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Perception of Anal HPV Infection by HIV-Positive Men Practicing male-male-sex

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Dissertation Submitted in Partial Fulfillment

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Abstract

Human papillomavirus (HPV) is a preventable, sexually transmitted infection whose prevalence has been rising dramatically among men who have sex with men (MSM) in the United States since 2008. The HPV infection rate for MSM is rising even faster for MSM who are infected with the human immunodeficiency virus (HIV) and for those who have developed acquired immune deficiency syndrome (AIDS). It is not clear whether MSM in general and MSM with HIV have the knowledge necessary to prevent infection of themselves and their partners. This phenomenological study explored the knowledge, health perceptions, attitudes, and norms of the community of MSM and HIV-positive MSM relative to HPV, using private, semi-structured, detailed interviews with 37 HIV-positive MSM between 18 and 26 years of age; interviews were conducted at 3 outpatient clinics and 2 private medical practices. Interview transcripts were analyzed; these findings revealed that the study population of HIV-positive MSM had a basic understanding of HPV but knew little about the transmission of HPV or about the availability and cost of HPV vaccines. This study promotes positive social change by identifying specific opportunities to improve health education policy and programs targeting HIV-positive MSM. It also supports primary prevention efforts that have the potential to be life-saving. Through educating MSMs, the potential exists to reach more MSMs with primary prevention life-saving efforts. Study recommendations include developing inclusive education programs addressing different aspects of, and behavioral approaches to, the reduction of HPV infection risk; further exploration of a cost-benefit analysis of the HPV vaccine; and support for policy change regarding insurance coverage for male HPV vaccine in the United States.

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Dedication

To God, my Heavenly Father, who strengthens me when I am a weak and opens door when they are closed.

I dedicate my dissertation work to my family who supported my journey: To my husband Conway, who taught me that quitting is not an option and shared the journey from start to finish; to my daughter Roshawn, who embraces me as her role model; to my sons Conway and Kyle who never left my side and who help me develop my technology skills.

Special thanks go out to my parents, Gretel and Milton, whose push for education rings in my ear. I also dedicate this dissertation to my friends who supported and prayed with me. Claudette, I appreciate the time you took to proofread my paper. Vivienne, your words of encouragement motivated me. Audrey, Catherine, and Shauna, you are my cheerleaders. Georgeann, you are the source of inspiration that kept me humble.

This dissertation is dedicated to all those who seek to expand knowledge and understanding through social sciences research.

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I wish to acknowledge the contributions of my Chair, Dr. Copper, you are the rock who stood strong through the process. Your patience, countless hours of reading my paper, and encouragement made this accomplishment possible. To Drs. Baron and Hanania, Thank you for your service.

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Chapter 1: Introduction to the Study

Introduction

The most common sexually transmitted infection (STI) in the United States is the human papillomavirus (HPV; Centers for Disease Control and Prevention [CDC], 2014). The CDC estimates that 79 million people have an HPV infection in the United States. About 14 million are newly infected with HPV in the United States annually in the 15 to 59--age range (CDC, 2015); 50% of cases result from sexual activity (CDC, 2011). About half of new infections are found in the 15 to 24-age range (Markowitz et al., 2014).

Because most HPV infections go into remission without medical interventions, cases can go undiagnosed, thus the disease remains largely untreated (Goldstone, 2010). However, when left untreated, HPV can cause serious health problems, the most common of which are genital warts and cancer at the HPV infection site (i.e., the vagina and cervix, penis, anus, or throat) (Goldstone, 2010). Based on the mistaken belief of medical professionals concerning the development of cervical cancer among sexually active women was the only serious heath consequence of HPV, early focus of HPV prevention worldwide was on 11- and 12-year-old girls before they became sexually active (Nyitray, et al., 2013).

Sexual transmission of HPV risk increased due to anal sex among men to men (Goldstone, 2010). Susceptibility and infectivity in men to men transmission was stronger due to the lack of treatment overtime (Goldstone, 2010). Despite the increasing rise of the HPV epidemiological risk the first HPV vaccination did not become available in the United States until 2006, and was restricted to preteen girls (CDC, 2006). In the United States, the CDC Advisory Committee makes federal vaccination recommendations for

Immunization Practices (ACIP), a U.S. federal government agency responsible for recommending vaccination of children and adults for a variety of conditions (CDC, 2008). In 2006, ACIP began recommending HPV vaccinations for women between 9 and 26 years of age, and in 2009, the vaccination of men between 11 and 21 years of age (CDC, 2010). ACIP published similar recommendations in 2015 (Markowitz et al., 2015). These ACIP recommendations show the agency's initial focus on HPV prevention in women; only later did prevention efforts focus on at-risk men as well.

Notwithstanding sex differences in the seriousness of the possible consequences of HPV infection, men represent significantly more infection cases and are three times more likely to have HPV (CDC, 2012). The median duration of a HPV infection for men is shorter than for women (Giuliano, Palefsky, Goldstone, Moreira, & Penny, 2011). Reports suggest the length of time between the onset and amelioration of positive symptoms is 7.52 months for men and 11.0 months for women (Giuliano et al., 2011).Heterosexual men, defined by this study, refer to men who only have sex with women, comprise the largest group of HPV infections (Fernandez & Larson, 2012). However, the HPV risk among gay and bisexual men is rapidly advancing (Fernandez & Larson, 2012). Globally, as of 2013, men who have sex with men (MSM), including both bisexual and exclusively gay men, are also at an inordinately high risk for HPV infection and for developing HPV-related cancer (Fernandez & Larson, 2012). Among MSM, bisexual men are at a higher risk of infection than are gay men (Fernandez & Larson, 2012).

The rate of HPV infection among MSM is approximately 50% (Blackwell & Eden, 2011; Goldstone et al., 2011; Lu et al., 2011). This rate is significantly lower than

the lifetime prevalence rate of HPV among men who have sex with both women and men, which is 67% (Nyitray et al., 2011). Within the population of MSM, the sex act frequently involves anal penetration (Méndez-Martínez et al., 2014). The anus is especially susceptible to HPV infections; absent the use of a condom, bodily fluids easily transfer from one partner to the other (Méndez-Martínez et al., 2014). As a result, the rate of anal HPV infection among MSM is higher than the rate of genital HPV among heterosexual men who have sex with women exclusively (Lu et al., 2011; Thomas & Goldstone, 2010). The susceptibility to HPV infection through anal intercourse makes MSM an especially vulnerable population (Del Amo et al., 2013).

Similar to other STIs, the risk of HPV infection rises for MSM with human immunodeficiency virus (HIV). HPV infection risk among HIV-positive MSM is twice that of heterosexual men and HIV-negative MSM (Gao, Zhou, Li, Yang, & Jin, 2011). The increased frequency of anal sex among MSM exposes them to both HIV and HPV infections, especially for the anally receptive partner (CDC, 2009). Increased frequency of anal penetration elevates the risk of anal HPV infection regardless of sex, but the gender of the recipient of anal penetration mitigates the risk for women (CDC, 2009). For a variety of reasons, HPV is higher among MSM than it is among women who engage in receptive anal sex (CDC, 2009). Whether contracted anally or vaginally, HPV can cause a variety of healthcare challenges, including cancer.

Research on the social and psychological effects of HPV among MSM is currently limited. There is also limited research on the physiological consequences of HPV-related genital warts (Lau, Wang & Li, 2014). The existence of a link between HPV and oral, anal, and penile neoplasms is clear, as is the association between HPV infection

and the acquisition of HIV among MSM (Crosby et al, 2012). Less empirical work has examined the knowledge, attitudes, and beliefs of MSM about HPV and its outcomes (Goldstone, 2010). For example, Lau, Wang and Lai (2010) analyzed the perception of MSM with HPV and link the infection as a contributory factor to HIV rise in Hong Kong. Another study by Goldstone (2010) also assessed the knowledge of MSM with oral HPV, anal HPV and HIV and concluded that a possible association could not be ruled out. There are other studies focusing on the epidemiology of HPV among MSM; however, the author's literature reviews found no study that has assessed the knowledge, attitudes, and beliefs about HPV among HIV-positive MSM. The literature search did reveal researchers have noted the need for such a study (Nurena, Brown, Galea, Sanchez & Blas, 2013). This study concentrates on the gap in research by analyzing the attitudes and beliefs of MSM (with and without HIV) about HPV, in order to identify interventions to reduce the risk of HPV infection in this vulnerable population.

Background of the Study

This study focused specifically on MSM, a key epidemiological group in the study of HPV because of its higher risk for HPV, and HIV (Beachler, D'Souza, Sugar, Xiao & Gillison, 2013). Those infected with HIV who also contract HPV are more likely to develop cancer (McCraken, Olsen & Chen, 2007). The MSM population is also a key epidemiological group for the study of HPV because MSM tend to have multiple partners and increased numbers of changes of partners (Goldstone, 2010). In other words, among MSM, HPV readily spreads readily and outcomes are increasingly higher in severity Goldstone, 2010). Worldwide, the medical community has diagnosed more than 79 million people with HPV, and the number increases by 14 million every year (CDC,

2014). HPV in men can infect the mouth, oropharynx and genital area, penis, and anus (CDC, 2012). While there are numerous HPV strains, which target specific parts of the body, HPV types are also distinguished as oncogenic (high-risk) and nononcogenic (low-risk) (Donà et al., 2012). Oncogenic and nononcogenic HPV types vary with the duration of sexual engagement (Donà et al., 2012). The researchers suggested an association between the number of sexual partners and oncogenic HPV (Donà et al., 2012).

The prevalence of HPV in men as they age remains constant at 90%, although the incidence among women declines after age 30 (Dietz & Nyberg, 2011). HPV causes 90% of anal cancers among gay and MSM (Bergeron et al., 2008; Hoy et al., 2009). The strains of HPV possessing the greatest oncogenic risk, specifically HPV-16 and HPV-18, tend to cause malignant tumors (Faridi et al., 2011). HPV-16 is the strain often found in anal infections (Dietz & Nyberg, 2011). The varieties of HPV that manifest themselves as genital warts and do not require the same medical attention as the carcinogenic varieties (HPV-6 and HPV-11); however, they may cause physical discomfort and mental distress to the patients (Mortensen & Larsen, 2010; Simatherai et al., 2009; Truesdale & Goldstone, 2010).

Research has shown that HPV is more frequent, persistent, and difficult to treat in HIV-infected individuals than in the general population (Rosa-Cunha et al., 2004). HPV-related diseases are also more likely to occur in HIV-positive men; they include severe genital warts and anal cancer (Nyitray et al., 2011b; Piketty et al., 2003). In a longitudinal study, Parisi et al. (2011) tested MSM with oral and anal swabs and found the baseline prevalence for oral HPV was 20.1% and 88.6% for anal HPV. Six months into the study, the results remained nearly identical: 21.3% for oral HPV and 86.3% for anal HPV

(Parisi et al., 2011). These results confirmed earlier studies of HPV among gay men and MSM (Giuliano et al., 2007; Partridge & Koutsky, 2006).

Increasing numbers of HIV-positive MSM have HPV as opposed to those who are HIV-negative (Dietz & Nyberg, 2012). One possible explanation is that open lesions are more receptive to infected material during anal sex (Dietz & Nyberg, 2012). However, HIV frequently weakens the immune system, making the body more receptive to HPV and many other infections (Dietz & Nyberg, 2012).

There is a high comorbidity of HIV and anal HPV (Dietz & Nyberg, 2012). Outcomes of multiple studies have shown that anal HPV is an independent predictor of positive HIV status among men (Chin-Hong et al., 2009; Gao et al., 2010). HIV-positive MSM with anal HPV are likely to have the high-risk varieties of anal HPV (Gao et al., 2011).

While there is no cure for HPV, there are medical methods to address lesions and growths that emerge in the course of the infection (Markowitz et al., 2007). Genital and oral warts can be treated or removed by freezing, surgical excision, laser removal, or topical application of 5-fluorouracil (Dietz & Nyberg, 2011). Dietz and Nyberg (2011) argued that the transmission of HPV from an infected partner to a new sex partner is inevitable. Although removing HPV-related warts removes the warning signs that a person is infected, physicians and dentists experienced in infectious disease management continue to provide palliative wart removal, describing it as responsible medicinal treatment (Reznik, 2006).

Statement of the Problem

HPV is more common among MSM than it is in the general population, with HIV-positive MSM being at the greatest risk (compared to women, and to men who have sex with women) for developing cancer. A recent study found that MSM generally have a low level of general knowledge about HPV, the HPV vaccine, and HPV-related issues (Sanchez, 2012). Young MSM also often lack accurate knowledge about sexual health in general, according to Suji (2002), and supported by the results of this study. The lack of knowledge about HPV in this population is a critical issue because of the MSM infection risk disparity (Sanchez, Pathela, Nicocolai & Schillinger, 2012). Knowledge about HPV informs individual and group health beliefs, which influences health behaviors that can protect men from contracting the most common and virulent strains of HPV (Truesdale & Goldstone, 2010). The gap in research is the lack of understanding concerning the extent and nature of knowledge about HPV (particularly anal HPV) among MSM and HIV-positive men (Truesdale & Goldstone, 2010). To improve knowledge in this area, this study examined MSM's general awareness and knowledge of HPV. I inquired about awareness, perceptions of HPV, individual susceptibility to HPV infection, and their perceptions of HPV-related health conditions. Additionally, I explore the selected populations' understanding of complications, treatment options, the availability, and cost of such treatments.

Purpose of the Study

The purpose of this study was to understand the perceptions of HPV among MSM with regard to their susceptibility to HPV infection and the severity of HPV-related health conditions. I conducted face-to-face interviews with MSM. I analyzed the

transcripts to identify their general awareness of HPV, and their familiarity with potential complications, treatment options, opportunities, and costs. The study provided valuable information for disease prevention and management among MSM and HIV-positive men.

The attitudes and beliefs of the MSM and HIV-positive MSM regarding HPV are important for healthcare planning, as HPV is a highly communicable and prevalent STI that develops into warts, lesions, and even cancer (Mortensen & Larsen, 2010). Even low-risk types of HPV may cause discomfort and distress, lowering the quality of life and complicating social interactions (Mortensen & Larsen, 2010). In this qualitative study, I investigated the attitudes and beliefs of MSM about the risk of HPV infection, transmission, the vaccine, treatment, and sequelae.

Research Questions

The primary research question for this present study was, "What are the beliefs and attitudes of men who have sex with men towards the human papillomavirus?" In seeking answers to the primary research question, I asked the following sub-questions:

RQ1: What are the experiences of men who have sex with men with human papillomavirus susceptibility?

RQ2: What are the knowledge, attitudes and beliefs of men who have sex with men regarding the human papillomavirus vaccine?

RQ3: How do men who have sex with men perceive human papillomavirus screening?

RQ4: How do men who have sex with men see the human papillomavirus infection in relation to the MSM community?

RQ5: How can the general level of knowledge about human papillomavirus among men who have sex with men be characterized?

RQ6: In what areas are men who have sex with men generally ignorant regarding the facts of human papillomavirus?

RQ7: How do men who have sex with men rate their overall knowledge about human papillomavirus infection?

Theoretical Framework

There are several theories regarding the beliefs, perceptions, and attitudes leading to health changes and behaviors (Pomfret, Gagnon, & Gilchrist, 2010). Notably are self-efficacy theory (Bandura, 2009) and the health belief model (Glanz, 2002). According to Bandura, self-efficacy theory holds that one's beliefs and opinions influence outcomes over which an individual takes particular and directed action. The health belief model locates the agency of patients acting to improve their own health within the rubric of healthcare, treatment, and outcomes (Glanz, 2002). This study used the health belief model. I designed this dissertation study to explore the perceived threats, susceptibility, severity of HPV sequelae, benefit of prophylactics against HPV, and general knowledge of HPV. For the purposes of addressing a widespread threat to health through the public health system, the health belief model is the one that addressed the available means of action for the specific threat. Self-efficacy theory is only indirectly relevant.

Self-efficacy theory focuses on what is required to improve behaviors, perceptions, beliefs, and attitudes of individuals (Pomfret et al., 2010). Self-efficacy theory proposes that the self-perception of patients influences their health and wellbeing (Pomfret et al., 2010). If patients perceive that they can influence their health outcomes,

for example, by dieting or exercising, they are more likely to follow through, and as a result are less likely to suffer ill effects (Bandura, 2009). Self-efficacy theory also postulated patients who take control of their health, improve their status (Bandura, 2009). Compared to individuals low in self-efficacy, individuals with high self-efficacy tend to be better informed, open to new information, proactive, and persistent in decisions and actions taken to achieve positive results (Bandura, 2009).

Boskey (2010) used the health belief model to explain and predict preventive health behaviors The main premise of this model is the belief that people's willingness to change health behaviors is primarily due to how they perceive risks, which leads to reactions (Boskey, 2010). Redding, Rossi, Rossi, Velicer, and Proschaska(2000) used the health belief model to undergird the analysis of understanding how MSM (some of whom were HIV-positive) viewed their health.

Nature of the Study

This study used a qualitative, phenomenological approach as it seeks to explore the opinions, levels of knowledge, preventative practices, health perceptions, and risk perceptions of MSM. This population tends to lack adequate knowledge about HPV prevention and treatment options (Cranston, 2014). I recruited 39 MSM from waiting rooms in five health service sites. Of the total number of participants, two participants' respondent's answers assisted in modifying test questions used in the research and therefore were not included in the results. Three of the sites were clinics, and two were physician private practices. I focused on the MSM population and their health needs in all five sites. Additionally, I obtained permission from each site before commencement of this study (Appendix A).

I provided letters of invitation/flyers that outlined the objectives of the study, the procedures for participants, compensation for participation, and my contact telephone number to eligible patients (Appendix B). To encourage participation, I provided compensation in the form of cash and transportation vouchers. Allowing 2-day minimum waiting period to receive the confirmation from the invited potential interviewees, gave them time to think over the decision and ensure their willingness to complete the process. I made follow-up calls to confirm the participation and asked them to select a convenient time for them to participate in a 20 minute semi-structured, face-to-face interview, and to complete the questionnaire at a private location in the recruiting clinic or office (Appendix C). I provided confidentiality by eliminating the participants' names and any personally identifiable information from the questionnaires. After assigning a generic number as an identifier in place of the name and prior to the actual interview, I audio-recorded my reading of the informed consent form. I asked each participate to verbally signify their consent, and acknowledging awareness of the study procedures, as well as their ability to withdraw at anytime, without negative repercussions (Appendix D). I audio-recorded the interviews and later transcribed them verbatim. During my analysis of the transcripts I interpreted the emergent themes and meanings to lay the foundation for data coding. Upon completing this process, and capture the participant's story as much as possible while minimizing researcher bias, I analyzed the narratives for categorization, and then synthesized and interpreted the results (Suri, 2011).

Definitions of Terms

I established definitions for the following terms for the purpose of the study.

Acquired immunodeficiency syndrome (AIDS): A disease of the human immune system caused by the human immunodeficiency virus (HIV) (Sepkowitz, 2001). The final stage of HIV infection, marked by severe damage to the immune system, places the individual at risk for opportunistic infections (National Institute of Allergy and Infectious Diseases, 2008).

Etic : Represents the approach to show the description of a behavior (Zhu & Bargiela Chiappini, 2013)

Emic: This approach analyzes how native people think, behave, and understand things (Kottak, 2008).

Human immunodeficiency virus (HIV): A lentivirus (lentiviruses are a genus of the Retroviridae [retrovirus] family) causing AIDS, which increases susceptibility to infection and disease (Douek, Roederer, & Koup, 2009; Weiss, 1993).

Human papillomavirus (HPV): Group of over 100 related viruses in the Papillomaviridae family (Markowitz, Dunne, Saraiya, Lawson, Chesson, & Unger, 2007; National Cancer Institute, 2008). It is the most common STI in the United States (CDC, 2015; Conner & Collins, 2008).

Men who have sex with men (MSM): Umbrella term describing those men who engage in same-sex sexual behavior while avoiding social labels of "gay," "bisexual," or "questioning" (Gao et al., 2010).

Nononcogenic: Absence of formation and/or growth of tumors; in the present context, it refers to HPV types that do not lead to tumors referred to as "low risk" (American Cancer Society, 2012).

Oncogenic: Formation and/or growth of tumors; in the present context, it refers to HPV types that lead to tumors and are referred to as "high risk" (American Cancer Society, 2012).

Assumptions

In this study, I assumed the research design and procedures described in chapter 3 were appropriate for an exploration of the beliefs and attitudes of MSM and HIV-positive MSM regarding HPV. Secondly, I recruited my sample from three clinics and two physician private practices in New York City. I assumed that the participants were truly representative of the population from which they were drawn, namely 18- to 26-year-old MSM, some of whom are HIV positive. I assumed the participants communicated their attitudes and understanding honestly. Accordingly, results from this study are generalizable only to the group of MSM who share similar experiences with the study participants.

Scope and Delimitations

The study focused on the knowledge, attitudes, and beliefs of HIV-positive MSM about HPV. I delimited the study with respect to age and HPV infection status within the identified group. The study included 18-to-26-year-old MSM and excluded HPV-infected MSM from the study. HPV-infected MSM may represent a different class in terms of their knowledge and attitudes.

Limitations

I limited the study to 39 interviewees who were MSM between 18 and 26 years of age from five healthcare sites in New York City. These sites were in highly urbanized areas on the east coast that tend to have mixed, shifting populations. These MSM are not

a static, rural population, so their knowledge and beliefs about HPV and sexual health needs might differ from MSM in rural communities (Assoumou, Panther &, Mayer, 2013). Because the clinics provided healthcare services to MSM, those who do not seek healthcare services, and do not identify as gay or bisexual were far less likely to be candidates. While 37 is a large amount for a qualitative study, phenomenological studies tend to lack generalizability (Suri, 2011). The backgrounds of another population may vary, producing differences in the results (Suri, 2011).

Significance of the Study

Sanchez (2012) conducted a study of the health beliefs and attitudes of MSM in general. To expand upon the Sanchez (2012) study, it seemed a logical step to investigate the health beliefs and attitudes of a narrower segment of the MSM population, such as young MSM, HIV-positive MSM, and MSM at risk for HPV (Sanchez, 2012). I chose young MSM because I have worked with them as patients and have developed good rapport with them. Understanding the knowledge and perceptions of HPV among young MSM is critical to the development and delivery of prophylactic vaccines that are effective in the reduction of HPV infection rates among young people (Cranston, 2014). In this context, a stud filling this gap in our empirical knowledge would benefit the health sector as a step toward curbing the growth of HPV infection rates among young MSM.

Summary

The development of knowledge about HPV among MSM, particularly those who are HIV positive, is an important contribution to healthcare promotion and community participation. In order to mitigate the risk of HPV transmission and infection, the sexually active community needs free and open access to HPV information along with friends and

family (Goldstone, 2010). This is especially important because HPV has a high morbidity rate for cancer-causing HPV strains (Machado et al., (2014). That makes the protection of at-risk groups (such as MSM and young women) vital (Machado et al., 2014). The present study has a great deal of potential for facilitating change in the dissemination of information about HPV prevention to MSM, and in the event of HPV infection, information about access to quality medical treatment.

In this chapter, I introduced the study and described the nature and scope of the HPV problem, including risk factors and etiology. In describing the purpose of the study and outlining several key research questions, I also discussed the need for this study and provided justification for the use of the qualitative tradition of inquiry. Specifically, justification of the use of a phenomenology approach promoting the detection themes emerging from the etic and emic perspectives of the study participants (Benbow, Forchuk, & Ray, 2011). In Chapter 2, I provided a thorough review of the scholarly literature on the nature of HPV and efforts aimed at its prevention and treatment. In the literature review, I outlined two distinct yet interrelated knowledge sets: both HPV as a disease, and the perceptions, knowledge, and beliefs about HPV among MSM. The discussion of HPV as a disease includes the etiology and pathogenesis of HPV, transmission and infection routes, and the role of sex in determining which route presents the greatest risk of infection. Also included in the discussion are HPV sequelae, treatments, and the advent of vaccines. The remaining part of the discussion in Chapter 2 is an examination of attitudes, perceptions, and knowledge of MSM about HPV-related topics. Chapter 3 explained the methods used to collect and analyze the data. The

following chapter, 4, reflects the complete analysis of the data collected. In chapter 5 I conclude with recommendations and summary of the entire process.

Chapter 2: Literature Review

Introduction to the Literature

The purpose of the study is to determine the knowledge, attitudes, and beliefs of men who have sex with men (MSM) about human papillomavirus (HPV) risks, transmissions, vaccine, and treatment. This chapter provides a comprehensive review of the existing literature concerning HPV risks, transmission, symptomology, treatment, and prevention. I conducted a comprehensive review of the scholarly literature to gain a deep understanding of HPV and the related topics of interest, including stigmatization of individuals infected with HPV, risk factors for HPV, and the effect of HPV infection on MSM and HIV-positive men.

Literature Search Strategies

I reviewed three types of literature: studies of theoretical frameworks for behavioral change, articles on the prevalence, causes, and transmission of HPV, and investigations of the knowledge, attitudes, and beliefs of MSM. These factors influence behavior written by scholars whose primary goal was the dissemination of useful information to the community at large with an eye to achieving favorable behavioral changes. I retrieved this literature primarily from PubMed and EBSCOhost aggregated databases. I also conducted full-text searches of Academic Search Premier, MasterFILE Premier, PsycINFO, PsycARTICLES, and MEDLINE to identify additional literature. While my search was limited to five years in terms of date of publication, I focused on the most current research if there was no study within the targeted time frame.

The goal of the literature search was to collect relevant work for developing both breadth and depth of knowledge about HPV, and about the perceptions, attitudes, and

beliefs about HPV held by MSM. Keywords either used individually or in concert included, *human papillomavirus*, *human immunodeficiency virus*, *acquired immunodeficiency syndrome*, *men who have sex with men*, *HPV vaccine*, *HPV transmission*, *sexual contact*, and *attitudes, knowledge, and beliefs about HPV*.

Theoretical Framework

I grounded this study in a blended health belief and self-efficacy model. Evidence-based practitioners have urged researchers to investigate and report on prevention and treatment models for patients with infections and chronic diseases. Multiple investigative studies of HIV prevention programs have reported, despite implementation, the rate of infection continues to increase (CDC, 2012). These factors led me to select a blended health belief and self-efficacy model instead of the more commonly used unified health belief model (HBM), relapse prevention model, or I-change model from similar studies.

Health Belief Model (HBM)

The use of belief systems to predict healthcare outcomes is not novel. As early as the 1950s, social psychologists working at the U.S. Public Health Service developed a theoretical model to explain the failure of tuberculosis screening efforts (Bandura, 1977). The zeitgeist in psychology of the time was to blend behavioral and learning theories to arrive at a theory with better predictive utility (Champion & Skinner, 2008). In the same way, researchers created the health belief model (HBM) by merging pure behavioral (stimulus-response) theory with cognitive learning theories (Bandura, 2012).

The adoption of the HBM changed the way psychologists viewed patient behaviors as predictable responses to stimuli. From a purely behavioral view,

physiological needs drive all behaviors, including health behaviors. When a particular behavior reduces physiological need, reinforcement increases the likelihood the individual will repeat the behavior in the presence of the same stimuli (Boskey, 2010). Conversely, according to purely cognitive learning theory, the selection of one behavior over another is the result of subjective beliefs about the value of the selected behavior and an expectation for a favorable outcome from the behavior (Rosenstock, Strecher, & Becker, 1988). The health belief model retains constructs from both schools of thought, the reduction of physiological needs and reinforcement from behaviorism, and the valuation of behaviors and outcome expectations from cognitive learning theories (Abraham & Sheeran, 2005). I chose the health belief model for this study because of this greater breath.

The health belief model holds that six types of constructs motivate health behaviors: (a) perceived susceptibility to a disease, (b) perceived severity of a disease, (c) perceived benefits of treatment, (d) perceived barriers to treatment, (e) cues to action, and (f) self-efficacy (Rosenstock et al., 1988). Other factors modify the influences of the motivating constructs include age, ethnicity, gender, socioeconomic status, personality, and knowledge about the disease and treatment options (Boskey, 2010). In the 1970s and 1980s, social learning theorists such as Marshall Becker expanded the model to its next logical level (Maiman & Becker, 1974). Rosenstock's version of HBM was useful for explaining why some people agreed to vaccinations for tuberculosis and other communicable diseases about which they knew little, and why some individuals with knowledge about tuberculosis refused inoculation (Boskey, 2010).

HBM initially consisted of four perception-related constructs: perceptions of susceptibility, perceptions of severity, perceptions of barriers, and perceptions of benefits. According to Glanz et al. (2008), these concepts explained an individual's readiness to act. Susceptibility is an individual's beliefs about his or her likelihood of contracting a disease or condition. The seriousness of the condition defines the severity. The way people understand barriers include perceptions about physical and psychological impediments to taking the disease- or condition-management action. The perceived benefit is the reduced susceptibility to the disease or condition.

The original HBM has been highly influential and contributed to the development of multiple related models. Outgrowths of HBM include the health action model (Tones, 1987), the theory of reasoned action approach (RAA) (Fishbein, 1980), the transtheoretical model of behavioral change (Prochaska, Redding, & Evers, 1994), the precaution adoption process model (Weinstein, Sandman, & Blalock, 2008), and social cognitive theory (Bandura, 1986). One of these derivatives, the health action model (Tones & Tilford, 1994), holds that health action behaviors result from beliefs about a given treatment, and that the relative seriousness of a health threat to a community or group provides a rational cue for the modification of health behaviors. Tones and Tilford (1994) argued that any health action is at least in part contingent on individual socioeconomic status and is therefore uncontrollable. As a result, the health action model emphasizes education in diseases management, arguing that people will do the right thing given accurate information about a disease or condition. Like the original HBM, the health action model recognizes the role of socioeconomics in health decision making.

The theory of reasoned action approach (RAA) is the model that seeks to address behavior and attitude (Fishbein & Ajen, 1980). The reasoned action approach predicts behavioral response of one's attitude towards change. The theory process was revised to include autonomy in taking charge of one's behavior (Hale, Household, & Greene, 2002). Hence, beliefs; evaluation of people's thoughts; and motivations are used in the model to enhance the predicted outcome (Hale et al., 2002). This feedback is based on the decision made to take control of one's health by evaluating the outcome, take into consideration opinions of others, and how much interest is shown in taking charge of one's health (Fishbein & Ajen, 2010).

The transtheoretical model of behavioral change views health action outcomes in terms of stages of motivation. These stages include precontemplation, contemplation, planning, action, and maintenance (Prochaska et al., 2008). As an individual faces a health challenge that requires behavioral change (e.g., lung cancer and smoking, diabetes and the reduction of glucose levels), he or she progresses through the stages, gaining in motivation at each stage. Traversing through the stages is not always linear. Instead, some individuals in the maintenance stage (for example) can engage in old behaviors requiring them to revisit a previously traversed stage. When grounded in the transtheoretical model of behavior change, treatments for smoking cessation, drug and alcohol abuse and dependence, and diabetes diet management are highly effective (Prochaska & DiClemente, 1983) The same model has therefore been applied to disease prevention.

The precaution adoption process model, like the transtheoretical model of behavior change, views change as the progression through a number of stages. These stages include

1. being unaware of the issue;
2. being unengaged with the issue;
3. being undecided about acting;
4. deciding not to act;
5. deciding to act;
6. acting;
7. maintaining (Weinstein et al., 2008)

After completing the third stage, individuals face a decision tree where they must decide whether to take action (Weinstein et al., 2008). If they decide not to take any action, they have only progressed to the fourth stage (Weinstein et al., 2008). Those who decide to act have progressed instead to the fifth stage and move on to subsequent stages (Weinstein et al., 2008). This model is especially useful for developing ways to deal with patient noncompliance (Weinstein et al., 2008).

In order to achieve success when attempting a significant change in health behaviors, a person's belief in his or her own ability to succeed is paramount as a motivator (Glanz et al., 2002). Although Rosenstock (1974) considered the role of self-efficacy in the development of HBM, subsequent HBM researchers have largely overlooked it. Operationalizing self-efficacy is useful for exploring differences in health behaviors between individuals who share similar health beliefs, and who have access to similar socioeconomic assets. Self-efficacy also helps explain the cessation of many

unhealthy behaviors, such as lassitude, smoking, and poor dietary management. Because self-efficacy is such an important factor in the process of behavioral change, the construct warrants special attention in this discussion.

Self-Efficacy Theory

According to Bandura's (1977) self-efficacy is the belief that one's actions will yield a desired result. In order to achieve a desired health outcome, the individual must have some measure of control over a health condition, the change process, or the outcome. Because an individual seldom has control of the disease in question, and rarely has control over the results of a given treatment, theorists generally focus on self-efficacy in the process of change. Self-efficacy theory is central to social learning theory, now called social cognitive theory; the theory underlies many social cognitive constructs such as the role of observational learning. In social cognitive theory, the strength of observational or vicarious learning depends on the perceptions one has about the person exhibiting the desired behavior. For example, the more observers perceive an actor as knowledgeable, the more likely they are to adopt the modeled behavior. More importantly, the more an individual believes in his/her own ability to engage in such behavior, the more likely he/she is to do so.

Self-efficacy theory is not a standalone theory per se, but is instead an important theoretical construct that grounds social learning or social cognitive theory (Bandura, 1977). In the early years of social learning theory, Bandura (1977) explained many learning constructs in terms of the presence or absence of self-efficacy. Thus, self-efficacy became the modulating variable of many studies. Everything else being equal, two individuals with the same physical makeup and a similar interest in basketball should

have the same chances of success at the game. As any basketball fan will attest, it takes more than athletic prowess and motivation to play the game well enough to become a basketball champion. It also takes self-efficacy, that unyielding belief in one's self to be highly successful at basketball. To that end, many basketball players spend hours engaged in visualization exercise wherein they see themselves putting the ball through the hoop from remarkable distances (Feltz, Short, & Sullivan, 2008). The more one engages in visualizing the ball floating effortlessly through the air into the basket, the higher the personal shooting average.

Self-efficacy also relates to impression management. Bandura (1977) argued that anyone could create a positive impression by simply finishing assigned tasks on time, assuming the task was within the limits of the individual's capabilities. The difference between the individual who worked diligently on the assignment and completed it on time, and the always-late procrastinator is not self-efficacy; they likely both believed in their ability to do the job. They might have had equally efficacious beliefs about their ability to complete their assignments on time, but only the one who did so earned the positive impression of the boss, reinforcing his or her concept of self-efficacy. As such, self-efficacy as a causal or mediating factor is so strong that it supersedes all others.

Self-efficacy forms mostly from experience. These experiences lie in one of four domains: "performance accomplishments, vicarious experience, verbal persuasion, and physiological states" (Bandura, 1977, p. 195). Each of these four sources influences self-efficacy differently and in variable amounts. Because they are experienced in a deeply personal way, performance accomplishments exert the greatest influence in the formation of self-efficacy. Success breeds success, thus a succession of accomplishments improves

self-efficacy, because the accuracy of success estimates get stronger with each accomplishment (Bandura, Adams, Hardy, & Howells, 1980).

After selecting a health action, an individual with a strong sense of self-efficacy is more likely to invest more time and energy in the selected behavior than would another with lower levels of self-efficacy. In fact, people often mistakenly make personal health decisions using only self-efficacy information; they do not use information from vicarious experiences, the verbal persuasion of knowledgeable others, or indications of physiological stress (Bandura, 1977). This is not to say that self-efficacy is the sole influence over motivation to engage in health behaviors. Other factors include social sanctions that serve to normative a specific health action, and self-sanctions, which guide personal choices (Bandura, 1998).

Some components of social cognitive theory are causal, some are dependent, and some are both. Human agency is one of those factors that are causal in one context and dependent in another. In other words, human agency influences self-efficacy and self-efficacy influences human agency. Decety and Lamm (2007) defined human agency as the belief an individual controls his or her own thoughts, feelings, and behaviors. It is therefore not the same as self-efficacy, or the belief one's actions will yield a desired result. Highly agentic people readily acknowledge their role in the events of their life and take ownership of both successes and failures. In this sense, agency has a causal influence over self-efficacy.

Social cognitive theory describes human agency in terms of its properties, the effect of other theoretical constructs on it, and its effect on those same constructs. Bandura (2006) described the relationship between self-efficacy and human agency as

interactive, each construct influencing the other. Smith et al. (2000) expanded the discussion of the cyclical nature of the relationship, stating empirical examination of the relationship would require a complicated form of structured equation modeling. In addition, Smith et al. noted the emphasis on individual agency in previous studies, accusing researchers of tacitly ignoring collective agency as a social cognitive construct. However, differentiating between individual and collective agency is only half the battle. Researchers would still need to differentiate neurocognitive effects from neuroaffective effects (Panksepp, 2003).

Regardless of the direction social cognitive researchers take, a discussion of human agency is useful. There are four defining properties of human agency: intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2006):

To be an agent is to influence intentionally one's functioning and life circumstances. In this view, personal influence is part of the causal structure. People are self-organizing, proactive, self-regulating, and self-reflecting. They are not simply onlookers of their behavior. They are contributors to their life circumstances, not just products of them. (p. 164)

The most significant property of human agency, intentionality, includes the formation and implementation of action plans and development of strategies for acting on them (Bandura, 2006). In order to create intentionality, one need only evaluate the perceived benefits of a particular outcome. Solitude rarely shields behavior from public view; conversely, most behaviors are socially situated. The individual must rethink his or her action plan (Schwarzer & Renner, 2000). This happens most frequently when individuals come together as a group to solve some collective problem because when

private, individual action plans conflict with sociocultural norms, or when self-interest conflicts with the needs of a larger collective. According to social cognitive theory, a highly agentic group member readily changes his/her individual action plans to comport with the group (or collective) action plans.

Forethought is the component of human agency making it possible for projected outcomes to influence agency when the outcome has not yet occurred, thus the outcome itself cannot guide and motivate behaviors leading to the outcome (Crockett, 2002). Strictly speaking, if the outcome has not yet happened, it cannot have caused the behaviors that led to it. The construct of forethought makes it possible. When the agentic actor forms and develops a set of visual representations of the desired outcome, these visualizations can then motivate behaviors leading to the desired outcome.

The remaining two factors, self-reactiveness and self-reflectiveness, allows the agentic individual to adjust the approach to a given problem (Bandura, 1986). Through self-reactiveness, the agent regulates traversal through the action plan, making adjustments as needed to remain on course. Self-reflectiveness allows the agent to examine his or her functioning, to identify areas in need of improvement, and adjust self-efficacy accordingly. Just as personal agency can inform self-efficacy, self-efficacy can inform personal agency as well.

In novel situations where one has little to no experience, the transfer of agency to a qualified other still improves the patient's self-efficacy for making health action decisions. Patients frequently encounter a novel health challenge, which presents novel actions from which to choose. In such situations, it is common for the patient to delegate to the physician responsibility for defining a desired outcome and selecting the

appropriate health action. Patients regularly give control over every facet of their health challenge (including condition identification, treatment, and outcome expectancy) to the physician. The physician then has full agency to monitor, manage, and revise the health actions and outcomes. Rarely does the patient verify the physician's educational and experiential qualifications to select a desired outcome, to develop an action plan to achieve the desired outcome, or to monitor the progression toward the desired outcome, and to do so safely and effectively. When the patient gives proxy agency to the physician, the patient's expectations for a positive outcome increase. This transfer of agency to a knowledgeable other also improves the patient's self-efficacy for making health action decisions.

No one expects the patient to engage in vicarious learning by watching the physician (an influential other) perform a medical procedure; in this situation, the value of vicarious learning is extremely low given that physicians often perform complicated medical procedures requiring specialized skills. The role of human agency in this context is still important. Initially, human agency helps one develop self-efficacy, and subsequently reinforces and strengthens self-efficacy. Increasing one's perception of self-control over a given situation increases the odds the individual will engage in change behaviors. When a knowledgeable other demonstrates the behavior, the likelihood one will engage in the behavior improves. Routine exposure to the behavior, self-taught behaviors, and desensitization to the consequences of failure improves the chances one will repeat the behavior, while the opposite decreases the odds of repetition (Bandura, 2012).

Performing in a relaxed setting is easier than in the presence of anxiety, pressure, overstimulation, or fear. One can thus improve self-efficacy by controlling the performance environment. The reverse is also true; poor performance, lower achievement, and difficulty completing tasks promote reduced self-efficacy (Bandura, 2012).

Generally, individuals high in self-efficacy tend to be enthusiastic about life. They tend to engage when complex solutions are required, and tend to demonstrate more skill in overcoming challenges (Luszczynska & Schwarzer, 2005). They are more ambitious in the attainment of personal goals, are less likely to blame others for their shortcomings, and usually return to the task shortly after encountering obstructions or setbacks (Bandura, 1997). Conversely, less efficacious individuals often visualize failure, have little self-confidence, and avoid opportunities to make significant life changes (Schwarzer & Fuchs, 1996).

Others tend to appreciate highly efficacious people. Highly efficacious people help to build self-esteem in others at virtually every opportunity. Highly confident, self-efficacious people tend to achieve more, experience lower levels of stress, and are at a lower risk of depression (Bandura, 1997). The relationship among self-efficacy, self-esteem, and self-confidence is symbiotic; each promotes the other (Schwarzer & Fuchs, 1996). Self-esteem and self-confidence are multiplicative in the promotion of self-efficacy (Schwarzer & Fuchs, 1996). Self-efficacy promotes self-esteem, which in turn promotes self-confidence. Individuals' lows in self-efficacy are at increased risk for anxiety, depression, hypertension, back problems, and general malaise (Schwarzer & Fuchs, 1996).

Prevalence, Causes, and Transmission of HPV

HPV, a sexually transmitted infection (STI), is the most prevalent of all STIs. HPV affects the genital, oral, anal, and throat areas (Chaturvedi et al., 2011). Laboratory bioassay testing of polymerase chain reaction (PCR)-amplified deoxyribonucleic acid (DNA) is required in order to diagnose HPV definitively. The detection of a sequence of nucleotides that are in the polymorphic L1 region of the HPV genome indicates a positive test result (Bouvard et al., 2009). HPV infections classified as oncogenic or nononcogenic. If the HPV laboratory test is positive for genotypes 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, or 68, regardless of the presence of other genotypes, the infection is of an oncogenic type. Otherwise, if the assay indicates an HPV infection of genotype 6, 11, 40, 42, 43, 44, 54, 61, 72, or 81, the infection is of the nononcogenic type (Bouvard et al., 2009).

Individuals infected by HPV are often asymptomatic; frequently the infected individual is not even aware of the infection (Mroz, Forastiere, & Rocco, 2011). HPV infections tend to clear up on their own within two years among individuals whose immune systems are not compromised (Giuliano et al., 2011). In many cases, however, HPV symptoms do emerge.

Genital warts are the most common symptom. Less common are warts inside the throat. Men infected with certain varieties of HPV may develop anal cancer or penile cancer, although penile cancer from HPV is uncommon (Bouvard et al., 2009). HPV varieties that cause genital warts differ from those that cause cancer. HPV-related anal cancer is relatively rare (van Hamont, van Ham, Bakkers, Massuger, & Melchers, 2006).

Varieties of HPV

There are over 100 varieties of HPV (Greer, Wheeler, & Ladner, 1995). Over 40 HPV strains can infect the genital area (Faridi, Zahra, Khan, & Idrees, 2011). The most common HPV varieties are 6, 11, 16, and 18 (Dietz & Nyberg, 2011). Varieties 6 and 11 are associated with the most common and noticeable symptom of HPV genital warts (Partridge & Koutsky, 2006). One percent of sexually active men between 15 and 49 years of age have visible genital warts at any given time. HPV warts vary widely in shape (Sinal & Woods, 2005); they can appear in the anus or genitalia as a small bump or group of bumps, small or large, raised or flat, and may resemble a cauliflower (Lountzis & Rahman, 2008). Warts may also emerge around the mucous membrane of the mouth or on the tongue (Dietz & Nyberg, 2011).

Depending on the strain, HPV can also form in the throat, constricting airways and causing recurrent respiratory papillomatosis (RRP) (Chaturvedi et al., 2011). RRP occurs most frequently in children who contract HPV from their mothers during childbirth. Juvenile onset RRP (JORRP) is common among children as well. Two HPV strains (6 and -11, both low risks) are associated with oral RRP and genital condyloma RRP (Kidon, Shechter, & Toubi, 2011). Types 16 and 18 are the two most common high-risk (oncogenic) HPV types. These HPV strains manifest symptoms differently than their low-risk counterparts. HPV-16 and HPV-18 can cause cervical, anal, penile, vulvar, or oropharyngeal cancer. Pap smear screening can detect HPV in the anus. Fang, Ma, and Tan (2011) estimated that each year, 1,500 men contract anal cancer. Researchers have estimated that HPV is "associated with more than 85% of all cases of cancerous or precancerous anal lesions worldwide" (Dietz & Nyberg, 2011) p. 122.

Transmission of HPV

The most common method of HPV transmission is through sexual contact. Usually, transmission takes place during vaginal or anal intercourse, but it can happen during oral intercourse or genital-to-genital contact (Bosch et al., 2008). Both men and women can contract and transmit HPV, and both straight and gay sex can result in HPV infection (Partridge & Koutsky, 2006). It is possible to contract HPV from a sex partner who has no outward symptoms (Piketty et al., 2003). HPV transmission may also occur during digital contact with the anus or vagina, or with the use of sex toys (Partridge & Koutsky, 2006). Regardless of the manner of sexual contact, sexually active men and women can acquire HPV though various transmission methods.

Symptoms such as genital warts can appear within a few weeks or months after sexual contact with an infected partner, or they may never appear (Giuliano et al., 2007). Most people with HPV are unaware of the infection, or that they are transmitting the virus (Mroz et al., 2011). Even years after sexual contact and infection, a risk of spreading HPV remains (Burchell, Winer, De Sanjosé, & Franco, 2006; Tay, Ho, & Lim-Tan, 1990). Infection with one HPV strain does not preclude comorbid infection with another. Thus, an individual can contract both oncogenic and nononcogenic types of HPV (Heiligenberg et al., 2010).

HPV Treatment

Currently, there is no cure for HPV (Markowitz et al., 2007). Once acquired, the HPV infection can linger in the body for years. It can resurface long after the abatement of symptoms. It is possible, however, to treat the diseases caused by HPV. These include genital and oral warts, lesions, and life-threatening conditions such as cervical, anal, and

penile cancer (CDC, 2012). An HPV vaccine can be an effective preventative for HPV-6, HPV-11, HPV-16, and HPV-18 (Markowitz et al., 2007).

Several treatments are available for the removal of genital warts. Sometimes, the HPV-infected person will forego treatment to see whether the warts heal on their own (Fang et al., 2011). Self-administered, over-the-counter preparations can be effective for wart removal. Patients typically treat only warts that are visible outside the body, and do so in cycles with rest periods in between applications (Dietz & Nyberg, 2011).

Physician-administered treatment is generally more effective, especially when the warts are inside the body. Such treatments include laser wart removal, cryotherapy (freezing), tricholoroacetic acid (burning), and surgical excision (Dietz & Nyberg, 2011; Goldstone, 2011). Both patient-administered and physician-administered methods can be effective for the removal of warts; however, patients need to know removal of the wart does not mean that the infection is gone.

HPV-related anal cancer and cervical cancer develop from precancerous lesions that are not easy to spot (Chin-Hong, Vittinghoff, & Cranston, 2005). These lesions are not necessarily symptomatic (lesions may not hurt, bleed, or present any sign that they are dangerous) and they are hidden inside the body. For this reason, periodic precancerous lesion screening is important for men and women at risk for anal and cervical cancer (Fang et al., 2011). Research has shown receptive anal intercourse is the most important factor in anal HIV infection and the development of anal cancer (Piketty et al., 2003).

When precancerous lesions exist in the anal canal or on the cervix, surgical removal is important (Dietz & Nyberg, 2011). Radiation therapy and chemotherapy may

be appropriate treatment options for cancerous lesions, depending on the depth of the cancer (Workowski & Berman, 2011). If lesions are cancerous, the patient should explore treatment options after consulting with more than one physician (Fang et al., 2011).

Prevention of HPV

Use of condoms during all phases of sexual contact can lower the risk of HPV infection (Bleeker, Berkhof, & Hogewoning, 2005), which inherently reduces the risk of HPV-related diseases such as genital warts and cervical cancer (Goldstone et al., 2011), and presumably anal cancer. Because HPV can infect nongenital areas, condoms may not provide adequate protection for other areas of the body. Vaccination to prevent infection of HPV-6, HPV-11, HPV-16, and HPV-18 strains is available (Markowitz et al., 2007). The fewer sex partners one has, the lower the risk of HPV infection (Beibei et al., 2011; Giuliano et al., 2011; Nyitray et al., 2011a). Although not realistic for most adults, the only certain prevention method is sexual abstinence.

The Quadrivalent Vaccine

In 2006, the U.S. Food and Drug Administration (FDA; 2006) approved a quadrivalent HPV vaccine initially for women only. Shortly after FDA approval, the CDC began recommending initial vaccination of 11- and 12-year-old girls, and girls as young as 9 years old at the discretion of the physician. Catch-up vaccination of women 13 to 26 years of age followed. In 2011, the CDC issued initial recommendations for the vaccination of 11- and 12-year-old boys. As with girls, physicians had discretion as to whether they would vaccinate boys as young as 9 years old. Recommendations for catch-up vaccination of 13- to 21-year-old men followed. Vaccination of 22- to 26-year-old men was also at the physician's discretion. The CDC recommended vaccination of non-

immunocompromised men up to age 26 (2011) and MSM (2014) (CDC, 2011; Markowitz et al., 2007; Markowitz et al., 2014).

A study by Swedish et al. (2012) examined the degree to which the quadrivalent vaccine reduced the rate of recurrence of high-grade anal intraepithelial neoplasia (HGAIN) among HIV-negative MSM. Swedish et al. conducted an historical cohort study that included 202 participants who were all patients at a New York City clinic and were HIV-negative MSM with HGAIN. Swedish et al. collected data from a clinical monitoring report and from participant treatment records. After the participants had received treatment for neoplasia, researchers vaccinated them with the quadrivalent HPV vaccine and monitored their symptoms. The results of the study demonstrated vaccination is effective in reducing the recurrence of HGAIN among MSM. Swedish et al. found a preventive effect for individuals with HGAIN in the vaccinated group. The unvaccinated group had faster onset and more frequent manifestations of symptoms than did the vaccinated group. The authors argued for more research in order to determine the effectiveness of the vaccine as an adjuvant for patients suffering from anal neoplasia, since standard treatments such as topical, surgical, and pharmacological alternatives had high recurrence rates.

One of the barriers to global acceptance of the HPV quadrivalent vaccine or any vaccine is cost. In Europe, researchers have had to justify the cost by demonstrating the vaccine leads to improvements in health and is economically feasible for the communities in which policy makers prescribe it. In one such study in France, Bergeron, Largeron, McAllister, Mathevet, and Remy (2008) found when coupled with regular HPV

screening, the vaccine improved overall health and wellbeing of the 14-year-old girls studied and the benefits justified the cost to the French government.

Treatment providers administer the quadrivalent vaccine in three stages over six months. The vaccine is prepared with LI proteins from HPV-6, HPV-11, HPV-16, and HPV-18 (Markowitz et al., 2007) and is most effective at preventing the most common strains of HPV (Bergeron et al., 2008). Studies have shown reductions of 85% to 95% in HPV-16 and HPV-18 infection rates from vaccinations alone (Bergeron et al., 2008; Hoy et al., 2009). The reduction in infection rates translates into reductions of up to 80% of anal carcinoma cases (Dietz & Nyberg, 2011).

Cost effectiveness of a vaccine is a real concern for nations lacking unlimited healthcare budgets. The HPV vaccine required a cost-benefit analysis to assess the case of global use. Kim (2010) conducted such a study and investigated the cost effectiveness of the vaccination of MSM with the quadrivalent HPV vaccine. Kim calculated the required cost per cost-adjusted year of life gained for 12-year-old, 20-year-old, and 26-year-old MSM. An assumption was that younger men have had less exposure to HPV in their lifetimes, making vaccination more effective. The 12-year-old group yielded the most effective results, with $15,290 spent per life year gained, compared to $37,830 for 26-year-olds. Kim took into account genital warts as well as anal cancer. The cost for the two groups increased by approximately 10%, when the removal of genital warts is included. From these data, Kim concluded the HPV vaccine was cost effective for MSM, but returns diminished with the age of the patient.

HPV and Men Who Have Sex with Men

MSM form a major epidemiological group in the study of HPV, as they are more likely to experience symptoms from an HPV infection. HPV in men can infect the mouth, the oropharynx area, genital area, penis, and anus (Chin-Hong et al., 2005). For MSM, the primary causes of HPV infection are anal and oral sex. MSM are 17 times more likely to get anal cancer after an anal HPV infection than are men who only have sex with women (Giuliano et al., 2007).

Understanding the frequency of symptomatic HPV in MSM is intertwined with the frequency of HIV in MSM. Anal cancer appears to be something of a marker for the combination. The rates of anal cancer have been rising since 1973 (no cases reported in men in 1973). Partridge and Koutsky (2006) theorized a relationship between the rise in anal cancer and the then new HIV epidemic in the 1980s. They attributed at least part of the cause to the increase in exposure over time to both HPV and HIV. They argued sexual behavior intensified as HIV became widespread. According to Partridge and Koutsky, HPV infections in HIV-positive men tend to last longer, and reactivations of latent HPV infections are more common. The compromised immune system resulting from HIV infection is unable to detect the presence of viruses and bacteria, which can cause infections to develop unabated (McElrath, 2010).

HIV-positive MSM tends to contract anal HPV at higher rates, and they often become infected with multiple HPV strains. Infection with more than one HPV strain can later progress to HGAIN, a precursor to anal cancer. While the number of sexual partners remains a significant risk factor for the development of anal cancer, research has not

shown age itself to be a significant predictor of HPV infection (Bosch et al., 2008; Chaturvedi et al., 2011).

In contrast to the studies that included HIV-positive MSM, Goldstone et al. (2011) examined prevalence and risk factors among young, HIV-negative MSM who had no observable HPV lesions and did not receive a HPV diagnosis. Their study is notable for its findings suggesting HPV could be acquired with no significant penile penetration. They recruited 602 MSM between 16 and 27 years of age from a variety of HPV testing sites in Australia, Brazil, Canada, Croatia, Germany, Mexico, Spain, and the United States. Men were included in the sample if they had five or fewer lifetime sex partners. Participants who had not had intercourse with an MSM must have engaged in oral sex at least once. While they excluded candidates with an HIV diagnosis at the commencement of the study, those who seroconverted after the commencement of the study remained.

Goldstone et al. (2011) performed no cytological/HPV prescreening. After checking for disqualifying lesions, they assayed participant blood for HPV DNA. They found that combined prevalence of HPV for any tested type (HPV 6, 11, 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59) was 48.1%. Prevalence was 18.5% at the penis, 17.1% scrotum, 33.0% at the perianal/perineal region, and 42.4% at the anal canal. Because the study was oriented to the capabilities of the quadrivalent HPV vaccine, Goldstone et al. paid special attention to infections of HPV-6, HPV-11, HPV-16, or HPV-18. They found that 30.5% of participants were positive for at least one of the strains under investigation. The researchers detected one or more of these strains at the anal canal in 25.2% of the cases, and at perineal site in 19.2% of cases (Goldstone et al., 2011).

The risk factors identified by Goldstone et al. (2011) included tobacco use, young age, high number of lifetime sex partners, and low rates of condom use. In this study, MSM had consistently higher rates of penile, scrotal, and perineal infection of HPV. Condom use yielded inconsistent results, which suggested it is possible to transmit HPV in the absence of significant penile penetration. Goldstone et al. concluded MSM, being a high-risk group, would likely benefit from early prevention.

Lu et al. (2011) examined the seroprevalence of the HPV strains in the quadrivalent vaccine and its associations. They used data from the human papillomavirus infection in men (HIM) study, a longitudinal study conducted in Tampa, Florida, Cuernavaca, Mexico, and São Paolo, Brazil. Lu et al. recruited participants between June 2005 and August 2009. The Brazilian cohort came primarily from health institutions, while the Mexican cohort relied on referrals from government and military officials. In the United States cohort, participants were residents in the Tampa, Florida area, more specifically, the area surrounding the University of South Florida.

The inclusion criteria required participants be a male between 18 and 70 years of age, no history of any STI, and no history of imprisonment, no history of homelessness, a commitment to remain in the study for a minimum of four years, and a commitment to attend 10 visits every 6 months (Lu et al., 2011). The recruitment of participants yielded a sample size of 1,477, of which 1,247 were men who reported having sex with only with women (MSW), 64 were men reported having sex with both men and women, and 64 were MSM. Data collection relied on the use of a computer-assisted self-interview instrument. For the purposes of the study, Lu et al. defined sex as any kind of sexual contact.

Lu et al. (2011) found the overall prevalence of HPV-6, HPV-11, HPV-16, and HPV-18 were 14.8%, 17.3%, 11.2%, and 5.8% respectively. Just over five percent of participants reported never having had sex. Sixty-five percent of MSM tested positive for one or more of the four HPV types. Fifty-nine point four percent of MSMW tested positive for one or more HPV strain. Seroprevalence of HPV-6 and HPV-11 was 51.6% in MSM and 43.5 in MSMW. Seroprevalence of HPV-16 and HPV-18 was 50% in MSM and 45.3% in MSMW. Lu et al. found that number of lifetime male anal sex partners correlated positively with age; as age increased the number of male anal sex partners also increased. This is significant because other studies had not shown age to be a significant risk factor (Chin-Hong et al, 2004; Lu et al., 2011; Nyitray et al., 2011a). Lu et al. concluded that MSM and MSMW are at a higher risk for the HPV types covered by the quadrivalent vaccine.

In yet another study, researchers found MSM and women benefit most from HPV vaccination. Heiligenberg et al. (2010) examined the prevalence of eight strains of HPV across MSM, MSW, and Women in Amsterdam. Heiligenberg et al. randomly contacted potential participants using the Amsterdam population registry; 1,364 of those contacted agreed to participate: 729 women, 576 MSW, and 44 MSM. After singing agreement forms documenting their informed consent, each participant submitted to an interview and provided blood samples. Testing revealed HPV infection rates for MSM were 31.4% for HPV-16, 43.3% for HPV-18, and 24.4% for HPV-45. Among women, the rates were 29.1% for HPV-16, 25.7% for HPV-18, and 13.3% for HPV-45. The rate of HPV-16 infection did not differ significantly between MSM and women. The aggregate HPV

prevalence in this study was high, particularly for cancer-causing strains among MSM and women.

Anal intercourse, particularly receptive anal intercourse, increases the risk of HPV infection (Dietz & Nyberg, 2011; Nyitray et al, 2011a). Using data from the earlier EXPLORE Study, researchers explored the effectiveness of behavioral interventions on the reduction of HIV among sexually active MSM, Chin-Hong et al. (2004) examined the role of age in anal HPV infection prevalence among MSM. The inclusion criteria for MSM in the EXPLORE Study required participants to be at least 16 years old, had receptive anal sex with at least one man in the previous year, and be HIV negative at commencement of the study. The EXPLORE Study sample came from Boston, Massachusetts, New York, New York, Denver, Colorado, and San Francisco, California.

The recruited participants from gay-oriented businesses such as gay bars, bathhouses, clubs (both sex and health-oriented), and video arcades. Between January 2001 and October 2002, researchers enrolled 1,409 men who were between 18 and 89 years of age. All participants submitted blood specimens and completed a questionnaire using an audio computer-assisted self-interview system. The presence of HPV was assayed using PCR amplified HPV DNA, which is a common in HPV testing. Chin-Hong et al. (2004) reported that the anal HPV prevalence in the sample was 57%.

The high-risk carcinogenic HPV strains (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, and 73) accounted for 26% of all observed anal HPV infections (Chin-Hong et al., 2004). HPV-16 was the most common strain, and accounted for 12% of all infections. The prevalence was similar across all four sites. Chin-Hong et al found that receptive anal sex with more than five men in the last six months was a positive predictor of anal

HPV infection. Age, among other factors, was not a significant predictor of infection. Chin-Hong et al. found that anal HPV has a high prevalence across MSM in all age groups in urban settings. Furthermore, they found anal HPV epidemiology does not parallel that of cervical HPV, which drops off after age 30 for women. Based on these findings, Chin-Hong et al. concluded a high proportion of HIV negative men are at risk of anal cancer.

Using data from EXPLORE study, Nyitray et al. (2011a) compared and characterized the HPV prevalence between MSW. Nyitray et al. found HPV infection among MSM correlated positively with number of sex partners. According to Nyitray et al., MSM who never used condoms were 6 times more likely to have anal HPV. The rates of infection with multiple HPV strains differed significantly between MSM and MSW; the rate for MSM was 33.0% and the rate for MSW was 3.2%. The infection rate for HPV-16 was 6.3% among MSM and 2.2% among MSW. The most common HPV strains detected were HPV-16, HPV-6, and HPV-51. Among MSM, the most common types were HPV-6, HPV-84, HPV-53, and HPV-16. Nyitray et al. detected 34 different HPV genotypes among MSW and 36 HPV genotypes among MSM.

With the exception of HPV-16, a higher proportion of MSW had a specific type of infection at the genitals mirroring the type detected at the anal canal. Nyitray et al. found only 21 cases of anal HPV-6 among MSW, yet 47.6% had an HPV-6 infection of the genitals. Nyitray et al. (2011a) concluded condom use during sex and reduction of sex partners are the best ways for MSM to reduce their risk of HPV infection. For MSW, Nyitray et al. recommended a reduction in the number of partners with whom they have

sex. Men who remained in a relationship for more than 10 years had a lower risk of anal HPV infection.

Additionally, Nyitray et al. (2011b) investigated the incidence, persistence, and factors associated with anal HPV among men. In the study, Nyitray et al. defined persistence as a continued occurrence of type-specific infection at each unscheduled visit. Nyitray et al. took anal samples from men aged 18 to 70-years-old from Sao Paolo, Brazil, Cuernavaca, Mexico, and Tampa, Florida.

Eligibility criteria for this study included the absence of any STI history (Nyitray et al., 2011b). A total of 954 MSW and 156 MSM participated in the first study (Nyitray et al., 2011b). Of the 4,063 participants in the larger HIM study (and participants in the first examination), 3,395 returned for the follow-up visit six months later (Nyitray et al., 2011b). The first 1,763 men who provided anal tissue samples were included in the study. Nyitray et al. used computer-assisted self-interview (CASI) to ask the participants questions. Of the total population, 32% of MSM and 4.2% of MSW exhibited a type-specific persistent anal HPV infection for at least one HPV genotype. MSM tended to be persistent for more than one type of anal HPV compared to MSW (16% vs. 1.6%). HPV-16 persistence was 5.1% for MSM and 0% for MSW (Nyitray et al., 2011b).

Nyitray et al. (2011b) evaluated men with widespread HPV for type-specific approval, which was a type-specific HPV infection at registration that was then untraceable at the six-month appointment. Nyitray et al. summed widespread infections and approval in events across genotypes for approval rates of oncogenic, nononcogenic, and any HPV type. Nyitray et al. found “11 MSM had prevalent HPV-16 infection, and three (27.2%) of these cleared the infection by the six-month visit” (Nyitray et al., 2011b,

p.12). All of the 21 MSW with prevalent HPV-16 "cleared the infection by the six-month visit. Type-specific clearance of any HPV type for MSM and MSW compared with 57.1% and 70.9%, respectively" (Nyitray et al., 2011b, p. 12). They concluded approximately 16% of MSM have a persistent oncogenic infection, though this is much lower for MSW. The authors found MSM have more persistent anal HPV infections than MSW. This accounts for anal cancer incidence rates being high among MSM (Nyitray et al., 2011b, p.12).

In the study regarding the relationship between anal HPV, squamous intraepithital lesions (SIL), anal cancer and HIV infection, Piketty et al. (2003) investigated how men who denied having anal sex with other men but were HIV positive were acquiring anal HPV infections, including precursor cancer lesions like SIL. The cross-sectional study recruited participants from June 1999 to October 2000 who were HIV positive, 18 years or older and acquired HIV through (a) homosexual or bisexual contact and/or (b) intravenous drug use. Piketty et al. excluded people who were intravenous drug users and engaged in MSM activities. In total, there were 117 participants; 50 heterosexual HIV positive intravenous drug users and 67 HIV positive MSM none drug users.

The participants were patients at the Georges Pompidou hospital in Paris, France. Applicants completed a self-administered survey focusing on risk activities, sexual activities, and age of sexual debut. Patients contributed anal tissue samples for HPV DNA and anal cytology as well as blood tests for CD4 counts. Piketty et al. (2003) compared patients with HPV infection and histologic or cytologic abnormalities with patients with no evidence of HPV infection or anal disease. Tests showed that of the 117 anal cytology samples, 66 (56%) were abnormal. Of the 50 intravenous drug users, 18

displayed abnormal anal cytology (36%). This was higher in the HIV-positive MSM group (72%). They detected anal HPV DNA in 80 (68%) men. For nonintravenous drug users, abnormal anal cytology was 46%, with an occurrence of at least 85% among men. In conclusion, the authors theorized immunosuppression in a group who denied anal sex might be responsible for the manifestation of what might otherwise be a low-level or undetectable HPV infection.

People acquire an anal HPV infection through the insertion of fingers or sex toys that are momentarily infected, and by shedding from other sites in the genital area (Delany-Moretlwe, Chikandiwa, & Gibbs, 2013). Thus, anal HPV may be comorbid with other infections at times (Piketty et al., 2003). The authors concluded screening abnormal anal cells as well as anal HPV DNA, regardless of history of anal sex for individuals with severe immunodeficiency (Piketty et al., 2003).

Genital HPV in Men

In another study, Nyitray et al. (2011c) compared the HPV prevalence in various participant test groups and identified a number of variables related to infections of oncogenic with HPV types from data. Using data from the HIM study, they focused on genital HPV. Nyitray et al. collected data from 4,074 men between June 2005 and December 2009 from three different sites in Tampa, Florida; Cuernavaca, Mexico; and Sao Paolo, Brazil. Of this population, 170 were MSM and 214 were MSMW. Nyitray et al. collected penile and scrotal swabs from this population for testing. The authors used the CASI instrument to collect behavioral risk data. The results indicated MSMW had the highest prevalence of nononcogenic HPV and multiple strains of HPV when compared to MSW and MSM. The prevalence of intestinal oncogenic with HPV types was 29.7%

(MSM), 39.6 (MSMW), and 30% (MSW). The five most common types in MSM were 6, 16, 61, 45, and 81. In MSMW, the common types were 6, 84, 16, 66, and CP6109/52 (tied). Among MSW, the five most common types were 62, 84, 16, CP6108, and 51 (Nyitray et al., 2011c). For MSM, the two significant variables were alcohol use in the last month and age. For MSMW, age, alcohol consumption, and higher numbers of female sex partners were significant variables. For MSW, there were several factors, including age, condom use, alcohol use, the number of female sex partners, and smoking (Nyitray et al., 2011c).

In conclusion, the prevalence of genital HPV was similar in MSM and MSW, but higher in MSMW. MSM and MSMW had a higher prevalence of HPV-6 and HPV-11 (Nyitray et al, 2011c). The study did not find a correlation between sexual behavior or the number of sexual partners and genital HPV between MSM and MSMW (Nyitray et al, 2011c). The authors noted this might be because they missed data regarding partners in noninsertive sex acts (Nyitray et al, 2011c). For example, masturbation, partners, and frequency of penetrative sex acts might play a role in addition to the number of partners (Nyitray et al, 2011c). Nyitray et al. (2011c) concluded future studies should look into the transmission possibilities of nonpenetrative sex and HPV and even nonsexual acts.

Guiliano et al. (2011) conducted research estimating incidence and clearance of genital HPV in men in general, including both MSM and MSW. Guiliano et al. (2011) conducted research with a sub-cohort obtained from the ongoing HIM study. The study period was from July 2005 to September 2009. The researchers examined the participants once before enrollment, once at enrollment, then every six months thereafter for a maximum of four years. Participants answered questionnaires presented through the

CASI system. The median total follow up time was 27.5 months. To be eligible for the study, men had to be between 18 and 70-years-old at enrollment, HIV negative, have had no history of HPV, no manifestations of HPV (penile discharge, observable warts), no participation in any vaccine study, and with no anal or penile cancer.

Giuliano et al. (2011) found HPV infection in 38.4 per 1000 person-moths in a sample of 1,159 men from a larger cohort. The researchers documented higher numbers of female sex partners among MSW led to higher acquisition of genital HPV. However, among MSM, the infection rate of genital HPV was higher in those men who had more than three anal sex partners (men) in the last six months. The mean time to clearance from any HPV infection was 7.52 months. Giuliano et al. found a negative correlation between length of time to clearance of genital HPV and age. Specifically, the mean to clearance was 9.53 months for the 18 to 30 year old group, 7.30 months for the 31 to 39 year old group, and 6.21 months for age 45 to 70 year old group. Guiliano et al. speculated this might be due to the presence of HPV antibodies predating the infection in older men. They also found oncogenic HPV types generally took longer to clear than did nononcogenic HPV types (mean time to clearance of all age groups was 6.60 months and 9.33 months respectively).

Genital warts interfere with quality of life. Mortensen and Larsen (2010) conducted semi-structured qualitative interviews with six MSM who they recruited from a clinic at the Bispebjerg Hospital in Copenhagen, Denmark and through gay media. They invited MSM who had genital warts for at least three months and who had no other STI history. Of six participants, four had anal genital warts, five had perianal genital warts, and one had penile warts. Three of the six subjects had two forms of genital warts.

Mortensen and Larsen (2010) found participants had not known much about HPV or genital warts until they became infected (Mortensen & Larsen, 2010). Upon the eruption of warts, their interest in learning more about HPV grew; they attributed their increased interest primarily to the cancer-causing potential HPV infection. For example, one participant noted the vagueness of the transmission HPV mechanism; he was not certain where and how he acquired it.

The authors also found participants were unwilling to have a group interview because of the social stigma associated with HPV Mortensen and Larsen (2010). According to Mortensen and Larsen (2010), patients were afraid of rejection and isolation from the homosexual community and mostly had withdrawn from sexual contact and the search for companionship. When the participants did attempt sexual contact, they felt tense and awkward. Revealing their genital warts status to partners generally resulted in further isolation. Fear of belittlement or calumnious gossip was widespread. Several of the interviewees compared genital warts to HIV without health risks but with the full social dimension of ostracism (Mortensen & Larsen, 2010). Patients reported feeling tainted and had highly negative feelings toward their bodies because of the infection. Mortensen and Larsen concluded MSM not only needed better information about genital warts, but also about HPV in general. This knowledge would help to both blunt psychological trauma and take positive steps toward preventative actions and safer sexual behavior (Mortensen & Larsen, 2010).

Truesdale and Goldstone (2010) researched the factors that influenced MSM participation in anal cancer screening. They conducted a chart review and contacted patients who indicated a willingness to complete a questionnaire. To be eligible, the

patient was required to have had an anal dysplasia diagnosis. Truesdale and Goldstone assigned participants to one of three groups: (a) regular follow-up (RF) group, (b) lost to follow-up (LTF) group, and (c) lost comeback (LCB) group. They assigned participants who presented for at least one follow up visit per year to the RF group (n = 96), less than one follow up visit per year to the LTF group (n = 50), and no follow up visits to the LCB group (n = 49). They found that follow up visitation (or lack thereof) was a function of patient identity, knowledge of HPV and cancer, the subjective emotional state of the patient, general HPV knowledge, and sexual behavior.

Truesdale and Goldstone (2010) found no significant relationship between age, race, education level, insurance type, HIV status, relationship status, or hours worked per week and presentation for follow up visits. Participants in the LCB group had more sex partners than did participants in the LTF group. For the LCB group, the odds of returning for follow up increased by 8% for each sex partner. Men who *always* or *sometimes* used a condom during anal sex were 3.34 times more likely to present for follow up. General HPV knowledge was higher in the RF group, although the difference between the LFT and LCB groups was not statistically significant. Members of the RF group were far more likely (74.0%) to describe their HPV diagnosis was "upsetting" than were members of the LTF group (54.0%). Truesdale and Goldstone also found that having more sexual partners, having more physical symptoms, perceiving oneself as promiscuous, and feeling upset over the HPV diagnosis were predictive of more follow up visits.

HPV and HIV-Positive Men

Increased duration of the HPV infection and the frequent occurrence of an HPV-caused disease (such as genital warts) are common among HIV-positive men. HIV

generally complicates and worsens all cases of HPV. Parisi et al. (2010) examined anal and oral HPV in HIV-positive MSM. Parisi et al. evaluated participants at baseline and then after six months. They collected DNA specimens using oral and anal swabs. The prevalence of oral and anal HPV did not vary significantly between baseline and checkup. Oral HPV at baseline was 20.1% in all participants and 21.3% at follow up. Anal HPV at baseline was 88.6% and 86.3% at follow up. Seventy-five percent of participants had persistent HPV six months later. More specifically, high risk HPV was persistent at 71.4%, while low risk HPV was 76.7%.

Parisi et al. (2010) argued the high prevalence and persistence of oral and anal HPV in HIV-positive MSM was because HIV increased the persistence of HPV, and it facilitated the acquisition of new types of HPV, as well as reactivation of latent infection. They found evidence of the existence of two sub-groups in the study: (a) a younger group with less anti-retroviral treatment and lower CD4 counts and, (b) a smaller, older group with more treatment and higher CD4 counts. The larger, younger group tended to have more anal and oral HPV infection than did the older group, while the older group showed opposite characteristics. Parisi et al. noted anal cancer in HIV positive individuals was increasing, and patients needed to consider monitoring and intervention using vaccine. The authors recommended further research into the effectiveness of the vaccine, and the relationship between HIV viral load and HPV infection. They also recommended investigation into other factors leading to HPV infection.

Gao et al. (2010) performed an in-depth examination of HIV-positive MSM with anal HPV focusing on two populations in China: one group in Beijing, and another in Tianjin. The researchers recruited through outreach or community-based organizations,

then had blood samples and anal swabs taken for HIV and HPV testing. Out of those recruited 578 participants' yielded testable data. The most common HPV genotypes identified were HPV-6 (19.6%), HPV-16 (13.0%), HPV-52 (8.5%), and HPV-11 (7.6%). HIV prevalence in the sample was 8.5%. Of HIV negative men, 58.9% had at least one variety of HPV. For HIV positive men, 96% had some form of HPV. For HIV-positive MSM, the most common HPV varieties were HPV-16 (34%), HIV-6 (30%), HIV-52 (18.0%), and HIV-18/-45 (both tied at 14%). Co-infection with more than one kind of HPV was common in HIV-positive MSM, at 54.0% of all HIV positive participants (Gao et al., 2010). HIV negative MSM had a much lower co-infection rate at 26.9%. Gao et al. found a significant association between anal HPV and HIV positive status, and a significant association between co-infection of more than one HPV type and HIV positive status.

The authors theorized the fundamental connection among HIV acquisition and HPV infection (Gao et al., 2010). One theory was that immunodeficiency caused by HIV results in the increased risk of HPV infection. Additionally, the authors observed multiple confections of HPV varieties linked with HIV positive status and demonstrating evidence of a causal relationship. However, Gao et al. suggested this connection might be bidirectional. In conclusion, they stated HPV infection was a separate interpreter for HIV infection. However, if a causal association exists between the two, it may be necessary to introduce the HPV vaccine to the MSM population as a strategy to prevent HIV acquisition (Gao et al., 2010).

Pokomandy et al. (2009) also studied the frequency, clearance, and infection rate of anal HPV in HIV-positive MSM through the Human Immunodeficiency and Papilloma

Virus Research Group (HIPVIRG). For this longitudinal study, Pokomandy et al. recruited participants through Canadian HIV clinics. Participants were eligible if they were 19 to 65-years-old, MSM, had HIV, and had a CD4 count of less than 500. Additionally the participants were eligible if they were not on highly active antiretroviral therapy (HAART), if they were currently receiving the HAART treatment, or scheduled to do so in the next six months. Pokomandy et al. excluded those patients who received treatment for anal cancer or anal lesion with immunomodulatory agents. Median CD4 count for the group (n = 247) was 380. Average age was 42, and average time since HIV diagnosis was 10.7 years. Infection with one or more HPV types at baseline was 97.9%, while infection with more than one strain of HPV was 90.9%. The median number of HPV types was five strains.

The most prevalent HPV varieties were 16, 6, 42, 18, 11, 52, 45, 18, 11, 52, 45, and 84 (38.2%, 35.3%, 28.6%, 24.5%, 23.2%, 21.6%, 21.2%, 21.2%, 12.2%, 13.5%, and 14.1%) (Pokomandy et al., 2009). HPV-16 had the lowest clearance rate of all varieties of HPV at 12.2 cleared episodes per 1000 person months. HPV-6 and -11 also cleared only slowly, each at 13.5 and 14.1 per 1000 person months, respectively. HPV-52, -53, and -16 had the highest production rates with 10.8, 10.8, and 9.8 new episodes detected per 1000 people. Thirty-three percent of patients were negative for HPV-16 at the baseline within 36 months. The authors noted HPV-16 and -18 had prolonged retention in patients, but many other varieties of HPV and co-infection were extremely high. As a result, it was possible many other kinds of HPV were causing AIN lesions.

Once infected with one strain of HPV, it is easier to contract other strains. Pokomandy et al. (2009) affirmed HIV increased the persistence of HPV infections and

make it easier to acquire other HPV strains, and facilitated the recurrence of dormant infections. Anal swabbing cannot detect AIN, the detection of AIN requires an anal biopsy. Pokomandy et al. called for more research into strategies to prevent anal cancer in HIV-positive MSM, and to understand better why some HPV varieties are more persistent than are others, including those leading to AIN.

Not all studies have provided consistent results relative to oncogenic HPV among HIV-positive MSM. In a study of factors contributing to anal HPV among 445 HIV-positive MSM in Brazil, Guimarães et al. (2011) found the prevalence for any anal HPV type was 65.6%; 40.7% of participants had some form of oncogenic HPV. HPV-11 and HPV-6 were the two most common varieties overall. These results reflected significant lower HPV rates than did other studies of anal HPV among HIV-positive MSM (i.e. Gao et al., 2011; Parisi et al., 2010). Guimarães et al. stressed that (a) high prevalence of anal HPV in HIV-positive MSM and (b) the known link between anal HPV and anal cancer both highlight the importance of anal screening in this high-risk group.

The considerable comorbidity of HIV and anal HPV suggested a strong relationship between the two. Chin-Hong et al. (2009) researched this comorbidity using the prospective cohort from the EXPLORE. To delineate this cohort, they excluded men who were in monogamous relationships for more than two years with a HIV negative partner. Chin-Hong et al. examined 1,409 MSM in 6-month intervals from baseline to at least 12 months, and to a maximum of 48 months. They tested participants for both HIV and HPV at each visit. Results indicated those participants who were HIV negative at baseline, 51 (1.17%) seroconverted. Furthermore, 81% of seroconverted participants tested positive for anal HPV. Chin-Hong et al. did not clarify whether participants were

precisely positive at the baseline or after; however, the rate of HPV in the HIV seroconverted group was higher than in the nonseroconverted group (57%).

Infection with one to two or more HPV strains was associated with acquisition of HIV. A history of *methamphetamine* use in the past six months and unprotected sexual intercourse were predictive indicators of positive HIV status (Chin-Hong, et al., 2009). After adjusting for sexual behaviors, anal HPV was an independent risk factor for HIV seroconversion. Chin-Hong et al. (2009) could not definitively explain the mechanism responsible, although they asserted HPV essentially creates friable mucosal tissue, the infected person was more susceptible to post-coital bleeding and therefore, reception of HIV. Chin-Hong et al. (2009) concluded HPV is an independent contributing factor of HIV; however, they offered no compelling evidence one HPV strain contributes more or less than another strain. There is need for additional research regarding the role of abnormal anal cytology in HIV acquisition is needed, as is research of whether HPV exerts the same influence over HIV in women.

Penile Cancer and Precursors

Penile intraepithelial neoplasia (PeIN) is a precursor to penile cancer in much the same way as AIN is a precursor to anal cancer and cervical intraepithelial neoplasia (CIN) is a precursor to cervical cancer. Kreuter et al. (2008) studied the incidence of PeIN among 263 Caucasian HIV-positive MSM (mean CD4 = 476) who were between 19 and 69 year of age. Kreuter et al. screened participants for anal and penile HPV. They examined participants for lesions and when found, conducted biopsies to determine the presence of condylomata. According to Kreuter et al., 59.3% showed anal dysplasia, 31.2% high grade AIN, and 32.7% low grade AIN.

Prostatic intraepithelial neoplasia (PIN) was present in 11 participants and 10 participants had either high-grade (8.5%) or low-grade (4.1%) AIN. Kreuter et al. (2008) concluded that although PIN and PeIN were rare in the general population, they were not as rare among HIV-positive MSM. Therefore, HIV positive MSN should undergo both AIN and PIN screening.

Quadrivalent and HIV-Positive MSM

As of 2015, there are no approved HPV screening tests for men. For women, the only approved test is to screen for cervical cancer, and then only in women aged 30 and over. (Zimet & Rosenthal, 2010). Because of the high rates of anal cancer among MSM and HIV positive individuals, some experts have recommended screening for anal cancer using an anal pap smear (Bratcher & Palefsky, 2008; Kreuter & Wieland, 2009). Vaccination is also an important HPV disease management tool. According to Markowitz et al. (2007), HPV vaccines are safe for use in men through age 26; clinicians recommend immunization for boys at 11 to 12 years of age.

The quadrivalent HPV vaccine is 90% effective against HPV-6, HPV-11, HPV-16, and HPV-18 in 16 to 26 year old men, and can prevent up to 80% of anal cancer cases (Dietz & Nyberg, 2011). However, although cancer prevention is available to MSM, personal health, sexual behavior, culture, and beliefs about HPV can obstruct access to care for some MSM. According to Dietz and Nyberg (2011), physicians have an obligation to integrate sexual health history and vaccination into male patient care, especially for MSM patients. Diligent screening and the use of vaccines can reduce HPV infection rates, rates of anal and genital cancer caused by HPV, and HIV infection rates globally.

Studies have demonstrated vaccination helps to slow down the transmission of HPV, as it lowers susceptibility to HIV, and does so safely. Using data collected at eight clinical sites in the United States, Wilkin et al. (2010) conducted a single-arm, open-label clinical trial of the quadrivalent HPV vaccine in 109 HIV-positive men (CD4 > 200). Participants received intramuscular injections of 0.5 ml. at study commencement, and again at weeks 8 and 24. No grade 3 adverse events occurred as a direct result of the vaccine, although some participants did report grade 1 or grade 2 injection site reactions. No adverse events reported directly or indirectly related to CD4 counts or HIV-1 RNA levels.

Knowledge about HPV and Vaccine among MSM

Awareness of the severity of HPV and some of the medically serious risks for MSM, such as anal or penile cancer, is new. As a result, minimal data exist regarding the knowledge of HPV and HPV vaccine among men in general, and more specifically, among MSM. Simatherai et al. (2009) examined the attitudes and knowledge of Australian MSM about the HPV vaccine. They recruited men 18 years of age and older who had had sex with a male in the previous 12 months. Two hundred men (mean age, 27 years) completed a survey containing questions about their sexual experiences with other men. Simatherai et al. asked participants whether they would be willing to pay $450 for the vaccine.

Simatherai et al. (2009) informed them the vaccine would prevent most cases of anal and genital warts, and it would prevent 80% of all anal cancers. Data analysis revealed the average age of first sexual contact in this sample was 18 years old, and the

average age for first anal sex was 20 years old. By the time they reached their 20th year, these men had already had an average of 15 sex partners.

Knowledge about HPV was sparse in this sample; only 74% of respondents had ever heard of HPV or "the wart virus." Only 30% had ever heard of the HPV vaccine. Forty-seven percent of respondents said they would be willing to pay $450 to obtain the vaccine. When presented with an opportunity to obtain the vaccine at no charge, participants were more eager: 93% said they would disclose their MSM status to a health professional if it meant getting the vaccine at no cost. When asked at what age they would feel comfortable making this disclosure, the median answer was 20 years of age. Simatherai et al. noted if the vaccine were actually available without cost to self-identifying MSM, most of these men would avail themselves of it only after their sexual debut, thus risking early exposure to HPV. In addition, Simatherai et al. also suggested knowledge about HPV and anal cancer among MSM was very limited, and any attempt to address HPV in this population must have an educational component.

Reiter et al. (2010) studied the acceptability of an HPV vaccine by surveying 306 MSM, 236 who identified as gay, and 70 who identified as bisexual. Reiter et al. found the majority of men had heard of HPV (79%) and were aware a vaccine was available (73%), yet their knowledge about the relationship between HPV and warts and HPV and cancer was limited at best. On average, participants supplied correct answers only 49% of the time. Areas where knowledge was weak included how HPV could cause genital herpes (33%), oral cancer (25%), and penile cancer (24%). Reiter et al. found 74% of respondents were willing to get the HPV vaccine. Reiter et al. (2010) concluded while most men in the study were willing to get the vaccine, more education was needed to help

them understand HPV and its sequelae, including their risk of HPV infection, routes of HPV infection, the availability, safety, and effectiveness of the HPV vaccine.

Knowledge, Attitudes, and Beliefs of MSM that Influence Behavior

In a study of HPV vaccine among MSM, Thomas and Goldstone (2011) explored factors thought to increase motivation for vaccination, the effect vaccination might have on sexual behavior, and the extent of knowledge MSM have about HPV and the HPV vaccine. Thomas and Goldstone contacted 191 MSM and invited them to complete a 53-item questionnaire. The HPV vaccine was offered to all participants, yet only 123 participants accepted the treatment. Participants who refused the vaccine offered the following reasons for their refusal: (a) it was not FDA approved, (b) they believed they already had HPV, (c) ignorance about the vaccine, and (d) high cost. Thomas and Goldstone surveyed those who accepted the vaccine and found greater than expected HPV knowledge; of a possible 13 points, the mean score was 10.8 (SD = 1.4). The relatively high mean score was likely due to sampling, including the education distribution in the sample, 97% of respondents reported having a college education.

The findings reported by Thomas and Goldstone (2011) were not borne out by other studies. In fact, both Sanchez (2012) and Blackwell and Eden (2011) found quite the opposite. For example, Blackwell and Eden (2011) administered a 29-item HPV questionnaire to 81 MSM and found the mean item score on only eight items exceeded 50%. Blackwell and Eden (2011) rated the level of participant knowledge about HPV as extremely poor (e.g., more than half had never heard of anal pap screening). Participants were generally unaware of the risk of death from anal cancer (only 6% answered correctly).

Differences in sampling may explain the inconsistent findings of these and other studies. Thomas and Goldstone (2011) recruited participants a surgical practice in the Greater New York City area where they were receiving treatment for an anorectal disease, whereas Blackwell and Eden (2011) drew their sample from attendees at a two-day Gay Pride event in Central Florida. Besides any geographic differences and differences in the socio-environmental influences on them, differences in their education levels may have accounted for differences in test scores. Forty-two participants in the Thomas and Goldstone (2011) study reported some graduate school, whereas only 24.7% reported the same education level in the Blackwell and Eden (2011) study.

Participants in the Thomas and Goldstone (2011) study had a better understanding of HPV and knew more about the HPV vaccine, including vaccinations would not protect an already infected individual. Regardless of which study yielded higher scores on an HPV questionnaire, communities throughout the United States would benefit from knowledge mastery related to HPV. The risk of HPV-related cancer alone makes knowledge development a worthwhile endeavor.

Finally, Sanchez et al. (2012) also studied the level of knowledge about HPV and HPV sequelae among MSM. Over a four-month period in 2008, Sanchez et al. surveyed 116 male attendees at a New York City clinic about their sexual practices and knowledge about HPV. The level of knowledge was more akin to findings in the Blackwell and Eden (2011) study; 15% (n = 18) had never heard of HPV, 41% were unaware oral sex could transmit HPV from one person to another, and 26.5% did not know anal sex could carry the HPV infection. Participants in this study were more likely to want the HPV vaccine, and over 90% believed both men and women should seek vaccinated. Participant

knowledge about HPV was low, and as a result, many participants underestimated their risk of HPV and HPV-related cancer.

Conclusion

Research is required to develop a deeper understanding of the knowledge, attitudes, and beliefs of MSM regarding HPV sequelae and vaccination. Some researchers have recently published articles on this topic, but the results of the studies have often contradicted each other (e.g., differences in findings reported by Blackwell & Eden, 2011; Sanchez et al., 2012; Thomas & Goldstone, 2011). Sanchez et al. (2012) examined the opinions and attitudes of MSM towards HPV and the HPV sequelae and found the level of knowledge of HPV was low, but acceptance of the vaccine was relatively high (86.2%). Blackwell and Eden (2011) conducted a similar study and found most MSM surveyed did not know much about HPV and did not perceive a significant risk of HPV infection. In yet another study, Thomas and Goldstone (2011) found the MSM they surveyed had knowledge about HPV, the vaccine, and the risk of contracting HPV through sexual contact.

The goal of the present study was to fill an empirical gap by expanding on the assessment of HPV knowledge among MSM and HIV-positive men, and exploring their attitudes and beliefs about HPV. This study also helps to promote positive social change by teaching and increasing the awareness of communities of MSM about HPV and the attendant health risks, encouraging behavioral change to reduce risky sex practices, and promoting HPV prevention and treatment.

Summary

HPV is the most common STI in the United States. Currently, statistics indicated approximately 79 million people are infected with HPV in the United States alone (CDC, 2015). HPV can cause warts in the genital areas, mouth, throat, and anus (Chaturvedi et al., 2011). It can also be completely asymptomatic; many people infected by HPV never know it (Chaturvedi et al., 2011).HPV transmission is usually from one person to another during vaginal or anal intercourse, but can also occur during oral intercourse or genital-to-genital contact (Chaturvedi et al., 2011). There is no cure for HPV and once acquired, the virus may linger for years (Markowitz et al., 2007). The virus may resurface even after symptoms have completely abated (Markowitz et al., 2007). Although HPV is incurable, it is treatable and the diseases caused by HPV such as genital, oral, or anal warts are preventable (Markowitz et al., 2007). Although HPV can cause life-threatening diseases such as cancer of the cervix, anus, penis, when discovered early in its pathogenesis, these too are preventable (Markowitz et al., 2007).

One common route of HPV transmission among MSM is anal intercourse, particularly receptive anal intercourse (Chin-Hong et al., 2004; Dietz & Nyberg, 2011; Nyitray et al., 2011). Unfortunately, there is no way to screen MSM for HPV (Zimet & Rosenthal, 2010). The only approved screening tests are for cervical cancer in women. Because of the high rate of anal cancer among MSM, some experts have recommended using anal pap smears to test for anal cancer in MSM and HIV-positive men (Bratcher & Palefsky., 2008). There are also no screening tests for penile cancer (Simatherai et al., 2009).

The general level of HPV knowledge among MSM is very low, and as a result, many individuals underestimate their risk of HPV infection, warts, and related cancers (Sanchez, 2012). Sanchez (2012) suggested the lack of knowledge, laissez faire attitudes, and uninformed opinions of MSM about HPV increases the spread of the disease When warts and lesions appear in the genitals, mouth, throat, or anus, many MSM are reluctant to seek treatment for a variety of reasons. Advocacy for HPV prevention is vital in order to reduce HPV infections, and to reduce the concomitant maladies stemming from HPV. Condom use, vaccination, recognition of the signs and symptoms of HPV when they exist, and reducing the number of sex partners can help to lower HPV infection rates throughout the United States, especially among MSM.

In this chapter, I reviewed the scholarly literature about HPV. Using a top-down approach, I discussed the many strains of HPV and the ways in which HPV is transmitted. HPV treatment and prevention, as well as the emergence of HPV vaccines, which can prevent HPV-related cervical and anal cancer was included in the discussion. Chapter 3 describes the methodology used in the study, which explores the knowledge, attitudes, and beliefs of MSM and HIV-positive men about HPV. I outline the procedures used to solicit data from study participants, including organizing and examining the data, while identifying any themes emerging from participant narratives.

Chapter 3: Research Method

The purpose of the study was to assess knowledge about human papillomavirus (HPV) among men having sex with men (MSM) who are HIV positive, and to explore their attitudes and beliefs about HPV. This consequently determined the perceived threat of susceptibility and severity of resulting health conditions, perceptions of the disease itself, knowledge of the disease, complications, treatment options, opportunities, and costs concerning HIV. I applied a phenomenological approach and individually collected each participant's narrative of the phenomenon adding to the field of knowledge regarding how MSM take control of their health status. This chapter includes a description of the methodology selected for this study, the research design, and the instrumentation. The chapter also delineates the reasons for selecting the phenomenological tradition of qualitative inquiry and opportunities for social change. It concludes with a description of trustworthiness, ethical procedures used for the protection of study participants from harm, and future research in this topic of a growing public health concern.

Qualitative Research Design and Rationale

Phenomenology, grounded research theory, ethnography, narrative, and case study research (Moustakas, 1994) are the four dominate methods of qualitative research. I took into consideration various aspects of human lived experiences. Grounded theory, ethnography, narrative theory, and case study research presented options less applicable in drilling down to health belief and human behavior, the topic of the current research.

I reviewed the grounded theory method for consideration in my study. However, grounded theory concentrated on collecting data to develop a theory (Suddaby, 2006;

Fram, 2013). This theory places emphasis on surveillance of participants, but does not facilitate any contact to collect lived experiences from MSM (Moustakas, 1994). The reason of the study is not to build a theory but to describe the lived experiences of the participants to understand clearly the MSM phenomenon about HPV infection. (Fram, 2013).

I considered an ethnography approach, as MSM could be considered a culture. This approach seeks to provide a broad description of people as a group or culture, through long-term observation and emergence into the group (Fram, 2010). While I could consider MSM a culture of focus, my intent was not to observe MSM but to interview them to describe their lived experiences.

Next, I considered the narrative approach. This approach seeks to gather the participants' story and overtime it is retold (Munhall, 2007). It provides meaning to the story and lessons learned. This approach could have provided some support to MSM in their beliefs about HPV. However, I did not use the narrative approach because my reason was not to inquire or repeat someone’s story but to get close to participants as they told their lived experiences about (perception, belief, knowledge) MSM with HPV and HIV (Converse, 2012).

Finally, I reviewed the case study approach. The case study approach looks at an event, defined by time and setting (Converse, 2012). While this approach seems to be popular among qualitative studies, I felt it would not be a good fit my topic area. My intent was to have no obstructions in order for MSM to openly expressing their feelings throughout the interview process.

In this study, phenomenological study plotted an image of the exclusive practice of MSM. van Manen (2007) outlined a phenomenological style as a path to gain maximum understanding of personal, shared experiences. I selected this approach in order to explore, define, and defend the behavioral responses for MSM and HPV (Converse, 2012; Marshall& Rossman, 2006; Moustakas, 1994). Moustakas (1994) declared this selected method as commanding the skill to openly view things and describe them as they appear; as well as comprehend the principle of perception and self-motivation. In acknowledging Moustaka's theory of a phenomenological approach, Sokolowski (2008) concluded this theory is best suited when used to ascertain a more in-depth understanding of peoples' lived experiences (Sokolowski (2008) as cited by Flood, 2010).

Methodology

Phenomenological research is rooted in the philosophical works of Husserl and Heidegger. Husserl (1987) referred to *essence* as the true meaning of things. Husserl (1965) labeled his methodology as the description of "pure consciousness" (Moustakas, 1994, p. 91) which relates to the description of the phenomena. This method describes epoche, defined as the bracketing of biases, or eliminating personal feelings and judgment (Moustakas, 1994). Husserl's "transcendental theory of consciousness" is geared towards describing ones perception on things" (Husserl 1987, p. 18). Researchers have an opportunity to examine a phenomenon through individuals who have shared an experience (Drew & Hewitt, 2006; Marshall, Cardon, Poddar & Fontenot, 2013).

Phenomenology involves the gathering of information and perceptions in the human sphere through participant observations, discussions, and/or interviews. To

achieve data validity and reliability in the target population frame, researchers use semi-structured, one to one interviews (Elliot, 2005).

The method used enables an understanding of one or more phenomena by gathering the lived experiences of study participants, as well as their subjective perceptions, thoughts, and feelings about the topic of interest (Flick, Kvale, & Angrosino, 2007). Following the work of Seidman (2006), this approach allowed me to investigate and interpret the meaning of MSM in their natural settings. It also promoted gathering information of individual's patterns of behavior (beliefs, perceptions, knowledge) (Creswell, 2012; Flood, 2010).

Role of the Researcher

While I collected all of the data for this study, I maintained a role as observer and facilitator. I did not judge the narratives or the participants when telling their stories. I tried at all times to be neutral in my recording, observation, and interpretation of participant responses to study questions. I understand personal opinions, experiences and prejudice can influence research in a negative way. Important to the success of a phenomenological study is to be aware of possible biases, put them aside, and when appropriate provide an explanation (Marshall & Rossman, 2006; Moustakas, 1994; Sokalowski, 2000).

I worked diligently to make all participants feel welcome and to insure their comfort during the interview phase of the study by showing acceptance of the MSM culture and how they fit into society. I made it known that I am not here to judge but to provide support and gather data for the study To provide some level of comfort, I provided information about my nursing background and the care that I deliver to all

without bias. I consulted with one of my nurses who is a MSM and a teacher to the gay community when developing this study. This provided me with valuable slangs and terms helping me to better understand my studied community.

Participant Selection Logic

All participants identified themselves as men who have sex with men. I asked each participant for their age and HIV status prior to enrolling them in the study. In order to protect their anonymity; I did not record participant names; instead, they were assigned a sequential number on their response form, along with their date of birth. I conducted a total of 39 MSM interviewees from volunteers in the waiting rooms of the identified sites.

Marshall, Cardon, Podder &and Fontenot, (2013) suggested diversity in a study should not be an exercise in tokenism, nor should sample diversity emerge solely as an exercise in equity. Instead, sample diversity should coincide with some relevant, actual differences (Marshall et al., 2013). Researchers are encouraged to ensure the sample reflects differences only when the differences are due to some quantifiable group dynamic (Suri, 2011). I maintained this stance when identifying and selecting participants for this study to ensure a broad set of participant responses in the telling of their lived experiences as MSM or HIV-positive men

Instrumentation

I developed an interview guide under the supervision of my committee members and the directors at the individual study sites (Appendix B). These individuals assisted in developing interview questions aligned with the goal of the study, which ensured questions were clear. Additionally, panels of experts comprising clinicians experienced in

working with the treatment of HIV among MSM shared advice on interview questions. I used the results of the expert panel review to finalize the interview instrument. After obtaining approval from the Walden University Institutional Review Board (IRB Approval # 2014.02.16-0600) to commence the research, I tested the instrument with two individuals from the volunteers. .

Procedures for Recruitment and Participation

I recruited 39 participants using flyers posted in the waiting area of three clinics and two physician's offices in New York City, New York. The posted flyer/brochure described the objectives of the study, outlined the inclusion criteria, and the remuneration for inclusion. I asked for contact information from those who agreed to be interviewed. After a two-day waiting period, I telephoned those who had expressed an interest and proceeded to set up an appointment to meet. I invited candidates who met the inclusion criteria to meet at the site for a semi-structured, face-to-face interview. Following the interview, I gave each person my contact information including an open invitation to contact me if they had any questions. At this time, I offered each participant a $15.00 gift for participating: $10.00 in cash and a $5.00 Metro Card (redeemable for public transit).

Data Collection

I incorporated responses from the first two participants (representative of the population) to determine the appropriateness of the questions. Based on their responses, the interview questions were evaluated, simplified, and/or clarified to ensure interviewees understood the meaning and purpose of each inquiry. I consolidated the results from the first two interviews for the revision of the interview protocol to include responses of *Yes* or *No*, but instead to allow open-ended questions for more in depth expression. This

process eliminated possible participant or researcher misinterpretations and ensured the interview questions were clear and appropriate. When selecting the initial two participants, I followed the proposed convenience sampling technique, which was used for the complete study (Suri, 2011). I excluded responses of the initial representatives from the final data set.

Interview Protocol

In the first part of the interview, I read the consent information and audio-recorded the participant's confirmation of their consent to participate and use of audio tapping to record their responses (Appendix D). I assigned individual identification numbers, which I used to ensure the privacy and confidentiality of their responses. In the beginning of the interview, I offered each participant water and held a brief conversation regarding their commute to the site. Each interviewee agreed to audio-taping prior to beginning the formal interview. In order to use the interview time as efficiently as possible, and minimize any distractions would have otherwise existed by writing or typing narratives, (Jacob & Furgerson, 2012).

At the end of the interview, I gave the participant pamphlets containing information about HPV. I transcribed all audio-recorded responses in the presence of the participant to ensure accuracy and fidelity. Finally, I stored the transcripts for later analysis.

Obtaining Consent

The consent form detailed the participant's right to confidentiality (Appendix D). I ascribed the assigned numerical identifier on the consent form, upon which the

participant signified acceptance of the study terms, understanding of the objective of the study, the research process, and willingness to participate.

Interviewing the Participant

I began the interview by starting a casual social conversation to create a relaxed atmosphere (Moustakas, 1994). According to Rubin and Rubin (2005) creating a relaxed atmosphere, assists in developing a rapport and enables participants to become comfortable before answering questions. In the first set of questions, I asked for demographic information such as age, place of birth, income level, race, and educational level. In the second set of questions, I asked him to describe their (a) view of the susceptibility to HPV, (b) acceptability of the vaccine, (c) the willingness towards screening, and (d) the level of comfort in sharing information with partners.

Data Analysis

My goal was to describe the knowledge, attitudes, and beliefs of MSM and HIV-positive men about HPV. I included interview questions, which helped me develop an understanding of their attitudes and beliefs about HPV. Once the participant confirmed the accuracy of the transcript, I read the responses aloud and used the coding technique described next to analyze the data in order to understand the participants' attitudes and beliefs towards HPV.

Coding Process

Data analysis is a way to look for patterns to explain the phenomena under investigation (Rubin & Rubin, 2012). Analysis of phenomenological data uses responses from open-ended, semi-structured interviews beginning with analyzing all the data by listing terms describing the attitudes and beliefs about HPV as reported. Next, I searched

responses for the emergence of themes and then cataloged the responses into thematic units. This was followed by categorizing and coding each of their responses.

Qualitative researchers must decide when and whether to use software to code and analyze the study data, or whether it is best to do it by hand. Rubin and Rubin (2012) suggested hand coding because it affords the researcher a more personal, hands-on connection with the data. I opted to use NVivo 10 computer software by QSR International to speed data analysis and increase precision. The NVivo 10 software assisted me in isolating the transcribed data and developing precise categories.

Evidence of Trustworthiness

Evidence of trustworthiness includes the ability to achieve credibility, dependability, transferability and conformability (Flood, 2010). Researchers increase credibility when they design the study in a way that demonstrates believability to the study participant (Flood, 2010).To achieve credibility, I ensured the findings accurately reflected the themes emerging from the participant's telling of their perspectives. I accomplished this by transcribing the interviews in front of the participant, and by asking each participant to review the transcript prior to analysis. Dependability is a measure of the researcher's ability to maintain the study focus and achieve similar outcomes (Glanz, Rimer, & Viswanath, 2008). In assuring the dependability of this study, I provided clear, concise statements of all schemes and processes another researcher could repeat. Keeping detailed records of all strategies and processes increased the dependability although it did not limit the present study. Thus, another researcher can repeat each step of this study.

Transferability is the ability to apply the findings from one study to another study in a similar context. To monitor transferability, I ensured the sample accurately

represented the population from which it was drawn, by demonstrating the participants give information the target population would find significant. The sample for this study consisted of MSM and HIV-positive men living in New York City, NY. My inclusionary criteria reflected the sample accurately represented the target population.

The participants in this study had first-hand knowledge, experience, or expertise necessary to provide information about HPV I selected cases typical of the population of MSM, assuming errors of judgment in the selection will adjust for one another to ensure the lack of transferability did not limit the present study. This is not a trustworthy assumption without a basis for judging (Glanz, Rimer, & Viswanath, 2008).

Finally, conformability is the extent to which participant descriptions of their lived experience matches the descriptions recorded by the researcher (Glanz, Rimer, & Viswanath, 2008). In order to ensure conformability, an auditor conducted a conformability audit and determined that my interpretations were supported by actual participant responses contained in the audit trail, they were internally consistent, and was grounded in the participant's lived experience (Guba & Lincoln, 1989). The audit attested to the conformability of the study. Although member checking can enhance both trustworthiness and conformability of a study, time constraints prevented the use of this technique. Participants were not able to provide feedback on the emergent themes. However, participants did review the transcript prior to analysis, which confirmed the accuracy of data collection.

Ethical Issues

Gaining the trust and support of research participants is critical to an informed and ethical academic inquiry in phenomenological research (Marshall & Rossman, 1995;

Walker, 2007). Each interviewee received the informed consent prior to starting the interview. I assigned each participant a number, which was attached to the consent forms in order to protect their identity. Only the identification numbers were stored with the raw data. Consent forms did not record biological sex or gender, only the identification numbers. All study data is stored in a locked box at an undisclosed location for a minimum of five years. After the required time the consent forms and other documents containing identifying information will be shredded consistent with Walden University IRB policies.

Institutional Review Board Approval

Prior to recruitment and data collection efforts, I received approval from the Walden University Institutional Review Board (IRB Approval Number: 2014.02.18-0600). Approval from the university IRB ensured ethical procedures were sufficient. The IRB also ensured protection from all undue influences for all participants (Klitzman, R., (2013).

Informed Consent

The purpose of the informed consent letter was to introduce the research process, provide contact information, articulate the intent of the study, and request voluntary participation by the recipients. Other provisions of the informed consent included the consent for the interview proceedings to be audio-recorded and to identify anticipated information and topics to the participants. I informed the participants regarding the use of audio recording in interviews as a means to gather more detailed information and did not initiate any other process until consent was documented (Klitzman, 2013).

Privacy and Confidentiality

I informed the participants of their rights to privacy and confidentiality of the use of information in the research study. Confidentiality refers to the treatment of information a participant discloses in a relationship of trust, with the expectation, the information will remain confidential. The informed consent letter articulated the procedural steps to maintain privacy, confidentiality, and the nonattribution of individual responses. The informed consent letter confirmed the participants' background information would remain confidential without prior expressed, written approval from the participant. Restricted access based upon a need-to-know protects and secures participants' information to maintain confidentiality, and anonymity. This was to ensure all responses were secure from inappropriate disclosure to enhance reliability and validity of the data provided. Each candidate signed and returned the letter of consent before the inquiry began. I informed them a secured locked repository would store and maintain all paper-based and audio-recorded data for a required five years after the conclusion of the research. After this time requirement expires, I will shred and erase all research data.

Summary

The purpose of the study was to investigate the knowledge, attitudes, and beliefs about HPV among a sample of MSM and HIV-positive men. Participants described their perceptions of the threat of susceptibility to HPV and the severity of health condition, which can result from HPV infection. They also responded to inquiries concerning their perceptions of HPV itself, their knowledge about HPV, and the complications, treatment options, opportunities, and costs associated with HPV and HPV vaccine. For the present study, I recruited study participants from three clinics and two physician's offices in New

York, NY. These clinics and health office catered to the MSM population. I recruited participants by placing a flyer in the waiting room of each site.

Once a potential candidate expressed interest in study participation, I informed them of their rights to privacy and confidentiality using an informed consent form and obtained their verbal agreement to participate prior to conducting an interview. I collected data via face-to-face interviews, which were audio recorded. I used NVivo 10 computer software from QSR International to conduct the qualitative analysis. Chapter 4 presents the results of the analysis.

Chapter 4: Findings

Introduction

The purpose of this phenomenological study was to explore how men who have sex with men (MSM) perceive factors related to the human papillomavirus (HPV). The investigation was designed to assess participants' knowledge about their susceptibility to HPV infection, the severity of resulting health conditions from HPV, and the HPV vaccine. The respondents also shared their perceptions of HPV itself, including the complications, treatment options, opportunities, and costs. This chapter presented the study data and other findings acquired from interviews. It also presents the setting, demographics, data collection, data analysis, evidence of trustworthiness, and the results of the analyses as related to the research questions.

My intent in designing this study was to narrow a research gap concerning the knowledge, beliefs, and perceptions of MSM and HIV-positive men about HPV. I used a qualitative study design to investigate the knowledge, attitudes, and beliefs of MSM about HPV risk of infection, transmission, vaccine, treatment, and sequelae. This study contributes to the research about HPV by providing valuable information to policy makers, health educators, and clinicians in the management of healthcare among young MSM and HIV-positive men.

The knowledge, attitudes, and beliefs of MSM and HIV-positive men about HPV are significant for achieving an informed public health approach to the infection. HPV is a highly communicable and prevalent STI that may develop into warts, lesions, and even cancer (Mortensen & Larsen, 2010) Even low-risk types of HPV may cause discomfort

and distress, lower quality of life, and complicate social interactions (Mortensen & Larsen, 2010).

The primary research question for the present study was,

"What are the beliefs and attitudes of MSM towards HPV?" In seeking answers to the primary research question, I asked the following sub-questions:

RQ1: What are the views of MSM on HPV susceptibility?

RQ2: What are the knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine?

RQ3: How do MSM perceive HPV screening?

RQ4: How do MSM see HPV in relation to the MSM community?

RQ5: How can the general level of knowledge about HPV among MSM be characterized?

RQ6: In what areas are MSM generally ignorant regarding the facts of HPV?

RQ7: How do MSM rate their overall knowledge about HPV infection?

I audio-recorded the answers to the questions collected during face-to-face interviews and transcribed the interviews to keep track of data and emerging understandings using a reflective log. I did not have any significant discrepant cases and nonconforming data.

Setting

No personal or organizational conditions existed that negatively affected the telling or interpretation of their stories. The individuals at the sites from which I received permission to conduct this study were cooperative. After setting up appointments with the candidates, I reserved a space ahead of time with the office manager at each site. Each

location provided a private room, where I placed a note on the door with my name and the word “study”. These well-lit rooms each had a computer desk and two comfortable chairs, and central air conditioning to maintain a comfortable temperature. One site had a water fountain inside the room.

Demographics

The interviewees consisted of Black, Hispanic, Mixed, Caucasian, and Asian individuals. All were men between 18 and 26 years of age. Twelve of the participants (32%) were Black men from different countries, which was the largest ethnic group. Tables 1 through five summarize the age, place of birth, ethnicity, education, and income level data collected during the interviews. Another significant aspect of the sample was 16 participants (43%) were born in New York City (Table 6). The other 57% were born elsewhere in the United States, Canada, Mexico, the Caribbean, Europe, and Asia. Educational levels varied, with 46% of participants either having some college education (meaning they had either dropped out or were actively in the process of earning a degree) or having a college degree. Only 19% had not completed high school or were still in the process of doing so. The remaining 35% had finished high school or trade school. The participants’ income data showed 21 participants (57%) fell in the lower income level (less than $20,000 annually). Age differences appeared to influence participants’ income levels, as most of the younger participants were still in school, or had no job, or both.

Table 1

Demographics: Year of Birth

Year of birth	# (*n*=37)	Percent
1988	1	2.70
1989	5	13.51
1990	2	5.41
1991	5	13.51
1992	5	13.51
1993	4	10.81
1994	4	10.81
1995	5	13.51
1996	6	16.22

Table 2

Demographics: Place of Birth

Place of birth	# (*n*=37)	Percent
New York	18	48.65
New Jersey	2	5.41
Georgia	2	5.41
Pennsylvania	1	2.70
Hawaii	1	2.70
Canada	1	2.70
Mexico	1	2.70
U.S. Virgin Islands	1	2.70
Barbados	1	2.70
Grenada	1	2.70
Trinidad	1	2.70
Jamaica	1	2.70
Spain	1	2.70
United Kingdom	1	2.70
Europe	1	2.70
Philippines	1	2.70
India	1	2.70
Not stated	1	2.70

Table 3

Demographics: Ethnicity

Ethnicity	# (*n*=37)	Percent
Black	11	29.73
Hispanic	8	21.62
Mixed	3	8.11
Caucasian	9	24.32
Asian	6	16.22

Table 4

Demographics: Education

Education	# (*n*=37)	Percent
Some high school	7	18.92
High school graduate	9	24.32
Trade school	4	10.81
Some college	12	32.43
College graduate	5	13.51
Graduate degree	0	00.00

Table 5

Demographics: Annual Income

Annual income	# (*n*=37)	Percent
$0-<$20,000	21	56.76
$20,000-<$40,000	8	21.62
$40,000-$65,000	8	21.62

Participant Profiles

This section contains an overview of the participants and a brief description of each, summarized in Table 6. These data were collected using demographic forms and supplemented with information collected during the interviews. These data demonstrated the range of participant backgrounds, which supports the claim these participants are representative of individuals impacted by HPV.

Table 6 provides the basic demographic information; however, some individuals provided additional details about their lives relevant to their understandings of HPV. For example, of those who were born outside of the United States, a number of them moved to the United States as young children. Specifically, a number of participants moved from islands in the Caribbean as young children, HPV11214 from St. Thomas, U.S. Virgin Islands, when he was 2, HPV10114 from Jamaica when he was 3 years old, HPV10914 from Jamaica when he was 7 years old and HPV11714 moved from Trinidad when he was 6 years old.

Others who moved as children included HPV13114 moved to the New York City area when he was 3 years old and HPV11514 from Mexico when he was 5 years old. HPV11814 moved from the Philippines when he was 4 years old and moved to the New York City area 5 years prior to this study in order to be with his boyfriend. HPV12314 moved to New York City with an uncle when he was 9 years old. His parents remain in India and send money to support him. HPV10514 moved from London, England when he was 12 years old to live with relatives in the New York City area. Thus, these interviewees spent their formative years receiving education in the United States, and growing up in the U.S. healthcare system.

A few others came to the United States as adolescents or adults. HPV11914 moved from Canada when he was 15 years old to live with relatives HPV112214 from Barbados, West Indies, and HPV12514 from Grenada, West Indies. A number of them moved from other parts of the United States or Europe, to attend college. One such individual, HPV10614, moved from Europe for college, but had to take a semester off because of his illness. The ones who moved to the United States at an older age may have had less familiarity with the U.S. healthcare system.

Table 6

Participant Profiles

Participant	Age	Ethnicity	Birthplace	Education	Employment	Income/year
HPV10314	18	Caucasian	Atlanta, GA	SC	Student	< $20K
HPV10414	22	Hispanic	NYC	SC	Student/fast food	< $20K
HPV10514	18	Caucasian	London, UK	SHS	Student	< $20K
HPV10614	23	Mixed	Europe	SC	Student	< $20K
HPV10714	19	Mixed	NYC	SC	Student/retail	< $20K
HPV10814	20	Hispanic	NYC	SHS	Drug rehab center worker	$20-<$40K
HPV10914	23	Black	Jamaica, W.I.	CG	Assistant teacher	$40-$65K
HPV11014	25	Caucasian	Spain	CG	Self-employed graphic arts	$40-$65K
HPV11114	18	Hispanic	NYC	SHS	Restaurant worker	< $20K
HPV11214	24	Hispanic	St. Thomas, V.I.	SC	Fitness club trainer	$40-$65K
HPV11314	19	Caucasian	NYC	SC	Student/nightclub entertainer	$20-<$40K

(continued)

Participant	Age	Ethnicity	Birthplace	Education	Employment	Income/year
HPV11414	21	Asian	HI	SC	Student	< $20K
HPV11514	22	Mixed	Mexico	HSG	Restaurant cook	< $20K
HPV11614	24	Black	GA	CG	Entertainment	< $20K
HPV11714	22	Black	Trinidad, W.I.	SC	Student	< $20K
HPV11814	24	Asian	Philippines	SC	Bartender	$40-$65K
HPV11914	20	Caucasian	Canada	SC	Student/movie theater	< $20K
HPV12014	20	Caucasian	PA	SC	Student/restaurant	< $20K
HPV12114	21	Caucasian	NJ	TS	Student/computer programmer	< $20K
HPV12214	22	Black	Barbados, W.I.	TS	Student	< $20K
HPV12314	21	Asian	India	SC	Student	< $20K
HPV12414	22	Black	NYC	TS	Student/retail	$20-<$40K
HPV12514	21	Black	Grenada, W.I.	TS	Student/security guard	< $20K
HPV12614	20	Caucasian	NJ	HSG	Hotel industry	$20-<$40K

(continued)

Participant	Age	Ethnicity	Birthplace	Education	Employment	Income/year
HPV12714	25	Black	NYC	CG	Teacher	$40-$65K
HPV12814	23	Black	NYC	SC	Healthcare	< $20K
HPV12914	23	Black	NYC	CG	Healthcare	$20-<$40K
HPV13014	25	Black	NY state	HSG	Adult entertainment	$40-$65K
HPV13114	23	Asian	Not stated	SC	Disability	< $20K
HPV13214	19	Black	NYC	SHS	Unemployed	< $20K
HPV13314	25	Hispanic	NYC	SC	Retail	< $20K
HPV13414	19	Caucasian	NYC	SC	Unemployed	< $20K
HPV13514	20	Hispanic	NYC	TS	Waiter	< $20K
HPV13614	18	Mixed	NY state	SHS	Seasonal work	< $20K
HPV13714	18	Hispanic	NYC	HSG	Retail	< $20K
HPV13814	25	Hispanic	NYC	SC	Retail/fashion	$40-$65K
HPV13914	19	Asian	NYC	SC	Retail	< $20K

[a] Key: SC = Some college; CG = College graduate; HSG = High school graduate; SHS = Some high school; TS = Trade school; NY = New York; NYC = New York City

Some of the participants, such as HPV10114, were open about their sexuality and at ease when discussing these issues. Others, such as HPV10714, indicated struggling with identity and acceptance by his family, and HPV10414 indicated that even though he did have sex with women, he was more comfortable having sex with men.

Others employed in a variety of occupations, had a range of income levels. A significant number had an annual income of less than $20,000, but many of those were full-time college students or attending trade school. HPV10514 was still in high school. Their families were supporting many of those who were students. The remaining interviewees had completed high school or had dropped out. A number are underemployed working in the restaurant or other service industries. For example, HPV11114 worked in a restaurant (but did not indicate what his position was), and HPV11514 was a cook in a restaurant. Others in the lowest income level received some form of government support; public assistance, or on disability due to their illness.

Data Collection

When I received the initial call, I asked them prequalifying questions, including their age, sexual preference, and HIV status. If they met the qualifying conditions, I immediately arranged interviews at a convenient time. Data collection took place from March 2014 through May 2014, and interviews ranged from to 20-25 minutes.

Sampling Procedure

The original target number for the study population was 30; however, I over-sampled and interviewed 39 qualified participants. The over-sampling was a result of participants sharing the original flyers with others. As a result, I identified more qualified participants than planned, and I did not turn any qualified participants away. I used the

first two participants to test and revise the interview questions resulting in use of data from 37 participants for data analysis. The Walden IRB approved this change in research protocol.

Interview Protocol

Selection of those two representatives followed the convenience sampling technique designed for the study (Rubin & Rubin, 2005). After excluding the responses of the first two interviewees, I consolidated the results from the initial interview process to create the final questions. This process assisted in eliminating possible misrepresentations and ensuring interview questions were clear and appropriate for answering the research questions.

Based on the feedback from the first two participants, I changed some questions to be open ended, while others remained "yes or no" questions. The change in interview protocol facilitated a semi-structured interview, which permitted participants to feel free to communicate their knowledge and experience during the interview (Rubin & Rubin, 2012). Maxwell (2005) and Moustakas (1994) recommended the use of a semi-structured interviews with some open-ended questions to control the interview while allowing participants to express their feelings freely. I used the revised instrument when conducting the interviews, and even though "yes or no" responses are closed and quantitative in nature, the mix of open-ended and closed questions relaxed the participants during the interview process and allowed for a broader conversation. I found most clients wanted to know whether they were correct in their yes/no responses. Thus, the mix of open-ended and closed questions allowed the participants to show a level of interest and enthusiasm during the interview.

Before proceeding with the in-person, semi-structured interview, I requested each person agree to be audio-recorded. I read the provisions in the informed consent form and audio-recorded each person's confirmation. The consent form detailed the rights of the participants for confidentiality (Appendix D). I also reminded the participants that the goal of the study was to investigate the opinions of MSM about HPV infection. Additionally, I asked the consent of the participant to audio-record the interview. I assigned each consent form a number ranging from HPV10114 to HPV13914. These numbers indicated affirmed their informed consent, signified their understanding of the study objectives, the research process, and willingness to respond to the research questions.

I began the interview with a casual social conversation to help create a relaxed atmosphere (Moustakas, 1994), which was intended to build rapport and enable the interviewee to feel comfortable before answering questions (Rubin & Rubin, 2012). During the actual interview, I asked research questions about their perspectives regarding HPV. Immediately following the interview, I transcribed the interview verbatim while the participant was with me. I repeated the information to check accuracy. After all the interviews were completed, I compiled the data for coding. The data will be stored in a secured, locked safe for a period of five years. At the end of that time, I will destroy all raw data.

Data Analysis

My goal for this study is to describe the attitudes and beliefs of MSM toward HPV infection. I used a mixture of closed (yes/no) and open-ended questions during semi-structured interviews, which broadened the comprehension of the each participant

as they have different experiences (Rubin & Rubin, 2012). I included interview questions allowing me to understand the attitudes and beliefs of MSM toward HPV infection. In order to achieve this goal and answer the research questions, I identified themes and patterns through systematic coding of the data following the process described by Moustakas (1994). The first step was to gather all of the data by listing terms regarding the attitudes and beliefs of MSMs towards HPV infection. I categorized meanings into themes found in participant responses concerning their attitudes and beliefs of towards HPV infection and then coded each response. After sorting the data, I read each response data three times to become familiar with each experience described in order to develop clarity of understanding of the information shared. Consistent with data collection recommendations by Moustakas (1994), I used NVivo 10 computer software from QSR International to speed data analysis and increase precision in coding and categorization. Appendix F contains a list of the major categories and the thematic categories, which emerged from the data analysis.

Overview of This Study's Findings

In a sample of 37 HIV-positive MSM, 33 saw themselves as either highly susceptible to HPV (17) or medially susceptible (16). This means the participants were largely aware of HPV and of their susceptibility to it. Almost two-thirds (24) knew HPV infection means a higher risk for cancer. In light of this level of awareness of HPV and the cancer risk, it is noteworthy that while 35 of the 37 knew wearing a condom can prevent HPV infection, all 37 practice unprotected sex at least some of the time. This demonstrated the need for access to the HPV vaccine, but also, to some extent, the need for change in sexual practice on the part of the MSM population. Of the 37, 19 had not

previously been aware of the vaccine. What is lacking is a sense of urgency. For example, while 33 said they were willing to take the vaccine, and 25 were willing or able to pay $450 for it, all 37 said they would not ask their partner(s) to take the vaccine. Lack of knowledge about important aspects of HPV contributes to the lack of urgency. Some of the participants' answers reflect this lack of knowledge underscored by 22 saying if people have no manifestations of HPV, they cannot transmit the infection. Some of the participants' answers are mutually contradictory, which may also reflect a lack of knowledge only 26 stated definitely "men do get HPV infection", but 33 stated they were "highly" or "medially" susceptible to it.

The results of the study are important for understanding the social universe within which HPV propagates. Understanding the beliefs and attitudes of MSM is critical in considering the existence and efficacy of any HPV vaccine (Promfret & Gagnon, 2012). The findings of the study will contribute to the knowledge needed to institute meaningful social change by enhancing motivation for the vaccination against HPV in various social and age groups. For example, health policy makers can use the information gleaned from this study to develop health outreach interventions aimed at vulnerable populations such as MSM and HPV positive individuals at younger, high-risk ages. Such efforts could ease the flow of information regarding the benefits of HPV vaccines. Healthcare workers could engage in directed, targeted social change initiatives by encouraging parents to have their children vaccinated against HPV infection.

Moreover, the results of the study are significant for families of MSM. The dissemination of information about how MSM perceive HPV will allow family members and close friends to seek out ways to support their loved one with HPV. Moreover, the

development of new approaches to working with HPV-infected persons can motivate healthcare providers and other caregivers to increase social awareness about HPV. Furthermore, a study focusing on a segment of the MSM population offers additional perspectives about education about HPV prevention methods, which will assist in increasing social sensitivity and reducing the stigma associated with STIs, including HPV.

The promotion of education and the prevention of HPV represent opportunities for meaningful social change. Campbell (2014) posited promoting issues positively affecting health could result in social change. Campbell and Cornish (2010) argued social mobilization is difficult to achieve, while Campbell, Cornish, Gibbs, and Scott (2010) warned about concerns requiring readdress within communities before realizing meaningful social change. Campbell et al. (2010) alleged one such concern is communities need to be receptive to change. Campbell and Burgess (2012) added focusing on social change drivers takes attention away from the need to promote health concerns. Campbell (2014) implied, there must be a balance between social change and the promotion of health issues. Thus, in order for meaningful change to occur, practitioners must address three dimensions of the social context: material, symbolic, and relational (Campbell, 2014).

Understanding the perceptions of MSM about HPV can aid healthcare administrators to evaluate existing HPV vaccination efforts. I anticipate the findings from this study will be useful to informing health policy makers involved in implementing effective strategies to further address the gaps in knowledge of MSM. The knowledge gleaned in this study will assist health professionals to provide better access to HPV

prevention and treatment. Finally, insights into the perceptions of MSM about HPV can help the stakeholders to identify needed support services, especially ones promoting constituents to help themselves, and peers possibly via behavior modification, symptom recognition, and early prevention.

Mitigation strategies can be effective, especially when considering both health promotion and social change together, rather than independently (Haines et al., 2012). Gregson et al. (2011) focused on the utilization of social capital to promote health in various social contexts. Gregson et al. (2011) asserted that in this context, the participation of local communities is an essential determinant of health. Campbell and Burgess (2012) added expanding the role of grass-root community organizations would enable them to address the social change concerns. Based on these social change perspectives, I intend to disseminate the findings of this study to policy makers and health educators in order to promote the funding, development, and implementation of programs to promote the use of HPV vaccinations.

Evidence of Trustworthiness

I made every effort to achieved trustworthiness through efforts to ensure credibility, dependability, transferability, and confirmability. To achieve credibility I ensured the findings accurately reflected the perspectives of the participants. I did this by transcribing interviews in the presence of the participant and having them review the transcripts prior to analysis. This allowed additional feedback and to verification of the accuracy of their experiences (Lincoln & Guba, 1985; Rubin & Babbie, 2008). I assessed dependability by providing clear, elaborate, and successive statements of all schemes and processes, soon other researchers can repeat each step of the analysis.

I assessed transferability by demonstrating the sample represented the target population and were able to give significant information. The population I accessed included MSM who lived in New York City (see Table 1 through Table 6). They represented having knowledge, experience, and expertise necessary to provide information the target population would find meaningful about HPV infection. Having participants review the data added credibility and accuracy to the data collection process and increased the level of trustworthiness. Overall, interview data from 37 participants were included in the analysis, and all reported the transcribed data were accurate. Finally, I ensured conformability by having a third party auditor conduct a conformance audit.

The Bracketing/Epoché Process

Having been a registered nurse for over 15 years, my experiences may create a bias (Grant, 2011), which would be a critical limitation in interpreting the interviews. Even though my primary responsibilities are as a nurse, I am also an educator and advocate for patients no matter their sexual orientation or background. I have friends who are MSM, and they have helped me understand the MSM group. Upon starting this study, two of my closest MSM friends motivated me to select HPV as an area of inquiry and to choose MSM as the population of interest. However, in order to address patient needs, health care workers and researchers must be realistic about the health and lifestyle of patients.

My clinical skills could have influenced my interpretation of the interviews, especially related to issues of health information, STI, and sexual orientation. However, I worked to remain nonjudgmental, fair, and nonbiased in the interviews. I set aside my pre-conceptions about the participants and approached the data with an open mind. I

individualized each participant as they all have a different story. Finally, I reduced bias by accepting my clients for who they are, and while asking the questions I was listening to their stories. Furthermore, I mitigated the risk of through the systematic analysis of the data and adherence to the tenets of qualitative research including credibility, dependability, transferability, and conformability.

Findings

Outcomes of the analysis of the collected data was organized according to themes corresponding to the research questions. Each section provides a description of the findings. Some questions were open-ended, while others were limited to closed responses (yes/no/unknown). The use of closed responses facilitated the time spent for the interview and allowed for precise responses, while open-ended responses provided opportunities to explore and express personal understandings and experiences. I tabulated the responses to the closed questions and presented the results in tables. Responses to the open-ended questions assisted in developing deeper insights into each theme.

I identified six themes:

- The views of MSM on HPV susceptibility
- The knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine
- How MSM perceive HPV screening
- How MSM see HPV in relation to the MSM community
- Characteristics of MSM's general level of knowledge about HPV
- Areas of general knowledge and lack of knowledge of HPV infection among MSM

The Views of MSM on HPV Susceptibility

Table 7 shows the tabulation of answers to the closed questions related to the participants' understandings of MSM's susceptibility to HPV infection. The comments made during the open-ended section of the interviews provide additional insights into the views of the participants on their susceptibility to HPV. The responses to the closed question regarding comfort discussing the possibility of infection with HPV were predominantly positive. Of the 37 participants, 26 (64.86%) said they were "very comfortable" in discussing the possibility of getting HPV infection, and only one (2.56%) said he was "not comfortable". Another said, "I am very comfortable when discussing the possibility of getting HPV infection." However, during the interview, I had to get comfortable asking the questions promoting a conversational atmosphere. My first participant asked if we would be alone and whether there was a camera. I reassured him his responses were confidential and the only recording was an audio recording. During the actual interview, I set the pace and he followed without any problem. I often asked the participants to tell me if they became uncomfortable and needed to stop.

Table 7

Views of MSM on HPV Susceptibility: Closed Questions

Invariant constituents	# (*n*=37)	Percent
Very comfortable when discussing the possibility of getting HPV infection	24	64.86
Somewhat comfortable when discussing the possibility of getting HPV	12	32.43
Not comfortable when discussing the possibility of getting HPV infection	1	2.70
Highly susceptible to HPV	17	45.95
Medially susceptible to HPV	16	43.24
Slightly susceptible to HPV	4	10.81

When participants discussed the possibility of HPV infection, 16 participants acknowledged they knew they were at high risk for HPV infection. Of those who acknowledged their susceptibility to HPV in discussion, one participant said, “I am susceptible to HPV”, and another said, “I am medically susceptible to HPV.” HPV113914 stated, “I am 100% sure I will get HPV infection,” and HPV10114 stated he knows he is at risk because of his present lifestyle. However, one stood out from the others because he said, “I am lowly susceptible to HPV.” HPV10314, whose demographic background identifies him as 18 years old added, “I will not have any more encounters without protection”.

While willing to talk about the subject during the interview, four stated they would not raise the subject of getting an infection in discussion with others, but would talk about it if asked. An 18-year-old participant voiced a reason for his willingness to talk about HPV. He said he wants to live as long as he can, so he wants to be knowledgeable about HPV infection. HPV10614 also indicated he needs updated information more regularly. A different, participant stated, "Knowledge is power, and I am young and already HIV positive." He also said, "My immune system is low, so I am willing to get information on healthier living."

However, 12 were only somewhat comfortable discussing their susceptibility to HPV. One participant said, "I am somewhat comfortable when discussing the possibility of getting HPV infection", and HPV10714 said, "I am shy and will only discuss this with my doctor." In contrast, HPV11014 said he would only discuss his possibility of HPV infection in a group. He said he likes to hear what others have to say because it makes him feel not alone. Other participants did not have a reason for being only somewhat comfortable or not comfortable discussing HPV, but suggested it may have to do with acceptance of their sexual preference.

Only one participant said he did not want to discuss HPV infection because he "prefers to read the information." With the exception of the participant who preferred to read the information, most were comfortable in discussing HPV and knew they were susceptible to these infections.

Knowledge, Attitudes, and Beliefs about HPV Vaccine

Table 8 shows the tabulation of answers to the closed questions related to the participants' knowledge, attitudes, and beliefs regarding the HPV vaccine. All were

willing to obtain the HPV vaccine if MSM were qualified, but only half knew a vaccine existed; despite the fact 81% of the said, they had discussed HPV with their physicians. Two had actually received the HPV vaccine. However, all said they believed men should be vaccinated against HPV and all were willing to disclose their sexual history if it provided them with free access to the vaccine. Although they were predominantly willing to obtain the vaccine, none were willing to ask a sexual partner to receive the vaccine, even though all engaged in unprotected sex and 41% were unaware of HPV prevention methods. The comments made in response to the open-ended questions provide deeper insights into the knowledge, attitudes, and beliefs of the participants regarding the HPV vaccine.

One of the interviewees described the HPV vaccine as an important preventive measure especially for gay men, and another said, "I am aware of HPV prevention methods." HPV10714 was eager to take advantage of the vaccine and said, "I will take this vaccine now, do you have some for me?" Participants were also interested in learning whether and how they could obtain the vaccine. HPV10814 asked, "How do I know if I am qualified for the HPV vaccine?" and another participant asked, "What is the qualification to get the vaccine?"

Although a significant number of the participants indicated, they lacked knowledge of the HPV vaccine or other prevention methods, 81% had discussed HPV with their physician. HPV12214 said, "I discuss everything with my doctor. He gets upset if I miss my appointment." Another participant revealed his doctor provides thorough care when he said, "my new doctor is not shy to ask me about everything, he even asks me to get a butt swab."

When asked about the HPV vaccine as a preventive measure, one participant said, "I am aware of the existence of vaccine against HPV for men." Several participants knew of the vaccine, but did not know it was effective for men. For example, HPV11814 said, "I am not aware of the existence of vaccine against HPV for men. I thought it was for only girls." As mentioned, two participants had received the HPV vaccination, but none of the participants knew any (other) men who had received the HPV vaccine.

Table 8

Knowledge, Attitudes, and Beliefs of MSM about HPV Vaccine: Closed Questions

Invariant constituents	# (*n*=37)	Percent
Willing to obtain this vaccine against HPV if MSM are qualified	33	89.19
Willing to obtain this vaccine against HPV if they are qualified	33	89.19
Aware of the existence of vaccine against HPV for men	18	48.65
Not aware of the existence of vaccine against HPV for men	19	51.35
Have discussed HPV with your doctor	30	81.08
Have never discussed HPV with their doctor	7	18.92
Would not ask their partner(s) to take the HPV vaccine	37	100.00
Religion, culture or other beliefs would stop them from getting the HPV vaccine	4	10.81
Religion, culture or other beliefs would not stop them from getting the HPV vaccine	33	89.19

(continued)

Invariant constituents	# (*n*=37)	Percent
Do not know any men who have had the HPV vaccine	37	100.00
Men should get the HPV vaccine	37	100.00
Feel comfortable taking the HPV vaccine	33	89.19
Willing to disclose their sexual history to obtain the vaccine if it were free of charge	33	89.19
Willing or able to pay $450 USD to obtain the vaccine	25	67.57
Not willing or able to pay $450 USD to obtain the vaccine	12	32.43
Are vaccinated with the HPV vaccine	2	5.41
Not vaccinated	35	94.59
Aware of HPV prevention method	22	59.46
Gain this knowledge through an advertisement/a doctor	22	59.46
Not aware of HPV prevention method	15	40.54
Have unprotected sex	37	100.00

Only two participants were vaccinated against HPV and the attitudes of the others toward vaccination varied. A lack of knowledge or access appeared to be a barrier to vaccination. HPV11214 said, “I will not be vaccinated with the HPV vaccine”, and HPV10714 said, “I am scared about the vaccine as it is new.” HPV11814 was concerned about being allergic to the vaccine and asked if it contained egg products. A majority of the participants liked the idea of the HPV vaccine but thought there is not enough information about it. Responses indicated confusion about the status and nature of the

vaccine and concern about side effects. HPV113214 asked “Is the vaccine still in testing?” and HPV11814 asked, “Are we the guinea pigs for the vaccine?” The participants indicated having more information would motivate them to get the vaccine. Furthermore, five participants had a fear of needles, which could affect their willingness for vaccination, but one participant said, “I will take the needle to save my life.”

Despite lack of general knowledge about the vaccine, most participants indicated in discussion willingness to receive vaccinations if they met the criteria. HPV11614 said, “I would be willing to obtain this vaccine against HPV if I qualify”, and HPV11314 said, “I should get the vaccine as it may save my life.” Another participant said, “I feel comfortable taking the HPV vaccine”, and yet another participant said, “Men should get the HPV vaccine.” However, even though most of the participants thought men should get the HPV vaccine, none was comfortable mentioning the subject to their partners. In fact, all participants refused to tell their partners about the vaccine, and one participant said, “I would not ask my partner to take the HPV vaccine.”

The data analysis indicated the most prevalent reported barrier to HPV vaccine among the participants is the cost. All participants indicated they believed the vaccine to be important, but thought it was not affordable. Only a few participants were willing to pay out-of-pocket. One participant said, “I am willing or able to pay $450 USD to obtain the vaccine.” However, 14 participants disagreed, and one participant said, “I am not willing or able to pay $450 USD to obtain the vaccine.” However, the data showed when participants were willing to disclose their sexual history to obtain the vaccine, they were comfortable doing so. Those individuals who were willing to undergo vaccination but were unable to pay out-of-pocket also expressed interest in alternative ways to access the

vaccine. HPV113114 asked, “Is there an insurance that is willing to pay for it HPV10714 said, “I can’t get another infection, so is there a payment plan for the vaccine?” HPV11614 asked, “Why can’t this vaccine be for free”?

Although 81% of the participants had discussed HPV with their physician, many said their doctors do not know their sexual preferences, and a few reported, “I deny my sexual preference as I am still in the closet.” Although most indicated religious, cultural, or other beliefs would not prevent them from getting the HPV vaccine, a few said religion did affect them. A few believed they had to hide their sexual practices because their religion thinks God gave them HIV because of their life style. With regard to the HPV vaccine, HPV11614 stated, “Nothing will cure me. My pastor said gays will go to hell.” Other participants said religion or cultural beliefs were factors affecting their accessing the HPV vaccine, and one said, “Religion, culture, or other beliefs would stop me from getting the HPV vaccine.”

How MSM Perceive HPV Screening

Table 9 shows the tabulation of answers to the closed questions related to how MSM perceive HPV screening. All but one said HPV screening should be mandatory for MSM. Only 32% were previously screened. The comments from the open-ended section of the interview provided a few additional insights into how they s perceived HPV screening.

Table 9

How MSM Perceived HPV Screening: Closed Questions

Invariant constituents	# (*n*=37)	Percent
HPV screening should be mandatory for MSM	36	97.30
HPV screening should not be mandatory for MSM	1	2.70
Have been screened for HPV	12	32.43
Have never been screened for HPV	25	67.57

With one exception, each responded positively to screening being necessary. Only one participant said, "HPV screening should not be mandatory for MSM". HPV12714 stated, "The government should make this test from age 10." A few expressed the thought mandatory screening would decrease the spread of the infection. The majority rejected screening, despite their support for HPV testing. HPV12514 indicated he had undergone screening when he said, "My doctor gave me a butt test." However, quite a number of them expressed they could not definitely recall getting an HPV screening. One interviewee said, "Last year my doctor did a test of my butt but I was too sick to remember what it was, so maybe I could have done it". Another, also said, "I can't remember if my doctor did it as my insurance was not willing to pay for it."

How MSM See HPV in Relation to the MSM Community

Table 10 shows the tabulation of answers to the closed questions related to how MSM see HPV in relation to the MSM community. Forty-six percent of the participants believed HPV is not common among MSM, and roughly 86% were currently HPV free.

The comments from the open-ended questions, however, provide deeper insights into the perceptions they had of HPV in relation to the MSM community.

Table 10

How MSM See HPV in Relation to the MSM Community: Closed Questions

Invariant constituents	# (*n*=37)	Percent
Do not believe HPV is common among MSM	17	45.95
HPV is common among MSM	20	54.05
Have been diagnosed with HPV	5	13.51
Have never been diagnosed with HPV	32	86.49

One person reported, “I perceive HPV to be common among MSM as we are always sick.” The majority indicated they had never received an HPV diagnosis, in agreement with the closed question, and with another saying, “I have never been diagnosed with HPV and never had any symptoms”. However, five participants did have a positive HPV diagnosis, andHPV12214 said, “I have been diagnosed with HPV since I was 15 years old.”

Although a majority (54% according to the closed question) understood the prevalence of HPV among MSM, 13 participants indicated they do not believe they could tell when someone had HPV. One suggested, “I think it is easier for girls to know they have HPV infection.” HPV13214 said, “HPV shows on the mouth sometimes.” HPV13014 also stated, “I knew someone with HPV in the eye.” However, HPV 11214 said, “I heard HPV infection do not always show”, and HPV12814 said, “I thought HPV

goes away." These variations in responses show the range of knowledge about the HPV infection. Some misunderstand the nature of the infection, and others associate with it signs and symptoms of a different type of infection.

Characteristics of MSM's General Level of Knowledge about HPV

Table 11 shows the general knowledge about HPV among the participants. This includes their beliefs as to whether HPV is curable, manifestations of HPV symptoms, the relationship between HPV, cancer, sexual practices and HPV risk (bottoming, topping, and oral sex). It also demonstrates how they feel condom use is way of preventing HPV, the susceptibility of women and men to HPV, and knowledge of sexually transmission.

Only 70% of the participants knew definitely men can get HPV and the rest indicated they did not know. All knew women could get HPV. Moreover, 59% believed HPV is curable. Half (51%) of the participants knew HPV could be asymptomatic; but another 27% were unsure. Although 73% knew where HPV lesions can appear in the genital, oropharynx (mouth and throat), or anal areas, they were almost evenly split in their knowledge about whether it always manifests as warts or lesions. Approximately one-third believed HPV always manifests as warts or lesions, one-third believed it does not always manifest as warts or lesions, and one-third claimed no knowledge about how HPV manifests itself. Forty-one percent of participants believed HPV transmitted did not occur if an individual were free of HPV symptoms. More than two-thirds (68%) of participants understood HPV infection increased the risk of cancer.

With respect to sexual behavior, there was uneven knowledge about the relationship between different sex acts and HPV infection. Most of the participants knew

HPV is a sexually transmitted disease and condoms are a preventive measure. Most participants also knew one could transmit HPV via oral sex, but less knew about the relationship of bottoming (receptive anal sex) and topping (insertive anal sex) to HPV infection.

Analysis of the transcripts provided deeper insights into the participants' understanding of the curability of HPV. HPV13214 said, "HPV mixed with HIV is deadly." What is noteworthy, however, is the response of HPV10214 who stated, "My roommate had HPV and told me it is just dormant sometimes". This individual's use of the term dormant, in the context of discussion about curability, seemed indicative of confusion between a cure and a latent infection. HPV10114 revealed a similar lack of knowledge when he said, "HPV can be cured", and HPV13414 asked, "How long does it take to get rid of HPV?" Another respondent indicated lack of knowledge when he asked, "Is it a virus or a disease?" These comments indicated the participants as a whole lacked full understanding of the nature of HPV infections, and seriously so in some important areas, such as whether men can even be infected with HPV, the ability to transmit the virus when symptom free, and curability. For 25% or more of the participants misunderstand one or more of these phenomena represent a health education challenge.

Table 11

Characteristics of MSM's General Level of Knowledge about HPV: Closed Questions

Invariant constituents	# (*n*=37)	Percent
HPV can be cured	22	59.46
HPV cannot be cured	8	21.62
Do not know if HPV can be cured	7	18.92
Sometimes the HPV infection can be asymptomatic	19	51.35
Sometimes the HPV infection cannot be asymptomatic	8	21.62
Do not know if sometimes the HPV infection can be asymptomatic	10	27.03
HPV always manifests as warts or lesions	14	37.84
HPV doesn't always manifest as warts or lesions	13	35.14
Do not know if HPV always manifests as warts or lesions	10	27.03
HPV lesions can appear in the genital, oropharynx, or anal area	27	72.97
Do not know if HPV lesions can appear in the genital, oropharynx, or anal area	10	27.03
Having HPV puts people at a higher risk for cancer	24	64.86
Having HPV does not put people at a higher risk for cancer	4	10.81
Do not know if having HPV put them at a higher risk for cancer	9	24.32
A vaccine is available for HPV	32	86.49

(continued)

Invariant constituents	# (*n*=37)	Percent
A vaccine is not available for HPV	2	5.41
Do not know if a vaccine is available for HPV	3	8.11
Wearing a condom can prevent infection with HPV	35	94.59
Do not know if wearing a condom can prevent infection with HPV	2	5.41
If people have no manifestations of HPV, they cannot transmit HPV	22	59.46
If people have no manifestations of HPV they can transmit HPV	15	40.54
Women do get HPV	37	100.00
Men do get HPV Infection	26	70.27
Do not know if men do get HPV infection	11	29.73
Bottoming is less associated with the acquisition of anal HPV infection than topping	18	48.65
Bottoming is not less associated with the acquisition of anal HPV infection than topping	12	32.43
Do not know if bottoming is less associated with the acquisition of anal HPV infection than topping	7	18.92
Can get HPV from topping	10	27.03
Do not know if MSM can get HPV from topping	15	40.54

(continued)

Invariant constituents	# (n=37)	Percent
Cannot get HPV from bottoming	19	51.35
Do not know if MSM can get HPV from topping	15	40.54
Can get HPV from oral sex	29	78.38
Do not know if MSM can get HPV from oral sex	8	21.62
HPV is a sexually transmitted infection	32	86.49
Do not know if HPV is a sexually transmitted infection	5	13.51

Deeper analysis of the data indicated the level of knowledge held by participants was greater at some sites than at others. One site had an information board prominently displayed in the waiting area. The board had several sleeves containing pamphlets about HPV and other STIs. At this site, the participants had more knowledge than did those at other sites.

Table 12 demonstrates the younger participants lacked knowledge of the disease. One 18-year-old participant said, “Is HPV curable? Oh my God, I can’t afford another disease.” A 19-year-old participant said, “How long does it take to get rid of HPV from my system?” A 22-year-old participant asked, “Can HPV be cured?” Another 19-year-old said, “I thought condom is to prevent pregnancy.” Conversely, the older participants, who were in their mid-20s, had more knowledge of the disease.

Table 12

Selected Statements Indicating Level of Knowledge of Younger MSM

Participant	Age	Quotes representing level of knowledge of HPV
HPV10414	22	HPV can be cured.
HPV13414	19	How long does it take to get rid of HPV?
HPV10314	18	Is HPV a virus or a disease?
HVP10714	19	I thought condom is for heterosexual people to prevent pregnancy.
HPV10814	20	When asked if men get HPV, responded "no."
HPV10514	18	I thought HPV is between a man and a woman.
HPV11114	18	Is there an incubation period for HPV manifestation?
HPV13714	18	If HPV doesn't always manifest as warts or lesions, what else do I get?
HPV13614	18	HPV shows on the mouth sometimes.
HPV11214	22	I heard HPV infection does not show in men.
HPV12614	20	I thought HPV goes away.
HPV13514	20	I thought you could tell when someone has HPV.
HPV11914	20	I am aware of the HPV vaccine for women, but not for men.
HPV11714	22	I do not know any men who have had the HPV vaccine.
HPV12014	20	Is the vaccine still in testing? Is HPV symptomless?
HPV113214	19	Bottoming or topping—there is no difference in position.

The level of knowledge of most respondents regarding manifestations of HPV infection remains a concern as infection rates continue to rise among MSM. Analysis of the transcripts indicates the majority participants knew the manifestations of HPV infection and were able to identify signs and symptoms. HPV13714 said, “HPV mostly manifests as warts or lesions”, and another participant said, “HPV lesions can appear in the genital area.” HPV12014 stated, “HPV is symptomless at times”, and HPV12314 similarly demonstrated knowledge concerning how HPV infections can be symptomless when he said, “I am a victim of HPV as my partner never had any sores.” Nevertheless, there were participants who lacked knowledge of how HPV infection manifested. Specifically, one interviewee said, “If HPV doesn’t always manifest as warts or lesions, what else I get?” HPV13814 asked, “Is there an incubation period for HPV manifestation?”

Even though some participants did not know how HPV infection manifested, most respondents knew having HPV put them at a higher risk for cancer. HPV11914 stated, “The famous actor just had throat cancer and he said it was from HPV infection”, and Participant HPV12714 stated, “I believe I can get cancer [from HPV] because of my HIV status.” Furthermore, HPV13914 said, “I am vulnerable to every infection, so don’t rule cancer out.” HPV12014 showed his understanding of the risk of HPV and cancer, associated with being an MSM, when he said, “Anal cancer must be the highest with MSM as we penetrate the ass very rough and women will get it in the vagina”. Additionally, HPV13314 stated, “My infectious disease doctor told me about anal cancer and it comes from STI”. However, four participants did not know of the relationship between HPV infection and cancer, and one of the four said, “Having HPV does not put

people at a higher risk for cancer, cancer was always here". Another stated, "We can cut out the ass and never kill cancer". Finally, HPV10514 associated cancer with his religious beliefs when he stated, "Cancer is God's wrath on us."

Despite the uneven nature of the participants' knowledge about the manifestation of HPV and its relationship to cancer, most had some knowledge of how to prevent HPV infection. Specifically, they knew using a condom was an effective measure against infection, and HPV11114 said, "Wearing a condom can prevent infection with HPV." HPV10614 likewise stated, "We are taught to cover for everything to avoid getting our immune system weak", and HPV10714 said, "I am never without condoms for my protection." Additionally, participant HPV12514 said, "Even though I hate condoms, I must wear them for protection". These statements, however, were inconsistent with answers to the closed question revealing all had unprotected sex.

Two, however, lacked adequate knowledge of how to prevent HPV infection or did not know condom use was a tool against infection. One reported, "Wearing a condom cannot prevent any infection, never 100%", and HPV11214 said, "I thought condom is for heterosexual to people to prevent pregnancy and other STI."

The participants also demonstrated their knowledge of HPV infection when asked who could get HPV. All indicated they knew women could get HPV, and more than half knew men could get HPV. A significant number of MSM did not know men could get HPV. For example, HPV11014 responded, "No" when asked if men could get HPV. Another "no" came from HPV11114 who said, "I thought HPV is between a man and a woman."

Data revealed mixed knowledge concerning the relationship between different sex acts and HPV infection. Two participants directly stated, “I did not know being on top or bottom makes a difference.” Topping without a condom is a high-risk behavior; however, bottoming is an even higher risk behavior (CDC, 2010). Twenty-seven percent knew topping could result in HPV infection, but 47% believed bottoming is less associated with the acquisition of anal HPV infection than topping. HPV11914 said, “I don’t think being on the bottom or top makes a difference in getting the infection. It’s what position you prefer.”

According to their responses to the closed questions, almost half supposed bottoming was associated with HPV infection in some degree. Fifty-one percent believed one cannot get HPV from bottoming, The majority knew oral sex was associated with a high risk of HPV infection, and eight (22%) indicated they did not know whether oral sex was a transmission route, two considered that it was not possible. HPV11414 demonstrated knowledge of the relationship between oral sex and HPV infection by saying, “Michael Douglas got HPV from oral sex”. Conversely, HPV11914 showed a lack of knowledge when he said, “If you don’t swallow semen you will not get HPV infection in the throat.”

Level of Knowledge of HPV With Respect to MSM, Among Younger MSM

The analysis provided in this section draws on the same data for younger MSM presented in Table 12; however, the focus in this section is on knowledge of HPV infection among MSM, rather than knowledge about HPV in general. Data from the open-ended responses provide deeper insight into the knowledge the participants had about HPV infection among MSM.

Overall, the entire group of 37 participants demonstrated a mixed level of knowledge and awareness of HPV among MSM. Although some were knowledgeable about many aspects of HPV, others did not know men could get HPV. In the words of one person, “HPV is a woman thing.” HPV11614 supported this perspective when he said, “I don’t know any MSM with HPV infection.” Additionally, most of the participants did not know that HPV is incurable, and many did not know that bottoming (receptive anal sex), topping (insertive anal sex), or oral sexual three were associated with HPV infection. Furthermore, many did not know how HPV manifests in HIV-positive MSM.

Analysis of the data also revealed limited knowledge within the age cohort of MSM who were aged 22 and younger (Table 12). A few did not know HPV is a sexually transmitted disease; not their vulnerability to be infected, and did not know about the availability of a vaccine against HPV. Others were unaware that the use of a condom is an effective preventive measure. Additionally, most did not know having HPV put them at a higher risk for cancer.

Composite Description of HPV Knowledge Infection and Prevention

Moustaskas (1994) suggested a phenomenological study should include a composite description of the essence of the experience under study. This section contains such a description. The majority of the participants knew about HPV and its impact on their lives. They knew what medical care was available to them, how to protect themselves against infection and were willing to take steps to protect themselves, especially if preventive measures such as a vaccine were readily available and affordable. Despite their knowledge of HPV and its association with an increased risk of cancer, the

participants expressed hesitation to share their HPV status with partners or ask their partners to get an HPV vaccination.

Although most were knowledgeable about HPV, some individuals clearly stated they did not know men can get a HPV infection, and they did not know how spreading of the infection occurred. Most participants were willing to get the HPV vaccine but could not afford the cost. A smaller group was afraid of the side effects of the vaccine. They had several questions about the vaccine and did not know of any MSM received the vaccine.

Several participants were hesitant in their responses due to similarities between HPV and other STIs. They also associated HPV infection with women. Most participants agreed they should wear condoms as a form of protection. However, most of the MSM did not wear a condom during sex even though they acknowledged it was the right thing to do. Youth appeared to be a factor contributing to the lack of knowledge of HPV.

Summary

Data analysis indicated participants were knowledgeable in general about many aspects of HPV and HPV prevention, but several lacked overall knowledge and had a number of misconceptions. Participants were generally comfortable discussing HPV, knew they were susceptible to HPV, and were willing to discuss HPV with their doctors. Participants indicated they knew there is a HPV vaccine and were willing to get the vaccination against HPV. However, they were not willing to ask their partners to get the vaccination. Some indicated they were aware of HPV prevention methods including the vaccine and the use of condoms. Participants indicated a desire for screening, yet they did

not know HPV was common among MSM, and would be accepting of individuals who tested positive for HPV.

An area where the participants were less comfortable was willingness to disclose their HPV-positive status to partners. Areas where there was more variation in responses included (a) knowledge of HPV as a sexually transmitted infection, (b) the absence of a cure for HPV, (c) the relationship between HPV and cancer, (d) the relationship between sex practices and HPV (bottoming, topping, and oral sex), (e) the use of condoms as a preventive method, and (e) the susceptibility of men as well as women to HPV. Although some participants had an adequate working knowledge about these issues, quite a few participants lacked knowledge.

Chapter 5 provides a discussion of the interpretation of findings in this study. In this chapter, I provide insights into the findings and make recommendations for future studies in this area. I also describe the implications of this study for social change and provide a call to action.

Chapter 5: Discussion

Introduction

The purpose of this study was to explore the knowledge, perceptions, and beliefs of Men who have Sex with Men (MSM) and Human Immunodeficiency Virus (HIV) positive men about human papillomavirus (HPV), including susceptibility to the risks and the potential severity of health conditions that result from HPV. It is important to understand the attitudes and beliefs of the MSM and HIV-positive MSM population regarding HPV, as HPV is a highly communicable and prevalent STI that may lead to the development of warts, lesions, and cancer (Mortensen & Larsen, 2010). Even low-risk types of HPV have been found to cause discomfort, distress, lower quality of life, and complicated social interactions (Mortensen & Larsen, 2010).

In this phenomenological study, I investigated the knowledge, attitudes, and beliefs of the MSM population regarding HPV risk of infection, transmission, vaccination, treatment, costs, complications, and sequelae. My analysis of the data provided valuable information for use by clinicians in the management of health among young MSM and HIV positive populations.

I designed this qualitative study to illuminate the need for education about HPV among MSM and HIV-positive men. Education is needed about HPV in general, its risks, and the potential HPV has for producing other health risks, including warts and cancer. Because they are at the highest risk of HPV infection, health policy makers must work to keep MSM better informed about the health risks of HPV and other STIs, provide them with timely information about HPV prevention strategies, and encourage them to engage in safer sex practices with fewer sex partners.

One goal of this study was to determine what MSM already know about prevention and treatment options available to HPV-infected MSM. In order to assess current HPV knowledge in this population, I recruited 39 MSM from waiting rooms in five health service sites (three HIV clinics and two physician offices) in New York, NY. The population of interest was MSM and HIV-positive men. The research questions were as follows:

RQ1: What are the views of MSM on HPV susceptibility?

RQ2: What are the knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine?

RQ3: How do MSM perceive HPV screening?

RQ4: How do MSM see HPV in relation to the MSM community?

RQ5: How can the general level of knowledge about HPV among MSM be characterized?

RQ6: In what areas are MSM generally ignorant regarding the facts of HPV?

RQ7: How do MSM rate their overall knowledge about HPV infection?

Summary of Findings

This section contains a summary of the findings, which I organized according to the types of knowledge demonstrated by participants of this study. The subsections include risk of infection, knowledge of the disease, vaccination, prevention and screening, and social perceptions. Following the summary is my interpretation of the findings.

Risk of Infection

The responses provided by 95% participants regarding the possibility of a HPV infection were predominantly positive responses. Ninety percent of participants were comfortable discussing the possibility of HPV infection, and they described their sexuality sensitive topic. Moreover, 90% participants in the study also thought they were susceptible to HPV. Additionally, over 75% of the participants had significant levels of knowledge regarding MSM's risk of HPV infection. Furthermore, more than 95% of respondents knew that wearing a condom was a way to prevent infection.

Knowledge of the Disease

About 40% of the participants demonstrated a lack of knowledge of the rate of MSM's HPV infection; however, all indicated a higher level of knowledge regarding women's HPV infection. Furthermore, the level of knowledge of 80% of respondents regarding the curability of HPV was low, as was the level of knowledge regarding HPV transmission. Moreover, when assessing the level of knowledge of MSM about the relationship between sexual acts (insertive anal sex, receptive anal sex, and oral sex) and HPV, it was about 40%. The level of knowledge for all respondents regarding HPV lesions was more than 70%, but more than 60% of participants had knowledge of how HPV infections manifested. Lastly, 90% of respondents indicated that they knew that having HPV put them at a higher risk for cancer.

Vaccination

All of the participants indicated that they were willing to obtain the vaccine against HPV. However, more than 90% of participants indicated that they were not willing to tell their sexual partners whether they had HPV, nor were they willing to ask

their partners to get the HPV vaccine. All respondents indicated that they did not know anyone who had gotten the HPV vaccine.

Prevention and Screening

Most of the participants (99%) responded positively when asked about HPV prevention methods. They knew about HPV screening and indicated that they perceived HPV screening for MSM to be necessary. Only one participant noted that he did not believe HPV screening for MSM was necessary.

Social Perceptions

Over 70% of participants viewed individuals infected with HPV positive in a positive light and perceived HPV to be common among MSM. However, about 30% of MSM perceived individuals who are HPV positive in a negative light. Approximately, 15% of participants did not perceive HPV to be common among MSM.

Interpretation of the Findings

In this section, I present a discussion of the findings about MSM and HPV. I organized the discussion according to the themes that emerged from the data analysis. The theoretical framework identified in Chapter 1 guided the interpretation. Specifically, the theory used to guide this study is the health belief model, which includes the self-efficacy theory.

Conceptual Framework Consideration

The health belief model (Bandura, 2012) has six components relative to this phenomenological study, (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, (d) perceived barriers, (e) cues to action, and (f) self-efficacy.

Perceived Susceptibility

Perceived susceptibility involves how individuals view the probable risk of developing a problem related to their health. The health belief model suggests that if one thinks they are at risk for a disease, he/she will participate in behaviors to decrease his/her risk (Luszczynska & Schwarzer, 2005). Within this study, the participants demonstrated a lack of knowledge that would allow them to analyze the risk associated with HPV infection. According to the health belief model, individuals, such as MSM, could improve their health through lifestyle changes, treatment modification, and education (Glanz, 2002).

Perceived Severity

The health belief model predicts that an assumed health behavior of an individual is affected by the perceived severity of the illness (Bleeker, Berkhof, & Hogewoning, 2005). The severity refers to personal analysis of the depth of a health problem and possible outcomes. Individuals assess how the disease will affect their lives, and if they believe that a given behavior could decrease the risk of a disease, then they are more likely to modify behaviors (Luszczynska & Schwarzer, 2005). Within the confines of this study, when MSM realize how their behavior increases their risk for becoming infected with HPV and that there is no cure, they may be more likely to modify behaviors, according to the health belief model (Boskey, 2010).

Perceived Benefits

Perceived benefit refers to the perception of how behavioral actions will lessen or eradicate the threat of a disease (Boskey, 2010). The participants in this study stated that benefits included being free of infection, or in case of infection, knowledge of self-care

and the care of others. According to 85% of the participants, knowledge of the benefits of the HPV vaccine is critical to young MSM. However, 95% of the participants of the study have limited knowledge about the benefits of vaccines, except from the basic advantages of being free of infection.

Perceived Barriers

Perceived barriers include how an individual views recommendations on actions to change health outcomes (Bandura 2009). Some barriers include the cost of the HPV vaccine and Anal Pap smear; lack of knowledge that, although HPV is treatable, it is not curable; and fear of side effects such as validity of the HPV vaccine. The data from this study indicated that more than 60% of the participants lacked knowledge about HPV and HPV prevention, and more than 90% of the participants were fearful of the potential side effects of the vaccine. Policy makers can address these barriers through educational efforts. However, more than 90% of young MSM in my data collection stated that they could not afford the HPV vaccine, which is a significant barrier.

Cues to Action

Cues to action could be an individual's experience, learned by observing another's experience, or by receiving advice from others (Boskey, 2010). Cues to action within this study included the participants' knowledge of others who have received the HPV vaccine as well as increased knowledge about the HPV infection. Participants who know other individuals that received the HPV vaccine were more open in receiving the vaccine as well. These participants believed that receiving the HPV vaccine would be beneficial to them. In addition, due to knowing individuals who received the HPV

vaccine, the participants were also more interested in acquiring knowledge about the HPV vaccine.

Self-efficacy

Self-efficacy theory is part of the health belief model and is used to show the level of confidence individuals have in regards to behavior modification (Bandura, 2012). Self-efficacy is a significant part of making long-term changes (Boskey, 2010). For the participants in this study, the belief that they were able to make changes that would positively influence their health was essential. All 39 participants believed that their health is important. However, analysis of study data showed that more than 50% of participants have limited knowledge about the negative effects of having HPV. As such, if these participants would have adequate knowledge about the negative effects of HPV on their health, then they would make necessary changes that would influence their health, such as receiving the vaccine, according to self-efficacy theory (Bandura, 2012).

MSM Views of HPV Susceptibility

The findings indicated that the more than 90% participants were comfortable discussing HPV and knew they were at a high risk for HPV infection. Self-efficacy theory, Bandura, (2009) holds that the self-perception of an individual influences health outcomes. Thus, if MSM perceive themselves to be at risk for HPV, they may be more likely to take action to protect themselves. The health belief model (Bandura, 2009), which suggests that people will make change if they perceive a risk, also indicates that the participants' understanding of their risk for HPV will lead to a change in behavior. Thus, the willingness of MSM to discuss HPV along with their knowledge of risk factors provides an opening for health practitioners and health educators to build knowledge of

HPV among MSM. If the participants were reticent about HPV or refused to accept the fact that they were at high risk, health workers would have a significant barrier to address. However, I found that MSM were open to opportunities for health education and for making behavioral changes.

MSM Knowledge, Attitudes, and Beliefs of HPV Vaccine

The participants had mixed responses to questions about their knowledge, attitudes, and beliefs regarding the HPV vaccine. According to Bandura (2012), the self-efficacy theory can decrease negative emotional arousal such as fear and stress. Policy makers must also work to improve the accuracy of perceptions of MSM in order to make them more amenable to vaccination, regardless of the cost. Analysis of the interview data indicated that 99% of the participants showed willingness to obtain the HPV vaccine. Specifically, MSM attitudes were substantiated by their knowledge of the vaccine and having discussion about HPV with their physician. Over 90% of MSM religious or cultural beliefs would not prevent the use of the vaccine. Over 90% of MSM did not know other men who had the HPV vaccine. MSM willingness to disclose sexual history to obtain the vaccine, willingness to pay for the vaccine, and awareness of HPV prevention was unanimously expressed by all participants.

All the participants were willing to obtain the vaccine against HPV and knew it would be beneficial because of their immuno-compromised status. One construct of the health belief model includes perceived benefits (Tones & Tilford, 1994). In this study, the participants believed in the efficacy of the advised action (receiving the vaccine) to reduce risk or seriousness of impact (acquiring HPV). Behavior change could influence action and the outcome is the health action rationale. One of the recommendations in

preventing the spread of HPV is through the HPV vaccine. Vaccinations would protect MSM against HPV. MSM were willing to discuss the vaccine with doctors to get a clear understanding on effects it might have on their health. Furthermore, more than 50% of participants indicated that there were no cultural or religious restrictions against receiving the vaccine.

However, despite the willingness for vaccination against HPV, most were unvaccinated and more than 90% expressed concerns about the safety and efficacy of the vaccine. Thus, when offering MSM the opportunity to be vaccinated, health care providers should take the time to answer questions and provide patients with information to reduce their fears. Despite their knowledge of preventative measures, all participants still had unprotected sex, and more than 85% of participants were less willing to tell their partners that they had HPV. The same 85% of participants were not willing to ask their partners to be vaccinated against HPV. This finding is especially important because data continue to show a high occurrence of unprotected sex among MSM, despite the stigma associated with HPV (Thomas & Goldstone, 2013). Additionally, MSM hide their health status even from their partner because of the association with illness; MSM want to appear healthy (Mortensen & Larsen, 2010). However, failure to use safe sex practices or to reveal their health status to partners increases the risk of transmission and infection. Thus, health education efforts should be directed to this area in light of this finding.

MSM Perceptions of HPV Screening

All 39 participants responded positively to the idea of HPV screening and they agreed that HPV screening for MSM is necessary. Green (2002) suggested that certain behavior and patterns of beliefs can prevent or control behavior modification. The health

belief model was founded on the premise of understanding that individuals would take action relating to their health. Therefore, the expectation is that the health belief model has a positive impact and provides the notion among the participants of preventing negative decisions regarding their health. While these participants thought screening was very necessary, they believed strongly that if the vaccine became mandatory, it would decrease the spread of the HPV infection. However, despite the participants' support of HPV screening, only 32% had been screened. The findings of this study support the need for the expansion of educational efforts to teach MSM about the importance of screening. The need for additional educational efforts among MSM who do not believe in—or who are resistant to—screening is clear.

MSM Description of a HPV Positive Person

Participants' responses indicated that more than 80% of MSM perceived HPV to be common among MSM. The concept of perceived susceptibility in the health belief model has shown great importance and recognition by the MSM group. Furthermore, although the majority of participants understood the prevalence of HPV, 13 participants indicated that they did not believe they could tell when someone was infected with HPV. This indicated varied levels of understanding about the HPV infection. Some misunderstand HPV infection; others associate signs and symptoms with the wrong infection. Even though efforts to educate MSM about the prevalence of HPV are in place, these efforts should continue.

MSM General Knowledge about HPV

The framework of the health belief model is to motivate people to take care of their health through positive actions (Bandura, 2002). The avoidance of negative health

behavior is important in the promotion of the self-efficacy theory that proposes self-perception of the individual influences their health and well-being. The characteristics of MSM's general knowledge of HPV are mixed. In this study, general knowledge about HPV included information about whether HPV can be cured, the manifestations of HPV infection, and the relationship between HPV infection and cancer. General knowledge also included the relationship of sexual practices to HPV infection (such as bottoming, topping, and oral sex), condom use as a preventative, the susceptibility of women to HPV, the susceptibility of men to HPV, and the knowledge that HPV is sexually transmitted.

Approximately 75% of the participants had little knowledge about the curability of HPV. Thus, there is a need for education addressing the manifestation of HPV, the fact that it is incurable, and how HPV is transmitted. This lack of knowledge was more pronounced at some sites than it was at others; it was found more among the younger age 18 to 22 years old MSM in this study. Additionally, the lower level of knowledge among younger participants indicated that education about HPV should occur earlier in life. This is especially important, in that MSM typically have their first sexual encounters at a younger age than 18 years old. Regardless of the varying nature of the participants' knowledge about the manifestation of HPV and its relationship to cancer, 50% demonstrated knowledge of how to prevent HPV infection. Specifically, more than 90% of participants knew that using a condom was an effective measure against STI. However, 95% of the participants indicated that they continued to have unprotected sex. This inconsistency between knowledge and action suggests a need for further research and education.

More than 80% of the participants knew HPV was a STI and that they could become infected with HPV from topping and oral sex. However, about 70% believed that bottoming was not associated with an increased risk of HPV infection. Health education should also directly address the relationship between sex acts and HPV transmission to mitigate these misconceptions.

General Knowledge and Lack of Knowledge of HPV Infection among MSM

In this study**,** the participants demonstrated a mixed level of knowledge and awareness of HPV. The primary areas where knowledge was lacking were who is susceptible to HPV, the relationship between different sex acts and HPV infection, and whether HPV can be cured. Furthermore, about 40% of participants did not know how HPV manifests in MSM who are HIV positive.

The greatest area of misunderstanding among MSM is that HPV can be cured. According to Boskey (2010), the likelihood of an individual taking action against a health condition through the health belief model will be decided by their perceived susceptibility to the disease, the results of the condition, and the severity and the effectiveness of behavior modification. While there currently is no cure for HPV, there are ways to treat the infection (Markowitz et al., 2007). The belief among the participants that HPV can be cured may lead MSM to view the transmission and infection as having less serious ramifications than it does. Furthermore, the lack of knowledge about the relationship between transmission and infection of HPV and the positions used by MSM during sexual intercourse (topping or bottoming) places MSM at high risk for transmission and infection.

The participants demonstrated a lack of understanding regarding the high risk of HPV infection associated with bottoming. Adequate knowledge of this fact would minimize the spreading of the infection (Chin-Hong et al., 2004; Dietz & Nyberg, 2011; Nyitray et al., 2011a). There appears to be limited knowledge in this area; health care providers can increase awareness through education.

These findings are consistent with those of Blackwell and Eden (2011) and Sanchez et al. (2012). Overall, both studies indicated that the level of knowledge of their respondents was extremely low. In the Blackwell and Eden study, about 50% of the MSM interviewed never heard of anal pap screening, and the participants were unaware that anal cancer was a serious and deadly form of cancer. Sanchez et al. (2010) also found low knowledge levels. In their report of the findings, they suggested that many individuals misconstrued their risk as too low. In light of such findings, Blackwell and Eden (2011) argued the need for a serious and focused education effort to spread awareness of HPV and HPV sequelae.

Limitations of the Study

The limitations of the study include efforts toward credibility, dependability, transferability, and conformability. The credibility of a qualitative study is as much about the researcher as it is the research (Patton, 1999). The researcher must bring a body of education, experience, and training to the design, development, and execution of the study at every stage. Trained as both a nurse and a scholar/practitioner in the field of health psychology, I fully understood the research methodology and the strategies for collecting and analyzing the data. My education and training allowed me to analyze the

data and to provide clear, elaborate, and successive statements of all schemes and processes, such that other researchers could reproduce the research.

I addressed the issue of transferability by ensuring that the sample represented the target population. Specifically, I selected participants that were general of the population of MSM, assuming that errors of judgment in the selection would adjust to ensure that lack of transferability did not limit the present study. I supported conformability by having a third party conduct a conformability audit that determined whether the data and interpretations were substantiated by material in the audit trail, were internally consistent, and stood for more than just my personal beliefs (Guba & Lincoln, 1989).

This study was only open to men who have sex with other men. All 39 participants identified as male from birth but have a sexual preference of men. This limitation was necessary to narrow the gender to only male to capture the MSM experience.

Researcher bias is another limitation associated with qualitative research. Although the data collected may not present verifiable information on HPV, efforts to mitigate researcher bias included the use of a standardized research protocol and detailed transcription of participants' responses in the presence of the participants.

I addressed researcher bias by bracketing my personal opinions and my life experiences. I began the bracketing process by writing in a journal all the assumptions I held about HPV, MSM, HIV positive status, and STIs. I used the descriptions of my personal experiences to as a guidebook to my own biases and propensity to draw assumptions about the population of interest, the phenomena of interest, and any relationships between the two. I used this writing during the analysis phase to insure that

I derived my beliefs about emergent themes from the data and the analysis thereof, and not from my own personal biases.

The sensitive nature of the topic was likely also a limitation of the study. The study provides significant data about MSM, and although 70% of the participants were openly gay, 30% were not. One participant described his sexual orientation as, "I'm still in the closet." There is evidence within the transcripts that the participants felt that they were not highly regarded within society. Such influences could inhibit the forthrightness of the participants. Although the interview was confidential, sexuality is not necessarily an open discussion among MSM; thus, the participants' responses could have been compromised. Therefore, this study may be limited by my inability to validate the truthfulness in participants' responses. It is difficult to assess whether participants expressed their true feelings during the interview and whether participants were able to articulate what they did and did not know about HPV.

The study was also limited by the interview protocol. Specifically, in an effort to assure continuity of data across participants, the interview followed a strict protocol including open ended and closed (yes/no) questions. As such, opportunities for asking probing questions were limited. Thus, the data do not include the rich data that might provide insights into questions, such as why participants were hesitant to ask partners to receive the vaccine.

A final limitation of the research was that the findings should not be generalized to all MSM. Although the participants included individuals with a range of background, education, and life experience, participants were living in a major metropolitan area, which may have had an impact on their knowledge and perceptions. The analysis

revealed the essential experience of this group of MSM, but the findings may not hold for MSM who live in rural areas or small cities with fewer services or a smaller or less visible population of MSM.

Recommendations

This section contains a discussion of recommendations for future research and for action on the part of health care professionals. Recommendations are based on the analysis discussed in Chapter 4 and the interpretation of the data discussed in this chapter.

Recommendations for Future Research

This study focused on the experience of MSM to draw conclusions about the knowledge and perception of MSM about HPV. A follow-up study focusing on HPV alone would provide a different perspective. Additionally, a study that utilizes health professionals who care for MSM could offer an alternative perspective relevant to addressing HPV. Such a study would help determine the detrimental impact of HPV and provide needed information on how health professionals should manage HPV to improve health care practices.

A follow-up quantitative study would be useful to confirm and extend the conclusions drawn from this study. For example, a quantitative study using the themes developed from perceptions, health beliefs, and knowledge of MSM would be significant in getting results through another methodology. Specifically, the themes identified in this study could be used to develop a survey, which would be administered to a national sample of MSM. Such data would provide additional and generalizable information about the perceptions, health beliefs, and knowledge of MSM regarding HPV. A survey could

also be administered to healthcare professionals to build a more accurate understanding of HPV knowledge that is based on quantitative data.

Although Sanchez (2012) directly addressed the beliefs and attitudes of the MSM population in general, there is a need to substantiate those findings in understanding the beliefs and attitudes of MSM and MSM HPV positive youth in relation to the preventative measures of HPV infection. Sanchez (2012) focused on MSM in general, which prevented him from examining the youth perceptions of MSM and MSM HPV positive men. Knowledge of these perceptions is crucial in understanding the significance of a prophylactic vaccine to reduce the prevalence rate of HPV infection in this population. In this context, a study substantiating this gap in knowledge could help the healthcare sector curb the increasing rate of HPV infection among 18 to 26 year old MSM.

Recommendations for Action

The impacts of HPV are detrimental. Thus, it is imperative that healthcare professionals understand how to properly treat HPV and develop relevant strategies to help individuals manage HPV. To address these concerns, I suggest that health professionals use the results of this study to assist in taking the following actions:

Introduce and implement courses that aim at developing the characteristics/skill sets necessary to manage HPV.

Recognize health professionals who have experience with HPV treatment and develop mentoring programs to train other health professionals with less experience.

Use a more personal medium to introduce, inform, and educate the population being studied.

Use the information provided in this study to assist with strategic planning, development, and implementation of HPV education and prevention programs.

Develop communication and technological strategies to mitigate the risks associated with HPV.

Implications

This section includes a discussion of the research, practice, and social implications of this study. The participants of this study demonstrated that there is a need to collect data on the perceptions, knowledge, behaviors, and attitudes of MSM toward HPV infection and prevention. There is an overwhelming need for increased knowledge and acceptance of the HPV vaccine of 18 to 26 year old MSM who are HIV positive. In this study, more than 75% of the participants had heard of HPV infection the availability of a HPV vaccine. However, the responses by the participants suggested that this group had a general idea about HPV infection, but was less knowledgeable on the concrete theories. Contributory facts disclosed by participants were of little value when not geared specifically toward the MSM group. For example, more information is available about women and HPV than HPV within the MSM population.

Research Implications

The results of this study are important in understanding the social environment within which HPV propagates. Understanding the knowledge, beliefs, and attitudes of young MSM about HPV is significant when one considers the existence and efficacy of the HPV vaccine, and that MSM are the group most at risk. Moreover, the findings from this study will help researchers understand how patients perceive HPV, which in turn may help healthcare professionals provide better information sharing, increase

accessibility to the vaccine, and allow patients to help themselves through behavior modification and the ability to recognize the signs of HPV manifestations.

Practitioner Implications

Development of educational programs about HPV is of primary importance within the health field. Educational efforts need not be expensive or time consuming. Instead, health providers should focus on getting information to MSM in ways that have the greatest impact. Insofar as the MSM interviewed indicated a willingness and desire to learn about HPV, these efforts are apt to be well-received and be effective.

Additionally, health promotion and disease prevention should include HPV screening and vaccination. The study indicated that the MSM are interested in screening and vaccination when provided with adequate knowledge and financial support. Zimet and Rosenthal (2010) asserted that no universal HPV screening tests exist for men. Although the only approved tests are for cervical cancer screening in women, some experts recommend anal pap smears for MSM and HIV positive individuals to test for cancer. This is due to the high incidence of anal cancers in this group (Bratcher & Palefsky, 2008; Kreuter & Wieland, 2009). Dietz and Nyberg (2011) concluded that physicians have an obligation to include sexual health history and vaccination in the care of male patients, especially MSM. Incorporation of the vaccine, along with screening, can result in reduced cancer rates and help reduce transmission of HIV.

Health providers and educators should teach MSM that the HPV vaccine is safe for use in men through the age of 26. Additionally, health policy makers should inform parents that HPV immunization is recommended for boys aged 11 to 12 years old (Markowitz et al., 2007). Although most boys are not sexually active at the recommended

age of vaccination, receiving the vaccine then will protect them when they do become sexually active, whether as MSM or MSW.

It is especially important that MSM be informed that Quadrivalent HPV vaccine is 90% effective against HPV-6, HPV-11, HPV-16, and HPV-18 in men 16 to 26 years old, and could prevent up to 80% of anal cancers (Dietz & Nyberg, 2011). With this knowledge, more MSM might be willing to undergo vaccination, which would result in drop in HPV infection rates. They might also be more willing to ask partners to undergo vaccination.

Social Change Implications

It is anticipated that that the results of this study will help to create an improved social awareness about HPV. The research can also lead to understanding the characteristics of a social environment that promotes the propagation of HPV. For instance, what factors in society have led to an increase in HPV infection in the past few years? In order to effect real social change, change agents must engage policy makers and not allow them to ignore social problems. One way to do that is to participate in meaningful social sciences research. To that end, I chose to investigate a significant social problem—HPV—in a population with the highest risk of contracting the disease.

This study can be a tool for understanding the world in which MSM live, and a world in which HPV is on the rise (Campbell, 2014). Through this study, I found that young MSM would benefit from preventive education on HPV infection and the HPV vaccine. Health education geared specifically towards young MSM could influence their decision to take HPV vaccines, regardless of their age. Health educators could receive funding to improve sex education in school curriculum. Because HPV is a STI, and

because the group with the greatest HPV infection risk is MSM, public school administrators might resist sharing information with students. However, since most boys will eventually become sexually active, and since a number of them will engage in sex with men, students will likely need this information sometime in their future. Expanding on this initiative in schools will help bring more information to young boys that will increase awareness.

The cost of the vaccine is also one of the factors that influenced young MSM to get (or not get) vaccinated. Not all participants in this study could afford the vaccine. Public lawmakers can mandate all insurance policies to include anal pap smears and HPV vaccines for men of all ages.

The findings of the study could also help policy makers with the implementation of effective health programs that address the gaps in knowledge or misunderstandings about HPV infection among the MSM group. Finally, general education can help to reduce or remove the stigma associated with HPV infection, especially among MSM. This will require policies for social change to ensure that the target population is identified and served without being stigmatized.

Reflections

I used an interview protocol to understand the life experiences and insights of young MSM about HPV. My role as an interviewer helped me identify and comprehend factors influencing MSM's lack of measures to prevent STI such as HPV. I conducted a sampling process designed to reach a diverse group of MSM in person. This approach to the research enabled me to capture the experiences of the participants. Prior to collecting data, I had preconceived notions that young MSM would have insights on HPV;

however, I argue that the findings from this investigation are free from researcher bias because I followed a strict analytic process that ensured trustworthiness of the findings. Thus, the findings of the study are valid and reliable. After reviewing the findings and interpreting the findings in light of the extant research, I identified the implications for research and practice and provided recommendations. The findings of the study bore out my assumption that MSM would be able to provide insights into their experience and knowledge of HPV. The findings were also consistent with the conclusions about HPV drawn from the literature review.

Conclusion

The purpose of this phenomenological study was to understand how MSM perceive their susceptibility to HPV infection, what MSM know of the severity of resulting health conditions among MSM with HPV infection, and to explore MSM's knowledge of the HPV vaccine. I identified themes that focused on the views of young MSM regarding HPV susceptibility, severity, benefits, and barriers. The investigation provided insights into their knowledge, attitudes, and beliefs about the HPV vaccine; their perceptions of HPV screening; their descriptions of individuals who are HPV positive; their general knowledge of HPV; areas in which they lacked knowledge; and their overall knowledge of HPV infection. Overall, the findings of the study were consistent with the existing literature.

The evidence indicated that young MSM were willing to discuss HPV and wanted to learn how to protect their health. The findings indicated that health professionals should focus on educating young MSM (ages 11 through 26) about the health risks associated with HPV infection, the risks of transmission associated with different sex

acts, how transmission of the virus could be minimized, the efficacy of the vaccine, as well as the optimal time for vaccination. This study showed that there is a need to collect data on the perception, knowledge, behaviors, and attitudes of MSM toward HPV infection and prevention.

Understanding the knowledge, beliefs, and attitudes of MSM patients could contribute significantly to the development of better information about the perception of HPV by MSM. It would also contribute to programs that aim to promote awareness about HPV. Such awareness could lead to a holistic approach to the control of HPV, thereby reducing the risks it poses to MSM and society overall.

Development of educational programs about HPV is important to promote screening and vaccination among young MSM. Although vaccination is the most beneficial option and is encouraged, the high cost of the vaccine limits those who seek preventative care. Affordability of the vaccine would significantly reduce HPV infection rate in the MSM group and improve longevity. The most common strains of HPV in MSM are readily treated with the HPV vaccine. However, data have shown that affordability of the vaccine is generally out of reach for the MSM group. Affordability would increase access, which in turn would provide a significant decrease in infection rates. Further research focusing on the financial impact of future health care costs and Quality Adjusted Life Year related to the use of the vaccine as preventive care for MSM may provide further support for global acceptance of the HPV vaccine by health care insurance. Through mandates, supported by empirical data, health care insurance companies may then be more amenable to include coverage for anal pap smears and the three recommended dosages of HPV vaccines for MSM.

If MSM were knowledgeable about the benefits of HPV vaccine, then they would be willing to get the vaccine. If more MSM were open to vaccination, there would be a decrease in the number of HPV infections overall. Policy makers should formulate and implement policies that address the needs of the MSM group, especially in regards to their knowledge or misunderstandings about HPV infection. Policies should also aim to reduce and ultimately remove the stigma associated with HPV infection, especially among MSM.

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Appendix A: Authorization Letters

MSAHC
Dr. John Steever, MD
320 E. 94th Street
New York, NY 10128

Walden University
Dissertation & Research
100 Washington Avenue
South Suite 900
Minneapolis, MN 55401

April 6, 2014

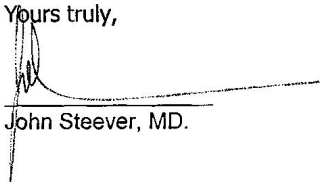
Letter of Authorization

Dear Sir/Madam,

The Mount Sinai Adolescent Health Center (MSAHC) is a program that provides services to assist youths and is an affiliation of Mount Sinai Medical Center. The sites provide care through a team of highly specialized physicians, which includes an HIV Specialist, and other health care professionals. MSAHC provides a wide array of services one might expect in an outpatient clinic- primary medical, gynecological, oral health care, mental health services, social work and COBRA case management, treatment education, harm reduction programs and nutritional support.

I have read the research method sent to me by Philecia Mullings, RN and based on the information and the nature of her research, I hereby grant her permission to use the facility to conduct the research and collect the necessary data. Please note that all policies and procedures for the clinic must be adhered to before, during and after the completion of the visit.

Yours truly,



John Steever, MD.

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June 13, 2013

Beth Israel Medical Center
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Walden University
Dissertation & Research
100 Washington Avenue
South Suite 900
Minneapolis, MN 55401

SUBJECT: Letter of Authorization

Dear Sir/Madam:
The Peter Krueger Center for Immunological Disorders (PKC) provides HIV/AIDS primary and specialty care through a team of highly specialized physicians, nurse practitioners, physician assistants, and other healthcare professionals. PKC provides a wide array of services including primary medical care, specialty health care (gynecology, dermatology, pain management), oral health care, mental health services, social work and case management, treatment education, harm reduction programs, and nutritional support.

I have read the research method sent to me by Philecia Mullings, RN and based on the information and the nature of her research, I hereby grant her permission to use the facility to conduct the research and collect the necessary data. Please note that all policies and procedures for the clinic must be adhered to before, during, and after the completion of the visit.

For any further information or questions, please contact me at rshiau@chpnet.org.

Sincerely,

Robert Shiau
Administrator, AIDS Center/Infectious Diseases

STEPHEN E. GOLDSTONE, M.D.
420 WEST 23rd St.
NEW YORK, NY 10011
(212) 2426500

March 14, 2014

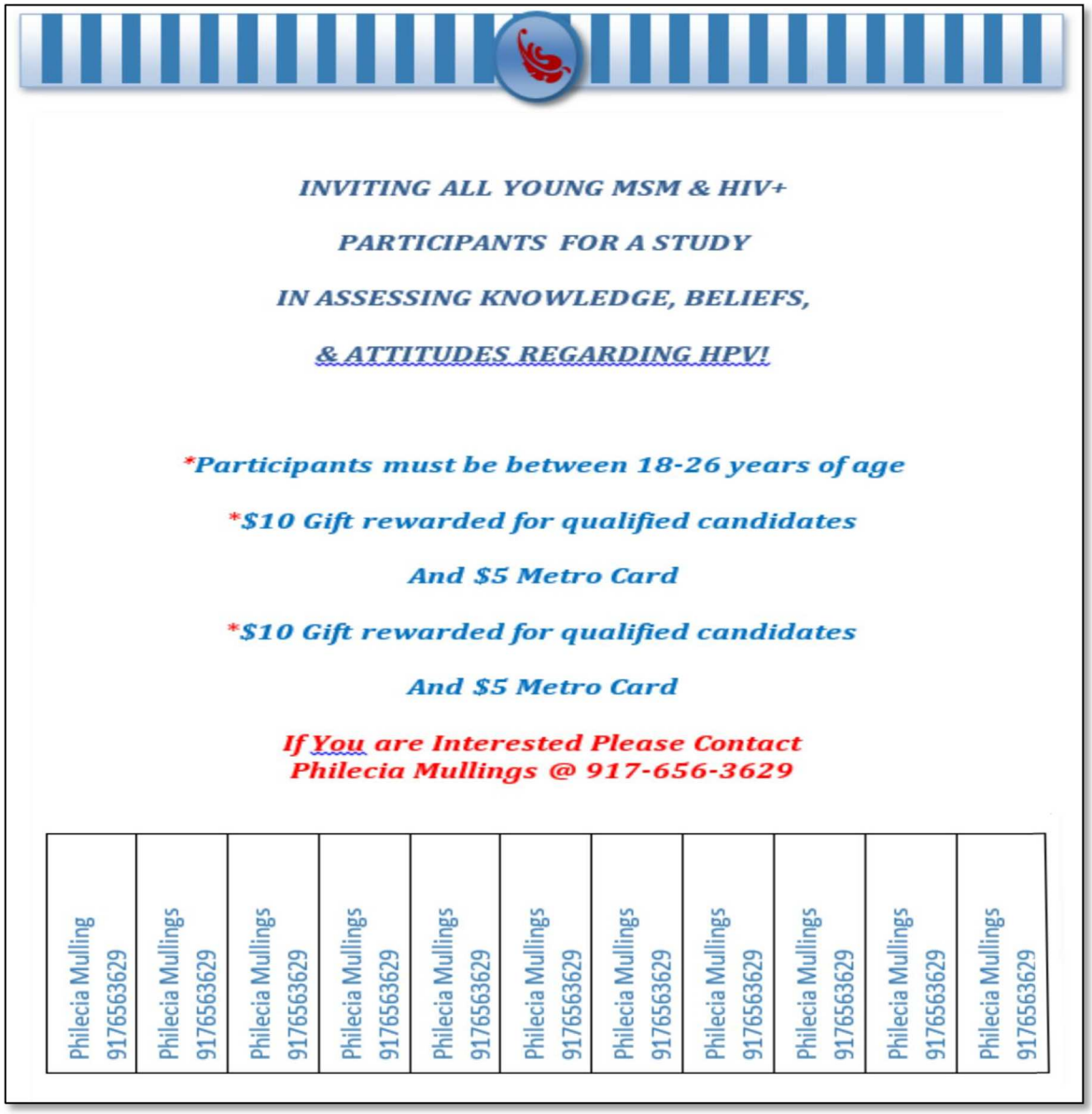
To Whom it May Concern at Walden University:

Philecia Mullings is doing a research study and we will post her study materials in the office for potential recruitment of subjects. I have read the research materials and feel it is a valid study for which my patients might be interested in participating in.

Sincerely,

Stephen E. Goldstone, M.D. FACS

Appendix B: Flyer/Invitation



Appendix C: Interview Questions

Set 1: Demographics

Participant's #: _____

DOB/Age: _____

Place of Birth: _____

Race: _____

Educational level:

Some High School_____

High School Graduate_____

Trade School_____

Some College_____

Undergraduate Degree_____

Graduate Degree_____

Annual Income level:

$0 – $20,000_____

$21,000 – $40,000_____

$41,000 – $65,000_____

$66,000 – $100,000_____

$101,000 and above_____

Set 2: Beliefs

How would you describe your experiences as an MSM?

How susceptible are MSMs to HPV?

Are you aware of HPV prevention method?

1. Yes 2. No

If yes, how did you gain this knowledge?

Are you vaccinated with the HPV vaccine?

1. Yes 2. No

Have you ever been screened for HPV?

1. Yes 2. No

Have you ever been diagnosed with HPV?

1. Yes 2. No

Do you believe HPV is common among MSM?

1. Yes 2. No

Do you believe HPV screening should be mandatory for MSM?

1. Yes 2. No

How comfortable are you when discussing the possibility of getting HPV infection?

1. Very comfortable

2. Somewhat comfortable

3. Not comfortable

Set 3: Knowledge

HPV is a sexually transmitted infection.

1. Yes 2. No 3. Explain

What are your beliefs regarding wearing a condom to prevent infection with HPV?

HPV can be cured.

1. Yes 2. No 3. Explain

A vaccine is available for HPV.

1. Yes 2. No 3. Explain

Having HPV puts you at a higher risk for cancer.

1. Yes 2. No 3. Explain

HPV always manifests as warts or lesions.

1. Yes 2. No 3. Explain

Sometimes the HPV infection can be asymptomatic.

1. Yes 2. No 3. Explain

HPV lesions can appear in the genital, oropharynx or anal area.

1. Yes 2. No 3. Explain

What are your beliefs concerning bottoming (receptive anal intercourse) and its association with the acquisition of anal HPV infection than topping?

You can get HPV from oral sex.

1. Yes 2. No 3. Explain

You can get HPV from topping (insertive anal sex).

1. Yes 2. No 3. Explain

Do you have experiences with men who have contracted HPV infection?

Women do get HPV.

1. Yes 2. No 3. Explain

If you have no manifestations of HPV, you can transmit HPV.

1. Yes 2. No 3. Explain

Set 4: Attitude

Do you have a Primary doctor?

1. Yes 2. No

Do you visit your doctor at least once per year?

1. Yes 2. No

Would you discuss your sexual health issues with your doctor?

1. Yes 2. No

Have you ever discussed HPV with your doctor?

1. Yes 2. No

Do you discuss your sexual health status with sex partners (especially HPV)?

1. Yes 2. No

Have you had unprotected sex (oral or anal) with a man in the last year?

1. Yes 2. No

Have you had unprotected sex (oral, anal, or vaginal) with a woman in the last year?

1. Yes 2. No

Are you aware of the existence of vaccine against HPV for men?

1. Yes 2. No

Would you be willing to obtain this vaccine against HPV if you are qualified?

1. Yes 2. No

Would you be willing or able to pay $450 USD to obtain the vaccine?

1. Yes 2. No

Would you be willing to disclose your sexual history to obtain the vaccine, if it were free of charge?

1. Yes 2. No

Do you feel comfortable taking the HPV vaccine?

1. Yes 2. No

Do you think men should get the HPV vaccine?

1. Yes 2. No

Do you know any men (do not include yourself) who have had the HPV vaccine?

1. Yes 2. No

Some doctors screen men for anal HPV through anal pap smears. Have you had an anal pap smear in the past?

1. Yes 2. No

Anal pap smears can identify anal HPV and precancerous/cancerous anal HPV lesions. Would you have an anal smear?

1. Yes 2. No

Has your doctor asked you to have an anal pap smear?

1. Yes 2. No

If you were found to have HPV, would you tell your sexual partners?

1. Yes 2. No

Would religion, culture or other beliefs stop you from getting the HPV vaccine?

1. Yes 2. No

Would you ask your partner(s) to take the HPV vaccine?

1. Yes 2. No

Appendix D: Consent Form

You are invited to take part in a research study of the Assessment of Perception, Health Beliefs and Knowledge of Men Who Have Sex with Men (MSM) and HIV Positive towards Anal Human Papillomavirus (HPV) Infection. This form is part of a process that allows you to understand the study before deciding whether to take part. I will read and tape record the process as you make your decision.

I, Philecia S. Mullings (a Ph. D student in Health psychology at Walden University), invite you to participate in a research study that analyzes your perception, beliefs and knowledge about the disease HPV which will be used for my Walden dissertation. You were selected as a possible participant in this study because you met the criteria's; MSM, between age of 18 – 26 and HIV+.

Some benefits of the study include but not limited to; (1). Understand the perceived threat of susceptibility and severity of health conditions among MSM with HPV infection so treatment options are known. (2). Another benefit is to analyze MSM perceptions about the HPV disease to provide correct education. (3). Next benefit is to seek feedback on their knowledge of the disease so we can provide education/support about Vaccines, complications, treatment options, and safe sex practices.

Risk associated with this study is very limited. However, participant's rights will not be violated and privacy will be maintained. Participants will not be coerced and will make known that his participation is voluntary.

The duration of the face-face interview should be approximately 20 minutes. No information obtained in connection with this study can or will be identified with you. If

you decide not to participate, you are free to discontinue participation at any time without prejudice. Please feel free to ask questions regarding this study.

There will be a $15 gift to you for participation ($10.00 in cash and $5.00 in Metro Card). Please keep a copy of this statement, which will be handed out to you, for your records. You may contact me later if you have additional questions at philecia.mullings@waldenu.edu . You may also contact a Walden representative for participant rights, Dr. Leilani Endicott, at 612-312-1210 who can discuss this with you.

In order to protect your privacy no signature is required. You are assigned a participant number if you chose to participate. All data will be kept for a period of 5 years in a locked box and will be stored in a secured area.

Statement of consent:

The information read to me is clear and I understand the study well enough to make a decision about my involvement. By saying, "I agree" I am providing my consent and agreeing to the terms described.

Participant's # _____

Researcher's Signature _____

Date of Agreement _____

Appendix E: Brochure

Who is at Risk?

All sexually active male and female through genital contact.

Even people who only have sex with one person in their lifetime can get HPV.

Heterosexual, Bisexual, Gay, and Men who have sex with men (MSM).

Screening for HPV

Pap smear is done for Screening for women which help to decrease cervical cancer.

No official test for men, but some doctors will do a pap smear of the anus.

Ways to Prevent HPV

Vaccines are available.

Condoms can lower the risk of HPV

Limiting number of sex partners.

Increase your knowledge about HPV.

Available Treatment for HPV

No cure or treatment for HPV.

Treatments for warts and lesions; cryotherapy, surgical excision, laser treatment and topical cream.

HPV Vaccine

Two available vaccines are Cervarix and Gardasil.

Recommended for boys 11 – 26 years.

Also for Gay, bisexual and men who have sex with men (MSM).

Girls 9– 26 years.

Gardasil protect against anal, vaginal, and vulvar cancers.

Only one of the vaccines (Gardasil) protects against HPV types 6 and 11.

Cervarix vaccine protects against HPV 16 & 18.

HPV vaccines offer the best protection to girls and boys who receive all three vaccines.

HPV and Cancer

HPV has been linked to some cancers mouth or throat, cervical, penile and anal cancer.

HPV is the main cause of cervical cancer in women.

HPV infection that last for many years increases a person's risk of developing cancer.

What is HPV?

HPV is a sexually transmitted Infection (STI).

HPV is the most common form of STI in the world.

HPV affects male and female.

If you are immunocompromised, and have HIV your risk is HPV increases.

Anal HPV is most common in Men who have sex with men (MSM).

Certain HPV types also cause most cases of genital warts in men and women.

Strains of HPV

There are more than 40 different types of HPV. Most common strains of HPV: 16,18,31,33 & 35.

HPV 16 & 18 is considered oncogenic (high risk and cancer causing).

Low risk HPV includes 6, 11, 53, 55, 66, 155 & 291.

HPV 6 & 11 is associated with warts.

Facts about HPV

You can be infected with the HPV infection without detection and pass it on.

It is possible to get more than one type of HPV strain.

Most HPV infections resolved without treatment.

However, some strains of HPV will persist and cause other serious health problems.

Genital HPV split into two categories;

Wart causing & Cancer causing.

HPV does not always appear as warts or lesions.

HPV can be asymptomatic (without symptoms).

HPV can be contracted through oral sex, anal sex and vaginal sex.

Men and women can have HPV.

Men can get Pap smear.

MSM are more susceptible to get HPV

Vaccine must be taken before first sexual encounter.

Both vaccines are given as shots and require 3 doses.

Both vaccines are very safe by FDA & CDC.

Dos to Prevent HPV

Get vaccinate before you get infected.

Get tested.

You can ask your doctor for a pap smear.

Talk to your doctor about HPV & HIV.

Share information with partners.

Practice Safe sex.

Center for Disease Control and Prevention

CDC (1800-232-4636)

Chin-Hong, P. V, & Palefsky, J. M. (2002).

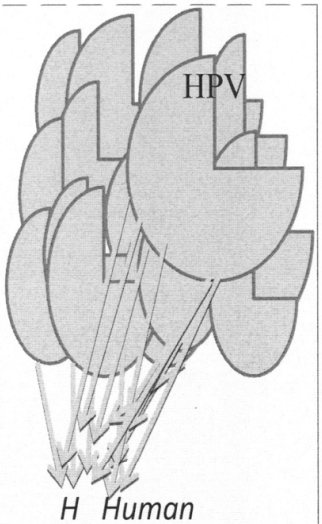
Cancer information (http://www.cdc.gov/cancer

HPV information (http://www.cdc.gov/hpv/)

HPV vaccination (http://www.cdc.gov/vaccines/vpd-vac/hpv/)

STD information (http://www.cdc.gov/hpv/)

Philecia S. Mullings, RN, BSN, MSA



H Human

P Papilloma

V Virus

Empower yourself with facts about Human papillomavirus

Appendix F: Thematic Categories

Major Category	Thematic Category
RQ1. "The Views of MSM on HPV Susceptibility"	"Very Comfortable when Discussing the Possibility of HPV Infection"
	"Somewhat Comfortable When Discussing the Possibility of HPV Infection"
	"Not Comfortable when Discussing the Possibility of HPV infection"
	"Highly Susceptible to HPV"
	"Medially Susceptible to HPV"
	"Lowly Susceptible to HPV"
	"Willing to obtain this vaccine against HPV if MSM are qualified"
RQ2: "The knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine"	"Never introduced to HPV vaccination"
	"Have discussed HPV with your doctor"
	"Have never discussed HPV with their doctor"
	"Would tell their partners if they have HPV"

Major Category	Thematic Category
	"Would not ask their partner(s) to take the HPV vaccine"
	"Religion, culture or other beliefs would stop them from getting the HPV vaccine" "Religion, culture or other beliefs would not stop them from getting the HPV vaccine"
	"Do not know any men who have had the HPV vaccine"
	"Men should get the HPV vaccine"
	"Feel comfortable taking the HIV vaccine"
	"Willing to disclose their sexual history to obtain the vaccine, if it were free of charge" "Willing or able to pay $450 USD to obtain the vaccine"
	"Not be willing or able to pay $450 USD to obtain the vaccine"
	"Are vaccinated with the HPV vaccine"
	"Not vaccinated with the HPV vaccine"
	"Aware of HPV prevention method"
	"Gain this knowledge through an advertisement/a doctor"
	"Not aware of HPV prevention method"
	"Have unprotected sex"
	RQ3: How do MSM perceive HPV screening?
	Major Category: "How do MSM perceive HPV screening?"
	Thematic Category:

Major Category	Thematic Category
	"HPV screening should be mandatory for MSM"
	"HPV screening should not be mandatory for MSM"
	"Have been screened for HPV"
	"Have never been screened for HPV"
RQ4: "How MSM see HPV in relation to the MSM community"	"Do not believe HPV is common among MSM"
	"HPV is common among MSM, Have been diagnosed with HPV"
	"Have never been diagnosed with HPV"
	RQ5: How can MSM's general level of knowledge about HPV be characterized?
	RQ6: In what areas are MSM generally ignorant regarding the facts of HPV?
	Major Category: "MSM's general level of knowledge about HPV and ignorance
	regarding the facts of HPV"
	Thematic Category:
	"HPV can be cured"

Major Category	Thematic Category
	"HPV cannot be cured"
	"Bottoming (receptive anal intercourse) is less associated with the acquisition of anal HPV infection than top"
	"Bottoming is not less associated with the acquisition of anal HPV infection than top"
	"HPV lesions can appear in the genital, oropharynx or anal area"
	"Sometimes the HPV infection can be asymptomatic"
	"Sometimes the HPV infection cannot be asymptomatic"
	"HPV always manifests as warts or lesions"
	"HPV does not always manifest as warts or lesions"
	"Having HPV puts people at a higher risk for cancer"
	"Having HPV does not put people at a higher risk for cancer"
	"A vaccine is available for HPV"
	"A vaccine is not available for HPV"
	"Wearing a condom cannot prevent infection with HPV"
	"Wearing a condom can prevent infection with HPV"
	"If people have no manifestations of HPV, they can transmit HPV"
	"If people have no manifestations of HPV, they can transmit HPV"

Major Category	Thematic Category
	"Women do get HPV"
	"Men do get HPV Infection"
	"Can get HPV from topping"
	"Can get HPV from topping (insertive anal sex)"
	"Can get HPV from oral sex"
	"HPV is a sexually transmitted infection"
	"Do not know if a vaccine is available for HPV"
	"Do not know if bottoming is less associated with the acquisition of anal HPV infection than top"
	"Do not know if HPV lesions can appear in the genital, oropharynx or anal area"
	"Do not know if sometimes the HIV infection can be asymptomatic"
	"Do not know if HPV always manifests as warts or lesions"
	"Do not know if having HPV put them at a higher risk for cancer"
	"Do not know if HPV can be cured"
	"Do not know if wearing a condom can prevent infection with HPV"
	"Do not know if men do get HPV infection"

Major Category	Thematic Category
	"Do not know if MSM can get HPV from topping (insertive anal sex)"
	"Do not know that MSM can get HPV from oral sex"
	"Do not know that HPV is a sexually transmitted infection"
RQ7: "How would you rate your overall knowledge about HPV infection?"	Low
	"HPV can be cured"
	"Do not know if there is no cure for HPV"
	"Do not think that HPV always manifests as warts or lesions"
	"Do not know if HPV always manifests as warts or lesions"
	"The HPV infection cannot be asymptomatic"
	"Do not know if sometimes the HPV infection can be asymptomatic"
	"Do not think that having HPV puts them at a higher risk for cancer"
	"Do not know if having HPV puts them at a higher risk for cancer
	"Do not think that a vaccine is available for HPV"
	"Do not know if a vaccine is available for HPV"

Major Category	Thematic Category
	"Wearing a condom cannot prevent infection with HPV"
	"Do not know if wearing a condom can prevent infection with HPV"
	"Do not think that if they have no manifestations of HPV"
	"They can transmit HPV"
	"Do not know if they have no manifestations of HPV"
	"They can transmit HPV"
	"Do not think that men get HPV Infection"
	"Do not know if men get HPV Infection"
	"Do not think that he can get HPV from topping (insertive anal sex)"
	"Do not know if they can get HPV from topping (insertive anal sex)"
	"Do not know that they can get HPV from oral sex"
	"Do not know that HPV is a sexually transmitted infection"
	"Bottoming (receptive anal intercourse) is less associated with the acquisition of anal HPV infection than top"
	"Do not know if bottoming is less associated with the acquisition of anal HPV infection than top"
	High
	"Do not think that HPV can be cured"

Major Category	Thematic Category
	"Sometimes the HPV infection can be asymptomatic"
	"HPV always manifests as warts or lesions"
	"Having HPV put them at a higher risk for cancer"
	"A vaccine is available for HPV"
	"Wearing a condom can prevent infection with HPV"
	"If people have no manifestations of HPV, they can transmit HPV"
	"Women get HPV"
	"Men get HPV Infection"
	"People can get HPV from topping"
	"People can get HPV from oral sex"
	"HPV is a sexually transmitted infection"
	"HPV lesions can appear in the genital, oropharynx or anal area"
	"Do not say that bottoming is less associated with the acquisition of anal HPV infection than top"
	RQ1: What are the views of MSM on HPV susceptibility?
	Major Category: "The Views of MSM on HPV Susceptibility"
	Thematic Category:
	"Very Comfortable when Discussing the Possibility of HPV Infection"

Major Category	Thematic Category
	"Somewhat Comfortable When Discussing the Possibility of HPV Infection"
	"Not Comfortable when Discussing the Possibility of HPV infection"
	"Highly Susceptible to HPV"
	"Medially Susceptible to HPV"
	"Lowly Susceptible to HPV"
	RQ2: What are the knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine?
	Major Category: "The knowledge, attitudes, and beliefs of MSM regarding the HPV vaccine"
	"Willing to obtain this vaccine against HPV if MSM are qualified"
	"Never introduced to HPV vaccination"
	"Have discussed HPV with your doctor"
	"Have never discussed HPV with their doctor"
	"Would tell their partners if they have HPV"
	"Would not ask their partner(s) to take the HPV vaccine"