Cervical Cancer: Prevention and Early Detection

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Objective: *To review effective methods of prevention that can be used to control the incidence of cervical cancer and detection strategies that can identify the precancerous lesions before they become true cancer.*

Data Sources: *Current medical, scientific and nursing literature, and national and international guidelines of cervical cancer.*

Conclusion: *Nearly all cervical cancers are caused by specific types of human papillomavirus (HPV). Prophylactic vaccination for HPV provides the most effective method of primary prevention against HPV-related diseases. The use of the Pap test and HPV test, according to published guidelines, provides the most effective means of screening for cervical cancer.*

Implications for Nursing Practice: *Nurses are in a key position to provide health education with the goal of supporting vaccine uptake and screening guidelines.*

Key Words: *cervical cancer, early detection, HPV vaccination, cervical cancer screening, education.*

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Cervical cancer is a global health concern. It ranks as the fourth most common female malignancy worldwide,[1,2] with the incidence of cervical cancer at an estimated 527,624 women every year, with 265,672 deaths from the disease.[3] Cervical cancer accounts for 4% of all cancers diagnosed worldwide. When one considers health disparities, cervical cancer is the third most common cause of death worldwide for those women who live in low-resource or less developed countries.[1] In fact, nearly 84% of cervical cancer cases occurred in less

developed countries, with the highest incidence in Africa, Latin America, and the Caribbean, and the lowest incidence in North America and Oceania.[4,5] Women who are poor and live in rural areas of low- and middle-income countries, as well women who are poor and live in high-income countries, are at an increased risk of invasive cervical cancer; this increased risk is caused by a lack of access to prevention, screening, and treatment services.[6]

In the United States (US), cervical cancer ranks 14th in frequency among all cancers.[7] However, disparities exist in the US as well. Incidence and death rates in the US are higher in areas with limited access to cervical cancer screening.[8] For 2017, the American Cancer Society estimates that 12,820 new cases of invasive cervical cancer will be diagnosed in the US, with a projected 4,210 deaths in the same year.[8,9]

Nearly all cervical cancers are caused by human papillomavirus (HPV) infections. HPV is the most common sexually transmitted infection worldwide,[10] and is the cause of nearly all cases of cervical cancer.[10,11] Currently, approximately 79 million men and women in the US are infected with HPV and about 14 million will become newly infected each year.[12] In the US, HPV is detected in 99.7% of cervical cancers,[13] and more than 11,000 women develop cervical cancer as a result of HPV disease.[12]

Because precancerous lesions can be found by the Papanicolaou (Pap) test and treated and cured, cervical cancer is often detected before it becomes advanced. Early detection has led to lower incidence and death rates. Women treated with precancerous lesions have nearly a 100% 5-year survival rate.[8,9] Even though secondary screening can prevent cervical cancer by detecting precancerous lesions, not all women receive the recommended screening nor receive the screening in a timely manner. In addition, an effective primary prevention strategy is available to combat cervical cancer. Both males and females should receive HPV vaccinations to prevent the development of cervical cancer; however, vaccination rates remain low.

History

In the 1940s, cervical cancer was a major cause of death among women of childbearing age in the US. In the 1950s, the Pap test was introduced and effectively reduced the incidence of invasive cervical cancer. Between 1955 and 1992, US cervical cancer incidence and death rates declined by more than 60%.[7,9] Epidemiologically, it was believed that cervical cancer might be caused by a sexually transmitted agent; however, this fact was not known until the 1980s.[9] Between 1975 and 2012, cervical cancer incidence declined by over 50% because of widespread use of the Pap test.[9] More recently, incidence rates have stabilized in whites younger than 50 years of age and declined by 3% per year in African Americans. For women over age 50, incidence has decreased by about 2% per year in whites and about 4% per year in African Americans.[9] Today, women are more likely to be diagnosed with cervical precancer than invasive cervical cancer.[9]

Worldwide, during the past 30 years, cervical cancer mortality rates have fallen in most developing countries because of screening and treatment programs.[6] However, during these same years, rates in most developing countries have risen or remained unchanged. These increased or steady rates have been because of limited access to health services, lack of awareness about cervical cancer and its screening recommendations, and the absence of screening and treatment program.[6]

Etiology

As the causative agent for virtually all cases of cervical cancer, HPV can infect the genital areas of females and males, including the skin of the vulva, penis, and anus; the linings of the vagina, cervix, and rectum; and the linings of the mouth and throat.[12] Unlike other sexually transmitted infections, most signs and symptoms of HPV are nonexistent; therefore, most individuals are unaware of the infection.

There are more than 40 types of HPV that are sexually transmitted and will infect the epithelium of the skin or mucus membranes. Despite the fact that the immune system typically clears the virus from the body within 2 years, some individuals will have a persistent HPV infection that can cause various types of cancers and genital warts.[14] "Low-risk" HPV types can cause warts on or around the genitals and anus of both females and males. Females may also have warts on the cervix and in the vagina. Because these genital HPV types rarely cause cancer, they are called "low-risk" viruses.[11] The low-risk types include 6, 11, 42, 43, 44, 54, 61, 70, 72, and 81, while types 6 and 11 account for 90% to 100% of genital warts.[15] It is estimated