

Examining HPV Awareness, Sexual Behavior, and Intent to Receive the HPV Vaccine Among Racial/Ethnic Male College Students 18–27 years

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Abstract

Human papillomavirus (HPV) awareness and vaccination among males in the general population is low. Men in general, but particularly racial/ethnic men, are disproportionately affected by HPV. The purpose of this article is to examine college males' (a) HPV awareness, (b) sexual behaviors, and (c) intention to receive the HPV vaccination. A non-probability sample of all students who self-reported their race/ethnicity and were attending a university in Southeastern United States were contacted by the university registrar's office and recruited to participate in the 15-minute survey. Males, ages 18–27 years ($N = 190$), were identified for this study. χ^2 , t -tests, and binomial logistic regression analyses assessed the relationship between knowing about HPV and HPV vaccine and the intent to receive the HPV vaccination. Findings indicated that 67.4% of the sample identified as Hispanic or Black. Among all men, 73.2% reported previous sexual experience and 49.5% were currently sexually active. There were 79.5% who had previous knowledge about HPV and 55.8% had knowledge about the HPV vaccine; 71.1% of the sample did not intend to receive the vaccine. Hispanic and Black men were less likely to identify as virgins, more likely to be sexually active, and more likely to have sexual experiences at an earlier age compared to White, Asian, and other men. Men with previous HPV vaccine knowledge (28.4%) were more likely to intend to receive the vaccine compared to men who did not have previous knowledge about the vaccine (14.9%). Providing males with information about HPV, its transmission, and possible HPV-related outcomes may increase HPV vaccine uptake.

Keywords

HPV, men's health, cancer prevention, college

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HPV is the most common sexually transmitted infection (STI) in the United States and plays a significant role in cancers (i.e., cervical, penile, anal, vaginal, vulval, oropharyngeal) and genital warts (Centers for Disease Control and Prevention [CDC], 2012, 2017b; Satterwhite et al., 2013). The perception that HPV-related cancers are predominantly female has been shifting to one that males are disproportionately affected, especially with regard to oropharyngeal and anal cancer (Jemal et al., 2013). Racial/ethnic disparities in HPV are also pervasive, with non-Hispanic Black adults having the highest prevalence of genital and oral HPV (McQuillan, Kruszon-Moran, Markowitz, Unger, & Paulose-Ram, 2017; Lewis, Markowitz, Gargano, Steinau, & Unger, 2017).

Although HPV is an STI, transmitted by having vaginal, anal, or oral sex with someone who has the virus, sexual behavior is often overlooked when explaining

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disparities in HPV-related cancers. College-aged students, 18–24 years old, engage in high prevalence of unsafe sexual practices, such as inconsistent condom use and multiple partners (CDC, 2018a; Downing-Matibag & Geisinger, 2009). Because of risky sexual behaviors, college-aged students, especially ethnic/minority students, are disproportionately affected by STIs and unintended pregnancies (CDC, 2016, 2017a, 2017b; Hittner, Owens, & Swickert, 2016). The sexual behaviors specifically associated with greater risk of HPV and thus HPV-related cancers include early sexual debut and increased number of sexual partners (Hariri et al., 2014). College-aged men, in particular, are a high-risk population for STIs due to behaviors such as short-term partnerships, more casual partnerships, and higher number of sex partners (Nadarzynski, Smith, Richardson, Pollard, & Llewellyn, 2017; Welsh, Grello, & Harper, 2006). Such behaviors may suggest the lack of awareness of susceptibility to HPV and overall lack of HPV education. Katz and colleagues did a cross-sectional survey of 165 college-aged males and reported that 80% of surveyed males were sexually active, 43.9% reported having had five or more sexual partners, and 12.9% reported rarely or never using condoms (Katz, Krieger, & Roberto, 2011).

Differences in sexual behaviors by race are also associated with HPV disparities. HPV prevalence is sixfold higher among non-Hispanic Blacks with one lifetime partner than among non-Hispanic Whites with one lifetime partner, whereas the prevalence is similar across racial/ethnic groups among individuals with six or more lifetime partners (Hariri et al., 2014; Katz et al., 2011). Another study reported that Black men have higher reported measures of sexual behaviors associated with genital HPV infection than White men have, whereas White men are more likely to report behaviors associated with oral HPV infection (D'souza, Cullen, Bowie, Thorpe, & Fakhry, 2014).

Initially, the prophylactic HPV vaccine was approved by the Food and Drug Administration (FDA) in 2006 and marketed as a vaccination to prevent cervical, vulval, and vaginal cancers, essentially feminizing the vaccine. In 2009, the HPV vaccinations were licensed for prevention of HPV infection in young men, but the belief of many parents that HPV and the HPV vaccination was for females only persisted (Holman et al., 2014). The U.S. Advisory Committee on Immunization Practices of the CDC recommends routine vaccination of young men 11–21 years of age and vaccination of men through 26 years of age who are considered at high risk for HPV (CDC, 2018b). Vaccination has the potential to substantially decrease rates of HPV and associated cancers in men (Drolet et al., 2015). There is an inequity in the rate of uptake of the HPV vaccine among men (CDC, 2012).

Lee, Lust, Vang, and Desai (2018) utilized the 2015 College Student Health Survey to analyze HPV vaccination behavior of males age 18–26 years. Of the 2,516 male college students, 54.5% of males 18–20 years indicated that they received the complete HPV vaccine series. In comparison, 45.5% of the respondents between 21 and 26 years indicated that they had completed the HPV vaccine series ($p < .001$). Thompson et al. (2016) had similar findings with younger males age 18–21 years being 2.26 times more likely to be vaccinated as compared to men age 22–26 years. They also reported a disparity in uptake of the HPV vaccination, with non-Hispanic Blacks having the lowest rate of increase over time.

The transmission and trajectory of HPV, as well as the negative HPV-related outcomes affect heterosexual men as well as men who have sex with men (MSM); however, most research on HPV and men has a focus on MSM (Cummings et al., 2015; Gerend, Madkins, Phillips, & Mustanski, 2016; Nadarzynski et al., 2017; Oliver et al., 2017; Reiter, McRee, Katz, & Paskett, 2015; Wheldon et al., 2016). There is still a dearth of research on HPV and U.S. racial/ethnic minority men (Fernandez et al., 2009; Oliver et al., 2017; Sledge, 2015; Stephens, Thomas, & Eaton, 2016). HPV prevalence and related disease incidence and mortality are disproportionately high among racial/ethnic minority men (Burger et al., 2016; Daley et al., 2011). Determining factors associated with HPV vaccine intentions among those at risk for HPV is important in increasing uptake of the vaccine and decreasing the burden of HPV-related diseases.

The purpose of this study is to examine (a) the awareness of males in college about HPV, (b) college males' sexual behaviors, and (c) the association between males' intent to receive the HPV vaccination and sexual behaviors by race/ethnicity men. This study is one of the few studies that measures racial/ethnic disparities in HPV knowledge and intent to vaccinate among college men.

Methods

Study Design and Sample

This secondary data analysis is part of a larger study (Hernandez et al., 2017; Kolar et al., 2015; Wheldon, Kolar, Hernandez, & Daley, 2017). Data were from a non-probability based cross-sectional survey of ethno/racial minority students attending a large Southeastern university in the fall of 2011. A non-probability sample of all students who self-reported their race/ethnicity were contacted directly by the university registrar's office and invited to participate in the 15-minute Web-based survey. There was no direct recruitment by the Principal Investigators. The Web-based survey was

self-administered using Checkbox® 4.6 (Watertown, MA). Upon completion of the survey, participants were provided with culturally sensitive and linguistically appropriate HPV and sexual health resources. Additionally, students who completed the survey were entered in a random drawing for a \$100 gift card, two movie tickets, or a \$10 coffee shop gift card.

Before completing the survey, participants were provided with an informed consent page. If the participant did not provide consent, the web page automatically closed. Survey items were adapted from previous research of psychosocial HPV studies among men and women and were based on constructs from the Health Belief Model and Social Cognitive Theory (Daley et al., 2008, 2009, 2010; Gerend & Magloire, 2008; Wheldon, Daley, Buhi, Nyitray, & Giuliano, 2011). Items assessed a range of topics including sociodemographics, sexual behaviors, HPV knowledge and awareness, psychosocial factors, medical mistrust, HPV vaccine beliefs, acculturation, and HPV vaccination status. The survey was piloted with a representative sample of racial/ethnic minority students to guide revisions to the data collection procedure and instrument. All responses were self-reported. Survey data were collected from 956 students, of whom 711 (74.4%) were female and 245 (25.6%) male. For the current investigation, only men 18–27 years were included in the analysis, which accounted for 19.9% of the total sample ($N = 190$). This study was approved by the University of South Florida's Institutional Review Board.

Study Variables

Dependent variables. The first dependent variable in this study was the intent to receive the HPV vaccination. To assess the participant's intent to receive the HPV vaccination, the questionnaire asked, "Do you intend to get the HPV vaccine in the next year?" ($Yes = 1, No = 0$). The second dependent variable was the level of importance of the HPV vaccine. This item provided the statement "Overall, I think getting the HPV vaccine is ..." ($Unimportant = 1$ to $Important = 7$) with a 7-point Likert-type scale to measure level of importance. The item was recoded into three separate categories due to low sample numbers in some categories; low importance (1–3), moderate importance (4), and high importance (5–7).

Independent variables. There were two variables that assessed whether participants had previous knowledge about HPV "Have you heard of HPV?" ($Yes = 1, No = 0$) and the HPV vaccine "Have you heard of the HPV vaccine?" ($Yes = 1, No = 0$). Items regarding sexual behavior were assessed to gain insight in risk factors for acquiring HPV. Sex was defined as vaginal, oral, and/or anal sex. Five variables inquired about sexual behaviors: "Do you

consider yourself a virgin?" ($Yes = 1, No = 0$); "Are you currently sexually active?" ($Yes = 1, No = 0$); "Have you ever had vaginal sex?" ($Yes = 1, No = 0$); "Have you ever had oral sex?" ($Yes = 1, No = 0$); and "Have you ever had anal sex?" ($Yes = 1, No = 0$). The last variable asked, "How important is it that your healthcare provider recommend HPV vaccination?" ($Not\ important\ at\ all = 0, Very\ important = 1, Somewhat\ important = 2$).

Adjustment variables. Sociodemographic variables were controlled for in this study's analysis. Sociodemographic variables were assessed using single items (age, marital status, education level, sexual orientation). Participants were asked to report how they formally identified themselves (i.e., the race specified on a birth certificate, driver's license, or other identifying record) to assess racial/ethnic group. For this analysis, racial/ethnic group was categorized as White, Black or African American, Hispanic or Latino/Latina, Asian, or other. Due to the number of males in the race/ethnic categories and research that indicates that Hispanic and Black males are affected negatively at disproportionate rates, the race/ethnicity variable was recoded into two categories ($Black/Hispanic = 1, White/Asian/other = 2$). The level of education completed was recoded from nine categories into three categories ($High\ school\ diploma/GED/first\ and\ second\ year\ college/2-year\ college\ degree = 1, three\ to\ five\ years\ college = 2, College\ undergraduate\ degree\ or\ higher = 3$). The participants were asked, "Which type of health insurance do you have?" For the purpose of the analysis, the insurance variable was recoded into $Yes, the\ participant\ has\ insurance = 1$ and $No, the\ participant\ does\ not\ have\ health\ insurance = 0$. Marital status was dichotomized into married (married/unmarried, living with partner) and unmarried (unmarried/single, separated/divorced, widowed). Sexual orientation was recoded into $heterosexual/straight = 1$ and $sexual\ minority = 2$ (bisexual/gay or homosexual/not sure/questioning). Participant's age (in years) was treated as a continuous variable.

Analysis Plan

This analysis examined self-reported data on participants' sociodemographics, sexual behavior, HPV knowledge, vaccine status, and intent to receive HPV vaccination. Univariate analyses examined the sample distribution; bivariate analyses (χ^2 and t -tests) examined the association between sexual behavior due to racial/ethnic differences and intent to receive the HPV vaccination; and binomial logistic regression analysis examined the predicted probabilities of men's intent to receive the HPV vaccination. Most variables had less than 3% missing except for "having previous knowledge of HPV," "having

previous knowledge about the HPV vaccination,” and “the intent to receive the HPV vaccine,” all of which had 7.9% missing data. Modal imputation was used to address missing data for all study variables. Analyses were conducted using SPSS 23.

Results

The mean age of the sample was 21.31 ($SD = 2.579$) years (see Table 1). There were 128 men who self-identified as Hispanic or Black (67.4%), and 62 men who self-identified as White, Asian, or other (32.6%). Most of the sample was insured (79.5%; $n = 151$), unmarried/single (83.7%; $n = 159$), heterosexual (91.1%; $n = 173$), and completed 2 years of college or less (45.3%; $n = 86$). Frequency distributions indicated that 73.2% ($n = 139$) reported previous sexual experiences, 49.5% ($n = 94$) of the sample was currently sexually active, and 71.1% ($n = 135$) had oral sex. There was 79.5% ($n = 151$) of the sample who indicated having had previous knowledge about HPV, 55.8% ($n = 106$) of the sample had previous knowledge about the HPV vaccine, and 66.8% ($n = 127$) indicated a high importance of the vaccine. Approximately 71% ($n = 135$) did not intend to receive the HPV vaccine and 45.3% ($n = 86$) thought it was of moderate importance for a provider to recommend it.

χ^2 analyses showed that 71.9% ($n = 100$) of Hispanic and Black men were less likely to identify as virgins ($p = .03$) and 56.3% ($n = 72$) were more likely to report being sexually active ($p = .007$) compared to White, Asian, and other men (see Table 2). In addition, 73.1% ($n = 95$) of Hispanic and Black men were more likely to have indicated that they had vaginal sex and 71.9% ($n = 97$) indicated they had oral sex, $p = .014$ and $p = .045$, respectively. T-test analyses (not shown) also indicated that Hispanic and Black men were more likely to have had vaginal sex at an earlier mean age of 16.45 years (2.4 SD) compared to Asian, White, and other men with a mean age of 17.51 years (1.7 SD). Among men who were currently sexually active, 54.3% ($n = 82$) were more likely to have previous HPV knowledge ($p = .021$). Men who reported having had vaginal (64.6%; $n = 84$), oral (64.4%; $n = 87$), or anal (82.5%; $n = 33$) sex were more likely to be currently sexually active compared to men who reported not having had vaginal, oral, or anal sex ($p < .001$). Men who reported having had vaginal sex ($p = .011$), having had oral sex ($p = .027$), and currently sexually active ($p = .006$) were less likely to have the intent to receive the HPV vaccination. Men who heard of HPV were less likely to have the intent to receive the HPV vaccine ($p = .029$). Similarly, men who heard of the HPV vaccine ($n = 27$; 28.4%) were less likely to have the intent to receive the HPV vaccine compared to men who did not have previous knowledge about the HPV vaccine ($p = .044$).

Binomial logistic regression analysis indicated that men who thought the HPV vaccine was of moderate importance were 86% less likely than men who thought the HPV vaccine was of low or high importance to intend to receive the HPV vaccine ($p = .037$).

Discussion

Men in this study sample had moderate knowledge of the HPV vaccine, yet the majority did not intend to receive the vaccine. About half of the men were currently sexually active and over 70% had sexual experiences, whether vaginal, oral, or anal. Recent studies continue to report that HPV awareness and uptake overall among men in the general population remains low (Daniel-Ulloa, Gilbert, & Parker, 2016; Rahman, Islam, & Berenson, 2015); however, the findings of this study are encouraging, in that more men who attend college are hearing about the HPV vaccine. Having more formal education does not translate into having more knowledge about HPV. This study unequivocally indicated at the level of statistical significance that men with HPV vaccine knowledge were more likely to intend to receive the HPV vaccine compared to men who did not have HPV knowledge.

Though males are recommended to receive the HPV vaccine, currently there are no approved recommendations or detection methods of HPV for them (CDC, 2017c), nor do health-care systems encourage routine screening for anal, penile, or throat cancers for men in the United States. Overall, men (ages 14–59) have a higher prevalence of high-risk HPV compared to females, with the highest prevalence between the age of 25 and 29 years (Lewis et al., 2017). Only men who are perceived to be at an increased risk for anal cancer, including men with HIV and men who receive anal sex, are offered anal Pap tests by some health-care providers, but this is not the norm (CDC, 2017c). With an estimated 79 million Americans infected with HPV at any given time, most of whom are in their late teens and early 20s, and the fact that the first symptoms appear years after engaging in sex with the infected person, it is vital that men are informed about HPV and the HPV vaccine (American Cancer Society, 2017; WHO, 2016).

To increase knowledge and the intent of men to receive the HPV vaccine, perhaps communicating the importance of the HPV vaccine should come from sources other than physicians. According to this study, the intent to vaccinate was not affected by the recommendation of a physician. The responsibility of informing males about HPV and the HPV vaccine should not be placed solely on physicians. In fact, a recent study reported that the level of trust in cancer information from providers was lower among Hispanic males than other racial/ethnic groups (Cooper, Hernandez, Rollins, Akintobi, & McAllister,

Table 1. Descriptive Statistics.

	Mean/proportion	Standard deviation	Minimum	Maximum
N = 190				
Dependent variables				
Intent to receive HPV vaccine	.211	–	0	1
Importance of HPV vaccine				
Low importance	.116	–	0	1
Moderate importance	.137	–	0	1
High importance	.668	–	0	1
Independent variables				
Heard of HPV	.795	–	0	1
Heard of HPV vaccine	.558	–	0	1
Considered a virgin	.258	–	0	1
Currently sexually active	.495	–	0	1
Ever had vaginal sex	.684	–	0	1
Ever had oral sex	.711	–	0	1
Ever had anal sex	.211	–	0	1
Provider recommendation for HPV vaccine				
Not important	.126	–	0	1
Somewhat important	.453	–	0	1
Very important	.421	–	0	1
Control variables				
Race/ethnicity				
Black/Hispanic	.674	–	0	1
White/Asian/other	.326	–	0	1
Level of education				
2-year degree or below	.453	–	0	1
3–5 years of college	.411	–	0	1
College undergrad degree or higher	.137	–	0	1
Has health insurance	.795	–	0	1
Does not have health insurance	.205	–	0	1
Marital status				
Married	.158	–	0	1
Unmarried	.842	–	0	1
Sexual orientation				
Heterosexual	.911	–	0	1
Sexual minority	.089	–	0	1
Age in years (continuous)	21.31	2.58	18	27

Note. HPV = human papillomavirus.

2017). With constant access to students, campus health centers and student organizations are in the optimal position for increasing HPV awareness and vaccine uptake among college students through education and support. A study reported that males in college are more likely to increase knowledge about HPV from the Internet and school (Barnard, George, Perryman, & Wolff, 2017). Another study reported an association between social support and intent, in that the stronger the perceived social support, the more likely men would have the intent to vaccinate (Fisher, Kohut, Salisbury, & Salvadori, 2013). Utilizing these methods may prove to make a difference in knowledge and uptake.

Possible HPV-related cancers may continue to disproportionately affect ethno/racial minority men. It is important to inform all men about HPV vaccine; however, an emphasis may be needed on reaching ethno/racial minority men at younger ages. As indicated in this study, Black and Hispanic men had sexual debut at a mean age of 16.45 years, an earlier mean age than the White, Asian, and other men in the sample who were above the national average of sexual debut; 17.51 and 17.0 years of age, respectively (CDC, 2017a). Hispanic and Black men were also less likely to consider themselves as virgins and more likely to be sexually active compared to White, Asian, and other men. Early age at

Table 2. χ^2 Analyses, by Race and Intent to Receive HPV Vaccine.

	Race/ethnicity		<i>p</i> value	Intent to receive HPV vaccine		
	Black/Hispanic (<i>N</i> = 128)	White/Asian/other (<i>N</i> = 62)		Yes (<i>N</i> = 40)	No (<i>N</i> = 150)	<i>p</i> value
	<i>n</i> (%)	<i>n</i> (%)		<i>n</i> (%)	<i>n</i> (%)	
Dependent variables						
Intent to receive HPV vaccine	29 (24.8)	11 (19.0)	–	–	–	–
Importance of HPV vaccine						
Low importance	15 (68.2)	7 (31.8)	–	0 (0.0)	22 (100.0)	–
Moderate importance	16 (61.5)	10 (38.5)		2 (7.7)	24 (92.3)	
High importance	86 (67.7)	41 (32.3)		38 (29.9)	89 (70.1)	
Independent variables						
Heard of HPV	101 (66.9)	50 (33.1)	–	37 (27.0)	100 (73.0)	.029
Heard of HPV vaccine	70 (66.0)	36 (34.0)	–	27 (28.4)	689 (71.6)	.044
Considered not to be a virgin	100 (71.9)	39 (28.1)	.030	36 (28.1)	92 (71.9)	–
Currently sexually active	72 (56.3)	22 (35.5)	.007	27 (31.8)	58 (68.2)	.006
Ever had vaginal sex	95 (73.1)	35 (26.9)	.014	34 (28.3)	86 (71.7)	.011
Ever had oral sex	97 (71.9)	38 (28.1)	.045	34 (27.6)	89 (72.4)	.041
Ever had anal sex	29 (72.5)	11 (27.5)	–	10 (27.0)	27 (73.0)	–
Provider recommendation for HPV vaccine						
Not important	59 (68.6)	27 (31.4)	–	26 (34.2)	50 (65.8)	–
Somewhat important	53 (66.3)	27 (33.8)		14 (18.4)	62 (81.6)	
Very important	16 (66.7)	8 (33.3)		0 (0.0)	23 (100.0)	
Control variables						
Race/ethnicity						
Black/Hispanic	128 (100.0)	–	–	29 (24.8)	88 (75.2)	–
White/Asian/other	–	62 (100.0)		11 (19.0)	47 (81.0)	
Level of education						
2-year degree or below	55 (64.0)	31 (36.0)	–	20 (26.3)	56 (73.7)	–
3–5 years of college	58 (74.4)	20 (25.6)		17 (23.0)	57 (77.0)	
College undergrad degree or higher	15 (57.7)	11 (42.3)		3 (12.0)	22 (88.0)	
Has health insurance	96 (63.6)	55 (36.4)	.028	34 (25.0)	102 (75.0)	–
Does not have health insurance	32 (82.1)	7 (17.9)		6 (15.4)	33 (84.6)	
Marital status						
Married	26 (86.7)	4 (13.3)	–	3 (11.5)	23 (88.5)	–
Unmarried	102 (63.8)	26 (36.3)		37 (24.8)	112 (75.2)	
Sexual orientation						
Heterosexual	117 (67.6)	56 (32.4)	–	38 (23.8)	122 (76.3)	–
Sexual minority	11 (64.7)	6 (35.3)		2 (13.3)	13 (86.7)	
Age in years (continuous)	21.46 (2.64)	21.00 (2.45)	–	21.08 (2.53)	21.53 (2.61)	–

Note. HPV = human papillomavirus.

sexual debut has also been reported to be associated with multiple adverse health outcomes including reproductive health well beyond adolescence. Nationally, the median age at first sex for men is 18.1 years (Finer & Philbin, 2014). Sexual debut before age 15 years is associated with risky sexual behaviors, such as condom nonuse, multiple partners, substance use and abuse, and higher

risk of STIs such as HPV (Outlaw et al., 2011; Sandfort, Orr, Hirsch, & Santelli, 2008). Similarly, another study reported that Black men had the highest HPV prevalence compared to other ethno/racial groups (Gargano et al., 2017). Rates of oropharyngeal cancer in both males and females were higher among Whites compared with Blacks and among non-Hispanics compared with

Hispanics (Viens et al., 2016). Among men of all ethnicities, rates of penile cancers were higher in Blacks compared with Whites and among Hispanics compared to non-Hispanics. In addition, HPV-associated anal and rectal cancers were higher in Black men compared to White men (Viens et al., 2016).

HPV can affect any sex, gender, and subgroup; therefore, researchers should be cautious with how they phrase messages about whom HPV affects. Though women are affected the most and research indicates that MSM are at greater risk than men who do not have sex with men, it may reduce the possible gains of public health to continue to assign a greater risk of infection to certain subgroups. The manner in which the message about whom HPV affects is communicated may negatively impact disparities in HPV knowledge, HPV vaccine uptake, and ultimately HPV-related cancer rates among other groups. Instead of reporting an increase in HPV vaccination among all men, studies such as those by Thompson and colleagues reported that gay males had the highest increase in HPV vaccination compared to other sexual orientation groups (Thompson et al., 2016). This may be an indication that MSM are receiving HPV vaccine information more than men who report having sex with women only. In fact, a recent study reported that the prevalence of HPV in men did not differ by sexual orientation (Gargano et al., 2017).

College men may not perceive themselves at risk for HPV or HPV-related complications. Studies have indicated that college men are more concerned about pregnancy prevention than STI prevention, therefore both supporting and giving responsibility to women in their use of female contraception (Breny & Lombardi, 2017; Fefferman & Upadhyay, 2018). Considering that HPV-related cancers are slow growing, the messaging to adolescent and young men may need to focus more on the prevention of genital warts instead. The type of HPV that is linked to genital warts is not the same type of HPV that causes cancer (CDC, 2018c), but the vaccine could be marketed as a vaccine that protects against most genital warts and HPV-related cancers. Messaging for HPV prevention should highlight that men are disproportionately more likely to develop oral HPV infections that can lead to oral malignancies, compared to women (The Oral Cancer Foundation, 2018).

This study is not without its limitations. The race/ethnicity of the sample for this study is not representative of the student population at most predominantly majority institutions, nor is it generalizable to the national population. The data collected is self-reported and therefore susceptible to recall bias as well as social desirability bias. This study combined Hispanic and Black males and compared them against a White, Asian, and other combined group. A study with a larger sample of males who attend

college from each group may have a different outcome than the one presented in this study.

Conclusion

Although this predominantly ethno/racial minority sample of men were knowledgeable about the HPV vaccine and reported being sexually active, they were still less likely to intend to receive the vaccine. Providing information, particularly to Hispanic and Black men, about HPV and the HPV vaccine, the risk of infection, and the mode of transmission at an earlier age may increase and emphasize the importance of HPV vaccination. Determining factors associated with HPV vaccine intentions among those at risk for HPV is important in increasing the uptake of the vaccine and decreasing the burden of HPV-related diseases.

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Author Contribution

All authors have approved the final article.

Declaration of Conflicting Interests

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