

# An Overview on Human Papillomavirus (HPV) - Associated Cervical Cancer and HPV Vaccination in India

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**Abstract:** Cervical cancer is the second most prevalent disease in women globally, and infection with oncogenic human papillomavirus (HPV) strains, most often HPV 16, is the leading cause for cervical cancer. The goal is to assess the burden of human papillomavirus (HPV) and HPV-related diseases in India, as well as their potential effect. HPV is the cause of nearly all cervical cancer cases, as well as a significant portion of anogenital and head and neck cancers. Cervical cancer is given special attention since it accounts for more than 80% of malignancies caused by HPV infection. Around 70% of all cervical cancer cases in the globe are caused by HPV strains 16 and 18. HPV vaccinations that protect against HPV 16 and 18 infections are now available in India, with the potential to lower the incidence of cervical and anogenital cancers. **Objective:** The goal of this systematic integrative study is to examine current evidence on cervical cancer screening education, awareness, and barriers in India, as well as to assess barriers to HPV vaccination. **Methods:** A systematic integrative review study was conducted on published and review literature published between 2015 and 2021 on HPV associated cervical cancer and HPV vaccination in India. A total of 10 studies were included in the review, and their findings have been presented. The descriptive statistical data for cervical cancer (International Classification of Diseases) were mainly obtained from publications. **Results:** Reaching out to rural populations to educate them about the condition and possible interventions was one of the most difficult tasks. Apart from that, psychological, socio-cultural, economic, and environmental concerns were the main roadblocks. **Conclusion:** The eradication of cervical cancer in India will be greatly enhanced by a well-balanced mix of effective cervical cancer screening programmes and effective HPV vaccination programmes.

**Keywords:** Cervical cancer, Cervical cancer Screening Human Papillomavirus, HPV, DNA, RNA, genotype, cervical intraepithelial lesion, cervical cytology, PAP Smear, Vaccination

## 1. Introduction

Cervical cancer remains a critical reason for morbidity and mortality among women across the globe, despite the fact that it is disease with the best potential for secondary prevention. According to global cancer statistics, in 2002 there were approximately 493, 000 new cases and 274, 000 deaths, with more than 80% of them in developing countries [1]. Cervical cancer is the fourth most common cancer among women worldwide and second most prevalent in India contributing to 14% of all cancers [2]. Cervical cancer is a type of cancer that affects the cells of the cervix that connect the uterus to the vaginal canal. The human papillomavirus (HPV) is the viral infection that is mostly spread through sexual contact.

In India, nearly 160 million women between the ages of 30 and 59 are thought to be at risk of getting cervical cancer, with 96, 922 new cases reported in 2018. Cervical cancer does not affect every woman infected with HPV. There are more than 100 HPV kinds, with around 40 of them capable of infecting the vaginal tract. HPV-16 and HPV-18 are the most common causes of cervical cancer. So yet, no additional reasons have been discovered. Other risk factors comprise of unprotected sexual activity with many partners, sexually transmitted diseases such as HIV/AIDS and chlamydia, a weakened immune system, and smoking. Based on the carcinogenic potential of the various HPV genotypes, HPV can be categorised as high-risk or low-risk. HPV types 16 and 18 are thought to be the most dangerous.

Cervical cancer is perhaps both preventable and treatable if found early. Cervical cancer can be readily addressed with both primary and secondary preventive measures. Cervical cancer can be prevented in two ways: Primary prevention of cervical cancer can be achieved by vaccination and secondary prevention by screening of high-risk HPV infection. Human papillomavirus (HPV) vaccine for primary prevention is given to females aged 9 to 13, with the goal of reaching them before they become sexually active. Access to technology, such as VIA (visual inspection of the cervix with acetic acid) or diagnosis of HPV infection based on DNA/RNA testing, is a secondary preventive option for women over 30. One of the available techniques is HPV genotyping using a polymerase chain reaction (PCR) using a common consensus primer, followed by treatment of precancerous lesions that may progress to cervical cancer. Tertiary prevention refers to women of any age having access to cancer treatment and management, such as surgery, chemotherapy, and radiation. When curative therapy is no longer a possibility, palliative care becomes essential.

## Understanding the cervical cancer

The cervix is the uterus's bottom, thin end (the hollow, pear-shaped organ where a foetus grows). The cervix connects the uterus to the vaginal canal (birth canal). Cervical cancer generally takes a long time to develop. Before cancer develops in the cervix, the cells of the cervix undergo a process known as dysplasia, in which abnormal cells form in the cervical tissue. Cancer cells

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begin to develop and spread deeper into the cervix and adjacent regions later on. Cervical dysplasia is more common in women in their twenties and thirties.

Cervical cancer death is uncommon in women under the age of 30 and in women of any age who have regular Pap test screenings. The Pap test is used to detect cancer and changes that may lead to cancer. Although most women with cervical cancer are infected with the human papillomavirus (HPV), not all HPV-infected women will acquire cervical cancer. HPV can damage the cervix in a variety of ways, but only few of them generate abnormal cells that can lead to cancer. Some HPV infections clear up on their own. The time it takes for cervical precancer to progress to cervical cancer is 7 to 10 years. Apart from adenocarcinomas and squamous cell cancers, the cervical areas have been known to produce a variety of different malignancies. Sarcoma, lymphoma, and melanoma are among them.

### Human papilloma Virus (HPV)

The human papillomavirus (HPV) is the most prevalent viral infection of the female reproductive system. It is often acquired by young women following the start of sexual activity. HPVs are non-enveloped double-stranded DNA viruses with a diameter of 50-55 nm that infect the skin and mucous membranes, leading both benign and malignant diseases. Many HPV genotypes are transmitted by sexual contact (vaginal, anal, or oral sex), whereas others are not. Based on potential carcinogenicity, sexually transmitted HPVs are categorised as "low risk" or "high risk." Low-risk HPVs can cause genital warts and respiratory papillomatosis. High-risk HPVs, on the other hand, can be carcinogenic, resulting in HPV-related cancer. The number of active HPV infections is asymptomatic and are eliminated by the immune system within 1-2 years. Persistent infection with high-risk HPV, on the other hand, can cause cellular alterations that lead to cancer. The cervix and oropharynx are the most frequent HPV-related malignancies, but anal, penile, vaginal, and vulvar cancers are also associated to HPV. There are more than 150 types of HPV. Amongst these, the International Agency for Research on Cancer (IARC) has defined 12 high-risk HPV types that are associated with cancers in humans (types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59) [3]. Worldwide, the most frequent HPV types are 16 and 18, with HPV 16 being the most common subtype [4].

### Burden of cervical cancer in India

The National Cancer Registry Programme (NCRP) has been in operation since 1982, and the Indian Council of Medical Research's permanent institute (National Centre for Disease Informatics and Research) is the essential repository of data from the collaborating cancer registries located in medical colleges/institutions and hospitals across India. NCRP now has 29 hospital-based cancer registries (including all Regional Cancer Centres) and 29 population-based cancer registries (PBCRs) in place as of March 2016. According to the information gathered from these Indian Cancer Registries, cervical cancer accounts

for 6-29% of all cancers in women. The age-adjusted incidence rate of cancer cervix was found to vary widely among registries, highest being 23.07/100,000 in Mizoram State, followed by 22.54/100,000 in Pasighat and the lowest being 4.91/100,000 in Dibrugarh district. The older PBCRs such as Bengaluru, Bhopal, Chennai, Delhi, and Barshi Rural reported an age-adjusted incidence rate between 13 and 16/100,000.

Cervical cancer is most common cancer in Indian women though breast is the leading cancer site globally. In India, cervical cancer had increased from 0.11 million in 2000 to 0.16 million in 2014. Women at risk for cervical cancer (Female population aged  $\geq 15$  years) is 469.1 million [5].

The proportion ranged from 15% to 55% of female cancers from different parts of the country. Over 80% of the cervical cancer present at a fairly advanced stage and annually around 80,000 deaths are reported in India [6]. Indian women face a 2.5% cumulative lifetime risk and 1.4% cumulative death risk from cervical cancer. At any given time, about 6.6% of women in the general population are estimated to harbour cervical HPV infection. HPV serotypes 16 and 18 account for nearly 76.7% of cervical cancer in India. Warts have been reported in 2-25% of sexually transmitted disease clinic attendees in India; however, there is no data on the burden of anogenital warts in the general community [7]. According to report provided by Catalan Institute of Oncology (ICO) Information Centre on Human Papillomavirus (HPV) related cancers in India 2018, the crude incidence rate of HPV-related cervical cancer in India is 14.9% [5]. In cervical cancer, 83.2% females have HPV-16/HPV-18 detected, highlighting its importance in the development of cervical cancer [8].

**Table 2:** Cervical Cancer mortality in India estimates for 2018

Indicator Figures	
Annual number of Death	60,078
Crude mortality rate	9.2
Age-standardized mortality rate	9.2
Cumulative risk % at 75 years old	1.0

Source: Human Papillomavirus and related disease, summary report 2018 [2].

About (Table 2), 60,078 cervical cancer deaths occur annually in India (estimates for 2018). Cervical cancer ranks as the 2nd leading cause of female cancer deaths in India. Cervical cancer is the 2nd leading cause of cancer deaths in women aged 15 to 44 years in India. About 96,922 new cervical cancer cases are diagnosed annually in India (estimates for 2018).

## 2. Literature Review

According to the International Agency for Research on Cancer (IARC), India has the highest number of cervical cancer cases in the world. There are an estimated 1,32,000 new cases and 74,000 deaths each year which occur due to cervical cancer in India. The World Health Assembly (WHA 70.12), in its agenda for cancer prevention and control in the context of an integrated

approach, urges governments and the WHO to accelerate action to achieve Goal 3.4 of the Sustainable Development Goals (SDG 3.4) in order to reduce premature mortality from non-communicable diseases including cancer by one-third by 2030 [9]. Mitra et al. (2010) in their study says that in India, almost 70% of cervical cancer patients are in stages III and IV. Around 20% of women diagnosed with cervical cancer die within the first year of diagnosis, with a 50% 5-year survival rate [10]. Krishnan et al. (2013) Poor women, particularly those living in rural regions, are particularly affected by this disease because they are less likely to be tested and treated, and so are more likely to develop invasive cancer and die from this as well [11].

Kranti Vora, et. Al. (2020) in their work says that despite the far too high number of Cervical Cancer related deaths in India, no organized cervical cancer screening program currently exists [12]. Das, M. (2018) in his work says according to a media estimate, India might avoid 70000 deaths in women each year due to cervical cancer by including the human papillomavirus (HPV) vaccination into public health programmes [13]. Sankaranarayanan et al. (2001) in their work on, said since 1970s, cytology screening has been implemented in Indian public health systems, and it is now available in all of the country's major hospitals. It has been promoted for including in the government's cancer control programme services since at least 2001 [14].

National Cancer Control Programme 2006 states that in 2006, the Indian government and WHO issued guidelines recommending the adoption of the Pap smear at the district level, as well as a less expensive, simpler screening procedure at the primary health centre level [15]. A study by Aswathy *et al* (2012) on cervical cancer screening programme in Kerala reported that appropriate knowledge on cervical cancer was a critical element in determining whether women would undergo a Pap test or not [16]. The US Food and Drug Administration has approved Cobas HPV test as a primary screening test to detect the DNA from high-risk HPV types. According to Roche Molecular Inc. (2014), "Cobas test is a qualitative multiplex assay that simultaneously provides specific genotyping information for HPV types of 16 and 18, and a pooled result of 12 high risk strains of HPV DNA" [28].

### Objectives

- 1) To identify the correlation between HPV and its associated cervical cancers.
- 2) To analyse the level of understanding and awareness about cervical cancer screening and HPV Vaccine in India.
- 3) To evaluate barriers toward HPV Vaccination.

### Scope of the study

The adequacy of the methodology in distinguishing the HPV type which is major related with cervical malignant growth will help in the execution of screening programs that can give assurance from diseases related with HPV by early detection. Further, can assess the barriers towards

vaccination, as immunization at the right age can speed up the decrease of disease which is related with HPV. Subsequently, this methodology is a critical part in accomplishing the Sustainable Development Goals by providing healthcare services and building universal health coverage.

### 3. Methodology

A systematic review methodology was utilised to view the title and abstract of each citation were screened first, and full report was screened. Second, if necessary to select the relevant articles according to selection criteria. Full texts of these selected studies were retrieved, reviewed, and extracted for relevant data by authors independently. A total of 10 studies were included in the review, and their findings have been presented. The descriptive statistical data for cervical cancer (International Classification of Diseases) were mainly obtained from publications of the Indian Cancer Registry, Union for International Cancer Control, International Agency for Research on Cancer, and WHO (GLOBOCAN-2018).

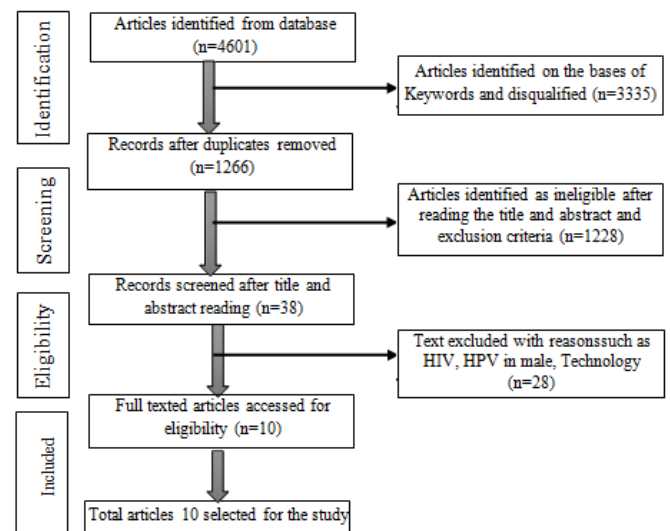


Figure 2: Search and selection process of articles

### Eligibility criteria

Studies qualified for the incorporation were (1) Across all the states of India, (2) Concentrated on HPV and its associated cervical cancer, (3) Articles that identified awareness, education and barriers of HPV and cervical cancer, (4) HPV screening and Vaccination.

### Exclusion criteria

Studies disqualified were (1) Cervical cancer in HIV positive women, (2) Studies on HPV that do not deal with awareness and attitude about HPV and HPV Vaccination, (3) Studies that states about treatment on cervical cancer and leveraging technology, (4) Studies which highlights implications on male HPV vaccinations, (5) Studies which talk about US policies on HPV and HPV vaccine.

### Duration

A systematic review of articles from Google scholar has

been done considering a time frame 2015 till 2021.

The electronic database search recovered 4601 articles and 1266 copies were found in the wake of understanding Title and Abstracts, 1228 records were avoided (Figure 2) as they didn't meet consideration standards and the time frame. Most of articles were rejected because the emphasis was not on HPV related cervical cancer in the

India. 10 examinations met the incorporation measures and rules for consideration like awareness, education, attitude and barriers of HPV and cervical cancer in India along with vaccination for HPV. The rest of the examination was identified as methodologically not so strong such as cervical cancer for screening HIV positive women, and treatment for cervical cancer and technology, along with HPV related disease in male.

### Study trails

**Table 3:** Summary of key characteristics of the included studies in the systematic review

Sr no	Name of paper	Date	Study type	Data collection	Aim of the study	Sample size
1	Current status of human papillomavirus vaccination in India's cervical cancer prevention efforts	2019	Policy Review	The Indian Ministry of Health, Government of India, and Indian Council for Medical Research.	To scale up human papillomavirus (HPV) vaccination for adolescent girls in India.	Population of Andhra Pradesh, Gujarat, Punjab, Sikkim, Delhi
2	Burden of cervical cancer and role of screening in India	2016	Literature review	Indian Cancer Registry, Union for International Cancer Control, International Agency for Research on Cancer, and WHO (GLOBOCAN-2012).	To assess the burden of cervical cancer in India and review the performance characteristics of available cervical cancer screening tools	11 Studies from MEDLINE and Web of Science electronic database
3	Cervical cancer screening in rural India: Status & current concepts	2018	Literature review	Cancer registry	Feasibility of different screening methods has been assessed to find out the most suitable mode applicable at the rural level.	Mass rural cervical cancer screening in Indian states
4	Primary HPV screening for cervical cancer	2020	Clinical trial review, randomized controlled trials and meta-analyses	Population based cancer registry	Studying the impact of HPV vaccination on cervical cancer screening.	Randomized trial consisted of 10, 154 participants
5	Risk Factors of Cervical Cancer: A Case-Control Study	2019	Case control study	A questionnaire	To assess the risk factors for cervical cancer in women aged 25-80 years.	In total, 75 age matched cases and 75 controls were enrolled
6	Cervical cancer: A comprehensive approach towards extermination	2016	Article Review	International Agency for Research on Cancer (IARC), GLOBOCAN 2012	Discussed molecular pathogenesis of HPV infection and the risk factors associated with it.	No sample size
7	Challenges of health promotion and education strategies to prevent cervical cancer in India: A systematic review	2019	Systematic Review	Data collected on review of 78 article	To understand the challenges of health promotion and education strategies to prevent cervical cancer in India.	78 studies during 1993-2017
8	Human papilloma virus associated cervical cancer: a review	2016	Integrative and Peer Review	Data collected by article review	To understand the HPV associated cervical cancer	No sample size
9	Cervical Cancer Screening: Past, Present, and Future	2020	Literature review	A literature search was conducted using PubMed	The aim of this study was to describe methods for detection and treatment of human papillomavirus (HPV), cervical dysplasia (CD), and cervical cancer.	No sample size
10	Prevention of Cervix Cancer in India	2016	Analytical Review	Several cross-sectional studies have looked at the comparative efficacy of different screening tests	To screening and prevention of cervical cancer.	No sample size

Table 3 shows attributes of the 10 examinations that met the relevance standards generally centred around HPV screening, awareness and barriers, HPV associated cervical cancer vaccination in India

### Evidence based strategies and conclusion

HPV transmission requires sexual contact, and HPV is still the most common sexually transmitted virus on the planet. It is more common in adolescent girls and women between the ages of 20 and 30, which corresponds to the time of first sexual interaction. HPV is a member of the Papovaviridae family, which includes both animals and humans as hosts. They only infect the epithelium's basal cells, although there are two kinds: cutaneous variants that attack the skin, and mucosal types that attack the oropharynx and anogenital tracts.

Another element that was linked in this study was the increasing number of sexual partners. An increase in the number of sexual partners of spouses was linked to a higher risk of cervical cancer. The findings indicated that a young age at first intercourse, an increased number of sexual partners, multiparity, and red meat intake were all associated to cervical cancer.

**Objective 1:** To identify the correlation between HPV and its associated cervical cancers. An HPV-associated cancer is a form of cellular cancer that is discovered in a part of the body where HPV is often present. HPV causes essentially all cervical cancer growths and numerous diseases of the vagina, vulva, penis, butt, rectum, and oropharynx. Human papillomaviruses (HPVs) that are oncogenic have been linked to the development of cervical cancer. HPV strains 16 and 18 are the two most dangerous variants, accounting for around 70% of all cervical cancer occurrences globally. In India, the prevalence of HPV is more than 80% of cervical intraepithelial lesions and cancers, while the high-risk HPV 16/18 is found in more than 90% of cervical cancer cases. The human papillomavirus (HPV) is a non-enveloped double-stranded deoxyribonucleic acid (DNA) virus that has over 100 genotypes. Early regulatory proteins (E1, E2, E5, E6, and E7), as well as late structural proteins (L1 and L2), are encoded by the viral genome. The illness is mostly transmitted through sexual contact, and it is predicted that roughly 80% of women will get it over their lives. There are 13 high-risk HPV types (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68) and 5 potential high-risk types among the 30-40 HPV types that infect the anogenital tract (53, 66, 70, 73 MM9, and 82 MM4) Types of HPV. The remaining HPV strains (e. g., 6/11/40/42/43/44/54/61/72) are low-risk variations linked to anogenital warts and laryngeal papilloma [6, 7, 10, 11].

### Overview of screening technique for cervical cancer

#### 1. Papanicolaou (PAP) smear

A Pap test is a technique that collects cells from the cervix and vaginal surface. To gently scrape cells from the cervix and vagina, a piece of cotton, a brush, or a little wooden stick is used. A microscope is used to examine the cells to

see whether they are abnormal. A Pap smear is another name for this treatment.

#### 2. HPV Test

An HPV test is a laboratory test that checks DNA or RNA for the presence of certain kinds of HPV infection. Cells from the cervix are taken and DNA or RNA from the cells is tested to see if an infection caused by a type of human papillomavirus related to cervical cancer exists. A sample of cells extracted during a Pap test can be used for this test. If the results of a Pap test reveal specific abnormal cervical cells, this test may be performed. A Pap/HPV co-test is when both the HPV test and the Pap test are performed using cells from the sample obtained during the Pap test.

### Prevention methods for cervical cancer

New WHO guide to prevent and control cervical cancer [17].

1. Vaccinate 9 to 13-year-old girls with two doses of HPV vaccine to prevent infection with the Human papillomavirus (HPV), the virus responsible for most cases of cervical cancer. The reduced, 2-dose schedule has been shown to be as effective as the current, 3-dose schedule.
2. Use HPV tests to screen women for cervical cancer prevention. With HPV testing, the frequency of screening will decrease. Once a woman has been screened negative, she should not be rescreened for at least 5 years
3. Communicate wider audience: adolescents, parents, educators, leaders and people working at all levels of the health system, to reach women throughout their lives.

### Vaccination

In 2008, Indian authorities approved bivalent and quadrivalent HPV vaccinations for prescription usage. In India, the first large-scale introduction of HPV vaccination through a public health environment occurred in demonstration projects in 2009, with the goal of determining the optimum way to administer the vaccine. India introduces the project of vaccination in various states of India such as Gujarat, Punjab, Delhi, Sikkim etc. The National Technical Advisory Group on Immunisation in India has suggested a study of the cost-effectiveness of HPV vaccination in India. And the findings reported as, implying that HPV vaccination is not only highly cost-effective but also fiscally sustainable for India. Strong political commitment by the governments in these states, assembly supported by strong state technical advisory groups that included experts from national and international organisations, agencies, and professional bodies; locally relevant awareness initiatives targeting parents; and strong state technical advisory groups that included experts from national and international organisations, agencies, and professional bodies were all factors that contributed to the successful introduction of HPV vaccination in Delhi, Punjab, and Sikkim.

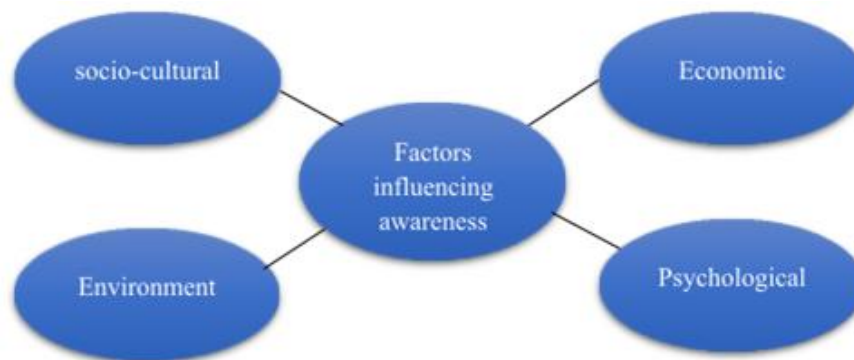
Following the identification of HPV as the causal agent of cervical cancer, HPV-based prophylactic vaccinations for primary cervical cancer prevention have been developed. In India, HPV vaccination might be a game-changer in the fight against cervical cancer. HPV vaccinations provided protection against HPV-16/18 as well as some cross-protection against a few other genotypes. In HPV positive women and those infected with 16/18 oncogenic HPV genotypes; these vaccinations are less likely to provide protection against cervical cancer.

Gardasil, Gardasil 9, and Cervarix are the three HPV vaccinations officially authorised by the US Food and Drug Administration (FDA) to prevent HPV infection. Each of these vaccinations protects against HPV genotypes 16 and 18, which together account for around 70% of cervical cancer cases. HPV genotypes 6 and 11, which cause 90% of genital warts, are likewise protected by both Gardasil vaccinations. HPV genotypes 31, 33, 45, 52, and 58 are also protected by Gardasil 9. GlaxoSmithKline's (GSK) Cervarix® is a bivalent

vaccination that protects against HPV strains 16 and 18, whereas Merck's Gardasil® is a quadrivalent vaccination that protects against HPV strains 16, 18, 6, and 11. Vaccination of girls aged 9-12 years in low resource settings with 2-dose HPV vaccine has been recommended.

**Objectives 2:** To analyse the level of understanding and awareness about cervical cancer screening and HPV Vaccine in India.

Due to socio-cultural, economic, and environmental issues, rural women's health and access to health care are challenged. They it is observed that among rural women, awareness of symptoms, the potential of early diagnosis, available diagnostics, and the likelihood of illness treatment was low. The observation is that the most important constraints they faced were psychological, i. e., ignorance of the disease, and that awareness levels were strongly related to age, education, income, and the number of family members with a history of cancer.



**Figure 3:** Factors influencing awareness about cervical cancer screening and HPV Vaccine

**Objective 3:** To evaluate barriers toward HPV Vaccination.

In India, the religious barrier is a major obstacle to getting the HPV vaccine. There's also concern that the vaccination would damage women's reproductive systems, making them infertile. Also, because the vaccination is costly, affordability is an issue. People also do not choose to be vaccinated as there is a concern of sexual behaviour. People in rural regions are unaware of vaccination availability due to a lack of awareness. People also believe that such type of infection cannot harm them.

#### 4. Conclusion

The huge disease burden of a preventable uterine cervix carcinoma is completely unjustified. Concentrated prevention and control efforts in less developed parts of India, can dramatically reduce the number of cases. The findings of this analysis show that the public health authority should take immediate effort to educate and inspire the general people about cervical cancer prevention, as well as enhance facilities to include much-needed preventative and early detection measures in India. Along with this, citizens must be educated on primary factors such as quitting tobacco, delaying the age at initiation of sexual activity to above 18 years, restricting

the number of sexual partners and the use of condoms. And, making vaccination compulsory can facilitate in achieving the Sustainable development goal by 2030.

#### 5. Recommendation

Cervical carcinoma is a prevalent cancer among women in India. The prevalence of cervical cancer among women can be decreased by to efficient implementation of screening programmes based on cytological analysis and subsequent treatment of precancerous lesions. Cervical cancer screening with Pap smears should begin at 21 years old and be repeated every three years between the ages of 21 and 29 years old. After then, screening can be done every 5 years if testing with Pap smear is done, or every 3 years if Pap smear screening is utilised alone, between the ages of 30 and 65.

Screening coverage is relatively poor in low-and middle-income countries, including India, due to the expensive price of setting up cytology-based screening programmes. The most effective secondary preventative method for cervical cancer is systematic screening of women through a well-organized programme, followed by treatment and follow-up of any precursor lesions found on the screen. As a result, other screening approaches such as early detection camp as a part of CSR activity can be set up at

rural setting. Cervical screening should be advocated for all ever sexually active women within a certain age group irrespective of whether they have any complaints, because there are often no signs and symptoms of cervical precancers.

With the WHO Mandate with Sustainable Development Goals by providing healthcare services and building universal health coverage vaccination must be compulsory for 12-year-old girl child at every state of India. Thus, this can get the figures of mortality drop at some extent.

In India, the national cervical cancer screening guideline recommends that women between the ages of 30 and 59 be screened. In a densely populated nation like India, the need of early identification and prevention of cervical cancer must be stressed. In India, there are numerous cervical cancer research programmes now underway. The Indian Council of Medical Research developed the National Cancer Registry Program, which serves as a cancer monitoring system in India. It gathers data in a "active" way, visiting public and private hospitals, specialist cancer hospitals, and pathology laboratories to obtain information on the kinds and severity of cancer cases. In India, the cancer registry does not actively cover the entire country, instead collecting data from a few urban and rural registries that have been created, to overcome this problem there must be a standardize regulatory control to collect the data in a systematic way from urban as well as rural settings. Thus, facilitate evidence-based decision on framing the policies.

## 6. Discussion

It has been found that women, particularly in rural areas, are under-informed on HPV testing and cervical cancer screening. It has also been noticed that HPV testing carries a stigma. Many women, in fact, were under the idea that they would not be at risk. People are hesitant to be vaccinated since it is linked to sexual behaviour. There is a need to reach out to front-line workers and primary health care providers in order to raise awareness and build community confidence on HPV infection and vaccine availability. We may look at other countries' approaches to these challenges and learn from them. As a result, we're getting closer to archiving the sustainable development goal by 2030.

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