

CONTRIBUTING FACTORS FOR HUMAN PAPILLOMAVIRUS (HPV)
VACCINE ACCEPTANCE
AMONG AFRICAN AMERICAN YOUNG ADULTS

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In Partial Fulfillment
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by

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The undersigned, appointed by the dean of the Graduate School,
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CONTRIBUTING FACTORS FOR HUMAN PAPILLOMAVIRUS (HPV)
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AMONG AFRICAN AMERICAN YOUNG ADULTS

Presented by Jennifer Anne Sledge
A candidate for the degree of doctor of philosophy
And hereby certify that in their opinion it is worthy of acceptance.

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DEDICATION

Dedicated to William C. Sledge, MSW and June Mae Sledge.

Dad, you taught me the value of an education and always reminded me that “no one can ever take that away from me”. You fought against tremendous odds to receive an education and ultimately receive your Master of Social Work degree from the University of Southern California. Your strong work ethic and the compassion that you showed in your work with those from “all walks of life” was truly inspiring.

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ABSTRACT

There is an epidemic of sexually transmitted diseases (STDs) in the United States. Populations most affected by STDs are young adults, particularly those living in a high risk environment such as a college or university. African American's are disproportionately at risk for STD's. One of the most prevalent STD's on college campuses today is the Human Papillomavirus (HPV). Genital HPV is a sexually transmitted disease which is primarily known for causing genital warts and cervical cancer. In 2007, the first vaccine to prevent HPV was approved. The purpose of this study was to investigate the contributing factors for HPV vaccine acceptance among African American young adults. The Health Belief Model (HBM) served as the theoretical framework to guide this study. Findings revealed that among African American young adults, perceived susceptibility to HPV, perceived benefits of HPV and perceived barriers to HPV vaccination were found to be significant factors for HPV vaccination intention. Findings further reveal a significant difference in knowledge of HPV between men and women, with women showing higher knowledge scores. Additionally, African American young adults with higher traditional masculinity ideology were less likely to accept the HPV vaccine. Findings add to the current state of the science regarding HPV knowledge and contributing factors for HPV vaccine acceptance among African American young adults.

CHAPTER 1: INTRODUCTION

Sexually transmitted disease (STD) is a term used to describe more than 20 different infections that are transmitted through the exchange of semen, blood, and other body fluids; or by direct contact with the affected body areas of people with STDs (Haggerty, 2002). They are caused by infections that are passed from one person to another during sexual contact. These infections often do not cause any symptoms. Medically, infections are only called diseases when they cause symptoms. That is why STDs are also called “sexually transmitted *infections* (STI).” However, it is common for people to use the terms “sexually transmitted diseases” or “STDs” even when there are no signs of disease (Sexually Transmitted Diseases [STDs], 2009). Some STDs can be prevented by abstaining from sexual contact, while others can be prevented with vaccine.

All communities are impacted by sexually transmitted diseases; as individuals coping with the physical, emotional and financial burden of the disease, as care providers in communities who deal with the economic costs of the disease, as social workers who provide counseling and education to those affected by STD's. The Centers for Disease Control and Prevention (CDC) have reported that 85% of the most prevalent infectious diseases in the United States are sexually transmitted (Haggerty, 2006). The CDC reports that STDs cost the U.S. health care system \$17 billion dollars every year (STD Trends in the United States, 2012). The cost to individuals is even higher with immediate and life-long health consequences. The rate of STDs in this country is 50 to 100 times higher than that of any other industrialized nation. Furthermore, about 19 million new sexually transmitted infections occur in the United States each year with one in four sexually

active Americans affected by an STD at some time in his or her life (Centers for Disease Control and Prevention, 2010). Populations most at risk for STI's are young adults ("Advocates for Youth", 2012).

Several theorists developed models and stages of human growth and development. Each of these theorists defines the age range of young adulthood differently. One such theorist, Erik Erikson, developed an eight stage theory of development (Erikson, 1950). Erikson focused on adolescence as one of the transformative periods in development. However, he noted that increased trajectories for marriage and career choices in industrialized society is leading to a "prolonged adolescence" period of development (Erikson, 1968). From a biological perspective, adolescents are maturing at an earlier age. Hines (1999) observed that physically, adolescents become adults at a younger age, yet do not have the cognitive capabilities to cope with a complex social environment as adults. Furthermore, Hines suggests that the resulted tension may contribute to issues such as unprotected sexual behavior, which has biological as well as social etiology.

Today, in the 21st century, theorists are creating a new field of interest describing the development of adolescents into adulthood. Arnett (2010) describes what Erickson referred to as "prolonged adolescents" as the current concept of "emerging adulthood". Emerging adulthood is a period in one's life marked by physical, emotional and sexual development. Arnett presents tenants of emerging adulthood as being related to the birth control pill and less stringent standards of sexual morality, which has enabled women to prolong marriage and childbirth. Young adults are now engaging in a series of sexual relationships prior to or without marriage. A second tenant of emerging adulthood is the

increase in years devoted to higher education. A higher proportion of young adults are entering college now more than at any other time in American history (Arnett, 2012).

Most recently, the Young Adult Development Project found that across theories and research frameworks, a sequence of developmental shifts emerged into three overall categories; 1) adolescence (puberty through age 18), young adulthood (18-25) and 3) later adulthood (mid-20's and older) ("Young Adult," 2008). It is during this developmental period when teens thinking capacities, relationship skills, and ability to regulate emotions are unlikely to be at a level where they can easily cope with a diverse and rapidly changing world ("Young Adult," 2008). The hope is that biology and environment will bring about a surge of growth paralleling those of childhood and adolescence. One particular tenant in this developmental period is that young adults have an easier time modulating risk-taking behavior and making decisions about the future, such as those involving health and relationships.

A disproportionate number of today's young adult women and men engage in unsafe sexual practices that enhance the risks of sexually transmitted diseases ((Davidson & Lawrence, 2004). Estimates suggest that even though young people aged 15-24 years represent only 25% of the sexually experienced population, they acquire nearly half of all the 19 million new STDs that occur each year ("STD surveillance," 2010). African American women, particularly those attending college, belong to a population that has some of the highest rates of sexually transmitted infections (Thomas & Freeman, 2011). For college students in particular, it is a time in their lives when they are encouraged to explore new and different experiences. For many young people, it is the first time in their lives when they are on their own and away from the watchful eye of a parent or guardian.

The college environment lends itself to behaviors that may result in negative outcomes, such as drinking alcohol, smoking cigarettes, engaging in sexual activity, and practicing risky sexual behaviors. In a study of African American college freshman, St. Rose (2008) found that 48.4% (n=94) of the respondents indicated that they had vaginal sex both with and without a condom and the median number of asexual partners was 2.5, with a range of 1-5 (p.4). The behaviors described are often experienced for the first time on the college campuses around the United States. Studies conducted on college campuses have found that at least 70% of young adults are sexually active (American College Health Association [ACHA], 2007). A particular concern with this population is the STD of the human papillomavirus (HPV). HPV is the most common STD on college campuses today (CDC, 2012).

Human Papillomavirus (HPV)

Physicians are only required to report to local or state public health authorities the STD incidence rates of gonorrhea, chlamydia and syphilis. However, these STDs only capture a fraction of the incidence of all STDs while excluding others, such as genital herpes and the human papillomavirus (CDC, 2010). Genital HPV is primarily known for causing genital warts and is the most common sexually transmitted infection in the United States (Intlekofer, Cunningham, & Caplan, 2012). Approximately 20 million Americans are currently infected, and about 6.2 million more get infected each year (CDC, 2010). The highest rates are seen among women between the ages of 20-24, with a prevalence rate of 45% ("MMWR sexual health," 2009). Additionally, these statistics are underrepresented due to the fact that they are not always reported; HPV is asymptomatic and often clears on its own.

HPV is a large category of at least 120 double-stranded DNA viruses (Intlekofer, Cunningham, & Caplan, 2012). There are more than 40-HPV types that can infect the genital areas of males and females. These HPV types can also infect the mouth and throat (CDC, 2013). The CDC estimates close to 5.5 million new genital HPV cases occur each year. Most people who become infected with HPV do not even know they have this infection. HPV is not the same as herpes or the Human Immunodeficiency Virus (HIV is the virus that causes Acquired Immune Deficiency Syndrome [AIDS]). These are all viruses that can be passed during sexual contact, but they cause different symptoms and health problems. Most people with HPV do not develop symptoms or health problems from it, and in 90% of cases, the body's immune system clears HPV naturally within two years. Sometimes, certain types of HPV can cause genital warts in males and females. Approximately 90 percent of genital wart infections are caused specifically by HPV types 6 and 11 (Intlekofer et al., 2012).

Of the 40 HPV types that infect the genital area, causing genital warts, there are some types that may also cause cervical intraepithelial neoplasia (CIN) (CDC, 2013), a condition of abnormal growth that can progress to cervical cancer (Intlekofer et al., 2012). Ninety percent of CIN cases are associated with HPV infection (Walboomers, Jacobs, & Manos, 1999). Of these, the high risk types of 16 and 18 together account for more than 74 percent of all cervical cancer and other cancers in both men and women including anal, penile and oral cancer. Compared to types 6 and 11, these high risk types show a delay in clearance. College-age African-American women, in particular, have a more difficult time clearing human papillomavirus infection and are more likely to have an abnormal Pap test than European-American women ("HPV Infection Lasts Longer,"

2013). In the Carolina Women's Care Study, Creek found that 56 percent of African-American women were shown to be infected two years after the initial infection compared to 24 percent of European-American women (Creek, 2012). Among the types of HPV that can cause genital warts, types 6 and 11 are not the same as the types that may cause cancer, types 16 and 18. However, there is no way to know or detect which people who get HPV will go on to develop HPV related cancer or other health problems (CDC, 2009).

Cervical cancer is almost always caused by the human papillomavirus infection (CDC, 1999). The CDC (2007) states that approximately 10 of the 40 identified genital HPV types can lead to development of cervical cancer. HPV types 16 and 18 cause about 70 percent of cervical cancers (Munoz et al., 2004). The American Cancer Society (ACS) estimated that in 2009, 11,270 women were diagnosed with invasive cervical cancer in the United States, and 4,070 women would succumb to the diseases. African-American women develop this invasive cervical cancer about 50% more often than non-Hispanic White women. Furthermore, African American women are more than twice as likely to die from cervical cancer as White women (ACS, 2008). The ACS Guidelines (2007) state that significant racial and ethnic disparities exist with regard to incidence, mortality, and survival associated with the diagnosis of cervical cancer in this country. Cervical cancer incidence is approximately 60% higher among African American women (10.5 cases per 100,000 persons) compared with White women (6.6 cases per 100,000 persons), and cervical cancer mortality among Black women is the highest (4.7 cases per 100,000 persons) of any racial or ethnic group.

The human papillomavirus is contracted most often through unsafe sexual

practices ("National Cervical Cancer Coalition," 2007). Despite years of widespread proliferation of informational materials, there has been little change overall in young adult's risk-taking behavior (CDC, 2009). Risky sex behaviors have been documented in the literature and include oral, vaginal or anal sexual contact without a condom, sexual intercourse without birth control or using birth control inconsistently, having sexual intercourse with multiple partners, and alcohol use . Over the last few years there has been a trend in the sexual risk taking behavior of young adults. Today, we hear the terms such as; "hooking up", "friends with benefits" and "casual sex". Daniel and Fogarty (2007) describe these terms as depicting a downward trend in traditional forms of dating. These terms refer to casual sexual interactions, which have become an alternative to exclusive sexual relationships. These relationships are often short-lived, nonexclusive and emotionally shallow, with a purpose of one-time sexual activity (Glenn & Marquardt, 2001). In a recent study on "hook-ups" with college women, condom use was reported for 0% of oral sex hookups and only 69% of vaginal sex hookups (Fielder & Carey, 2010). In a qualitative study, Downing-Matibag and Geisinger (2009) found that college students misperceive their vulnerability to STIs when engaging in a "hook-up". In their study, they found that of the 71 participants, not one reported that they used protective barriers against STIs when giving or receiving oral sex (p. 1200). Young adults' failure to adopt safer practices, such as the consistent use of condoms or dental dams, may be related to differences in how they perceive risk that are not immediately personally relevant.

STDs affect people of all races, ages, and sexual orientations, though some individuals experience greater challenges in protecting their health. Race and ethnicity are not risk factors but are risk markers that correlate with fundamental determinants of health, such as poverty and limited access to quality health care ("Race and Risk," 2011). STDs take an especially heavy toll on African Americans, particularly young African American women and men. African Americans are disproportionately at risk for infections such as chlamydia, gonorrhea, herpes, and syphilis. African Americans make up just 13 percent of the U.S. population, yet in 2009 accounted for approximately half of all new cases of chlamydia and syphilis (48 percent and 52 percent respectively), and some 71 percent of gonorrhea cases. Additionally, African Americans also experienced more than half of newly diagnosed HIV infections (Cullins, 2011). The HPV Sentinel Surveillance Project was carried out from 2003 to 2005 and found that in 26 geographically diverse clinics, an estimated 25% of African Americans were infected with high risk HPV types (Datta, Koutsky, & Ratelle, 2008).

Those that live in communities with high rates of STDs are at greater risk for being exposed to an STD during sexual intercourse. In Missouri, sexually transmitted diseases have been increasing at an alarming rate. In a 2010 STD profile, the CDC ranked Missouri 16th highest among 50 states in chlamydial infections (422.2 per 100,000 persons) and ranked 14th in gonorrheal infections (136.3 per 100,000 persons) (CDC, 2012). A report by the CDC (2009) noted half of Missouri teenagers are sexually active, and estimates that 50 percent of them will contract an STD by the age of 25. Many of these young adults will be unaware of having an infection and will unknowingly infect

their partner. In communities where STD prevalence is higher, individuals may have a more difficult time reducing their risk for infection (“STD surveillance,” 2010).

HPV is one of those STDs that can remain asymptomatic (without symptoms); however, an infected person can still transmit the disease through sexual contact. HPV infections can be subclinical or *asymptomatic*. Subclinical HPV infection is detected by abnormal Pap smears or microscopic lesions. Asymptomatic HPV infection is the presence of the virus in apparently normal tissue. Most people are unknowingly infected with asymptomatic HPV and are therefore at a greater risk for transmitting the infection to their sexual partner(s). Furthermore, HPV can lie dormant on the cervix for up to 20 years before a cervical cancer, such as cervical dysplasia (precancerous cells) is detected (Koutsky, 1997). Because STD prevalence is already higher in African American communities than in others, even the individual in this community who has only one sex partner can be at increased risk of infection. To date, there is no cure for HPV; therefore, one of our best defenses is through prevention by way of the HPV vaccination.

HPV Vaccines

Gardasil®. In June of 2006, the Food and Drug Administration (FDA) licensed the first HPV vaccine. Merck Pharmaceuticals introduced the HPV vaccine, Gardasil®, to prevent genital warts, cervical cancer and HPV related diseases in young women. Subsequently, in October, 2009, Merck introduced the HPV vaccine for young men between 11-26 years of age. Gardasil® is a quadrivalent Human Papillomavirus recombinant vaccine. This HPV vaccine will protect men from genital warts and HPV-related cancers such as anal cancer. Gardasil® is called a quadrivalent vaccine because it

protects against four types of infections associated with types 6, 11, 16, and 18. ("Gardasil® HPV vaccine," 2007).

Cervarix®. In October, 2009, the FDA licensed Cervarix®, the second HPV vaccine to help prevent cervical cancer in women. Cervarix® is a bivalent vaccine. Cervarix® is called a bivalent vaccine because it protects against the types of infections associated with types 16 and 18. It helps prevent cervical cancer and precancers associated with these HPV types. Cervarix® is approved for girls and young women between the ages of ten and twenty five ("Cervarix® HPV vaccine," 2009).

The CDC's Advisory Committee on Immunization Practices (ACIP) sets the guidelines on when immunizations should be given. In October of 2011, the ACIP recommended that the HPV vaccine be given to boys and girls at 11 and 12 years of age. Beyond this age, the ACIP recommends young men and women up to age 26 receive it as a "catch-up" vaccination (Morbidity and Mortality Weekly Report, 2011). However, a health care provider, at his or her discretion, may administer the vaccine to a boy or girl at the age of 9 ("HPV vaccine," 2011). Both HPV vaccines are given in three injections over a six month time period (0, 2 months, and 6 months). It is necessary to receive all three doses to reap the full benefit of the vaccine. It is suggested that the HPV vaccine be given prior to one becoming sexually active. However, if a person has not been infected with HPV at the time of vaccination, they will still be fully covered by the vaccine. Even if a person has been infected with one type, they would still get the benefit of protection from the other HPV vaccine types through vaccination. Because these are relatively new HPV vaccines, their immunity length is unknown. The research continues, however, and

studies with six years of follow-up data show that there is no evidence that the protection loses effectiveness (CDC, 2012).

Although Gardasil® has been heavily promoted for young women through the media via captivating commercials such as the “One Less” slogan and the "Tell Someone" campaign, Gardasil® for young men has yet to be widely advertised to the general public. Furthermore, the advertisements that both young women and men see on television and in magazines fail to impart the importance of issues such as; practicing safer sex methods, the causal relationship between HPV and cancers with both men and women, how HPV affects young men, or the transient nature of HPV between young men and women. What is often misunderstood is that men are carriers of the HPV virus and therefore, can transmit HPV to a sexual partner. An issue with men who are infected with HPV is the potential to infect women, which may lead to substantial morbidity and mortality of infected women (Palefsky, 2010).

Contributing Factors of HPV Vaccine Acceptance

Knowledge

Although knowledge is not a direct predictor of health behavior, health behavior theories hypothesize that it is a distal factor mediated by attitudes, risk perceptions, social influence, and self efficacy. Thus, acquiring knowledge is a key first step to the success of any health education intervention (Tiro, Meissner, Kobrin, & Chollete, 2007). One’s knowledge level regarding HPV, the negative HPV-related health outcomes and the HPV vaccine may influence ones decision to receive the vaccination. Therefore, it is imperative to assess the current knowledge level of HPV and the HPV vaccine with African American young adults.

Health Belief Model

The Health Belief Model (HBM) has been used for decades to explain and predict health behaviors (Rosenstock, 1974). The HBM is a theory that has successfully predicted a wide range of health behaviors, including STI vaccination (Gerend, Cruz Lee, & Shepherd, 2007). The HBM posits that a person's intention to perform a given preventative behavior is influenced by one's knowledge of a disease threat and one's attitudes regarding that disease (Rosenstock, 1974). The theoretical framework of the HBM asserts that a person's attitude regarding a particular disease, such as HPV, involves a) the individual's perceived susceptibility to the disease, b) the perceived severity of the disease, c) the perceived benefits of performing the preventative behavior, d) the perceived barriers that may place constraints on performing the behavior, and e) a resilient sense of efficacy in overcoming obstacles through perseverant effort. Social psychological and demographic variables such as; gender, race and education level, may affect the individual's perceptions and therefore, indirectly influence particular health-related behaviors (Rosenstock, 1974).

To date, the literature measuring the constructs of the Health Belief Model in relation to HPV has been limited in scope and application. Three studies asked questions regarding perceived susceptibility to HPV and perceived severity to HPV (Lopez & McMahan, 2007; McPartland, Weaver, Lee, & Koutsky, 2005). Additionally, the HBM has been utilized to examine the perceived benefits and barriers to vaccine acceptance (Caskey, 2009; Gerend, Lee & Shepherd (2007). The HBM has also been used as a framework for HPV studies that included African American young adults (Gerend, Lee, & Shepherd, 2007; Gerend & Magloire, 2008; Gerend & Barley, 2009). However, the

percentage of African American representation within those samples has been very small. Given a larger sample of African American young adults, the HBM may provide a useful theoretical framework for understanding the sexual health behaviors, HPV knowledge and HPV vaccine acceptance with this population.

Masculinity Ideology

Masculinity ideologies are belief systems about what it means to be a man, and the degree to which a man endorses and internalizes his cultures values and norms about masculinity (Addis & Mahalik, 2003). Traditional masculinity ideology serves to uphold patriarchal codes by requiring that males adopt dominant and aggressive behaviors and function in the public sphere, while requiring that females adopt adaptive and nurturing behaviors and function in the private sphere of the family (Levant, 1997). Masculinity is often expressed by men through the mainstream and traditional ideals of accumulating wealth and material possessions and by gaining social power and positions of influence (Oliver, 1988). In a 1995 study, Harris suggested that traditionally, White masculine ideals are often unattainable for African American men due to “material constraints” of race. Harris states that the pressures to meet European American standards of manhood as provider, protector, and disciplinarian are representative of such a dilemma for African American men. Inequities in earning potential and employment and limited access to educational opportunities prevent the expression of these behaviors (p.279-280). African American men often lack the power and resources necessary to express masculinity in this regard. Instead, they often typically rely on alternative modes of masculine expression (Harris, 1995). In turn, these perceptions and experiences force them to find alternative ways to prove their manliness. For instance, Oliver (1989) described a primary

orientation through which masculinities are expressed by African American men, the "player of women." Players are young men who have established reputations for having many girlfriends and engaging in sexual relations with multiple women.

Traditional health models, like the HBM, are problematic because they do not adequately incorporate the importance of a masculine identity to health (Duck, 1995). Duck states that according to the Health Belief Model, men who perceive a personal threat to their health and believe that a health practice will reduce that threat are more likely to engage in health practices to reduce the threat. Focus group findings from a qualitative study reported that African American men knew that certain health behaviors were risky, and recognized how to reduce those risks (e.g., going to the physician for screening), or the consequences of a particularly risky behavior. Yet those men continued to be engaged in risky sexual behaviors to express ambivalence about going to the physician, even though they knew the risk associated with their behavior (Duck, 2009).

Statement of the problem

Racial and ethnic minorities, particularly African Americans, continue to be disproportionately affected by STDs in the United States. Data from the CDC's 2006 STD Surveillance Report show higher rates of all STDs among minority racial and ethnic population when compared to Whites, with the exception of Asians/Pacific Islanders (CDC, 2007). The Human Papillomavirus is an STD that has negative health-related outcomes and has the potential to lead to HPV-related cancers in African American young adults. To date, Gardasil® and Cervarix® are the only HPV vaccines approved by the FDA for young women and men. There is paucity in the literature related to HPV and HPV vaccine acceptance among African American young adults, specifically in the state

of Missouri. Having a better understanding of the HPV related knowledge level and contributing factors that affect HPV vaccine acceptance will advance social workers and health professionals' ability to better serve African American young adults with HPV and HPV vaccination inquiries, aid in HPV educational interventions and will contribute to informed vaccination decision making.

Statement of purpose

As educators, clinicians and researchers, social workers must strive to understand what factors contribute to African American young adults to seek information and engage in preventive health practices related to HPV, such as the HPV vaccination. Currently, there is a dearth of literature regarding HPV and HPV vaccine acceptance among African American young adults, especially men. To date, there have been minimal investigations of African American young adults' knowledge, and the contributing factors associated with HPV and HPV vaccine acceptance. The current study is one of the first to examine this area of interest since the October 2009 FDA approved the use of Gardasil® for young men. In addition, African American masculinity ideology, in relation to young adults' sexual health behaviors has received very limited examination (Levant & Majors, 1997). The purpose of this study was to apply the constructs of the Health Belief Model to examine African American young adults' HPV knowledge, health belief factors (e.g., perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) and masculinity ideology regarding HPV vaccine acceptance.

Research Questions

- 1) Is there a relationship between knowledge, contributing factors within the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults?
- 2) Is there a gender difference related to knowledge, contributing factors within the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults?
- 3) Is there an educational level (freshman/sophomore and junior/senior) difference related to knowledge, contributing factors within the Health Belief Model (perceived susceptibility to HPV, perceived seriousness of HPV, perceived benefits of vaccination, perceived barriers to vaccination, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults?
- 4) Is there a relationship between traditional masculinity ideology and intention to receive the HPV vaccine.

Hypotheses

- 1) Greater knowledge about HPV, higher perceived susceptibility to HPV, higher perceived seriousness of HPV, greater perceived benefits of the HPV vaccine, and greater self-efficacy will increase the likelihood of being willing to get the HPV vaccine, while greater perceived barriers will reduce HPV vaccine acceptance among African American young adults.

- 2) African American young women will have more knowledge about HPV, perceive their susceptibility to HPV as higher, perceive the seriousness of HPV to be higher, perceive greater benefits of the HPV vaccine, have greater self-efficacy, perceive fewer barriers to vaccination, and be more likely to accept HPV vaccination, compared to African American young men.
- 3) Is there an educational level (freshman/sophomore and junior/senior) difference related to knowledge, contributing factors within the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults.
- 4) African American young adults with higher traditional masculinity ideology will be less likely to accept HPV vaccination.

Delimitations, Limitations and Assumptions

The sample populations were recruited from African American men and women who were enrolled at one of ten public colleges or universities in the state of Missouri during the study time period of June 2010 through March 2012 (Fall and Spring semesters). The participants were between the ages of 18 and 26, which correspond with the Gardasil® and Cervarix® vaccination age requirements. The study utilized a convenience sampling methodology and self-selection bias of study participants may have occurred. This descriptive research study cannot be generalized to all African American young adults, particularly those who have not attended a public college or university in Missouri. It was assumed that the participant had a certain level of literacy, reading comprehension and basic computer skills in order to respond to the online survey

questions. It was further assumed that participants reported truthful and accurate responses, as the survey relied on self-reported information.

Definition of Terms

List of terms defined for the purposes of this research study:

Young adult: Male or female between the ages of 18-26.

African American: A self-described male or female of American African descent.

Human Papillomavirus (HPV): Genital HPV infection is a sexually transmitted disease that is caused by human papillomavirus. HPV is the name of a group of viruses that includes more than 100 different strains or types (CDC, 2008).

HPV Vaccine: A vaccination series approved by the FDA for 9-26 year old women and men that guard against the spread of HPV (CDC, 2007; 2009).

Perceived barriers: One's perception regarding the potential negative consequences that may result taking particular health actions, including physical, psychological and financial demands (Rosenstock et al., 1994).

Perceived benefits: The degree to which an individual believes that taking a specific action to prevent a condition will be beneficial and effective (Bandura, 1986).

Perceived severity: One's perception concerning the seriousness of contracting an illness, or leaving it untreated; include evaluations of medical, clinical, and social consequences (Rosenstock et al., 1994).

Self-efficacy: The belief in being able to successfully execute the behavior required to produce the desired outcome, such as HPV vaccination (This concept was introduced by Bandura in 1977). Self-efficacy behaviors related to HPV vaccination may include

obtaining information about the vaccine and making a clinical appointment to discuss the vaccine.

Vaccine acceptance: One's willingness or intent to obtain the HPV vaccination:

Gardasil® and Cervarix® are vaccination series approved by the FDA for 9-26 year old females (CDC, 2007) and 9-26 year old males (CDC, 2009).

Significance

One of the aims of Healthy People 2010 was to reduce the proportion of females with Human Papillomavirus (HPV) infection ("Health People 2010," 2000). In this effort, it was necessary to gain an understanding of current knowledge within the African American population in regards to HPV and HPV vaccine knowledge as well as HPV vaccine uptake. The current research study will contribute to the state of the science related to the Human Papillomavirus awareness and knowledge as well as HPV vaccine acceptance with African American young adults. Findings from this study may heighten awareness of sexual health behaviors, the virus itself, transmission, and negative health outcomes associated with HPV within the African American community. Most importantly it focused on African American young adults who are disproportionately affected by sexually transmitted diseases and the negative health outcomes related to HPV.

Health care professionals, such as social workers, nurses and clinicians who work in healthcare environments and academic settings are in ideal positions to communicate the facts about the prevalence of HPV, transmission issues, the HPV vaccine, and the psychosocial concerns surrounding HPV. Findings from this study may help social workers, health care providers and community health workers to provide relevant health

information and educational interventions to help improve the sexual health of African American young adults. With the recent approval of the HPV vaccine for young men, it is imperative to include gender, issues of transmission, culturally appropriate educational interventions and social marketing efforts in regards to vaccine acceptance initiatives. Ultimately, this study provides new knowledge regarding the contributing factors that may influence HPV vaccine acceptance among African American young adults attending a public college or university in the State of Missouri.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews the empirical literature related to the contributing factors of HPV vaccine acceptance among African American young adults. The objective of the review was to examine research conducted on the human papillomavirus, HPV awareness and knowledge, knowledge regarding HPV-related cancer, HPV vaccine, HPV vaccine acceptance, sexual health behaviors and HPV, the Health Belief Model, and Masculinity Ideology in relation to African American young adults.

Human Papillomavirus

One of the most prevalent STDs is the human papillomavirus; HPV is the name of a group of viruses that includes more than 100 different strains or types. The FDA (2008) states that both men and women carry the human papillomavirus and epidemiologic studies further suggest that 75% of all people who are sexually active will become infected with HPV at some point in their lives (Koutsky, 1997). Of these types, approximately 40 exist in the genital area and can cause genital warts. These 40 strains can be further broken down to “high” and “low” risk strains. HPV types are often referred to as “low-risk” (wart-causing) or “high-risk” (cancer-causing), based on whether they place a person at risk for cancer (“HPV types,” n.d.). Low-risk strains sometimes cause changes in a Pap smear (a test used to look for changes in the cells of the cervix) but do not progress to cancer. Of the low-risk strains, two types (6 and 11) are most likely to cause genital warts. There are approximately 13 high-risk strains of HPV, of which two types (16 and 18), are believed to cause about 74% of all cervical and HPV related cancers (Munoz, Bosch, & Castellsague, 2001).

The following is a review of the empirical literature on young adults' knowledge of HPV, HPV vaccine acceptance, HPV-related cancer, the Health Belief Model, and Masculinity Ideology. Research studies conducted in the United States from 1997-2009 were included in the review. Most of the studies obtained samples from University settings. There were studies that included African American participants; however, the percentage of representation in general is very low. There were two studies with a majority of African American respondents: D'Urso, Thompson-Robinson, and Chandler (2007), conducted a study at an Historically Black University (HBCU) and Gerend and Barley (2008), recruited from an HBCU with 57% African American participants. Of the 20 studies in this review, 10 were conducted with women only, 5 included men and women participants, and 5 included all male participants. Seventeen studies utilized a quantitative methodology, with three studies using a qualitative method of inquiry.

Human Papillomavirus Awareness and Knowledge

Knowledge about HPV infection. Awareness and knowledge about HPV infection varies widely and is impacted by the specific questions asked within each study. In studies where the participants were young women, there were varying degrees of participants' knowledge about the term HPV. In another study, female nursing students' knowledge of HPV was assessed ((Denny-Smith, Bairan, & Page, 2006)). The researchers in this study were surprised to find that the participating female students demonstrated relatively low knowledge levels for what one would expect for nursing students in their junior and senior years of college. The mean knowledge score was 10.2 (range 1-15; SD = 2.4). In a different study of 172 college students attending personal health classes, 21.5% had never heard of HPV (Lopez & McMahan.). In a similar study

of students knowledge (Caron, Kispert, & McGrath, 2008) conducted at a Northeastern university, 85% (n=293) had heard of HPV prior to the survey administration. In response to the 2005 Health Information National Trends Survey (HINTS), Tiro et al (2007) conducted a study that analyzed cross sectional data from 18-75 year olds (n=3,076). The HPV knowledge level of U.S. women was relatively low; only 40% of women (n=1,248) reported that they had heard of HPV. Another study asked the question to Latina mothers who have teenage daughters (Bair et al., 2008). Most of the Latina mothers (n=31, 78%) had not heard of HPV. In 2009 (Cates, Brewer, Fazekas, Mitchell, & Smith, 2009), racial differences in HPV knowledge were assessed among rural Southern women; out of 91 respondents, only 24% of Black women reported having heard of HPV compared to 57% (n=47) of White respondents.

In four studies that included both women and men, the percentage that had heard of HPV ranged from 12-67%. Yacobi, Tennant, Ferrante, Pal, and Roetzheim (1999) conducted a study of Florida State University student's knowledge and awareness of HPV. Students' awareness of HPV was limited, only 38% of respondents had heard of HPV prior to the survey. In another study, college students' knowledge of HPV was assessed utilizing a brief information-only educational intervention (Lambert, 2000). There were no significant difference in scores for HPV items between the men and women. Overall, only a minority of college students were familiar with HPV. In yet another cross-sectional, study self-administered questionnaires were administered at one university and two community practices. Results were similar to other studies in that 33% of the 289 respondents (47% male and 53% female) had never heard of HPV (Holcomb, Bailey, Crawford, & Ruffin, 2004).

Social work and public health researchers examined HPV-related knowledge of Black students attending a HBCU (D'Urso et al., 2007). Most respondents (64% n=234) had never heard of HPV prior to the survey. Furthermore, of the 36% (n= 126) who heard of HPV, 52% (n=66) reported knowledge of HPV. Awareness and knowledge about HPV in a racially diverse sample of young adults reported that 78% (n=97), of the participants, heard of HPV (Gerend, et al. 2008). A significantly larger proportion of women (94%) than men (63%) had heard of HPV.

Four studies asked the question about HPV to only men (Allen, Fantasia, Fontenot, Flaherty, & Santana, 2009; Gerend & Barley 2009; Lopez, Tanjasiri, & McMahan, 2008; McPartland et al., 2005). One study utilized a qualitative method to obtain HPV infection information (Allen et al., 2009). The study included six focus groups with 18-22 year old male students (n=45) from a private University. Many men did not know that both men and women were susceptible to the disease and referred to HPV as a "woman's disease". Three cross-sectional studies were conducted to explore the knowledge of HPV infection on college-aged men. In a single study, about half of the participants (54.9%) had not heard of HPV before receiving the study recruitment letter (McPartland et al., 2005). A second study found that about one third (33.7%, n=100) of the men had never heard of HPV (Lopez et al., 2008). However, in the third study, 295 men (85%, n=356) had heard of HPV prior to being invited to participate in the study (Gerend & Barley, 2009). Investigators concluded that the high percentage may have to do with the study being conducted at the same time Gardasil® was being heavily promoted in the media via television commercials.

Eight studies asked participants if they knew that HPV can be asymptomatic. Three studies found between 10%-85% knew that the HPV infection be asymptomatic. Nonetheless, Yacobi et al. (1999) noted most students in the study were not aware that HPV could be present without visible signs. However, 23% of respondents felt certain that they would know if they had HPV. Interestingly, when asked to choose from a list of symptoms that might be caused by HPV, more than two-thirds of respondents indicated they did not know symptoms of HPV. In a 2000 study, 58% (n = 29) of young women diagnosed with cervical dysplasia did not know that HPV could be asymptomatic (Gehardt, Pong, Kollar, Hillard, & Rosenthal). Additionally, 42% incorrectly believed that those with HPV experienced symptoms such as itching, stomach pain, and pain during intercourse. In a survey of college women (Lambert, 2000), 85% knew that HPV lacked symptoms prior to an educational intervention. Post intervention, 95% knew that HPV was asymptomatic. A 2005 study assessing men's perceptions and knowledge of HPV reported that only 9.9% of the participants knew that most people with HPV infection do not have visible signs or symptoms; however, 89% knew that HPV could be transmitted to sex partners even in the absence of symptoms (McPartland et al., 2005).

In a study at a HBCU, only 16% (n = 351) of the African American students in the study knew that HPV could be asymptomatic (D'Urso et al., 2007). A recent study of college women reported that 84.4% (n = 172) of the respondents knew that most people with genital HPV have no visible signs or symptoms (Lopez & McMahan, 2007). In a racially diverse group of college students, 77% (n = 97) of the respondents answered correctly, "False", to the question "A person usually has symptoms when infected with HPV" (Gerend & Magloire, 2008). Interestingly, in a recent study of men and HPV, 79%

(n = 100) knew that they could transmit HPV when they were asymptomatic and that most people with HPV (75%) have no signs or symptoms (Lopez, Tanjasiri, & McMahan, 2008).

Eight studies in this review asked respondents if they knew that HPV can cause genital warts. In these studies, between 27-75% of the respondents knew that HPV can cause genital warts. Baer, Allen, & Braun (2000) found only 11.6% of the women and 4.2% of men ($p < .05$) knew that HPV was the cause of genital warts. Additionally, Bair, Mays, Sturm, & Zimet (2008) noted only 15 (38%) of the 40 Latina mothers had heard of genital warts, and of those, 12 knew it was a STI. Gerend et al. (2008) noted 31% of the college student respondents were unfamiliar with the connection between HPV infection and genital warts. A study by Holcomb et al. (2004) reported that 28% of respondents reported “true” when asked if they knew that “wartlike growths” were a symptom of HPV, 20% responded “false” and 32% responded “don’t know”. In 2007, Lopez & McMahan conducted a study assessing college women’s knowledge of HPV and genital warts, 55% knew that HPV can cause genital warts. Lopez et al. (2008) conducted a similar study with men and found that 44% knew that HPV caused genital warts. McPartland et al. (2005) found 41.5% correctly answered “false” to the statement “genital warts are caused by the herpes virus”. Finally, in a HPV awareness study, Yacobi et al. (1999) noted 64% of the student respondents were unsure if HPV caused genital warts.

Ten studies in this review asked respondents knowledge of HPV being a sexually transmitted disease. Yacobi et al. (1999) asked respondents if they knew how HPV was transmitted. Most respondents (59%) indicated they did not know. In a study of college students, 82.6% of the men and 45.6% of women indicated that they did not know how

HPV was transmitted (Baer et al., 2000). A community based study with female respondents asked the same question (Holcomb et al., 2004) and found that a little more than 50% of all participants knew that HPV could be transmitted sexually. Unfortunately, the data in this study also demonstrated that the average person knew the correct response for less than half of the knowledge questions. In assessing perceptions and knowledge, 89% of the men in the study knew that HPV could be transmitted to sex partners (McPartland et al., 2005). Only 36% of the students at a HBCU responded that they had heard of HPV; of those, 55% (n = 66) reported knowing what it was (D'Urso et al., 2007). In a study utilizing HINTS data, 64% of the women respondents who had heard of HPV knew that HPV is a STI (Tiro et al., 2007). Of Latina mothers' who were asked about HPV transmission, eight of the nine (out of 40) who had heard of HPV knew that HPV was sexually transmitted (Bair et al., 2008). Lopez and McMahan (2007) found that college women scored over 80% on questions having to do with transmission. Similarly, Gerend and Barley (2009) found that at baseline three-fourths of the men understood that they could unknowingly transmit an HPV infection to their partner.

Knowledge about HPV-related cancer.

Eight studies in this review surveyed participants' knowledge of HPV as a risk factor for cervical cancer. The association between HPV and cervical cancer was known by between 16-89% of the respondents. Baer et al. (2000) found 16 (15.5%) of the men and 35 (15.1%) of the women knew of the HPV association with cervical cancer.

Lambert (2000) noted 53% of students' knew that HPV caused cervical cancer, prior to the educational intervention, and 88% knew post-intervention. When asked if HPV is the virus that can cause cervical cancer, 39% answered "True", 8% "False" and 51% "Don't

Know” (Holcomb et al., 2004). McPartland et al. (2005) found 89% of the men answered “True” when asked if HPV can cause cervical cancer. In a study by Lopez and McMahan (2007), 91.4% responded “True” when asked if HPV can cause cervical cancer. Among the 40% of women in one study, who had heard of HPV, less than half knew that HPV causes cervical cancer (Tiro et al., 2007), Bair et al. (2008), found 27% (n = 27 of 40) of the Latina mothers knew nothing about cervical cancer. Gerend and Magloire (2008) noted 92% of the participants knew that HPV is a risk factor for cervical cancer.

HPV types 16 and 18 are responsible for the majority of HPV-related penile, anal and oropharyngeal pre-cancers and cancers in men (Giuliano, 2007). However, only two studies in this review addressed the topic of knowing that HPV is a risk factor for anal and penile cancer. In one study 15 (14.6%) of the men and 28 (11.6%) of the women knew of the HPV-association with penile dysplasia (Baer et.al., 2000). In the study by Lambert (2000), prior to an educational intervention, 32% of the students knew the HPV association with penile cancer and 88% knew post-intervention.

African American young adults are at an increased risk of acquiring genital, oral, head and neck cancers through the sexual activity of having oral sex with an HPV positive partner. Research has indicated that oral transmission is an important health concern, particularly because some young adults erroneously view oral sex as a risk-free behavior (Remez, 2000). Oral HPV infection is the result of oral sex, in which both men and women can be at risk for developing oral cancer related to HPV. A study was conducted exploring prevalence rates of oral sex among 13-22 year old sexually-experienced urban women (Rierden, Forke, Rudy, Hodinka, & Schwarz, 2007). The researchers found that 90% of African American women in their sample engaged in oral

sex. Young women in the study reported performing oral sex because their partner likes it (43%), she likes it (22%), to avoid sexual intercourse (20%), to communicate a greater level of intimacy (15%), and to avoid pregnancy (15%). None of the women enacted oral sex to prevent sexually transmitted diseases.

A recent study by the National Cancer Institute (2008) looked at the incidence rates for HPV-related oral cancers and found a steady rise in men from years 1973-2004. HPV related cancers are becoming about as common as those from tobacco and alcohol. Gillison, D'Souza, Westra, Sugar, Xiao, Begum, & Viscidi (2008) suggested men and women who had oral sex with five or more partners during their lifetime had a much greater chance of having throat cancer. HPV associated oral carcinoma occurs to a higher degree in men and does so at a younger age and at a more advanced stage than non HPV associated oral cancers. A large study covering 83% of the U.S. population during the years 1998–2003, found African American men and women had higher rates of HPV associated cancers of the oropharynx and oral cavity. However, the study may have under-represented the actual number of cancers diagnosed during this time (Ryerson, Peters, Coughlin, Chen, Gilliso, Reichman, & Kawaoka, 2008). The studies in this review did not ask questions regarding oral sex as a risk factor for HPV associated cancer.

HPV Vaccine

In June 2007, Merck Pharmaceuticals introduced Gardasil® as a cervical cancer vaccine for women. As a preventive measure, Gardasil® is the only vaccine that may help guard against diseases that are caused by HPV types 6, 11, 16, and 18 (Merck, 2007). Gardasil® is not a live vaccine, it is a recombinant vaccine. Recombinant vaccines are made by genetic engineering, the process and method of manipulating the genetic

material of an organism ("Gardasil HPV vaccine," 2007). The federal Advisory Committee on Immunization Practices (ACIP) has recommended the vaccine for girls and young women 9-26 years of age (CDC, 2006). Gardasil® is given in three injections over a six month period (0, 2 months, and 6 months).

In earlier studies that began in 2005, Merck Research Laboratories began to test the efficacy of an HPV vaccine for HPV types 16, 18, 6, and 11 in young men (Geipert, 2005). Clinical trials evaluated the efficacy, immunogenicity and safety of Gardasil® in boys and men 9 to 26 years of age. Vaccine efficacy in men was evaluated in a randomized, double-blind, placebo-controlled trial (Merck, 2009). A total of 4,055 men were enrolled and received at least one dose of Gardasil® or placebo. Of these 3,457 were heterosexual men aged 16 to 23 years and 598 were men who have sex with men age 16 to 26 years. In the per protocol efficacy analysis, Gardasil® was 90.4 percent efficacious against HPV types 6, 11, 16, and 18-external genital lesions ("Gardasil HPV vaccine," 2007). In immunogenicity studies, Gardasil® generated robust immune responses to HPV types 6, 11, 16 and 18 in boys between 9 to 15 years old and 16 to 26 year old young men (Coutlee, 2008).

In September of 2009 the FDA Advisory Committee recommended approval for the use of Gardasil® in boys and young men (Merck, 2009). The Advisory Committee agreed that efficacy, immunogenicity and safety data from clinical trials in males supported the use of the Gardasil® vaccine in boys and men 9 through 26 years of age for the prevention of genital warts caused by HPV types 6 and 11.

Most of the research to date has focused on vaccine acceptance among adolescent females, parents of young women and healthcare providers. Research prior to 2007

focused on vaccine acceptance as hypothetical or “when it becomes available.” Gardasil® for women was not FDA approved until 2007. Since the approval of Gardasil®, several studies have examined factors related to HPV vaccine acceptance among young women. Gardasil® for men had been undergoing clinical trials since 2007 and therefore, a few research studies began to incorporate men in studies involving the HPV and the HPV vaccine. Because men play a significant role in the transmission of HPV, it is important to include them in HPV research. With the new FDA approved HPV vaccine for young men, it is imperative to examine the factors that may influence both men and women in HPV vaccine acceptance. The following is a systematic review of the empirical literature on young adults HPV vaccine acceptance.

HPV Vaccine Acceptance

The following review includes empirical literature regarding HPV vaccine acceptance published from January 2007 through 2009. Of the eight studies included in the review, all but one of the studies was published after the FDA approval of Gardasil® for women. However, none of the articles were published after the October 2009 FDA approval of the HPV vaccine for men.

Two qualitative and six quantitative research studies regarding HPV vaccine acceptance are included in this review. One study (Scarinci, Garces-Palacio, Partridge, 2007) was conducted just prior to Gardasil® approval for women. African American (n=27) and Latina immigrants (n=28) were recruited from the community in a city in Alabama. Eight focus groups were conducted to explore the acceptability of HPV vaccination. When the topic of “likelihood of getting vaccinated” was discussed, African American women were more skeptical and had more questions than White women

regarding “vaccine effectiveness”, African American women wanted more information, however, Latina women felt the vaccine, if FDA approved, would be effective. Barriers to receiving the HPV vaccine included vaccine cost and safety. Another barrier mentioned by African American women in this study was the Tuskegee research study. This fear about misappropriate and dangerous research practice may explain some of the hesitation among the African American women in Alabama, to accept the HPV vaccine.

The quantitative studies in this review utilized a cross sectional survey methodology. Three of the studies recruited from college campuses in different parts of the United States (Caron et al., 2008; Gerend & Magloire, 2008; Lopez et al., 2008). Caron et al. enrolled 293 White (93.5%) women from a University in New Hampshire; Gerend and Magloire enrolled 124 men and women (52%; n = 64) from a college in Florida. Many of the participants in the study were recruited from a HBCU with 57% being African American. Lopez et al. (2008) enrolled 100 men of mixed ethnicities from a University in Southern California. One study, Cates et al. (2009) recruited 138 predominately women (n = 90 Blacks and 48 Whites) from public health clinics across rural North Carolina. Although the mean age of the participants was 40, it was inclusive of the age criteria of interest in the current research study.

Lopez et al. (2008) found 36.0% of women knew there was an HPV vaccine for women. In a North Carolina study (Cates et al. 2009) that tested about HPV knowledge, 20% of the women had heard of the vaccine and the responses did not differ by race. When African American women in Florida were asked about the vaccine, 65% (n = 39) said they were interested in the vaccine. Greater interest was associated with being in a committed relationship or dating, being sexually active, having a greater number of

sexual partners, and feeling vulnerable to HPV infection (Gerend & Magloire, 2008). Interestingly, African American women in rural, NC perceived higher effectiveness of the vaccine against cervical cancer than did White women. Furthermore, fewer African Americans agreed that vaccines, in general, are beneficial and more agreed that they are unnecessary than did White respondents (Cates et al., 2009). In New Hampshire, most of the women said they would get the vaccine if it were free (75.3%) and those who would not needed more information (63.5%) and 39.4% were concerned about vaccine safety (Caron et al., 2009). Interestingly, this study was the only one to report women who had already begun the HPV vaccine series (16.2%). Of the women in this study who had previously had sexual intercourse, only 56.5% were concerned about acquiring HPV, however, 82.8% agreed that females should be vaccinated.

Not including studies of parents and physicians, most investigations of HPV vaccine acceptability have been conducted with women. Relatively few studies have included male participants. As of 2010, there were seven published HPV vaccine related research studies that included men interest in their sample (Allen et al., 2009; Ferris, Waller, Miller, Patel, Price, Jackson and Wilson, 2009; Gerend & Barley, 2009; Gerend & Magloire, 2008; Giuliano et al., 2007; Jones & Cook, 2008; Reiter, Brewer, & Smith, 2009)

A study examining HPV vaccine acceptability among young adult men was published (Gerend & Barley, 2009). The goals of this study were to: 1) compare two different approaches to educating young adult men about HPV vaccination, and 2) to identify predictors of HPV vaccine acceptability among young men. The participants were college men, Hispanic (n=49, 14%), White (n=298, 84%) and African American

(n=4, 16%). Interestingly, at baseline, 39% (n=137) of the men knew that a vaccine to prevent HPV infection for men was under development. The study involved students reading a 2-page intervention message on HPV infection and the HPV vaccine. Post-test results found that the men's intentions to receive the HPV vaccine were moderately high and did not vary by experimental condition (self: $m = 3.39$; $SD = 1.40$ vs. self and partner: $m = 3.78$; $SD = 1.52$). Presenting men with the benefits of the HPV vaccine for their female partner(s) did not increase vaccine acceptability over and above presenting them with benefits to men alone. Although not statistically significant, sexual activity was the only unique behavioral predictor of HPV vaccine acceptance, meaning sexually active men reported more interest in the vaccine than non-sexually active men.

Remaining correlates of HPV vaccine acceptability were generally consistent with those identified in previous studies of women.

A study examining the variables associated with Human Papillomavirus vaccine acceptance by men was conducted by Ferris et al. (2009). Convenience samples of adult men from Georgia were recruited from universities as well as various other locations, such as, a local military base, family medicine center and elsewhere in the community. A total of 571 heterosexual (94.9%) White men (61%) were given a 1-page information sheet about HPV and the vaccine. Of the 571 respondents, 33% wanted to be vaccinated against HPV, 27% did not and 40% were undecided. Interestingly, more White men were undecided about vaccination and a greater percentage of Black men were opposed to vaccination. Additionally, educated, younger and not currently sexually active men correlated positively with a desire to receive the HPV vaccine. Men who had more than

10 sexual partners were interested in the HPV vaccine. Furthermore, knowledge of the HPV was also found to correlate positively with HPV vaccine acceptance.

A qualitative research study exploring college men's knowledge, attitudes, and beliefs about HPV and the HPV vaccine was conducted in 2009 (Allen et al.). Six focus groups (n = 45) of predominately White (51%, n= 23 and 24% Black n=11) men from a private college in the Northeast participated. Of those who participated, seventy-one percent were currently sexually active. One of the focus group topics was "knowledge and awareness of the HPV vaccine." An example of a sample question: "Have you ever heard of a vaccine to prevent HPV?" Many of the participants knew that a vaccine was available for women. When asked about receiving the vaccine when it became available to men, apprehension regarding costs, accessibility, safety, and side effects was voiced. Participants believed that women in general would benefit, "better safe than sorry".

Sexual Health Behaviors and HPV

Although Gardasil® and HPV have been heavily promoted in the media for young women; the current message does not address the male factor, especially transmission, in relation to this STD. According to the CDC (2008) HPV is passed on through genital contact-most often during vaginal and anal sex. HPV is most often transmitted through unsafe sexual practices. The sexual behaviors specifically associated with greater risk are 1) unprotected sex, 2) intercourse at an early age, 3) multiple male sexual partners, and 4) sex with a male partner who has had multiple sexual partners (National Cervical Cancer Coalition, 2007).

Alcohol has often been cited as a contributing factor for abandoning safe sex practices, which in turn, leads to possible STDs such as HPV. In the National Institute on

Alcohol Abuse and Alcoholism (NIAAA) report, researchers outline the problem of high-risk drinking on U.S. College and university campuses ("College drinking," n.d.). The NIAAA report states that 4,000,000 students between the ages of 18 and 24 had unprotected sex and more than 100,000 students between the ages of 18 and 24 report having been too intoxicated to know if they consented to having sex (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002).

Aside from complete sexual abstinence, condoms and dental dams are recognized as the most effective means of preventing the transmission of STDs. Dental dams are square latex pieces worn over the mouth during vaginal or anal oral sex. The continued high rate of sexually transmitted diseases suggest that the use of condoms remains below what is needed to effectively control the spread of STDs (Bankole, Darroch & Singh, 1999). A recent study found that condoms can protect against HPV 79% of the time (ACS, 2007). In a 28-month study of 123 college women, researchers found that sexually active women who used condoms consistently were significantly less likely to contract HPV than were women who had not used condoms (Winer, Shu-Kuang, Hughes, Adam, Kiviat, & Koutsky, 2005).

Having multiple sex partners is a high risk health behavior for women. Although it has been shown to be a causal factor in the relationship to HPV, having multiple sex partners has not been studied extensively in the sexual health literature. Having multiple sex partners is often cited as a behavior risk for various negative health outcomes. Moore and Davidson state that a high level of participation in premarital sexual intercourse among college women is much in evidence, as is the controversy surrounding this trend, and the concomitant rise of sexual risk-taking (2006). There are few studies, however,

that have focused on the behavior of having multiple sex partners. In 1992, researchers from the Alan Guttmacher Institute examined two large national surveys and found a substantial percentage of American women have multiple sex partners (Kost & Darroch Forrest, 1992). Santelli, Brener, Lowry, Bhatt & Zabin (1998), conducted a survey of young adults to assess factors associated with having multiple partners. Of the 63% of female respondents who had had sex during the three months of the survey, 15% had had two or more partners during that period. In particular, there was evidence that the African American young adults in the study exhibited risky behaviors, such as multiple partnerships (among men and possibly women), more commonly than was evidenced in other racial/ethnic groups (Adimora & Schoenbach, 2002).

Concern over the HPV's possible impact on sexual behavior has to do with "behavioral disinhibition". Behavioral disinhibition, in this regard, is the perception of safety resulting from introduction of the prophylactic HPV vaccine, which may lead to an increase in unsafe behaviors and premature sexual activities among adolescents (Saslow, Castle, Davey, Einstein, & Ferris, 2007). Failure to adopt less risky practices may be related to differences in how adolescents perceive risk that is not immediately and personally relevant (Dudley, O'Sullivan, & Moreau, 2002). In a recent study (Caron et al., 2008) researchers addressed the controversial idea that vaccination against a sexually transmitted infection, specifically HPV, may encourage risky sexual behavior. The majority of respondents (65.3%) disagreed with this idea.

In the current literature review, several studies assessed risky behaviors that might put participants "at risk" for an STD, such as HPV. Yacobi et al. (1999) reported that 95% of the White respondents indicated they took some precaution to prevent STDs. The

most common precautions were: remaining in monogamous relationship (71%), using condoms (40%) and abstinence (26%). However, of the 40% who use condoms, only 58% (n=) reported using one the last time they had sexual intercourse.

In 2005, researchers examined perceived risk of single and married nursing students (Denny-Smith et al., 2005). In this sample, married women used condoms less than single women, $m = 4.88$ and 3.10 , respectively; high numbers indicate a lack of consistent condom use. In the study by Gerend et al (2007), respondents perceived that higher risk was associated with being sexually active and having a greater number of partners. Both sexual activity and number of partners were unique predictors of perceived risk. Furthermore, the mean response for frequency of using protection among the sexually active respondents was 4.3 ($SD = 1.0$), with 58% indicating they “always” used protection. In a study whose participants were being treated for cervical dysplasia, 22% did not realize that condoms help protect themselves and their partners from the spread of HPV (Gerhardt et al., 2000). A focus group study, college men recognized that infection was more common among those with multiple sexual partners (“guys who jump around”) and those who do not use condoms (“you gotta always wrap it up”) (Allen et al., 2009). Use of condoms (85%) and monogamy (79%) were the two most common strategies employed by Black college students to prevent STIs. Yet, 23% of students in this study did not take any precautions against STIs. Most recently, in a study of vaccine acceptance by men (Ferris et al., 2009), 166 of the participants reported having more than 10 female sex partners; furthermore, 403 participated in oral sex.

There were studies in this review that did not assess current sexual behavior, but rather, *intent* to perform “positive” sexual health behaviors. Community study

respondents reported that they would use a condom if they or their partner were diagnosed with HPV (Holcomb et al., 2004). A study of male perceptions of HPV reported that 95.1% of the men indicated that if they were diagnosed with HPV, they would use condoms with new sex partners (McPartland et al., 2005). In a 2007 study of college women, 41.2% intended to use condoms the next time they have sex and 57% intend to reduce their number of sex partners to decrease their probability of contracting HPV infection (Lopez & McMahan, 2007). In 2008, condom use among male students was explored. Of those who were sexually active, 74.3% were self-efficacious to wear condoms during their next sexual encounter and 53.4% intended to reduce their number of sexual partners (Lopez et al., 2008)

Health Belief Model

One of the current theoretical frameworks that support the introduction of an HPV vaccine is the Health Belief Model (HBM). The HBM was developed in the 1950's as part of an effort by a social psychologist in the United States Public Health Service to explain the lack of public participation in health screening and prevention programs. The HBM was one of the first models that adapted theory from the behavioral sciences to health problems and it remains one of the most widely recognized conceptual frameworks of health behavior. Since its inception, the HBM has been adapted to explore a variety of long-and short-term health behaviors (Rosenstock, et al., 1994). The HBM is a framework for motivating people to take positive health actions and the desire to avoid a negative health consequence as the prime motivation. For example, HPV and cervical cancer are negative health consequences, and the desire to avoid them can be used to motivate African American young adults into receiving the HPV vaccination.

The Health Belief Model is described in terms of four constructs representing the perceived threat and net benefits: 1) *Perceived threat* consists of both perceived susceptibility and perceived severity of a health condition. Susceptibility is one's subjective perception of the risk of contracting a health condition and perceived severity is one's perception of the seriousness of contracting the illness or condition. 2) *Perceived benefit* is the believed effectiveness of strategies designed to reduce the threat of the illness or condition. 3) *Perceived barriers* are the potential negative consequences that may result from taking particular health actions, including physical, psychological and financial demands. 4) *Cues to action* include events, either physical or environmental that motivates people to take action. A recent addition to the health belief model is the concept of *self-efficacy*, or one's confidence (Bandura, 1977). This concept was added by Rosenstock and others in 1988 to help the HBM better fit the challenges of changing habitual unhealthy behaviors, such as being sedentary, smoking, or overeating (Glanz, Lewis, & Rimer, 1997).

Theories of health behavior can offer *a priori* predictions about beliefs likely to increase the adoption of the HPV vaccine (Brewer & Fazekas, 2007). Most of the studies in the current literature review were assessments of HPV knowledge and did not utilize a theoretical approach to results interpretation. Nine of the twenty research studies under review used constructs of the HBM to assess HPV knowledge and vaccine acceptance. When examined, perceived risk of HPV infection was relatively low. In a racially diverse sample of college men and women, 56% of the participants disagreed, either strongly or moderately, with the statement that they were at risk for HPV infection (Gerend & Magloire, 2008). In a study of female nursing students, respondents had low perceived

susceptibility and seriousness scores, indicating that they did not believe HPV or cervical cancer to be a serious disease threat to them and did not feel susceptible to contracting the disease (Denny-Smith et al., 2005).

Questions regarding perceived susceptibility and perceived severity are often phrased as “How likely do you think it is that you will get infected with HPV? What is your risk?” and “How severe do you think it would be to have an HPV infection?” (Denny-Smith et al., 2005; Lopez & McMahan, 2007; McPartland et al., 2005; Yacobi et al., 1999). Only 21% of respondents believed that they were at risk for HPV infection, and 56% knew that risk increases with multiple sexual partners. Furthermore, 11 % knew risk increased with early sexual activity (Yacobi et al., 2005). On a rating scale ranging from 1-5 on men’s perceptions, men did not perceive HPV to be a severe disease for themselves, (McPartland et al., 2005). However, most indicated that they perceived HPV infection to be more severe for female partners. In 2008 (Lopez et al.), a study of college men’s’ perceptions noted 74 % reported high severity and 88.9% susceptibility to HPV infection.

Benefits and barriers to HPV vaccine were assessed in three studies (Caskey et al., 2009; Gerend et al., 2007; Reiter et al., 2009). In a recent study of girls and young women (Caskey et al., 2009), almost one-third of all respondents stated that “not being sexually active” or “concerns about vaccine safety” as the most important reasons for foregoing vaccination. Perceived benefits and barriers were assessed as predictors of HPV vaccination acceptability among underserved women (Gerend et al., 2007). In this study, perceived safety of the HPV vaccine was a significant predictor of vaccine acceptability. In a national sample of heterosexual men, moderate levels of perceived

barriers (cost and adverse effects) to getting a hypothetical HPV vaccine were reported (mean=2.76, SD=0.87) (Reiter et al., 2009).

Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given levels of attainment (Bandura, 1997). Furthermore, efficacy is a major basis of action. The construct of self-efficacy was measured in two studies. In Lopez and McMahan (2007), the construct of self-efficacy was worded "How confident are you in your ability to use a condom the next time you have sex to prevent HPV infection?" Participants with greater self-efficacy were more likely to request that their partners wear condoms during their next sexual encounter to prevent HPV infection. Gerend and Barley (2009) asked the single-item question "I am confident in my ability to get the HPV vaccine". HPV vaccine acceptability was uniquely predicted by several health beliefs, including self-efficacy to receive the vaccine.

The Health Belief Model has been applied to a variety of health issues including AIDS, cigarette smoking behavior, and predicting condom use (Rosenstock & Strecher, 1997). The HBM, as applied to HPV vaccine acceptance, is based on the understanding that a person will take a health-related action (HPV vaccination) if that person: 1) feels that a negative health condition (HPV and/or HPV related cancer) can be avoided, 2) has a positive expectation that by taking a recommended action, she/he will avoid a negative health condition (HPV vaccination will avoid negative HPV related outcomes), and 3) believes she/he can successfully take a recommended health action (knowledge and risks of HPV and negative HPV related outcomes + HPV vaccine = positive health behavior decisions made with confidence). The Human Papillomavirus, as well as cancers and outcomes related to HPV, are negative health consequences. The knowledge and desire to

avoid them can be used to motivate African American young adults to practice positive sexual health behaviors, to engage in conversations about their sexual health and possibly be open to accepting the HPV vaccination.

The Health Belief Model is a good fit as a theoretical framework for investigating HPV vaccine acceptance among African American young adults. The benefits of this model are outlined below:

- 1) The HBM is a subjective model, so it can be applied to any individual and adapted to their own status or position within the health behavior change trajectory.
- 2) The HBM focuses on one's beliefs, which makes this model personal and easy to tailor to an individual.
- 3) The HBM is a good model studying preventive measures, such as obtaining the HPV vaccine.
- 4) The HBM can also be used to identify particular population characteristics and health behaviors, such as those seen within the African American culture.
- 5) The concepts of the HBM can be directly applied to specific stages of an intervention or program to change one's health behavior.
- 6) The HBM can be easily coupled with another theory or concept, such as masculinity ideology, in an effort to "make-up" for certain drawbacks that the model alone may hold.

Although the Health Belief Model is an empirically based theory of understanding health related behaviors, some researchers claim the model is limited in addressing such psychosocial concerns as attitudes about illness, social support and cultural factors

(Damrosch, 1991). Masculinity ideology as a cultural factor will help to further explore the contributing factors of HPV vaccine acceptance with African American young adults. To date, this model has not been explored in studies on HPV and HPV vaccine acceptance.

Masculinity Ideology

There is a paucity of research regarding health-related attitudes and behaviors and masculinity ideology with African American men and women. Furthermore, the concept of masculinity has not been consistently defined, possibly because masculinity exists on a continuum comprising power, prestige, and status (Spraggins, 1999). In general, there is not one universal set of behaviors that satisfy the requirements of masculinity (Crook, Thomas & Cobia, 2009). It has been found that men construct masculinity differently depending on their social structural location and the social context (Winterich et al., 2009). Masculinity has also been viewed from a social constructivist perspective, asserting that masculine behaviors and attitudes are learned and produced in social institutions and reinforced through human action (Martin & Harris, 2006; Spraggins, 1999).

Historically, masculinity theory is positioned in a larger spectrum of sociological research that has been undertaken on the subjects of gender and sex (Grodan, 2009). Allwood (1998) further asserts that sex role theory and the social construction of gender are pivotal points for developing research on masculinity and femininity. However, masculinity is more than just a gender role, it refers to a set of culturally created beliefs, identities and practices that are constructed through interactions between individuals in diverse contexts (Courtenay, McCreary, & Merighi, 2000; Gough, 2006). When

definitions of manhood or masculinity include provider and protector, it is important to recognize that some men of color face challenges in meeting these roles due to such barriers as racism, poverty, lack of education, underemployment, and reduced access to service (Thomas, Boss, & Kaggwa, 2004). These constructs most likely result in different health beliefs and behaviors.

Beliefs about masculinity and manhood are deeply rooted in culture and supported by social institutions that play a role in shaping the behavioral patterns of men in ways that have consequences for health. Yet, there remains a paucity of research that has examined the social concept of masculinity on health practices (Gough, 2006). In the healthcare arena, this construct can mean infrequent encounters with the healthcare system, delayed attention to symptoms, poor medication compliance and an unwillingness to talk openly about health concerns (Williams, 2003). Most recently attention has been given to exploring the concept of masculinity within the African American community in relation to health behaviors and beliefs. A recent qualitative study explored how African American men conceptualize masculinity and how it relates to their health behaviors (Duck, 2009). The study found that being sexually active is an important component of African American men's notion of masculinity.

African American men who have sex with women are almost nonexistent in the social science literature (Bowleg, 2004). In her study regarding HIV concerns, Bowleg found this puzzling because many African American men's HIV risk behaviors (particularly injection drug use) form the leading exposure categories of Black women's HIV risk. This philosophy can be further applied to African American men's HPV risk behaviors (particularly unprotected sex) and the leading exposure categories of African

American young women's HPV risk. With regard to HPV exposure, the concept of masculinity from both the male and female perspective may play a role in sexual health behaviors of African American young adults. In a recent discourse regarding the performance of masculinity in love relationships, Wallace (2007) states that "since Black girls are taught the same lessons about manhood, as women, their own ideas of what it means to be a Black man are also skewed."

There is a constellation of standards and expectations associated with the traditional male role in the Western world (Levant & Richmond, 2007). This type of masculinity ideology is referred to as "hegemonic masculinity" to underscore its role in the dominance of White heterosexual men over women and racial, ethnic, and sexual minorities. David and Brannon (1976) identified four norms of traditional masculinity: 1) "no sissy stuff" (that men should avoid feminine things), 2) "the big wheel" (that men should strive for success and achievement), 3) "the sturdy oak" (that men should not show weakness), and 4) "give 'em hell" (that men should seek adventure, even if violence is necessary).

For men of color, who are marginalized and not allowed these mainstream ways to enact male gender roles, risk-taking behavior provides a way in which they can attempt to establish themselves as men. Traditional masculinity ideology supports those health-related attitudes and behaviors that put men at risk for poor health, however, it is not clear what particular aspects of traditional masculinity may contribute to poor health outcomes in African American men and women (Wade, 2009). A recent study by Wade (2008) found that nontraditional masculinity was a predictor of health behaviors conducive to African American men's behavior. Thus far the concept of African American traditional

masculinity ideology among both male and female young adults in regard to HPV and HPV vaccine acceptance has not been explored in the literature.

Summary

This chapter provided an extensive review of the empirical literature related to HPV, HPV-related cancer, HPV vaccine acceptance, the Health Belief Model, and Masculinity Ideology. A review of the literature revealed young adults in the United States generally lack the awareness or knowledge and are misinformed when it comes to HPV, putting them a higher risk of being infected with HPV. The literature review revealed a number of gaps in the literature. First, HPV research has not been conducted in the State of Missouri, a state with one of the highest STD rates in the country. Second, very few studies included African American young adults in their sample population, who are disproportionately affected by STDs. Third, few studies utilized a theoretical framework, however, the HBM was used most commonly but only a few of the constructs were measured in each study. A more comprehensive use of the HBM is needed. Fourth, the concept of masculinity ideology has not been explored in relation to HPV and HPV vaccine acceptance. This concept may provide additional information along with the to the HBM when applied to research with African American young adults.

CHAPTER THREE: METHODOLOGY

The focus of this study was to examine factors that may contribute to HPV vaccine acceptance in African American young adults. This chapter provides an overview of the methods used to guide the study; study design, data collection, and sample characteristics. The psychometric properties of each instrument are described in detail and include the Knowledge and Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey, demographic information and the Male Role Norms Inventory-Revised. Data analysis and screening procedures are described fully.

Study Design

This study utilized a cross-sectional survey design to elicit information from African-American young adults regarding their knowledge and beliefs about HPV. The HBM served as the theoretical framework for this study, with the additional concept of masculinity ideology. The HBM was used to examine African American young adults' perceived susceptibility and perceived seriousness of HPV. The perceived barriers and perceived benefits to an HPV vaccine were also examined. Self-efficacy was looked at in relation to one's intention to receive the HPV vaccine. In addition to the concepts described, the HBM suggest that behavior is also influenced by cues to action such as events, people or things that influence people to change behavior (Hayden, 2009). However, "cues to action" were excluded from this study, since the researcher was not interested in determining what cues African American young adults take, but rather in determining their knowledge and contributing factors of HPV vaccine acceptance. The concept of masculinity ideology was also explored. The survey included demographic information as well as questionnaire response.

The dependent variable of interest was identified as HPV vaccine acceptance operationalized as intention to receive the HPV vaccine. The independent variables of interest included: 1) HPV knowledge, 2) perceived susceptibility to HPV, 3) perceived seriousness of HPV, 4) perceived benefits of vaccination, 5) perceived barriers to vaccination, 6) self-efficacy, and 7) masculinity ideology.

Data Collection

Approval for this study was obtained on June 22nd, 2010 from the University of Missouri-Columbia Health Sciences Institutional Review Board. Additionally, IRB approvals were obtained from each of the ten study sites, including: Harris Stowe State University in St. Louis, Lincoln University in Jefferson City, Saint Louis Community College campuses (Florissant Valley, Forest Park, Meramec, and Wildwood) Truman State University in Kirksville, the University of Missouri at Columbia, the University of Missouri at Rolla, and the University of Missouri at Saint Louis. The research study employed an e-mailed link recruitment strategy (Appendix A). An e-mail invitation to participate in the study was sent to potential participants via their college or university e-mail address. If a student was interested in participating, they were instructed to click on the embedded secure SurveyMonkey link. SurveyMonkey is an on-line survey development software program. This software program allows researchers to develop surveys as well as create a link to the survey, which may be placed in any format such as an e-mail. Once on the SurveyMonkey site, the participant was presented with the informed consent document (Appendix B). The consent document provided information about the purpose and process of the study, university and research contact information, and potential benefits and risks. Informed consent acknowledgement was obtained

through participants clicking on an agreement button which stated they have read the informed consent and would like to participate in the study. The total time for study participation, including demographic and survey response completion, was approximately 20 minutes.

Participants

A non-probability convenience sample was utilized in this research study. A representative at each college or university site was identified and agreed to be the school's contact person for the accessed student population. This contact person sent an e-mail invitation to the students on behalf of the researcher. The link to the survey on SurveyMonkey was embedded in the e-mail letter of invitation to participate in the study. The target population for the study was African-American young adult men and women, between the ages of 18 and 26, because 26 is the age limit recommended for the vaccine. Students enrolled at one of the public university or college study sites between September 2010 and March 2012 were invited to participate in the study. Missouri is a large Midwestern state; therefore, participants were recruited from multiple sites in an attempt to obtain geographical diversity. The participant's e-mail address was not connected to the survey response in any way. The surveys were anonymous and confidentiality was assured throughout the survey. Incentive for participation was the possibility of winning one of several (two per study site) \$25 gift cards in return for participation. At the end of the survey, participants were asked to leave any form of contact information, such as an e-mail address or phone number, if they would like to be entered into the drawing for a gift card.

Instrumentation

Demographic Questionnaire. The demographic questionnaire was used to collect information about study participants. The questionnaire included items on participants' zip codes, gender, age, self-identified race/ethnicity, and current year in college. Participants were asked questions regarding their relationship status, sexual orientation and age at first intercourse. Questions based on Gerend and Barleys' (2009) study assessed awareness of HPV, if participants had heard of HPV, where they obtained information on HPV, Pap test knowledge and history, and condom use. In addition, questions were asked regarding sexual risk factors, based on Gerend and Barley's (2009) model.

Knowledge and Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey. A literature search of published surveys on HPV and the HPV vaccine acceptance was conducted. At the time, there were not many existing measures for HPV and HPV vaccine acceptance (Denny-Smith, 2006; Ingledue, Cottrell, & Bernand, 2004; Tiro et al., 2007). In most cases, researchers developed questionnaire items or adapted them from published research (Allen et al., 2010). For the current study, the Men's Health Attitudes Study: Pre-survey (MHAS) developed by Gerend (2009) was selected. Permission to use the survey with modifications was requested and granted by the author. Studies that have used the MHAS include research on HPV awareness, and knowledge, beliefs and attitudes toward HPV. In addition, the question items in this instrument have been validated in prior studies with racially diverse samples of young adults (Gerend, Lee, & Shepherd, 2007; Gerend & Magloire, 2008; Gerend & Barley, 2009).

The MHAS survey was originally developed for a study to identify predictors of HPV vaccine acceptability among young adult men (Gerend & Barley, 2009). In the study, it was hypothesized that men, particularly those men who were in a committed romantic relationship with a woman, would display greater vaccine acceptability when exposed to the partner protection benefits of the HPV vaccination. The study included a 2-page intervention message on HPV infection and the HPV vaccine. Although the psychometric properties of the survey were not published, the author, Dr. Gerend, drew items from prior research in this area (Gerend et al., 2007; Gerend & Magloire, 2008; Gerend & Shepherd, 2008; Gerend & Shepherd, 2007; (Gerend, Shepherd, & Monday, 2008); McPartland et al., 2005). For the purpose of this research study, only questions that related to the constructs of interest were included in the modified version. The current study does not include the intervention, the questions related to the intervention, or those related to being in a real or fictitious romantic relationship.

The 73-item MHAS survey includes questions about HPV and HPV vaccine acceptance (Gerend & Barley, 2009). The MHAS survey items are congruent with the definitions of the concepts of knowledge, intention to vaccinate, and the constructs of the Health Belief Model: perceived threat (susceptibility and severity), perceived benefits, and perceived barriers, and self-efficacy. For the purposes of this study, the Knowledge and Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey (a modified version of the MHAS) was developed with 121 items included in the survey (Appendix C). The modification of the survey included deletion of certain items, additional questions added as well as response alternatives inserted on the Likert scales. When asked about the modifications, particularly response alternatives, the original

author stated that she thought it was a good idea to add in the descriptors, especially since participants were completing the survey online. Dr. Gerend further stated that “anything we can do to make the survey easier for participants to understand is usually a good thing to do” (M. Gerend, personal communication, January, 2009).

Knowledge. Questions in this section are scored as “true”, “false”, or “don’t know”. For example: 1) Genital warts are caused by HPV, 2) Most people with genital HPV have no visible signs or symptoms, and 3) HPV can cause cancer of the penis or anus in men. The MHAS included 14 knowledge questions. For this study, one question was changed from “Vaccines to prevent HPV infection for men are under development” to “There is a vaccine to prevent HPV infection that is available for men”. This change reflects the FDA approval of the HPV vaccine for men, which was not available at the time the MHAS was developed. Three additional questions addressing HPV-related cancer were included in the survey: “HPV can cause oral cancer in men”, “HPV can cause anal cancer in women”, and “HPV can cause oral cancer in women”. A total of 17 knowledge questions comprised the knowledge scale with 1 point given for each correct answer (0-17). Zero points were given for incorrect and “don’t know” responses. A higher total score is reflective of greater HPV knowledge. The knowledge scale has good internal consistency, with a Cronbach alpha coefficient of .77. Values above .7 are considered acceptable (DeVellis, 1991, p.85).

Intention to vaccinate. Intention to vaccinate against HPV was assessed using five items based on prior research (Gerend & Barley, 2009; Gerend & Shepherd, 2007; Gerend et al., 2008). Five questions were included in this section and scored on a 6-point Likert scale from 1 = “Very Unlikely” to 6 = “Very Likely”. For example, 1) How likely

is it that you'll try to get more information about the HPV vaccine? 2) How likely is it that you'll make it a priority to get the HPV vaccine? And 3) How likely is it that you'll actually get the HPV vaccine? Scores were summed to create a total intention score, where a lower score indicates less intention and a higher score indicates greater intention. The intention to vaccinate scale showed a Cronbach alpha coefficient of .93 which is considered to be excellent (George & Mallery, 2003).

Perceived Susceptibility. Items in this scale were used to assess perceived susceptibility. Four questions were included in this section and scored on a 6-point Likert scale from 1 = "Very Unlikely" to 7 = "Very Likely". For example, 1) How likely is it that you'll get genital HPV in the next 10 years? And 2) How likely do you think it is that a current or recent partner(s) of yours is infected with HPV? Scores were summed to create a total perceived susceptibility score, where low scores indicate low perceived susceptibility and high scores indicate high perceived susceptibility. The perceived susceptibility scale showed a Cronbach alpha coefficient of .84 which is considered to be good (George & Mallery, 2003).

Perceived Severity. Two questions on perceived severity were included in this section and scored on a 5-point Likert scale from 1 = "Not At All" to 5 = "Very Severe". For example, 1) How severe do you think genital HPV infection would be for yourself? and 2) How severe do you think genital HPV infection would be for your partner? Scores were summed to create a total perceived severity score, where low scores indicate low perceived severity and high scores indicate high severity. The perceived severity scale showed a Cronbach alpha coefficient of .94 which is considered to be excellent (George & Mallery, 2003).

Perceived Benefits. Four questions on perceived benefits were included in this section and scored on a 6-point Likert scale from 1 = “Disagree Strongly” to 6 = “Agree Strongly”. For example, 1) The HPV vaccine reduces a man’s chances of developing HPV related cancers, and 2) Getting the HPV vaccine may be a good thing to do for my health. Scores were summed to create a total perceived benefits score, where low scores indicate low perceived benefits and high scores indicate high perceived benefits. The perceived benefits scale showed a Cronbach alpha coefficient of .81 which is considered good (George & Mallery, 2003).

Perceived Barriers. Nine questions on perceived barriers were included in this section and were prefaced with the following “Would the following factors prevent or keep you from getting vaccinated against genital HPV in the future?” For example, 1) Having to pay a lot for the vaccine, 2) Fear that you could get HPV from getting the vaccine, and 3) Having to get shots. Items are scored as either “yes” or “no” with each “yes” response receiving a score of 1. A total score is obtained (range of 0-9) with a higher score indicating more perceived barriers. The perceived barriers scale showed a Cronbach alpha coefficient of .70 which is considered acceptable (George & Mallery, 2003).

Self-efficacy. Two questions on self-efficacy were included in this section. They are scored on a 6-point Likert scale from 1 = “Disagree Strongly” to 6 = “Agree Strongly”. For example, 1) I am confident in my ability to get the HPV vaccine and 2) Whether I get vaccinated against HPV is under my personal control. Scores were summed to create a total self-efficacy score, where lower scores indicate lower self-efficacy and high scores indicate higher self-efficacy. The self-efficacy scale showed a

Cronbach alpha coefficient of .65 which is considered minimally acceptable (DeVellis, 1991, p. 85).

Male Role Norms Inventory-Revised. The Male Role Norms Inventory-Revised (MRNI-R) (Levant et al., 2007; Levant et al., 2010) was used to assess traditional masculinity ideology among African American young adults. For African American males who are marginalized and are not allowed mainstream ways to enact male gender roles, risk-taking behavior provides a way in which they can attempt to establish themselves as men (Courtenay, 2000b). Traditional masculinity ideology supports those health-related attitudes and behaviors that put men (and possibly women) at risk for poor health (Wade, 2009). This study examined the relationship between traditional masculinity ideology and African American young adult's intention to receive the HPV vaccine.

The MRNI-R is a 53-item measure with items rated on a 7-point Likert scale (1 = strongly disagree to 7= strongly agree). The items used in the MRNI-R are framed to make comparisons between men and women as opposed to many extant scales which make statements about men in relation to male role norms (Levant & Richmond, 2007). The instrument includes seven theoretically-derived norms of traditional masculinity ideology including: 1) Avoidance of Femininity (eight items, e.g., "Men should not wear make-up" and "Men should watch football instead of soap operas"); 2) Fear and Hatred of Homosexuals (ten items, e.g., "Homosexuals should never marry" and "All homosexual bars should be closed down"); 3) Extreme Self Reliance (seven items, e.g., "A man must be able to make his own way in the world" and "A man should never count on someone else to get the job done"); 4) Aggression (seven items, e.g., "Boys should be

encouraged to find a means of demonstrating physical prowess” and “ Men should get up to investigate if there is a strange noise in the house at night”); 5) Dominance (seven items, e.g., “A man should always be the major provider in his family” and “In a group, it is up to the men to get things organized and moving ahead”); 6) Non-relational Attitudes toward Sexuality (six items, e.g., “Men should always take the initiative when it comes to sex” and “A man should get up to investigate if there is a strange noise in the house at night”); and 7) Restrictive Emotionality (eight items, e.g., “One should not be able to tell how a man is feeling by looking at his face” and “Men should not be too quick to tell others that they care about them”). A traditional masculinity total scale score is obtained by averaging the scores on all 53 items (Levant, Hassan, & Smalley, 2010).

Data Analysis and Screening

Data from each 121-item questionnaire were exported from SurveyMonkey to an Excel spreadsheet. The researcher examined the data to ensure all data points were transferred successfully. Questionnaires were completed over a continuum which allowed the researcher to clean the data and make appropriate decisions as data collection progressed over time. There were 558 questionnaires received, however, 207 were excluded for several reasons: Initially, demographic question items were placed at the end of the survey. The researcher believed, as did Dillman (1978), that recipients who had already invested the time to answer the more “appealing” survey items first, would be more likely to complete the “ordinary” demographic questions at the end of the survey. This technique was recommended in seven of nine social work research textbooks (Green, Murphy, & Snyder, 2000). However, as the data cleaning process began, it was realized that recipients were not completing the demographic questions.

This was a huge concern considering the fact that inclusion criteria required a) the participant be between the ages of 18-26 and b) that they be of African-American descent. In order to test gender differences as stated in hypotheses 2, the researcher would need to distinguish between male and female participants. The gender question item was also at the end of the survey (n=60). Therefore, the researcher re-formatted the on-line survey and placed the demographic question items at the beginning of the survey.

A second exclusion of surveys occurred after the demographic section was re-formatted. When the data were screened again, survey respondents who were found to be outside of the 18-26 year age range and not of African American descent were removed from the data set (n=147).

Data from each survey were then entered into a database file and analysis was completed using the statistical package software IBM SPSS Statistics Version 19 ("SPSS Version 19," 2012). Upon completion, data were cleaned utilizing a visual inspection of the 351 cases. The researcher employed a random data check as a step in data entry accuracy. Frequencies were then run on all of the variables to check for coding accuracy, outliers and missing data. As stated in Heppner & Heppner (2004) missing data can reduce the credibility of the data set and may also raise questions about why certain items were not answered. There was not an observed pattern of missing data that would suggest a certain item caused the participant to exit the survey. There were relatively few cases which had larger amounts of missing data. The researcher decided to leave the data as is, with the missing values in place. Therefore, all 351 cases were included in the final data analysis with missing data coded as such.

Prior to data analysis, assumption of normality for each variable was checked and the scales were assessed for internal consistency. Perceived benefits, perceived severity, perceived susceptibility, self-efficacy, and traditional masculinity ideology displayed some skewness and/or kurtosis as indicated by values greater than 1. The variables of intention to vaccinate and perceived barriers were close to normal distribution with skewness and/or kurtosis values between -1 and $+1$. Inspection of the normal probability plots on all variables was observed. Each variable displayed a relatively straight line which suggests normal distributions. In research, particularly the social sciences, scores on the dependent variable are not always normally distributed (Pallant, 2010). Pallant states that with a large sample size (e.g. 30+); the violation of normality should not cause any major problem.

Summary

This chapter explained the study methodology, including study design, data collection, participants, instrumentation, data analysis and screening procedures. Chapters four and five will present study results and discussion, respectively. There is a gap in the literature about African American young adults (ages 18-26), regarding their knowledge of HPV and the HPV vaccine. This research study is intended to contribute to the growing body of work that provides an empirical basis of support for appropriate clinical and educational interventions regarding HPV and HPV vaccine acceptance with African American young adults.

CHAPTER FOUR: RESULTS

The purpose of this study was to examine the contributing factors of HPV vaccine acceptance among African American young adults. The statement of the problem was discussed in Chapter one. An extensive review of the literature pertaining to knowledge of the Human Papillomavirus, HPV vaccine, health behaviors, the Health Belief Model, as well as, masculinity ideology was provided in Chapter two. The methods and procedures used to conduct the study were outlined in Chapter three. The following chapter will summarize the results of the participant demographics and sexual risk factors, as well as explain the statistical analyses performed for each of the four hypotheses.

Participant Description of Demographics and Sexual Risk Factors

Descriptive data about the demographic and sexual risk factors of participants are presented in Table 1, 2 and 3 respectively. Table 1 describes the overall sociodemographic information from the entire sample of men and women. The sample population consisted of 351 students attending one of ten public colleges and universities in Missouri. The majority of the respondents were female 80.6% (n=283), with men representing 19.4 % (n=68) of the sample. The mean age was 20.78 (SD=2.10) and all participants were between 18 and 26 years old, the maximum age at which young men and women can receive the HPV vaccine. The year in college was equally represented from freshman (20.6%, N=14 men and 20.5%, n=58 women) through senior year (26.5%, n=18 men and 23.0%, n=85 women). However, graduate students were least represented in the sample (8.8%, n=6 men and 6.4%, n=18 women). The large number of participants reported being in a committed relationship (37.9%, n=133), with 77(21.9%) reported as

currently single and dating, 13 (3.7%) being married. Overall, a large percentage of students had heard of HPV prior to the survey (85%, n=58 men and 96.1%, n=272 women). There are several avenues for individuals to receive information regarding HPV. Interestingly, men and women in this study receive information from the same top three sources. The men receive information regarding HPV from their healthcare provider (44.1%), the television or radio (42.6%) or from a class (42.6%). Similar to men, women hear about HPV from their healthcare provider (76.3%), television or radio (51.9%) or from a class (44.8%).

Table 2 describes the sociodemographic characteristics and sexual risk factors of the freshman/sophomore and junior/senior educational level students. In regards to relationship status, the data was very similar across the two divisions. Many of the participants were single and actively dating (21% freshman/sophomore and 21% junior/senior) or single and in a committed relationship (38% freshman/sophomore and 40% junior/senior). Several students reported that they are not currently dating (39% freshman/sophomore and 35% junior/senior). The difference between upper and lower division students having heard of HPV prior to the survey was insignificant (95% freshman/sophomore and 92% junior/senior). When looking at sources from which the students get information regarding HPV, the top three sources were very similar to male and female distribution; healthcare provider (76% freshman/sophomore and 67% junior/senior), class (54% freshman/sophomore and 38% junior/senior) and television or radio (44% freshman/sophomore and 53% junior/senior).

Table 3 details the overall sexual risk factors of both the men and women in the study. Forty-five percent (n=45) young men and 64% (n= 182) of the young adults in this

study report having had sexual intercourse on or before the age of 18. One hundred and fifty six (44.4%) reported that they had no current sexual partner and 22.5 % (n=79) stated that they have never had sexual intercourse. Of those who were in a relationship at the time of the survey, 12.3 % (n = 43) reported that they do not use condoms to prevent sexually transmitted diseases. Participants who were sexually active were asked the question, “Did you use a condom the last time you had sex?” Of the 247 participants, 46 % (n=124) said they did not use condoms during their last sexual encounter. When asked “Which of the following puts you at risk for HPV?” the participants believed that having many sex partners (83%) and having frequent sex (45%) were the most risky behaviors for contracting HPV.

Table 1.

Sociodemographic Characteristics of African American Men and Women (N=351)

Characteristics	Men				Women			
	Mean	SD	N	%	Mean	SD	N	%
Age (years)	20.71	1.72	68	19.4	20.80	2.18	283	80.6
Class rank								
1 st year			14	20.6			58	20.5
2 nd year			9	13.2			70	24.7
3 rd year			21	30.9			72	25.4
4 th year			18	26.5			65	22.9
≥5 th year			6	8.8			18	6.4
Relationship Status								
Single and dating			18	26.5			59	20.8
Single, but in a committed relationship			21	30.9			112	39.6
Not currently dating			28	41.2			100	35.3
Married			1	1.5			12	4.2
Sexual orientation								
Sex with women			57	83.8			10	3.5
Sex with men			5	7.4			260	91.9
Sex with men and women			6	8.8			13	4.6

Heard of HPV				
Yes	58	85.0	272	96.0
No	10	15.0	11	4.0
Where heard of HPV				
Healthcare provider	30	44.1	216	76.3
Friend	18	26.4	83	29.3
Partner	4	5.8	13	4.5
Class	29	42.6	127	44.8
Television or radio	29	42.6	147	51.9
Family	11	16.1	72	25.4
Internet	22	32.3	89	31.4
Magazine	10	14.7	73	25.7

Table 2.

Sociodemographic Characteristics and Sexual Risk Factors of Freshman/Sophomore and Junior/Senior African American College Students (N=327)

Characteristics	Freshman/Sophomore		Junior/Senior	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Freshman/Sophomore	151	46.2		
Junior/Senior			176	53.8
Relationship Status				
Single and dating	32	21.2	37	21.0
Single, but in a committed relationship	58	38.4	70	39.8
Not currently dating	59	39.1	61	34.7
Married	2	1.3	8	4.5
Heard of HPV				
Yes	144	95.4	162	92.0
No	7	4.6	14	8.0
Where heard of HPV				
Healthcare provider	114	75.5	119	67.6
Friend	41	27.2	51	29.0
Partner	6	4.0	10	5.7
Class	82	54.3	67	38.1
Television or radio	67	44.4	93	52.8
Family	44	29.1	35	19.9
Internet	48	31.8	56	31.8
Magazine	41	27.2	35	19.9

Sexually Active					
Yes	112	74.0	138	78.0	
No	39	26.0	38	22.0	
Current Partner Use of Condom to Prevent STDs					
Always	40	26.0	43	24.0	
Not always	54	36.0	59	34.0	
No current partner	57	38.0	74	42.0	
Know What a Pap Test Is					
Yes					
Correct response	108	71.5	134	76.1	
Yes,					
Incorrect response	43	28.5	42	23.9	
You or any sexual partner Ever had abnormal Pap test					
Yes	24	15.9	37	60.7	
No	61	40.4	67	38.1	
Don't know	34	22.5	43	24.4	
Specific risk factor for HPV					
Having sex at an early age*	59	39.3	64	36.4	
Having frequent sex	72	48.0	73	41.5	
Having many sex partners*	130	86.7	141	80.1	
Using birth control pills	6	4.0	9	5.1	
Alcohol use	18	12.0	17	9.7	
Being under the age of 25*	35	23.3	50	28.4	
Drug use	26	17.3	21	11.9	

Note. Graduate students are not included in the totals represented in the table (n=24).

*Generally accepted as risk factors for HPV.

Table 3.

Sexual Risk Factors of African American Men and Women (N=351)

Risk Factor	Men (n=68)		Women (n=283)	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Sexually Active				
Yes	56	82.4	216	76.3
No	12	17.6	67	23.7
Age at First Intercourse				
12	3	5.3	5	2.3
13	3	5.3	10	4.6
14	5	3.5	19	8.8
15	5	8.9	29	13.4

16	10	17.8	38	17.6
17	10	17.8	36	16.7
18	9	16.1	45	20.8
19	6	10.7	21	9.7
20	2	3.5	7	3.2
21	3	5.3	3	1.4
22	0	0.0	2	0.9
23	0	0.0	1	0.5
Never had sex	12	21.4	67	31.0
Current Partner Use of Condom to Prevent STDs				
Always	16	39.0	69	41.0
Not always	25	61.0	100	59.0
No current partner	27	40.0	114	40.0
Know What a Pap Test Is				
Yes,				
Correct response	31	45.6	230	81.3
Yes,				
Incorrect response	37	54.4	53	18.7
You or any sexual partner Ever had abnormal Pap test				
Yes	5	7.4	65	23.0
No	19	27.9	119	42.0
Don't know	44	64.7	99	35.0
Specific risk factor for HPV				
Having sex at an early age*	19	27.9	117	41.3
Having frequent sex	30	44.1	127	44.9
Having many sex partners*	54	79.4	236	83.4
Using birth control pills	1	1.5	18	6.4
Alcohol use	10	14.7	30	10.6
Being under the age of 25*	12	17.6	83	29.3
Drug use	14	20.6	37	13.1

Note. N=represents those who responded 'yes' to these are risk factors.

*Generally accepted as risk factors for HPV.

Research Questions and Hypothesis

Research Question 1

Is there a relationship between knowledge, contributing factors of the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults?

Hypothesis 1

Greater knowledge about HPV, higher perceived susceptibility to HPV, higher perceived seriousness of HPV, greater perceived benefits of the HPV vaccine, and greater self-efficacy will increase the likelihood of being willing to get the HPV vaccine, while greater perceived barriers will reduce HPV vaccine acceptance among African American young adults.

A standard multiple regression analysis was used to assess HPV knowledge and the constructs of the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) to predict one's intention to accept the HPV vaccination. Regression results indicated that the overall model significantly predicts African American young adults intention to receive the HPV vaccine, $R^2=.404$, $F_{6,316}=35.7$, $p<.05$. Meaning, there is only a 5 in a 100 (or less) chance that there is not a relationship between the variables included in the model. The R^2 value of 40% indicates that just under half of the variability in African American young adult's intention to receive the HPV vaccine is predicted by variables included in the model. Of the six variables included in the model, three (perceived susceptibility, perceived benefits and perceived barriers) make statistically significant unique contributions to the equation.

A summary of the regression coefficients is presented in Table 4. It was found that perceived susceptibility ($B = .16$, $p < .05$), perceived benefits ($B = .73$, $p < .05$) and perceived barriers ($B = -.09$, $p < .05$) significantly contributed to one's intention to accept the HPV vaccination. In other words, for each additional point of perceived susceptibility and perceived benefits, intention to accept the vaccine was increased by 0.16 and 0.73 points, respectively. For each additional point of perceived barriers, the intention to accept the vaccine was decreased by 0.09.

Table 4.

Regression Analysis Summary for Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Self-efficacy, and Knowledge Variables Predicting HPV Vaccine Intentions

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Perceived susceptibility	.160	.058	.122	2.75	.006*
Perceived severity	.046	.047	-.259	-1.89	.066
Perceived benefits	.726	.066	.541	11.006	.000*
Perceived barriers	-.089	.029	-.142	-3.088	.002*
Self-efficacy	-.007	.076	-.005	-.095	.924
Knowledge	.032	.020	.074	1.602	.110

Note. $R^2 = .40$ ($*p < .05$). Perceived severity, self-efficacy and knowledge were not significant predictors.

Research Question 2

Is there a gender difference related to knowledge, contributing factors within the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults?

Hypothesis 2

African American young women will have more knowledge about HPV, perceive their susceptibility to HPV as higher, perceive the seriousness of HPV to be higher, perceive greater benefits of the HPV vaccine, have greater self-efficacy, perceive fewer barriers to vaccination, and be more likely to accept HPV vaccination, compared to African American young men.

An independent samples t-test was conducted to see if women expressed greater knowledge regarding HPV when compared to men. There was a statistically significant difference in scores for males ($M = 10.13$, $SD = 3.87$) and females ($M = 11.81$, $SD = 3.08$), $t(341) = 3.83$, $p = .001$, one-tailed). This indicates that females have slightly more knowledge regarding HPV than their male counterparts. See Table 5 for HPV knowledge items and percent responding correctly by gender.

Due to the unequal group sample sizes, a Mann-Whitney U Test was also conducted. The Mann-Whitney U Test revealed a significant difference in knowledge regarding HPV. The results of the Mann-Whitney test showed a significant difference in intention to accept the HPV vaccination among males ($Md = 11.00$, $n = 68$) and females ($Md = 12.00$, $n = 275$), $U = 6517.50$, $z = -3.894$, $p = .00$.

Table 5.

HPV Knowledge Responses of African American Men and Women

Items	Correct Answer	Men (n=68)		Women (n=275)	
		n	%	n	%

Most people with genital HPV have

no visible signs or symptoms.	True	57	83.8	249	90.5
HPV can cause herpes.	False	36	52.9	152	55.2
Genital warts are caused by HPV.	True	46	67.6	175	63.6
HPV can cause cervical cancer in women.	True	59	86.7	263	95.6
HPV can cause oral cancer in men.	True	41	60.2	192	69.8
HPV can cause anal (rear end) cancer in women.	True	50	73.5	20.0	72.7
If a woman's Pap smear is normal, she does not have HPV.	False	20	29.4	123	44.7
An abnormal Pap smear may indicate that a woman has HPV.	True	46	67.6	227	82.5
Genital warts are caused by the herpes virus.	False	28	41.1	88	32.0
Pap smears will almost always detect HPV.	True	24	35.2	95	34.5
There is a vaccine to prevent HPV Infection that is available for women.	True	26	38.2	230	83.6
Having one type of HPV means that you cannot acquire new types.	False	45	66.1	220	80.0
People can transmit HPV to their partner(s) even if they have no symptoms of HPV.	True	57	83.8	257	93.4
HPV can cause cancer of the penis or anus (rear end) in men.	True	52	76.4	214	77.8
HPV can cause oral cancer in women.	True	42	61.7	205	74.5
There is a vaccine to prevent HPV infection that is available for men.	True	9	13.2	78	28.3
Having multiple sexual partners increases a person's risk of getting HPV.	True	61	89.7	255	92.7

Note. HPV = Human Papillomavirus. HPV knowledge: Number (percent) answering correctly.

A multivariate analysis of variance (MANOVA) was used to assess the constructs of the Health Belief Model. The MANOVA was employed to test if women have higher perceived susceptibility to HPV, higher perceived seriousness of HPV, higher perceived benefits of HPV vaccine, greater self-efficacy to get the vaccine, and fewer perceived barriers to vaccination when compared to men.

There was a statistically significant difference between males and females on the combined dependent variables, $F(5, 322) = 3.67$, $p = .003$; Wilks' Lambda = .95; partial eta squared = .05. When the results for the dependent variables were considered separately, the only difference to reach statistical significance, using an alpha level of .05, was self-efficacy, $F(1, 326) = 11.36$, $p = .001$; partial eta squared = .03. An inspection of the mean scores indicated that females reported slightly higher levels of self-efficacy ($M = 5.38$, $SD = .86$) when compared to males ($M = 4.98$, $SD = 1.07$). See Table 6 for HBM items and mean/SD responding correctly by gender.

Due to the unequal group sample sizes, multiple Mann-Whitney tests were used to test the mean rank differences between men and women on the Health Belief Model variables of perceived susceptibility to HPV, higher perceived seriousness of HPV, higher perceived benefits of HPV vaccine, greater self-efficacy to get the vaccine, and fewer perceived barriers to vaccination. The results of the Mann-Whitney tests showed a significant difference in self-efficacy among women ($Md = 6.00$, $n = 264$) and men ($Md = 5.00$, $n = 65$), $U = 6163.00$, $z = -3.745$, $p = .000$.

Table 6.

Means and Standard Deviations for Perceived Susceptibility, Perceived Seriousness, Perceived Benefits, Perceived Barriers, and Self-Efficacy as a Function of Gender

Group	n	Perceived <u>susceptibility</u>		Perceived <u>seriousness</u>		Perceived <u>benefits</u>		Perceived <u>barriers</u>		Self-efficacy	
		M	SD	M	SD	M	SD	M	SD	M	SD
Women	263	1.98	1.10	3.20	1.35	4.60	1.02	4.07	2.24	5.38	.86
Men	65	1.71	.95	3.21	1.36	4.40	1.15	4.63	2.17	4.95	1.07

An independent samples t-test was conducted to determine if women expressed greater intention to accept the HPV vaccination when compared to men. There was a statistically significant difference in scores for males (M = 3.80, SD = 1.40) and females (M = 4.37, SD = 1.39), $t(321) = 2.88$, $p = .002$, one-tailed). This indicates that females have greater intention to accept the HPV vaccination than their male counterparts.

Due to the unequal group sample sizes, a Mann-Whitney U Test was also conducted. The Mann-Whitney U Test revealed a significant difference in intention to accept the HPV vaccination. The results of the Mann-Whitney test show a significant difference in intention to accept the HPV vaccination among males (Md = 3.80, n = 63) and females (Md = 4.60, n = 260), $U = 6120.50$, $z = -3.12$, $p = .002$.

Research Question 3

Is there is an educational level(freshman/sophomore and junior/senior) difference related to knowledge, contributing factors of the Health Belief Model (perceived susceptibility to HPV, perceived seriousness of HPV, perceived benefits of vaccination, perceived barriers to vaccination, and self-efficacy) and one’s acceptance of the HPV vaccine among African American young adults?

Hypothesis 3

Is there an educational level (freshman/sophomore and junior/senior) difference related to knowledge, contributing factors within the Health Belief Model (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and one's acceptance of the HPV vaccine among African American young adults.

An independent samples t-test was conducted to see if there was a difference in knowledge regarding HPV between lower and upper division college students. There was not a statistically significant difference in scores for lower division students (M = 11.59, SD = 3.15) and upper division students (M = 11.30, SD = 3.52), $t(317) = .751$, $p = .05$, two-tailed). This indicates that there was no significant difference in knowledge regarding HPV among freshman/sophomore and junior/senior grade levels. See Table 7 for HPV knowledge items and percent responding correctly by gender.

Table 7.

HPV Knowledge Responses of Freshman/Sophomore and Junior/Senior African American College Students

Items	Correct Answer	Freshman/Sophomore (n=151)		Junior/Senior (n=176)	
		n	%	n	%
Most people with genital HPV have no visible signs or symptoms.	True	130	88.4	152	88.4
HPV can cause herpes.	False	66	44.9	78	45.3
Genital warts are caused by HPV.	True	92	62.6	109	63.4
HPV can cause cervical cancer in women.	True	137	93.2	161	93.6

HPV can cause oral cancer in men.	True	109	74.1	109	63.4
HPV can cause anal (rear end) cancer in women.	True	111	75.5	121	70.3
If a woman's Pap smear is normal, she does not have HPV.	False	94	63.9	92	53.5
An abnormal Pap smear may indicate that a woman has HPV.	True	115	78.2	137	79.7
Genital warts are caused by the herpes virus.	False	93	63.3	119	69.2
Pap smears will almost always detect HPV.	True	56	38.1	70	40.7
There is a vaccine to prevent HPV infection that is available for women.	True	114	75.5	125	72.7
Having one type of HPV means that you cannot acquire new types.	False	32	21.8	44	25.6
People can transmit HPV to their partner(s) even if they have no symptoms of HPV.	True	133	90.5	158	91.9
HPV can cause cancer of the penis or anus (rear end) in men.	True	113	76.9	113	65.7
HPV can cause oral cancer in women.	True	108	73.5	121	70.3
There is a vaccine to prevent HPV infection that is available for men.	True	48	32.6	35	20.3
Having multiple sexual partners increases a person's risk of getting HPV.	True	134	91.2	159	92.4

Note. HPV = Human Papillomavirus. HPV knowledge: Number (percent) answering correctly.

A multivariate analysis of variance (MANOVA) was used to assess the constructs of the Health Belief Model. The MANOVA was employed to test if there is a difference

in perceived susceptibility to HPV, perceived seriousness of HPV, perceived benefits of HPV vaccine, self-efficacy to get the vaccine, and fewer perceived barriers to vaccination among freshman/sophomore and junior/senior educational level college students. There was no significant difference between freshman/sophomore and junior/senior education level college students on the combined dependent variables, $F(5, 298) = 1.09$, $p = .362$; Wilks' Lambda = .98; partial eta squared = .01.

An independent samples t-test was conducted to see if there was a difference in intention to receive the HPV vaccination among freshman/sophomore and junior/senior education level college students. There was a significant difference in scores for lower division students ($M = 4.47$, $SD = 1.31$) and upper division students ($M = 4.03$, $SD = 1.45$), $t(297) = 2.78$, $p = .05$, two-tailed). This indicates that there was a significant difference in intention to receive the HPV vaccination among freshman/sophomore and junior/senior education level college students. This suggests that freshman and sophomores have greater intention to receive the HPV vaccination than junior and senior education level college students.

Research Question 4

Is there is a relationship between traditional masculinity ideology and intention to receive the HPV vaccine?

Hypothesis 4

African American young adults with higher traditional masculinity ideology will be less likely to accept the HPV vaccine.

The relationship between total traditional masculinity ideology (as measured by the MRNI-R) and intention to receive the HPV vaccine was investigated using Pearson

product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a small negative correlation between the two variables, $r(319) = -.125, p = <.05$. This correlation supported the hypotheses that young African American adults with higher traditional masculinity ideology were less likely to accept the HPV vaccine.

The purpose of this study was to gain a better understanding of what African American young adults know about the Human Papillomavirus, the HPV vaccine and contributing factors of HPV vaccine acceptance. Constructs of the Health Belief Model were used as the theoretical framework which examined perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy in relation to HPV vaccine intention. The concept of masculinity ideology in relation to HPV vaccine acceptance was also examined. The Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey and the Male Role Norms Inventory-Revised were the instruments used to measure the concepts of interest. The information garnered through the study questionnaires provided rich data on what African American young adults know and believe regarding the HPV and HPV vaccination.

CHAPTER FIVE: DISCUSSION

This chapter will discuss the study findings presented in Chapter IV. Additionally, limitations of the study will be reviewed and implications for social work practice, policy and future research will be presented.

The current study is one of the first to examine HPV and HPV vaccination knowledge and awareness among college students since the FDA approval of Gardasil® for males aged 9 through 26 years old for the prevention of genital warts. African American college students have been included in prior studies regarding knowledge and awareness of HPV and the HPV vaccine. However, the inclusion rates have been minuscule in comparison to White respondents (Daley et al., 2010; Dillard & Spear, 2010; Gerend & Barley, 2009; Licht et al, 2010; (Sandfort & Pleasant, 2010)). This study is one of a few with a large sample of African American respondents. Furthermore, men have not been the primary focus of HPV related research until very recently. This study is one of a few to include men in the sample, particularly African American men. Geographically, Missouri residents have not been included in HPV-related study recruitment efforts. To the authors' awareness, only one study examining HPV and HPV vaccination has been conducted in the state of Missouri. This study assessed the intent and concerns of HPV vaccination among African-American parents and guardians of girls ages 9 to 17 (Sanders Thompson, Arnold, & Notaro, 2012). Interestingly, the influence of physician recommendation was found to be a recurring theme on parent's intention to obtain HPV vaccination for their daughters. Although physician recommendation was not specifically examined in the current study, most college students noted that they received most of their HPV information from a physician.

Overall, most of the studies in the literature review found that there is generally a low awareness of HPV and HPV vaccine among college students. HPV awareness begins to increase with studies conducted a few years after the approval and marketing efforts of the HPV vaccination (Caron et al., 2008; Gerend & Barley, 2009). The current research study is similar to this upward trend in HPV awareness with college students, including African American college students ((Bynum, Brandt, Friedman, Annang, & Tanner, 2011; Gelman, Nikolajski, Schwarz, & Borrero, 2011; Gerend & Shepherd, 2011). However, increased awareness of HPV does not always equate to an increase in HPV and HPV vaccination knowledge.

HPV research conducted prior to HPV vaccination approval found that overall HPV knowledge to be low among college students (Vail-smith & Durham, 1992; Yacobi et al., 1999). More recent studies found that young adults in general are becoming more aware of HPV and the HPV vaccine, however, their understanding and comprehension of key issues, such as transmission, remains low (Dillard et al., 2010; Gerend & Magloire, 2008; Licht et al., 2009; Sandfort & Pleasant, 2009). The majority of young adults in the current study stated that they had heard about HPV. Yet, the mean total knowledge score was only 11.48(SD=3.29) out of 17 possible points. There have been studies that suggested greater knowledge of HPV is indicative of greater HPV vaccine acceptance (Jones & Cook, 2008; Woodhall et al., 2007). Studies report an increase in overall HPV knowledge level of college populations (Bendik, Mayo, & Parker, 2011; Dillard & Spear, 2010). Yet, recent studies conducted with African American young adults continue to show lower levels of HPV and HPV vaccination knowledge among African American young adults' when compared to White populations (Bynum et al., 2011; Ford, 2011;

Gelman et al., 2011). The results of the current study indicate that women expressed more knowledge regarding HPV and HPV vaccination, and greater intention to accept the HPV vaccination when compared to men. However, intention and acceptance do not always translate over to actual HPV vaccination uptake. A recent study found that although 80% of non-Hispanic Black women between the ages of 18-24 years were aware of HPV, only 8% of actually received the HPV vaccine (Ford, 2011). In a study examining the actual use of the HPV vaccine with college students, African American women were less likely to be vaccinated when compared to White women (Licht et al., 2010). Data reporting HPV vaccine uptake for young men between the ages of 18-26, in the United States is lacking. However, there has been one published report on adolescent male HPV vaccine uptake reported one year after the FDA approved the vaccine for males. As of 2010, only 2% of adolescent males have received at least one dose of the HPV vaccine (Reiter, McRee, Kadis, & Brewer, 2011).

Since its approval, Gardasil® has been heavily promoted in the media. It is possible that young adults in this sample have become familiar with the term “HPV” through the “one less” commercials on television or seeing an HPV vaccine ad in a magazine. However, the advertisements do not fully describe or discuss the sexual transmission of HPV, HPV-related cancers (besides cervical cancer), the HPV relationship with genital warts, or the male factor with HPV. This discrepancy may account for a slight increase in awareness of HPV, yet very little knowledge regarding the details of HPV and the HPV vaccine; such as the transient nature of HPV between men and women. Additionally, most young adults in this study stated that they received HPV information from their healthcare provider. This was a disconcerting finding considering

the low knowledge scores of participants. The origin of this disconnect may be due to miscommunication or low health literacy and comprehension of HPV information during physician or healthcare visits with this population. Further discussion of this relationship is beyond the scope of this study.

One purpose of this study was to explore the constructs of the Health Belief Model and how they may contribute to one's intention to receive the HPV vaccination. It was hypothesized that higher perceived susceptibility to HPV, higher perceived seriousness of HPV, greater perceived benefits of the HPV vaccine, and greater self-efficacy would result in an increased likelihood of intention to get the HPV vaccine. When the HBM variables were included in the model, perceived susceptibility, perceived benefits and perceived barriers were found to be unique significant predictors of intention to get the HPV vaccination.

HPV intention to vaccinate was uniquely predicted by the health belief of perceived susceptibility to HPV infection. As stated in the Health Belief Model, if African American young adults believe that they are more susceptible or at risk of contracting the HPV infection, then they are more likely to intend to protect themselves against transmission with the HPV vaccine. This finding indicates that sexual health education programs and HPV vaccine promotion efforts should focus on those risky behaviors that impact the self in order to increase HPV vaccination rates. In order to feel more at risk, an individual would have to know and understand what those risky sexual behaviors include and take steps to avoid those behaviors. In this study, 54% (n=148) of those who were sexually active did not use a condom the last time they had sex. Additionally, 60% (n=125) of the participants stated that they don't always use a condom

to prevent STDs when having sexual intercourse with their current partner. There is an apparent disconnect between susceptibility and risky sexual behaviors seen among the young adults in this study.

Perceived benefits of HPV vaccine were also a unique predictor of intention to receive the HPV vaccine. In an effort for one to obtain the HPV vaccination, an African American young adult would have to believe that the benefits of getting the HPV vaccination outweigh the risks. Healthcare providers and social work practitioners should not only emphasize the benefits of HPV vaccination and positive sexual health outcomes, but also the relationship of the negative HPV-related outcomes. A thorough discussion about the relationship between HPV and HPV-related cancers needs to occur. The HPV discussion, when it occurs, is typically in relation to sex and sexual behaviors. In American society, the topic of sex is uncomfortable and often occurs only once during puberty as “the talk”. These “talks” are fraught with embarrassment and usually the details are not discussed. As Americans mature into young adults, they may feel hindered to discuss sexual health for a variety of reasons; taboo, shame, religion, or cultural beliefs. Healthcare providers and social workers must continue the open dialogue regarding sexual health. Today we know that sexual behaviors can have negative outcomes far beyond an STD. Therefore, it is imperative that discussion about HPV and the HPV vaccination with African American young adults include the preventative benefits, such as; reducing the risk of cervical, oral, anal, penile, head and neck cancers.

As observed in previous studies, perceived barriers among African American young adults were found to be a significant factor related to one’s intention to receive the HPV vaccine (Brewer & Fazekas, 2007; Gerend et al., 2009; Zimet, 2006). An individual

may feel susceptible to HPV and understand the benefit of the HPV vaccine. However, if the individual perceives these barriers to be great, the chances of that individual getting the HPV vaccine are decreased substantially.

Similar to several studies (Chou, Krill, Horton, Barat, & Trimble, 2011; Gerend et al., 2009; Zimet, Mays, Winston, Kee, Dickes, & Su, 2010), concerns voiced by African American young adults that insurance will not cover the cost of the HPV vaccine (72%) and that they would have to pay a lot for the vaccine (67%) were found to be the two greatest perceived barriers in accepting the HPV vaccination. As found in Gerend's study (2009), the potential hassle involved in receiving the HPV vaccine was also found to be a barrier with this population; a lot of effort to get the HPV vaccination (45%) and if it takes a lot of time to get the HPV vaccination (39%). Perceived and tangible barriers, such as these, may hinder a young adult from accepting the HPV vaccination. However, this is an area where social work can intervene either in the clinic or community setting, to work with young adults in finding the appropriate resources needed to alleviate these barriers.

Safety was also found to be a barrier for HPV vaccination acceptance. Of the participants, 64% (n=226) worried that the HPV vaccine is not safe. Furthermore, 41% (n=144) feared that they can get HPV simply from getting the HPV vaccine. The HPV vaccines Gardasil® and Cervarix® are noninfectious, recombinant vaccines; they stimulate an immune response but cannot cause HPV because they are made with proteins that contain only part of the virus (Wheeler, 2007). Information such as this, which should come from one's health care provider or social work practitioner, may help an African American young adult decide to receive the HPV vaccination.

Only 5% (n=17) of the African American young adults in this study stated that they did not perceive that a barrier would prevent them from accepting the HPV vaccine. It takes just one perceived barrier to influence one's decision to get the HPV vaccine. In this study, only 4% (n=3) of the men and 5% (n=14) of the women reported having zero barriers that would prevent them from accepting the HPV vaccine. The majority of the participants perceived anywhere from one to nine barriers which may influence their decision not to get the HPV vaccine.

The second hypothesis in this study examined gender differences among African American young adults and factors that may contribute to HPV vaccination intention. This hypothesis stated that women will have more knowledge about HPV, perceive their susceptibility to HPV as higher, perceive the seriousness of HPV as higher, perceived greater benefits of the HPV vaccine, have higher self-efficacy, perceived fewer barriers to vaccination, and be more likely to accept the HPV vaccination when compared to men.

There was a statistically significant difference in HPV knowledge scores between young men and women. This finding is consistent with the literature (Allen et al., 2009; Bynum et al., 2011). On the knowledge scale, men received a mean score of 10.13 (SD=3.87) where women scored an average of 11.81 (SD=3.05). Although the overall knowledge scores are low, as shown in first hypothesis, it is not surprising that men scored lower than women regarding HPV and the HPV vaccine. First, women are seen by healthcare professionals on an annual basis for 'well woman' visits. An annual exam is when a woman sees a physician or nurse practitioner for an annual check-up which may include a pap smear. When asked "Do you know what a Pap test is?" 261 (74%) of the African American young adults in this study answered "yes". However, when asked

“What is being tested for in a Pap test?” 34% (n=90) gave an incorrect response. Still, more women than men knew what the Pap test is for (81% vs. 46% respectively).

Women have more opportunities to gain awareness and knowledge of HPV through their annual exam and this may explain part of the gap in knowledge. Second, since its approval, Gardasil has been promoted in the media targeting young women and girls. This is another opportunity for young women to have a heightened awareness of HPV and HPV vaccine. Although there have been a few magazine ads for the HPV vaccine that feature young boys, there has not been a mass media campaign featuring young boys and how HPV affects them. Third, HPV vaccines have been promoted to help prevent the development of cervical cancer in women. This type of communication may lead to men being misinformed, believing HPV to be a “woman’s health issue”.

Although the majority of African American young adults in this study knew that HPV could cause cervical cancer in women, knowledge about anal and oral HPV-related cancers was low. The National Cancer Institute predicted that in 2012 6,230 people would be diagnosed with anal cancer in the United States, with 80%-90% of anal cancers being caused by HPV (NCI, 2012). A recent study reported that anal sex is on the rise among young adults, particularly those who have unprotected vaginal sex (Lescano, Houck, Brown, Doherty, DiClemente, Fernandez, Pugatch, Schlenger, & Silver, 2009). In this study, when asked if “HPV can cause cancer of the penis or anus (rear end) in men”, 22% (n=61) of the females and 24% (n=16) of the men did not know this was a true statement. When asked if “HPV can cause anal (rear end) cancer in women”, 27% (n=75) of the women and 26% (n=18) of the men did not know this was a true statement.

According to a new study, two-thirds of Americans aged 15-24 have engaged in oral sex (Copen, Chandra, & Martinez, 2012). It is estimated that HPV type 16 is responsible for up to 90% to 95% of HPV-positive oropharyngeal tumors (Marklund & Hammarstedt, 2011) . When respondents in this study were asked if “HPV can cause oral cancer in women” 25% (n=70) of the women and 38% (n=26) of the men did not know this was a true statement. When asked if HPV can cause oral cancer in men, 31% (n=85) and 40% (n=27) of the women and men respectively did not know this was a true statement. In a recent study conducted by the American College Health Association (2010) only 5% of students who had engaged in oral sex over the past 30 days, had used a condom mostly or always during oral sex. As seen in prior research (Stone, 2006), young adults in this study did not know that STDs, such as HPV, can be transmitted through oral and anal sex. However, more African American young women than men in this study knew the transmission issues of HPV-related oral cancer.

The first HPV vaccine, Gardasil®, has been promoted in the media since its FDA approval for young women in 2006. However, among the respondents in this study, 16% (n=45) of the women and 62% (n=42) of the men did not know there was an HPV vaccine for women. Gardasil® for young men gained FDA approval in 2009. Yet, 72% (n = 197) of the women and 87 % (n=59) of the men in this study did not know there was an HPV vaccine for young men. Although more young women than men knew about the available HPV vaccination for women, there remain a large number of young adults in this study who are unaware of this type of HPV protection for young men. Most college students are required to have a physical exam prior to the start of the school year.

Students in this study report getting their HPV information from physicians, yet the majority of students did not know about the availability of an HPV vaccine for men.

When gender differences were examined utilizing the constructs of the Health Belief Model, self-efficacy was found to be statistically significant. Young adult women in this study seem to have a stronger sense of self efficacy in their ability to receive the HPV vaccine when compared to men. There were no significant gender differences related to the HBM variables of perceived susceptibility, perceived seriousness, perceived benefits, and perceived barriers. However, as shown in the first hypothesis, perceived susceptibility, perceived benefits and perceived barriers were significant factors in one's intention to vaccinate. It appears as though, within the realm of culture, African American young men and women are congruent, except with self-efficacy, in their perceptions regarding these health beliefs and their intention to receive the HPV vaccine.

There was a statistically significant gender difference related to one's intention to receive the HPV vaccination. Consistent with prior research studies, young women in this study were more likely to intend to receive the HPV vaccination than young men (Jones & Cook, 2008). One explanation for this difference could be the fact that the HPV vaccine was approved for young women a few years prior to the approval for young men. Second, there has been a great deal of media regarding women, HPV, HPV vaccination and cervical cancer.

To date, studies examining HPV and HPV vaccination among college students only looked at the aggregate of students as compared with education level. The sociodemographic variable of education level may have a contributing factor in one's acceptance of the HPV vaccination. The third hypothesis in this study looked at the

differences between freshman/sophomore and junior/senior educational level differences in HPV knowledge, Health Belief Model variables (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and self-efficacy) and acceptance of the HPV vaccination. Although the results indicate no significant differences between the groups on most items, there was a difference in one's intention to receive the HPV vaccination. Freshman/sophomore African American college students expressed greater intention to receive the HPV vaccination. This finding has important implications for health educators when developing sexual health education programs. This is a time when college students are first exposed to the freedoms of what the college environment offers, such as; access to alcohol, drugs and sexual experimentation. Educational interventions aimed at increasing HPV knowledge and HPV vaccination uptake would be most beneficial to incoming freshman/sophomore students.

Results from the fourth hypothesis indicate that African American young adults with higher traditional masculinity ideology will be less likely to intend to receive the HPV vaccine. The findings from this study coincided with prior research with African American male participants examining masculinity ideology and health behaviors (Courtenay, 1998; Hammond, Matthews, Mohottige, Agyemang, & Corbie-Smith, 2010; Mahalik, Lagan, & Morrison, 2006). In his 2008 study, Wade found that men who endorse traditional masculinity are less likely to engage in health-promoting behaviors and have greater health risks than men who do not endorse traditional masculinity. As in Wade's study (2008), similar results were found in the current study of both men and women. Young African American adults in this study endorsed traditional masculinity ideology, yet they engaged in risky sexual health behaviors considered risky for

contracting an STD, such as; having sexual intercourse without using a condom one hundred percent of the time and having sex with multiple partners. With regard to Black sexuality, West (1993) stated that the lack of opportunity to acquire power in traditional patriarchal structures compels some Black men to adopt a “Black machismo identity that solicits primarily sexual encounters with women” (p.89) and reinforces the myth of Black male sexual prowess. These underlying cultural norms, beliefs and myths surrounding masculinity may continue to be exhibited in the college environment with African American young adults.

As Bowleg described in her study entitled *Love, Sex, and Masculinity* (2004), the lives of African American men and women are inextricably linked historically and socioculturally. Culturally speaking, the traditional masculinity ideology that holds true for African American men may also hold true for African American women as well. Bowleg further states that African American men’s relationships and sexuality are not isolated from the poverty and racism that are hallmarks for many African American men. In the context of this study, African American men’s STD risk behavior (particularly having sex at an early age, having multiple sex partners and having unprotected sex) form a leading exposure for African American women’s HPV risk.

Wolfe (2003) described the role of hypermasculinity in African American males. He described how men tend to adopt a manipulative and exploitive attitude with African American women. Further stating how men try to “get over” which means to overcome a young African American woman’s sexual defenses, and of their “quest for sexual prowess” (p. 848). Furthermore, Wolfe stated that the elements of hypermasculine personality are a callous sexual attitude towards women, and a belief that violence is

manly. These attitudes and high risk sexual behaviors of young men have a great impact on young women. Doss & Hopkins, (1998) stated that male role norms are culturally constructed expectations, considered appropriate for men and that these norms are determined by both men and women in the culture. In relation to traditional masculinity ideology, African American men and women share in the cultural milieu of hypermasculinity. This dynamic may have an effect on the risky sexual health behaviors of African American young adults, as observed in this study.

The limited research on traditional masculinity with African Americans and health behaviors, such as HPV vaccination, suggests that traditional masculinity ideology supports those health-related attitudes that put men and women at risk for poor health. In relation to the current study, traditional masculinity ideology may be a contributing factor in an African American young adult's decision to accept the HPV vaccination. Results from this study found that there was a lower intention to vaccinate when scores on traditional masculinity ideology increased.

Implications for Policy, Practice and Future Research

Policy Implications. On March 23, 2010, the Affordable Care Act (ACA) was passed by Congress and signed into law by President Obama (HealthCare.gov, 2012). According to the ACA, young adults can now remain on their parents' insurance plan until the age of 26, which coincides with the current HPV vaccination age guideline. What happens to African American young adults who are over the age of 18 and do not have health insurance? The answer to this question varies by state and by the organization that provides the HPV vaccine. In Missouri, Planned Parenthood will provide the HPV vaccine for \$135 per injection (Planned Parenthood, 2012) and Walgreens will charge

\$215 for the first HPV vaccine shot and \$185.00 each for the 2nd and 3rd shots (Walgreens, 2013). An adult who does not have insurance or whose insurance may not cover the HPV vaccine may qualify for the Merck Vaccine Patient Assistance Program (MVPAP) ("MVPA," 2012). Gardasil® is part of this program which is funded by Merck & Co., Inc. Eligibility criteria include being over the age of 18, without health insurance or meeting the annual household income levels ("Gardasil HPV vaccine," 2007). For young adults enrolled in a college or university, the cost is usually not covered by the school's health insurance plans. When offered, the cost of each injection varies at each school, for example: \$155.00 per injection (University of Missouri-Columbia). Although the ACA is a great improvement in policy when it comes to preventative healthcare, particularly sexual health, there is still work to be done to make the vaccine financially accessible to all young adults. Findings from this study show that cost is a barrier to ones intention to receive the HPV vaccination. As client advocates, social workers can utilize information from this study to work to change policies regarding HPV vaccination, such as mandatory vaccination. Mandating HPV vaccination would lower cost and provide access to all young adults who would like to receive the HPV vaccination.

Practice Implications. Findings from this study indicate that knowledge regarding HPV and HPV vaccination is limited. Therefore, it is necessary to develop HPV related educational opportunities for African American college students, particularly those attending college or university in Missouri. Social workers in healthcare settings can utilize knowledge gained from this study to inform students of the prevalence, transmission and negative outcomes related to HPV. Although this study examined a specific population, it is imperative that all students receive the most current HPV and

HPV vaccination information. A general information session focused on HPV could be given by social workers during freshman orientation, followed by an information session specifically for African Americans at the minority student orientation. The information sessions could emphasize the findings from this study to include: 1) Increasing health literacy by insuring that the students understand the sexual health behaviors that put both men and women at risk for transmitting the HPV, 2) Informing students of the safety and efficacy of the HPV vaccine, 3) Discussing how masculinity ideology within the African American culture and the negative affect it may have on one's sexual health behavior, and 4) Directing students about where and how to receive financial assistance to pay the series of three HPV vaccinations.

College freshmen are often overwhelmed with information, while at the same time trying to adjust to the college environment. Social workers in public health settings could partner with colleges to implement several avenues of HPV information reinforcement such as; sexual health information brown bag seminars, monthly HPV newsletter through student e-mail or text messaging bullet point information. The reinforcement techniques could be applied to African American students throughout their tenure at college or university.

Community social workers can have a great impact on educating African American young adults throughout the State of Missouri. Community social work is deeply rooted in the history of social work. A community social worker in Missouri could partner with local health clinics to develop a program, with measurable outcomes, that is focused on HPV and HPV vaccination. To the researcher's knowledge, there has not been a community level intervention specifically aimed at HPV and HPV vaccination noted in

the literature or in the State of Missouri. Measurable outcomes of an HPV and HPV vaccination program may include 1) increased HPV awareness, knowledge and comprehension, 2) behavior change (increased condom use and annual well person visits), 3) decreased HPV incidence, and 4) increased HPV vaccination uptake. In addition to an initial community needs assessment, the knowledge garnered from this study regarding HPV and HPV vaccination awareness, knowledge, sexual behaviors could serve as the basis for program and survey development.

The next steps would be to identify the target audience within the African American community, which may include parents, young adults, community leaders, spiritual care leaders, physicians and programs that support the initiative (i.e., Planned Parenthood). Social workers could train peer educators who self-identify with the target audience to facilitate the program. The program could be presented at various locations within the community, such as; schools, community centers, libraries, and YMCA or YWCA. Social workers can develop educational materials that the community members could take with them, which may include; safer sex information (with condoms), HPV and HPV vaccination information, tips on how to discuss safer sex methods, HPV and HPV vaccination with your parent, children and partner, and how to access financial and informational resources in the community. A support group could be formed to include those who have experienced HPV, as well as, those who are concerned about their sexual health behaviors. Additionally, community social workers could establish relationships with media outlets that are geared specifically towards the African American community. African American specific media outlets may include African American radio stations (e.g., Magic 100.3 which is broadcast in several Missouri communities), newspapers

(e.g., Saint Louis American) or community events such as the “Sista Strut” which holds an annual race to bring breast cancer awareness to the African American community in Missouri.

Future Research. Social work researchers are in an opportune position to continue the study of HPV and HPV vaccination among African American young adults, as well as adolescents. First, a valid and reliable HPV and HPV vaccination intention instrument for use with young men and women is needed in this field of research. This study utilized a modified version of one of the first instruments developed to assess HPV knowledge and HPV vaccine acceptance.

This study did not specify whether a respondent had initiated or completed the HPV vaccination. In studies included in this literature review, only a few assessed HPV vaccination status and still fewer included African American young adults in their assessment. Future research in this area should include current HPV vaccination status in an effort to compare knowledge, sexual health behaviors and beliefs among African American young adults.

Future research should involve the general population of African American young adults. Participants in this study were all in attendance at a public college or university. College students are at an advantage in that they have a certain level of access to healthcare that the general population does not have. Furthermore, HPV knowledge, health beliefs and behaviors of the general population of African Americans in Missouri may look quite different from African American college and university students.

There is a dearth of literature focusing on sexual minority youth, particularly African American young adults, in relation to HPV and the HPV vaccine. Although most

of the early HPV research focused on men who have sex with men (MSM), to date, HPV and HPV vaccine related research with a specific focus on lesbian and bi-sexual African American young adults is virtually nonexistent. Sexual minority young adults may feel social stigma which may lead to avoidance of a physician visit. This, in turn, had a tremendous effect on their current sexual health status and opportunities to learn about issues such as HPV and the HPV vaccination. Bisexual and lesbian women, in particular, may have the misconception that they are not vulnerable to STD's including HPV. However, lesbian and bisexual women can transmit HPV through genital skin-on-skin contact.

Additionally, in African American culture, there is a well-known slang described as, "being on the down-low". This refers to a subset of African American men who discreetly have sex with other men while being in a sexual relationship with women. Typically men on the down-low do not consider themselves as homosexual or bisexual, which may speak to traditional masculinity ideology of African Americans. Yet, young African American men on the "down-low" are putting their significant other in jeopardy of contracting an STI, such as HPV. HPV research involving African American sexual minority young adults may lead to an understanding of the current state of awareness and knowledge which in turn can help to develop appropriate HPV vaccine acceptance interventions.

It was evident from this study that African American men and women are engaging in sexual activities at an early age, prior to entering college or university. It is imperative that research focus on African American adolescents and their parent or guardian in an effort to increase awareness and knowledge of HPV and HPV vaccination

opportunities for their children. Although parents and adolescents were not included in this study, early adolescence is a period in life where norms, values and beliefs are shaped. Having an impact on sexual health and behaviors at an early age, will lead to a more knowledgeable and informed young adult. Conducting educational interventions with parents and adolescents on HPV and HPV vaccination early will help young African American adults in college to make positive sexual health behavior decisions, especially regarding the decision to accept the HPV vaccination.

To the researcher's knowledge, this was the first study to include masculinity ideology in relation to HPV vaccination acceptance. Future research should continue to focus on the cultural aspects of African American young adults' masculinity ideology in an effort to capture their decision making regarding sexual health behaviors in the realm of interpersonal relationships. This study touched the tip of the iceberg in relation to masculinity ideology and African American young adults. Similar to masculinity ideology literature reviewed in this study, African American young adults report a negative relationship with masculinity ideology and the health behaviors, particularly HPV vaccination. In an effort to look beneath the surface, research could look deeper at the underlying elements of masculinity ideology within this culture, as well as between genders to examine how it impacts sexual health behaviors and HPV vaccination acceptance decision making of African American young adults.

The majority of studies to date have been assessments regarding knowledge and awareness of HPV and the HPV vaccine. Intervention studies with African Americans are needed to increase awareness of HPV, HPV knowledge around transmission and HPV vaccination. Evidence outlining best practices for successful interventions regarding HPV

awareness and knowledge may lead to a significant increase in HPV vaccination uptake among African Americans, particularly young adults.

Lastly, to the researcher's knowledge, there has yet to be a longitudinal intervention study conducted among African American young adults related to HPV and HPV knowledge, behavior and vaccination uptake. This type of research design would contribute greatly to the current body of literature particularly with the relatively new FDA HPV vaccine approval and guidelines for young men, the HPV-related cancer developments and the Affordable Care Act.

Limitations

There are several limitations to consider with the current research study. First, the study involved recruitment of a non-probability sample of African American students from ten public colleges and universities in the state of Missouri. Those who participated in the study may have had a higher interest in HPV or the HPV vaccine than those who did not participate. Second, the study employed a self-reporting survey methodology. Self-report is a required element for full disclosure on the sensitive nature of sexual health knowledge and behavior. However, self-report lends itself to recall bias and social desirability (Paulhus & Reid, 1991). Third, the population of interest is of African American college age men and women. Although the vaccine is approved for young adults between the ages of 18-26, the results cannot be generalized to all African American of this age or those who are not in the public college or university system.

Results cannot be generalized beyond the young men and women involved in this study. Masculinity ideology is a multidimensional concept; this study was limited in that it examined one aspect of traditional masculinity ideology and not the sub-parts or

nuances of the entire concept. Lastly, the instrument was modified from a survey which was limited in reliability and validity. Future HPV related research would benefit from an instrument that was psychometrically sound.

Conclusions

One of the goals of Healthy People 2020 is to promote healthy sexual behaviors, strengthen community capacity, and increase access to quality services to prevent sexually transmitted diseases (STDs) and their complications ("Healthy People 2020," 2012; HealthyPeople.gov, 2012). One of the specific objectives of Healthy People 2020 is to reduce the proportion of females with Human Papillomavirus (HPV) infection. To accomplish this goal we must educate men and women on HPV and HPV vaccination resources and to address the identified barriers to getting vaccinated. The historical roots of the social work profession are grounded in a philosophy of prevention (McCave & Rishel, 2011, p. 226). Social workers often lead prevention and health promotion efforts in fields such as HIV/AIDS and gerontology. It is time that social workers and public health social work researchers take the lead in research, prevention and health promotion in the area of HPV and HPV vaccination.

Empirically, we know very little about the knowledge level and attitudes regarding HPV and HPV vaccination among African American young adults. However, given the strengths of this study, there are conclusions which can be extrapolated from the study results. This study found significant relationships between the perceived barriers, perceived benefits, perceived susceptibility, self-efficacy, educational level differences and knowledge in relation to HPV vaccine acceptance. Findings from this study suggest a high level of HPV awareness, yet a mid level range of knowledge

regarding modes of transmission of HPV, HPV related cancers and the HPV vaccination among African American young adults. This study highlights the fact that young adult African American college students living in Missouri exhibit high levels of risky sexual behaviors, such as having sex at a very early age and inconsistent use of condoms. With the possibility of greater access to care via the Affordable Care Act, the hope is that we will see an increase in minority populations receiving quality healthcare. It is essential that physicians, nurses and social workers not only have HPV and HPV vaccine related knowledge themselves, but also impart this knowledge to African American young adults. Missouri is one of the 29 states across the country that does not mandate comprehensive sex education to inform public school students about reproductive health, including sexually transmitted diseases. Furthermore, when school districts voluntarily include a sex education program, they are required to use an abstinence-only program. If a school chooses to provide additional education on sexuality it must “present abstinence from sexual activity as the preferred choice of behavior in relation to all sexual activity” (“Missouri statutes on sex education,” 2012). Armed with the findings of the current study, social workers can have an influence on policy related to the sexual education content that is permissible in public schools in Missouri.

These are important findings if the objective is to increase HPV awareness, knowledge, and ultimately HPV vaccine uptake. It is vital to include African American young adults in research pertaining to HPV and cancer prevention research. It is through this work that social workers can ensure that culturally specific barriers are identified, health disparities are addressed and appropriate interventions are implemented. HPV related research within the African American population is needed to further advance the

development of knowledge and inform social work practice, behavior therapy, counseling, clinical practice, community practice, as well as the evaluation of social policies.

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APPENDIX A

Dear Saint Louis Community College Student,

I would like to invite you to participate in my dissertation research study. The purpose of my study is to gain a better understanding of what we, young African American men and women, know about the Human Papillomavirus (HPV) and what factors may contribute to HPV vaccine acceptance.

I am conducting a survey of African American men and women currently attending Florissant Valley, Forest Park, Meramec, and Wildwood Community Colleges. Your input can help me understand what African American college students in the Saint Louis area know about the Human Papillomavirus, the HPV vaccine and how masculinity ideology plays a role in our health behaviors. Your participation will have a great effect on our future health, particularly regarding the availability of the HPV vaccine for all young African American men and women.

It will take you approximately 15 minutes to complete the survey. After completing the survey, you will have an opportunity to win one of several \$25 gift cards. Simply click on the link below to participate in this study:

Survey link

I would appreciate your response by *Deadline*
Your input is very important to me and will be kept strictly confidential.
If you have any questions please do not hesitate to contact me.

Sincerely,

Jennifer A. Sledge, PhD(c), MSW
University of Missouri
314.454.8573
jasm28@missouri.edu

If you experience technical difficulties accessing or submitting the survey please contact _____ at _____.

APPENDIX B

WAIVER OF DOCUMENTATION OF CONSENT

INVESTIGATOR'S NAME: **JENNIFER A. SLEDGE, PhD(C), MSW**

PROJECT # 1162697

DATE OF PROJECT APPROVAL:

FOR HS IRB USE ONLY
APPROVED

HS IRB Authorized Representative
Date
EXPIRATION DATE:

STUDY TITLE:

**Contributing factors related to Human Papillomavirus (HPV) vaccine
acceptance among African American young adults.**

You are being asked to participate in a research study. The purpose of this research is to gain a better understanding of what young African American men and women know about the Human Papillomavirus (HPV) and the HPV vaccine. I, as an African American, understand that disparities in healthcare exist against African Americans. I am interested in if or how that is happening with the Human Papillomavirus vaccine.

This study is being directed by Jennifer A. Sledge, MSW, a social work doctoral candidate, under the supervision of Dr. Colleen Galambos, School of Social Work, University of Missouri-Columbia.

By agreeing to participate, I understand that:

- a. The purpose of this study is to gain a better understanding of what young African American men and women know about the Human Papillomavirus (HPV) and what factors may contribute to HPV vaccine acceptance.
- b. My part in the research will be to share my beliefs and opinions about the Human Papillomavirus, the HPV vaccine, as well as, my thoughts on masculinity ideology.
- c. It may take up to 15 minutes to answer the questions.
- d. Participation is voluntary. I am free to stop participating at any time.
- e. There will be an opportunity to participate in a drawing for a \$25 gift card, from each of the participating universities, upon completion of the survey.
- f. My participation in this research should not expose me to any greater risk than that encountered in everyday life.
- g. To protect my identity, this survey and demographic information are free of any identifying information. The survey is anonymous.

- h. The results of this research may be published but I will not be identified in any such publication. All results will be reported in the aggregate (total) and they will be made available to the college I am currently attending.
- i. This study has been approved by the MU Health Sciences Institutional Review Board (IRB) at the University of Columbia, MO (project #1162697).
- j. If I have any questions regarding my rights as a participant in this research and/or concerns about the study, or if I feel under any pressure to enroll or to continue to participate in this study, I may contact the University of Missouri Health Sciences Institutional Review Board (which is a group of people who review the research studies to protect participants' rights) at (573) 882-3181.
- k. If there are any additional questions, I am to contact Jennifer A. Sledge, MSW, Doctoral Student, 711 Clark Hall, University of Missouri School of Social Work, Columbia, MO 65211 or at 314.454.8573. I can also email her at jasm28@missouri.edu. Dr. Galambos can be reached at galambos@missouri.edu.
- l. Please print a copy of this Waiver of Documentation of Consent for your records.

By clicking the “next” button, I am consenting to participate in this study.

APPENDIX C

The Knowledge and Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey

To be completed by both men and women

I would first like to ask you questions regarding your sexual health, the Human Papillomavirus (HPV) and the HPV vaccine. This survey is anonymous. We will not be able to connect your name with your answers. Please check your response as appropriate. Please be honest.

1. When you have sexual intercourse with your current sexual partner(s), do you ever use anything to prevent pregnancy?

- Yes: If yes, what do you use?: _____.
- Check here if you do not currently have a sexual partner (skip to #4).
- No (skip to #4).

2. How often do you use this method to prevent pregnancy when you have sex with your current partner(s)?

- Almost Never □1 □2 □3 □4 □5 Every time
□1 □2 □3 □4 □5 □6

3. When you have sexual intercourse with your current sexual partner(s), do you ever use a condom to prevent sexually transmitted diseases (STDs)?

- Almost Never □1 □2 □3 □4 □5 Every time
□1 □2 □3 □4 □5 □6

No (If no, what is your primary method, please specify: _____).

4. Did you use a condom the last time you had sex?

- No Yes I've never had sex

5. Do you know what a Pap test is?

- Yes. If yes, what is being tested for in a Pap test?
 - HIV/AIDS
 - Abnormal cells that may develop into cervical cancer
 - Pregnancy
 - Sexually Transmitted Disease (STDs)
- No (skip to # 7).
- Don't know (skip to #7).

6. Have you or your current partner or any of your previous partners ever had an abnormal Pap test?

- No Yes Don't know Check here if you have never had a sexual partner.

The next questions ask about genital Human Papillomavirus (HPV) infection. Genital HPV is a sexually transmitted disease (STD). It is not the same as HIV, the virus that leads to AIDS.

7. Have you ever heard of the STD called the Human Papillomavirus or HPV?

- Yes. If yes, where did you hear about it? (Check all that apply).

- | | |
|---|--|
| <input type="checkbox"/> Healthcare provider | <input type="checkbox"/> Television or radio |
| <input type="checkbox"/> Friend | <input type="checkbox"/> Family member |
| <input type="checkbox"/> Partner | <input type="checkbox"/> Internet |
| <input type="checkbox"/> Class (health education program) | <input type="checkbox"/> Magazine/Newspaper |
| <input type="checkbox"/> Other (please specify): _____ | |

- No (skip to next section).

8. Which of the following puts you at risk for HPV? (Check all that apply).

- | | |
|--|--|
| <input type="checkbox"/> Having sex at an early age | <input type="checkbox"/> Alcohol use |
| <input type="checkbox"/> Having frequent sex | <input type="checkbox"/> Being under the age of 25 |
| <input type="checkbox"/> Having many sex partners | <input type="checkbox"/> Drug use |
| <input type="checkbox"/> Using birth control pills | |
| <input type="checkbox"/> Other (please specify): _____ | |

Please read the following information paragraph before answering the following questions

The Human Papillomavirus (HPV)

Genital Human Papillomavirus (HPV) is the most common sexually transmitted infection. HPV is contacted most often through unsafe sexual practices. There are more than 40 types that can infect the genital areas of males and females. These HPV types can also infect the mouth and throat. HPV is not the same as herpes or HIV (the virus that causes AIDS). Most people with HPV do not develop symptoms or health problems from it. In 90% of cases, the body's immune system clears HPV naturally within two years; but sometimes, certain types of HPV can cause genital warts in men and women. Other HPV types can cause cervical cancer, and less common cancers such as penile (penis), anal (rear end), vaginal (vagina), head, neck and oral (tongue, tonsils and throat). There is no way to know which people who get HPV will go on to develop cancer or other health problems.

Please check a number on the line next to each statement, using the following scale (1 = *very unlikely* to 6 = *very likely*). If you currently have or have had genital HPV in the past, please think about how likely it is that you'll become infected again (with another type of HPV) in the future.

9. How likely is it that you'll get genital HPV in the next 10 years?

Very unlikely
1 2 3 4 5 Very likely
6

10. How likely do you think it is that a current or recent partner(s) of yours is infected with HPV?

Very unlikely
1 2 3 4 5 Very likely
6

11. How likely is it that you'd test positive for genital HPV if you were tested today?

Very unlikely
1 2 3 4 5 Very likely
6

12. How likely is it that you'll get genital warts in the next 10 years?

Very unlikely
1 2 3 4 5 Very likely
6

13. How likely is it that you would receive a vaccine to prevent future genital HPV infection if it was proven safe, effective and available?

Very unlikely
1 2 3 4 5 Very likely
6

**Please answer the following 2 questions as if you were told you had HPV.
Please check one response for each of the following questions**

14. If you had HPV, how severe do you think genital HPV infection would be for yourself?

Not at all severe somewhat severe fairly severe severe very severe

15. If your partner had HPV, how severe do you think genital HPV infection would be for your female/male partner?

Not at all severe somewhat severe fairly severe severe very severe

**The following questions refer to the transmission, diagnosis and disease of HPV.
Please check true, false or don't know for the following statements about HPV**

16. Most people with genital HPV have no visible signs or symptoms.

True False Don't Know

17. HPV can cause herpes.

True False Don't Know

18. Genital warts are caused by HPV.

True False Don't Know

19. HPV can cause cervical cancer in women.

True False Don't Know

20. HPV can cause oral cancer in men.

True False Don't Know

21. HPV can cause anal (rear end) cancer in women.

True False Don't Know

22. If a woman's Pap smear is normal, she does not have HPV.

True False Don't Know

23. An abnormal Pap smear may indicate that a woman has HPV.

True False Don't Know

24. Genital warts are caused by the herpes virus.

True False Don't Know

25. Pap smears will almost always detect HPV.

True False Don't Know

26. There is a vaccine to prevent HPV infection that is available for women.

True False Don't Know

27. Having one type of HPV means that you cannot acquire new types.

True False Don't Know

28. People can transmit HPV to their partner(s) even if they have no symptoms of HPV.

True False Don't Know

29. HPV can cause cancer of the penis or anus (rear end) in men.

True False Don't Know

30. HPV can cause oral cancer in women.

True False Don't Know

31. There is a vaccine to prevent HPV infection that is available for men.

True False Don't Know

32. Having multiple sexual partners increases a person's risk of getting HPV.

True False Don't Know

The following questions ask about the HPV vaccine.

33. The HPV vaccine will protect people from getting genital HPV.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

34. The HPV vaccine will be effective in preventing genital HPV infection.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

35. The HPV vaccine will reduce a man's chances of developing HPV related cancers.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

36. The benefits of getting the HPV vaccine outweigh the potential risks.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

37. Getting the HPV vaccine may be a good thing to do for my health.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

38. Getting the HPV vaccine will give me peace of mind about my health.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

39. Many of my male friends will get vaccinated for genital HPV.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

40. I am confident in my ability to find a clinic or doctor to get vaccinated.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

41. Whether I get vaccinated against HPV is under my personal control.

Disagree Strongly Agree
Strongly
1 2 3 4 5 6

42. If I get vaccinated for HPV, people may think that I'm sexually promiscuous or sleep around.

Disagree Strongly Agree
Strongly

52. If it took a lot of effort to get the vaccine.

Yes No

53. If it took a lot of time to get vaccinated.

Yes No

54. How likely is it that you'll try to get more information about the HPV vaccine?

Very unlikely 1 2 3 4 5 6 Very likely

55. How likely is it that you'll consider getting the HPV vaccine?

Very unlikely 1 2 3 4 5 6 Very likely

56. How likely is it that you'll make it a priority to get the HPV vaccine?

Very unlikely 1 2 3 4 5 6 Very likely

57. How likely is it that you'll actually get the HPV vaccine?

Very unlikely 1 2 3 4 5 6 Very likely

58. If a health care professional offered you the genital HPV vaccine within the next three years, how likely is it that you'd get vaccinated?

Very unlikely 1 2 3 4 5 6 Very likely

MRNI-R

Please complete the questionnaire by circling the number which indicates your level of agreement or disagreement with each statement. There is no right or wrong answer. Please give only one answer for each statement.

Strongly Disagree	Disagree	Slightly Disagree	No Opinion	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

59. Homosexuals should never marry.

1 2 3 4 5 6 7

60. The President of the U.S. should always be a man.

1 2 3 4 5 6 7

61. Men should be the leader in any group.

1 2 3 4 5 6 7

62. A man should be able to perform his job even if he is physically ill or hurt.

1 2 3 4 5 6 7

63. Men should not talk with a lisp because this is a sign of being gay.

1 2 3 4 5 6 7

64. Men should not wear make-up, cover-up or bronzer.

1 2 3 4 5 6 7

65. Men should watch football games instead of soap operas.

1 2 3 4 5 6 7

66. All homosexual bars should be closed down.

1 2 3 4 5 6 7

67. Men should not be interested in talk shows such as Oprah.

1 2 3 4 5 6 7

68. Men should excel at contact sports.

1 2 3 4 5 6 7

69. Boys should play with action figures not dolls.

1 2 3 4 5 6 7

70. Men should not borrow money from friends or family members.

1 2 3 4 5 6 7

71. Men should have home improvement skills.

Strongly Disagree	Disagree	Slightly Disagree	No Opinion	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

72. Men should be able to fix most things around the house.

1 2 3 4 5 6 7

73. A man should prefer watching action movies to reading romantic novels.

1 2 3 4 5 6 7

74. Men should always like to have sex.

1 2 3 4 5 6 7

75. Homosexuals should not be allowed to serve in the military.

1 2 3 4 5 6 7

76. Men should never compliment or flirt with another male.

1 2 3 4 5 6 7

77. Boys should prefer to play with trucks rather than dolls.

1 2 3 4 5 6 7

78. A man should not turn down sex.

1 2 3 4 5 6 7

79. A man should always be the boss.

1 2 3 4 5 6 7

80. A man should provide the discipline in the family.

1 2 3 4 5 6 7

81. Men should never hold hands or show affection toward another.

1 2 3 4 5 6 7

82. It is ok for a man to use any and all means to “convince” a woman to have sex.

1 2 3 4 5 6 7

83. Homosexuals should never kiss in public.

1 2 3 4 5 6 7

84. A man should avoid holding his wife’s purse at all times.

1 2 3 4 5 6 7

85. A man must be able to make his own way in the world.

1 2 3 4 5 6 7

Strongly Disagree	Disagree	Slightly Disagree	No Opinion	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

86. Men should always take the initiative when it comes to sex.

1 2 3 4 5 6 7

87. A man should never count on someone else to get the job done.

1 2 3 4 5 6 7

88. Boys should not throw baseballs like girls.

1 2 3 4 5 6 7

89. A man should not react when other people cry.

1 2 3 4 5 6 7

90. A man should not continue a friendship with another man if he finds out that the other man is homosexual.

1 2 3 4 5 6 7

91. Being a little down in the dumps is not a good reason for a man to act depressed.

1 2 3 4 5 6 7

92. If another man flirts with the women accompanying a man, this is a serious provocation and the man should respond with aggression.

1 2 3 4 5 6 7

93. Boys should be encouraged to find a means of demonstrating physical prowess.

1 2 3 4 5 6 7

94. A man should know how to repair his car if it should break down.

1 2 3 4 5 6 7

95. Homosexuals should be barred from the teaching profession.

1 2 3 4 5 6 7

96. A man should never admit when others hurt his feelings.

1 2 3 4 5 6 7

97. Men should get up to investigate if there is a strange noise in the house at night.

1 2 3 4 5 6 7

98. A man shouldn't bother with sex unless he can achieve an orgasm.

1 2 3 4 5 6 7

Strongly Disagree	Disagree	Slightly Disagree	No Opinion	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

99. Men should be detached in emotionally charged situations.

1 2 3 4 5 6 7

100. It is important for a man to take risks, even if he might get hurt.

1 2 3 4 5 6 7

101. A man should always be ready for sex.

1 2 3 4 5 6 7

102. A man should always be the major provider in his family.

1 2 3 4 5 6 7

103. When the going gets tough, men should get tough.

1 2 3 4 5 6 7

104. I might find it a little silly or embarrassing if a male friend of mine cried over a sad love story.

1 2 3 4 5 6 7

105. Fathers should teach their sons to mask fear.

1 2 3 4 5 6 7

106. I think a young man should try to be physically tough, even if he's not big.

1 2 3 4 5 6 7

107. In a group, it is up to the men to get things organized and moving ahead.

1 2 3 4 5 6 7

108. One should not be able to tell how a man is feeling by looking at his face.

1 2 3 4 5 6 7

109. Men should make the final decision involving money.

1 2 3 4 5 6 7

110. It is disappointing to learn that a famous athlete is gay.

1 2 3 4 5 6 7

111. Men should not be too quick to tell others that they care about them.

1 2 3 4 5 6 7

I would like to ask you some questions about yourself, your current and previous relationships. Please check your response on the line as appropriate. Please be honest.

112. How old are you in years? _____.

113. What is your school zip code? _____.

114. What is your home zip code? _____.

115. What is your sex?

Male Female

116. What year are you in college?

Freshman

Sophomore

Junior

Senior

Graduate

Other (please specify): _____

117. What is your current relationship status?

Married

Single, but in a committed relationship

Single and dating

Not currently dating

118. How do you describe your sexual orientation?

I prefer to have sex with women

I prefer to have sex with men

I prefer to have sex with men and women

119. Have you ever had sexual intercourse?

Yes No (skip to #121)

120. How old, in years, were you when you first had sexual intercourse? _____.

121. Which one of the following groups describes your race?

- American Indian or Alaska Native
- Asian
- Hispanic or Latino
- Black or African American
- Native Hawaiian or Pacific Islander
- White or Caucasian
- Other

Thank-you for participating in the Knowledge and Attitudes towards Human Papillomavirus (HPV) and HPV Vaccination Survey.

**If you would like to be entered into the drawing for a \$25 gift card,
please click on the link below.**

Your contact information will not be linked to your survey responses.

VITA

Jennifer Anne Sledge was born and raised in Pomona, California and Claremont, California. After graduation from Claremont High School, she went on to receive a Bachelor of Arts (BA) degree in Organizational Behavior, with a minor in Sociology, from Pitzer College in Claremont, California. Following her undergraduate work, Jennifer attended the George Warren Brown School of Social Work at Washington University in Saint Louis, Missouri. She earned her Master of Social Work (MSW) degree in 1997. Since 1995, Jennifer has worked in the Department of Research for Patient Care Services at Barnes-Jewish Hospital in Saint Louis, Missouri. In 2007, she began her doctoral education at the University of Missouri in Columbia. In May of 2013 she received her Doctorate of Philosophy in Social Work.