview (Creswell, 2007). Two of the authors, who are trained in, and have experienced with, qualitative methods, simultaneously conducted coding by reviewing transcripts, line-by-line for themes relevant to the research questions. Initial coding involved describing the general features of the data in order to draw attention to commonality and create categories that pertained to a range of data examples. When associations, overlaps, or diversions in the data occurred, coding categories were adjusted to fit the data. Categories were then collapsed to develop constructs.

Results from coding analyses were compared between the two coders to enhance the reliability of the themes derived from the data. Discrepancies between the coders were discussed and resolved by comparing each coder's results with the raw data until they reached an agreement on how the data should be coded. Quotations that were particularly representative of the categories were selected from the transcripts and reviewed. The data analysis was then tied to relevant literature to bring meaning and understanding to the findings. Themes derived from the data are presented below.

Results

HPV Knowledge

Women most commonly explained that HPV is a sexually transmitted infection (87%) and that it is associated with cervical cancer (80%); however, 20% of the women did not mention cervical cancer until the interviewer mentioned it (or asked about it). Fewer women (23%) knew that there are multiple types of HPV. Only 27% of women knew that HPV can cause genital warts, and 30% knew that HPV can cause other cancers.

The women had many misunderstandings with regard to HPV. For example, although 30% knew that HPV can cause other cancers, two women incorrectly believed that HPV is associated with ovarian cancer, one erroneously mentioned uterine cancer, and another mentioned breast cancer. Only one woman correctly referenced throat cancer. No other women mentioned throat cancer, and no one mentioned anal cancers. Twenty percent of the women believed that HPV can cause other STIs, and three of those women believed that HPV causes infertility. Two other misunderstandings were thinking that HPV *is* cervical cancer (13%) and that HPV affects only women, or affects women more severely than men (20%).

Purpose of Pap Smears

Many women (43%) knew that the purpose of a Pap smear is to screen for cervical cancer; however, 57% incorrectly thought that the Pap smear also tests for STIs. When participants were asked how often women should obtain pap smears, the most common response was at least once a year (90%). Women were generally uncertain about whether HPV vaccinated women should be getting regular pap smears; however, the majority of women (57%) suggested that, although they were unsure, they thought that being vaccinated against HPV should not change Pap smear behavior. Twenty percent of the women believed that being vaccinated against HPV might influence how often women get a Pap. Specifically, if women had received the vaccine, they would need a Pap smear less often.

Vaccine Efficacy and Perceived HPV Risk

Most women (93%) knew that they could still get HPV despite having had the HPV vaccine. All but five women gave explanations for why they thought they could still get HPV. One of the major reasons women (20%) gave for feeling susceptible to HPV is because the vaccine is not 100% effective. For example, one woman said, “no vaccine is 100% effective,” and another said more generally, “I feel like anything can happen.” Some women (20%) also likened the HPV vaccine to the flu shot. For example, “people get flu shots and they still catch it [the flu].” Finally, 20% of the women felt susceptible because they knew that the vaccine only protects against certain strains of HPV: “...Yes [to whether she could get HPV]. And I say that because my doctor told me that it does not prevent against all sorts of HPV so I guess so.” Two women did not think they could get HPV. One of them stated, “No. I think that – I don’t think I could. I think that it’s...I don’t, well I could be wrong, but I’ve...I’ve always been under the impression that I’m immune from that now.”

All of the participants knew that there is still a chance they could get cervical cancer, although it is less likely than without the vaccine. A notable response to this question is that 30% said that they could still get cancer because they believe that there are other ways to get cervical cancer that do not involve HPV infection. For example, some women (20%) also thought that cervical cancer could run in families; “...I mean maybe the vaccination may not be as strong as the strand of cervical cancer in my family.”

Only 30% of participants believed that the HPV vaccine offers some protection against genital warts. They were generally less confident about the genital warts protection than they were about the cervical cancer protection; for example, “...I guess it’s effective

because the warts is HPV...” The remaining participants did not know or did not think the vaccine offers any protection against genital warts; for example, one woman said, “Um. I actually didn’t know that it did...Um, I don’t think it does.” Another said, “Uh, I don’t know anything about that! I don’t have them?”

All participants reported that they are still at risk for STIs. For example, one woman said:

Yeah, I mean this just prevents me from the HPV virus, it doesn’t prevent me from getting any other sexually transmitted diseases, I would still have to be careful with, um, during any intercourse and um still protect myself the same way if I didn’t have the vaccine.

The HPV Vaccine and Romantic Relationships: “One Less Thing”

The majority of women (83%) said that having been vaccinated against HPV had no influence on their romantic relationships. As one woman commented, “I wouldn’t say like I feel like more inclined to like sleep with more people now that I’ve had it or anything.” Another woman explained, “I just personally chose the way that I wanted to have my romantic relationships based on who I am as a person more than whether or not I had um, whether or not I could get a STD or the HPV virus or anything.” Some women (13%) added that having been vaccinated against HPV made them feel more confident, or safer in their relationships, because HPV was “one less thing” that they had to worry about. In addition, some women (7%) expressed that having been vaccinated was a benefit to their sexual partners. One woman commented:

I think it’s sort of like a bonus call item. It’s not like it’s going to change how I make decisions about like my romantic life but um when I do make those decisions it’s like one less thing that I have to worry about I guess.

The HPV Vaccine and Safer Sex: “I’m More Aware”

One half of the women stated that having received the HPV did not have any effect on their participation in safer sex, because, as several women noted, women have to be careful sexually, regardless of having been vaccinated against HPV: “...you still have to be protected, you still need to be careful with what you do...” Other women (27%) reported that getting vaccinated made them more aware of sexually transmitted diseases, which made them more cautious with sexual activity. Moreover, some women (10%) indicated that, because they had taken action to protect their sexual health, they wanted to continue participating in healthy behaviors. For example, one of the women stated:

I guess by getting the vaccine for HPV, it has made me cautious in other regards. Like you know, making sure my partner is clean before we do anything. Because, you know, I’ve taken steps already that protect myself so I want to keep doing that.

Another woman explained:

It’s just made me aware that there are things that aren’t, you know, not visible to the naked eye that you can contract from other people and things like that. And that there are things that, you know, are life threatening you know, like HIV. It just made me cautious.

Other women (17%) reported that it had made them less worried about contracting HPV from partners: “having the vaccine has made me feel a little safer.”

None of the women reported that the HPV vaccine had had an influence over their use of condoms during sexual activity. As one woman explained, “I would still use all forms of protection, and do anything in order to just NOT get those things. I know a few people who have taken those chances and it’s really hurt them in the end.” Other women commented, “I think you should still wear one. I don’t think it’s a license to not wear one” and “I mean you can get other diseases.”

All of the women indicated that the HPV vaccine did not have any influence over their decisions about birth control. As one woman indicated:

I have goals and I have things that I want to do with my life so I’m definitely not trying to ruin those plans by getting pregnant or getting like diseases so and like it doesn’t really make me more like reckless I guess but it’s just like it’s like okay I still have to do these things but it’s just part of it.

The women recognized that preventing pregnancy and preventing HPV infection were “two completely different things,” and, thus, HPV vaccination was unrelated to these decisions and behaviors.

Importance of Pap Smears Post Vaccination: “Everyone Should Get One”

All but two of the women indicated that despite having received the HPV vaccine, participating in routine Pap smears is very important to their health regimen. As one woman explained, “I don’t think it’s any less important than anyone else who hasn’t received the vaccine. You know? I think everyone should get one at least once a year.” Over 60% of the women reported that getting a Pap smear is good because it gives them peace of mind knowing that everything is OK:

I mean, it’s just good, uh, it’s good to have like a piece of mind and just, you know, to get the pap smear results back and know that you’re normal... I mean like know that you’re okay for sure. It’s just- it’s nice to have that...the knowledge.

Some women (13%) also noted that it is important to get a Pap smear to check for issues unrelated to HPV. For example, as one woman suggested, “its very important because you know you want to check for other stuff. If it’s not cervical cancer it could be something else.” In addition, women (17%) said that they need a Pap smear because there is no way for someone to know what is going on inside the body: “I mean you usually can tell if you’re healthy or not but you really don’t know what’s going on inside of you so I feel that it’s best to seek professional help for that.”

Finding health issues early was a frequently discussed topic in regard to the importance of routine screening (17%). One woman exclaimed:

[Getting a Pap smear is] super-duper important! Um I don’t know I think I think a lot of people don’t do it just because they’re scared of it or whatever. But um I don’t, it just all comes down to like I would rather know if something’s wrong with me than find out too late.

The two women who thought that Pap smears were not that important to their health mentioned that they were at low risk for HPV and so there was no real need for them to participate in routine screening. As one of the women explained:

At the moment not very important because I am not sexually active and cancers do not run in my family. So I know anyone can develop cancer, but it's just for me at this moment, I don't feel like it's that important.

Discussion

We used a qualitative approach to obtain in-depth information about what HPV-vaccinated women know about HPV, the vaccine, and how it has influenced their sexual and reproductive health behaviors, as well as their HPV-related risk assessments. With regard to HPV knowledge, most women knew that HPV is sexually transmitted, that there are multiple types, and that it is associated with cervical cancer; however, many women had misunderstandings about what cancers HPV causes, and some did not know that HPV can cause genital warts. Despite limited knowledge, the majority of the women in this study correctly identified that they are still at risk for HPV infection, and they understood the importance of Pap smears and safer sex practices.

The findings of the present study are in line with the findings of available quantitative studies. For example, in their cross-sectional study, Caskey et al. (2009) found that only 5% of HPV-vaccinated women believed that having had the vaccine decreases the need to obtain cervical cancer screening or engage in safer sex. Mullins et al. (2012) also found that few women perceived a decreased need for safer sexual behaviors post-vaccination. Furthermore, Liddon and colleagues (2012) found no association between HPV vaccination and risky sexual behavior in their national sample of girls and women aged 15-24. The present study extends the previous literature by providing in-depth qualitative information about women's knowledge and lives post HPV vaccination. For example, in addition to assessing women's perceived risk for HPV post-vaccination, we were able to understand women's reasoning for their risk perceptions. Furthermore, when asked about knowledge in true/false or multiple-choice formats, individuals have a chance to guess the correct answer. In the present study we asked an open-ended question to assess HPV knowledge, which may provide more insight into participants' actual understanding of HPV. We also believe that using telephone interviews allowed women to be candid about their experiences, which provided us with valuable information about the positive impact of HPV vaccination on reproductive and sexual health.

Similar to previous studies (Kuitto et al., 2010; Mather et al., 2012), findings from this study support the idea that the HPV vaccine may facilitate protective health behaviors; most of the women indicated that having had the HPV vaccine made them more aware of sexually transmitted infections and prompted them to continue to take care of their sexual and reproductive health. In addition, having had the HPV vaccine gave women peace of mind regarding cervical cancer protection, but not to the extent to which they jeopardized their sexual health. Specifically, women reported that having had the HPV vaccine did not influence their condom use or birth control choices. Indeed, the majority of women reported

that they were currently using contraceptives, participating in Pap smears, and had not been diagnosed with an STI. The vast majority of women (all but two) correctly believed that routine Pap smears remained important for them, despite having been vaccinated.

Despite findings that support a positive relationship between HPV vaccination and reproductive and sexual health, women generally continued to have a limited understanding of HPV. These misunderstandings are a concern, given Mullins et al.'s (2012) finding that low HPV and HPV vaccine knowledge were significant predictors of girls' and women's perceptions of a decreased need for safer sex (other significant predictors were lower concerns about HPV infection, lack of condom use at last intercourse, no lifetime alcohol use, and having had their teacher as a source of HPV vaccine information). Misunderstandings regarding HPV can also have important implications for how women cope with HPV-related diagnoses and whether women get vaccinated. More efforts to educate the public about the relationship between HPV and genital warts and the protective value of the vaccine to genital warts are warranted. Many women thought that the Pap smear tests for STIs, which is problematic because women who have had a normal Pap smear may think, inaccurately, that they are also negative for a variety of other STIs. More women need to be informed about the purpose of a Pap smear and the importance of receiving routine Pap smears regardless of vaccination status. Patient-physician communication is a critical intervention point for more targeted information. HPV vaccination appointments can serve as opportunities to educate women about these issues.

It is important for young adults to continue to be informed about the options that exist for protecting their sexual and reproductive health. This is especially true for college women who may be less likely than community samples to obtain Pap smears (Wolwa et al., 2013). When they are offered or educated about the HPV vaccination, it is critical for girls and women to be made aware of exactly what the vaccine does and does not protect against. Although women in the present study correctly identified that they were still at risk of HPV infection, these perceptions were guided by erroneous beliefs (e.g., cervical cancer running in families). These beliefs need to be addressed so that women can make informed decisions about their health. In addition, women need to know the purpose and importance of obtaining regular Pap smears despite their vaccination status. The fact that many women in this study had misunderstandings about HPV and the HPV vaccine despite having been vaccinated reinforces the importance of educating women about these issues.

Despite the study's contributions, it is not without its limitations. As with any study regarding sexual health, issues of social desirability can arise; however, we believe that participating in the interviews by telephone instead of face-to-face helped women to feel freer to provide more open and honest responses. The interviewer also did not know the participants in any other context, which may have helped the participants feel comfortable to express their true experiences and beliefs. Although qualitative research provides in-depth information, the small sample size limits the study's generalizability. We acknowledge the fact that our sample consisted of college students, which means the findings cannot necessarily be applied to the general young adult population who may have variations in social economic status, race/ethnicity and educational backgrounds. In the future,

researchers should investigate whether there are differences in understanding among different sociodemographic groups.

In conclusion, this qualitative study helps us to understand the impact of HPV vaccination on women's reproductive and sexual health behavior and HPV-vaccinated women's knowledge about HPV. Many misunderstandings were revealed, despite the fact that the women in our study were college-educated, which highlights the importance of providing women with accurate information at HPV vaccination appointments. The majority of the women reported that the HPV vaccine did not have a negative impact on their reproductive or sexual health behaviors. Although women feel reassured after having been vaccinated, they still value and understand the importance of obtaining regular cervical cancer screenings and engaging in safer sex. These findings are promising, as they support the positive value that being vaccinated against HPV can have on women's lives and help to reinforce the importance of educating women about various behaviors that will help them to maintain healthy lives.

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Table 1*Participants' Socio-demographics (N=30)*

Demographics	Mean	Range
Age	20.87	19-25
Number of sexual partners		
Lifetime	7.6	0-45
Within the last 1 year	1.5	0-5
After HIV Vaccine	5.9	0-40
	Frequency	Percentage
Relationship/marital status		
Single	12	40.0%
Significant other (not living together)	14	46.7%
Living with significant other	4	13.3%
Race/ethnicity		
Black	6	20.0%
White	19	63.3%
Other	2	6.6%
More than one race/ethnicity	3	10.0%
Religious affiliation		
Catholic	5	16.7%
Protestant	9	30.0%
No religion	9	30.0%
Other	7	23.3%
Highest level of education completed		
Some college (no degree)	27	90%
Trade/professional school degree	1	3.3%
College degree	1	3.3%
Masters degree	1	3.3%
Annual Household income		
Less than \$20,000	12	40.0%
\$20,000 - \$40,000	4	13.3%
\$41,000 - \$60,000	3	10.0%
\$61,000 - \$80,000	1	3.3%
Over \$80,000	4	13.3%
Health insurance		
Yes	26	86.7%
Federally/State funded	4	13.3%
No	3	10.0%

Demographics	Mean	Range
Sexual orientation		
Heterosexual	27	90.0%
Bisexual	3	10.0%
Currently on birth control/contraception	28	93.3%
STI diagnosis		
Never	22	73.3%
Once	6	20.0%
Twice	2	6.7%