

Understanding Pap Smears, HPV, and Preventive Measures in Relation to Cervical Health.

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Abstract

Understanding HPV, Pap Smears, and Preventive Measures are examined in various facets of cervical health and how important it is to women's life. The main points of contention here are the value of maintaining cervical health, the contribution of the Human Papillomavirus (HPV) to the development of cervical cancer, the necessity of Pap smears for early detection, and the preventive measures that can be taken to keep cervical health. It has covered the function of HPV, the significance of Pap smears, and a number of preventive strategies, such as HPV vaccine, responsible sexual behavior, and routine screenings. The author has placed a strong emphasis on the necessity of ongoing awareness campaigns and the vital role that healthcare providers play in teaching patients about cervical health throughout this essay. By putting these steps into practice, we can lower the prevalence of cervical cancer, identify anomalies early on, and ultimately save lives. For those who are interested in learning more about cervical health and for medical professionals who want to help and counsel their patients, this paper is a great resource. It emphasizes how crucial it is for medical experts, legislators, and the community to work together in order to realize the vision of a world free from cervical cancer and manageable with it.

Keywords: Preventive Measures, Pap Smears, HPV, and Cervical Health.

1. Introduction

Cervical cancer (CC) is a cancer of the cervix, the organ linking the uterus and the vagina. The human papillomavirus (HPV), a pathogen that causes infections through sexual contact, is the main cause of it. Consequently, cervical cancer can be avoided with efficient HPV infection prevention measures [1]. Cervical cancer is now recognized as a sexually transmitted disease by origin since HPV infection is a sexually transmitted infection [2].

The term "cervical health" describes the general state of health and wellness of the cervix, the area of the uterus that attaches to the vaginal wall. It is related to the common virus known as Human Papillomavirus (HPV) and has a significant role in women's reproductive health. It is also essential for maintaining a healthy and functional reproductive system [3]. The World Health Organization (WHO) states that HPV is the most prevalent STD in the world, infecting millions of people annually. The HPV virus has more than 100 subtypes. Those who have several sexual partners and/or persistent HPV infection are particularly vulnerable to acquiring additional HPV subtypes. Although the clinical lesions might be clearly visible, testing for viral DNA may be necessary in certain situations (latent lesions). Most HPV infections are latent, and

instead of manifesting as cancer, the majority of clinical lesions first appear as warts.

These days, laryngeal, oral, lung, and anogenital cancers have been linked to HPV. Low-risk subtypes 6 and 11 typically have low-grade precancerous lesions and the production of condylomas. The high-risk HPV subtypes 16 and 18 cause high-grade intraepithelial lesions that develop into cancers. It is vital to realize that HPV alone does not cause cancer but requires triggers such as smoking, folate insufficiency, UV radiation exposure, immunosuppression, and pregnancy [4]. One of the major instruments in detecting cervical abnormalities and early indicators of cervical cancer is the Pap smear, often known as a Pap test. The mainstay of cervical cancer screening for the last 60+ years has been the Papanicolaou test. Georgios Papanicolaou created the Papanicolaou test, also referred to as the Pap test or the Pap smear, in the 1940s. It entails removing cells from the cervix's transformation zone so that these cells can be examined under a microscope to look for signs of cancer or precancerous lesions.

programs, with the developing countries accounting for 80% of all cervical cancer fatalities [4].

Preventive measures are crucial in the fight against cervical health concerns associated to HPV. It has been demonstrated that vaccination against HPV effectively lowers the chance of infection. For the best defense, the Centers for Disease Control and Prevention (CDC) advises adolescents, usually between the ages of 11 and 12, to have an HPV vaccination on a regular basis. Promoting cervical health and averting potential consequences also requires implementing safe sexual practices and placing a high priority on routine screenings.

The most prevalent virus that affects the reproductive system is the human papillomavirus, or HPV. The majority of sexually active men and women will contract the infection at some point in their life, and some may contract it more than once. Over 90% of the afflicted populations eventually become virus-free. More than 95% of cases of cervical cancer are caused by HPV. By far the most prevalent HPV-related illness is cervical cancer. Cervical cancer is almost always caused by HPV infection. All women are at risk for HPV infections becoming chronic and precancerous lesions developing into invasive cervical cancer, even though the majority of HPV infections and pre-cancerous lesions cure spontaneously. In women with healthy immune systems, cervical cancer takes 15 to 20 years to develop. For women with compromised immune systems—such as those with untreated HIV infection—it can happen in as little as five to ten years.

In the world, cervical cancer ranks fourth in terms of incidence among women and fourth in terms of cancer-related deaths among them. There were projected to be 604,000 in 2020. 342,000 disease-related deaths worldwide and 342,000 new cases [5]. In underdeveloped nations, cervical cancer is the second most prevalent cancer among women; in industrialized nations, it ranks seventh most common. Every year, there are about 500,000 new cases, and more than 80% of them originate from underdeveloped nations [6]. It is the most prevalent gynecological cancer and the primary cause of cancer-related deaths among Nigerian women, taking the lives of one person every hour and more than nine thousand annually. An estimated 75% of sexually active men and women will get a genital HPV infection at some point in their lives. HPV is the most prevalent sexually transmitted virus. About 20 million women are infected with the virus globally [7]. There are over 100 different forms of HPV, but only a handful are linked to cervical cancer. "HPV 16 and HPV 18 together are responsible for 70% of cervical diseases [8]."

2. The Importance of Cervical Health

The state and health of the cervix, the lower section of the uterus that joins the upper part of the vagina, are included in cervical health. By promoting menstruation, assisting with embryo implantation during pregnancy, and acting as a barrier to prevent infections, it is essential to women's reproductive health.

The Importance of Neck Health Consists of
Early Identification of Deviations,
HPV Infection and the Prevention of Cervical Cancer

Better Reproductive Health,
Standard of living
Empowerment via Information

3. Human Papillomavirus (HPV) and Cervical Cancer: A Relative

A family of viruses known as the human papillomavirus (HPV) infects the skin and mucous membranes, including the vaginal region. All around the world, it is the most prevalent sexually transmitted virus. Most HPV infections are temporary and go away on their own, but chronic infections with high-risk HPV strains can cause a number of health problems, the most serious of which is cervical cancer [9].

4. The Connection to Breast Cancer

- **Cervical Cancer Development:** It has been determined that certain HPV strains, especially high-risk varieties, are the main causes of cervical cancer development. A significant percentage of cervical cancer occurrences worldwide are caused by high-risk HPV strains including HPV-16 and HPV-18.

- **Transmission and Infection:** Oral, anal, and vaginal intercourse are the main ways that HPV is spread during sexual contact. After infecting cervical epithelial cells, the virus may eventually cause alterations in the cells. The immune system often eradicates HPV infections, but if an infection persists, precancerous lesions may eventually grow and lead to cervical cancer.

- **Oncogenic Potential:** High-risk HPV strains has the capacity to interfere with the regular regulation of the cell cycle and encourage the development of aberrant cells. These cells have the potential to develop into precancerous lesions that could lead to invasive cervical cancer if treatment is not received [10].

- **Pap Smears and Early Detection:** The significance of routine screenings like Pap smears is highlighted by the correlation between HPV and cervical cancer. Early diagnosis of precancerous lesions is made possible by the ability of Pap smears to detect aberrant alterations in cervical cells. Cervical cancer that has spread to the inside can be stopped with prompt intervention and therapy.

- **HPV Vaccination:** Given its important role in preventing cervical cancer, HPV vaccination has become a highly effective preventive strategy. Cervical cancer-causing high-risk HPV strains are the focus of HPV vaccinations. Immunization can protect against these kinds and dramatically lower the chance of developing cervical cancer [11].

5. The Frequency and Spread of Human Papillomavirus (HPV)

The human papillomavirus, or HPV, is a common virus that infects a large percentage of people worldwide. In order to address the issues raised by health concerns associated to HPV, it is imperative to comprehend the prevalence and means of transmission.

6. Occurrence

The most prevalent sexually transmitted infection globally is HPV. According to estimates from the World Health Organization (WHO), there are over 290 million HPV infections worldwide at any given moment. Sexually active people are more likely to have it, especially those in their late teens and early twenties [13].

- Age and Gender: The prevalence of HPV usually peaks soon after a person engages in sexual activity and then progressively decreases with age. It is significant to remember that HPV infections can affect both men and women, and that men can spread the virus to their partners.

7. Transmission Modes

- Sexual Transmission: Vaginal, anal, and oral sex are all forms of sexual contact that are known to transmit HPV. HPV can spread even in the absence of symptoms or visible warts. The risk of HPV transmission is increased by multiple sexual partners and unprotected sexual activity [14].

- Vertical Transmission: During childbirth, HPV can be passed from mother to kid. Although it is uncommon, this form of transmission can cause respiratory papillomatosis in young children [15].

- Skin-to-Skin Contact: Direct skin-to-skin contact is another way that HPV can spread. Any contact—even without penetration or sexual activity—with the genital or anal region might be considered this.

8. Various HPV Types and Their Possible Effects on Health

The human papillomavirus, or HPV, is a complex family of viruses with a wide range of strains and unique impacts on human health. Based on their correlation with various medical disorders, the strains are divided into high-risk and low-risk categories [16].

9. High-Risk Types of HPV:

HPV varieties classified as high-risk have been associated with a higher chance of acquiring many malignancies, including cervical cancer. There are around 14 different high-risk HPV strains. Notable high-risk HPV types include:

- HPV-16: Because of its high correlation with cervical cancer, this kind is especially alarming. Research has demonstrated that a sizable portion of cervical cancer occurrences globally are caused by HPV-16.

- HPV-18: Another high-risk strain, HPV-18, is also known to contribute to cervical cancer development. It is frequently found alongside HPV-16.

- Other High-Risk Types: Because they have the ability to cause anogenital and cervical malignancies, HPV-31, HPV-33, HPV-45, and a few other types are regarded as high-risk.

Low-Risk Types of HPV:

Even while some HPV kinds are considered low-risk, Traci (2022) notes that they can still cause genital warts and other health problems even though they seldom result in cancer. Famous low-risk HPV varieties consist of:

- HPV-6: Most incidences of genital warts are linked to this strain. Genital warts can nevertheless negatively affect a person's quality of life and necessitate medical care even if they are not connected to malignancy.

- HPV-11: HPV-11 is the same virus that causes genital warts as HPV-6. Additionally, respiratory papillomatosis—a disorder in which warts grow in the airways—can be brought on by these low-risk HPV strains.

10. Potential Effects on Health

Because of their propensity to cause cancer, high-risk HPV strains are the main cause for concern. High-risk HPV strains can cause persistent infection, which can proceed to aggressive cancer if ignored and cause precancerous lesions to appear. The most common result of high-risk HPV infection is cervical cancer, although these viruses can also cause malignancies of the vulva, vagina, anus, penis, and oropharynx.

Low-risk HPV strains can be physically and psychologically uncomfortable even though they are not linked to cancer. A typical sign of low-risk HPV infection, genital warts can have an impact on one's self-esteem and sexual health. Furthermore, pulmonary papillomatosis can result from the transmission of low-risk HPV strains, especially in children born to women who have genital warts [17].

11. Recognition of Pap Smears (Pap Tests)

The meaning and objective of PAP smears

A Pap smear is a medical screening process used to collect and evaluate cells from the cervix, the lower part of the uterus, and the top of the vagina. It is also referred to as a Pap test or cervical cytology [18]. A Pap smear's main objectives are to:

- Find Abnormalities: Look for any unusual alterations in the cervical cells that can point to the existence of precancerous lesions or cervical dysplasia.

- Cervical Cancer Screening: Keep an eye out for any early warning indicators of cervical cancer, which is highly curable if caught early.

- Stop Cervical Cancer: Assist in the prompt identification and management of aberrant cells to stop the development of invasive cervical cancer.

- Watch High-Risk People: Keep a close eye on people who have recognized risk factors for cervical cancer, such as a history of abnormal Pap tests or HPV infection.

Part of Pap Smears in The Detection of Cervical Cancer and

Cervical Abnormalities

Pap Smears Are Essential to Women's Health Care Because They:

- **Identifying aberrant Cells:** Prior to the development of cancer, aberrant alterations in cervical cells, such as cervical dysplasia or precancerous lesions, can be identified.

Early Cervical Cancer Detection: Cervical cancer is highly curable when detected in its early, most treatable stages.

- **Risk assessment:** Using Pap smear results, an individual's risk for cervical cancer is evaluated in order to inform subsequent diagnostic and treatment decisions. Preventive care refers to giving patients the chance to take prompt action, including removing precancerous lesions, to stop their cancer from spreading to more advanced stages [18]. Age and Frequency Recommendations for Pap Smears Individual risk factors and criteria may influence the recommended age and frequency of Pap smears [21]. Generally speaking, however, the following guidelines should be followed:

- **Start Age:** Regardless of sexual activity or HPV vaccination status, Pap screenings are generally advised to start at age 21.

- **Frequency:** Pap smears are usually advised every three years for people between the ages of 21 and 29.

- **Women in the age range of 30 to 65** have the option of co-testing (Pap smear and HPV test) every five years or every three years. Because co-testing is more accurate, it is becoming more popular.

- **Following Hysterectomy:** Unless they have a history of cervical abnormalities or other risk factors, women who have undergone a total hysterectomy (removal of the cervix) for non-cancerous reasons may not require Pap screenings. It's crucial to remember that suggestions from medical professionals, personal circumstances, and medical history should determine when and how often Pap smears are performed.

The Process for Obtaining A Pap Smears

The Pap smear procedure is a minimally invasive and very straightforward treatment that entails:

- **Preparation:** Because menstrual blood can tamper with the results, the patient is usually asked to schedule the test during a period when they are not menstruating. Additionally, they must refrain from using douches, spermicides, vaginal drugs, or tampons for at least 48 hours before to the test.

- **Positioning:** To give the medical professional access to the pelvic region, the patient rests on an examination table with their feet in stirrups.

- **Speculum Insertion:** To view the cervix, a lubricated speculum—a medical instrument—is carefully placed into the vagina to hold the walls apart.

- **Cell Collection:** The medical professional carefully scrapes or gathers cells from the cervix and surrounding area using a tiny spatula, brush, or swab.

- **Removal of the Speculum:** After the speculum is carefully taken out, the gathered cells are either put on a glass slide or in a liquid preservative.

- **Laboratory Analysis:** A pathologist or cytotechnologist examines the gathered cells under a microscope in a laboratory for analysis.

12. Results

The patient's healthcare professional notifies them of the results, which are usually available in a few weeks. Results that are abnormal can call for additional testing or follow-up measures.

A Pap smear usually takes a few minutes to perform and is often well tolerated. They have a crucial role in the early identification and prevention of cervical cancer and related disorders, making them an essential part of women's preventive healthcare [22].

12.1. HPV Immunization:

There are other HPV vaccines available, however the following are the most widely used ones:

- **Gardasil 9:** This vaccination guards against nine HPV strains, including various low-risk strains that cause genital warts as well as high-risk strains including HPV-16 and HPV-18.

12.2. Cervarix

The two high-risk strains of HPV that cause the majority of cervical malignancies are the main targets of this vaccine, HPV-16 and HPV-18. Suggested Age Groups for Vaccination: Certain ages are optimal for HPV vaccination administration.

- **Preteens and Adolescents:** At the age of eleven or twelve, the CDC advises boys and girls to receive a regular HPV vaccination. At this age, vaccination guarantees protection ahead of possible virus encounter.

- **Catch-Up Vaccination:** Those who were not vaccinated at the recommended age may be vaccinated up until the age of 21 for men and 26 for women.

Although the effectiveness of HPV vaccination may be lower in later age groups, healthcare experts may in some situations prescribe it for people up to the age of 45.

13. Harmful Sexual Activities

The use of condoms can considerably lower the risk of HPV transmission; nevertheless, they do not offer total protection as HPV can still infect places not covered by the condom, such as the vulva or scrotum. However, using condoms correctly and consistently can reduce your chance of contracting HPV and other STIs [4].

• **Reducing the Number of Sexual Partners and Upholding Monogamous Relationships:** Both of these strategies help mitigate the risk of HPV transmission. The likelihood of contracting the virus is reduced while having intercourse with fewer partners. It's also crucial to be open and truthful when discussing sexual history and health with partners.

14. On A Regular Basis

Promoting Regular Pap screenings for Early Detection: A vital aspect of cervical health is routine Pap screenings. Urge people to get Pap smears at the suggested times, particularly if they are 21 years of age or older (every three years for those in this age range, and every three years or co-testing every five years for those in this age range). Stress the importance of Pap screenings' ability to identify precancerous lesions and aberrant cervical alterations, which enables early management and the prevention of cervical cancer [5].

• **Talking About the Significance of Follow-Up Care Following Abnormal Results:** It is important to emphasize that abnormal results from Pap smears do not always indicate malignancy. Anomalies could be a sign of precancerous lesions or cervical dysplasia. Urge patients who receive abnormal results to schedule a quick follow-up appointment with their physician for further testing, biopsy, or colposcopy.

Emphasize the significance of prompt follow-up care in order to resolve any abnormalities found and stop the possible development of invasive cervical cancer [15].

15. Education and Awareness of Cervical Cancer

A. The Importance of Increasing Cervical Cancer Awareness

• **It Is Essential to Increase Cervical Cancer Awareness in Order to**

• **Prevent Cervical Cancer:** Knowledge enables people to embrace preventive actions including HPV vaccination, safe sexual behavior, and routine screenings. This lowers the prevalence of cervical cancer and its associated illnesses.

• **Early Detection:** People who are more informed seek out routine HPV testing and Pap tests, which helps identify abnormalities and cervical cancer early on. Treatment outcomes are considerably improved by early identification.

Minimize Health Disparities: Education contributes to reducing differences in the incidence and prognosis of cervical cancer. Campaigns to raise awareness might focus on marginalized groups, guaranteeing that everyone has access to information and preventive care.

• **Fight Stigma:** There may be social stigma attached to cervical cancer. Increasing awareness promotes candid conversations and support by dispelling myths and eradicating the stigma around the illness.

• **Advocate for Policy Change:** Raising awareness through

campaigns can influence policy changes that enhance access to screenings, vaccinations, and treatment options [20].

B. The teaching of prevention to patients by healthcare professionals

Healthcare providers are essential in teaching patients how to prevent cervical cancer because they:

• **Giving Accurate Information:** Medical professionals should advise patients on HPV, Pap smears, HPV vaccinations, and safe sexual behavior in a straightforward and evidence-based manner.

• **Promoting vaccine:** Stressing the value of HPV vaccine in preventing cervical cancer and recommending it to eligible people, including teenagers.

• **Encouraging Regular Screenings:** Stressing the value of routine HPV and Pap tests as a component of preventive healthcare, with an emphasis on the appropriate age and frequency.

• **Answering Questions and Concerns:** Promoting candid communication by answering queries, worries, and misunderstandings that patients may have regarding cervical cancer and associated subjects.

• **Offering Supportive Counseling:** Helping patients make decisions about their course of treatment and follow-up care while offering them emotional support in the event of aberrant outcomes.

• **Supporting Preventive Care:** Promoting preventive care and informing patients of the resources that are available, particularly in underprivileged areas [7].

B. Resources and Support Available for Cervical Health

• **Emphasize the services and assistance that are available for cervical health, such as:**

• **Government Initiatives:** Discuss government-funded initiatives that offer HPV vaccinations and cervical cancer screenings to qualified individuals, such as Medicaid and the Vaccines for Children Program.

• **Nonprofit Groups:** Encourage funding for groups such as the American Cancer Society (ACS), Planned Parenthood, and neighborhood women's health centers that provide cervical cancer education, screenings, and assistance.

Online Resources: Provide trustworthy information on cervical health, prevention, and treatment by recommending credible websites such as the World Health Organization, the CDC, and the National Cervical Cancer Coalition.

• **Support Groups:** Bring up nearby or virtual support groups where people can get in touch with others going through comparable struggles, offering emotional support and exchanging stories.

- Educational Materials: Offer patients access to brochures, pamphlets, and educational materials for further details and resources.

- Advice from Healthcare professionals: Suggest to patients that they consult their healthcare professionals for advice and assistance, since they can provide customized suggestions based on each patient's needs [22].

- Awareness of HPY, Pap Smear, and Its Preventive Measures: Implications.

- Healthcare Policy: The significance of cervical health awareness and preventive actions is emphasized in this research. Because it promotes greater accessibility to HPV vaccine, screenings, and educational initiatives, it may have an impact on healthcare policy.

- Empowerment of the Individual: Imparting information on cervical health and prevention to individuals can result in improved health consequences. People could be motivated to take proactive measures to maintain their cervical health by reading this study.

Minimizing Health Disparities: Underprivileged people are disproportionately affected by cervical cancer. This work has the potential to increase public awareness of health disparities and support initiatives to lessen them through education and focused interventions.

- Medical Practice: By realizing their critical role in patient education and preventative care promotion, healthcare workers can gain valuable insights from this paper [23].

16. Conclusion

In summary, cervical health plays a vital role in women's general health. It is crucial to comprehend HPV, Pap screenings, and preventive measures in order to lessen the incidence of cervical cancer. Safe sexual behavior, routine checkups, and HPV vaccination are effective preventative measures against cervical cancer. When it comes to teaching patients and promoting preventative care, healthcare professionals are indispensable. People can take control of their cervical health by increasing knowledge about cervical health and providing resources and assistance.

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