Spring 2010

Exploring the Human Papillomavirus in Female College Students

Kellie Blankenstein

Carroll College, Helena, MT

Follow this and additional works at: https://scholars.carroll.edu/nursing_theses

Part of the Public Health and Community Nursing Commons

Recommended Citation
Blankenstein, Kellie, "Exploring the Human Papillomavirus in Female College Students" (2010). Nursing Undergraduate Theses. 20.
https://scholars.carroll.edu/nursing_theses/20

This Thesis is brought to you for free and open access by the Nursing at Carroll Scholars. It has been accepted for inclusion in Nursing Undergraduate Theses by an authorized administrator of Carroll Scholars. For more information, please contact tkratz@carroll.edu.
Exploring the Human Papillomavirus in Female College Students
Kellie A. Blankenstein
Carroll College
This thesis for honors recognition has been approved for the Department of Nursing.

Joni Walton, PhD, RN, ACNS-BC

Jennifer Elison, RN, EdD, PMHCNS-BC

Joan Stottlemyer, Director of Academic Resource Center
Table of Contents

Acknowledgments ............................................................................................................. 5
Abstract ................................................................................................................................. 6
CHAPTER I .......................................................................................................................... 6
Background ......................................................................................................................... 7
Etiology and Risk Factors ...................................................................................................... 8
Purpose ................................................................................................................................. 8
  Physical impact of HPV on the client ............................................................................. 9
  Psychosocial impact of HPV ......................................................................................... 9
  Impact of HPV on relationships .................................................................................... 11
Ethical issues related to HPV: Disclosure & Mandatory vaccination .................................... 12
Pender’s Health Behavior Model ....................................................................................... 14
  Assumptions of Pender’s Theories ............................................................................. 14
  Behaviors ....................................................................................................................... 15
  Level of commitment, demands, & health promotion .................................................. 15
  Application of Pender’s Theory to HPV ...................................................................... 16
CHAPTER II ....................................................................................................................... 18
Review of Literature ............................................................................................................ 18
  Vaccine efficacy & attitudes towards vaccination ....................................................... 18
  College student knowledge of HPV ............................................................................ 22
  Linking cervical cancer to HPV .................................................................................. 23
    Socioeconomic status and HPV knowledge ............................................................... 23
    Cultural meaning of HPV .......................................................................................... 25
  Minority populations and HPV knowledge ................................................................. 26
  Ethnic differences in transmission of HPV ................................................................... 28
  Primary Care implications for adolescents related to HPV .......................................... 30
  Educational resources related to HPV ......................................................................... 33
  Repeated HPV tests and emotional consequences ...................................................... 35
  National Guidelines ....................................................................................................... 36
  Micromedix Information ............................................................................................... 37
  Epidemiology .................................................................................................................. 37
  Laboratory & diagnostic testing of HPV ....................................................................... 38
  Treatment of HPV .......................................................................................................... 39
Acknowledgments

I would like to first thank all the participants who took their time and shared their knowledge with me through both questionnaire and discussion group. I would also like to extend a sincere thank you to Dr. Joni Walton for her support and guidance throughout this process. In this way, I would also like to thank Joan Stottlemyer and Dr. Jennifer Elison for dedicating their time to reading and amending my thesis; their advice and expertise was instrumental in the completion of this process. Finally, I would like to thank my family for their endless support, without which the completion of this endeavor would not have been possible.
Abstract

The Human Papillomavirus (HPV) is not only the most common but also the most prevalent Sexually Transmitted Infection (STI) in the United States. To date, 20 million people are infected with HPV. The female population has the highest rate of infection, and it is estimated that close to 80% of sexually active women will contract HPV by age 50. Of all HPV infections, 74% occur in persons age 17-24 (Markowitz, Dunne, & Saraiya as cited in Hutchinson & Klein, 2008). The goal of the research study was to use explorative methods including a focus group and questionnaire to better understand and examine what kind of knowledge deficits exist related to the transmission of HPV and what type of views and values may be factors in the continued transmission of HPV. On a small liberal arts campus in the Northwestern United States, a questionnaire was administered to 39 female sophomore nursing students, while a focus group took place with 10 female students of various ages and different majors. Results supported the idea that a large knowledge deficit exists among female students in terms of their overall knowledge base of HPV. Additionally, the young women who participated in this study felt as if HPV related resources are limited and the information regarding HPV is not clearly defined and varies from source to source.
CHAPTER I

Background

The Human Papillomavirus is not only the most common but also the most prevalent Sexually Transmitted Infection (STI) in the United States. To date, 20 million people are infected with HPV. This year alone, 6.2 million new infections will emerge (Centers for Disease Control & Prevention [CDC] 2008). The Human Papillomavirus is defined as “a common sexually transmitted disease (STD) caused by Human Papillomavirus, a group of more than 100 viruses, at least 35 of which can infect the genital tissues. HPV is spread by direct contact of infected tissue with uninfected tissue during vaginal, anal, or oral sex” (The Crisis Pregnancy Centers, 2007, Glossary of Terms p. 1). Over 99.7% of all cases of cervical cancer have been linked to the papillomavirus, making HPV the “highest level of association identified for a specific cause of a major human cancer” (Walboomers, Jacobs, & Manos as cited in Hutchinson & Klein, 2008, p. 2106). According to the American Cancer Society, cervical cancer is the second leading cause of death in women across the world, and the most common cause of death-related cancer in developing countries (Saslow, Castle, & Cox as cited in Hutchinson & Klein, 2008). The majority of strains of HPV do not have any visible symptoms, although some do produce genital warts. The strains of HPV that do not cause the warts can increase the overall risks for not only cervical cancer in women, but other forms of genital cancers in both male and female populations (The Crisis Pregnancy Centers, 2007, Glossary of Terms).
Etiology and Risk Factors

The female population has the highest rate of infection, and it is estimated that close to 80% of sexually active women will contract HPV by age 50. Of all HPV infections, 74% occur in persons age 17-24 (Markowitz, Dunne, & Saraiya as cited in Hutchinson & Klein, 2008).

Purpose

The primary focus of this thesis was to gain insight into why college students have the highest prevalence of HPV. The goal of the research study was to use explorative methods including a focus group and questionnaire to better understand and examine what kind of knowledge deficits exist in terms of the symptoms of HPV and what type of views and values may be factors in the continued transmission of HPV. Of the 6.2 million new infections this year, the majority will be young individuals, high school to college age. In most cases, HPV symptoms will resolve themselves within a year. For others, the reality is that they not only have contracted an STI, but may eventually develop cancer, jeopardizing not only their reproductive health, but their longevity. The main risk factor associated with contracting HPV is sexual behavior. For example, the number of sexual partners, those partners’ sexual history, and being under age 25, all play a significant role in increasing the risk of contracting HPV (Baseman & Koutsky as cited in Hutchinson & Klein, 2008). Nursing education is a critical component in the way in which people make informed health decisions. Nurses have a unique opportunity to explore the attitudes of this specific population of at-risk individuals and implement programs that ultimately lower the overall rate of HPV infection in young adults.
Physical impact of HPV on the client. According to Beutner, Reitano, and Richwald (1998), low risk (LR) HPV infections are those which cause genital warts, whereas the high risk (HR) infections are those related to cervical intraepithelial neoplasia and ultimately cervical cancer (as cited in Kahn et al., 2005). In terms of the physical impact on the client, most healthy individuals will be able to clear HPV from their system within one to two years of initial infection, with self-limiting symptoms. Generally speaking, “90% of HPV infections are transient and clear within two years” (Markowitz, Dunne, & Saraiya as cited in Hutchinson & Klein, 2008, p. 2105). In research studies, “It is estimated that in this younger population, 60-80% of new cases of HPV infection clear within 1 year” (Franco, Villa, & Sobrinho as cited in Hutchinson & Klein, 2008, p. 2105).

Walboomers, Jacobs, & Manos linked 99.7% of all cases of cervical cancer to HPV (as cited in Hutchinson & Klein, 2008). In the year 2007, 11,150 women were diagnosed with cervical cancer. Of those 11,150 diagnosed with cervical cancer, 3,670 died (Jemal, Siegel, & Ward as cited in Hutchinson & Klein, 2008). Fleurence, Dixon, and Milanova stated, “In the United States, approximately $4.6 billion is spent annually on cervical HPV-related disease, primarily for the management of abnormal cervical cytology and treatment of cervical intraepithelial neoplasia (CIN)” (as cited in Hutchinson & Klein, 2008, p. 2106).

Psychosocial impact of HPV. Women with initial negative screening for HPV stated that they would continue to practice safe sex. A study was conducted in Ontario, Canada where researchers explored “the short-term psychological, behavioral, and interpersonal consequences of HPV and Pap test results in young women” (Kahn et al.,
Participants consisted of 50 sexually active females from 14-21 years of age. The study included a questionnaire measuring their current knowledge of HPV, followed by a brief educational session. Afterwards, the women completed a baseline pap smear and HPV/DNA test, and then returned two weeks later to receive their test results and participate in an interview (Kahn et al., 2005). Regardless of their test results, “the psychological responses discussed were empowerment, affective responses to HPV and Pap test results, and self-confidence to prevent cancer and STIs” (Kahn et al., 2005, p. 652). Whether their test results were positive or negative, the women felt empowered by the knowledge they gained through participating in the study and becoming more educated about HPV.

In terms of affective responses, those with negative test results reported feelings of happiness and relief, whereas those with positive results were distressed. Some HPV-positive participants used wishful thinking or denial to cope with their results, while many experienced low self-confidence. A 19-year-old with positive HPV results stated, “Bad stuff always happens to me. So I know I'll probably get more [STIs]” (Kahn et al., 2005, p. 653). However, even when the women received positive test results, they reported feeling in control related to the ability to take steps to have the infection resolve and continue to be tested into the future, which was linked to their increased knowledge during the study itself (Kahn et al., 2005). A seventeen year old stated “I feel good about it 'cause it was concerning my health. . . . If it came up positive, I got the results back and we’re early enough we can deal with that” (Kahn et al., 2005, p. 652). Upon receiving their results, all participants said that their “behavioral intentions after receiving an HPV or Pap result included continuing or changing one’s sexual behaviors, monitoring current
or future sexual partners, returning for Pap tests, and changing smoking behaviors” (Kahn et al., 2005, p. 653). Nurses are in a unique position to not only further educate the population about HPV, but also counsel positive individuals in a non-judgmental way and empower the patient through knowledge of the mode in which HPV is transmitted.

Those who had negative results said they would continue to follow their “safe-sex” practices including being in monogamous relationships and utilizing condoms. Those with abnormal results said that they were committed to altering their sexual practices by limiting their sexual partners and instituting the use of condoms. Overall, “HPV-negative participants intended to disclose results in order to communicate that they or their partners had been faithful to each other and had not participated in unsafe or ‘dirty’ sexual practices” (Kahn et al., 2005, p. 654). Those who had negative results were eager to communicate to their partners that they were negative and reinforce the fact that they were a faithful, “clean,” partner.

**Impact of HPV on relationships.** Kahn and colleagues found that “participants [in the study] reported that HPV and Pap test results could have considerable interpersonal consequences….Disclosure was viewed by many participants as a responsibility to their partner, as a way in which they could prove to their partners that they were monogamous if results were negative, or as a way to assign blame to partners if results were positive” (Kahn et al., 2005, p. 656). Many in the study had high intentions to disclose test results to their sexual partner, however they also felt that the “disclosure of positive test results would adversely impact sexual relationships because of the blame, stigma and shame associated with an STI diagnosis” (Kahn et al., 2005, p. 656). In other words, having a positive HPV test could make partners question one another’s fidelity.
Some of those who had positive test results experienced feelings of anger and grief towards their current sexual partner who may have exposed them to HPV. A fifteen year old who received results that she had a HR type HPV infection said “I’m gonna tell him ‘cuz I know I was a virgin when I got with him, so he had to give it to me. So, he gonna know and he gonna get slapped in the mouth, too, for lyin’” (Kahn et al., 2005, p. 654). Women’s emotional response can often be attributed to a knowledge deficit. Nurses and other healthcare professionals can play a key role in treating not only HPV itself, but the emotional components that come with such a diagnosis. (Perrin et al., 2006).

Many individuals are hesitant to get tested, let alone disclose their HPV status due to the fear of social rejection and being ostracized by peers. For instance, “Several HPV-negative participants actually demonstrated social rejection as they distanced themselves from girls with HPV and other STIs and described them as ‘dirty’ or ‘nasty’ (Kahn et al., 2007, p. 197). Additionally, “Participants noted that social rejection would also be based on the assumption that those with HPV are not practicing safe sexual behaviors, including not using condoms or having multiple and/or casual partners” (Kahn et al., 2007, p. 197). Another participant who tested negative even said “... If someone told me that, I’d probably avoid them for a little while too. Till you learn more, you gotta be safe. You don’t want to be getting nasty too, y’know” (Kahn et al., 2007, p. 197). Through the study researchers noted that much of the stigma attached to HPV related to social rejection was due to a lack of knowledge or overall misinformation about the transmission of HPV.

Ethical issues related to HPV: Disclosure & Mandatory vaccination

Two ethical issues come to the forefront with HPV, the first being the obligation
to disclose one’s HPV status to his or her current, past, and especially future partners. It was discovered that “Participants who intended to communicate test results to partners viewed disclosure as a personal responsibility or a useful communication tool within the setting of the relationship” (Kahn et al., 2005, p. 654). It is one’s obligation to communicate positive results of HPV or any STI that could hold negative future outcomes for not only the infected individual, but also for their partners as well.

The second ethical issue related to HPV is whether or not to make the recombinant vaccine mandatory among pediatric and youth nationwide as part of their normal vaccination series. In June of 2006, the FDA approved the first HPV vaccine to prevent virus types 6, 11, 16, and 18 that have been associated with cervical cancer. The vaccine has been approved for use in girls as young as nine, but is ideally used in females ages 13-26. The vaccine is given in a series of three shots over six months. (FDA as cited in Thomas, 2008). There are several arguments against making the vaccine mandatory, the first being the high cost of the vaccine itself. It costs over $300 to complete the series of shots, and protection only lasts four to five years, meaning women would have to repeat the series every five years (Johnson as cited in Thomas, 2007). The next argument is that making the vaccine mandatory would lead to an overall increase in sexual promiscuity. It is important to note that “Although research has shown that sexual and reproductive health education does not promote sexual activity or promiscuity, the vaccination of young girls with the HPV vaccine has raised the argument that this will cause a rise in promiscuity” (Guttmacher Institute as cited in Thomas, 2006 p. 430).

The vaccine is effective against 70% of the HPV that causes cervical cancer and is most successful when administered before sexual activity begins. Parents will have to
examine "...whether the fear of a potential cancer later in life trumps fear about sex in adolescence" (Wilson as cited in Thomas, 2007, p. 430). Dempsey, Zimet, Davis, & Koutsky felt that "Nurses are patient advocates and must remain current in their knowledge on transmission of HPV and the HPV vaccine to educate patients, parents, and the public" (as cited in Thomas, 2006, p. 430).

**Pender’s Health Behavior Model**

Clearly, education may not be enough when it comes to preventing young adults from acquiring STIs; otherwise, STIs would be eradicated. Preventative education cannot stand alone in relation to health promotion. Individuals are multi-faceted, and therefore healthcare providers must examine a variety of factors beyond the knowledge base of their clients. Nola Pender’s Health Promotion Theory is described as “a middle-range theory focusing on the relation of individual characteristics and experiences, behavior-specific cognitions and affect, commitment to a plan of action, and competing demands and preferences as to health-promoting behavior” (Venes, 2005, Appendix N2, Nursing Theories, Pender, Overview Section). Pender’s theory examines the many factors that come into play when one is choosing, or not choosing to practice health promoting behaviors.

**Assumptions of Pender’s Theory.** Pender’s theory is based on five main assumptions. The first assumption is that there are individual characteristics and experiences unique to each person. This refers to any previous behaviors, inherited or otherwise, that would impact health promoting behaviors. This includes (a) prior related behavior or a behavior that has proved to promote health in the past; personal factors or “inherited and acquired biological, psychological, and socio-cultural characteristics”
(Venes, 2005, Appendix N2, Nursing Theories, Pender, Individual Characteristics and Experiences Section); (b) personal biological factors including one’s gender, age, weight, fitness level; (c) personal psychological factors, or their current mental status and capacity to perceive their own health; and (d) personal socio-cultural factors which includes ethnic affiliation, level of education or socioeconomic status (Venes, 2005).

**Behaviors.** The second assumption of Pender’s theory relates to specific cognition and affect that impact behavior. The following motivational factors would encourage a client to adhere to a plan to promote his or her overall health: (a) perceived benefits of action are what the client sees as benefits to continue with the health promoting behavior, (b) perceived barriers to action; what the client sees as being problematic or obstacles towards performing the health, (c) perceived self-efficacy; how capable the person thinks he or she is of achieving his or her goal of health promotion, (d) activity related affect; how the person feels before, during and after he or she has participated in a health promoting behavior, (e) interpersonal influences; family and/or friends that may have an impact on one’s attitude and beliefs towards a particular behavior and the commitment to it and (f) situational influences; external environmental factors that may promote or impede health promotion (Venes, 2005).

**Level of commitment, demands, & health promotion.** The third assumption Pender makes is that there will be a significant commitment to a plan of action. This implies that the client will follow through on the behavior they have committed to modify in order to promote his or her own health. The fourth assumption of Pender’s theory involves immediate competing demands and preferences. In other words, there will be demands such as work tasks that may interfere with the behavior he or she is trying to modify.
There may be alternative preferences, too, which the client has more control over than demands, but still may interfere in the ultimate health promoting behavior. Pender’s fifth assumption is the health promoting behavior (Venes, 2005).

*Application of Pender’s Theory to HPV.* There are several interventions to consider when implementing a plan to prevent HPV. Abstinence would be ideal in the prevention of HPV, but those who are contracting HPV are sexually active individuals. This means that the health promotion behavior of focus needs to be on monogamy as well as instituting the consistent use of condoms. A nurse would have to examine the five assumptions and apply them to his or her client. First, the nurse would assess individual characteristics and experiences, such as the client’s sexual behaviors, and whether or not he or she has instituted the use of condoms before, along with biological, psychological and socio-cultural factors that may impact the client choosing to use condoms or be monogamous. Next, the healthcare provider would look at behavior specific cognitions and affect, including what the client sees are benefits to practicing monogamy and using condoms, what sorts of barriers may prevent the person from following through on the behavior, and how capable he or she thinks they are of instituting this behavior. It is important to also examine the client’s friends’ view of the use of condoms and situational limitations to such behavior. Next, the nurse would examine significant commitment to a plan of action, or how committed this person is to following through on using condoms and practicing monogamy. Subsequently, immediate competing demands and preferences need to be explored in terms of other factors that may interfere in condom use, or how the person may opt not to use condoms or be in a monogamous relationship for that matter. Last, the nurse would need to address monogamy and condom use in general in the
prevention of STIs.

There is not a singular reason, but an array of factors as to why someone acquires HPV. The nurse needs to address these many areas when implementing a plan to prevent the transmission of HPV. In this way, there is a multi-dimensional focus. The basis of the theory is that there are several areas of focus to be dealt with when looking at how one can practice health promoting behavior. Health care providers need to examine all these factors and design interventions and implementations accordingly when it comes to preventing the spread of HPV.
CHAPTER II

Review of Literature

HPV is the most common STI in the United States and tends to occur most frequently among college aged students. HPV is responsible for thousands of deaths each year related to cervical cancer, but is completely preventable. Research is revealing that prevalence rates are related to an overall knowledge deficit regarding HPV in terms of its transmission, symptoms, and correlation to cervical cancer.

_Vaccine efficacy \& attitudes towards vaccination_

The purpose of the Miksis study was to compare the effectiveness of condoms to the administration of the recombinant vaccine in preventing the spread of HPV. The study methodology was based upon others’ research that was then combined to draw broader conclusions. The researchers utilized Cochrane, Cinhal, Pubmed, and Clinical Evidence databases to search for the keywords HPV, vaccine, and condoms. They then obtained and analyzed articles related to the vaccine efficacy in studies that had used random, double-blinded placebo controlled trials. To examine condom efficacy they used longitudinal and meta-analysis studies. They extracted data from studies that looked at either condom use or vaccine administration and the rate of transmission of HPV (Miksis, 2008).

The Miksis (2008) study concluded “after evaluating all the relevant data, the evidence suggests that the greatest degree of protection from the untoward effects of HPV infection is with the simultaneous use of both condoms and the HPV vaccine” (p. 336). The overall conclusion drawn from the study was that both condoms and the vaccine, when used in conjunction with one another, are the most effective in preventing
Running Head: HPV

the spread of HPV. The 2008 research was unbiased and looked at both condom efficacy and the effectiveness of the vaccine. Based on other studies, the researchers synthesized the data to come up with an expansive presumption.

There are several nursing implications one can derive from this study. Miksis (2008) stated that “nurses play a critical role in educating young patients and their parents” (p. 336). If adolescent women elect to receive the vaccine, it is the role of the nurse to educate the client about not only the purpose and side effects of the vaccine, but also to stress the importance of completing the three-shot series for maximal protection. It is also crucial to address the fact that the vaccine does not protect against all strains of HPV nor does it replace the need for regular pap smears and STI screenings. Nurses must address the controversial issue of teens, sex, and possible STIs in relation to the recombinant vaccine.

Ershler (2007) analyzed the role of just the HPV vaccine in preventing cervical cancer. Women between the ages of 16 and 26 were recruited from university and urban health centers worldwide and then were tested to be susceptible or seronegative for HPV 16/18. The women were randomized so that they received either the monovalent, quadrivalent, or placebo vaccine in four randomized placebo controls. They received three doses of the vaccine: on day one, 2 months after day one, and six months after day one. They were then monitored for three years thereafter in a longitudinal study. Of the 8550 in the placebo group, 85 developed HPV 16/18 related cervical intraepithelial neoplasia grades 2/3 (CIN2/3) or adenocarcinoma in situ (AIS). Of the 8579 in the vaccine group only 1 developed CIN2/3 and no AIS in the vaccine group. Based on this study, the vaccine was found to be 98% effective in preventing CIN2/3 and AIS. Ershler
Running Head: HPV

(2007) found “….that prophylactic administration of a vaccine against HPV 16 or HPV 6/11/16/18 can lead to substantial reductions in cervical cancer worldwide” (p. 50).

The findings of the study were valuable in that they provided efficacy to the effectiveness of the vaccine. However, the investigators did not address the fact that the protection is limited to certain strains of HPV and only effective for approximately five years. After five years, women would need to complete an additional series to remain protected. This supports the idea that “although the duration of protection is not established, even over the short haul, widespread immunization programs would prevent HPV associated cervical cancer and its associated morbidity/mortality in a large number of women” (Ershler, 2007, p. 50). The role of the nurse is to be a patient advocate. If the vaccine has been found to reduce or eliminate the instances of HPV that are known to cause cervical cancer, it is the nurse’s duty to encourage the overall health and future well-being of their client through promoting the vaccination series.

In the Fazekas, Brewer, and Smith study, if a woman had increased knowledge regarding HPV, she was more likely to vaccinate herself or have the intention to vaccinate her adolescent daughters (2008). Of the 146 participants, 58% had low knowledge of HPV. Interestingly, 51% of all the women interviewed said they would prefer to receive information regarding HPV from their healthcare providers versus internet resources. Younger participants were more likely to have the intention to receive the Gardasil vaccine than older women. Eighty four percent of participants with adolescent daughters said they would not hesitate to vaccinate their daughters if the cost was free (Fazekas et al., 2008). One hundred forty six women in North Carolina were administered a questionnaire regarding their knowledge of HPV, the link between HPV
and cervical cancer, and the vaccine. The study recruited participants from Person County with approximately 90 people per square mile. With permission from the county, researchers recruited from waiting rooms of clinics and hospitals that offered women’s health services (Fazekas et al., 2008).

The questionnaire assessed awareness and knowledge of HPV, vaccine acceptability, and attitudes regarding their perceived risks for HPV and cervical cancer. Multiple linear regressions were used to examine the women’s intentions of vaccinating themselves and their daughters.

Providing women with correct information regarding HPV is crucial especially in rural areas where access to resources may be limited. Fazekas et al. (2008) found that the “HPV vaccine education materials targeted to rural Southern women should attempt to remedy the many misunderstandings about HPV, emphasize the vaccines’ effectiveness against cervical cancer, and take into account women’s risk perceptions of HPV infection and cervical cancer” (p. 547). Educational programs need to be tailored to fit the needs of specific populations to enable them to attain the greatest knowledge and understanding of HPV. Also, despite the fact that many people like to seek information on the internet, according to this study, women would rather hear this valuable information regarding their health from their primary provider. It is the duty of such providers to convey clear and concise information regarding HPV and its link to cervical cancer, as well as the efficacy of the vaccine against HPV infection.
College student knowledge of HPV

Most of the general population may assume that those pursuing careers in healthcare would have the most knowledge in regards to current health issues. Researchers put this theory to the test when they administered a 40 question survey to a group of 240 female nursing students that were enrolled in a baccalaureate nursing program. The results indicated that the mostly junior and senior nursing students had relatively low knowledge levels of HPV. These nursing students, however, outsored the female population of college females who participated in the same survey. There was a positive correlation between the number of sexual partners and how susceptible or at risk the women thought they might be for contracting cervical cancer. Also those students who had regular pap smears had an overall higher knowledge of HPV and cervical cancer suggesting that those women who did not have an HPV knowledge deficit were more likely to get regular Pap smears. Participants were chosen using a convenience sample; the surveys were distributed within the nursing program at a southeastern university. The students ranged from ages 19-58. The purpose of the study was to “assess knowledge of, perceived susceptibility to, perceived seriousness of, and risk behaviors regarding human papillomavirus (HPV) and cervical cancer among female nursing students” (Denny-Smith, Bairan, & Page, 2006, Abstract). The study essentially sought to find a link between what the nursing students actually knew about HPV, the sexual behaviors they were engaging in, and how serious they perceived HPV to be or if they even saw themselves at risk for contracting it. The study was designed by “a quantitative descriptive correlational design to examine relationships between perceived seriousness, perceived susceptibility, knowledge of HPV and cervical cancer, and health risk
behaviors” (Denny-Smith et al., 2006, p. 64). The first thirty questions of the survey strictly addressed how knowledgeable the students were in regards to the transmission of HPV and what makes one susceptible to HPV. The final ten questions were demographic related, such as if they were on oral contraceptives or if they have a family member that was diagnosed with cervical cancer. (Denny-Smith et al.). The study may have been limited because it involved a relatively low number of participants chosen using a convenience sample, many of whom happened to be married. The married population results may be distinct from that of the single population. However the results were consistent with previous studies of its kind, despite a limited population base.

The study found that “a lack of knowledge combined with low perceptions of susceptibility and seriousness to HPV and cervical cancer make college women more likely to contract STDs, including HPV, and therefore more susceptible to cervical cancer” (Denny-Smith et al., 2006, p.68). Women who get regular gynecological exams tend to know more about the transmission of HPV and its relation to cervical cancer. Healthcare providers need to take on the role as a sexual behavior educator to provide education and advocate the importance of annual pap smears and gynecological exams throughout one’s lifetime. Through education women tend to be more knowledgeable regarding STIs and may be less likely to engage in risky sexual behaviors and more likely to continue to follow up with their health care provider (Denny-Smith et al.)

Linking cervical cancer to HPV

Socioeconomic status and HPV knowledge. In Botswana, cervical cancer is the number one cancer affecting the female population. Researchers investigated women’s knowledge about the Papanicolaou (Pap) smear test used in the detection of abnormal
cells and ultimately cervical cancer. Thirty women of various backgrounds and socioeconomic classes were selected. Using the health belief model, these women’s views and perceptions of both cervical cancer and pap smears were examined using both a questionnaire and an interview (McFarland, 2003).

McFarland (2003) found:

Of the 30 women, only 18 (60%) had at least one Pap smear test in their lifetime. The number of Pap smear tests for these women ranged from 0 to 5 in the past 5 years. Similarly, Pap smear utilization was greater among women who had higher incomes and health insurance. Eight women (44%) reported that they had Pap smear tests because they had gynecological symptoms (opportunistic testing). Twelve women (40%) stated that they had never had a Pap smear test. (p. 172)

Overall, women with higher socioeconomic status were found to have a higher knowledge of both Pap smear screening and cervical cancer and to have had a higher frequency of pap smears over the past five years. This was attributed to the fact that most women of higher socioeconomic status have private insurance. This private insurance allows them to access private doctors and receive more specialized and individual attention; therefore they were better educated regarding pap smears and screening techniques for cervical cancer.

Consequently, those of lower socioeconomic status sought out healthcare at government clinics where providers were not informing women of the need for pap smears to screen for abnormal cells and cervical cancer. The women from the lower class received most of their information from other women, not healthcare providers.

Bostwanan women in general have a knowledge deficit in terms of pap smears and
cervical cancer, especially those who come from a lower economic class. This puts nurses in a unique position to develop programs to educate the general population, especially targeting this low income population. Nurses can advocate for health policies that allow lower class women to access services that may prove instrumental in detecting cancer and ultimately save their lives (McFarland, 2003).

Cultural meaning of HPV. A random sample of 880 women in Cuernavaca found only 1.9% knew that there was a link between HPV and cervical cancer. This study found that Mexican women saw cervical cancer as being less-blameworthy than other STIs; in other words they did not see it as a necessarily preventable STI, but did associate HPV with cervical cancer and therefore a higher mortality rate (Garcia, Becker, Tatum, Aldrich, & Fernández, 2007).

This qualitative study involved conducting eight focus groups with women in Mexico City. The study, with the help of a Mexican marketing firm, recruited women ages 16-25, the group with the highest HPV rate, and 45-65, the age group with the highest mortality rate related to cervical cancer. A female moderator guided all focus group sessions, while a female note taker transcribed the sessions. The focus group itself was divided up into four distinct sections:

The first section covered knowledge and attitudes on cervical cancer. The second section covered knowledge and attitudes on non-HIV STIs, including HPV. Questions in these first two sections focused on beliefs about the causes of each illness, prevention options, treatment options, severity, and personal and public attitudes about people who suffer from each type of illness. Following these sections, we asked participants to compare cervical cancer with non-HIV STIs.
and to evaluate which would be more worrisome to them personally. (Garcia, Becker, Tatum, Aldrich, & Fernández, 2007, p.195)

Following the focus groups a female physician gave a brief educational presentation regarding HPV transmission and its link to cervical cancer. Members of the research team read the transcripts in Spanish and coded them according to major themes that emerged.

While women in the focus group associated cervical cancer with HPV, they also cited various causes other than sexual behavior including diet, heredity, and poor hygiene. Many stated that cancer was a death sentence. For the most part women stated that with the exception of HIV, all STIs are short in duration and easily cured. Often the women expressed feelings of sadness when discussing cervical cancer, but anger when discussing STIs. They thought that when one is suffering from cervical cancer, it should be done openly with the support of friends and the community, but mourning should be done in private when one has an STI. The participants did not associate HPV as being an STI or that it was linked to cervical cancer (Garcia et al., 2007). This study reinforced the idea that there are mass amounts of misinformation regarding HPV and its link to cervical cancer. It is up to healthcare providers to dispense accurate information regarding HPV and counsel accordingly. Also, because of the negative social stigma of contracting an STI, clients need to be referred to support and counseling services. While this study was valuable, it only represents a small sample of the overall female population. In other words, results may differ if the same study was replicated with a larger number of women (Garcia et al., 2007).

Minority populations and HPV knowledge

Over 64% of students surveyed on a historically African American campus lacked
both knowledge and awareness of HPV. For the most part, these students did not know about HPV until possibly after they had become infected. The study indicated that this population receives the majority of his or her HPV education from a healthcare provider (D’Urso, Thompson-Robinson, & Chandler, 2007).

Three hundred fifty one undergraduate students at a historically African American university volunteered to take surveys in randomly selected classes. While the majority indicated they had never heard of HPV, the 66 students who said they had, still had much misinformation regarding the transmission of HPV and its symptoms. However, the women who were surveyed tended to have more accurate knowledge of HPV than their male counterparts (D’Urso et al., 2007).

The survey consisted of 122 closed-ended questions that explored participant’s knowledge of HPV and its transmission, symptoms, and how HPV is contracted. Limitations of this study include the difficulty in generalizing this study to all African American college students because it represents a minimal sample of all African American college students. Regardless, there is a lack of knowledge concerning HPV especially among the high risk college populations. This may indicate that “Black students may need to be guided through a re-evaluation of the notions, beliefs, and information they hold-for whatever reason-regarding sexual health and risk behaviors so that they may actively reconstruct their own internal knowledge and awareness” (D’Urso et al., 2008, p. 162). With the aid of healthcare providers, this idea of reconstructing internal beliefs and awareness can be applied to all populations through education. Nurses and providers are valuable resources, especially for college students. Universities may need to look at hiring nurses specializing in sexual health to address the overall HPV
knowledge deficit on college campuses.

Women who have sex with women (WSW) perceived their risk for contracting HPV as relatively low compared to women in general. The rate of HPV infection among WSW is estimated to be around 13% (Eaton et al., 2008).

Women were approached at a gay pride festival and asked if they would be willing to fill out a survey addressing same sex relationships. The survey asked for demographic information, their healthcare behaviors, perceived HPV prevalence of women in Atlanta compared to other U.S. cities, and what they thought their personal risk of contracting HPV was. Mixed model analyses of variance was used to compare individual risk perceptions to risk perceptions of the population as a whole, while regression analyses were used to test for the association between abnormal Pap smear, demographic information, behaviors, and perceived risks (Eaton et al., 2008).

Of the 317 women surveyed, 37% reported having abnormal Pap smear and 5% had been diagnosed with HPV. This indicates that “WSW perceive their risks for HPV lower than should be expected given their high prevalence of abnormal pap smear and HPV diagnosis” (Eaton et al., 2008, p. 80).

It is important as healthcare providers to advocate for the health of women, especially WSW who clearly have a high prevalence of HPV but do not perceive themselves to be at risk. WSW may not see gynecologists as regularly as someone who is having sexual relations with a male. It is estimated that many WSW have had sexual relations with a man at some point in their lifetime and may have the virus. Programs need to be implemented during other health exams to explain HPV and encourage these women to get regular pelvic exams and pap smears (Eaton et al., 2008).
Ethnic differences in transmission of HPV

There are several differences among ethnic groups that result in differing rates of HPV transmission. Researchers need to examine the multitude of factors that may contribute to an individual acquiring HPV, including one’s ethnicity. This means examining different ethnicities in relation to their overall HPV transmission. Kenney (1995) found that “minority women with HPV had an average of 9.1 sex partners compared with women without HPV who averaged 7.4 sex partners. Anglo women reported the most sex partners, and Hispanic women reported the least. Women with more than four lifetime sex partners were twice as likely to have HPV than those with only one partner, and Hispanic women were four times” (p. 1223).

The study included 302 multi-ethnic women who volunteered after being recruited from a multitude of health care facilities. The women ranged from 18-38 years in age, were able to read English or Spanish, and had a Pap smear recorded in their medical chart. The women completed a survey which outlined their number of sexual partners, the use of oral contraceptives, whether or not they smoked, and their overall sexual behavior pattern. The women also gave permission to researchers to access their medical charts. The women who had any HPV-induced cytopathic changes in terms of their Pap smear were said to be HPV positive. Those without any history of cytopathic changes or any abnormalities based on their Pap smear were said to be HPV negative (Kenney et al., 1995).

The data from the study was analyzed using the Statistical Analyses System program. To calculate mean and frequencies, descriptive statistics of the overall demographic and independent variables was computed. Chi Square analysis was used to
calculate the differences between HPV positive and negative women and the differences among ethnic groups. Finally, variance was performed to see how HPV and ethnicity interact as well as how they affect co-factors (Kenney et al., 1995).

Although these study findings are valuable, the research team fails to mention what the HPV transmission rate is in comparison to the non-minority population. In other words, there are no baseline results to compare these results to within the general population. It is difficult to determine if these rates are increased, decreased, or even significant. It would be interesting to run the identical study on 300 Caucasian women of the same age group and compare the findings. Nursing implications include the idea that special interest may need to be paid to females in minority groups. The study alluded to the fact that “genetic differences in immune response may explain why some women have different levels of susceptibility for specific HPV DNA lesions or lower squamous epithelial cell immune response” (Kenney et al., 1995, p.1222). A genetic link that may make minorities more susceptible to HPV has not been determined. However, it is apparent that females in minority groups may be engaging in sexual behaviors that increase their risk for contracting HPV.

*Primary Care implications for adolescents related to HPV*

Researchers found that although it is challenging to deliver care to preadolescent and adolescent populations regarding HPV, it is important to take a preventative approach when discussing the link between the Human Papillomavirus and the risk for developing cervical cancer (Sussman, Helitzer, Sanders, Urquieta, Salvador, & Ndiaye, 2007). This challenge included keeping parents involved in the discussion when it came to administering the HPV vaccine and how the HPV vaccine may play a role in
preventing cervical cancer.

Sussman and colleagues' qualitative study consisted of 37 in-depth interviews with primary care clinicians in New Mexico. A variety of healthcare providers were selected from a list of New Mexico Board of examiners purposively based on how researchers thought different demographic areas would perceive the vaccine. Each clinician was administered a semi-structured survey that addressed a typical patient visit and what the likelihood is of HPV and cervical cancer education being incorporated into a standard discussion regarding STIs during a check-up. Interviews lasted approximately 45-60 minutes. The interviews were performed in person and audio-taped for analysis. During the interview itself providers were,

.... led through a discussion of (1) the general nature of their practice specific to the care of adolescent patients, (2) counseling related to sexual risk taking and STDs, (3) the relationship between cultural and community contexts and sexual risk, (4) counseling related to HPV infection, and (5) their knowledge, attitudes, and perceived barriers to using the HPV vaccine for their patients. (Sussman et al., 2007, p. 299)

Following the interviews, three or four teams reviewed the transcripts and identified major themes that emerged throughout. Researchers found that during a typical well-child visit, a provider will ask the parents about behaviors and tasks related to childhood milestones, ask how the child is doing in school, and what activities or sports the child is interested in. Following these questions, one nurse explained that she touched on anticipatory guidance, including drugs, tobacco, alcohol, and sexual behaviors (Sussman et al., 2007).
The majority of clinicians stated that they altered what they covered based on reading cues from the adolescents. In other words, they might not address sexual risk taking depending on the cues they pick up on during their interaction with the patient. However, clinicians said that they often send parents out of the room to obtain information from the adolescent without parental presence interference.

These interviews revealed that this particular group of providers felt as if the adolescent age group as a whole engages in extremely risky behaviors. One female nurse practitioner stated “that 10- to 20-year-old age-group, I mean, their risky sexual behavior is unbelievable. I mean, multiple partners, multiple, multiple partners, alcohol use, meth...” (Sussman et al., 2007, p. 300). Despite clinicians’ expressing concern regarding adolescent sexual behaviors adolescents engage in, they often did not discuss HPV with their clients because they felt that HPV was too complex and above the basic knowledge a teen holds. Some clinicians in the study even admitted they were uncomfortable with their own knowledge of the topic, or mostly that the time constraints during a typical adolescent visit prevented them from discussing HPV and the Gardasil vaccine and were unsure as to what age to recommend being vaccinated and how the parental population would perceive the vaccination in relation to sexual activity (Sussman et al., 2007).

The clinicians supported the Gardasil vaccine as a beneficial way to prevent cervical neoplasias, but also noted that the vaccine may give a false sense of security in terms of how teens view their susceptibility to other STIs (Sussman et al., 2007).

Primary clinicians play a crucial role when it comes to delivering care to the adolescent population and explaining the link between HPV and cervical cancer, especially when it comes to preventative education and the vaccine associated with the
prevention of cervical cancers. With the introduction of the vaccine, clinicians have an opportunity to educate the adolescent population about not only HPV, but other STIs, long before sexual activity begins. Although parents are often asked to leave the room for check-ups in older teens, with the introduction of the vaccine in younger children, clinicians will need to alter the discussion regarding sex and HPV to include parents as well. It is also important to assess different cultural views and beliefs in terms of the attitudes and beliefs associated with HPV. This means “presenting information in ways that are sensitive to a range of cultural norms and social values associated with sexual activity in adolescents will likely play a role in enhancing vaccine acceptance” (Sussman et al., 2007, p. 303).

*Educational resources related to HPV*

Most women may be unaware of the link between cervical cancer and HPV. The purpose of a 2009 study was to screen web-based patient education material and examine the content of these materials in relation to HPV. Researchers found the “need for more comprehensive, plainer language patient education materials that explain new technologies in cervical cancer screening” (Roland, Benard, Saraiya, Hawkins, Brandt, & Friedman, 2009, p. 5).

The study first searched for material related to HPV using the Google search engine. The materials had to (a) relate HPV to cervical cancer, (b) be patient centered and aimed toward an adult audience (c) be written in English, (d) be published between 2004-2006 in the United States, and, (e) be free to the public. From there, each educational piece was reviewed for the inclusion of the following:
(1) how common HPV is, (2) HPV is a risk factor for cervical cancer, (3) the advantages of the HPV test, (4) the difference between the HPV and Pap tests, (5) why the two tests are used together, (6) when to go in for periodic health examinations and preventive care, (7) messages about the safety of the 3-year interval of screening, and (8) the importance of discussing screening results and following up with a doctor. (Roland et al., 2009, p. 6)

The reading level of the materials was also examined and two authors’ reviewed the literature for overall readability.

The study provided evidence that the majority of the internet materials discussed the screening guidelines for women over the age of 30 whose HPV test results had been negative two times in a row. But the materials often overlooked the safety in extending Pap smear screening from 1 to 3 years and the fact that women still needed regular health check-ups. Additionally, the reviewers found that the majority of the materials were at the ninth grade reading level which is four to five grade levels higher than the recommended fifth grade reading level for health material (Roland et al., 2009).

It is up to nurses to perhaps create materials that simplify the complex topic of HPV and cervical cancer and convey the message in simple language. In order to best inform the female population “the scientifically complex concepts of HPV and cervical cancer screening need to be conveyed in plain language to educate and empower patients” (Roland et al., 2007, p.10). The CDC is considering the findings of this study in creating materials regarding HPV, cervical cancer, and screening guidelines that are easy to read and follow.
Repeated HPV tests & emotional consequences

After an initial positive HPV test, women were more distressed if, after returning for repeat testing in a year, their HPV test was positive for a second time. These women whose test was positive for the second time wished to have a colposcopy rather than continue to be monitored. The researchers found that, initially, women were both shocked and confused at their first positive HPV result. They expressed feelings of anxiety related to uncertainty about how HPV was contracted. After follow-up education about how HPV is transmitted, most women reported their anxiety resolved. However, those who experienced anxiety throughout the twelve months prior to returning for another test did not take advantage of the educational resources provided to them (Waller, McCaffery, Kitchener, Nazroo, & Wardle, 2007).

The study evaluated 30 women who had tested positive for HPV and then returned twelve months later for a follow-up test. These women underwent in-depth interviews. The interview transcripts were later analyzed using the Framework Analysis method to examine any emergent themes (Waller et al., 2007).

Women who tested positive for a second time expressed great anxiety. One participant said “The first one you don’t know what it’s about whereas with the second one it’s important to you. When you find out you’re positive again . . . you’re like ahh!” (Waller et al., 2007, p.199). Some women were disappointed that their immune systems had not cleared the virus naturally, while others were eager to undergo a colposcopy and get rid of HPV. Those whose test was negative the second time expressed feelings of happiness and overall relief, but still expressed concern about the recurrence of the virus into the future.
The study supports the idea that although women experience initial anxiety when they are informed they have HPV, they were able to relieve these feelings with education. This implies that health care providers can do a great deal to relieve the anxiety of positive test results through education and discussion. The twelve month period between testing was when women experienced the most anxiety related to knowledge deficit or unanswered questions. Follow-up phone calls between tests may be of value to answer questions and relieve apprehensions (Waller et al., 2007).

National Guidelines

HPV is not only the most prevalent sexually transmitted disease, but also the leading cause of cervical cancer. The question remains, what kinds of nursing interventions can be implemented in order to prevent the 6.2 million new HPV infections and possibly cervical carcinomas that will emerge among the American population this year alone? It has been shown “Educating women particularly those who are socially and economically disadvantaged, about behaviors that enhance sexual risk reduction has a proven benefit in reducing the incidence of STDs” (Gearhart, Randall, & Buckley, “Follow-up,” 2007, ¶ 10).

The National Guideline Clearinghouse outlines evidence based nursing interventions for the prevention of the Human Papillomavirus. First, encouraging the consistent use of condoms may reduce the risk of contracting genital warts or developing cervical cancer which are both directly related to HPV. Also, using condoms may help one clear HPV or the HPV-related lesions from the individual’s system. In terms of pap smears, women over the age of 30 can use cervical cytology and the HPV DNA test; if they receive negative test results for both, they can return again in three more years for
follow-up. Finally, when treating genital warts related to HPV, there is no one right treatment. Treatment should be guided by both the preferences and experiences of the individual together with the healthcare provider (ACOG, “Recommendations,” 2005, ¶ 12).

**Micromedix Information**

The human papillomavirus affects squamous epithelial cells. The high risk strains of HPV that cause cancers do so by having oncoproteins E6 and E7 interfere with normal cell function, producing abnormal chromosomes, inhibiting apoptosis, and ultimately producing malignancies. Often HPV infections are asymptomatic and resolve on their own without treatment. Most low-risk types of HPV are associated with genital warts, whereas the high risk types are associated with cervical cancer, with 2/3 of all cases of neoplasias being associated with types 16 and 18. If the genitalia are damaged, one is more likely to contract HPV. If an individual is immunocompromised that individual is more likely to acquire a persistent HPV infection (Thomson Micromedix, Diseasedex, 2009).

There are three ways to diagnose HPV. The first way is seeing visible genital warts. The second test involves a Pap smear to detect cervical intraepithelial neoplasia (CIN I), which indicates that there are in fact cells producing HPV within the cervix. Of those positive for CIN, only one in ten to one in thirty will result in abnormal cervical cytology. The final way to test for HPV is to do an HPV DNA test, which is typically done with women older than 30 years of age, or after cervical excision to determine HPV has dissipated. If a woman tests positive for a low-risk HPV type, most infections resolve on their own without treatment, but it is essential the woman return within a year for
another pap smear to follow-up. If one tests positive for high risk HPV, they need to be referred to a specialist for a cervical biopsy (Thomson Micromedix, Diseasedex et al., 2009).

Laboratory & diagnostic testing of HPV

The main way to diagnose HPV is through cervical cytologic testing by a Papinocau test better known as the Pap smear. The Pap smear itself checks for changes in the cells of a woman’s cervix and is done during a pelvic exam. The woman will first lie on her back on the exam table. The doctor will insert a speculum into the vaginal opening to open up the canal and visualize the cervix. The doctor will then take a special swab and gently brush the cervix and surrounding tissue to remove cells. It contains “samples of cells from ectocervix, transformation zone, and endocervical canal” (Gearhart, Randall, & Buckley, “Differential Diagnoses & Workup,” 2007, ¶3). The cells will be brushed on a glass slide and sent to the lab for further examination (Office of Women’s Health, Pap test, 2008). The test itself can be slightly modified if abnormal cells are suspected to be on the vagina itself or perineal area. Pap Smears should be performed three years after a woman becomes sexually active or when she has reached 21 years of age and have remained abstinent, whichever comes first. If she has results within the non-abnormal reference range for three consecutive pap smears, the frequency with which the Pap smear is performed may decrease (Gearhart et al., 2007).

If abnormal cells are detected by way of a Pap smear, a woman needs to return to have her cervix examined with a special kind of microscope called a colposcope. The purpose of the colposcopy is to determine if the abnormality picked up on by the Pap smear is cervical dysplasia, better known as cervical intraepithelial neoplasia (CIN).
grades I, II or III. Cervical Dysplasia is defined as a disordered growth (Indman, “What is Cervical Dysplasia,” 2008). CIN I, or mild dysplasia means only a few cells are abnormal, while CIN II or moderate dysplasia, indicates that more than half of the thickness of the cervical cells are abnormal. Severe dysplasia, also known as carcinoma-in-situ, indicates that the abnormal cells span the entire thickness of the cervix but have not yet penetrated below the outer layer (Indman et al., 2008). There is a fourth category that women often are categorized as and that is atypical cells of undetermined significance, or ASCUS. ASCUS basically means that a woman’s cells were not abnormal enough to be classified as dysplasia, but are not normal either. If a woman comes back with cervical dysplasia or ASCUS, her cells will be tested definitively for HPV through HPV DNA testing. There are two HPV testing methods, the Hybrid Capture II (HC II) and the polymerase chain reaction (PCR) enzyme immunoassay. Finally, if for whatever reason the HPV testing methods were inconclusive or further confirmation is needed, a tissue biopsy of the wart itself can be removed for biopsy (Gearhart et al., 2007).

Treatment of HPV

Treating warts. Although 80% of HPV infections will be transient and clear one’s system without incident, there remain a number of individuals who require treatment, particularly those whose HPV infection manifests itself in the form of genital warts. The main aim of treatment is to treat the patient’s symptoms through eliminating the warts, but ultimately eliminating dysplastic growth. There are two categories of medications used to treat HPV: immune response modifiers, such as imiquimod and interferon alfa, or cytotoxic agents like antiproliferative podoflox, podophyllin, and 5-flurouracil. Every
medication used to treat HPV infection is applied topically on the skin’s surface. Some may have local reactions to such medications. Most patients with warts need to have multiple treatments over a series of weeks or months. If there has been little or no improvement following three treatments administered by a physician or six patient administered treatments, a different course of treatment is recommended. (Gearhart et al., 2007).

All medications related to Human Papillomavirus at this time are topical agents used in the treatment of warts caused by HPV. It is important to note that the “low-risk” HPV types are those that are most likely to cause warts. They are known as the low-risk forms because although they do cause warts, they do not cause the more serious cervical neoplasias that must be addressed through surgery or other procedures.

**Imiquimod.** Although it does not directly act on HPV, it is an immune response modifier and produces interferon alfa, tumor necrosis factor, and interleukins. It is applied by the individual three times a week every other day. The person should continue treatment until there are no visible warts, but no longer than 16 weeks (Gearhart et al., 2007).

**Interferon alfa.** Interferon Alfa is a natural cytokine that has both immunomodulatory and antiviral effects against HPV. The physician injects the medication at the base of each wart. The person should see maximum effects 4-8 weeks after the first treatment, but if the course of treatment is not satisfactory at weeks 12-16, another course may be initiated unless contraindicated (Gearhart et al., 2007).

**Podofilox.** Podofilox is an anti-mitotic agent which induces tissue necrosis. The patient can apply this topical gel twice a day for 4 days, then 3 days without. This cycle
of four days with, 3 days without can be repeated up to a maximum of four times. The physician should demonstrate how to put on the gel the first time so the patient does not exceed the 0.5 g of gel per day recommendation (Gearhart et al., 2007).

*Podophyllin.* Podophyllin is a cytotoxic which kills warts in mitosis. The patient must first cleanse the area with soap and water, and then apply the Podophyllin. The topical agent must dry for 30-40 minutes on the first application, then be removed again with soap and water. For every application thereafter, the patient can leave the agent on for 1-4 hours before washing off. This medication can be used for up to 6 weeks and should be not be used to treat larger regions of warts (Gearhart et al., 2007).

*5-Fluorouracil.* 5-Fluorouracil, an anti-metabolite, interferes with the cell’s RNA and DNA synthesis, eventually killing the cell. It is not the typical treatment for HPV related warts but can be used 1-3 times per week for several weeks. The patient must clean the area with soap and water prior to application of the topical cream and remove the dried cream after 3-10 hours, similar to the Podophyllin (Gearhart et al., 2007).

*Keratolytics.* Keratolytics must be applied by a physician. They essentially cauterize tissue and do not allow further growth. The physician will apply a strong solution to the area weekly. Keratolytics are considered to be acidic and dry white. The area after drying completely needs to have sodium bicarbonate put on it to remove any additional acid that may not be visible (Gearhart et al., 2007).

*Surgery*

In addition to medications, there are several surgical procedures often used to treat HPV. The majority of these surgeries are out-patient and can often be performed in the primary care doctor’s office. These usually only take one or two treatments; however
some require the use of local anesthetics and take more time and equipment to perform than the topical medications. The first surgical procedure is cryosurgery used most commonly for CIN I and simple warts. Liquid nitrogen is applied to the area using the freeze-thaw-freeze method; the liquid is applied for thirty seconds after the skin begins to turn white. Then the skin is allowed to thaw and the freezing resumes for another cycle. The goal is to freeze the intracellular wall and ultimately destroy it. Anesthetics are typically not used, and although painful after only 2-4 treatments, 75-80% of all patients are able to rid themselves of the warts completely (Gearhart et al., 2007). Many warts can even be removed by simple surgical procedures involving scalpels or scissors under local anesthesia.

Another surgical method is electro surgery, used to treat external warts and squamous intraepithelial lesions (SILs). Electro surgery uses high frequency currents to cut and destroy warts and lesions and utilizes local anesthetics. An alternative therapy is laser surgery, when carbon dioxide laser vaporization is used. This method is especially common in people who have recurring HPV or a large number of warts. The main issue with electro surgery and laser surgeries is that HPV has been "found in smoke plumes; therefore, procedures to evacuate smoke and prevent inhalation must be used" (Gearhart et al., 2007). Finally the Cavitron Ultrasonic Surgical Aspirator (CUSA) vibrating at 23 kHz, slightly lower than that of an ultrasound, destroys tissue with extreme heat. The advantages of CUSA are that it can remove a great deal of infected epithelium tissue without compromising or destroying surrounding tissues. (Gearhart et al., 2007).
**Nursing Interventions**

*Diet.* Folate deficiency has been linked to cervical cancer. If one lacks folate, it makes it easier for HPV DNA to incorporate into fragile parts of chromosomes, creating mutations, and eventually causing cancer. Women should be taking in approximately 100 micrograms of folate each day. They can do so by either incorporating green leafy vegetables, citrus fruits and juice, and legumes into their diet or by taking a supplement which fulfills this daily value (Gearhart et al., 2007).

*Sexual activity.* The younger the age that an individual engages in sexual activity, the more likely he or she are to acquire HPV. Also, the more sexual partners one has, and the more promiscuous his or her partner has been, the greater the likelihood that he or she has of acquiring HPV. It is important to educate all young men and women about STIs and what increases their risk of contracting HPV and the kinds of preventative measures they can take to protect themselves and their partner. (Gearhart et al., 2007)

Additionally, if a young woman already has an STI, it increases her chance of getting HPV. This is because STIs can damage cells and cause inflammation of the cervix, making this individual more susceptible to any sort of pathogen due to the compromised condition of her cells (Thomson Micromedix, Diseasedex, 2009).

*Tobacco & oral contraceptives.* Tobacco smoking also significantly increases a woman’s risk of developing cervical cancer. Carcinogens have been found within the cervical mucosa of women who smoke. These carcinogens are believed to play a role in the transformation of regular cells to abnormal cells and neoplasias in those that have HPV. Tobacco cessation programs could be incorporated into gynecological check-ups for any woman who is sexually active and at risk for contracting HPV. Although the link
is not definite at this time, women who use contraceptives for more than a five year duration also have an increased risk of acquiring HPV and developing cervical abnormalities. For those who stop using contraceptives, the risk decreases, and there is little to no risk in those who use oral contraceptives for less than five years. Women need to be informed of these risks prior to initiating any form of oral contraceptives to evaluate the risks and benefits in doing so (Gearhart et al., 2007). In order to reduce the incidence of HPV among women, nurses must first assess their client and then educate her accordingly. They must act as patient advocates and inform patients thoroughly about all their risks and what they can do to protect themselves from acquiring HPV, starting with lifestyle alterations such as tobacco cessation or increasing folic acid in addition to safe sexual practices.
CHAPTER III
Methodology

Focus Group Interviews

Focus groups present an opportunity for a researcher to initiate discussions and to observe the interactions among participants. From these interactions, the researcher can piece together the sample’s overall beliefs, attitudes, and knowledge about the topic matter. A focus group “...serves a variety of purposes, with the ultimate goal of observing interactions among focus group members and detecting their attitudes, opinions, and solutions to specific topics posed by the facilitator” (Fain, 1999, p. 160). Focus groups revolve around the concept of “safety in numbers.” That is, people are more willing to express and further explain their view if in a group setting than if it were just a one-on-one interview.

A focus group is composed of 6-12 volunteers who are recruited to engage in a discussion about a particular topic led by a facilitator. It is crucial to have over six volunteers but no more than twelve at one time. This desired 6-12 member focus group is designed to initiate adequate discussion and to ensure everyone gets an opportunity to speak and share his or her view point. The discussion itself is either recorded by audiotape or manually by a note taker. The audiotape is then transcribed and becomes the data for further examination (Fain, 1999).

Questionnaires & Surveys

The purpose of a survey is to collect “data to describe, compare, or explain knowledge, attitudes, and behaviors” (Fain, 1999, p. 144). A survey itself is a battery of questions developed by researchers posed to a group of subjects. Questionnaires are
described as “structured, self-administered surveys” (Fain, 1999, p.144). Although questionnaires are often distributed through the mail, they can also be distributed face-to-face from researcher to subject. In closed-ended questionnaires, participants are asked to select an answer from a certain number of options or choices. With open-ended questionnaires, participants can create their own answers to questions.

There are several elements of developing a good questionnaire. First of all, when asking a question, one needs to be specific rather than broad. This helps to clarify for the participant exactly what the researcher is asking. Next, the language needs to be kept as simple as possible. The question also should be worded to an educational level reflective of the respondents, only addressing one concept per question. It is important to design the questions so that the question itself does not influence the answer. In addition to carefully creating each question, the order of the questions also plays an important role in the way in which respondents answer questions. Begin with questions the participants will think are of the most importance, grouping questions together that have similar topic matter. Sensitive questions should be placed two-thirds of the way into the questionnaire and be ordered in such a way that the easiest ones to answer are first and the harder ones fall further down. Finally any sort of demographic information that may bore or be viewed as intrusive to the reader should be placed at the end of a questionnaire (Dillman as cited in Fain, 1999.).

Purpose of Study

The purpose of this study was to gain insight into why college students have the highest prevalence of HPV. The goal of the research study was to use explorative methods including a focus group and questionnaire, to better understand and examine
what kind of knowledge deficits exist in terms of HPV and what type of views and values may be a factor in the continued transmission of HPV. Ultimately the data from this study could theoretically be used in evaluating the current educational programs related to HPV and developing improved outreach programs. The first portion of this study involved the administration of a survey to sophomore nursing students asking about their general knowledge of HPV and its transmission. The survey was done voluntarily within assessment classes with the permission of the professor. Such a survey was helpful in understanding students’ views and attitudes regarding HPV and its transmission as well as gathering generalized demographic data. The next part of the study was to gather a group of seven to ten students by way of flyers on campus to engage in a focused discussion regarding HPV. This focus group differed from the survey in that it gave participants an opportunity to express their viewpoints and attitudes about HPV in an open-ended forum. Rather than being closed-ended, questions allowed participants to elaborate and explain their thought processes. Through such interactions, important answers as to why college aged students have the highest prevalence of HPV may be presented and could possibly be generalized to the greater population.

Sample, Setting, Data Collection, and Analysis

Students over the age of 18 were enlisted from the campus of a small, private liberal arts, Catholic college in the Northwestern United States. The participants were informed that the survey and focus group were approved through the college’s Institutional Review Board (IRB). The survey was administered to the sophomore nursing assessment classes and participation was voluntary. The surveys were administered in a classroom on the college campus prior to the start of an assessment lecture and took
no more than 15 minutes to complete. The quantitative survey administered to the approximately 40 sophomore female nursing students was evaluated based on descriptive statistical analysis.

The focus group involved ten female volunteers from the general student population who responded to flyers posted throughout campus. Interested participants contacted the researcher through email documents to express their initial interest, and the researcher responded via encrypted email. The qualitative focus group was analyzed utilizing the focus group analysis method. The session was tape recorded and then transcribed verbatim. Participants were coded using numbers. The transcript was reviewed several times over a period of weeks by the principal investigator and her supervisor in order to identify key themes that emerged based on the focus group analysis method. The focus group took place in a closed and secure classroom in the evening and did not exceed two hours in duration.

While the research may not directly benefit individual participants, it has the potential to impact society in that it may provide insight as to why college students have the highest prevalence of HPV and what measures can be implemented to decrease the incidence among this population.

Confidentiality

Confidentiality was of the utmost importance. The surveys were anonymous without any identifying factors. Within the focus group, participants signed a consent form agreeing to not discuss the focus group outside of the session. However participants also recognized that the researcher could not guarantee that their confidentiality would not be compromised due to the actions of other participants outside the focus group.
setting. Surveys and focus group transcripts were stored in a locked cabinet at all times and destroyed after the data had been collected and thoroughly analyzed. Both the focus group and survey participants received informed consent paperwork to complete prior to their participation. To ensure the privacy of the survey participants, no identifying factors were placed on the surveys themselves. The completed surveys were then placed in a manila envelope at the front of the room by individual participants. To ensure privacy of participants, the focus group was held in a closed classroom on campus during the evening hours. Participants signed agreements to protect the information shared by other participants and were instructed not to share the identity of the other participants outside of the group.

*Study Limitations*

One limitation may be the setting. Sampling occurred on a small liberal arts Catholic college in the rural Northwest. This same study performed elsewhere may produce different results based on the setting alone. Another limitation of this study was the convenience sampling method utilized for the questionnaire. The questionnaire was administered to a select group of sophomore, female nursing students for the sake of accessibility. The results obtained may not apply to all sophomore students or students in another nursing program. Furthermore, the questionnaire was administered prior to the students’ class lecture. While participation was not required, it was strongly encouraged. Students may not have felt it necessary to engage in the survey in a serious manner because it was not part of their graded class requirements.
CHAPTER IV

Results

The purpose of this study was to gain insight into why the female college-aged population has the greatest incidence of HPV. The study explored attitudes and understanding of the disease through both a structured questionnaire and group discussion. After reviewing the results of the questionnaire and focus group, it was clear that participants have a knowledge deficit about HPV. More important is that this group of young women feel as if their resources and information regarding HPV are limited.

Questionnaire Results

Of the 39 students who completed the questionnaire, 37 of them or 95% knew that the virus associated with cervical cancer was transmitted by sexual intercourse. However, only 33 or 85% of the students knew that cervical cancer and pre-cancerous cells were associated with the presence of the human papillomavirus, and more alarmingly, 18 of the participants or 46% were unsure of the symptoms of HPV. One hundred percent of participants recognized that multiple sex partners increases one's risk for contracting HPV, while 56% of those participants believed HPV is curable with proper treatment. Twenty seven or 72% of participants said that their chances of contracting HPV were low while 8 or 21% of students believed they had an equal chance to any other woman of developing cervical cancer, and it was beyond their control. The results of the HPV questionnaire are listed in Appendix C, Table 1. The demographic information for these participants follows in Table 2 of Appendix C.

Focus Group Findings

The focus group lasted a little over one hour in duration. The overall findings of
the group were that participants did not know how HPV is transmitted, symptoms of HPV, or what their treatment options were should they contract HPV. The group as a whole felt as if HPV was a more private topic than other STIs. One participant said, “I think it’s a really private issue. Like I don’t think many people would come out and say ‘I have HPV.’ I think I have heard of more people getting Chlamydia or some other random STD.” Participants felt as though the information they knew about HPV was skewed, and different sources provided differing information about the same disease. For this group of young women, the consensus was that some sort of campaign needs to be done to reach this population and get their attention. One focus group participant said, “Our generation is so technologically driven. We need to reach them through a forum such as Facebook and throw out some startling facts to really get them engaged.”
CHAPTER V

Discussion

Of the young women surveyed, 95% were aware that HPV can be transmitted through sexual contact and that multiple sexual partners increased the risk for contracting HPV. Seventy four percent were unaware of the symptoms of HPV, and 72% of the students surveyed said their risk of contracting HPV was low. Within the survey group, 41% have never had a pap smear. It is concerning that these young women have not had baseline gynecological exams and Pap smears. The Centers for Disease Control and Prevention recommends that young women “should start getting regular Pap tests at age 21, or within three years of the first time you have sex—which ever happens first” (2010, ¶6). Researchers continue to recommend regular gynecological exams in relation to individuals who have had multiple partners, use alcohol, and/or have an immature cervix which makes this population susceptible to infection (Lindley, Barnett, Brandt, Hardin, & Burcin, 2009). Sexual behaviors may put them at risk for contracting HPV leading to cervical cancer; therefore it is important that they receive annual pap smears for screening purposes because “the incidence of cervical cancer has decreased dramatically during the last century because of implementation of the Papanicolaou test” (Gearhart et al., 2007, “Frequency,” ¶5). One focus group participant recognized that “I don’t think a whole lot of girls get Pap smears who should.” College-aged students, especially females, have continued to engage in unsafe sexual practices despite educational interventions in place on these campuses (Bontempi, Mugno, Bulmer, Danvers, & Vancour, 2009).

During the focus group, the participants said that the majority of their information was not obtained from their family physicians. Participants were not seeking help from
medical practitioners until they had physical issues related to other conditions, not necessarily HPV itself, at which time the contraction of HPV was discovered. Another woman said that she got most of her information in a college microbiology course. Focus group participants could not identify how HPV was transmitted other than it was somehow related to sexual activity. Participants initially responded confidently when asked about the transmission as being through sexual contact, but then regressed into saying “I don’t know. I thought I did. But I’m not sure.” The focus group participants said that they were skeptical about the commercials regarding the Gardasil vaccine because the information was synthesized by a pharmaceutical company looking for business. One participant stated, “Sometimes I look and the information is very skewed. First of all, it’s from a pharmaceutical company [for the Gardasil vaccine] and they have to pay so much money for it. I think that’s horrible.” Another said that “I would be way more an advocate of education before the vaccine, like getting an annual pap smear, and what the signs and symptoms are. That’s how I would educate my sisters and daughters.”

They felt as though the side effects of the vaccine were not well known enough for them to seek out the vaccination series or encourage other females to do so. When asked what sort of sex education program should be put in place and when, one participant responded that “people are going to have sex no matter what. It’s better to educate kids about sex and the safe way to do it and what the consequences are rather than preach abstinence only.” They felt that some sort of effective educational tool needs to be implemented early on in development before young adults begin engaging in any form of sexual activity. González, Sánchez-Crespo, and González reported that an increase in STIs “makes this kind of education a priority. . . . Young people have the right to an effective
sexual education. Information and comprehensive sexual education provide them with the knowledge, skills and attitudes necessary to take decisions in the present and future” (2009, Abstract, p. 1).

Nursing Implications

There remains a profound lack of knowledge about HPV in the college population. School and clinic nurses and nurse practitioners remain in a unique position to educate this population regarding prevention of HPV, the symptoms of HPV, and the need for annual Pap exams. It is the primary role of the nurse as an educator to provide accurate and up to date information in the simplest terms possible.

Many young men and women have the opportunity to undergo education via the public school system. The ultimate goal of sex education in and of itself is to reduce or eliminate the negative consequences of engaging in sex such as unplanned pregnancy or sexual infections. Sex education cannot just equip young people with knowledge, but also needs to emphasize the importance of developing decision making and critical thinking skills. Avert (2009) stated:

Effective sex education develops young people’s skills in negotiation, decision-making, assertion and listening. Other important skills include being able to recognize pressures from other people and to resist them, dealing with and challenging prejudice and being able to seek help from adults - including parents, carers and professionals - through the family, community and health and welfare services. (2009, “What Skills Should Sex Education Develop,” ¶ 2)

Education and skill development about HPV and STIs should not be put off until college years. Sex education should be started before puberty or any sort of pattern of
behavior has been established, prior to most engaging in high risk sexual activities (Avert 2009). The knowledge they receive should be a strong foundation to sustain and build on throughout their lifetime. Avert stated that “providing information through sex education is therefore about finding out what young people already know and adding to their existing knowledge and correcting any misinformation they may have” (2009, “So What Information Should Be Given to Young People?” ¶1). This means that upon annual exams, nurses and other health care providers can find out what these young adults already know, correct any misinformation, and further educate them.

It may be possible that some of these young women may be unaware that they even have HPV unless they had a Pap smear recently. The high risk types of HPV, or the ones that cause cancer, may be symptom-free except for abnormal cervical cytology (Thomson Micromedix, Diseasedex et al., 2009). But if they do not know the symptoms or the definite form of transmission, they cannot safely say they are not at risk for contracting HPV. Males typically do not present with symptoms except for the cases when they have external warts. Even though “a high prevalence of HPV-associated penile SILs exists in the male sex partners of women with cervical SILs, examination of these men is not necessary. . . . Nevertheless, sex partners of patients with HPV disease may benefit from examination and a detailed evaluation for STDs” (Gearhart et al., 2007, “Miscellaneous,” ¶ 3).

Young women may be engaging in intercourse with asymptomatic males and contract a high risk form of HPV ultimately leading to cervical cancer and be completely unaware. Gearhart et al. stated:

Educating women, particularly those who are socially and economically
disadvantaged, about behaviors that enhance sexual risk reduction has a proven benefit in reducing the incidence of STDs. Reducing the incidence of STDs potentially could decrease HPV transmission and, consequently, the incidence of cervical carcinoma. (2007, “Follow-up,” ¶10)

It is important to acknowledge that not all STIs are contracted by women who engage in sex willingly. Some women may end up with HPV after being raped as children or young adults. The proposed education strategies and campaigns are solely directed at those who willingly choose to be sexual.

Recommendations for the future

A large knowledge deficit about HPV exists in both the male and female populations worldwide (Garcia et al., 2007). The majority of females within the Garcia et al. study were unaware that HPV was not a bacterial STI, but rather a virus and that condoms are not always effective in preventing the transmission of HPV (2007). This shows that “educational messages must present accurate information on HPV and should clarify common misconceptions about its prevention, treatment, and consequences” (Garcia et al., 2007, p. 201). The focus of this study was knowledge deficit among the female population. Nevertheless it is important to recognize the male role in the continued transmission of HPV. It would be important to educate both the male and female population about HPV. Just the knowledge of HPV’s link to cervical cancer may encourage women to be screened more often through increasing their awareness and initiate conversations regarding sexual health among partners.

STIs are often associated with feelings of shame, guilt, and anger. The stigmatization of HPV as an STI may in fact discourage women from seeking out much
needed treatment and emotional support. When shaping informational campaigns, these negative associations need to be taken into consideration when presenting messages linking HPV to cervical cancer to ensure the negative stigma associated with cervical cancer does not prevent women from seeking out treatment (Garcia et al., 2007).

**Summary**

It is startling that HPV remains the most readily transmitted STI in the United States, the majority of infections among the college population. The research supports the idea that college students have an incredible deficit in terms of knowledge of the transmission, symptoms, and treatment of HPV. It would be important to explore barriers to transmission of HPV beyond education and explore what sorts of programs will motivate behavioral change. The same principle exists in any health promoting behavior; as nurses we must assess what will motivate individuals to choose health promoting behaviors over those behaviors that could be detrimental to an individual’s health?
References


Running Head: HPV


Appendix A Questionnaire Informed Consent

Carroll College Department of Nursing

Consent to Participate in a Research Project

Title: The Prevalence of Human Papillomavirus among college students.

I have been invited by Kellie Blankenstein, a Carroll College nursing student, to participate in a voluntary research study. The purpose of this study is to gain insight into why college-aged individuals have the highest rate of HPV through exploring the knowledge and attitudes of sophomore nursing students related to HPV.

If I choose to participate in this study, my participation will consist of completing a closed-questionnaire. It will take approximately 15-20 minutes to complete the questionnaire. In this questionnaire I will be asked about my knowledge and attitudes in regards to HPV. My age, gender, and previous sexual behaviors and practices will also be included in the data collection. I may refuse to answer any questions and stop the survey at any time if I so wish; I realize I can withdraw from this study at any point in time. Confidentiality will be maintained throughout the study and at no time will my name or identifying characteristics be used. I am aware that this research will be used to advance the understanding of HPV among college students. There may be various presentations and publications associated with this study. There are no costs involved with participation in this study. I am aware that if I have any questions, I can contact Kellie Blankenstein at (425) 466-7428 or Dr. Joni Walton at (406) 447-5490.

Participant Signature  
Date: ____________________________

Researcher Signature  
Date: ____________________________
Title: The Prevalence of Human Papillomavirus (HPV) among college students.

Principal Investigator: Kellie Blankenstein

Participant’s Name ___________________________ Date ____________

PURPOSE

You are invited to participate voluntarily in a research study. The main objective of this study is to gain insight into why college students have the highest prevalence of HPV. The purpose of this study would be to ultimately outline the framework for an educational program that targets this specific population of at risk individuals. To take part in this study you must agree to participate in a two-hour focus group session held on Carroll’s campus with 7-10 of your fellow students.

PROCEDURES

If you agree to participate in the study, you will be invited to a closed classroom on Carroll’s campus. The principal investigator will lead a discussion regarding HPV with you and your peers. The focus group will address your knowledge and awareness of HPV, how susceptible you think one is for contracting HPV, what behaviors are associated with contracting HPV, and the possible link between HPV and cervical cancer.

RISKS

At this time, we foresee a few risks that might occur should you decide to participate in this study. A minor risk is the possibility of potential psychosocial or social harm that comes from interacting with a group of peers. To minimize these risks, a safe
environment needs to be established within this focus group. By signing this consent form, you are agreeing to first respect your fellow group members as well as the investigator, but also not to disclose your fellow group members’ identity or discussion matter outside the focus group itself.

BENEFITS

There is no promise or guarantee of any benefits resulting from your direct participation in the study. However, you may have better insights into your own values as they relate to HPV. Additionally, your participation may help create a program that addresses education among college students in relation to HPV as a result of knowledge gained from this study.

COSTS

There will be no cost to you for participating in this study.

CONFIDENTIALITY

All focus group information will be kept confidential. In any records of the study, you will be identified by a code number and your name will only be known by the principal investigator. Your name will not be used in any publication of this study. Your participation is completely voluntary; you may withdraw at any time. If you have any questions you may contact the principal investigator, Kellie Blankenstein at (425) 466-7428, or Dr. Joni Walton at (406) 447-5490.

Participant’s Name___________________________________________

Principal Investigator________________________________________

The procedures of the research project have been explained to me and I understand and have been told about all the predictable risks and benefits that may result, and I agree to
participate in this research project. I understand I may withdraw at any time.

Participant’s Signature

Date
Appendix C Result Tables

**Table 1. Results of Awareness of HPV and Cervical Cancer Questionnaire**

<table>
<thead>
<tr>
<th>Questions 1-5</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple Choice</strong></td>
<td></td>
</tr>
<tr>
<td>1. The virus associated with cervical cancer is transmitted by:</td>
<td>a. Sexual intercourse, 37 (95%)</td>
</tr>
<tr>
<td></td>
<td>b. Maternal-fetal transmission,</td>
</tr>
<tr>
<td></td>
<td>c. Blood transfusions,</td>
</tr>
<tr>
<td></td>
<td>d. Inanimate objects</td>
</tr>
<tr>
<td></td>
<td>e. I don’t know 2 (5%)</td>
</tr>
<tr>
<td>2. Cervical cancer and pre-cancer cells are associated with the presence of:</td>
<td>a. Epstein-Barr virus,</td>
</tr>
<tr>
<td></td>
<td>b. Herpes simplex virus, 1 (2.5 %)</td>
</tr>
<tr>
<td></td>
<td>c. Human papillomavirus, 33 (85%)</td>
</tr>
<tr>
<td></td>
<td>d. Human immunodeficiency virus, 1 (2.5%)</td>
</tr>
<tr>
<td></td>
<td>e. I don’t know, 4 (10%)</td>
</tr>
<tr>
<td>3. Cervical cancer can be diagnosed by:</td>
<td>a. X-rays,</td>
</tr>
<tr>
<td></td>
<td>b. Pap tests, 37 (95%)</td>
</tr>
<tr>
<td></td>
<td>c. Blood tests, 1 (2.5 %)</td>
</tr>
<tr>
<td></td>
<td>d. Urine test,</td>
</tr>
<tr>
<td></td>
<td>e. I don’t know, 1 (2.5 %)</td>
</tr>
<tr>
<td>4. Prevention of cervical cancer may require:</td>
<td>a. Delayed onset of sexual activity, 1 (2.5 %)</td>
</tr>
<tr>
<td></td>
<td>b. Annual Pap test, 2 (5%)</td>
</tr>
<tr>
<td></td>
<td>c. Use of condoms, 1 (2.5 %)</td>
</tr>
<tr>
<td></td>
<td>d. All of the above, 34 (87%)</td>
</tr>
<tr>
<td></td>
<td>e. I don’t know 1 (2.5%)</td>
</tr>
</tbody>
</table>
a. Vaginal discharge, 9 (23%)
b. Genital warts, 10 (26%)
c. Itching, 1 (2.5%)
d. Burning urination, 1 (2.5%)
e. I don’t know, 18 (46%)

**Questions 6-15**
Please identify which of the following are risk factors of cervical cancer:
(Answer: Yes or No)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. HPV can live in the skin without causing growths or changes.</td>
<td>37 (95%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>7. Multiple sex partners</td>
<td>39 (100%)</td>
<td></td>
</tr>
<tr>
<td>8. Having genital warts</td>
<td>25 (64%)</td>
<td>14 (46%)</td>
</tr>
<tr>
<td>9. Sexual intercourse before age 18</td>
<td>33 (85%)</td>
<td>6 (15%)</td>
</tr>
<tr>
<td>10. Taking illegal drugs</td>
<td>15 (38%)</td>
<td>24 (62%)</td>
</tr>
<tr>
<td>11. Having contracted any sexually transmitted diseases</td>
<td>36 (92%)</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>12. Smoking cigarettes</td>
<td>7 (18%)</td>
<td>32 (82%)</td>
</tr>
<tr>
<td>13. Poor diet or nutrition</td>
<td>17 (44%)</td>
<td>22 (56%)</td>
</tr>
<tr>
<td>14. Using tampons</td>
<td>3 (8%)</td>
<td>36 (85%)</td>
</tr>
<tr>
<td>15. Use of oral contraceptives</td>
<td>2 (5%)</td>
<td>37 (95%)</td>
</tr>
</tbody>
</table>
### Questions 16-30

Please respond to the following questions by circling True (T) or False (F)

<table>
<thead>
<tr>
<th>Question</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. I worry about getting cervical cancer.</td>
<td>22 (56%)</td>
<td>17 (44%)</td>
</tr>
<tr>
<td>17. I worry about getting human papillomavirus (HPV).</td>
<td>15 (38%)</td>
<td>24 (62%)</td>
</tr>
<tr>
<td>18. I believe that I am at risk for developing cervical cancer.</td>
<td>12 (31%)</td>
<td>27 (69%)</td>
</tr>
<tr>
<td>19. I believe I am at risk for contracting HPV.</td>
<td>14 (36%)</td>
<td>25 (64%)</td>
</tr>
<tr>
<td>20. All women have an equal chance of developing cervical cancer; it is beyond my personal control.</td>
<td>8 (21%)</td>
<td>31 (79%)</td>
</tr>
<tr>
<td>21. My chances of getting cervical cancer are high.</td>
<td>4 (10%)</td>
<td>35 (90%)</td>
</tr>
<tr>
<td>22. My chances of contracting HPV are low.</td>
<td>28 (72%)</td>
<td>11 (28%)</td>
</tr>
<tr>
<td>23. I have the ability to avoid cervical cancer.</td>
<td>31 (80%)</td>
<td>8 (20%)</td>
</tr>
<tr>
<td>24. I have the ability to avoid HPV infection.</td>
<td>34 (87%)</td>
<td>5 (13%)</td>
</tr>
<tr>
<td>25. All women who develop cervical cancer must have their uterus removed.</td>
<td>1 (3%)</td>
<td>38 (97%)</td>
</tr>
<tr>
<td>26. Among the diseases that I can imagine, getting cancer of the cervix is among the most serious.</td>
<td>24 (62%)</td>
<td>15 (48%)</td>
</tr>
<tr>
<td>27. I believe HPV is curable with proper medical treatment.</td>
<td>22 (56%)</td>
<td>17 (44%)</td>
</tr>
<tr>
<td>28. Cervical cancer is often curable with early detection and proper medical treatment.</td>
<td>36 (93%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>29. HPV is a life-threatening disease.</td>
<td>24 (62%)</td>
<td>15 (38%)</td>
</tr>
<tr>
<td>30. No one dies anymore from cervical cancer.</td>
<td>0</td>
<td>39 (100%)</td>
</tr>
</tbody>
</table>
Table 2. Demographic Information for Awareness of HPV and Cervical Cancer Questionnaire

37 out of 39 surveys provided demographic information

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>How old are you?</td>
<td>Mean Age: 22</td>
</tr>
<tr>
<td>What is your college level?</td>
<td>Sophomore Nursing: 31 (80%)</td>
</tr>
<tr>
<td></td>
<td>Second Bachelor’s: 6 (20%)</td>
</tr>
<tr>
<td>What is your sexual experience status?</td>
<td>None: 16 (43%)</td>
</tr>
<tr>
<td></td>
<td>Sexual Experience: 19 (51%)</td>
</tr>
<tr>
<td></td>
<td>Marital Partner Only: 2 (6%)</td>
</tr>
<tr>
<td>What is the number of sexual partners that you have had within the past year?</td>
<td>0: 20 (54%)</td>
</tr>
<tr>
<td></td>
<td>1: 13 (35%)</td>
</tr>
<tr>
<td></td>
<td>2: 1 (2%)</td>
</tr>
<tr>
<td></td>
<td>3: 1 (2 %)</td>
</tr>
<tr>
<td></td>
<td>4: 2 (7%)</td>
</tr>
<tr>
<td>Do you use condoms?</td>
<td>Yes: 15 (41%)</td>
</tr>
<tr>
<td></td>
<td>No: 6 (16%)</td>
</tr>
<tr>
<td></td>
<td>Sometimes: 2 (5%)</td>
</tr>
<tr>
<td></td>
<td>N/A (No Sexual activity): 14 (38%)</td>
</tr>
<tr>
<td>Do you currently use oral contraceptives?</td>
<td>Yes: 13 (35 %)</td>
</tr>
<tr>
<td></td>
<td>No: 24 (65%)</td>
</tr>
<tr>
<td>Do you currently smoke cigarettes?</td>
<td>Yes: 1 (3%)</td>
</tr>
<tr>
<td></td>
<td>No: 36 (97%)</td>
</tr>
<tr>
<td>What is your marital status?</td>
<td>Single: 29 (78%)</td>
</tr>
<tr>
<td></td>
<td>Married: 7 (19%)</td>
</tr>
<tr>
<td></td>
<td>Engaged: 1 (3%)</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>When was the last time you have a Pap test?</strong></td>
<td></td>
</tr>
<tr>
<td>Never: 15 (41%)</td>
<td></td>
</tr>
<tr>
<td>&lt;6 Months Ago: 12 (32%)</td>
<td></td>
</tr>
<tr>
<td>6 Months-1 year: 8 (22%)</td>
<td></td>
</tr>
<tr>
<td>3 years: 2 (5%)</td>
<td></td>
</tr>
<tr>
<td><strong>Have you or anyone in your family ever been diagnosed with HPV or cervical cancer?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes: 1 (3 %)</td>
<td></td>
</tr>
<tr>
<td>No: 35 (94 %)</td>
<td></td>
</tr>
<tr>
<td>Unsure: 1 (3 %)</td>
<td></td>
</tr>
</tbody>
</table>