

Expanding the Scope of Nursing Research in Low Resource and Middle Resource Countries, Regions, and States Focused on Cervical Cancer Prevention, Early Detection, and Control

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Abstract

Cervical cancer is the second most commonly diagnosed cancer and the third leading cause of cancer death in women worldwide. There are significant disparities in cervical cancer incidence and mortality globally as well as in the United States. The most significant global disparities in cervical cancer incidence and mortality are reported in low resource and middle resource countries, regions, and states. This report provides an overview of cervical cancer epidemiology and etiology, and identifies "gaps" in the nursing literature specific to cervical cancer prevention and control worthy of consideration by nurses within the practice setting.

Key Words: Cervical cancer, HPV, HPV vaccine, women

There are significant disparities in cervical cancer incidence and mortality globally and in the United States. The most significant global disparities in cervical cancer incidence and mortality are reported in low resource and middle resource countries, regions, and territories (Cancer Statistics Working Group, 2009; International Agency for Research on Cancer, 2008; American Cancer Society, 2007; Sloan & Gelband, 2007). The highest incidence rates of cervical cancer worldwide occur in Central America, South America, the Caribbean, Sub-Saharan Africa, and Southern Asia. The highest mortality rates of cervical cancer worldwide occur in Africa, Latin America, Asia, and India. The global disparities in cervical cancer incidence and mortality seen between wealthy and poor countries are reported as being related to gross disparities in access to screening and treatment.

Introduction

Cervical cancer is one of the most common forms of cancer diagnosed and one of the most common causes of cancer death among women worldwide (International Agency for Research on Cancer, 2008; American Cancer Society, 2007). Once the most common cause of cancer among women of childbearing age, cervical cancer ranks as the second most commonly diagnosed cancer and the third leading cause of cancer death in women worldwide. According to reports disseminated by the World Health Organization and the American Cancer Society, an estimated 555,100 new cases of cervical cancer and an estimated 309,800 deaths due to cervical cancer would occur worldwide during 2007.

Within the United States, the highest incidence rates of invasive cervical cancer are reported in Alaska, Arkansas, Delaware, the District of Columbia, Florida, Kentucky, Louisiana, Nevada, New Mexico, New York, Tennessee, Texas, and West Virginia (Cancer Statistics Working Group, 2009; American Cancer Society, 2007). The highest mortality rates of invasive cervical cancer in the United States are reported in Alabama, Arkansas, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Tennessee, Texas, and West Virginia. Among the factors most often cited and associated with the disparate variations in cervical cancer incidence and mortality within the United States are race, poverty, and access to resources for cervical cancer screening and treatment of pre-invasive cervical cancer lesions.

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Cervical Cancer Etiology and Risk

Cervical cancer is an infection-related cancer caused primarily by the human papilloma virus (HPV) (National Comprehensive Cancer Network [NCCN], 2008; American Cancer Society [ACS], 2008; Centers for Disease Control and Prevention [CDC], 2007; CDC, 2007b; National Cancer Institute [NCI], 2004; Koutsky, Galloway, & Holmes, 1988; Ho, Bierman, Beardsley, Chang, & Burk, 1998; Sellers, Karwalajtys, Kaczorowski, Mahony, Lytwyn et al., 2003; Baseman & Koutsky, 2005; Winer, Lee, Hughes, Adam, Kiviat et al., 2003; Rylander, Ruusuvaara, Almstromer, Evander, & Wadell, 1994; Kjaer, Chackerian, van de Brule, Svare, Paull et al., 2001; Moscickim, Hills, Shiboski, Powell, Jay et al., 2001). There are more than 100 different HPV types. Approximately 60 HPV types cause warts on non-genital skin, such as on the hands, arms, knees, shins, feet and face. Approximately 40 HPV types can affect mucous membranes and cause genital warts or low-grade changes, high-grade changes, pre-cancer or cancer in the cervix, vagina, anus, vulva, penis, urethra, mouth, throat, tongue or tonsils. In addition, other types do not cause warts, cancer or symptoms.

Most sexually active women (and men) are infected by a genital type of the HPV at some time in their lives. Genital types of the HPV do not cause health problems for most people. For most women (and men), the virus is eliminated by the immune system within one to two years before it causes any changes in the body. However, among some women, most notably those infected with the high-risk type of the virus, the virus persists and leads to the development of cervical cancer.

Etiology of Exposure

Sexual behavior is a primary risk factor for contracting the genital type of the HPV. The genital type of the HPV is usually transmitted skin-to-skin during penetrative vaginal or anal-genital contact. Oral-genital, manual-genital and genital-genital contact can lead to the transmission of the virus. While studies have shown that transmission of the genital type of the HPV without sexual intercourse is possible, it is not common.

Women with multiple sex partners have a higher risk of contracting the genital type of the HPV than monogamous women. Young women between the ages of 15 and 25 have a two-fold higher risk of contracting a genital type of HPV compared to women over 35 years of age (Fraisier, 1994). Early age at first intercourse, having many sex partners, having a sexual partner who has had several different sex partners, and having sex with an uncircumcised male increase a woman's risk of contracting a genital type of the HPV. Other factors that increase a woman's risk for contracting a genital type of the HPV or of developing cervical cancer have been identified. Included among these risks are chlamydia infection, smoking, immune suppression, oral contraception use, diets low in fruit and vegetables, overweight, multiple pregnancies, exposure to DES in utero, low socioeconomic status, family history, and irregular cervical cancer screening (NCCN, 2008;

CDC, 2007; CDC, 2007b; Ho et al., 1998; International Collaboration of Epidemiological Studies of Cervical Cancer, 2007; Sedjo, Roe, Abrahamsen, Harris, Craft et al., 2002; Calle & Kaaks, 2004; International Collaboration of Epidemiological Studies of Cervical Cancer, 2006; Hatch, Herbst, Hoover, Noller, Adam et al., 2001; Troisi, Hatch, Titus-Ernstoff, Hyer, Palmer et al., 2007).

Common Causations

- Chlamydia infection - Women whose blood tests show past or present chlamydia infection are at a higher risk for cervical cancer than women with normal test results.
- Smoking - Smoking can accelerate the cervical damage caused by HPV. Women who smoke are twice as likely as non-smokers to develop cervical cancer.
- Immune suppression - Suppression of the immune system due to HIV infection, post-organ transplantation therapy, chemotherapy or chronic steroid use increases a person's risk of developing an HPV-associated disease.
- Oral contraception use - Women who take oral contraceptives for five consecutive years are more likely to develop invasive cervical cancer than are women who never use oral contraceptives.
- Diets low in fruit and vegetables - Women who consumed diets high in vegetables and fruit are less likely to develop persistent HPV infections.
- Overweight - While studies of the association between BMI and cervical cancer are limited and inconclusive, several studies have shown an increased risk of cervical cancer among overweight and obese women.
- Multiple pregnancies - Women who carry seven or more full-term pregnancies are at increased risk of developing invasive cervical cancer.
- In utero exposure to DES - Women exposed to DES in utero are at increased risk of developing clear-cell adenocarcinoma, a rare type of cervical cancer.
- Low socioeconomic status - Low socioeconomic status is associated with increased risk for developing invasive cervical cancer due to limited access to screening and treatment for pre-cancerous cervical diseases.
- Family history - A woman whose immediate family member, like a mother or sister, has had cervical cancer is two to three times more likely to develop invasive cervical cancer. Scientists believe women with a family history of cervical cancer may carry a genetic condition making them more susceptible to HPV infections.
- Irregular cervical cancer screening - Women who have never had cervical cancer screening and women who do not regularly obtain cervical cancer screening, are less likely to be treated for pre-cancerous cervical diseases, resulting in an increased risk of developing invasive cervical cancer.

Table 1. National Guidelines for Cervical Cancer Screening

	U.S. Preventive Services Task Force*	National Comprehensive Cancer Network**	American Cancer Society***
When to begin cervical cancer screening	Cervical cancer screening can safely be delayed until 3 years after onset of sexual activity or until age 21, whichever comes first.	Cervical cancer screening should begin approximately three years after the onset of vaginal intercourse or by 21 years of age.	Screening should begin approximately 3 years after the onset of vaginal intercourse, but no later than age 21.
Cervical cancer screening intervals for Conventional Pap test: If liquid-based cytology If liquid-based testing combined with HPV testing	At least every 3 years.* Evidence insufficient to recommend for or against the routine use of liquid-based cytology to screen for cervical cancer. Evidence insufficient to recommend for or against the routine use of HPV testing.	Annually* for women > 30 with 3 consecutive, technically satisfactory negative cytology tests.* Annually; every 2-3 years for women > 30 with 3 consecutive, technically satisfactory negative cytology tests.* Every 3 years if HPV DNA negative, negative cytology tests for women > 30.*	Annually; every 2-3 years for women > 30 with 3 negative cytology tests.* Every 2 years; every 2-3 years for women > 30 with 3 negative cytology tests. Every 3 years if HPV DNA negative, negative cytology tests for women > 30.*
When to stop cervical cancer screening	Women > 65 years with normal Pap smears, who are not otherwise at high risk for cervical cancer.	Women 70 years of age or older with an intact cervix who have had 3 or more documented, consecutive, technically satisfactory negative cervical cytology tests, and no abnormal cytology tests within the 10 year period prior to age 70 may choose to stop having cervical cancer screening. Women with a history of cervical cancer, DES exposure before birth, HIV infection or a weakened immune system should continue. Women with co-morbid or life-threatening illnesses may forego cervical cancer screening.	Women 70 years of age or older who have had 3 or more normal Pap tests in a row and no abnormal Pap test results in the last 10 years may choose to stop having cervical cancer screening. Women with a history of cervical cancer, DES exposure before birth, HIV infection or a weakened immune system should continue to have screening as long as they are in good health.
Post total hysterectomy	Discontinue routine screening in women who have had a total hysterectomy for benign disease.	Vaginal cytology tests after total hysterectomy for benign gynecological diseases is not indicated.	Women who have had a total hysterectomy may also choose to stop having cervical cancer screening, unless the surgery was done as a treatment for cervical cancer or pre-cancer. Women who have had a hysterectomy without removal of the cervix should continue to follow the guidelines above.

* United States Preventive Services Task Force. (2003). Screening for cervical cancer: Recommendations and rationale. *American Family Physician*, 67, 1759-1766.

** National Comprehensive Cancer Network. (2008). *NCCN clinical practice guidelines in oncology: Cervical Cancer*. Fort Washington, PA: National Comprehensive Cancer Network.

*** Smith, R. A., Cokkinides, V., & Brawley, O. W. (2008). Cancer screening in the United States, 2008: A review of current American Cancer Society guidelines and cancer screening issues. *CA Cancer J Clinicians*, 58, 161-179.

HPV in Men

Less is known about the risk factors for contracting a genital type of the HPV in men. However, outcomes of several recent studies suggest that the risk factors for contracting a genital type of the HPV infection in men resemble those found in women (Svare, Kjaer, Worm, Osterlind, Meijer et al., 2002; Nyitray, Nielson, Harris, Flores, Abrahamsen et al. 2008; Hernandez, Wilkens, Zhu, McDuffie, Thompson et al., 2008). Factors which significantly increase a man's risk for contracting a genital type of the HPV are engaging in sex at an early age, having many sexual partners, having sex with a partner who has had many other partners, engaging in unprotected sex, and being uncircumcised.

Cervical Cancer Prevention, Early Detection and Treatment

Abstaining from all sexual contact is the only absolute way to prevent infection by a genital type of HPV (ACS, 2009; NCCN, 2008; CDC, 2007; CDC, 2007b; National Association of Nurse Practitioners in Women's Health and the Ad Hoc Committee on Cervical Cancer Screening, 2007; NCI, 2004). For most adults, complete abstinence is unrealistic, so other means of HPV risk reduction, early detection, and treatment are recommended. Being in a monogamous long-term relationship with an uninfected partner will greatly reduce a person's risk of contracting a genital type of the HPV. Limiting the number of sexual partners decreases a person's risk of contracting different strains of the HPV. Consistent and correct condom use also provides some protection. Safer sexual methods and practices that include condom use are therefore encouraged. However, given that condoms do not cover the vulva, scrotum, perineum, or rectal areas, they cannot completely prevent the transmission of genital types of the HPV.

The Food and Drug Administration licensed the first HPV vaccine in June of 2006. The vaccine is indicated for use among girls and women from 9 to 26 years of age for the prevention of cervical cancer, precancerous or dysplastic lesions, and genital warts. While the HPV vaccine does not protect against all types of HPV, it does provide protection against two HPV types that cause 70% of the cases of cervical cancer (i.e., HPV 16 and HPV 18). It also provides protection against two of the HPV types that cause 90% of the cases of genital warts (i.e., HPV 6 and HPV 11) (FUTURE II Study Group, 2007).

Early Identification and Treatment

Identifying and treating pre-cancerous lesions of the cervix before they become invasive reduces cervical cancer incidence and mortality. Several institutions, organizations, and societies have developed guidelines for cervical cancer screening. Included among them are the U.S. Preventive Services Task Force, the National Comprehensive Cancer Network, and the American Cancer Society. While they all support Pap testing for cervical cancer screening, the recommendations/guidelines vary relative to the age when screening should begin, the age when screening should end, the interval for regular screen-

ing, screening for women who have had hysterectomies, and the use of conventional Pap smear, liquid-based cytology, computerized technologies, and algorithm-based technologies (see Table 1).

Several treatments are available to women who have been diagnosed with pre-cancerous cervical lesions and invasive cervical cancers (ACS, 2008; NCCN, 2008; NCI, 2004). Pre-cancerous lesions of the cervix are most often treated using electrocoagulation, cryotherapy, laser ablation, or surgery. Invasive cervical cancers are most often treated using surgery, radiation, chemotherapy and/or biological therapy.

Gaps and Opportunities Worthy of Consideration by Nurses

Over the past decade, many reports have been published in the literature that describe the etiology, epidemiology, and prevalence of cervical cancer worldwide and in the United States. The same is true of reports published in the nursing literature that describe the outcomes of efforts undertaken by nurses to explore factors relevant to cervical cancer detection, diagnosis, and treatment. Consequently, much has been gleaned about concerns and needs of diverse groups of women relative to cervical cancer detection and control (see Table 2).

Much has been gleaned about the perceptions, beliefs, and cervical cancer screening practices of women abroad and in the United States (Denny-Smith, Bairan, & Page, 2006; Lee, Fogg, & Menon, 2008; Lee, Tripp-Reimer, Miller, Sadler, & Lee, 2007; Lee-Lin, Pett, Menon, Lee, Nail et al., 2007; Schulmeister & Lifsey, 1999; Tung, Nguyen, & Tran, 2008; Donnelly & McKellin, 2007; McFarland, 2003; O'Brien, Mill, & Wilson, 2009; Steven, Fitch, Dhaliwal, Kirk-Gardener, Sevean et al., 2004). Much has been gleaned about cultural, personal, social, and economic factors which (positively and negatively) influence cervical cancer screening and early detection among women worldwide and in the United States (Strickland, Squeoch, & Chrisman, 1999; Ackerson, Pohl, & Low, 2008; Carruth, Browning, Reed, Skarke, & Sealey, 2006; Ho, Yamal, Atkinson, Basen-Engquist, Tortolero-Luna, & Follen, 2005; Jennings, 1997; Jennings-Dozier & Lawrence, 2000; Jennings-Dozier, 1999; Kim, Yu, Chen, Kim, Kaufman, & Purkiss, 1999; Lee, 2000; Welch, Miller, & James, 2008; Boonpongmanee & Jittanoon, 2007; Holroyd, Twinn, & Adab, 2004; Thomas, Saleem, & Abraham, 2005; Twinn, Shiu, & Holroyd, 2002). Much has been gleaned about concerns and experiences of women after diagnosis who sought treatment for cervical dysplasia or cervical cancer and about concerns and experiences of women presumed to have cervical cancer who, for varying reasons, chose to forgo treatment (Rajaram, 1998; Lauver, Baggot, & Kruse, 1999; Hunt, de Voogd, Akana, & Browner, 1998; Clemmens, Knafl, Lev, & McCorkle, 2008; Greenwald & McCorkle, 2007; Kritcharoen, Suwan, & Jirojwong, 2005; Hunter, 2005; Idström, Milsom, Andersson-Ellström, & Athlin, 2006; Twinn & Cheng, 1999; Park, Yoo, & Chang, 2002; Barnoy, Bar-Tal, & Treister, 2003; Butler, Banfield, Sveinson, & Allen, 1998; Eisemann & Lalos, 1999; Twinn, 2006; Velji

Table 2. Cervical Cancer Detection and Control Evidence Review, 1998-2008

Author/Year	Title	Purpose	Study Design	Sample Demographics	Instrument/s Analytic Methods	Findings
<i>Study of influence of knowledge, perceptions and experiences on cervical cancer risk behaviors and screening</i>						
Denny-Smith, et al., 2006	A survey of female nursing students' knowledge, health beliefs, perceptions of risk, and risk behaviors regarding HPV and cervical cancer.	Assess knowledge of perceived susceptibility to, seriousness of and risk behaviors regarding HPV and cervical cancer among female nursing students	Descriptive Correlational	N = 240 female baccalaureate nursing students, 19 to 58 years of age	Descriptive Inferential	Female nursing students participate in high risk sexual behaviors and had fairly low levels of knowledge, low perceived risk of contracting HVP, and low perceived seriousness of HPV and cervical cancer.
Kim, et al., 1999	Cervical cancer screening knowledge and practices among Korean-American women.	Examine cervical cancer screening knowledge and practices of Korean-American women	Descriptive	N = 159 Korean-American women, 40 to 69 years of age	Descriptive	Knowledge of the purpose of the Pap test and adherence with screening recommendations was limited among the study sample. The most common reasons for not having a Pap test was the absence of symptoms.
McFarland, 2003	Cervical cancer and Pap smear screening in Botswana: knowledge and perceptions.	Examine knowledge and beliefs of women in Botswana about cervical cancer and Pap smear	Descriptive	N = 30 low, middle and high income women 31-54 years of age	Semi-structured interview Content analysis	Knowledge of cervical cancer and Pap smear utilization was limited among the low-income women.
O'Brien, et al., 2009	Cervical screening in Canadian First Nation Cree women.	Explore the beliefs and attitudes of First Nation Cree women about cervical cancer and cervical cancer screening	Exploratory	N = 8 First National women having experience with cervical cancer screening and/or cancer.	In-depth interview Thematic analysis	Women expressed that they had inadequate information about cervical cancer and were resistant to screening because of embarrassment and fear of cancer.
Schulmeister, et al., 1999	Cervical cancer screening knowledge, behaviors, and beliefs of Vietnamese women.	Describe the knowledge, beliefs, and cervical cancer screening practices of Vietnamese American women	Exploratory Descriptive	N = 96 Vietnamese migrant women, 18 to 65 years of age	Thematic analysis Descriptive	Limited knowledge about the purpose and procedures used to perform Pap test. Perceived the risk of cervical cancer to be low.

Table 2. Cervical Cancer Detection and Control Evidence Review, 1998-2008 (continued)

Author/Year	Title	Purpose	Study Design	Sample Demographics	Instrument/s Analytic Methods	Findings
<i>Tung, Nguyen, et al., 2008</i>	Applying the trans-theoretical model to cervical cancer screening in Vietnamese-American women.	Describe Pap smear behaviors of Vietnamese American women	Descriptive	N = 80, Vietnamese American women, 20 to 65 years of age	Descriptive Inferential	While most women reported ever having had a Pap test, less than half reported regular screening.
<i>Study of influence of culture, social and economic factors on cervical cancer risk behavior and screening</i>						
<i>Ackerson, et al., 2008</i>	Personal influencing factors associated with Pap smear testing and cervical cancer.	Explore personal influencing factors associated with Pap smear testing and perceptions of vulnerability to cervical cancer among a subset of African-American women	Exploratory	N = 7 African-American low income women from south central Michigan, 21 to 38 years of age	Content analysis In-depth interview	Family and providers were noted to influence Pap testing of the women. Previous experience with Pap smear of most of the women was perceived as negative (scary, uncomfortable and painful).
<i>Carruth, et al., 2006</i>	The impact of farm lifestyle and health characteristics: cervical cancer screening among southern farmwomen.	Identify factors contributing to cervical cancer screening behavior among farmwomen in three Southern states	Descriptive	N = 2,324 farmwomen, 18 to 65+ years of age	Descriptive Inferential	Having a house on a farm, and engaging in no off-farm work and minimal involvement in farm tasks predicted failure to obtain cervical cancer screening. Previous breast exam and mammogram were positive predictors of cervical cancer screening.
<i>Jennings, 1997</i>	Getting a Pap smear: focus group responses of African-American and Latina women.	Identify barriers and facilitating factors associated with Pap smear use among African-American and Latina women	Exploratory Descriptive	N = 52 African-American and Latina women from health and social service agencies in the Mid-Atlantic	Focus group Content analysis Descriptive statistics	Factors most commonly identified as facilitating/inhibiting Pap testing among African-American women were access to a doctor, gender of the doctor and cost. Among Latina women, the most common factors identified were access to a doctor, doctor's gender and the presence of symptoms.

Table 2. Cervical Cancer Detection and Control Evidence Review, 1998-2008 (continued)

Author/Year	Title	Purpose	Study Design	Sample Demographics	Instrument/s Analytic Methods	Findings
Jennings-Dozier, et al., 2000	Sociodemographic predictors of adherence to annual cervical cancer screening in minority women.	Assess impact of age, income, insurance coverage, marital status, level of education and number of persons living at home on cervical cancer screening in Black and Hispanic women	Descriptive	N = 204 Black and Hispanic women, 18 to 83 years of age, from non-profit service agencies in Philadelphia	Descriptive Inferential	Among Black women, insurance and level of education were significant predictors of cervical cancer screening. Age and place of birth, were significant predictors of cervical cancer screening among Hispanic women.
Lee, 2000	Knowledge, barriers, and motivators related to cervical cancer screening among Korean American women. A focus group approach.	Identify barriers and motivators to cervical cancer screening among Korean American women.	Exploratory	N = 102 Korean American women, 18 to 50+ years of age	Focus groups Content analysis	Misinformation and lack of knowledge about causative factors and prevention of cervical cancer was common. Economics, language problems, fear, fatalism and Confucian thinking were identified as barriers to cervical cancer screening.
Thomas, et al., 2005	Barriers to effective uptake of cancer screening among Black and minority ethnic groups.	Describe factors that act as barriers to breast and cervical cancer screening among Black minority groups living in the UK	Exploratory	N = 85 women and 50 men, 20-75 years of age	Focus group Content analysis	Poor knowledge and underlying health and cultural beliefs (i.e., superstitions, taboos), language, and attitudes of health-care professionals were noted to be barriers to screening.
<i>Study of experiences of women seeking treatment for abnormal Pap smear</i>						
Hunt, et al., 1998	Abnormal Pap screening among Mexican-American women: impediments to receiving and reporting follow-up care.	Identify impediments to receiving and reporting timely follow-up care for abnormal Pap tests among Hispanic women	Descriptive	N = 11 Mexican American women. 40 to 73 years of age, "lapsed" in follow-up for abnormal Pap tests	Structured interview Content analysis	Reluctance to be examined by a male practitioner, lack of flexibility in scheduling clinic appointments, and poor staff communication regarding appointments and the seriousness of the condition negatively influenced follow-up behavior.

Table 2. Cervical Cancer Detection and Control Evidence Review, 1998-2008 (continued)

Author/Year	Title	Purpose	Study Design	Sample Demographics	Instrument/s Analytic Methods	Findings
<i>Lauver, et al., 1999</i>	Women's experiences in coping with abnormal Pap results and follow-up colposcopy.	Describe experiences and needs of women coping with abnormal Pap results that warrant follow-up colposcopy	Descriptive	N = 75 women who had Pap results revealing significant abnormalities that warranted colposcopy, 15 to 41 years of age	Descriptive	Primary concerns identified were limited understanding of cancer, the Pap results, and infertility. Social support and distraction were identified as the most commonly used and helpful coping strategies.
<i>Rajaram, 1998</i>	Non-adherence to follow-up treatment of an abnormal Pap smear: a case study.	Case study of a 32-year-old African-American woman diagnosed with an abnormal Pap smear, who did not follow through with the recommended diagnostics	Exploratory	N = 1, 32-year-old African-American woman diagnosed with an abnormal Pap smear	Case study	Study findings demonstrate how patients' illness explanatory models may not agree with biomedical explanations, and have an adverse impact on health and illness behavior.
<i>Study of experiences of women undergoing treatment for cervical cancer</i>						
<i>Butler, et al., 1998</i>	Conceptualizing sexual health in cancer care.	Describe women's experiences with changes in sexual function related to physical comfort, sexual satisfaction, and feelings of intimacy after treatment for gynecological cancer	Exploratory	N = 17 women with endometrial and cervical cancer, 23 to 76 years of age	Semi-structured interview Thematic analysis	Sexual functioning was perceived to be multidimensional and dependent on how the women perceived the changes in their lives as a result of having gynecological cancer and treatment.
<i>Clemmens, et al., 2008</i>	Cervical cancer: patterns of long-term survival.	Describe the quality of life experienced by long-term survivors of cervical cancer and factors that promote adaptation	Exploratory	N = 19 women diagnosed with cervical cancer, 34 to 92 years of age	Semi-structured interview Thematic analysis	Three distinct patterns specific to experience emerged from the survivors accounts: moving on from cancer as a difficult place in life; renewed appreciation for life pattern, while focusing on positive outcomes of their experience; and ongoing, while attempting to manage negative outcomes.

Table 2. Cervical Cancer Detection and Control Evidence Review, 1998-2008 (continued)

Author/Year	Title	Purpose	Study Design	Sample Demographics	Instrument/s Analytic Methods	Findings
<i>Greenwald, et al., 2007</i>	Remedies and life changes among invasive cervical cancer survivors.	Assess the impact of invasive cervical cancer and health practices in population of long-term survivors of cervical cancer	Descriptive	N = 208 women, 6 to 29 years after diagnosis with invasive cervical cancer	Descriptive Inferential	Despite the disease many women found opportunities for growth and adaptation. Vast majority of women used remedies for their cervical cancer other than those prescribed by their doctors. Included among the most commonly used remedies were vitamin supplements, prayer, massage and herbal teas.
<i>Hunter, 2005</i>	Emelda's story: applying ethnographic insights to cultural assessment and cervical cancer control.	Examine the life and cervical cancer experience of a 42 year old woman from Peru	Case study	N = 1, 42 year old woman dying from cervical cancer	Ethnographic analysis	Cultural, personal and systemic issues impacting the cervical cancer experience included cancer knowledge, illness behavior, fear of cancer, fear of pelvic examination, and health care system.

& Fitch, 2001). And, much has been gleaned about the concerns, practices, competencies, and educational needs of women's health providers regarding cervical cancer screening (Morris, McLean, Bishop, & Harlow, 1998; Tessaro & Herman, 2000; Widmark, Tishelman, Lundgren, Forss, Sachs et al., 1998; Lundgren, Tishelman, Widmark, Forss, Sachs et al., 2000; Donnelly, 2008).

These reports provide valuable information and insights essential to cervical cancer screening, diagnosis, and treatment. However, review of this body of literature in light of current knowledge reveals several "gaps" worth thoughtful consideration by nurses in the practice setting. For example, several reports have been published by the International Agency for Research on Cancer, the National Cancer Institute, the Centers for Disease Control and Prevention, the American Cancer Society, and other organizations dedicated to the prevention and control of cervical cancer that highlight worldwide population-specific trends

relative to cervical cancer morbidity and mortality. However, few reports have been published in the nursing literature that describe strategies designed to address global disparities in cervical cancer incidence and mortality in low and middle resource countries, regions, territories and states. And, few reports have been published in the nursing literature that describe efforts to address the needs of younger women, mature women, economically challenged women, medically underserved women and other women at increased risk for developing and/or dying from cervical cancer.

Several reports have been published that describe efforts undertaken by nurses to examine the impact of perceptions, beliefs, socio-demographics, and other factors on cervical cancer screening, diagnosis, and treatment. However, while acknowledging that cervical cancer is an infection-related cancer associated with exposure to the HPV, few reports have been published in the nursing lit-

Textbox 1: Resources for Nursing Practice, Education, and Outreach**Cervical Cancer**

HPV-Associated Cervical Cancer Statistics (Centers for Disease Control and Prevention)
<http://origin.cdc.gov/cancer/hpv/statistics/cervical.htm>

Cervical Cancer (Medline Plus)
<http://www.nlm.nih.gov/medlineplus/cervicalcancer.html>

Cervical Cancer (National Cancer Institute)
<http://www.cancer.gov/cancertopics/types/cervical/>

What You Need To Know About™ Cervical Cancer (National Cancer Institute)
<http://www.cancer.gov/cancertopics/wyntk/cervix>

Cervical Cancer (National Women's Health Information Center)
<http://www.womenshealth.gov/faq/cervical-cancer.cfm>

Detailed Guide: Cervical Cancer (American Cancer Society)
http://www.cancer.org/docroot/CRI/CRI_2_3x.asp?dt=8

Cervical Cancer (American Society of Clinical Oncology)
<http://www.cancer.net/patient/Cancer+Types/Cervical+Cancer>

Cervical Cancer (Women's Cancer Network/Gynecologic Cancer Foundation)
http://www.wcn.org/articles/types_of_cancer/cervical/overview/

HPV

HPV-Associated Cancers (Centers for Disease Control and Prevention)
<http://origin.cdc.gov/cancer/hpv/>

HPV Infection (Centers for Disease Control and Prevention)
<http://www.cdc.gov/std/hpv/>

Genital HPV Information Fact Sheet (Centers for Disease Control and Prevention)
<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>

HPV Vaccine Information for Young Women (Centers for Disease Control and Prevention)
<http://www.cdc.gov/std/hpv/STDFact-HPV-vaccine-young-women.htm>

HPV Vaccine Questions and Answers (National Cancer Institute)
<http://www.cancer.gov/cancertopics/factsheet/Risk/HPV>

HPV, Cancer and Vaccines: Frequently Asked Questions (American Cancer Society)
http://www.cancer.org/docroot/CRI/content/CRI_2_6x_FAQ_HP_Vaccines.asp?sitearea=

HPV and Cancer: Questions and Answers (National Cancer Institute) <http://www.cancer.gov/cancertopics/factsheet/Risk/HPV>

erature that describe efforts undertaken to examine the impact of these factors on behaviors associated with the transmission of the HPV. And, few have been published that describe efforts undertaken to describe perceptions of women about abstinence, monogamy, condom use, vaccination, and other strategies recommended to prevent the HPV from being acquired and transmitted.

Conclusions

Concern for the well being of women worldwide should prompt nurses within the clinical, academic, and research arena to work to change these trends. Concerted effort needs to be undertaken by nurses to apply current knowledge specific to HPV and cervical cancer prevention and control within the practice setting. Working together with nurses within the clinical, academic, and research arena, much could be done to reduce cervical cancer morbidity and mortality. However, in order for this vision to be realized, nurses will need to expand the current scope of outreach, practice, education, and science, and focus greater attention on populations with the greatest risk and populations with the greatest need. Doing so could contribute much to efforts geared toward reducing global and regional disparities in cervical cancer morbidity and mortality and to efforts that aim to improve the quality of life of women diagnosed with cervical cancer worldwide and within the United States.

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