



From Awareness to Action: A Narrative Review on Cervical Cancer Prevention in India's Public Health Framework

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ABSTRACT :

Background: Cervical cancer remains a major public health concern in India, ranking as the second most common cancer among women. Despite being preventable through screening and vaccination, low awareness, limited healthcare access, and socio-cultural barriers impede prevention efforts.

Objective: This narrative review aims to examine the current status of cervical cancer prevention within India's public health system. It explores historical developments, current challenges, policy frameworks, innovations, and strategic interventions, with a focus on awareness, screening, and HPV vaccination.

Methods: A literature review was conducted using data from PubMed, WHO reports, NFHS surveys, Ministry of Health publications, and peer-reviewed studies from 2005 to 2024.

Findings: Despite national programs, India struggles with poor screening coverage (less than 30%), limited HPV vaccination uptake, and low awareness among rural women. Innovations in screening, pilot programs, and state-level vaccination efforts have shown promise but are fragmented.

Conclusion: Strengthening public awareness, integrating cervical cancer services into existing reproductive health programs, and scaling up HPV vaccination under a unified national strategy are crucial for sustainable impact.

Keywords: Cervical cancer, public health, India, screening, HPV vaccination, women's health, awareness, prevention

1. Introduction

Cervical cancer is largely preventable, yet it accounts for an estimated 123,907 new cases and 77,348 deaths annually in India (GLOBOCAN 2020). It is the second most common cancer among Indian women aged 15–44 years. Persistent infection with high-risk human papillomavirus (HPV), especially types 16 and 18, is the primary cause. Public health efforts globally have led to reductions in incidence and mortality through early screening and HPV vaccination. However, in India, systemic barriers have hindered the transition from awareness to effective action. This review explores the evolution and current state of cervical cancer prevention in India's public health system.

2. Historical Background and Public Health Context

Cervical cancer has been on the public health agenda in India since the early 2000s. The National Cancer Control Programme (NCCP) incorporated cervical cancer screening, but its implementation remained limited. Screening was opportunistic and not systematized.

In 2005, the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was launched, aiming to strengthen NCD prevention—including cervical cancer screening—within primary health services. However, coverage remained low, and a population-based approach was only piloted in a few states.

3. Epidemiological Burden and Risk Factors

India contributes to nearly one-third of the global cervical cancer deaths. Risk factors include early marriage, multiple pregnancies, poor genital hygiene, lack of awareness, and low socio-economic status. HPV prevalence in Indian women is estimated at 7.9%. Rural women face greater risks due to low access to screening and treatment facilities.

4. Awareness and Sociocultural Barriers

Studies show that only 20–30% of Indian women have heard of cervical cancer screening. Myths, stigma, and cultural discomfort with pelvic exams contribute to poor participation. Education, family support, and media exposure influence awareness levels.

A cross-sectional study by Bansal et al. (2015) in rural Haryana found that 87% of women had never heard of a Pap smear, and only 5% would willingly undergo screening without their husband's approval.

5. Screening Programs in India

The NPCDCS recommends visual inspection with acetic acid (VIA) every 5 years for women aged 30–65. However, only 1.9% of eligible women are screened, as per NFHS-5 data (2019–21).

Challenges include: inadequate training of frontline workers, lack of infrastructure at PHCs, weak referral and follow-up systems, and absence of electronic health records for tracking.

Pilot screening programs (e.g., Tamil Nadu, Sikkim) showed improved outcomes when integrated with routine services.

6. HPV Vaccination Efforts

HPV vaccination has been introduced in some Indian states (e.g., Sikkim, Delhi, Punjab, and more recently, Maharashtra), targeting girls aged 9–14. The introduction of India's first indigenously developed HPV vaccine, CERVAVAC, has created momentum for nationwide rollout.

In January 2023, the Indian government announced plans to integrate HPV vaccines into the Universal Immunization Programme (UIP), but large-scale implementation is pending due to cost and logistical barriers.

7. Innovations and Public Health Initiatives

Several NGOs and state-led programs have piloted awareness campaigns using: community health workers (ASHAs), school-based vaccination drives, self-sampling kits for HPV DNA testing, and mobile vans with VIA and Pap smear services.

AIIMS Delhi and ICMR have piloted mobile colposcopy units and digital cervicography to screen underserved populations.

8. Challenges and Gaps

- Poor awareness and health literacy, especially in rural areas
- Lack of national screening registry
- Inconsistent funding and monitoring of state-led initiatives
- Limited HPV vaccine supply and cold chain infrastructure
- Gender norms limiting women's autonomy in reproductive health decisions

9. Strategic Interventions

1. Integrate cervical cancer screening into routine reproductive and child health (RCH) services.
2. Launch nationwide media campaigns in regional languages to normalize screening and vaccination.
3. Empower ASHAs and ANMs through training and incentives to counsel and mobilize women.
4. Scale HPV vaccination through school-based and community outreach programs under UIP.
5. Develop a centralized screening and vaccination registry linked to Ayushman Bharat digital health ID.
6. Incorporate mental health and counseling into screening services to address fear and stigma.

10. Conclusion

India faces a unique paradox in cervical cancer prevention: high disease burden despite available preventive tools. Moving from awareness to action requires a multi-sectoral public health response—grounded in education, equity, and system integration. With political will, community engagement, and investment in capacity-building, India has the opportunity to eliminate cervical cancer as a public health problem by 2040.

11. References (Vancouver Style)

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