

Running head: HUMAN PAPILOMA VIRUS AND CERVICAL CANCER

Female Nursing Students' Knowledge and Beliefs About the Human Papilloma Virus,
Its Link to Cervical Cancer, and
the Importance of Cervical Screening

Lisa Kirk

Master's of Public Health

Lakehead University

March 2005



Library and
Archives Canada

Bibliothèque et
Archives Canada

Published Heritage
Branch

Direction du
Patrimoine de l'édition

395 Wellington Street
Ottawa ON K1A 0N4
Canada

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*
ISBN: 0-494-10660-3
Our file *Notre référence*
ISBN: 0-494-10660-3

NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protègent cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.


Canada

Abstract

The purpose of this study was to conduct a comparative analysis of the knowledge and beliefs about human papilloma virus (HPV) infection, its link to cervical cancer, and the importance of cervical screening among a group of female nursing students ages 18 to 24 currently enrolled at a university in Northwestern Ontario. The researcher designed a questionnaire to compile data on demographics; general health behaviours; and knowledge of specific, health-related issues of HPV, cervical cancer, and cervical screening. The questionnaire combined open-ended and closed questions to address the sensitive nature of some of the questions. Fifty-three percent of the respondents had never heard of HPV, and more than 50% were not aware that it is a common sexually transmitted disease (STD). Fifty-nine percent had no knowledge of the common risk factors for HPV, and 54% had no knowledge that HPV increases the risk of cervical cancer. Open-ended questions revealed common feelings of fear and embarrassment among the study participants; despite having these feelings, most respondents recognized the importance of having Pap smears, with over 80% acknowledging that a Pap smear detects abnormal cells in the cervix and that women should begin to have Pap smears once sexually active or by the age of 18. Recommendations included revamping nursing curriculum on STD prevention education to include HPV transmission, risk factors, the high prevalence rate of HPV among this age group, and its causal link to cervical cancer; increasing educational material at university health clinics; and implementing a team approach with health care professionals on university campuses to provide a continuum of care for females infected with HPV or displaying other cervical abnormalities.

Acknowledgements

I would like to express my appreciation and thanks to Dr. Darlene Steven and Dr. John Jamieson for their supervision and guidance during the process of writing this thesis.

Finally, to my husband, Allan, and my children, Stefanie and Jeremy, thank you for your understanding and support throughout the writing of this thesis.

Table of Contents

List of Tables	5
CHAPTER 1	6
Introduction to the Study	6
<i>Cervical Cancer</i>	6
Purpose of the Study	6
Objectives of the Study	6
Theoretical Framework	7
Summary	8
CHAPTER 2	10
Literature Review	10
<i>Risk Factors and Incidence of Cervical Cancer</i>	10
<i>Screening Guidelines for Cervical Cancer</i>	11
<i>Knowledge of the Link Between HPV Infection and Cervical Cancer</i>	13
<i>Beliefs and Misconceptions About HPV Infection and Cervical Cancer</i>	21
<i>Health Behaviours of Nursing Students</i>	26
Summary	29
CHAPTER 3	31
Methodology	31
<i>Research Design</i>	31
<i>Limitations of the Study</i>	31
<i>Setting</i>	31
<i>Study Sample</i>	31
<i>Data Collection Measurement Tool</i>	32
<i>Analysis</i>	33
CHAPTER 4	34
Results of the Study	34
<i>HPV Awareness</i>	36
<i>Cervical Cancer Awareness</i>	39
<i>Data Analysis</i>	41
<i>HVP and Cervical Cancer Awareness Scales</i>	42
<i>Respondents' Pap Smear Experiences</i>	43
Summary	45
CHAPTER 5	47
Discussion	47
<i>Health Belief Model</i>	50
Recommendations	51
<i>Health Education</i>	51
Conclusion	52
References	54
APPENDIX A: Cover Letter	59
APPENDIX B: Consent Form to Participate in Study	60
APPENDIX C: Questionnaire.....	61
APPENDIX D: Common Themes	67

List of Tables

1. Age of First Sexual Intercourse	35
2. HPV Awareness	37
3. HPV Awareness Scores	38
4. Cervical Cancer Awareness	39
5. Cervical Cancer Awareness Scores	40
6. Mean Scores for HPV Awareness Scale.....	42
7. Mean Scores for Cervical Cancer Awareness Scale.....	43
8. Six Common Themes.....	43
9. Positive and Negative Comments According to Theme	45

CHAPTER 1

Introduction to the Study

Cervical Cancer

Cervical cancer is a clearly treatable cancer in females if found in its early stages. According to Franco, Schlecht, and Saslow (2003), “Every year, an estimated 234,000 deaths from cervical cancer occur worldwide, with over three-fourths [*sic*] of them in developing countries...” (p. 349). In Canada, the estimated new cases for cervical cancer in 2003 approached 1,400, with approximately 550 new cases in Ontario alone, which was the highest estimated new cases of all provinces (National Cancer Institute of Canada, 2003). The age-standardized incidence rates in Canada have been steadily decreasing for cervical cancer: In 1995, 9.3 per 100,000 females were diagnosed with cervical cancer; in 1998, that number decreased to 8.2 per 100,000 females. The National Cancer Institute of Canada estimated that the age-standardized incidence rate in 2003 was 7.9 per 100,000 females. Although cervical cancer is on the decline, it continues to rank as the third most common cancer in females ages 20 to 49 (Health Canada, 2002b).

Purpose of the Study

The purpose of the study was to examine the knowledge, attitudes, and beliefs about human papilloma virus (HPV) infection in young female nursing students aged 18 to 24 currently enrolled in a university in Northwestern Ontario.

Objectives of the Study

1. To conduct an analysis of young female students’ knowledge and beliefs about the risk factors for HPV infection and its link to cervical cancer.

2. To identify gaps in the young female students' knowledge and beliefs about the risk factors for HPV infection and its link to cervical cancer.
3. To identify educational strategies that will promote and enhance awareness of HPV infection and cervical screening.

Theoretical Framework

The researcher utilized Becker and Maiman's (1975) adaptation of the health belief model (HBM), which is a predictor for preventive behaviour in compliance with health care regimens such as screening tests and medical care, as the foundation for the study. Five elements of the HBM combine cognitive and social behaviours of individuals to predict how individuals will deal with a perceived illness or disease and adapt healthy choices: (a) perceived susceptibility to an illness or disease, (b) perceived severity of contracting the illness or disease, (c) benefits of taking action to prevent the illness or disease, (d) perceived barriers to taking action, and (e) cues to action taken to help promote healthier behaviours. "While it is assumed that diverse demographic, personality, structural, and social factors can, in any given instance, affect an individual's health motivation and perception, these variables are not seen as directly causal of compliance" (Becker & Maiman, p. 13).

The HBM reinforced the researcher's use of a questionnaire to identify gaps in the knowledge of young female nursing students about HPV infection. For example, the researcher adapted each element of the HBM to examine how the questionnaire identified gaps in knowledge of the study sample:

- *Perceived susceptibility to the illness*: Did the study participants feel personally susceptible to contracting HPV infection?

- *Perceived severity of contracting the illness:* Did they perceive HPV infection as a threat to their health?
- *Perceived benefits and perceived barriers:* Were the study participants willing to acknowledge that the benefits of cervical screening (i.e., Pap smears) outweigh the barriers of acknowledging the health risks (i.e., cervical cancer) if they do not follow cervical screening guidelines?
- *Cues to action:* Will these be triggered by the amount of external information they receive about HPV infection and cervical screening, as well as their comfort in having a regular Pap smear?

Fishbein and Guinan (1996) investigated different behavioural theories and discussed the preventive behaviours that need to be incorporated into health promotion strategies to implement the change. They stated:

If the results of formative research indicate that attitude is a primary determinant of behavior, then one should direct the intervention toward changing people's beliefs about the consequences of performing that behavior....Thus, with respect to any given behavior, it is important to identify the beliefs about performing that behavior that are held by members of the sample being considered. (p. 7)

Summary

The present research was designed to study nurses' knowledge of HPV and its link to cervical cancer. The importance of identifying the students' knowledge level about HPV infection will determine what changes need to occur to improve their knowledge of HPV as a sexually transmitted disease (STD) and its causal link to cervical

cancer. Becker and Maiman's (1975) HBM is an essential tool to examine where the gaps in knowledge are in this group of students.

CHAPTER 2

Literature Review

The literature review of young female college and university students' knowledge about HPV infection and its link to cervical cancer revealed a profound lack of awareness of the infection, its transmission, and the associated risk factors (Baer, Allen, & Braun, 2000; Ramirez, Ramos, Clayton, Kanowitz, & Moscicki, 1997; Yacobi, Tennant, Ferrante, Pal, & Roetzheim, 1999). Further research on young female students' attitudes and beliefs about safe sex practices and the use of cervical screening interventions identified many misconceptions about these health-related issues (Bauer et al., 1991; Maxwell, Bancej, Snider, & Vik, 2001). To date, there is minimal research available on nursing students' knowledge of HPV infection; instead, research has focused on determining if nursing students incorporate positive health behaviours, such as regular eating habits, exercising, seat belt use, and routine physical and dental examinations, into their own lifestyles when teaching their patients (Dittmar, Haughey, O'Shea, & Brasure, 1989; Soeken, Bausell, Winklestein, & Carson, 1989).

In this section, the researcher first presents the risk factors and incidence for cervical cancer. A discussion of screening guidelines for cervical cancer, knowledge of the link between HPV and cervical cancer and common beliefs and misconceptions follows. The researcher concludes with a focus on health behaviours of nursing students.

Risk Factors and Incidence of Cervical Cancer

The risk factors of cervical cancer are very similar for those of STDs. Females who become sexually active at a young age, have many sexual partners, become infected with HPV, smoke, or use oral contraceptives without using other barrier methods are at

high risk of developing cervical cancer (Health Canada, 2002b). One of these risk factors, HPV, is an STD with more than 60 different subtypes. According to Bauer et al. (1991), it is an important link to the development of cervical cancer. They commented:

Of the more than 60 characterized HPV types, about one third infect mucosal tissue. Human papillomavirus types 6 and 11 are commonly associated with benign anogenital warts (condyloma acuminatum), while types 16 and 18 are found in the majority of carcinomas. (p. 472)

Canada's surveillance of STDs does not include HPV infection. Only such common STDs as chlamydia, gonorrhea, and syphilis are reported; therefore, it is difficult to determine if the rate of HPV infection is rising in Canada. Health Canada (1998) reported that in 1995, Ontario had the highest number of cases among females for the following STDs: chlamydia, at 9,157; gonococcal infections, at 1,264; and syphilis, at 174. A number of cross-sectional studies have been done in Canada on the incidence of HPV infection, one of which was conducted by Sellors et al. (2000) on the prevalence and predictors of HPV infection in females ages 15 to 49 in Ontario. They determined that the highest rate of HPV infection (24%) occurs in females between the ages of 20 and 24.

Screening Guidelines for Cervical Cancer

Health Canada (2002a) recommended the following guidelines from its 1998 surveillance report on cervical cancer screening:

- Pap screening to start at age 18 or at initiation of sexual activity.
- A second smear should, in general, be taken after one year, especially for women who begin screening after age 20.

- If the first two smears are satisfactory and show no significant epithelial abnormality, women should, in general, be rescreened every 3 years to age 69.
- Screening should occur at this frequency in areas where a population-based information system exists for identifying women and allowing notification and recall. In the absence of such a system, it is advisable to repeat Pap smears annually.
- Women over the age of 69 who have had at least two satisfactory smears and no significant epithelial abnormality in the last 9 years and who have never had biopsy-confirmed severe dysplasia or carcinoma in situ can be dropped from the cervical cytology screening program.
- If mild dysplasia (cytologic equivalent of cervical intraepithelial neoplasia [CIN] grade 1, or low-grade squamous intraepithelial lesion [LSIL]) is found, the smear is to be repeated every 6 months for 2 years.
- If the lesion persists or progresses to moderate or severe dysplasia (CIN grades 2 and 3, or high-grade SIL), the patient must be referred for colposcopy.
- Women do not need to be screened if they have never had sexual intercourse or have had a hysterectomy for benign conditions with adequate pathological documentation that the cervical epithelium has been totally removed and previous smears have been normal. (section 3, p. 14)

Cervical screening programs over the past 50 years have resulted in a decrease in mortality from cervical cancer in the 1990s through early detection of abnormal or precancerous cells in the cervix, known as dysplasia, by Pap smears. Clearly, screening programs are of optimal importance in the primary prevention of cervical cancer (Franco

et al., 2003; Quinn, Babb, Jones, & Allen, 1999; Sasieni & Adams, 1999). Maxwell et al. (2001) cited the findings of the National Population Health Survey of 1996-97 in Canada to determine why females ages 18+ have or do not have regular Pap smears. They found that Pap smears are more common for females aged 25 to 34, who usually have had a Pap smear within the last 3 years. Surprisingly, females between the ages of 18 and 24 do not think that a Pap smear is necessary at their age. Females who are 65+ feel the same way. “Conversely, women aged 18 – 24, and 65+ were more likely to have never had a Pap test and less likely to have received one in the past three years” (Maxwell et al., p. 130).

Knowledge of the Link Between HPV Infection and Cervical Cancer

A number of studies clearly identified a knowledge deficit among young adult females regarding HPV infection (Baer et al., 2000; Ramirez et al., 1997; Yacobi et al., 1999). Ramirez et al. conducted a study to examine the knowledge and beliefs of female university students’ perceived and actual risk of contracting HPV. The study participants filled out a questionnaire to assess their knowledge of HPV and their perception of the risk of being infected with HPV, along with their actual risk (for those that consented to be tested for HPV).

Ramirez et al. (1997) noted that 31 (28%) of the 110 single, young female university students ages 18 to 22 who participated in their study had never heard of HPV and that only 48 (44%) of the study participants identified a link between HPV infection and cervical cancer. Ninety (82%) of the females were sexually experienced. Ramirez et al. commented, “Among this group, the mean age of first intercourse was 16 ± 2.7 years, and the mean number of lifetime sexual partners was 5.1 ± 4.3 ” (p. 116). Of these sexually experienced females, 51 (58%) out of 88 identified themselves at high risk of

contracting HPV infection, citing their reasons for this perceived risk as having many sexual partners, not practising safe sex, and not knowing their partners' sexual histories. Of the 51 (58%) who perceived themselves at high risk, 36 (41%) consented to being tested for HPV; 13 (36%) of this group actually tested positive. Thirty-seven (42%) of 88 sexually experience females did not perceive themselves at risk for HPV. Twenty of this group consented to being tested for HPV; 7 (35%) of this group tested positive for HPV. Clearly, the inability of these two groups to identify their perceived or actual risk of contracting HPV was poor.

Vail-Smith and White (1992) conducted a survey of 263 sexually active female university students on their awareness of HPV and their risk of contracting HPV infection. The results indicated that 229 (87%) of the 263 respondents to their questionnaire "had never heard of" or "were not sure they had heard of" HPV. Vail-Smith and White found that the respondents had a consistently poor awareness of the risk factors for HPV infection. They stated:

Of the 263 respondents, 17 (6.6%) correctly identified smoking, 21 (7.9%) identified early age of first intercourse, and 23 (8.8%) identified history of STD as HPV risk factors. Only 38 (14.5%) knew that a history of multiply sex partners increased the risk of infection. (p. 228)

When comparing the association between HPV infection and cervical cancer, only 25 (9.6%) knew that HPV can be asymptomatic, and 21 (7.9%) of the respondents knew of a connection between HPV infection and cervical cancer.

Another study investigating the knowledge and awareness of university students on HPV was that of Yacobi et al. (1999). The researchers developed a 54-item

questionnaire to assess the participants' knowledge of risk factors, transmission, diagnosis, treatment, and complications of HPV. They also compared their knowledge and awareness of HPV to other common STDs: HIV, chlamydia, syphilis, gonorrhea, hepatitis B, and herpes. The questionnaire was mailed to a random sample of 500 students; 289 were returned, producing a response rate of 60%. Yacobi et al. found that only 110 (38%) of the 289 respondents had heard of HPV. When comparing HPV to other common STDs, the study participants noted that HPV infection was the STD that they knew little about or had never been taught about. "Among the seven STDs assessed, HPV was the disease students indicated they knew the least about (Wilcoxon signed rank = 3324; Bonferoni-adjusted P = 0.002) and perceived the least education about (Wilcoxon signed rank = 1842; Bonferoni-adjusted P = 0.002)" (Yacobi et al., p. 537).

When questioned if they knew how HPV is transmitted, 171(59%) of the respondents did not know, although 286 (99%) of the respondents indicated that if they found out that their partner was infected with HPV, they would make some changes (Yacobi et al., 1999). "Changes they would make included using condoms (47%), seeing a physician to discuss HPV (83%), seeing a physician regularly for examinations (63%), or ending their sexual relationship (13%)" (Yacobi et al., p. 538). The respondents also indicated that if they were diagnosed with HPV, they would make similar changes to those already mentioned. Conversely, the respondents did not seem compelled to take precautions to avoid spreading HPV infection. Yacobi et al. noted:

Most students (59%) also indicated they would not be any more concerned about spreading HPV if the infection were a cause of cancer. Finally, 7% of the

respondents were uncertain if they would even tell their sexual partner if diagnosed with HPV. (p. 538)

Baer et al. (2000) researched young female and male adults' knowledge of HPV infection. Of the 322 first-year college students (218 females and 104 males) who answered the questionnaire, 102 of the females and 104 of the males had previously engaged in some form of sexual activity. It is important to note that of these respondents, 264 were only 18 years old at the time of the study, indicating that many young adults become sexually active while still in high school. Baer et al. looked at HPV in comparison to other STDs: herpes, HIV/AIDS, hepatitis B, gonorrhea, syphilis, genital warts, and chlamydia. The respondents were asked to list the three most common STDs out of the eight listed. They reported:

Of the total of 102 males and 217 females [who answered the question], the majority indicated that herpes was the most common STD (56.9% men and 54.8% women) followed by HIV/AIDS (49% men and 57.1% women) and hepatitis B (43.1% men versus 33.2% women). Only 2% of males and 4.6% of females listed HPV as a common STD. (p. 72)

Baer et al.'s (2000) study sought answers to specific questions about HPV infection. A large percentage of respondents had heard of genital warts (i.e., 100 [96.2%] of males and 208 [95.4%] of females), but only 4 (4.2%) out of 95 males and 23 (11.6%) out of 198 females thought that genital warts were caused by an HPV infection; conversely, 69 (72.6%) of males and 126 (63.6%) of females did not know the cause of genital warts. Baer et al. found that the study participants could not identify the mode of transmission of HPV infection, with 19 (82.6%) out of 23 males and 26 (45.6%) out of 57

females admitting to not knowing how HPV infection is transmitted. When asked about the risk factors of cervical cancer, 61 (30.2%) out of 202 females and 24 (25.5%) out of 94 males acknowledged that having multiple sexual partners is a risk factor of cervical cancer. Only 32 (15.8%) of the females and 5 (5.3%) of the males indicated that HPV infection is a risk factor for cervical cancer (Baer et al.). It is important to note that although the researchers had a poor response rate of 21.9%, the results of their study indicated that the knowledge of HPV in this age group of students is poor and the causal link of cervical cancer is not apparent.

Beatty, O'Connell, Ashikaga, and Cooper (2003) conducted a survey on HPV education taught to adolescents in middle and high schools in Vermont. They asked 108 educators and nurses teaching the sexual health curriculum if they considered teaching students about HPV infection to be an important component of the curriculum. Although most of these educators recognized that teaching students about HPV infection is an important issue, they revealed that they lack the time to teach students about HPV infection and that they need more knowledge about HPV. Beatty et al. commented:

Main issues keeping teachers and nurses from teaching about HPV included insufficient class time (47%), poor materials or curricula (29%), and lack of knowledge about HPV (25%). Lack of materials and curricula were more an issue for high schools than for middle schools ($p = 0.03$). (p. 255)

A qualitative study on females' knowledge of cervical cancer and cancer screening surveyed 72 women through a face-to-face or telephone interview in one general health practice in Scotland. Neilson and Jones (1998) found that of the 72 females participating in their study, none of them had ever had a Pap smear, or they had

chosen not to have a Pap smear. This study included women between 20 and 60 years of age; based on the results of the study, their knowledge of cervical cancer and cervical screening was poor. "Fifty-eight per cent (42) believed that all women should be tested, with 18% (13) feeling it should be only sexually active women. Forty percent (22) claimed no knowledge of cervical cancer" (Neilson & Jones, p. 573). When asked about their reasons for not having a Pap smear, the females in Neilson and Jones's study identified "fear" and "dislike of the idea of the test" (p. 573). Most of the females preferred to have a female health care professional conduct the Pap smear. Though their sample was small, Neilson and Jones provided useful information about females' hesitancy to have a Pap smear and the need of the health care profession to change this conception and promote ways to encourage regular use of this screening tool.

Similar findings arose in McKie's (1993b) study of why women hesitate to have a Pap smear. Participants cited fear and embarrassment as the primary reasons for not having a cervical Pap smear. McKie focused on 70 of the 302 interviewed women who did not have a Pap smear. Fourteen of the respondents were between 20 and 34; 56 were between 50 and 64. Along with a question about what would encourage them to have a Pap smear, 26 (37%) of the women felt they would have to have some type of symptom, 16 (23%) said "nothing" would encourage them, and 16 (23%) just cited "don't know." These responses identified the women's lack of knowledge about cervical cancer and the importance of having a regular Pap smear. Clearly, women need to be educated about the importance of regular Pap smears and early detection through cervical screening.

McKie (1993a) conducted a follow-up study using the same data. The only difference was that 232 (77%) of these study participants had had a Pap smear. Of this

number, 136 were between 20 and 34, and 96 were between 50 and 64. When analyzing the results of the open-ended questions, such as what they experienced after having their most recent Pap smear, McKie found that 88 (38%) of the study participants had positive comments, 86 (37%) had negative comments, and 47 (20%) had a mix of negative and positive comments. It is important to note that in the negative comments, the common features identified were fear and embarrassment. Surprisingly, in response to “What is a positive smear?,” McKie found that 103 (44%) of the participants connected cancer with a positive smear, and 56 (24%) answered, “don’t know.” To the question, “What are the causes of cervical cancer?,” 33 (14%) of the participants answered “sexual activity,” and 15 (6%) stated “promiscuity” as a cause of cervical cancer. More importantly, 118 (51%) answered “don’t know.” McKie cited this last response as a limitation in her study. This researcher might assume that the respondents’ lack of knowledge about the risk factors of cervical cancer and the importance of cervical screening also could have led to their response of “don’t know.”

A 42-item questionnaire developed by Hasenyager (1999) to determine what young women knew about cervical cancer screening was completed by 154 female university students attending a health clinic for an annual gynecological examination, which was indicated for females using prescription oral contraceptives. Hasenyager found that the majority of the respondents knew that a Pap smear tests for precancerous and cancerous lesions, but they also thought that it tests for ovarian cancer and STDs.

Hasenyager concluded:

Ninety percent of women knew that the Pap smear was a screening test for precancerous and cancerous lesions of the cervix; 56% also believed it screened

for ovarian cancer, 30% for chlamydia, 29% for gonorrhea, 27% for syphilis, 6% for acquired immune deficiency syndrome (AIDS), and 5% for uterine cancer.

(p. 222)

The findings also revealed that more than 50% of the respondents could not identify the risk factors for cervical cancer. Even though the participants in this study had an understanding of what a Pap smear indicates, they overestimated its significance and had poor knowledge of the actual risks from cervical cancer.

Pitts and Clarke (2002) studied females' understanding of the link between HPV infection and cervical cancer by using a sample base of females with a mean age of 40 who were employed at a university in the United Kingdom. They found that of the 400 females who answered the question, "Have you ever heard of HPV infection?," 280 (70%) of the respondents had never heard of HPV. Of the same number of females who responded to the question, "How do you think HPV is contracted?," 277 (69.3%) either did not know or left the question blank. Not surprisingly, when asked the question, "What are the long-term effects of HPV?," only 45 (11.3%) had some knowledge of a link between HPV infection and cervical cancer.

Pitts and Clarke's (2002) questions about the risk factors of cervical cancer determined that 241 (60.3%) of the 400 females who participated in their study knew that having sexual intercourse at an early age is an important risk factor; 271 (67.8%) of the respondents knew that having multiply partners is an equally significant risk factor. Only 111 (27.8%) of the females in the study felt that not using condoms might increase the risk of cervical cancer; 180 (45%) of the respondents knew that smoking is a risk factor. In this study, the females ranged in age from 19 to 64, indicating that women of all age

groups with diverse educational backgrounds lack knowledge about cervical cancer and its risk factors. One might argue that because 95% of the respondents were of White, European heritage, this sample was not representative of the general population.

In their (2003) study to identify females' knowledge about cervical cancer, Philips, Johnson, Avis, and Whynes surveyed 222 female university students with a mean age of 18.9 years. Of the respondents who answered the questionnaire, a majority (approximately 80%) thought that cervical cancer was the leading cause of death annually among females when asked to choose from 4 cancers; breast, cervix, bowel and lung cancers. More than 109 (49.1%) of the respondents felt that an abnormal Pap smear happens in females aged 35 to 50, and only 17 (7.7%) correctly identified the age range of 18 to 25 years. When asked about the major risk factors of cervical cancer from a list of risk factors, the participants commonly stated that family history of cancer is a major risk factor. The results from this study showed that the participants' knowledge of cervical cancer and its risk factors was poor.

In summary, the authors of the studies cited found a general lack of knowledge regarding the awareness of HPV and its risk factors, transmission, and link to cervical cancer. In the next section, the researcher examines common beliefs and misconceptions about HPV infection and cervical cancer.

Beliefs and Misconceptions About HPV Infection and Cervical Cancer

Poor knowledge in this age group of young adult female students (i.e., those ages 18 to 24), along with a lack of maturity and the sensitive nature of the topic, may lead to misconceptions about the transmission of HPV infection, its link to cervical cancer, and the importance of cervical screening. Bauer et al. (1991) investigated the accuracy of two

methods of detecting HPV in young females attending a university health clinic for annual gynecological screening. They found that the polymerase chain reaction (PCR method) was more sensitive at detecting HPV infection at either the cervix and/or the vulva, as opposed to the ViraPap test that is used. “Of the 467 women, 213 (46%) showed evidence of infection with HPV at one or both sites using the PCR method, while only 51 (11%) were positive by ViraPap” (Bauer et al., p. 475).

They concluded that in further epidemiological studies, the PCR method would be of benefit in detecting the incidence of HPV infection and its link to cervical cancer in this sample of young females. “It is clear from our results that HPV infection is common in the healthy women we studied, who are likely to represent other young, sexually active women” (Bauer et al., 1991, p. 476). The reader should note that 336 (72%) of the females in this study were Caucasian and that the mean age of the participants was 22.9 years. An important inference from this study is that detecting HPV infection at different sites implies that young females need to be more conscious of safe sex practices such as using barrier methods (i.e., condoms) on a consistent basis, reducing the number of sexual partners, and knowing each partner’s sexual health history to reduce the risks of HPV infection.

Cleary, Barhman, MacCormack, and Herold (2002) conducted a qualitative study in which they interviewed 22 female, heterosexual students between the ages of 19 and 23 who had begun relationships with new sexual partners within the last 12 months. The study focused on the amount of health protective sexual communication (HPSC) that occurs before first-time intercourse with the new partner. Cleary et al. interviewed each of the 22 participants using semistructured questions. Each interview lasted

approximately 40 to 60 minutes. Using grounded theory, the researchers collected and analyzed all of the narratives. Ten themes arose: (a) education, (b) responsibility for sexual health, (c) importance of feeling comfortable, (d) feelings of fear, (e) use of assumptions, (f) peer influences, (g) experience, (h) relationship expectations and commitment, (i) personal characteristics, and (j) partner influences.

Cleary et al. (2002) noted that discussions about HPSC were limited. Many of the respondents stated that they had “no” communication at all before first-time sexual intercourse with their new partners. Of those females who did communicate with their new partners, it was mainly to ascertain that the male was using a condom to prevent pregnancy. Cleary et al. also observed that rarely did any of the discussions focus on sexual histories or sexually transmitted infections (STI). For example, one of the themes compiled by Cleary et al. was “Personal Characteristics.” Under this theme, most of the participants believed that they were at low risk of contracting a STI, and most were not concerned at all about sexual health issues. Participant 17 acknowledged:

Like I never really thought “I wonder if he has an STD,” it just wasn’t an issue...there hasn’t been an excessive amount of discussion because it really just doesn’t seem like...not an issue.... I don’t really feel that we need to. (Cleary et al., p. 126)

“Education,” another theme arising from Cleary et al.’s (2002) study, overlapped in similarities to “Personal Characteristics” in that communication was limited before first-time sexual intercourse with their new partners because the females felt that they were at low risk and that they were protecting themselves by using a condom or birth control medication. Participant 3 explained:

Although I might not talk about it doesn't mean that I don't protect from it....

I don't have a sit-down conversation about what I think of STDs...how to...but I mean condoms...they almost...kind of, eliminate the conversation.... I use the condom thing as a way of not talking about it. It overtakes the conversation, sort of, in my point of view. (Cleary et al., p. 122)

Although Cleary et al.'s study sample was small, the participants provided insight into the perceptions young adult students have; their comfort level discussing sexual issues, such as STDs and condom use; and how poor knowledge, along with a lack of communication skills, is a barrier to protecting themselves.

Dilorio, Dudley, Lehr, and Soet (2000) found that young adults with higher self-confidence are able to talk about sexual issues more openly, which leads to more positive outcomes, such as condom use. Godin, Gagnon, and Lambert (2003) reached similar conclusions when they examined positive attitudes and personal normative beliefs about regular condom use.

Kavanagh and Broom (1997) conducted a qualitative study in which they interviewed 29 females who had had abnormal Pap smears. The researchers asked the females in their study to interpret the information they had received about abnormal Pap smears and colposcopy procedures from their gynecologists. Most of the females found it difficult to ask questions because they did not understand the medical terminology that the physicians were using. One participant stated, "When they first heard precancer, many thought it was the same as cancer: 'I didn't know anything about precancer; soon as it was linked to cancer, I thought I'd had it' " (as cited in Kavanagh & Broom,

p.1390). The researchers proposed that colposcopy clinics provide precolposcopy clinics so that the clients can ask questions and receive answers before the procedure is done. It is important to note that the age range of the females in this study was 19 to 70, with more than half of the participants between the ages of 19 and 35. The results showed that women in general have misconceptions about cancer and precancerous abnormalities.

Linnehan and Groce (1999) conducted a survey to determine health care providers' perceptions of the need to support and educate young adults infected with HPV. Seventy-three nurse practitioners and 70 physicians working in college-health based clinics participated in the survey. All of the health care providers agreed or strongly agreed that the psychosocial needs of patients infected with HPV included counselling; however, Linnehan and Groce also found that 95% of the participants spent only 5 minutes counselling patients and that 54% spent 10 minutes counselling patients.

An important finding of Linnehan and Groce's (1999) study revealed health care professionals' concerns about managing patients with HPV infection. Thirty-three of the participants indicated that discussing the psychosocial aspects of HPV infection is the most difficult, 25% of the respondents felt that it is difficult to promote behavioural changes, and 24% of them believed that it is difficult to have this group comply with treatment and follow-up. "Providers cited their patients' low level of knowledge of HPV, high-risk behaviors and feelings of 'invincibility' as contributing to these challenges" (Linnehan & Groce, p. 140). Limitations cited by Linnehan and Groce were the reliability and validity of their questionnaire, which made it difficult for the researchers to generalize their findings to a larger population. Nonetheless, the conclusions identified

the importance of providing counselling on a more consistent basis to help change young adult females' attitudes about HPV infection.

Michael et al. (1998) compared British and American opinions of males and females on sexual behaviours and risks of STDs. The researchers noted that American opinions vary from very liberal to very stern. These polarized opinions may affect future public health policies and initiatives that target public health concerns such as STDs.

Michael et al. noted:

There is great public resistance in the United States to addressing forthrightly the risks of having many sexual partners and of engaging in risky sexual practices.

The resistance results in large part from the strong opinions that such behavior is preemptively unacceptable, not that it is risky. Our public health may be the high price we pay for our public opinion. (p. 754)

In summary, poor knowledge of HPV infection and cervical screening issues, compounded by the lack of communication among students, reinforced common misconceptions about HPV infection and cervical cancer. In the next section, the researcher discusses studies that have investigated the general health behaviours of undergraduate nursing students.

Health Behaviours of Nursing Students

There has been a dearth of studies investigating the health behaviours of undergraduate nursing students, specifically their behaviours in regard to STDs and their lack of knowledge about the link between HPV and cervical cancer. Previous researchers had focused their studies on determining if nursing students incorporate positive health behaviours, such as regular eating habits, exercising, seat belt use, and routine physical

and dental examinations, into their own lifestyles or if they merely advocate rather than adhere to a healthy lifestyle when teaching their patients (Dittmar et al., 1989; Soeken et al., 1989). The following studies provide some insight into health behaviours that have been commonly studied in undergraduate nursing students.

Clement, Jankowski, Bouchard, Perreault, and Lepage (2002) conducted a 3-year longitudinal study on nursing students' health behaviours. They compared 52 undergraduate nursing students with an average age of 20.5 years to 93 nonnursing students with an average age of 20.3 years and then to the general population in the same age range. Their questionnaire was based on the 1987 Quebec Health Survey. They used 44 questions on health-related behaviours from the 136 questions on the original survey. From the 44 questions, nine desirable health behaviours were examined, including 7 hours of sleep daily, eating breakfast daily, at least 15 minutes of physical activity weekly, tobacco abstinence, moderate or no alcohol consumption (0 to 7 drinks weekly), routine seat belt use, monthly breast self-examinations, clinical breast examinations and Pap tests (every 2 years).

Clement et al. (2002) found no significant difference between nursing students and nonnursing students on the nine health behaviours examined over the 3-year period. When comparing the health behaviours of the students to those of the general population, Clement et al. found that the students smoked less and drank alcohol less than the general population. When examining nursing students' compliance to health behaviours in regards to women's health issues over the 3-year period, the researchers found that monthly breast self-examinations increased from 27% in the first year to 43% in the third year. The health habit of having a Pap smear every 2 years also increased from 67% to

81% over the 3-year period. It is important to note that in this study, 179 of 193 nursing students completed the questionnaire in the first year; in the third year, 52 of the original 193 completed the questionnaire. Clement et al. felt that attrition may have biased the results; therefore, it is difficult to generalize the results to all nursing students.

Dittmar et al. (1989) also investigated the health behaviours of 1,081 female nursing students from 10 different nursing schools in the Buffalo area. The mean age was 24 years, with the largest age group (400 [37%]) being 17 to 20. Specific findings about the health behaviours that closely related to preventive measures included monthly breast self-examinations and annual Pap smears. Only 288 (27%) of the study participants performed monthly breast self-examinations, and 559 (52%) had an annual Pap smear. Dittmar et al. noted that health behaviours that improve the nursing students' appearances, such as brushing their teeth more than once a day, having routine dental examinations at least once a year, and becoming active physically two to four times per week, performed better than doing a monthly breast self-examination and having an annual Pap smear. They concluded that nursing students either do not feel they are at risk for such a cancer (breast cancer) at their age or they do not have the skill to perform the examination.

Shriver and Scott-Stiles's (2000) 2-year longitudinal study sought to determine if the health habits of nursing students improved with nursing curriculum when compared to a group of nonnursing students. A Health Habits Inventory was developed by Shriver to measure health habits relating to eating, smoking, wearing seatbelts, exercising, screening, practising safe sex, using drugs and alcohol, and knowing their own blood

pressure and cholesterol levels. Data were collected twice, once in the winter of 1995 (time 1), when students were considered sophomores, and again in the fall of 1996 (time 2), when the students were considered seniors. The reader should note that the age range for nursing students was 21 to 51 years and 21 to 24 for nonnursing students. The number of nursing students decreased from time 1 ($n = 71$) to time 2 ($n = 57$), as did the nonnursing students (time 1, $n = 83$; time 2, $n = 20$). Findings revealed that the nurses who participated in this study improved on the majority of health behaviours. For example, monthly breast self-examinations increased from 23.3% (time 1) to 33.3% (time 2). What became more of a negative behaviour for nursing students was smoking on a daily basis, which increased from 7% (time 1) to 8.8% (time 2) and practising safe sex (use of condoms), which decreased from 63.4% (time 1) to 50.9% (time 2). This may account for the fact that there was a wider age range for the nursing students and they may be in monogamous relationships. There were many limitations to this study. The most apparent ones were the difference in age range in nursing students compared to nonnursing students, the inability to identify the students from time 1 to time 2, and the difference in the response rate from time 1 and time 2.

Summary

Based on the studies mentioned in this review, the reader may conclude that the general population of postsecondary students in many different disciplines show a lack of knowledge of and have misconceptions about HPV: risk factors, symptoms, and casual link to cervical cancer. In regard to nursing students, past research has focused on their general health behaviours, for example, the frequency of screening procedures, such as Pap smears and breast self-examinations, along with other more commonly studied

nutritional and safe health behaviours. To date, research has not focused on determining their level of knowledge of HPV infection and its casual link to cervical cancer.

CHAPTER 3

Methodology

Research Design

The researcher utilized a comparative survey approach in this study. “*Descriptive, exploratory, or comparative surveys* collect detailed descriptions of existing variables and use the data to justify and assess current conditions and practices or to make more plans for improving health care practices” (LoBiondo-Wood & Haber, 2002, p. 223). Becker and Maiman’s (1975) HBM helped to support the measurement tool (i.e., questionnaire) that the researcher used to establish where educational efforts need to be concentrated when examining the nursing students’ knowledge and beliefs about HPV and cervical screening issues.

Limitations of the Study

1. The sample was restricted to female nursing students ages 18 to 24.
2. The researcher carried out the study at only one postsecondary institution.
3. The researcher did not utilize a randomized sample or a comparison group.

Setting

The sample consisted of nursing students aged 18 to 24 years currently enrolled in a university baccalaureate nursing degree program in a Canadian city with a population greater than 100,000.

Study Sample

A convenience sample was taken from first- and second-year female nursing students between the ages of 18 to 24 currently enrolled in a university baccalaureate nursing degree program during the fall semester. Prior to approaching faculty members

and/or students, the researcher received approval from the university's Ethics Review Board to proceed with this study. With the consent of faculty in the school of nursing, students were approached at the end of nursing lectures to explain the objectives of the study and to read an information letter to them (see Appendix A). The researcher assured the students that their participation in the study was voluntary and that their confidentiality would be maintained because their names would not be recorded. If students verbally expressed an interest in participating in the study, they were given a consent form to complete, sign, and return (see Appendix B).

Data Collection Measurement Tool

A questionnaire was developed for the study by the researcher, who reviewed relevant literature and consulted with health care professionals. The researcher used Becker and Maiman's (1975) HBM as the foundation for the study, which provided an explanation for the findings on knowledge and beliefs about HPV and cervical cancer issues in this study. The framework for the questionnaire was based on Steven et al.'s (2004) questionnaire, which allowed the researcher to compile data on demographics (i.e. age, residence, program year); general health behaviours (i.e., smoking, sexual activity, safe sex practices); and knowledge of specific, health-related issues of HPV infection, its link to cervical cancer, and the importance of cervical screening (see Appendix C). The questionnaire combined open-ended and closed questions because of the sensitive nature of some of the questions. The open-ended questions also gave the participants an opportunity to offer personal thoughts. The questionnaire had a category labelled *Don't Know* to decrease guesswork by the participants and to increase the reliability of the questionnaire.

Steven et al.'s (2004) questionnaire had been peer reviewed by an expert panel for appropriateness and had been piloted with a group of women using the test-retest method. It was deemed valid and reliable by an expert panel comprised of health care professionals engaged in research, education, and health practice. Rather than repilot the questionnaire, the researcher modified some of the original questions, which focused on breast cancer, to reflect the topic under study, namely, HPV.

Analysis

The researcher entered the quantitative data from the questionnaire into SPSS, and computed descriptive statistics (i.e., means and percentages) for demographic characteristics. Frequencies (i.e., percentages) were cross tabulated, and associations were assessed using chi-square. The researcher examined differences among group means using analysis of variance (ANOVA). For all findings, a probability $< .05$ was considered as significant. Content analysis was used to assess the responses to the qualitative, open-ended questions.

CHAPTER 4

Results of the Study

Eight-five female nursing students completed the questionnaire. Although 324 students were enrolled in both years of the baccalaureate nursing program, 196 met the eligibility criteria of being female nursing students between the ages of 18 and 24. Of the 100 eligible first-year nursing students, 58 (58%) completed the questionnaire, and 27 (28%) of the 96 eligible second-year nursing students completed it, for an overall response rate of 43%.

The mean age of the sample was 19.58 years. Fifty-nine (69%) respondents reported their primary residence as a major urban centre in Northwestern Ontario, with 8 (9%) identifying smaller communities in Northwestern Ontario as their primary residence. Sixteen (19%) respondents came from elsewhere in Ontario, and 2 (2%) came from elsewhere in Canada. A large number of the respondents, 75 (88%), were single; 8 (9%) were in common-law relationships; and 2 (2%) were married. Seventy-one (84%) of 85 respondents reported being Christian; of those respondents, 36 expressed that they were Catholic. Two (2%) gave "other" religious affiliations, and 12 (14%) gave no affiliation. Of those respondents who mentioned having a religious affiliation, 47 (55%) answered that they actively practise their religion or faith/tradition.

Some of the risk factors for both HPV and cervical cancer are smoking, intercourse at an early age, and HPV infection (Health Canada, 2002b). When the respondents were asked, "Do you smoke?," 6 (7%) answered "yes," and 79 (93%) answered "no." In response to the question, "Have you ever smoked?," 30 (35%) answered "yes," and 55 (65%) responded "no." To the question, "If you smoked, how

long have you or did you smoke for?," 6 respondents indicated they had smoked for less than one year, and 11 had smoked for between one and nine years.

When the respondents were asked, "Are you sexually active?," 59 (69%) answered "yes." These 59 respondents were then asked how old they were when they became sexually active and 53 of the participants engaged in sexually intercourse by the time they were 18 years old. The responses are listed in Table 1.

Table 1

Age of First Sexual Intercourse

<i>Age (in years)</i>	<i>n (%)</i>
14	3 (4%)
15	7 (8%)
16	13 (15%)
17	19 (22%)
18	11 (13%)
19	2 (2%)
20	3 (4%)
21	1 (1%)

n = 59

Mean age = 19.58 years

SD (std. dev.) = 1.599

Although 59 (69%) respondents indicated they were sexually active, a total of 65 respondents answered the question, "Do you practise safe sex?" and 64 (75%) respondents answered "yes" to practising "safe sex," and one answered "no." A total of 67 respondents answered the question "Why do you practise safe sex?," 13 (15%) answered, "to prevent unwanted pregnancy," one (1%) answered, "to prevent STDs," and 53 (62%) answered for both reasons.

The respondents were asked to choose which "safe sex" practices would protect them best from an STD. The list included spermicidal cream, IUD, condom, birth control pill, abstinence, or oral/anal sex. The respondents were allowed to choose more than one selection. The majority, 61 (72%), thought that condoms would be the best way of

protecting against an STD, followed by abstinence at 53 (62%), birth control pills at 18 (21%), and spermicidal cream at 3 (4%). More than 90% felt that neither an IUD nor oral/anal sex would offer protection against an STD. The respondents were then asked if they used a condom and how often they used one during sexual intercourse. Twenty-seven (32%) reported that they “always” use a condom, 11 (13%) reported “often,” 8 (9%) reported “sometimes,” 6 (7%) reported “rarely,” and 11 (13%) reported “never.”

HPV Awareness

When they were asked the question, “Have you heard of HPV?,” 45 (53%) of the respondents had never heard of HPV. When asked, “Have you ever been diagnosed with HPV?” 76 (89%) of 85 reported never being diagnosed with HPV, and 9 (11%) did not know if they had ever been diagnosed with HPV.

Thirteen items relating to HPV infection were presented to the respondents on the symptoms, transmission, risk factors, and diagnosis of HPV to evaluate their knowledge of HPV. The respondents answered the questions as *True/False* or *Don't Know*. The respondents were asked not to guess at any answers; if they were unsure, they were to answer *Don't Know*. The results are listed in Table 2.

Table 2

HPV Awareness

<i>Question</i>	<i>Correct Answer</i>	<i>n (%) Answered True</i>	<i>n (%) Answered False</i>	<i>n (%) Answered Don't Know</i>
1. HPV is a common STD.	True	36 (42)	6 (7)	43 (51)
2. HPV causes genital warts.	True	19 (22)	5 (6)	61 (72)
3. Discharge is a common symptom of HPV.	False	13 (15)	5 (6)	67 (79)
4. Pain is a common symptom of HPV.	False	12 (14)	7 (8)	66 (78)
5. Bleeding is a common symptom of HPV.	False	3 (4)	6 (7)	76 (89)
6. HPV is a "silent" infection.	True	22 (26)	2 (2)	61 (72)
7. HPV is most common in women between the ages of 16 and 24.	True	23 (27)	3 (4)	59 (69)
8. Using a barrier method of contraception such as a condom may reduce your risk of HPV.	True	43 (51)	3 (4)	39 (46)
9. Men and women can be infected with HPV.	True	41 (48)	11 (13)	33 (39)
10. Having many sexual partners, engaging in sexual intercourse at a young age, and smoking are some common risk factors for HPV.	True	33 (39)	2 (2)	50 (59)
11. HPV can be transmitted through unprotected vaginal intercourse.	True	43 (51)	1 (1)	41 (48)
12. Having oral or anal sex will protect you from being infected with HPV.	False	1 (1)	33 (39)	51 (60)
13. A Papanicolaou (Pap) smear test is used to diagnose HPV.	True	37 (44)	1 (1)	47 (55)

N = 85

It is important to note from the results in Table 2 that only 36 (42%) of the respondents were aware that HPV is a common STD and that only 23 (27%) were aware that HPV is common in the age group 16 to 24. Over 60 (70%) of the respondents had no knowledge of the symptoms of HPV infection, as denoted in items 2 to 6. Forty-three (51%) had good awareness of the transmission of HPV by correctly identifying item # 8 (Using a barrier method of contraception such as a condom may reduce your risk of HPV) and item # 11 (HPV can be transmitted through unprotected vaginal intercourse).

A 13-item HPV Awareness Scale based on the 13 items in Table 2 was developed by the researcher to determine the study participants' general knowledge of HPV. Each item was given a score based on the respondents' answers:

- 1 = Wrong Answer
- 2 = Don't Know
- 3 = Correct Answer

For example, a perfect score of 39 (13 items x 3 for each correct answer) would show an excellent knowledge of HPV. A score of 26 (13 x 2) provided a baseline to indicate that the respondent had no knowledge of HPV equivalent to answering *Don't Know* to all items. A score of less than 26 meant that the respondents had incorrect knowledge of HPV. The results of the scores are listed in Table 3.

Table 3

HPV Awareness Scores

n (%)	Score (out of 39)
2 (2%)	25
21 (25%)	26
12 (14%)	27
2 (2%)	28
5 (6%)	29
12 (14%)	30
4 (5%)	31
12 (14%)	32
8 (9%)	33
4 (5%)	34
2 (2%)	35
1 (1%)	36

N = 85

The scores ranged from 25 to 36, with 21 (25%) of the respondents having a score of 26.

The overall mean score was 29.35, indicating that the respondents have limited knowledge of HPV.

When the respondents were asked if they had received written information on HPV, 74 (87%) responded “no.” Eleven (13%) respondents mentioned they had received written information most commonly through a high school health class or in a nursing class.

Cervical Cancer Awareness

The respondents were presented with six items relating to cervical screening, the risk factors, and the association between HPV and cervical cancer. Table 4 provides the correct answer and the respondents' answers to the six items.

Table 4

Cervical Cancer Awareness

<i>Question</i>	<i>Correct Answer</i>	<i>n (%) Answered True</i>	<i>n (%) Answered False</i>	<i>n (%) Answered Don't Know</i>
1. A Papanicolaou (Pap) smear test is a cervical screening tool used to detect abnormal cells in the cervix.	True	68 (80%)	1 (1%)	15 (18%)
2. A woman should have her first Pap test once she becomes sexually active or by the age of 18.	True	77 (91%)	4 (5%)	4 (5%)
3. Inadequate cervical screening will increase your risk of cervical cancer in later years.	True	40 (47%)	10 (12%)	35 (41%)
4. Some types of HPV are associated with cervical cancer.	True	43 (51%)	1 (1%)	41 (48%)
5. Being infected with HPV increases your risk of cervical cancer.	True	35 (41%)	4 (5%)	46 (54%)
6. The most common risk factors of cervical cancer are similar to that of an STD.	True	12 (14%)	9 (11%)	64 (75%)

N = 85

n = 84 (Item # 1)

The majority of the respondents were aware of the specific cervical screening issues denoted in items one and two, with 68 (80%) answering correctly to item one and 77 (91%) answering correctly to item two, respectively.

A second scale was developed by the researcher on Cervical Cancer Awareness using the six items in Table 4. Each item was given a score based on the respondents' answers:

- 1 = Wrong Answer
- 2 = Don't Know
- 3 = Correct Answer

A perfect score of 18 (6 x 3 for each correct answer) would show excellent knowledge of cervical cancer issues. A score of 12 (6 x 2) provided a baseline indicating that the respondents had no knowledge of cervical cancer issues, which was equivalent to answering *Don't Know* to all items. A score of less than 12 demonstrated that the respondents had incorrect knowledge of cervical cancer issues. The results are listed in Table 5.

Table 5

Cervical Cancer Awareness Scores

n (%)	Score (out of 18)
1 (1%)	11
5 (6%)	12
12 (14%)	13
19 (22%)	14
16 (19%)	15
17 (20%)	16
7 (8%)	17
7 (8%)	18

N = 85

The scores ranged from 11 to 18, with an overall mean score of 14.88, indicating that the respondents' knowledge of cervical cancer issues was only slightly better than don't know. Disconcertingly, one respondent (1%) scored 11, and 5 respondents (6%) scored 12, indicating no or incorrect knowledge of cervical cancer issues. However, 7 (8%) of the respondents scored a perfect 18.

When the respondents were asked if they had ever received written information on cervical screening or Pap smears, only 22 (26%) confirmed receiving information, and 63 (74%) indicated that they had never received any information. Of the 22 most reported receiving the written information from a doctor or a health unit/sexual health clinic.

The question, “Have you ever had a Pap smear?” 43 (51%) of the 85 respondents answered “yes.” Twenty-eight (33%) respondents reported having had a Pap smear as part of a routine check-up, 24 (28%) for oral contraception, and 5 (6%) for problems such as bleeding or discharge. Because some of the respondents answered this question by checking off more than one response, each response was reported independently. The respondents were also asked if they had ever refused to have a Pap smear; 11 (13%) answered “yes.” The most common reasons given were “scared” and “uncomfortable.”

Data Analysis

Study participants living in the large urban centre in Northwestern Ontario were significantly less likely to have heard of HPV than participants who came from elsewhere in Canada [34% vs. 76%, $\chi^2 (1) = 12.514, p < .001$]. No other association was found between those living in this community and their religious affiliation, or if they practised their religion, were sexually active, smoked, or had had a Pap smear. With respect to the respondents’ religious affiliations, the Catholic participants were more likely to have had a Pap smear than non-Catholics [64% vs. 32%, $\chi^2 (1) = 7.234, p = .007$].

Participants who practised their religion were significantly less likely to engage in sexual activity [60% vs. 85%, $\chi^2 (1) = 4.864, p = .024$]; were less likely to smoke [23% vs. 58%, $\chi^2 (1) = 8.582, p = .004$], and were less likely to have had a Pap smear [36% vs. 69%, $\chi^2 (1) = 7.331, p = .007$] than those study participants who did not practise their religion.

Although there was no association between sexually activity and knowledge of HPV infection, the study participants who were sexually active were more likely to have had a Pap smear than those who were not sexually active [70% vs. 8%, $\chi^2 (1) = 27.574,$

$p < .001$]. Not surprisingly, the study participants who had heard of HPV were also more likely to have had a Pap smear than those who had not heard of HPV [62% vs. 40%, $\chi^2(1) = 3.877, p = .040$].

HPV and Cervical Cancer Awareness Scales

Scores were calculated using the HPV Awareness Scale (see Table 2) and the Cervical Cancer Awareness Scale (see Table 4). There was a significant correlation between scores on the two awareness scales: Participants who scored higher on the HPV Awareness Scale also tended to score higher on the Cervical Cancer Awareness Scale ($r = .427, p < .001$).

Differences in HPV and cervical cancer awareness among subgroups of the sample were examined using independent t -tests. As seen in Table 6, those who live in the large urban centre in Northwestern Ontario scored significantly lower on the HPV Awareness Scale, as compared to respondents who live elsewhere [$t(83) = -2.688, p = .009$]. Similarly, participants who had heard of HPV had significantly higher scores on the HPV Awareness Scale than those who did not hear of HPV [$t(82) = 5.192, p < .001$].

Table 6

Mean Scores for HPV Awareness Scale

<i>Subgroup</i>	M	SD
Large urban centre	28.8	2.845
Elsewhere	30.6	2.940
Heard of HPV	31.0	2.665
Have not heard of HPV	14.3	2.572

As shown in Table 7, those that had heard of HPV also had higher scores on the Cervical Cancer Awareness Scale [$t(82) = 3.563, p = .001$].

Table 7

Mean Scores for Cervical Cancer Awareness Scale

<i>Subgroup</i>	M	SD
Heard of HPV	15.5	1.714
Have not heard of HPV	14.3	1.443

Respondents' Pap Smear Experiences

Seventy-seven (91%) of the respondents reported their feelings about having a Pap smear. Answers to the question, "How do you feel about having a Pap smear?," were grouped according to how the respondents felt about having a Pap smear. Six common themes were identified (see Table 8).

Table 8

Six Common Themes

Themes extrapolated from comments from 77 undergraduate female nursing students on their feelings about having a Pap smear

- Routine Health Screening
 - Scared and Embarrassment
 - Sexual Health
 - Uncomfortable and Bothersome
 - Fine and O.K. with the Test
 - Don't Like the Test
-

Analysis of the comments revealed some overlap among the themes due to multiple expressions in some comments (see Appendix D for the 77 comments categorized according to theme). For example, the overlapping themes "Uncomfortable and Bothersome" and "Routine Health Screening" can be identified in the following comment by Respondent 74, "Uncomfortable during the procedure, but reassured about cervical health." Similarly, Respondent 57's comment, "Fine. I feel they are necessary to ensure you are not infected with something, and not passing it along to your partner,"

provided another illustration of the overlapping of themes “Fine and O.K. with the Test” and “Sexual Health.”

All of comments were grouped according to theme by the first response given by each respondent, however, it is important to note that because of this overlapping, the themes were not mutually exclusive. The 77 comments were further categorized as positive and negative (see Table 9). Fifty-two (68%) of the comments were positive; 25 (33%) were negative. Overall, the positive comments were found more frequently in the themes “Routine Health Screening,” “Sexual Health,” and “Fine and O.K. with the Test.” Following are examples of selected positive comments:

Theme #1: Routine Health Screening

- “It is an important screening tool.”
- “Now that I have had one, I will now encourage—screening is a good idea.”

Theme #3: Sexual Health

- “It is a necessary thing to do these days to ensure good sexual health.”
- “I think it’s good to get a Pap smear once a person becomes sexually active.”

Theme #5: Fine and OK with the Test

- “No big deal—was scary when younger.”
- “Fine, it’s a normal part of a woman’s check-up. I like to know that I’m healthy.”

Negative comments were more common in themes “Scared and Embarrassed,”

“Uncomfortable and Bothersome,” and “Don’t Like the Test.” Following are examples of selected negative comments:

Theme #2: Scared and Embarrassed

- “Scared/nervous.”

- “Embarrassed, vulnerable, scared.”

Theme #4: Uncomfortable and Bothersome

- Feels very uncomfortable.”
- “Uncomfortable.”

Theme #6: Don’t Like the Test

- “I don’t like it”
- “Gross it hurts”

Table 9

Positive and Negative Comments According to Theme

<i>Themes</i>	<i>n</i>	<i>Positive</i>	<i>Negative</i>
Routine Health Screening	17	17	0
Scared and Embarrassed	11	2	9
Sexual Health	6	5	1
Uncomfortable and Bothersome	19	8	11
Fine and O.K. with Test	17	17	0
Don’t Like the Test	7	2	5
Total	77	52	25

Summary

The chapter presented the statistical analysis of the responses from the 85 study participants. The majority of the participants had limited knowledge of HPV infection, according to the mean score on the HPV Awareness Scale and the Cervical Cancer Awareness Scale. Six themes were identified by the researcher based on the participants’ comments about having a Pap smear. Although the respondents recognized the importance of cervical screening as one way to detect HPV infection, and even though they acknowledged the importance of having regular Pap smears, they remain hesitant to participate in either of these health-promoting activities. The researcher also found that

the respondents who had heard of HPV had more of an awareness of health-related issues surrounding HPV infection and cervical screening.

CHAPTER 5

Discussion

The findings indicated that the knowledge of HPV among nursing students is quite poor, with 53% never having heard of HPV. Similar findings had been seen in a number of studies conducted on university students (Ramirez et al. 1997; Vail-Smith & White, 1992; Yacobi et al., 1999). The lack of awareness that HPV infection is a common STD was seen in this group, with over 50% being unaware of its connection. Baer et al. (2000) found that of 322 first-year college students, only 10 (4.6%) of the females felt that HPV is a common STD. Yacobi et al. found that their study participants were confused about HPV and other STDs. They also scored the lowest on their knowledge of HPV as compared to other STDs, which included HIV, chlamydia, gonorrhea, herpes, hepatitis B, and syphilis.

Nursing students subjectively demonstrated their lack of knowledge of HPV infection with a mean score of only 29.35 on the 13-item Knowledge Awareness Scale. Over 60 (70%) had no knowledge that HPV has few signs and symptoms, and 61 (72%) were unaware that HPV is considered a silent infection. Only 19 (22%) knew that HPV causes genital warts, and 61 (72%) stated that they did not know that HPV causes genital warts. These results are comparable to those derived from the study conducted by Baer et al. 2000, in which only 23 (11.6%) of the females knew that genital warts are caused by HPV and 126 (63.6%) did not know the cause of genital warts.

Of the study participants who identified themselves as being sexually active (recall Table 1), 53 (90%) of 59 had already begun to engage in sexual activity by the age of 18, suggesting that these young women engage in one of the most common risk factors

for HPV infection, that is, engaging in sexual intercourse at a young age (Philips et al., 2003; Ramirez et al., 1997; Sellors et al., 2000).

The majority of participants correctly identified the importance of cervical screening, with 68 (80%) of the participants knowing that a Pap smear test detects abnormal cells in the cervix and 77 (91%) agreeing that a woman should begin having a Pap smear by age 18 or when she becomes sexually active. Hasenyager (1999) found that the young female university students in her study who had had gynecological exams had a similar awareness of the importance of cervical screening.

Researchers (Philips et al., 2003; Vail-Smith & White, 1992; Hasenyager, 1999) have shown consistently that university students have poor knowledge of the risk factors of HPV infection and cervical cancer. The findings of this study are similar to others, with 50 (59%) of the 85 study participants having no knowledge of the common risk factors for HPV infection and 64 (75%) having no knowledge that the risk factors for cervical cancer are comparable to those for STDs. Overall, 50% of the participants were unaware that HPV increases the risk of cervical cancer. The participants who had heard of HPV were significantly more likely to know about HPV infection and cervical cancer issues; those who were sexually active and who had heard of HPV infection were more likely also to have had a Pap smear. Gaining information about individual sexual health through routine gynecological exams may help to impart healthier behaviours in this age group of young females. Thus, learning that HPV infection is a link to cervical cancer might increase their awareness of the importance of cervical screening.

Awareness of HPV infection was related to place of residence: students living in the large urban centre in Northwestern Ontario were much less likely to be aware of HPV

infection. Perhaps students who travel to this urban centre to pursue educational opportunities may be more aware of HPV than those who remain in their home communities. No significant difference in cervical cancer awareness and living in a large urban centre was identified. A limitation to this study was the small sample size of students living in the large urban centre; however, it does raise the question of the adequacy of information about HPV infection within this region.

The study participants revealed that they had received information on HPV infection and cervical screening mainly from health professionals, educators, and health classes (Baer et al., 2000). It is unfortunate that the topics that were the framework of this study—HPV infection, its link to cervical cancer, and the importance of cervical screening—have not yet been more widely accepted as a health risk for women of all ages. Although information about AIDs is now widely disseminated through health magazines, newspapers, and television programs, there is no such widespread information in the media about HPV infection. Although HPV infection as an STD is not yet as commonly discussed as AIDS, young women need to be just as informed about the link between HPV infection and cervical cancer.

The responses to the open-ended question in regard to the participants' feelings about having a Pap smear echoed similar findings from other studies (McKie, 1993a; Neilson & Jones, 1998). "Scared" and "embarrassment" were commonly identified as reasons for not having had a Pap smear, along with the feeling of being "uncomfortable" during the test. Interestingly, most of the study participants felt that a Pap smear should be part of a routine check-up to improve their overall health.

Health Belief Model

The HBM (Becker & Maiman, 1975) was developed as a predictor for preventive behaviour in compliance with such health care regimens as screening tests and medical care. The model has five elements: (a) perceived susceptibility to an illness or disease, (b) perceived severity of contracting the illness or disease, (c) benefits of taking action to prevent the illness or disease, (d) perceived barriers to taking action, and (e) cues toward the action taken to help promote healthier behaviours.

The questionnaire revealed gaps in the participants' knowledge of the elements of the HBM. For example, the researcher found poor knowledge of HPV among the participants, with 45 (53%) never having heard of HPV. In the first element, namely, perceived susceptibility to an illness, the study participants did not recognize themselves as being susceptible to HPV infection because of their lack of or limited knowledge of the disease. Therefore, contracting HPV infection would not be considered a threat within the second element (i.e., perceived severity of contracting the illness). The third element, that is, benefits of taking action to prevent the illness, was identified by more than 50% of the study sample as having a Pap smear.

The study revealed that the majority of the participants had sufficient knowledge of cervical screening guidelines. In regard to the theme "Routine Health Screening," many of the participants responded positively to the importance of having a Pap smear as one way of maintaining optimum health. Knowledge of cervical screening guidelines was an important factor in the decision to have a Pap smear.

The fourth element, namely, perceived barriers to taking action, was not clearly identified in this study. Despite that weakness, the participants who engaged in a

preventive behaviour (i.e., having a Pap smear), did not express the perceived barrier of acknowledging the health risk of the link between HPV and cervical cancer. The results indicated that 64 (75%) of the participants had no knowledge of the risk factors for cervical cancer and that 46 (54%) had no knowledge that being infected with HPV is a risk factor for cervical cancer.

The absence of the fifth element, that is, cues toward action taken to help promote healthier behaviours, was reflected in two ways:

1. The participants' lack of knowledge of HPV infection.
2. The lack of external information (i.e., written information) that the participants had received about HPV infection and cervical screening.

Recommendations

Health Education

- To examine and modify nursing curriculum on STD prevention education to include information on HPV transmission, risk factors, the high prevalence rate of HPV among this age group and its causal link to cervical cancer.
- To increase the amount of available educational material (e.g., videos, written materials, or other educational devices) at university health clinics to explore such topics as STDs (including HPV), Pap smears, and cervical cancer screening guidelines.
- To develop educational programs on the importance of screening, prevention, and early detection of cervical cancer to include HPV information at the postsecondary level.

- To implement a team approach through partnerships with district health units, physicians, and nurses at clinics on university campuses to provide a continuum of physical and emotional follow-up care for female students infected with HPV or displaying other cervical abnormalities.

Conclusion

This investigation was designed to assess the knowledge and awareness of HPV infection on a group of nursing students in a university setting. The basis for the theoretical framework for this study was Becker and Maiman's (1975) HBM, which supported the use of the questionnaire to predict where educational efforts need to be concentrated when examining nursing students' knowledge and beliefs about HPV and cervical screening issues.

The results indicated that nursing students have poor knowledge of the risks of HPV and the link to cervical cancer. Forty-five (53%) of the study participants had never heard of HPV, 43 (51%) had no knowledge that HPV is a common STD, 50 (59%) did not know the common risk factors for HPV, 46 (54%) had no knowledge that HPV increases the risk of cervical cancer, and 64 (75%) were unaware that the common risk factors for cervical cancer are similar to those for STDs. With this lack of or limited knowledge of HPV infection and the fact that this age group (i.e., 18 to 24) has the highest prevalence rate of HPV infection, the risk of contracting HPV is further amplified by the fact that 53 (90%) of 59 nursing students identified themselves as being sexually active by the age of 18. Although 43 (51%) indicated that they had had a Pap smear and that their feelings about cervical screening were positive, the results indicated that

nursing students' knowledge of the causal link between HPV infection and cervical cancer in general remains poor.

This study was unique in its exploration of nursing students' knowledge of HPV. Most other studies that have investigated the health behaviours of nursing students have placed a minimal focus on the prevention of STDs, specifically HPV infection. Given the nursing students' limited knowledge of HPV and cervical cancer issues, it would be prudent to consider improving the education curriculum in nursing schools, incorporate it into the program, and promote more awareness of HPV as an STD to postsecondary students as serious efforts aimed at reducing the rate of infection in this age group. University health care professionals have an opportunity to promote awareness through education and also to participate in further research on this problem to decrease the incidence of this infection.

References

- Baer, H., Allen, S., & Braun, L. (2000). Knowledge of human papillomavirus infection among adult men and women: Implications for health education and research. *Journal of Community Health, 25*(1), 67-78.
- Bauer, H. M., Ting, Y., Greer, C. E., Chambers, J. C., Tashiro, C. J., Chimera, J., et al. (1991). Genital human papillomavirus infection in female university students as determined by a PCR-based method. *Journal of the American Medical Association, 265*(4), 472-477.
- Beatty, B. G., O'Connell, M., Ashikaga, T., & Cooper, K. (2003). Human papillomavirus (HPV) education in middle and high schools of Vermont. *Journal of School Health, 73*(7), 253-257.
- Becker, M. H., & Maiman, L. A. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care, 13*(1), 10-24.
- Cleary, J., Barhman, R., MacCormack, T., & Herold, E. (2002). Discussing sexual health with a partner: A qualitative study with young women, *Canadian Journal of Human Sexuality, 11*(3/4), 117-132.
- Clement, M., Jankowski, L. W., Bouchard, L., Perreault, M., & Lepage, Y. (2002). Health behaviors of nursing students: A longitudinal study. *Journal of Nursing Education, 41*(6), 257-265.
- Dilorio, C., Dudley, W. N., Lehr, S., & Soet, J. E. (2000). Correlates of safer sex communication among college students. *Journal of Advanced Nursing, 32*(3), 658-665.

- Dittmar, S. S., Haughey, B. P., O'Shea, R. M., & Brasure, J. (1989). Health practices of nursing students: A survey. *Health Values, 13*(2), 24-31.
- Fishbein, M., & Guinan, M. (1996). Behavioral science and public health: A necessary partnership for HIV prevention. *Public Health Reports, 111*(1), 5-10.
- Franco, E. L., Schlecht, N. F., & Saslow, D. (2003). The epidemiology of cervical cancer. *Cancer Journal, 9*(5), 348-359.
- Godin, G., Gagnon, H., & Lambert, L. (2003). Factors associated with maintenance of regular condom use among single heterosexual adults. *Canadian Journal of Public Health, 94*(4), 287-291.
- Hasenyager, C. (1999). Knowledge of cervical cancer screening among women attending a university health center. *Journal of American College Health, 47*, 221-224.
- Health Canada. (1998). *Sexually transmitted disease surveillance in Canada: 1995 annual report*. Retrieved January 27, 2004, from http://www.hc_sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/98vol24/24sl/stdn_e.html
- Health Canada. (2002a). *Cervical cancer screening in Canada: 1998 surveillance report*. Retrieved March 9, 2004, from http://www.hc_sc.gc.ca/pphb-dgspsp/publicat/ccsic-dccuac/index.html
- Health Canada. (2002b). *It's your health: Screening for cervical cancer*. Retrieved January 27, 2004, from http://www.hc-sc.gc.ca/english/iyh/diseases/cervical_cancer.html
- Kavanagh, A. M., & Broom, D. H. (1997). Women's understanding of abnormal cervical smear test results: A qualitative interview study. *British Medical Journal, 314*, 1388-1391.

- Linnehan, M. E., & Groce, N. E. (1999). Psychosocial and education services for female college students with genital human papillomavirus infection. *Journal of Family Planning Perspectives, 31*(3), 137-140.
- LoBiondo-Wood, G., & Haber, J. (2002). *Nursing research: Methods, critical appraisal, and utilization* (5th ed.). St. Louis: Mosby.
- Maxwell, C. J., Bancej, C. M., Snider, J., & Vik, S. A. (2001). Factors important in promoting cervical cancer screening among Canadian women: Findings from the 1996-97 national population health survey (NPHS). *Canadian Journal of Public Health, 92*(2), 127-133.
- Michael, R. T., Wadsworth, J., Feinleib, J., Johnson, A. M., Laumann, E. O., & Wellings, K. (1998). Private sexual behavior, public opinion, and public health policy related to sexually transmitted diseases: A US-British comparison. *American Journal of Public Health, 88*(5), 749-754.
- McKie, L. (1993a). Women's views of the cervical smear test: Implications for nursing practice — women who have had a smear test. *Journal of Advanced Nursing, 18*, 1228-1234.
- McKie, L. (1993b). Women's views of the cervical smear test: Implications for nursing practice — women who have not had a smear test. *Journal of Advanced Nursing, 18*, 972-979.
- National Cancer Institute of Canada. (2003). *Canadian cancer statistics 2003*. Toronto: Author.

- Neilson, A., & Jones, R. (1998). Women's lay knowledge of cervical cancer/cervical screening: Accounting for non-attendance at cervical screening clinics. *Journal of Advanced Nursing*, 28(3), 571-575.
- Philips, Z., Johnson, S., Avis, M., & Whynes, D. K. (2003). Human papillomavirus and value of screening: Young women's knowledge of cervical cancer. *Journal of Health Education Research*, 18(3), 318-328.
- Pitts, M., & Clarke, T. (2002). Human papillomavirus infections and risks of cervical cancer: What do women know? *Journal of Health Education Research*, 17(6), 706-714.
- Quinn, M., Babb, P., Jones, J., & Allen, E. (1999). Effect of screening on incidence of and mortality from cancer of cervix in England: Evaluation based on routinely collected statistics. *British Medical Journal*, 318, 904-908.
- Ramirez, J. E., Ramos, D. M., Clayton, L., Kanowitz, S., & Moscicki, A. (1997). Genital human papillomavirus infections: Knowledge, perception of risk, and actual risk in a nonclinic population of young women. *Journal of Women's Health*, 6(1), 113-121.
- Sasieni, P., & Adams, J. (1999). Effect of Screening on cervical cancer mortality in England and Wales: Analysis of trends with an age period cohort model. *British Medical Journal*, 318, 1244-1245.
- Sellors, J. W., Mahony, J. B., Kaczorowski, J., Lytwyn, A., Bangura, H., Chong, S., et al. (2000). Prevalence and predictors of human papillomavirus infection in women in Ontario, Canada. *Canadian Medical Association Journal*, 163(5), 503-508.

- Shriver, C. B., & Scott-Stiles, A. (2000). Health habits of nursing versus non-nursing students: A longitudinal study. *Journal of Nursing Education, 39*(7), 308-314.
- Soeken, K. L., Bausell, R. B., Winklestein, M., & Carson, V. J. (1989). Preventive behaviour: Attitudes and compliance of nursing students. *Journal of Advanced Nursing, 14*, 1026-1033.
- Steven, D., Fitch, M., Dhaliwahi, H., Kirk-Gardner, R., Sevean, P., Jamieson, J., et al. (2004). Knowledge, attitudes, beliefs, and practices regarding breast and cervical cancer screening in selected ethnocultural groups in Northwestern Ontario. *Oncology Nursing Forum, 31*(2), 305-311.
- Vail-Smith, K., & White, D. M. (1992). Risk level, knowledge, and preventive behavior for human papillomaviruses among sexually active college women. *Journal of American College Health, 40*, 227-230.
- Yacobi, E., Tennant, C., Ferrante, J., Pal, N., & Roetzheim, R. (1999). University students' knowledge and awareness of HPV1. *Journal of Preventive Medicine, 28*, 535-541.

APPENDIX A
Cover Letter

Thank you for agreeing to participate in the study concerning HPV and its link to cervical cancer.

My name is Lisa Kirk. I am a graduate student in the Master's of Public Health Program at Lakehead University. I am conducting research to determine the knowledge and beliefs of a group of young females aged 18 to 24 about HPV infection and its link to cervical cancer.

I am interested in capturing the knowledge base and understanding of this common infection in young females to effectively develop and promote educational strategies to prevent the spread of this infection.

You are asked to complete a questionnaire that will take approximately 25 minutes to fill out. If you need assistance to fill out the questionnaire, it will be provided for you. All answers will be accepted.

Even though this study will not benefit you directly, there are no risks involved in completing the questionnaire. Your involvement in this study is voluntary, and you may withdraw at any time.

All information will be confidential and will be coded numerically. It will be stored in a secure location at Lakehead University for seven (7) years, after which time it will be shredded.

If you have any questions or concerns please feel free to contact me at ml2001@lakeheadu.ca

After the study has been completed, a copy of the results will be made available to you upon request.

Thank you again for your participation in this study.

Sincerely,

Lisa Kirk, RN, HBScN

APPENDIX B
Consent Form to Participate in Study
Lakehead University

In signing this form, I am giving my consent to participate in a study conducted by Lisa Kirk, graduate student currently enrolled in the Master's of Public Health, Lakehead University.

The study has been designed to determine the knowledge and beliefs of a group of young females aged 18 to 24 about the risks of HPV and its link to cervical cancer.

I understand that there is no risk of physical, psychological, or social harm to my participating in this study. There will be no benefit to me for participating in this study, but the researcher hopes that the findings will capture the knowledge base and understanding of this common infection in young females to effectively develop and promote educational strategies to prevent the spread of this infection.

It will take 25 minutes to complete the questionnaire, and every answer will be accepted.

I understand that participation in this study is voluntary and that I may withdraw at any time. I have been informed that the information will be kept confidential and that I will not be identified in any way. The questionnaires will be kept in a secure location at Lakehead University for seven (7) years, after which time the information will be shredded. I am aware that the results may be published.

I will receive a copy of the signed consent.

If I have any questions or concerns, I can contact the supervisor of this study Dr. Darlene Steven, School of Nursing, Lakehead University at (807) 343-8643 or by e mail:

darlene.steven@lakeheadu.ca

Date: _____

Signature of Participant: _____

Signature of Witness: _____

If the participant would like a copy of the results, please indicate below.

Yes ___ No ___

Name: _____

Address: _____

APPENDIX C

Questionnaire

Please read the questions carefully, and follow the instructions for each section. Regardless of the nature of the questions, all of the information that you provide remains confidential. Your name is not recorded, so there is no way of identifying you.

Section A: Demographic Information

Please **tick** the box next to the response that you have chosen.

1. How old are you? Age in years
2. Which year of the baccalaureate nursing program are you enrolled in?
 1st year 2nd year

3. What city/town do you live in?

4. To which cultural group do you belong?
(i.e., Italian, Chinese, Oji-Cree, Canadian)

5. What religion/faith/tradition are you?

Do you practise your religion/faith/tradition?

Yes No

6. What is your marital status?

Single Married Common Law
 Separated Widowed Divorced

7. Do you smoke?

Yes No

8. Have you ever smoked?

Yes No

9. If you smoke, how long have you smoked or did you smoke?

Years

10. Are you sexually active?

Yes No

If yes, at what age did you first have sexual intercourse?

Age

11. Do you practise safe sex?

Yes No

12. Why do you practise safe sex?

- To prevent unwanted pregnancy
 To prevent STDs (sexually transmitted diseases)
 For both reasons

13. What safe sex practice do you feel will protect you the best from an STD? You can tick **more than one answer**.

- Spermicidal creams IUD Condoms
 Birth control pill Abstinence Oral or anal sex

14. If you use a condom, how often do you use a condom?

Always Often Sometimes Rarely Never

Section B: Questions related to HPV (human papilloma virus)

Please **tick** the box to the response you have chosen for each question.

15. Have you heard of HPV?

Yes No

16. Have you ever been diagnosed with HPV?

Yes No Don't Know

For the following statements about HPV, tick if **true** or **false**. If you do not know, PLEASE DO NOT GUESS; instead, tick **Don't Know**.

17. HPV is a common STD (sexually transmitted disease).

True False Don't Know

18. HPV causes genital warts.

True False Don't Know

19. Discharge is a common symptom of HPV.

True False Don't Know

20. Pain is a common symptom of HPV.

True False Don't Know

21. Bleeding is a common symptom of HPV.

True False Don't Know

22. HPV is a "silent" infection.

True False Don't Know

23. HPV is most common in women between the ages of 16 and 24.

True False Don't Know

24. Using a barrier method of contraception such as a condom may reduce your risk of HPV.

True False Don't Know

25. Men and women can be infected with HPV.

True False Don't Know

26. Having many sexual partners, engaging in sexual intercourse at a young age, and smoking are some of the common risk factors for HPV.

True False Don't Know

27. HPV can be transmitted through unprotected vaginal intercourse.

True False Don't Know

28. Having oral or anal sex will protect you from being infected with HPV.

True False Don't Know

29. A Papanicolaou (Pap) smear test is used to diagnose HPV.

True False Don't Know

Please **tick** the box next to the response you have chosen, and **comment** on the following questions that most accurately reflect the way you feel.

30. Would you tell your partner if you were infected with HPV?

Yes No Don't Know

If No or Don't Know, please explain.

31. Would you ask your partner about his past sexual history?

Yes No Don't Know

If No or Don't Know, please explain.

32. Would you ask your partner to wear a condom?

Yes No Don't Know

If No or Don't Know, please explain.

33. Have you received written information about HPV?

Yes No

If Yes, who gave you this information?

Section C: Questions related to cervical screening and cervical cancer.

For the following statements, tick if **true** or **false**. If you do not know, PLEASE DO NOT GUESS; instead, tick **Don't Know**.

34. A Papanicolau (Pap) smear test is a cervical screening tool used to detect abnormal cells in the cervix.

True False Don't Know

35. A woman should have her first Pap test once she becomes sexually active or by the age of 18 years.

True False Don't Know

36. Inadequate cervical screening will increase your risk of cervical cancer in later years.

True False Don't Know

37. Some types of HPV are associated with cervical cancer.

True False Don't Know

38. Being infected with HPV increases your risk of cervical cancer.

True False Don't Know

39. The common risk factors of cervical cancer are similar to that of an STD.

True False Don't Know

Please **tick** the box next to the response you have chosen, and **comment** on the following questions that most accurately reflect the way you feel.

40. Have you ever had a Pap smear?

Yes No

If Yes, why did you have the test?

- Routine check-up
- Problems (i.e., bleeding or discharge)
- To receive oral contraceptive prescription
- Do not know why

41. Have you every refused to have a Pap smear?

Yes No

42. If yes, describe some of the reasons why you would not have a Pap smear?

43. How do you feel about having a Pap smear?

44. Have you received written information about cervical screening or Pap smears.

Yes No

If Yes, who gave you this information?

APPENDIX D

Common Themes

“How do you feel about having a Pap smear?”**Theme # 1****Routine Health Screening**

“Not a problem. I feel healthier after having one, as it will let me know if something is wrong which I can not detect!” (respondent 1)

“Good to make sure you are healthy.” (respondent 3)

“It is a routine check-up and if it’s for my health, then why not?” (respondent 4)

“ I think women should have it done, but it must hurt, especially if women aren’t sexually active.” (respondent 20)

“They are good because they help detect disease.” (respondent 21)

“I am actually scheduled for my first one next week.” (respondent 32)

“Good because I know I am getting checked and am safe.” (respondent 30)

“I think it’s is a good thing to have it done routinely.” (respondent 34)

“It is an important screening tool.” (respondent 39)

“More comfortable about having the knowledge of not having any problems/complications.” (respondent 40)

“Part of life and health.” (respondent 50)

“I feel that it is necessary for a healthy life. Routine, so no one should not get one.” (respondent 52)

“It is needed, so I do not feel odd having one.” (respondent 59)

“I feel it is a proactive approach in the health care system to take charge of one’s own life.” (respondent 62)

“Now that I’ve had one, I am totally OK with having them routinely.” (respondent 64)

“Good idea for a future check-up.” (respondent 72)

“Now that I have had one, I will now encourage—screening is a good idea.” (respondent 75)

Theme # 2

Scared and Embarrassment

“Scared, uncomfortable, small town.” (respondent 43)

“Anxiety and embarrassed.” (respondent 69)

“Scared/nervous” (respondent 2)”

“Scared and embarrassed.” (respondent 15)

“I would be nervous about having one, but I would keep myself healthy.” (respondent 17)

“Scared—don’t want a male to it.” (respondent 27)

“Embarrassed, vulnerable, scared.” (respondent 35)

“Nervous, don’t want to be judged, uncomfortable (feel more comfortable with female doctor and sister/close friend present).” (respondent 36)

“Nervous, but it’s a good thing to get one.” (respondent 38)

“Nervous.” (respondent 77)

“Queasy and uncomfortable.” (respondent 79)

Theme # 3

Sexual Health

“I think it’s good to get a Pap smear once a person becomes sexually active.” (respondent 5)

“I feel uneasy. Because I am sexually active, maybe they will find something.” (respondent 44)

“It is a necessary thing to do these days to ensure good sexual health.” (respondent 51)

“Awkward, but I would get it when I start being sexually active.” (respondent 65)

“I know I should have one—but because I am not sexually active, I guess I don’t feel I should go.” (respondent 67)

“I think everyone that is sexually active should have one. But do you need one just for intercourse?” (respondent 73)

Theme # 4

Uncomfortable and Bothersome

“Uncomfortable.” (respondents 6, 8, 12, 53, 61, 84)

“It would bother me. I have never had one, though maybe it would be a good idea.” (respondent 10)

“Uncomfortable but necessary.” (respondent 14)

“Uncomfortable, but it is necessary.” (respondent 56)

“It’s uncomfortable, but important to do it. Only last 30 seconds, so it’s not a big deal.” (respondent 16)

“I feel very uncomfortable, but one day I will because I know you should.” (respondent 18)

“Uncomfortable and awkward.” (respondent 26)

“A little uncomfortable and nervous, but it must be done to be safe.” (respondent 32)

“Uncomfortable, nervous.” (respondent 33)

“It’s uncomfortable, but necessary to maintain healthy lifestyle.” (respondent 49)

“Feels very uncomfortable.” (respondent 54)

“Not good because it’s uncomfortable.” (respondent 55)

“It is a bit uncomfortable, but I know that it is important for my health.” (respondent 71)

“Uncomfortable during procedure, but reassured about cervical health.” (respondent 74)

Theme # 5

Fine and O.K. with Test

“Fine.” (respondent 11)

“Fine, it’s a normal part of a woman’s check-up. I like to know that I’m healthy.” (respondent 13)

“O.K.” (respondent 31, 45)

“No big deal—was scary when younger.” (respondent 46)

“Willing—I’m getting one in December.” (respondent 47)

“Fine. I feel they are necessary to ensure you are not infected with something, and not passing it along to your partner.” (respondent 57)

“Doesn’t really matter. I would like to know if something is abnormal (for example, cancer).” (respondent 58)

“Good, help prevent and detect early cervical cancer diagnosis. I’m being safe.” (respondent 60)

“I would like to have one, but not right now.” (respondent 63)

“Fine—slightly painful procedure, though.” (respondent 66)

“I’m comfortable, and feel secure that I’m safe and healthy.” (respondent 70)

“It’s not that bad.” (respondent 81)

“It’s a good thing to have done, but just never thought to get one yet.” (respondent 85)

“Alright, one day soon I’ll get one done.” (respondent 83)

“I’m not really sure.” (respondent 9)

“Don’t know, but I should definitely have one.” (respondent 68)

Theme # 6

Don’t Like the Test

“I hate it—it’s cold, uncomfortable, and it really hurts!!!” (respondent 24)

“I don’t like it.” (respondent 29)

“Icky...” (respondent 42)

“I really don’t like them and find them very uncomfortable, but I know that they are essential, so I do them.” (respondent 48)

“Gross it hurts.” (respondent 76)

“Not looking forward to it.” (respondent 78)

“Don’t want it, I am scared about having one done. But will get one once I become sexually active.” (respondent 80)