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WOMEN'S KNOWLEDGE OF HPV AND THEIR PERCEPTIONS OF PHYSICIAN
EDUCATIONAL EFFORTS REGARDING HPV AND CERVICAL CANCER

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by

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Abstract

AN ABSTRACT OF THE THESIS FOR THE MASTER OF SCIENCE DEGREE IN HEALTH PROMOTION AND EDUCATION, PRESENTED ON FEBRUARY 25, 2009, AT THE UNIVERSITY OF CINCINNATI, OHIO.

TITLE: Women's Knowledge of HPV and their Perceptions of Physician Educational Efforts Regarding HPV and Cervical Cancer

MASTERS COMMITTEE MEMBERS: Dr. Randall Cottrell (Chair) and Dr. Judy Murnan

Human papillomavirus (HPV) was one of the most common sexually transmitted infections (STIs) in women of child-bearing age in the U.S. It was estimated that nearly three out of every four Americans between the ages of 15 and 49 would be infected with genital HPV over the course of their lifetime. Human papillomavirus was present in almost 100% of cervical cancers. Despite this growing epidemic, there was little knowledge and awareness of HPV among the general public. HPV was most often detected in abnormal Pap test results. However women undergoing Pap tests lacked basic knowledge about testing, abnormal results, and follow-up procedures.

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge regarding testing, treatment, risk

factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

A survey containing 33 questions was completed by 109 women at a social service agency in the summer of 2008. Based on the data collected in this study it seems that physicians were not routinely providing information about HPV to their female patients. Women reported their physicians were not educating them on testing for HPV and cervical cancer, risk factors associated with contracting HPV, and preventive measures associated with HPV. Women who had younger physicians were more likely to have a physician who discussed these topics with them than women who had older physicians. Single women also reported more discussion with their physician on these topics than married women. Such findings should be shared with physicians, all sexually active women, and used by health educators to develop more effective interventions aimed at HPV prevention.

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Chapter One

The Problem

Human papillomavirus (HPV) was one of the most common sexually transmitted infections (STIs) in women of child-bearing age in the U.S. (Revzina & DiClemente, 2005). It was estimated that nearly three out of every four Americans between the ages of 15 and 49 would be infected with genital HPV over the course of their lifetime (Couto & Dailard, 1999). Human papillomavirus was present in almost 100% of cervical cancers (Maissi et al., 2004). Baer, Allen, and Braun (2000) reported that cervical cancer was second only to breast cancer as a cause of cancer-related mortality in women worldwide. Despite this growing epidemic, there was little knowledge and awareness of HPV among the general public. HPV was most often detected in abnormal Pap test results (National Cancer Institute [NCI], 2006). Women undergoing Pap tests, however, lacked basic knowledge about testing, abnormal results, and follow-up procedures (Anhang, Goodman, & Goldie, 2004).

There were two classifications of HPV strains, “low-risk” and “high risk” (NCI, 2006). Low risk strains rarely developed into cancer. Most people who became infected with “low-risk” strains of HPV never knew they were infected. Those who were infected may never have experienced any symptoms and the infections would clear on their own. HPV could lay dormant for several years without ever causing any cell abnormalities. The other strains, “high-risk” strains, were more likely to lead to the development of cancer in the cervix, vulva, vagina, anus, or penis. In some cases of “high-risk” strains, a pregnant woman passed HPV to her baby during vaginal delivery. In such cases, a baby could have developed HPV related warts in the throat or voice box. Both “low-risk” and

“high-risk” strains caused the growth of abnormal cells, but generally only the “high-risk” types led to cancer. However, the majority of “high-risk” HPV infections went away on their own and do not cause cancer (NCI, 2006).

The Centers for Disease Control and Prevention (CDC) (2004) reported HPV infection could occur in both male and female genital areas that were covered or protected by a latex condom, as well as in areas that were not covered. While the effect of condoms in preventing HPV infection was unknown, condom use had been associated with a lower rate of cervical cancer, which was highly associated with HPV infections (CDC, 2004).

The exact number of number of cases of HPV in the U.S. was unknown. The estimated number of women infected with HPV ranged from 14% to 90%. The CDC (2004) estimated 20 million new and existing cases of HPV in 2005. The CDC also reported that at least 50 percent of sexually active men and women acquired genital HPV infection at some point in their lives. By age 50, at least 80 percent of women had acquired a genital HPV infection. About 6.2 million Americans acquired a new genital HPV infection each year. Estimates suggested 75 percent of the reproductive age population had been infected with sexually transmitted HPV (CDC, 2004).

Linnehan and Groce (1999) found that college-aged women were one of the populations at greatest risk for contracting HPV. Risk factors associated with contracting HPV included smoking, using oral contraceptives, having multiple sexual partners, and engaging in sexual acts with partners who had been exposed to or had a history of HPV.

Couto and Dailard (1999) found another population to be at high risk. Approximately 3.5 million American women who believed they were in a mutually

monogamous relationship were at risk for HPV infection due to their partner's sexual history. The HPV virus could lay dormant for several years and be unknowingly transmitted to other partners several years later.

The American Cancer Society (ACS) (2005) reported that the only known 100% effective method of protection from HPV was to refrain from any genital contact with another individual. For those choosing to engage in sexual activity, the safest method of protection against infection was to remain in a long-term, mutually monogamous relationship with a known, uninfected partner.

An HPV vaccination was released in June of 2006. The vaccine was designed to protect against the two HPV types that cause most (70%) cervical cancers (types 16 and 18). The vaccine was recommended for 11-12 year old girls, but could be given to girls as young as nine, and as old as 26. Females should receive the vaccine before they were sexually active (CDC, 2006).

The National Cancer Institute (2006) stated that infection of the cervix with HPV was the most common cause of cervical cancer. Cervical cancer was one of the most common cancers that affected a woman's reproductive organs (Mayo Clinic, 2007). The American Cancer Society (2006) estimated that in 2006, about 9,710 cases of invasive cervical cancer would be diagnosed in the United States. About 3,700 women would die from cervical cancer in the United States during 2006 (ACS, 2006).

A Pap test was the primary cancer-screening tool for cervical cancer or pre-cancerous changes in the cervix, many of which were associated with HPV (NCI, 2006). The CDC (2004) credited the Pap test for greatly reducing the number of cervical cancer deaths. The ACS (2006) also stated that most women who developed invasive cervical

cancer had not had regular cervical cancer screening through Pap tests and these deaths were preventable.

Even though HPV was so prevalent among the population, the general public lacked knowledge and awareness of HPV infection (Anhang, Wright, Smock, & Goldie, 2003). Little research had explored women's questions and concerns about HPV or their attitudes towards HPV testing. Breitkopf, Pearson, and Breitkopf (2005) found that women undergoing cervical cancer screening stated that they were aware that they should be screened; however, they often lacked basic understanding of the process, limitations, and results of the Pap test. Although women underwent screening for cervical cancer, most had a poor understanding of HPV and its association to cervical cancer (Breitkopf et al., 2005). Studies of low-income and minority women reported that these women had poor understandings of a Pap test and Pap results. Racial and ethnic disparities had been identified in previous investigations of knowledge regarding cervical screening (Karatz, McKee, and Roybal, 2003). Anhang and colleagues (2004) reported that of those who had heard of HPV, few were aware that it was associated with cervical cancer, that it could be present without symptoms, or that HPV could be sexually transmitted even with condom use.

Studies of women experiencing an abnormal Pap test found that they had insufficient knowledge about abnormal results and follow-up procedures (Breitkopf et al., 2005). The women felt that it was the physicians' responsibility to explain their diagnosis and make recommendations accordingly (McCaffery & Irwig, 2005). However, Linnehan and Groce (1999) reported that in a large study of patients with HPV, a majority noted their provider's failure to offer advice on emotional issues, to ask

questions about sexual practices, to supply written information and to provide a referral for more support. In this same study, barriers to providing HPV information to patients included lack of education, low comfort levels, and lack of personal interest. Waller and colleagues (2003) reported that clear and consistent messages about HPV transmission, cancer risk, and protection needed to be present during cervical cancer screening.

Physicians and health education professionals needed to target educational efforts to women regarding HPV, Pap tests, cervical cancer, risk factors, and preventive measures.

Purpose Statement

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge regarding testing, treatment, risk factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

Research Questions and Hypothesis

This study answered the following research questions:

1. How do women rate their physicians' educational efforts regarding HPV and the purpose of an HPV test?
2. How do women rate their physicians' educational efforts regarding HPV and the purpose of a Pap test?
3. How do women rate their physicians' educational efforts regarding smoking as a risk factor associated with contracting HPV?
4. How do women rate their physicians' educational efforts regarding oral hormonal contraceptive use as a risk factor associated with contracting HPV?
5. How do women rate their physicians' educational efforts regarding HPV and safer sex?
6. How do women rate their physicians' educational efforts regarding HPV and sexual history/number of partners?
7. How do women rate their physicians' educational efforts regarding risk factors associated with HPV and cervical cancer?
8. How do women rate their physicians' educational efforts regarding preventive measures for HPV?
9. How do women rate their physicians' educational efforts regarding HPV and the new HPV vaccine?
10. What overall score do women give their physicians' educational efforts regarding HPV?
11. How well educated were the women on HPV?

12. Will younger physicians provide better HPV education than older physicians?
13. Will female physicians provide better HPV education than male physicians?
14. Will Caucasian women report receiving better HPV education from their physicians than non-Caucasian women?
15. Will women who report earning a higher education report receiving better HPV education from their physician than women who do not report earning a higher education?
16. Will Caucasian women have better HPV knowledge levels than non-Caucasian women?
17. Will Caucasian women have better HPV knowledge levels than non-Caucasian women?

Hypothesis 1

Predictive hypothesis 1. The perceived physician HPV education effort scores of younger physicians will be higher than the perceived physician HPV education effort scores of older physicians.

Alternative hypothesis 1. The perceived physician HPV education effort scores of younger physicians will be lower than the perceived physician HPV education effort scores of older physicians.

Null hypothesis 1. There will be no difference in perceived physician HPV education effort scores of younger physicians and the perceived physician HPV education effort scores of older physicians.

Hypothesis 2

Predictive hypothesis 2. The perceived physician HPV education effort scores of female physicians will be higher than the perceived physician HPV education effort scores of male physicians.

Alternative hypothesis 2. The perceived physician HPV education effort scores of female physicians will be lower than the perceived physician HPV education effort scores of male physicians.

Null hypothesis 2. There will be no difference in perceived physician HPV education effort scores of female physicians and the perceived physician HPV education effort scores of male physicians.

Hypothesis 3

Predictive hypothesis 3. The perceived physician HPV education effort reported by Caucasian women will be higher than the perceived physician HPV education effort scores reported by non-Caucasian women.

Alternative hypothesis 3. The perceived physician HPV education effort scores reported by Caucasian women will be lower than the perceived physician HPV education effort scored reported by non-Caucasian women.

Null hypothesis 3. There will be no difference in perceived physician HPV education effort scores reported by Caucasian women and the perceived physician HPV education effort scores reported by non-Caucasian women.

Hypothesis 4

Predictive hypothesis 4. The perceived physician HPV education effort scores of women who report earning a higher education will be higher than the perceived

physician HPV education effort scores of women who do not report earning a higher education.

Alternative hypothesis 4. The perceived physician HPV education effort scores of women who report earning a higher education will be lower than the perceived physician HPV education effort scores of women who do not report earning a higher education

Null hypothesis 4. There will be no difference in perceived physician HPV education effort scores of women who report earning a higher education and the perceived physician HPV education effort scores of women who do not report earning a higher education.

Hypothesis 5

Predictive hypothesis 5. The HPV knowledge scores for Caucasian women will be higher than the HPV knowledge scores for non-Caucasian women.

Alternative hypothesis 5. The HPV knowledge scores for Caucasian women will lower than the HPV knowledge scores for non-Caucasian women.

Null hypothesis 5. There will be no difference in HPV knowledge scores for Caucasian women and the HPV knowledge scores for non-Caucasian women.

Hypothesis 6

Predictive hypothesis 6. The HPV knowledge scores for women who report earning a higher education will be higher than the HPV knowledge scores for women do not report earning a higher education.

Alternative hypothesis 6. The HPV knowledge scores for women who report earning a higher education will be lower than the HPV knowledge scores for women do not report earning a higher education.

Null hypothesis 6. There will be difference in HPV knowledge scores for women who report earning a higher education and the HPV knowledge scores for women who do not report earning a higher education.

Delimitations

This study was delimited to female employees at The Talbert House, a social service agency located in the Greater Cincinnati area. Participants had to be between the ages 18-65, and had to have received a Pap test within the past 18 months. Therefore, there will be limited generalizability of the findings.

Limitations

The study was limited in the following ways:

1. The results were based on self-reported responses that may be affected by participant's bias or honesty.
2. Being a survey-based study, recall was a potential problem.
3. Participants may not have fully understood or may have misinterpreted some questions, thereby misrepresenting their responses. However, it was expected that the face validity and test-retest reliability procedures used in developing the instrument would help remove any uncertainty in the survey wording.
4. The education level of the sample may not have been representative of the general population.

Assumptions

There were two assumptions regarding participation in this study. The first was that participants read and understood questions on the survey. The second assumption was that participants responded honestly and to the best of their ability.

Operational Definitions

HPV education effort. For purpose of this study HPV education effort was defined as the sum total of respondent's score on the 9 questions regarding physician education effort.

HPV knowledge score. For purpose of this study HPV knowledge score was defined as the total correct score on the ten multiple choice knowledge questions on the HPV knowledge survey.

Younger physicians. For purposes of this study, physicians that were reported to be under the age of 50 were classified as younger physicians.

Older physicians. For purposes of this study, physicians that were reported to be 50 years of age or older were classified as older physicians.

Higher education. For purposes of this study, women who reported earning an associate's degree, bachelor's, master's or doctorate were classified as women who reported earning a higher education.

Chapter 2

Review of the Literature

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge regarding testing, treatment, risk factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

Human Papillomavirus

According to the National Cancer Institute (NCI) the Human Papillomavirus (HPV) was a group of more than 100 strains of viruses (NCI 2006). They were termed Papillomavirus because certain strands caused warts, or appaloosas, which were noncancerous tumors. Certain HPVs caused the common warts that grew on hands or feet (NCI, 2006). However, over 30 strains of HPV were sexually transmitted. The American

Social Health Association (ASHA, 2005) reported that these strains infected the genital regions of men and women including the skin of the penis, vulva (the outside of the vagina), the linings of the vagina, cervix, and rectum, or anus.

There were two classifications of HPV strains, “low-risk” and “high risk”. Some “low-risk” strains lead to genital warts (papillomas). Genital warts usually appeared as soft, moist, pink, or flesh-colored swellings. They appeared flat, single, or multiple, small or large, and possibly cauliflower-shaped. After sexual contact with an infected person, warts appeared within weeks, months, or sometimes, not at all (NCI, 2006). Low risk strains rarely developed into cancer. Most people who became infected with “low-risk” strains of HPV never knew they were infected. Those who were infected may never have experienced any symptoms and the infections would clear on their own. HPV could lay dormant for several years without ever causing any cell abnormalities.

The other strains, “high-risk” strains, were more likely to lead to the development of cancer in the cervix, vulva, vagina, anus, or penis. In some cases of “high-risk” strains, a pregnant woman passed HPV to her baby during vaginal delivery. In such cases, a baby could have developed warts in the throat or voice box (Vulvar Health, 2001).

Both “low-risk” and “high-risk” strains could cause the growth of abnormal cells, but generally only the “high-risk” types led to cancer. However, the majority of “high-risk” HPV infections went away on their own and did not cause cancer (NCI, 2006).

The CDC (2004) reported HPV infection occurred in both male and female genital areas that were covered or protected by a latex condom, as well as in areas that were not covered. While the effect of condoms in preventing HPV infection was

unknown, condom use had been associated with a lower rate of cervical cancer, which was highly associated with HPV infection (CDC, 2004).

Prevalence of HPV

The exact number of number of cases of HPV in the U.S. was unknown. The estimated number of women infected with HPV ranged from 14% to 90%. In 2005, HPV was one of the most common sexually transmitted infections (STIs) in women of child-bearing age in the U.S. (Revzina & DiClemente, 2005). The CDC (2004) estimated 20 million people would be infected with HPV in 2005. The CDC also reported that at least 50 percent of sexually active men and women would acquire genital HPV infection at some point in their lives. By age 50, at least 80 percent of women had acquired a genital HPV infection. About 6.2 million Americans acquired a new genital HPV infection each year. Estimates suggested 75 percent of the reproductive age population had been infected with sexually transmitted HPV (CDC, 2004). Nearly three out of four Americans between the ages of 15 and 49 would be infected with genital HPV over the course of their lifetime (Couto & Dailard, 1999).

Linnehan and Groce (1999) found that college-aged women were one of the populations at greatest risk for contracting HPV. Ten to forty-six percent of female students between the ages of 20 and 22 using college health centers were infected over the course of one study as reported by the Guttmacher Institute. Linnehan and Groce (1999) reported that behavioral and psychosocial factors increased the risk of HPV infection. Risk factors associated with contracting HPV included smoking, using oral contraceptives, having multiple sexual partners, and engaging in sexual acts with partners who had been exposed to or had a history of HPV. Sellors and colleagues (2003) reported

changing sexual partners, having a history of herpes simplex virus, and a history of genital warts were also associated risk factors for HPV infection.

Couto and Dailard (1999) found another population to be at high risk. It was found that approximately 3.5 million American women who believed they were in a mutually monogamous relationship were at risk for HPV infection due to their partner's sexual history. The HPV virus could lay dormant for several years and be unknowingly transmitted to other partners several years later.

Prevention of HPV

HPV was spread through direct skin-to-skin contact, predominately sexual contact involving vaginal, oral, or anal sex. HPV could infect any genital region from the inner thigh to the cervix, making the virus easily transmitted even during condom-protected sex (Ireland, Reid, & Powell, 2005). Because condoms did not cover the entire genital region, they were not 100% effective in protecting against HPV. The American Cancer Society (2006), however, reported that if condoms were used 100% of the time, they could decrease a woman's risk of infection by 70% and protect her from developing precancerous cervical changes.

The American Cancer Society (2005) reported that the only known 100% effective method of protection from HPV was to refrain from any genital contact with another individual. For those choosing to engage in sexual activity, the safest method of protection against infection was to remain in a long-term, mutually monogamous relationship with a known uninfected partner. Beyond these methods, other ways to reduce risk included reducing number of sexual partners and only engaging in sexual

contact with “low-risk partners. People were less likely to be infected if they had no or few previous sexual partners (NCI, 2006).

The National Cancer Institute (NCI) (2006) reported that most women were diagnosed with HPV on the basis of abnormal Pap tests (also called a Pap smear). A Pap test was the primary cancer-screening tool for cervical cancer or pre-cancerous changes in the cervix, many of which were associated with HPV. A more complete discussion of Pap tests and their results can be found in the section of this paper on Cervical Cancer Prevention.

There was no "cure" for HPV infection. Once infected, a person remained infected. In most women, however, the infection went away on its own. The treatments provided were directed to the changes in the skin or mucous membrane caused by HPV infection, such as warts and pre-cancerous changes in the cervix (NCI, 2006).

Genital warts were diagnosed by visual inspection. The National Cancer Institute (2006) found genital warts were usually easily treatable. Those infected often used a self-applied medication or used treatments performed by a healthcare provider. Treatments included: freezing off warts with liquid nitrogen (cryotherapy); cutting off the warts, burning off the warts (electrocautery), laser therapy, and chemical treatments (trichloroacetic acid or Podophyllin) (ASHA, 2005). Some warts disappeared on their own and no treatment was needed. Some individuals choose to forego treatment to see if the warts would disappear on their own. No treatment regimen for genital warts was better than another and no one treatment regimen was ideal for all cases (NCI, 2006).

HPV was present in almost 100% of cervical cancers (Maissi et al., 2004). Of the 30 strains of HPV, two-thirds of these were classified as high-risk because of their

etiological association with cervical cancer. Some of these strains were more prevalent than others. HPV-16 accounted for 50% - 60% of cervical cancer cases globally, HPV - 18 accounted for 10% - 12% of cervical cancer cases globally, and HPVs 31 and 45 were the cause of 4% -5% global cervical cancer cases (Anhang et al., 2004).

Baer and colleagues (2000) found that cervical cancer was second only to breast cancer as a cause of cancer-related mortality in women worldwide. Incidence of cervical cancer related deaths was low in most countries; however there were a large number of reported cervical cancer cases globally, especially among older, Black women (Baer et al., 2000). In the U.S., reported cases of cervical cancer were relatively low. The American Cancer Society (2005) estimated that about 10,520 women developed invasive cervical cancer in 2004 and about 3,900 women died from this disease. This number was further decreasing every year, mainly due to secondary prevention measures.

Factors that increased risk of invasive cervical cancer among HPV positive women included: older age, long term use of oral contraceptives (five or more years), five or more full term pregnancies, smoking, and HIV infection (Anhang et al., 2004).

New HPV Vaccine

A HPV vaccination was approved in June of 2006. The vaccine protected against the two HPV types that cause most (70%) of cervical cancers (types 16 and 18), and the two HPV types that cause most (90%) genital warts (types 6 and 11). The vaccine did not protect against all types of HPV. The vaccine was given through a series of three injections over a six-month period. The second and third doses were to be administered two and six months after the first dose. The length of the vaccine immunity was not yet

known. Women who received the vaccine had shown immunity for five years and were still being followed (CDC, 2006).

The Federal Food and Drug Administration approved the HPV vaccine as safe and effective. The vaccine was tested in over 11,000 females (ages 9-26) in many countries around the world. No serious side effects had been detected. The most common side effect was soreness at the site of infection (CDC, 2006).

The vaccine was recommended for 11-12 year old girls, but could be given to girls as young as nine and as old as 26. Ideally, females received the vaccine before they were sexually active. The vaccine was found most effective in girls and women who had not yet acquired any of the HPV four vaccine types (16, 18, 6, and 11). These girls/women would receive the benefit from the vaccine. The vaccine was also recommended for 13-26 year-old girls/women who had not yet received or completed the vaccine series. They benefited less from the vaccine because they could have already acquired one of the HPV vaccine types, yet they would still get protection from the vaccine HPV types they had not yet acquired. It was rare that a female was infected with all four HPV types. These recommendations were released by the federal Advisory Committee on Immunizations Practices (ACIP). The ACIP advised the Centers for Disease Control and Prevention on vaccine issues (CDC, 2006).

More than eighteen states in the United States were considering making the HPV vaccination mandatory for girls entering middle or high schools. However, several conservative groups in the U.S. had publicly opposed this mandatory vaccination, stating it was a violation of parental rights. Socially conservative religious groups also opposed this vaccination, arguing that it would encourage promiscuity (Wikipedia, 2007).

Cervical Cancer

Cervical cancer was a disease in which malignant (cancer) cells formed in the tissues of the cervix. The cervix was in the lower, narrow part of the uterus (National Cancer Institute, 2006). Before cancer appeared in the cervix, abnormal cells (dysplasia) were present in the cervical tissue. When these abnormal cells in the cervix became malignant (cancerous), they spread more deeply into the cervix and to surrounding tissues.

Prevalence of cervical cancer. Cervical cancer was one of the most common cancers that affected a woman's reproductive organs (Mayo Clinic, 2007). The American Cancer Society (2006) estimated that in 2006, about 9,710 cases of invasive cervical cancer would be diagnosed in the United States. About 3,700 women would die from cervical cancer in the United States during 2006.

Cervical cancer was most prevalent in midlife. Fifty percent of women diagnosed were between the ages of 35 and 55. Cervical cancer was rare in women under the age of 20 (ACS, 2006). According the American Cancer Society (2006) "Cervical cancer occurred most often in Hispanic women; the rate was over twice that in non-Hispanic white women. African-American women developed this cancer about 50% more often than non-Hispanic white women".

Primary prevention. The National Cancer Institute (2006) stated that infection of the cervix with HPV was the most common cause of cervical cancer. Scientists believed that the HPV virus turned off the tumor suppressor gene. This allowed for uncontrolled growth of the cervical lining cells, which lead to cancer (ACS, 2006). However, the HPV vaccine protected against the two types of HPV that caused most (70%) of cervical

cancers (types 16 and 18). The vaccine was most effective if it was administered to girls/women who had not yet acquired the HPV (CDC, 2007). It was also thought that smoking produced cancer-causing chemicals that damaged the DNA of cervical cells and contributed to the development of cervical cancer (ACS, 2006). Other possible risk factors included: giving birth to many children, having many sexual partners, having first sexual intercourse at an early age, having other STIs, oral contraceptive use, and a weakened immune system (human immunodeficiency virus) (NCI, 2006).

Secondary prevention. A Pap test was a procedure in which cells were scraped from the cervix during routine gynecological visits. The sample was examined in a laboratory for abnormal-looking cells under a microscope. There were two classification systems for determining the lab results of a pap test. The system most commonly used in the U.S. was the Bethesda System. Table 2.1 describes the classification and descriptions used for abnormal cells as the Bethesda System classified them.

The National Cancer Institute (2006) also reported that the older, less commonly used classification system was called the Dysplasia scale. Dysplasia is a term used to describe abnormal cells. These cells may develop into very early cancer of the cervix. However, they do not invade nearby healthy tissues. There are four degrees of dysplasia: mild, moderate, severe, and carcinoma in situ. Carcinoma in situ is a term for cancerous cells found only on the surface of the cervix and has not spread to nearby tissues (NCI, 2006).

Table 2.1

Bethesda Classification System for Abnormal Cells

Name	Description
ASC- atypical squamous cells <ul style="list-style-type: none"> • ASC-US • ASC-H 	Thin, flat cells that form the surface of the cervix Atypical squamous cells- may be related to HPV Atypical squamous cells –may be at higher risk of being precancerous than ASC-US
AGC- atypical glandular cells	The mucus-producing cells in the endocervical canal or the lining of the uterus.
AIS- endocervical adenocarcinoma in situ	Precancerous cells found in the glandular tissue
LSIL- low-grade squamous cells intraepithelial lesions	Precancerous cells found in the glandular tissue
HSIL- high-grade squamous intraepithelial lesions	More severe abnormalities that may lead to cancer if left untreated

Note. From National Cancer Institute (2005). *Human papillomaviruses and cancer: questions and answers*. Retrieved November 14, 2005, from <http://www.cancer.gov/cancertopics/factsheet/Risk/HPV>

According to the National Cancer Institute (2006) when a Pap test had abnormal results, physicians generally repeated the procedure as a follow-up. Many times cell abnormalities would clear up on their own. If cells continued to have abnormal shapes, there were two standard procedures physicians usually performed. The first was a colposcopy. This was a procedure where an instrument called a colposcope was used to examine the vagina and cervix. A colposcope was similar to a microscope. A diluted vinegar solution was used to coat the cervix during this procedure that would cause abnormal cells to turn white. At this time, a physician could remove a small piece of tissue, called a biopsy, for further examination. Another procedure was the endocervical curettage. This procedure entailed using a curette, a small spoon-shaped tool, to scrape cells from the cervical canal. At this time, a biopsy could also be performed (NCI, 2006).

When lab results showed precancerous cells that were likely to develop into cancer, than further treatment was needed. There were four treatments options for removal of these cells. A loop electrosurgical excision procedure (LEEP) was a procedure that used an electrical current which passes through a thin wire loop to act as a knife. Another procedure, cryotherapy, destroyed abnormal tissue by freezing it. A third procedure used a narrow beam of intense light to destroy or remove abnormal cells, called laser therapy. Conization removed a cone-shaped piece of tissue using a knife, laser, or the LEEP technique (NCI, 2006). Table 2.2 describes the treatments used for cell abnormalities according to their classification from the National Cancer Institute (2006).

The general recommendation for when to receive a Pap test was approximately every three years. Pap tests should begin three years after first sexual intercourse or by the age of 21, whichever occurs first. The three-year waiting period was recommended to

avoid unnecessary treatment of abnormal cells. Cervical cancer was extremely rare in women under 25. Cell abnormalities were not rare, but most cleared up on their own (NCI, 2006).

The CDC (2004) found that 81% of women in the U.S aged 18 and older were following these recommendations for Pap tests, and approximately 50 million women had had a Pap test in the past three years. Of these 50 million women, approximately 3.7 million had been diagnosed with a cytological abnormality that had required further testing (CDC, 2004).

Between 1955, when the Pap test was introduced, and 1992, reported cases of cervical cancer decreased 74% (Couto & Dailard, 1999). Pap tests detected both pre-cancerous and cancerous cells on the cervix (NCI, 2006). Regular Pap testing and careful medical follow-up, with treatment if necessary, helped to ensure that pre-cancerous changes in the cervix caused by HPV infection did not develop into life threatening cervical cancer. The American Cancer Society (2005) credited the Pap test for greatly reducing the number deaths from cervical cancer. In 2004, the ACS estimated that 10,520 women would develop invasive cervical cancer and 3,900 of these cases would result in death. The ACS also stated that most women who developed invasive cervical cancer had not had regular cervical cancer screening (through Pap tests) and these deaths were preventable.

Tertiary prevention. Once cervical cancer had been diagnosed, there were several factors that affected the prognosis and treatment options.

Table 2.2

Pap test abnormalities, tests, and treatments

Pap Test Results	Abbreviations	Tests and Treatments
Atypical squamous cells- undetermined significance	ASC-US	-HPV Testing -Repeat Pap Test -Colposcopy and biopsy
Atypical squamous cells- cannot exclude HSIL	ASC-H	-Colposcopy and biopsy
Atypical Glandular cells	AGC	-Colposcopy and biopsy and/or endocervical curettage
Endocervical adenocarcinoma in situ	AIS	-Colposcopy and biopsy and/or endocervical curettage
Low-grade squamous intraepithelial lesion	LSIL	-Colposcopy and biopsy
High-grade squamous and/or endocervical	HSIL	-Colposcopy and biopsy -Further treatment with LEEP, cryotherapy, laser therapy, conization, or hysterectomy

Note. From National Cancer Institute (2005). *Human papillomaviruses and cancer: questions and answers*. Retrieved November 14, 2005, from <http://www.cancer.gov/cancertopics/factsheet/Risk/HPV>

According to the NCI (2006), the prognosis usually depended upon the stage of the cancer (whether it affected part of the cervix, or involved the whole cervix, or had spread to the lymph nodes or other places in the body), the type of cervical cancer, and the size of the tumor. Treatment options depended upon the stage of the cancer, the size of the tumor, the patient's desire to have children, and the patient's age.

Cervical cancer was diagnosed based on a staging system. The National Cancer Institute (2006) categorized the following four stages. Stage 0 was referred to as carcinoma in situ. In this stage, cancer was found only in the first layer of cells lining the cervix and had not invaded the deeper tissues of the cervix (National Cancer Institute, 2006).

In stage I, cancer was found in the cervix only. Stage I was divided into stages IA and IB, based on the amount of cancer that was found. In Stage IA a very small amount of cancer that can only be seen with a microscope was found in the tissues of the cervix. Stage IA was divided into stages IA1 and IA2, based on the size of the tumor. Stage IA1, the cancer was not more than 3 millimeters deep and not more than 7 millimeters wide. In stage IA2, the cancer was more than 3 but not more than 5 millimeters deep, and not more than 7 millimeters wide (National Cancer Institute, 2006).

In stage IB, cancer could only be seen with a microscope and was more than 5 millimeters deep or more than 7 millimeters wide, or could be seen without a microscope. Cancer that could be seen without a microscope was divided into stages IB1 and IB2, based on the size of the tumor. In stage IB1, the cancer could be seen without a microscope and was not larger than 4 centimeters. In stage IB2, the cancer could be seen without a microscope and was larger than 4 centimeters (National Cancer Institute, 2006).

In stage II, cancer had spread beyond the cervix but not to the pelvic wall or to the lower third of the vagina. Stage II was divided into stages IIA and IIB, based on how far the cancer has spread. In stage IIA cancer had spread beyond the cervix to the upper two thirds of the vagina but not to tissues around the uterus. In stage IIB cancer had spread beyond the cervix to the upper two thirds of the vagina and to the tissues around the uterus (National Cancer Institute, 2006).

In stage III, cancer had spread to the lower third of the vagina, may have spread to the pelvic wall, and/or had caused the kidney to stop working. Stage III was divided into stages IIIA and IIIB, based on how far the cancer had spread. In stage IIIA, cancer had spread to the lower third of the vagina but not to the pelvic wall. In stage IIIB, cancer had spread to the pelvic wall and/or the tumor had become large enough to block the ureters. This blockage could cause the kidneys to enlarge or stop working. Cancer cells may also have spread to lymph nodes in the pelvis (National Cancer Institute, 2006).

In stage IV, cancer had spread to the bladder, rectum, or other parts of the body. Stage IV was divided into stages IVA and IVB, based on where the cancer was found. In stage IVA, cancer had spread to the bladder or rectal wall and may have spread to lymph nodes in the pelvis. In stage IVB, cancer had spread beyond the pelvis and pelvic lymph nodes to other places in the body, such as the abdomen, liver, intestinal tract, or lungs (National Cancer Institute, 2006).

Treatment Options. The three standard treatment options for cervical cancer were surgery, external radiation, and chemotherapy. There were several surgical options for cancer treatment. Conization, or cone biopsy, was a procedure used to remove a cone-

shaped piece of tissue from the cervix and cervical canal. This surgery could be used in the diagnosis or the treatment of cervical cancer (National Cancer Institute, 2006).

A total hysterectomy was a surgical procedure used to remove the uterus, including the cervix. If the uterus and cervix were taken out through the vagina, the operation was called a vaginal hysterectomy. If the uterus and cervix were taken out through a large incision (cut) in the abdomen, the operation was called a total abdominal hysterectomy. If the uterus and cervix were taken out through a small incision in the abdomen using a laparoscope, the operation is called a total laparoscopic hysterectomy (National Cancer Institute, 2006).

A bilateral salpingo-oophorectomy was a surgical procedure to remove both ovaries and both fallopian tubes. A radical hysterectomy was a surgical procedure to remove the uterus, cervix, and part of the vagina. The ovaries, fallopian tubes, or nearby lymph nodes may also be removed. A pelvic exenteration was a surgical procedure to remove the lower colon, rectum, and bladder. In women, the cervix, vagina, ovaries, and nearby lymph nodes were also removed. Artificial openings (stoma) were made for urine and stool to flow from the body to a collection bag. Plastic surgery may be needed to make an artificial vagina after this operation (National Cancer Institute, 2006).

Less invasive procedures included cryosurgery. This was a treatment that used an instrument to freeze and destroy abnormal tissue, such as carcinoma in situ. This type of treatment was also called cryotherapy. Another non-invasive procedure was laser surgery. This was a surgical procedure that used a laser beam as a knife to make bloodless cuts in tissue or to remove a surface lesion such as a tumor. A Loop electrosurgical excision procedure (LEEP) was a treatment that uses electrical current passed through a thin wire

loop as a knife to remove abnormal tissue or cancer. This procedure was also used in the diagnosis of abnormal cells (National Cancer Institute, 2006).

A second treatment option was radiation therapy. This was a cancer treatment that used high-energy x-rays or other types of radiation to kill cancer cells. There were two types of radiation therapy. External radiation therapy used a machine outside the body to send radiation toward the cancer. Internal radiation therapy used a radioactive substance sealed in needles, seeds, wires, or catheters that were placed directly into or near the cancer. The way the radiation therapy was given depended upon the type and stage of the cancer being treated (National Cancer Institute, 2006).

Chemotherapy was the third treatment option. This was a cancer treatment that used drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. Chemotherapy could either be administered directly into the affected organ, called regional chemotherapy, or through the bloodstream, called systemic chemotherapy. The way the chemotherapy was given depended on the type and stage of the cancer being treated. (National Cancer Institute, 2006). Table 2.2 organizes pap test abnormalities, tests and treatments used according to the National Cancer Institute (2006).

Awareness and Knowledge of HPV and Cervical Cancer

Breitkopf and colleagues (2005) found that women undergoing cervical cancer screening stated that they were aware that they should be screened; however, they often lacked basic understanding of the process, limitations, and results of the Pap test. According to Anhang and colleagues (2003) a substantial body of literature had shown low lay awareness and knowledge of HPV. Little research had explored women's

questions and concerns about HPV or their attitudes towards HPV testing. McCaffery and Irwig (2005) stated that as a sexually transmitted infection, HPV may be strongly stigmatized and could therefore cause anxiety and distress among women who test positive.

Women with abnormal results. Studies of knowledge and understanding among women experiencing an abnormal Pap test found that women had insufficient knowledge about abnormal results and follow-up procedures such as colposcopy and that many were dissatisfied with the type and amount of information they received about their results.

In one Australian study, in-depth interviews were conducted with women who had received an HPV positive diagnosis (McCaffery & Irwig, 2005). None of the women had any awareness that HPV caused cell abnormalities that could have been detected in their Pap tests prior to diagnosis. Even after their consultations and treatments, they still had a poor understanding of HPV, how it was transmitted, and requested further information. The women believed that it was the physicians' responsibility to explain their diagnosis and make recommendations accordingly. Some participants in this study felt comfortable discussing their results with their doctor and reported that their doctor minimized the seriousness of their diagnosis. These same women reported feeling positive about their doctors involvement and being involved in the decision making process.

Other participants in this same study reported dissatisfaction with their physicians' style of information giving. These women reported feelings of patronization or their physician "patted them on the back". In these cases, women reported that their clinicians gave them limited information, avoided responding to certain questions, or

made them feel as though their concerns were not valid. These women also complained that their physician had not given them sufficient time to discuss the results. A small number of the participants went on to get a second opinion, visit their general practitioner, or seek out a specialized gynecologist (McCaffery & Irwig, 2005).

A Swedish study examined the relationship of screening compliance and women's knowledge finding that less than half of the women questioned believed that their lifestyle was of importance in developing dysplasia (Idestrom, Milsom, & Andersson-Ellstrom, 2002). Consequently, at least half of all women lacked knowledge about the connection between dysplasia and early sexual debut, number of sexual partners, use of oral contraceptives for more than 10 years, smoking, and HPV. Only 13% were aware that the use of a condom offered protection against dysplasia. This study also found that it was especially important to provide correct and well-balanced information to teenagers, as 30% of 18-year old women who had their sexual debut already had HPV in the cervix. The provision of information about lifestyle factors was important in order to give women the opportunity to act accordingly on this knowledge.

In this same study (Idestrom, Milsom, & Andersson-Ellstrom, 2002) while the woman believed they were well informed, their real knowledge about screening was rather poor. Only 62% of the women were aware that screening was for the specific detection of cervical cancer. This finding is in agreement with another Danish study where only 56% knew what type of gynecologic cancer the smear test was intended to detect. In addition to not knowing for which type of cancer they were being screened, the women were also unaware of the true meaning of an abnormal smear test, the natural history of dysplasia and that spontaneous regression of dysplasia often occurred.

Socioeconomic status. In a study regarding knowledge of the Pap test among low-income women, large percentages answered “don’t know” to the questions pertaining to colposcopy (63%) and HPV (54%) (Breitkopf, et al., 2005). These terms were commonly associated with abnormal Pap results. Large proportions (61%-73%) gave incorrect responses to questions pertaining to the purpose of the Pap test (i.e. checking ovaries, testing for sexual disease), blood testing for follow-up and the potentially transient nature of an abnormal result. Only one-half of respondents knew that a woman with an abnormal Pap smear might not have symptoms, while one-third incorrectly indicated that the purpose of the test was to treat cancer. The majority knew that the purpose of the Pap test was to check for cancer, that women with abnormal Pap results should tell their partner and may need more frequent testing, that an abnormal result does not necessarily mean that a woman has cancer and that follow-up for an abnormal result may include a repeat test (68%-89%) (Breitkopf et al., 2005).

According to Anhang and colleagues (2003) a substantial body of literature had shown low lay awareness and knowledge of HPV. Little research had explored women’s questions and concerns about HPV or their attitudes towards HPV testing. In this study, focus groups comprised of low-income and minority women were conducted. The study found that women’s primary questions about HPV dealt with transmission, prevention, treatment, and level of risk associated to cancer. Five major questions and themes arose from the groups: 1) Overestimation of cancer risk; 2) uncertain level of anxiety about HPV; 3) confusion about screening test results; 4) desire for a personalized risk profile; and 5) focus on HPV as an STD. The questions and themes of this focus group were

based on the findings from the American Social Health Association National HPV and Cervical Cancer Prevention Resource Center.

The focus groups from this study also identified three areas of confusion in HPV education. First, many women had difficulty understanding the difference between low-risk and high-risk strains of HPV. Second, many women were confused by the meaning of HPV test results compared with Pap test results. Third, many women were uncertain about how alarmed they should be regarding their HPV infection. This study concluded that effective HPV education must include information about transmission, prevention, treatment, and cervical cancer risk; tailor messages to describe HPV susceptibility according to age and risk profile; present clarification regarding HPV strains and consequences; offer explanations of different types of tests and their results; and provide a balance between accurate discussion of cancer risk and reassurance that following recommended screening practices will reduce risk to negligible levels (Anhang et al., 2003).

Race and/or ethnicity. According to Karasz and colleagues (2003) numerous studies reported that women, especially those in ethnic minority groups, had poor understandings of the results of abnormal pap tests. In this particular study, women were interviewed after receiving abnormal Pap results and following a colposcopy. One of the most consistent findings the authors reported was a high degree of distress after receiving the news of abnormal results from their physicians. This distress was associated with fears of cancer and shame from those who associated their diagnosis with sexual behavior. The authors also reported that when women did not understand their results it was often a result of poor communication from the physician or lack of physician

knowledge. In this particular study about one half of the women were dissatisfied with the care they received when they had an abnormal result. Women were initially reluctant to complain about their physicians. At the onset of the interviews when women were asked if they were satisfied with their physicians' care, most said yes. As the interviews progressed, it became evident that most physicians had not addressed important patient concerns. The authors reported that although women had discussed their fears of cancer, other concerns such as guilt associated with sexual behavior, diet or gynecological problems had not been addressed. Women were most frustrated when physicians treated their results with vagueness; women associated that with incompetence on the physicians' part. Others felt that the physician was implying it was not important to follow-up. Finally, a common theme throughout the interviews was that the physicians had not taken enough time to provide explanations about abnormal results or thoroughly discuss Pap tests purpose (Karasz et al., 2003)).

Breitkopf and colleagues (2005) reported that white women scored higher on HPV knowledge questions than Blacks and Hispanics according to their study. Scores also were higher among women who had more than a high school education as compared to their less educated counterparts. Interestingly, mean knowledge scores did not differ among women who had experienced an abnormal result, those who had not and those who had not had a prior Pap test. The data from this study revealed considerable knowledge deficits among socioeconomically disadvantaged women awaiting screening. The poor knowledge surrounding HPV found in this study and, similarly, in research conducted outside the U.S., suggested a need to improve women's understanding of the linkage between sexual behavior, HPV, Pap testing, and cervical cancer. Racial and

ethnic disparities had been identified in previous investigations of knowledge regarding cervical cancer screenings (Breitkopf et al., 2005).

In a study of minority adolescents and adult women who had had Pap tests, less than one-third could accurately identify that the purpose of the Pap test was to detect precancerous or cancerous cells (Anhang et al., 2003). This particular study included a series of focus groups with lower income and minority women in Massachusetts. In keeping with a review of the frequently asked questions at the American Social Health Association National HPV and Cervical Cancer Prevention Resource Center, the women in the focus groups were asked HPV questions on the following core areas: transmission, prevention and detection, treatment and progression without treatment, and risk of cervical cancer. Women in this study were interested in knowing that HPV was sexually transmitted, that transmission could occur through genital contact regardless of whether intercourse had taken place, and that condoms did not completely protect against transmission. Women also reported wanting to know the typical duration of HPV infection, how HPV spontaneously resolved itself, the likelihood of developing cancer, and the screening and follow-up treatments (Anhang et al., 2003).

Education. The knowledge deficits that were reported by Karasz and colleagues (2003) in this qualitative study suggested that women may not receive adequate information when they undergo a Pap test and when they are told they have an abnormal result. Other data suggested that women did not retain information given to them by clinicians. Unfortunately, patients with the greatest health care needs typically had the lowest functional health literacy levels. Clinicians tried to use laymen's terms and to encourage the most basic questions about Pap testing and cervical cancer to educate

vulnerable populations. This study found concerns about the pain and discomfort of the Pap test, a need for better communication between providers and patients, a desire for more information on the exam procedure, questions regarding the importance of the Pap test and a need for more information about the severity and treatment of abnormal results. These themes were reported in previous studies and suggested a continuing need to identify new mechanisms and opportunities for patient education (Karasz et al., 2003).

According to Waller and colleagues (2003), studies in the U.S. found low awareness of HPV among women in university and healthcare settings. Waller and colleagues (2003) also reported similar findings in the United Kingdom based on unpublished data. In the United Kingdom, 70% of female university employees surveyed had never heard of the virus and in a representative population sample, less than 1% recalled HPV as a risk factor for cervical cancer. Information about HPV had been found to cause confusion among women with no prior knowledge of the virus or its link with cervical cancer. Smear results which mention “wart virus” were poorly understood.

The participants in this study conducted by Waller and colleagues (2003) were women attending a well woman clinic. The participants were predominately young (mean age of 30), white, well educated and employed full time. Equal numbers of women were married/cohabitating and single. About 30% of women had heard of HPV. Awareness of HPV was higher in older than younger women. Women reporting a history of candida or genital warts had higher awareness of HPV, as did those who reported ever having an abnormal smear result. Awareness was lower in smokers than nonsmokers. Even among women who had heard of HPV, knowledge was poor. Given that this sample was highly educated, and there was evidence of poorer knowledge among less educated women, it is

likely that knowledge in the general population is even lower. The author of this study suggested that public education about HPV was essential, so that women participating in cervical screening could understand the possible results of the smear tests, particularly if HPV testing was introduced. Clear and consistent messages about HPV transmission, cancer risk, and protection needed to be developed so that women would be fully informed when they participated in cervical screening (Waller et al., 2003).

Age. Mass patient education was needed to accompany screenings to prevent anxiety and distress associated with HPV diagnosis. Anhang and colleagues (2004) reported that less than one-third of men and women in the general population had heard of HPV, and similarly reported low awareness had been reported among women in high school and college settings. Of those who had heard of HPV, few were aware that it was associated with cervical cancer, that it could be present without symptoms, or that HPV was sexually transmitted, even with condom use. In a review of existing research, Anhang and colleagues (2004) found that more than half of women surveyed at U.S. universities who did know about HPV did not know how it was transmitted. A recent survey of female students at U.S. universities reported that one-third of women under 18 knew they should have their first Pap test soon after first sexual intercourse. Of these women, less than one-third knew that Pap test abnormalities were associated with HPV.

Inglehue, Cottrell, & Bernard (2004) found that female students at a large Midwestern University engaged in high risk behaviors, possessed little knowledge of HPV, did not perceive themselves to be at high risk for HPV, and did not know the seriousness of HPV. Low condom usage was reported among the sexually active participants. However, it was found that women who got a Pap test every year were

significantly more knowledgeable regarding HPV than women who did not participate in an annual Pap test and women who had never received a Pap test.

Linnehan and Groce (1999) reported that in a large study of patients with HPV, a majority rated their provider as only fair to poor. Their greatest dissatisfaction stemmed from the provider's failure to offer advice on emotional issues, to ask questions about sexual practices, to supply written information and to provide a referral for more support.

Clinicians. Linnehan and Grace (1999) surveyed nurse practitioners and physicians in college-based health clinics regarding their perceived needs for psychosocial and educational interventions and their practices regarding their own services. The results of the study found that 95 % of respondents reported spending at least five minutes providing counseling and educational intervention to their patients regarding their HPV diagnosis; however, only 54% reported spending at least 10 minutes on such efforts. This number was significantly higher among nurse practitioners than physicians. Reported barriers to providing proper education were patients' low levels of HPV knowledge, high risk behaviors, lack of resources, time constraints, and burnout due to large numbers of HPV patients. Providers also reported that diagnosis resulted in feelings of anger, guilt, blame, and fear in their patients. Diagnosis also raised issues concerning self-image, sexuality and sexual functioning. Some providers admitted to lacking in personal education regarding the topic, low comfort levels, or lack of interest as barriers to presenting HPV education. Patients themselves were often too embarrassed to discuss the issue with their provider. It was found that nurse practitioners reported the strongest attitudes about the importance of counseling and providing educational interventions, however they reported facing the same barriers as physicians. The findings

of the study called for health providers to bridge the gap between necessary interventions and those that they were actually providing (Linnehan and Grace, 1999).

Davis, Williams, Marin, Parker, and Glass (2002) reported that clinicians also reported specific challenges when dealing with HPV testing and diagnosis. Clinicians most often reported encountering patients that were not knowledgeable about HPV, inaccurate information on HPV provided from non-medical sources, and limited time for patient counseling. The results of the study suggested the following guidelines for patient education: clinicians needed to take extra time to listen to patients' questions and concerns, use plain language when describing alternatives, risks, and benefits, provide written materials, provide a limited amount of information at each visit, and use a "teach back" approach, in which patients describe new information in their own words to ensure comprehension (Davis et al., 2002).

Summary

A review of the literature indicated a substantial body of knowledge that identified a lack of knowledge and understanding by women regarding HPV. There were deficits in awareness of HPV, understanding of the purpose of a Pap test, understanding of results of a Pap test, and implications of HPV. Little research had explored women's questions and concerns about HPV or their attitudes towards HPV testing.

Studies revealed considerable knowledge deficits among socioeconomically disadvantaged women. These women reported difficulty in understanding the difference between low-risk and high-risk strains of HPV. They were confused by the meaning of HPV test results compared with Pap results; and they were uncertain of how alarmed they should be regarding their HPV infection.

Racial and ethnic disparities had also been identified regarding cervical cancer screenings. It was reported that women in ethnic minority groups had poor understandings of abnormal Pap tests results. White women had higher knowledge scores than Blacks and Hispanics. Dissatisfaction was also reported by minority women with the care they received when they had an abnormal result.

Women who had more than a high school education had higher knowledge scores than their less educated counterparts. Patients with the greatest healthcare needs typically had the lowest functional health literacy.

A low awareness was reported in women of high school and college age. It was found that college-aged women were one of the populations at greatest risk for contracting HPV. This particular population did not know how HPV was transmitted or that Pap test abnormalities were associated with HPV.

There was also a deficit in physicians' efforts to educate women, along with women's inability to recall or understand information relayed to them. A common theme throughout the literature was that the physicians had not taken enough time to provide explanations about abnormal results or thoroughly discussed the Pap test's purpose. Reported barriers to providing proper education were patients' low levels of HPV knowledge, high risk behaviors, lack of resources, time constraints, and burnout due to large numbers of HPV patients.

The poor knowledge level surrounding HPV suggested a need to improve women's understanding of the linkage between sexual behavior, HPV, Pap testing and cervical cancer. Physicians and health education professionals needed to target educational efforts to women regarding HPV, Pap tests, cervical cancer, risk factors, and

preventive measures. Clear and consistent messages about HPV transmission, cancer risk, and protection needed to be developed so that women would be fully informed when they participated in cervical screenings. Mass patient education was needed to accompany screenings to prevent anxiety and distress associated with HPV diagnosis. There was a continuing need to identify new mechanisms and opportunities for patient education.

Chapter Three

Methods

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge among women regarding testing, treatment, risk factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

In chapter one, the problem, purpose, research questions, hypothesis, limitations, delimitations, and assumptions were presented. In chapter two, literature on HPV was reviewed regarding prevalence of the disease, transmission, testing, screening, risk factors, prevention, and the relationship to cervical cancer. Additionally women's awareness, knowledge levels, and physicians' educational efforts were reviewed. In this

chapter, the study subjects, instrumentation, procedures, and data analysis will be discussed.

Subjects

The participants of the study were female employees at the Talbert House in the Greater Cincinnati Area. The Talbert House was a community-wide nonprofit network of social services that focused on prevention, assessment, treatment, and reintegration of people with mental and behavioral health issues.. The agency employed approximately 1,000 residents of Cincinnati, Northern Kentucky, and Indiana. Approximately 50% of the Talbert House workforce was female. The Talbert House employee population was comprised of mostly white-collar workers. All female employees who had a gynecological exam in the past eighteen months and who were between the ages of 18-65 were asked to participate in this study.

Instrumentation

After a comprehensive review of the literature on knowledge and perceptions regarding HPV, a 33-item instrument was developed (Appendix A). The instrument used for this study was designed by the researcher in order to assess knowledge of HPV and Pap tests among women visiting private practice offices and their perceptions of their physicians' efforts to educate them on HPV and cervical cancer.

The knowledge portion of the questionnaire consisted of 10 multiple-choice items. Each question had one correct answer and three distracters. Each question could be scored as either correct or incorrect. The total number of correct responses provided the knowledge score for this instrument. The possible range of scores was from 0 to 10.

Nine questions were used to assess perceived physician HPV educational efforts. For example, one question assessed the perceived physician HPV education efforts and the purpose of a Pap test in relation to HPV. These questions were based on the scale of 1 to 4, with 1 meaning the topic was not at all mentioned or discussed, 2, the topic was mentioned, but not discussed, 3, the topic was discussed but with no opportunity for questions, and 4, the topic was discussed with detail and an opportunity for question was provided. The possible range of scores for perceived physician HPV educational efforts was 9 to 36. One additional question asked to give the physician an overall rating for their perceived HPV educational efforts; ranging from failing, poor, fair, good, and excellent.

Four questions addressed their last physician visit. These questions were pertaining to testing and vaccination services provided by the physician. The response choices were yes, no, or I don't know. The remaining nine questions addressed demographics of both the participant and the physician. One question was open-ended regarding participant's age. Three questions requested highest level of education completed, marital status, and race. There was one open-ended question regarding degree earned and highest level of education received. Two questions assessed smoking and use of hormonal contraceptives. There were two questions included regarding the physicians' age and sex. The survey was designed to answer research questions related to women's perception of the physicians' educational efforts and women's understanding of the information relayed to them; and to test hypotheses to determine if physicians' age or race, and the participant's educational attainment, age, or race impacted physicians' perceived educational efforts.

Content and face validity of the instrument was determined by using consensual validity via a panel of seven experts. Panel members included one gynecologist, two professors of health education, the director of nursing at Hamilton County General Health District, a medical professor from the Breast and Cervical program of Cincinnati, Ohio, one worksite wellness nurse, and a health educator who had experience in a family planning clinic. These professionals were selected based on their knowledge and experience regarding HPV and cervical cancer, and instrumental development. The panel was instructed to take the survey and each made corrective comments or suggestions regarding the appropriateness of the items on the research tool and how the survey was to be scored. Stability reliability of the instrument was established through the test-retest procedure (testing one week apart) using thirty women of similar demographics who worked at another social service agency, the Southwest Council on Aging. Results of the first and second testing were compared and correlated against one another to establish stability reliability. The Pearson correlation for overall knowledge score was .928 and .879 for the overall perceived physician HPV education effort score.

Procedures

The study was granted approval by the University of Cincinnati IRB, the internal Talbert House IRB, and by the researcher's graduate committee. All female employees at the Talbert House were sent an email explaining the survey and purpose of the research (Appendix B). They were invited to participate and given a date when the surveys would be distributed.

On the assigned date, all female employees were sent a hard copy of the survey instrument in the inter-office mail with a cover letter. The detailed cover letter explained

the importance of the survey and thanked the employees for their participation. The cover letter explained that submission of the survey indicated permission for participation in the study. It also assured employees that their responses would remain anonymous. The cover letter included instructions for return of the survey (Appendix C). Once the employee completed the survey, they were to place it in a locked box located in a lobby in front of Human Resources. The participants were able to collect one Dove dark chocolate candy for returning the survey.

Reminder emails were sent out to all female employees after one week. The email thanked those that had returned the original questionnaire and encouraged those who had not to please do so and included an attachment with the survey. The email urged employees to return the survey and repeated instructions on where to deposit it. They were notified that the surveys would again be collected in one week (Appendix D).

The reminder email was sent out again to all female employees at the end of two weeks thanking those that had participated. Again, the email encouraged those who had not completed one to do so, included an attachment with the survey and instructions. They were notified that the surveys would be collected at the end of the third week.

Data Analysis

The researcher collected all data, which was entered into a computer database in a password protected file. The system used was the Statistical Package for the Social Sciences (SPSS) on a Dell computer in a University of Cincinnati student computer lab. Frequencies and percentages were determined using the SPSS program. The SPSS program was also used to calculate Pearson correlation coefficients for parametric data and univariate ANOVAs were used to analyze the data. An alpha level of .05 significance

was utilized for all data analysis. Data was used to determine relationships among women's perceptions of the education they received from their physician regarding HPV.

Chapter Four

Results and Discussion

Human papillomavirus (HPV) was one of the most common sexually transmitted infections (STIs) in women of child-bearing age in the U.S. (Revzina & DiClemente, 2005). It was estimated that nearly three out of every four Americans between the ages of 15 and 49 would be infected with genital HPV over the course of their lifetime (Couto & Dailard, 1999). Human papillomavirus was present in almost 100% of cervical cancers (Maissi et al., 2004). Baer, Allen, and Braun (2000) reported that cervical cancer was second only to breast cancer as a cause of cancer-related mortality in women worldwide. Despite this growing epidemic, there was little knowledge and awareness of HPV among the general public. HPV was most often detected in abnormal Pap test results (National Cancer Institute [NCI], 2006). Women undergoing Pap tests, however, lacked basic knowledge about testing, abnormal results, and follow-up procedures (Anhang, et al., 2004).

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge among women regarding testing, treatment, risk factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients

and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

Chapter one of this thesis introduced the growing epidemic of HPV, how it is transmitted, prevalence, and at-risk populations. The lack of basic knowledge regarding testing and follow-up procedures was briefly discussed. The first chapter concluded with the research questions, hypotheses, delimitations, limitations, assumptions, and the operational definitions of the study. Chapter two presented a comprehensive review of the literature. The third chapter described the methods used in this study, and this chapter will discuss the results of the research.

Participation

The participants of the study were female employees at The Talbert House in the Greater Cincinnati Area. The Talbert House was a non-profit network of social services with over 40 programs that focus on preventions, assessment, treatment, and reintegration of people with mental and behavioral health issues. At the time of this study The Talbert House employed approximately 1,000 residents of Cincinnati, Northern Kentucky, and Indiana, with approximately 50% of the workforce being female. The Talbert House employee population was comprised of mostly white-collar workers. All female employees who had a gynecological exam in the past eighteen months and who were between the ages of 18-65 were asked to participate (N=559). One hundred twenty one

completed surveys were returned making the response rate 21.6%. However, to be included in the study, women had to have had a gynecological exam in the past 18 months. Twelve women were eliminated from the study because they did not meet the 18 month criteria. With 109 completed usable surveys, the final participation rate was 19.49%.

Overall the mean age of the participants was 42.3 with an age range of 18-65. The Talbert House employee population was 58.31% Caucasian and 40.25% African American. Within this study sample, 72.1% were Caucasian, 23.4% were African American, and 4.5% indicated they were in some other racial category. The participants' highest level of education completed ranged from high school to doctoral degrees. Thirty-eight percent of participants had completed a bachelor's degree and 30.6% had completed a master's degree. Thirty eight percent of the participants were married, 32.4% were single, and 14.4% were divorced. Sixteen percent the participants reported being a current smoker and 73.9% reported currently using a hormonal contraceptive (Table 4.1)

Research Questions and Hypothesis

Eleven research questions and six hypotheses were examined in this study. The findings related to each research question and each hypothesis are presented below.

Research question #1. "How do women rate their physician's educational efforts regarding HPV and the purpose of an HPV test?" Based on the data collected in this study it seems that physicians were not routinely providing information about HPV to their female patients. One question on the survey asked women to report on any HPV discussion their physician might have had with them at their last gynecological exam.

Table 4.1

Demographic profile of participants

Characteristic	N	%
Education		
High School	5	4.5
Some College	15	13.5
Associate's Degree	9	8.1
Bachelor's Degree	43	38.7
Master's Degree	34	30.6
Doctoral Degree	4	3.6
Marital Status		
Single	37	33.3
Married	42	37.8
Divorced	16	14.4
Engaged	7	6.3
Living with Significant Other	7	6.3
Other	2	.9
Race/Ethnicity		
White/Hispanic	82	73.9
African American	26	23.4
Native Hawaiian/Pacific Islander	1	.9
Other	1	.9

Table 4.1 (*continued*)*Demographic profile of participants*

Characteristic	N	%
Smoker		
Yes	18	16.2
No	91	82
Hormonal Contraceptive		
Yes	28	25.2
No	82	73.9

N= 109, % = Valid Percentage, Missing values excluded from analysis

Seventy-eight (71.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Eleven (10.1%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Five (4.6%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Fifteen (13.8%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #2. “How do women rate their physician’s educational efforts regarding the difference between an HPV test and a Pap test?” Based on the data collected in this study, physicians did not clearly educate their female patients on the difference between an HPV test and a Pap test. One question on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding the difference between an HPV test and a Pap test. Ninety (82.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Six (5.5%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Four (3.7%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Nine (8.3%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #3. “How do women rate their physician’s educational efforts regarding smoking as a risk factor associated with contracting HPV?” Based on the data collected in this study, physicians did not clearly educate their female patients on smoking as a risk factor associated with contracting HPV. One question on the survey asked women to report on any discussion their physician might have had with them at

their last gynecological exam regarding smoking and HPV. Ninety four (86.2%) of the 109 women responding reported that the topic was not at all mentioned or discussed.

Seven (6.4%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Zero (0%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Seven (6.4%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question # 4. “How do women rate their physician’s educational efforts regarding oral hormonal contraceptive use as a risk factor associated with contracting HPV?” Based on the data collected in this study, physicians did not clearly educate their female patients on use of oral hormonal contraceptive as a risk factor associated with contracting HPV. One question on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding oral hormonal contraceptive use and HPV. Ninety two (84.4%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Eleven (10.1%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Two (1.8%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Four (3.7%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #5. “How do women rate their physician’s educational efforts regarding HPV and safer sex?” Based on the data collected in this study, physicians did not clearly educate their female patients on HPV and safer sex. One question on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding safer sex practices in regards to HPV.

Eighty one (74.3%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Eleven (10.1%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Eight (7.3%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Nine (8.3%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #6. “How do women rate their physician’s educational efforts regarding HPV and sexual history/number of partners?” Based on the data collected in this study, physicians did not clearly educate their female patients on their sexual history and number of partners in relation to HPV. One question on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding their sexual history and number of partners related to HPV. Sixty eight (62.4%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Eighteen (16.5%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Five (4.6%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Eighteen (16.5%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #7. “How do women rate their physician’s educational efforts regarding risk factors associated with HPV and cervical cancer?” Based on the data collected in this study, physicians did not clearly educate their female patients on risk factors associated with HPV and cervical cancer. Three questions on the survey asked women to report on any discussion their physician might have had with them at their last

gynecological exam regarding sexual history and number of partners, smoking, and use of hormonal contraceptives as risk factors associated with HPV. Sixty eight (62.4%) of the 109 women responding reported that the HPV and sexual history/number of partners was not at all mentioned or discussed. Ninety four (86.2%) of the 109 women responding reported that the topic of smoking as a risk factor for HPV was not at all mentioned or discussed. Sixty eight (62.4%) of the 109 women responding reported that the topic of use of hormonal contraceptives as a risk factor was not at all mentioned or discussed.

Research question #8. “How do women rate their physician’s educational efforts regarding preventive measures for HPV?” Based on the data collected in this study, physicians did not clearly educate their female patients on preventive measures for HPV. One question on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding how to prevent HPV. Seventy seven (70.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Ten (9.2%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Eleven (10.1%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Eleven (10.0%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #9. “How do women rate their physician’s educational efforts regarding HPV and the new HPV vaccine?” Based on the data collected in this study, physicians did not clearly educate their female patients on the difference between an HPV test and the new HPV vaccine. One question on the survey asked women to report

on any discussion their physician might have had with them at their last gynecological exam regarding HPV and the new HPV vaccine. Eighty three (76.1%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Seven (6.4%) women of the 109 reported that the topic was mentioned, but not thoroughly discussed. Seven (6.4%) women reported that the topic was thoroughly discussed but with no opportunity for questions. Eleven (10.1%) of the women reported that the topic was thoroughly discussed and an opportunity for questions was provided.

Research question #10. “What overall score do women give their physician’s educational efforts regarding HPV?” One question on the survey asked women what score they would give their physician for their overall education efforts in regards to HPV. Forty one (37.6%) of the 109 women reported the score for his/her overall education effort related to HPV as failing. Twenty (18.3%) women of the 109 reported the score for his/her overall education effort related to HPV as poor. Fourteen (12.8%) women reported the score for his/her overall education effort related to HPV as fair. Twenty (18.3%) of the women reported the score for his/her overall education effort related to HPV as good. Seven (6%) of the women reported the score for his/her overall education effort related to HPV as excellent.

Research question #11. “How well educated were the women on HPV?” The survey instrument contained ten questions designed to measure women’s knowledge of HPV. The knowledge portion of the questionnaire consisted of 10 multiple-choice items, each with four responses including three distracters. Each question could be scored as either correct or incorrect. The total number of correct questions provided the knowledge score for this instrument. The possible range of scores was from 0 to 10.

Based on the data collected in this study, one (.9%) woman received a 0 knowledge score. Seven (6.4%) women received a 9 knowledge score. Zero (0%) women received a 10 knowledge score. The mean knowledge score was a 6.66 with twenty-eight women receiving this score (table 4.2).

Research question #12. “Will younger physicians provide better HPV education than older physicians?” This research question was answered by testing hypothesis #1 which predicted that, "The perceived physician HPV education effort scores of younger physicians will be higher than the perceived physician HPV education effort scores of older physicians."

Predictive hypothesis 1 results. Nine questions were used to assess perceived physician HPV educational efforts. These questions were based on the scale of 1 to 4, with 1 meaning the topic was not at all mentioned or discussed, 2, the topic was mentioned, but not discussed, 3, the topic was discussed but with no opportunity for questions, and 4, the topic was discussed with detail and an opportunity for question was provided. The possible range of scores for perceived physician HPV educational efforts was 9 to 36. For purposes of this study, younger physicians were classified as under the age of 50 and older physicians were classified as age 50 and above. This age classification was used by the Association of American Medical Colleges’ Center for Workforce Studies in 2006 (AAMC, 2006). The mean perceived physician HPV education effort score of younger physicians was 13.99 while the mean perceived physician HPV education effort score of older physicians was 11.86. Using a t-test, this difference of 2.13 was determined to be significant ($t_{102} = 1.44, p = .007$ {two-tailed}).

Table 4.2

Knowledge Score of Participants

Number of Correct Responses	N	%
0	1	0.9
1	1	0.9
2	1	0.9
3	6	5.5
4	10	9.2
5	15	13.8
6	28	25.7
7	21	19.3
8	19	17.4
9	7	6.4
10	0	0

Scores were based on 10 questions worth one point each. N= 109, % = Valid Percentage, Missing values excluded from analysis

Based on the results of this study, Null Hypothesis #1, which stated that there will be no difference in perceived physician HPV education effort scores of younger physicians and the perceived physician HPV education effort scores of older physicians was rejected.

Based on this data, it was concluded that there was a difference in perceived HPV education scores of younger physicians and perceived HPV education scores of older physicians. The perceived physician HPV education effort scores of younger physicians was higher than the perceived physician HPV education effort scores of older physicians.

Research question #13. “Will female physicians provide better HPV education than male physicians?” This research question was answered by testing hypothesis #2 which predicted that, “The perceived physician HPV education effort scores of female physicians will be higher than the perceived physician HPV education effort scores of male physicians.”

Predictive hypothesis 2 results. The mean perceived physician HPV education effort score for male physicians was 13.0 while the mean perceived physician HPV education effort score of female physicians was 13.34. Using a t-test, this difference of -.34 was determined not to be significant ($t_{103} = -.238, p = .813$ {two-tailed}). Based on the results of this study, Null Hypothesis #2, which stated that there will be no difference in the perceived physician HPV education effort scores of female physicians and the perceived physician HPV education effort scores of male physicians, was not rejected. Based on this data, it was concluded that there were no difference in perceived HPV education scores of female physicians and perceived HPV education scores of male physicians. Female physicians and male physicians scored about the same regarding their perceived HPV education efforts.

Research question #14. “Will Caucasian women report receiving better HPV education from their physician than non-Caucasian women?” This research question was answered by testing hypothesis #3 which predicted that, “The perceived physician HPV education effort reported by Caucasian women will be higher than the perceived physician HPV education effort scores reported by non-Caucasian women.”

Predictive hypothesis 3 results. The mean perceived physician HPV education effort score reported by Caucasian women was 13.54 while the mean perceived physician HPV education effort score reported by non-Caucasian was 12.15. Using a t-test, this difference of 1.39 was determined not to be significant ($t_{104} = .668, p = .506$ {two-tailed}). Based on the results of this study, Null Hypothesis #3, which stated there will be no difference in perceived physician HPV education effort scores reported by Caucasian women and the perceived physician HPV education effort scores reported by non-Caucasian women was not rejected. Based on this data, it was concluded that there were no differences in perceived HPV education scores reported by Caucasian women and non-Caucasian women. Caucasian women and non-Caucasian women reported their perceived physician HPV education efforts to be about the same.

Research question #15. “Will women who report earning a higher education report receiving better HPV education from their physician than women who do not report earning a higher education?” This research question was answered by testing hypothesis #4 which predicted that, “The perceived physician HPV education effort scores of women who report earning a higher education will be higher than the perceived physician HPV education effort scores of women who do not report earning a higher education.”

Predictive hypothesis 4 results. For purposes of this study, women who reported the highest level of education they earned as being grade school, high school, or some college were classified as women who did not report earning a higher education. Women who reported earning an associate's degree, bachelor's, master's or doctorate were classified as women who did report earning a higher education. The mean perceived physician HPV education effort scores of women who report earning a higher education were 13.10 while the mean perceived physician HPV education effort scores reported by women who did not report earning a higher education were 13.48. Using a t-test, this difference of .38 was determined not to be significant ($t_{103} = .236, p = .814$ {two-tailed}). Based on the results of this study, Null Hypothesis #4, which stated there will be no difference in perceived physician HPV education effort scores of women who report earning a higher education and the perceived physician HPV education effort scores of women who do not report earning a higher education was not rejected. Based on this data, it was concluded that there were no difference in perceived physician HPV education scores reported by women who report earning a higher education then women who do not report earning a higher education. Women who report earning a higher education and women who do not report earning a higher education reported about the same regarding their perceived physician HPV education efforts.

Research question #16. "Will Caucasian women have better HPV knowledge levels than non-Caucasian women?" This research question was answered by testing hypothesis #5 which predicted that, "The HPV knowledge scores for Caucasian women will be higher than the HPV knowledge scores for non-Caucasian women."

Predictive hypothesis 5 results. The mean HPV knowledge score for Caucasian women was 6.23 while the HPV knowledge scores for non-Caucasian women was 5.89. Using a t-test, this difference of .34 percentage points was determined not to be significant ($t_{106} = .872$, $p = .385$ {two-tailed}). Based on the results of this study, Null Hypothesis #5 which stated that there will be no difference in HPV knowledge scores for Caucasian women and the HPV knowledge scores for non-Caucasian women was not rejected. It was concluded that there were no difference between the HPV knowledge scores for Caucasian women and HPV knowledge scores for non-Caucasian women. Caucasian women and non-Caucasian women demonstrated similar HPV knowledge scores.

Research question #17. “Will women who report earning a higher education have better HPV knowledge scores than women who do not report earning a higher education?” This research question was answered by testing hypothesis #6 which predicted that, “The HPV knowledge scores for women who report earning a higher education will be higher than the HPV knowledge scores for women do not report earning a higher education.”

Predictive hypothesis 6 results. For purposes of this study, women who reported the highest level of education they earned as being grade school, high school, or some college were classified as women who did not report earning a higher education. Women who reported earning an associate’s, bachelor’s, master’s or doctorate were classified as women who did report earning a higher education. Those women who reported earning a higher education scored an average of 6.44 on the HPV knowledge question section while those women who did report earning a higher education scored an average of 5.25 on the

HPV knowledge section. Using a t-test, this difference of 1.194 percentage points was determined to be significant ($t_{107} = 3.195$, $p = .002$ {two-tailed}). Based on the results of this study, Null Hypothesis #6 There will be no difference in HPV knowledge scores of women who report earning a higher education and the HPV knowledge scores of women who did not report a higher education was rejected. It was therefore concluded that differences in HPV knowledge section scores do exist between women who report earning a higher education and those women who did not report earning a higher education. Women who report earning a higher education scored better on the HPV knowledge question section than those women who did not report earning a higher education.

While conducting the data analysis, another finding emerged. For purposes of this study, single women was defined as single, engaged, or divorced. Married women was defined as married, widowed, or other. An additional independent t-test was conducted on the perceived physician HPV education effort scores of single women and the perceived physician HPV education effort scores of married women. The single women reported an average perceived physician HPV education effort score of 15.05 while the married women reported an average perceived physician HPV education effort score of 10.90. Using a t-test, this difference of 4.15 was determined to be significant ($t_{108} = 3.01$, $p = .003$ {two-tailed}). Based on this data, it was concluded that there was a difference in perceived HPV education scores of physicians as reported by single women and perceived HPV education scores of physicians as reported by married women. The perceived physician HPV education effort scores for physicians as reported

by single women was higher than the perceived physician HPV education effort scores as reported by married women.

Discussion

Overall women in this study did not feel that their physicians educated them well related to testing for HPV and cervical cancer, risk factors associated with contracting HPV, and preventive measures associated with HPV. Participants reported that their physician did not address or discuss HPV and cervical cancer related topics at all during their annual visit when asked to rate each topic individually. However, the participants in this study were also hesitant to give their physician a failing or poor score for their overall perceived HPV and cervical cancer educational efforts.

This study found that women perceived younger physicians to provide more education regarding HPV and cervical cancer than older physicians. It was also found that married women did not receive as much education from their physicians on the topic of HPV and cervical cancer as single women. Another finding was that women in this study who had earned a higher education knew more about HPV and cervical cancer than women who had not earned a higher education.

The race and/or ethnicity of the women in this study did not report different perceived HPV and cervical cancer educational efforts by their physicians. Women in this study who had earned a higher education also did not report different perceived educational efforts by their physician than women who did not earn a higher education.

Chapter Five

Conclusions and Recommendations

Human papillomavirus (HPV) was one of the most common sexually transmitted infections (STIs) in women of child-bearing age in the U.S. (Revzina & DiClemente, 2005). It was estimated that nearly three out of every four Americans between the ages of 15 and 49 would be infected with genital HPV over the course of their lifetime (Couto & Dailard, 1999). Human papillomavirus was present in almost 100% of cervical cancers (Maissi et al., 2004). Baer and colleagues (2000) reported that cervical cancer was second only to breast cancer as a cause of cancer-related mortality in women worldwide. Despite this growing epidemic, there was little knowledge and awareness of HPV among the general public. HPV was most often detected in abnormal Pap test results (National Cancer Institute [NCI], 2006). Women undergoing Pap tests, however, lacked basic knowledge about testing, abnormal results, and follow-up procedures (Anhang et al., 2004).

The purpose of this study was to determine women's knowledge of HPV and their perceptions of the education they received from their physician regarding the purpose of a Pap test, explanation of Pap test results, and how effectively the physician explained associations between HPV and cell abnormalities, cervical cancer, risk factors, and preventive measures. This study was needed due to the increased number of Human Papillomavirus infections and the lack of knowledge among women regarding testing, treatment, risk factors, and preventive measures. This study focused on the educational efforts of physicians and the knowledge levels of patients. This study was different from other studies in that it scored physicians' education efforts as perceived by their patients

and measured patients' understanding of such efforts. This study was designed to identify and fill a possible void in the literature regarding HPV and physician education efforts. The results of this study benefited health education professionals and health care professionals by targeting potential gaps in education for future health promotion efforts. Information from this study could be used to help increase and promote dialogue between physicians and their patients.

Chapter one of this thesis defined HPV and the sexually transmitted strains of the virus. The growing epidemic of HPV was introduced, how it is transmitted, prevalence of the virus among the general population, and specific at-risk populations. The lack of basic knowledge regarding testing and follow-up procedures was briefly discussed, especially among low-income and minority women. The barriers for physicians providing adequate education to their patients was also introduced. The first chapter concluded with the purpose statement, research questions, hypotheses, delimitations, limitations, assumptions, and the operational definitions of the study.

Chapter 2 presented a review of the literature regarding HPV and cervical cancer. Background information regarding prevalence of HPV, prevention, and vaccination was discussed. Cervical cancer was then defined, followed by primary, secondary, and tertiary prevention. Treatment options for cervical cancer was presented at-length. Awareness and knowledge levels of women regarding HPV and cervical cancer was presented. Specifically, lack of knowledge in women with abnormal test results, with low socioeconomic status, racial disparities, and differing education levels was reviewed. Barriers for physicians providing adequate HPV education to their patients were identified.

Chapter 3 discussed the research methods used in this study. More specifically, it presented a thorough overview of the study participants, including the agency where the study was conducted and the population of the worksite. The instrument was discussed at-length, including the scales of measurement developed and possible ranges of scores. The content validity, face validity, and stability- reliability were presented. This chapter described procedures for survey distribution and collection and data analysis.

Chapter 4 presented the results of the research questions and hypothesis. The final participation rate and demographics were presented. The results of each research question and hypothesis was discussed at-length, including if the null hypothesis was rejected.

This chapter will provide conclusions, a discussion of findings, recommendations for practice, recommendations to improve research, and recommendations for future research.

Conclusions

The participants of the study were female employees at The Talbert House in the Greater Cincinnati Area. The Talbert House was a non-profit network of social services with over 40 programs that focus on preventions, assessment, treatment, and reintegration of people with mental and behavioral health issues. At the time of this study The Talbert House employed approximately 1,000 residents of Cincinnati, Northern Kentucky, and Indiana, with approximately 50% of the workforce being female. The Talbert House employee population was comprised of mostly white-collar workers. All female employees who had had a gynecological exam in the past eighteen months and who were between the ages of 18-65 were asked to participate (N=559). One hundred twenty one completed surveys were returned making the response rate 21.6%. However, to be

included in the study, women had to have had a gynecological exam in the past 18 months. Twelve women were eliminated from the study because they did not meet the 18 month criteria. With 109 completed usable surveys, the final participation rate was 19.49%.

Eleven research questions and six hypotheses were examined in this study. The research questions asked women about information physicians were providing regarding HPV, testing for HPV and cervical cancer, risk factors associated with contracting HPV, and preventive measures associated with HPV. Based on the data collected in this study it seems that physicians were not routinely providing information about HPV to their female patients. Seventy-eight (71.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed. It also seems that physicians did not clearly educate their female patients on the difference between an HPV test and a Pap test. Ninety (82.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed.

Physicians did not clearly educate their female patients on risk factors associated with HPV and cervical cancer. Three questions on the survey asked women to report on any discussion their physician might have had with them at their last gynecological exam regarding sexual history and number of partners, smoking, and use of hormonal contraceptives as risk factors associated with HPV. All three response rates had a high percentage of women reporting that the topic was not at all mentioned or discussed. Ninety four (86.2%) of the 109 women responding reported that smoking as a risk factor associated with contracting HPV was not at all mentioned or discussed. Ninety two

(84.4%) of the 109 women responding reported that use of oral hormonal contraceptive as a risk factor associated with contracting HPV was not at all mentioned or discussed.

It appears that physicians did not clearly educate their female patients on HPV and safer sex. Eighty one (74.3%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Participants reported that they were not clearly educated by their physicians on sexual history and number of partners in relation to HPV. Sixty eight (62.4%) of the 109 women responding reported that the topic was not at all mentioned or discussed. Physicians also did not clearly educate their female patients on preventive measures for HPV. Seventy seven (70.6%) of the 109 women responding reported that the topic was not at all mentioned or discussed.

Despite the low scores women gave their physicians related to specific aspects of HPV and cervical cancer education, only half rated their physician's educational efforts as failing or poor. One question on the survey asked women what score they would give their physician for their overall education efforts in regards to HPV. Forty one (37.6%) of the 109 women reported the score for his/her overall education effort related to HPV as failing. Twenty (18.3%) women of the 109 reported the score for his/her overall education effort related to HPV as poor. Fourteen (12.8%) women reported the score for his/her overall education effort related to HPV as fair. Twenty (18.3%) of the women reported the score for his/her overall education effort related to HPV as good. Seven (6%) of the women reported the score for his/her overall education effort related to HPV as excellent.

Six hypotheses were tested using independent t-tests. Results indicated no difference in perceived HPV education scores reported by Caucasian women and non-Caucasian women or women who reported earning a higher education and women who did not report earning a higher education. It was also found that there were no differences in perceived HPV education effort scores of male or female physicians. However, the perceived HPV education effort scores of younger physicians was higher than the perceived HPV education effort scores of older physicians.

Results related to knowledge scores indicated that there were no difference between the HPV knowledge scores for Caucasian women and HPV knowledge scores for non-Caucasian women; however, women with higher education levels scored better on the HPV knowledge questions than women who had lower education levels.

While conducting the data analysis, another finding emerged. It was found that perceived HPV education scores of physicians as reported by engaged, single, and divorced women were higher than perceived HPV education scores of physicians as reported by married, widowed, and other women. In other words, physicians did a better job educating single women who might be considered to be a higher risk than married women who might be considered to be a lower risk.

Discussions

Breitkopf and colleagues (2005) found that women undergoing cervical cancer screening stated that they were aware that they should be screened; however, they often lacked basic understanding of the process, limitations, and results of the Pap test. Results from this study demonstrated consistent findings. When asked about their physician's educational efforts regarding HPV and the purpose of an HPV test, seventy-one percent

reported that the topic was not at all mentioned or discussed. When asked to rate their physician's educational efforts regarding the difference between an HPV test and a Pap test, 82% reported that the topic was not at all mentioned or discussed. Anhang and colleagues (2003) reported many women were confused by the meaning of HPV test results compared with Pap test results. This might suggest that women were confused by the meaning of HPV test results compared with Pap test results because their physicians had not discussed this difference with them.

Results from the current study found that physicians were not discussing risk factors for HPV with their patients. Linnehan and Groce (1999) reported that behavioral and psychosocial factors increased the risk of HPV infection. Risk factors associated with contracting HPV included smoking, using oral contraceptives, having multiple sexual partners, and engaging in sexual acts with partners who had been exposed to or had a history of HPV. The survey asked women if they had any discussion with their physician regarding smoking, use of oral hormonal contraceptives, and their sexual history/number of partners as three separate questions and were asked to rate their physician on their educational efforts. Eighty-six percent of the women reported that smoking as a risk factor for HPV was not at all mentioned or discussed, 84% of the women reported that use of oral hormonal contraceptives was not at all mentioned or discussed, and 62% of the women reported that sexual history/number of partners was not at all mentioned or discussed. This finding seems consistent with a Swedish study that examined the relationship of screening compliance and women's knowledge finding that less than half of the women questioned believed that their lifestyle was of importance in developing dysplasia (Idestrom et al., 2002). Consequently, at least half of all women lacked

knowledge about the connection between dysplasia and early sexual debut, number of sexual partners, use of oral contraceptives for more than 10 years, smoking, and HPV.

Ingledue et al (2004) found that female students at a large Midwestern University engaged in high risk behaviors, possessed little knowledge of HPV, did not perceive themselves to be at high risk for HPV, and did not know the seriousness of HPV. Low condom usage was reported among the sexually active participants. One question in this study asked women to rate their physician's educational efforts regarding HPV and safer sex. Seventy-four percent of the women reported that the topic was not at all mentioned or discussed. Another question on the survey asked women to rate their physician's educational efforts regarding preventive measures for HPV. Seventy percent of the women reported that the topic was not at all mentioned or discussed. When women were asked to rate their physician's educational efforts regarding the new HPV vaccine, 76% of the women reported that the topic was not at all mentioned or discussed.

One interesting finding in this study was that although the majority of women indicated that their physicians had not even mentioned HPV topics, only 37% of the women evaluated their physician's educational efforts regarding HPV as failing, with another 18% reporting an overall score of poor. Eighteen percent of the women reported an overall score of good. It seems some of these women were reluctant to give their physicians a failing or poor score even though these women reported that the physicians had not provided them with HPV information.

The results of this study indicated that the perceived HPV education effort scores of younger physicians were higher than the perceived HPV education effort scores of older physicians. For purposes of this study, younger physicians were classified as under

the age of 50 and older physicians were classified as age 50 and above (Association of American Medical Colleges, 2006). Perhaps younger physicians may have been exposed to this information more than older physician while in medical school. It is also possible that younger physicians may have felt more comfortable talking about these subjects with their patients than older physicians. While physician age was seen as a factor related to HPV education efforts, gender was not a factor. Female physicians and male physicians scored about the same regarding their perceived HPV education efforts.

Breitkopf and colleagues (2005) reported that white women scored higher on HPV knowledge questions than Blacks and Hispanics according to their study. This finding was not supported in the current study. There was not a difference in perceived HPV education scores between Caucasian women and non-Caucasian women. Similarly there was no difference in perceived HPV education scores reported between Caucasian women and non-Caucasian women in this study. Both groups seem to receive about the same HPV information from their physicians. It is important to note that most of the women in this study were fairly well educated. Education may counter the negative aspect of racism in the Breitkopf et. al. study.

Breitkopf and colleagues (2005) reported that women who had more than a high school education scored higher on HPV knowledge questions as compared to their less educated counterparts. This study corroborated these findings. Women who reported earning a higher education scored higher for HPV knowledge than did women who did not report earning a higher education..

The results of this study found that there was no difference in perceived HPV education scores reported by women who had higher education levels than women who

had lower education levels. Physicians seemed to provide the same level of HPV education to their patients without regard to the patient's education levels.

One finding that emerged was that the perceived HPV education effort scores for physicians as reported by single women was higher than the perceived HPV education effort scores as reported by married women. For purposes of this study, single women was defined as single, engaged, and divorced. Married women was defined as married, widowed, or other. It was found that the perceived HPV education effort scores for physicians as reported by single women was higher than the perceived HPV education effort scores as reported by married women. This indicates that physicians may have made a judgment that married women did not need this information. This finding was significant as Couto and Dailard (1999) found that approximately 3.5 million American women who believed they were in a mutually monogamous relationship were actually at risk for HPV infection due to their partner's sexual history. The HPV virus could lay dormant for several years and be unknowingly transmitted to other partners several years later.

Recommendations

Recommendations for practice. Based on the results of this study, physicians need to improve the education they provide women patients regarding HPV infection, HPV risk factors, HPV and cervical cancer, HPV vaccine, and the difference between HPV and Pap tests. This is important information women need to know and physicians need to provide. Improved communication is needed between health care providers and their patients concerning these important topics. Clear and consistent messages about HPV

transmission, cancer risk, and protection need to be developed so that women can be fully informed when they participate in risky behaviors and receive Pap screenings.

Educational campaigns need to tailor messaging to women with lower education levels and high-risk populations. Effective HPV education must include information about transmission, prevention, treatment, and cervical cancer risk. Messages should be tailored messages to describe HPV susceptibility according to age and risk profile; present clarification regarding HPV strains and consequences; offer explanations of different types of tests and their results; and provide a balance between accurate discussion of cancer risk and reassurance that following recommended screening practices will reduce risk to negligible levels (Anhang et al., 2003).

Barriers that hinder physicians from providing adequate HPV knowledge should be identified and addressed. Reported barriers to providing proper education were patients' low levels of HPV knowledge, high sexual risk behaviors, lack of resources, time constraints, and burnout due to large numbers of HPV patients (Linnehan and Grace, 1999). Providers also reported that diagnosis resulted in feelings of anger, guilt, blame, and fear in their patients. Diagnosis also raised issues concerning self-image, sexuality and sexual functioning. Some providers admitted to lacking personal education on HPV, low comfort levels, or lack of interest as barriers. Patients themselves were often too embarrassed to discuss the issue with their provider. It was found that nurse practitioners had the most positive attitudes toward HPV counseling and providing educational interventions, however they reported facing the same barriers as physicians (Linnehan and Grace, 1999). Physicians should be provided with education to increase their comfort levels and personal knowledge on the topic as well as messaging to provide to

patients. Efforts should target older physicians who received significantly lower perceived HPV education effort scores in this study.

Recommendations for improving this research. There are several changes that could be made to improve this study. It would be an advantage to obtain a larger sample. The response rate was fairly low, just below 20%. One recommendation for a higher response rate would be for Human Resources to distribute a letter of support for participation or offer incentives for completed surveys.

This research could benefit from a more representative sample. The population at the worksite was all fairly well educated. One recommendation for a more diverse sample would be to repeat this study in a worksite where employees had a much broader range of educational levels. This study could also be repeated in different geographic locations to determine if similar results were obtained from different locations.

Another recommendation to improve this research would be to include a question on the instrument regarding socioeconomic status. Participants could report annual income and number of family members in the household. This may allow for data on SES and perceived physician HPV education efforts.

Recommendations for future research. It was very difficult to get approval to conduct this study at a worksite. At one point, a worksite was identified and approval was granted only to be pulled one day before implementation. The researcher contacted many major worksites within the Greater Cincinnati area and all refused to participate. There were concerns that questions about these personal issues would be offensive to some employees. Future research may want to identify worksites in a less conservative area of

the country or spend more time cultivating relationships with decision makers in larger corporations prior to proposing the research.

This study focused on how the patients perceived their physician's education efforts. Future research could examine physicians and the barriers that exist to providing patients with adequate education.

Another recommendation would be to distribute this survey immediately after a physical so the women could rely less on memory. This would minimize the memory limitation of the study.

Future research should also examine the factors of this study on a random, nationwide sample of individuals in similar worksite settings. This would allow for greater generalization of results and comparisons across different cities and or regions of the country.

In June, 2006, the Food and Drug Administration announced the approval of Gardasil, the first vaccine developed to prevent cervical cancer. Gardasil is manufactured by Merk & Co., Inc. (FDA, 2006). Since the approval and release of the vaccine, Merk has implemented several media campaigns raising awareness for HPV and cervical cancer. This may prompt women to learn more about testing and dialogue with their physicians. This same survey could be repeated after the media efforts to see if there has been a change in HPV knowledge levels.

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Appendix A

**HPV Survey
University of Cincinnati
Division of Health Promotion and Education**

This first set of questions are regarding your last pelvic exam.

Directions: Please check the most appropriate answer that applies to you for the following questions. Thank you for your participation.

- 1) Have you had a pelvic exam in the past 18 months?
☐ Yes (**Continue with the survey**)
☐ No (**You do not need to complete the rest of the survey – please turn your survey in now**)
- 2) At your last pelvic exam, did you have a Pap test?
☐ Yes
☐ No
☐ I don't know or can't remember
- 3) At your last pelvic exam, were you tested for any sexually transmitted infections?
☐ Yes
☐ No
☐ I don't know or can't remember
- 4) At your last pelvic exam, did your physician ask you if you would like the new HPV Vaccine?
☐ Yes
☐ No
☐ I don't know or can't remember

This next section of questions is regarding your knowledge of sexual health.
Directions: Please circle the best answer to the following multiple choice questions.
Please answer each question to the best of your ability. If you do not know the answer to a question, please leave that question blank.

- 1) A Pap test screens for
 - a) Sexually transmitted infections
 - b) Cervical cancer
 - c) Bacterial Infection
 - d) Ovarian cancer
- 2) The risk of contracting HPV can be reduced with the use of
 - a) male condoms
 - b) oral contraceptives
 - c) female condoms
 - d) an IUD (Inter Uterine Device)
- 3) Existing cases of HPV are treated with
 - a) antibiotics
 - b) surgery
 - c) there is no treatment for HPV
 - d) the new HPV vaccine
- 4) Which of the following is NOT a risk factor associated with HPV
 - a) smoking
 - b) using oral contraceptives
 - c) being overweight
 - d) having multiple sexual partners
- 5) HPV is most often detected by
 - a) the result of an abnormal Pap test
 - b) the appearance of itchy, red bumps
 - c) a thin, watery discharge
 - d) spotting between periods
- 6) The HPV vaccine is recommended for females in which of the following age ranges?
 - a) Age 9 through age 26
 - b) Age 18 through age 21
 - c) Age 11 through age 12
 - d) Birth through post menopausal age

- 7) The most common cause of cervical cancer is?
 - a) Sexually transmitted infections
 - b) Family history
 - c) Using oral contraceptives
 - d) HPV
- 8) HPV is most commonly transmitted through:
 - a) Airborne illness
 - b) Hand-to-hand contact
 - c) The use of tampons
 - d) Sexual contact
- 9) Approximately how often is it recommended for a woman to receive a pelvic exam?
 - a) Every six months
 - b) Every year
 - c) Every other year
 - d) Every three years
- 10) Which of the following treatments are NOT used for treating precancerous cells?
 - a) Loop Electrosurgical Excision Procedure (LEEP)
 - b) Conization
 - c) Steroids
 - d) Laser therapy

This next section is regarding information your doctor may or may not have provided at your last visit to a gynecologist.

Directions: Please circle the most appropriate answer based on the extent to which your physician discussed each of the following topics using the responses below:

1= the topic was not at all mentioned or discussed.

2=the topic was mentioned, but not thoroughly discussed.

3=the topic was thoroughly discussed but with no opportunity for questions.

4=the topic was thoroughly discussed and an opportunity for questions was provided.

1) Your sexual history and number of sex partners related to HPV.	1	2	3	4
2) The purpose of an HPV test.	1	2	3	4
3) The difference between a Pap test and an HPV test.	1	2	3	4
4) Smoking as a risk factor associated with contracting HPV.	1	2	3	4
5) Oral hormonal contraceptive use as a risk factor associated with contracting HPV.	1	2	3	4
6) Safer sex practices in relation to HPV.	1	2	3	4
7) The relationship between HPV and cervical cancer.	1	2	3	4
8) How to prevent HPV.	1	2	3	4
9) The new HPV Vaccine.	1	2	3	4
10) What score would you give who provided your last pelvic exam for his/her overall education effort related to HPV? (please circle below)				

Failing

Poor

Fair

Good

Excellent

Directions: Please answer the following questions:

- 1) What is your age? _____years
- 2) What is the highest level of education completed? Please circle one.
 - a) Grade School
 - b) High School
 - c) Some College
 - d) Associate's Degree
 - e) Bachelor's Degree
 - f) Master's Degree
 - g) Doctoral Degree
- 3) If you have obtained a college degree, please list the highest degree achieved.

-
- 4) What is your marital status? Please circle the response that best applies to you.
 - a) Single
 - b) Married
 - c) Divorced
 - d) Widowed
 - f) Engaged
 - e) Living with Significant Other
 - f) Other _____

- 5) What is your race/ethnicity?
 - a) White
 - b) African American
 - c) Asian
 - d) American Indian/Alaska Native
 - e) Native Hawaiian/ Pacific Islander
 - f) Other _____

- 6) Are you a current smoker
 - a) Yes
 - b) No

- 7) Are you currently using a hormonal contraceptive (birth control pill, patch, ring)?
 - a) Yes
 - b) No

- 8) The physician you last visited for a pelvic exam was
 - a) male
 - b) female

- 9) Your physician you last visited for a pelvic exam is in what approximate age range?
- a) 20 – 29
 - b) 30 – 39
 - c) 40 – 49
 - d) 50 – 59
 - e) 60 - 69

Please return your completed survey to the locked box located in the lobby of the Executive Office. As a thank you for your participation, please help yourself to a Dove dark chocolate located next to the collection box.

Appendix B

My name is Megan Cermak. I am a graduate student in the Health Promotion and Education Program at the University of Cincinnati. I am conducting a research study for my master's thesis on the amount of education physicians provide women on Human Papillomavirus (HPV) and cervical cancer.

In one week, you will be receiving a questionnaire through inner-office mail. The purpose is to assess the perceived HPV educational efforts taken by your physician and your knowledge of HPV and cervical cancer. Your participation is voluntary. All women who work at the Talbert House are being asked to participate. Your participation is anonymous, so please do not write your name anywhere on the survey and answer all questions as honestly as possible.

It should only take five to ten minutes of your time to complete this questionnaire. The results of this study will help to establish future health education efforts. Women's health issues can only improve as we raise awareness and educate the public.

You may voluntarily withdraw your participation at anytime by not completing and submitting the survey. Your submission of the survey indicates your consent for participation in this study. If you choose to complete this survey, please return it to the Executive Office. There is a locked metal box with a slit for completed surveys located in the lobby. Please return the survey within one week of receiving it. Once you have turned in your completed survey, please help yourself to the Dove dark chocolate located next to the drop-off.

If you have any questions about this survey may contact me at megan.cermak@gmail.com or (513) 349-9354 or my thesis advisor, Dr. Randall Cottrell at randall.cottrell@uc.edu or 556-3861. If you have any questions about being a research participant, you may contact the Chair of the University of Cincinnati's Institutional Review Board - Social and Behavioral Sciences at 558-5784. Please keep this information sheet for your reference. Thank you for your time.

Sincerely,

Megan Cermak

Appendix C

**University of Cincinnati
College of Education, Criminal Justice and Human Services
Health Promotion and Education Program
Megan Cermak, B.S.
513-349-9354 megan.cermak@gmail.com**

June 2007

Dear Participant:

My name is Megan Cermak. I am a graduate student in the Health Promotion and Education Program at the University of Cincinnati. I am conducting my master's thesis on the amount of education physicians provide women patients on Human Papillomavirus (HPV) and on women's knowledge of HPV.

The enclosed questionnaire is to assess the perceived HPV educational efforts taken by your physician and your knowledge of HPV and cervical cancer. Your participation is voluntary. All women who work at Talbert House are being asked to participate. Your participation is anonymous, so please do not write your name anywhere on the survey and answer all questions as honestly as possible.

It should only take five to ten minutes of your time to complete this questionnaire. The results of this study will help to establish future health education efforts. Women's health issues can only improve as we raise awareness and educate the public.

You may voluntarily withdraw your participation at anytime by not completing and submitting the survey. Your submission of the survey indicates your permission for participation in this study. If you choose to complete this survey, please return it to the Executive Office. There is a locked metal box with a slit for completed surveys located in the lobby. Please return the survey within one week of receiving it. Once you have turned in your completed survey, please help yourself to the Dove dark chocolate located next to the drop-off. If you have any questions about this survey may contact me at megan.cermak@gmail.com or (513) 349-9354 or my thesis advisor, Dr. Randall Cottrell at randall.cottrell@uc.edu or 556-3861. Please keep this information sheet for your reference. Thank you for your time.

Sincerely,

Megan Cermak

Appendix D

Dear Talbert House Employees,

I want to thank everyone that has already completed the questionnaire on the amount of education physicians provide women on Human Papillomavirus (HPV) and cervical cancer. The results of this study will help to establish future health education efforts.

If you have not yet completed or returned your survey, please do so at your earliest convenience. I will be picking up all completed surveys in two weeks. Please return your survey to the Executive Office. There is a locked metal box with a slit for completed surveys located in the lobby. Once you have turned in your completed survey, please help yourself to the Dove dark chocolate located next to the drop-off.

Your participation is voluntary. All women who work at Talbert House are being asked to participate. Your participation is anonymous, so please do not write your name anywhere on the survey and answer all questions as honestly as possible. An electronic version of the survey is attached to this email.

If you have any questions about this survey, you may contact me at megan.cermak@gmail.com or (513) 349-9354 or my thesis advisor, Dr. Randall Cottrell at randall.cottrell@uc.edu or 556-3861. If you have any questions about being a research participant, you may contact the Chair of the University of Cincinnati's Institutional Review Board - Social and Behavioral Sciences at 558-5784.

Thank you for your participation,

Megan Cermak