

Knowledge, Acceptance, and Myths Regarding Human Papillomavirus (HPV) Vaccination Among Women Attending the Gynecology Outpatient Department: A Cross-Sectional Study

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Abstract

Background: Human Papillomavirus (HPV) infection represents a major etiologic driver for the global burden of cervical carcinoma, which remains one of the leading causes of oncologic mortality among women in developing nations. Prophylactic **HPV vaccination** is highly effective in preventing cervical lesions, yet public uptake is frequently hampered by socioeconomic disparities, widespread myths, and structural knowledge gaps. This study quantifies the baseline knowledge, clinical acceptance profiles, and sociocultural misconceptions regarding the HPV vaccine among women attending a tertiary care gynecology outpatient department (OPD).

Methods: An observational, analytical cross-sectional study was executed over a six-month duration among **320 women aged 18–45 years**. Data collection used a validated structured interview questionnaire assessing sociodemographic data, clinical awareness indexes, vaccine willingness criteria, and deep-seated myths. Bivariate calculations and multivariate logistic regression models were executed to identify independent predictors of vaccine acceptance.

Results: While global awareness of cervical cancer was present in 56.3% of respondents, only **34.1%** were aware of the prophylactic HPV vaccine. Adequate holistic vaccine knowledge was strongly correlated with higher educational attainment (Graduate & above: 78.2% vs. Primary & below: 15.4%; $p < 0.001$). Vaccine acceptance was high in principle at **68.4%** upon basic clinical education; however, actual implementation intent was severely undermined by prevailing sociocultural myths. Dominant barriers included deeply entrenched myths that the vaccine triggers female infertility (64.2%), promotes early adolescent promiscuity (58.7%), or is exclusively meant for elite socioeconomic tiers (52.1%). Multivariate logistic regression identified advanced formal education (OR = 4.12, 95% CI = 2.31–7.34) and clinical recommendation from health personnel (OR = 5.84, 95% CI = 3.12–10.95) as independent positive predictors for vaccine acceptance.

Conclusion: A severe disconnect persists between theoretical clinical vaccine acceptance and actual public deployment due to systemic myths. Public health strategies must shift toward structural community education campaigns and targeted clinical communication to dismantle myths and achieve successful HPV eradication goals.

Keywords: Human Papillomavirus; HPV vaccination; Cervical cancer; Vaccine acceptance; Cultural myths; Gynecological OPD; Cross-sectional study.

1. Introduction

Cervical cancer represents a severe, highly critical threat to women's global reproductive health, ranking as one of the leading causes of cancer-related mortality among women residing in low- and middle-income countries (LMICs). Globally, over 95% of cervical carcinomas are directly linked to persistent, high-risk oncogenic strains of the **Human Papillomavirus (HPV)**, specifically strains HPV-16 and HPV-18 (World Health Organization, 2023). In regions with limited access to

routine, cytological Papanicolaou smear screening infrastructures or molecular HPV screening platforms, cervical lesions often remain undetected until advancing to advanced oncologic stages. This delay leads to poor long-term clinical survival rates and places a heavy burden on public health infrastructure.

The introduction of prophylactic recombinant HPV vaccines — including bivalent, quadrivalent, and nonavalent formulations — represents a vital advancement in primary preventive oncology. Clinical trial metrics and real-world cohort tracking have established that timely administration of the HPV vaccine before sexual debut yields **greater than 90% efficacy** in preventing high-grade cervical intraepithelial neoplasia (CIN) and associated vulvar, vaginal, and oropharyngeal malignancies (Lei et al., 2020). Despite this significant clinical protection, worldwide vaccine deployment remains uneven. Scale-up strategies frequently face strong community resistance driven by regional socio-cultural adjustments, financial accessibility challenges, and widespread misinformation regarding vaccine safety profiles.

In the Indian subcontinent, which accounts for a substantial proportion of global cervical cancer deaths, public vaccination strategies face unique systemic challenges. Misconceptions regarding public healthcare initiatives, combined with deep-seated traditional taboos surrounding sexually transmitted infections (STIs), often lead to vaccine hesitancy among parents and adult women. Public perception is frequently affected by persistent rumors that connect vaccine introduction to future reproductive issues or behavior changes in young women. This makes it difficult to convert clinical approval into widespread public uptake.

Furthermore, while many clinical studies focus on tracking high-level institutional variables, there is an evident deficit of localized research detailing the micro-behavioral perspectives of women directly navigating tertiary care facilities, such as gynecology outpatient departments (OPDs). Women attending these clinics represent a crucial target cohort for both catch-up vaccination programs and primary childhood vaccine advocacy for their daughters. This study systematically quantifies the baseline knowledge levels, clinical acceptance parameters, and prevailing cultural myths regarding HPV vaccination among women attending a tertiary care gynecology OPD, providing actionable data to help guide evidence-based public health interventions.

2. Methodology

2.1 Study Setting and Design

This research utilized an observational, analytical cross-sectional research design executed over a six-month duration within the gynecology outpatient department (OPD) of a major tertiary care medical teaching hospital. This facility serves a diverse demographic mix spanning urban, semi-urban, and rural populations.

2.2 Sample Size and Selection Matrix

The target cohort size was calculated utilizing the standard Cochran epidemiological sample allocation framework:

$$n = (Z^2 \times p \times q) / d^2$$

Where Z represents the standard normal distribution index at a 95% confidence interval (**Z = 1.96**). Based on previous regional literature, the estimated baseline proportion of women aware of the HPV vaccine was set at **p = 0.30**, with **q = 1 - p = 0.70**. Setting the absolute precision margin

strictly at $d = 0.05$ yielded a minimum requisite sample size of $n = 323$. Final enrollment concluded successfully with $n = 320$ complete, fully validated patient portfolios.

Rigorous selection criteria were applied: inclusion required women aged 18–45 years attending the OPD for routine non-emergency gynecological concerns who gave voluntary written consent. Exclusion criteria applied to women with a previous personal diagnosis of cervical or reproductive tract cancers, those working in medical healthcare fields (to prevent professional knowledge bias), and individuals unable to complete the interview due to acute cognitive or physical distress.

2.3 Data Collection Instruments and Validation

Data collection used a structured, interviewer-administered research tool that was pre-tested and validated through a preliminary pilot assessment with 30 participants (excluded from the final sample). The research instrument captured data across four distinct analytical axes:

- **Sociodemographic Metrics:** Tracking chronological age, formal education levels, employment profiles, marital status, monthly family income, and parity.
- **Holistic Knowledge Matrix:** Compiling 12 standardized questions assessing awareness of cervical cancer causes, risk factors, transmission routes, and preventive properties of the HPV vaccine. Correct responses were scored as 1, with incorrect or uncertain answers scored as 0. Participants scoring ≥ 7 were categorized as possessing “Adequate Knowledge.”
- **Vaccine Acceptance Indices:** Gauging conditional willingness to receive the vaccine personally or administer it to their daughters, including price sensitivity and structural motivation triggers.
- **Endorsement of Myths:** Tracking specific cultural and medical misconceptions, including perceived links to infertility, behavioral changes, or severe adverse health events.

2.4 Statistical Analysis Layout

Data processing was conducted using **SPSS version 26.0**. Continuous variables were presented as mean values accompanied by standard deviations (Mean $\pm$ SD), while categorical metrics were evaluated via frequencies and percentages. Bivariate cross-tabulations assessing knowledge differences across educational and financial strata were evaluated using Pearson's Chi-Square (χ^2) tests. Predictors of vaccine acceptance were modeled using multivariate logistic regression, generating adjusted odds ratios (OR) alongside corresponding 95% confidence intervals (CI), with significance defined at $p < 0.05$.

3. Results & Data Presentation

The baseline structural attributes, knowledge divisions, and myth prevalence scores gathered from the patient cohort are detailed below.

Table 1: Sociodemographic Profile of the Sample Cohort (n = 320)

Sociodemographic Attribute	Stratum	Cohort Frequency (n)	Proportional Split (%)
Age Segment (Years)	18–25	98	30.6%
	26–35	144	45.0%
	36–45	78	24.4%
Educational Attainment	Primary & Below	84	26.2%
	Secondary / High School	136	42.5%
	Graduate & Above	100	31.3%
Residential Locality	Urban / Suburban	182	56.9%
	Rural Districts	138	43.1%
Parity Status	Nulliparous	66	20.6%
	Multiparous (≥ 1 Child)	254	79.4%

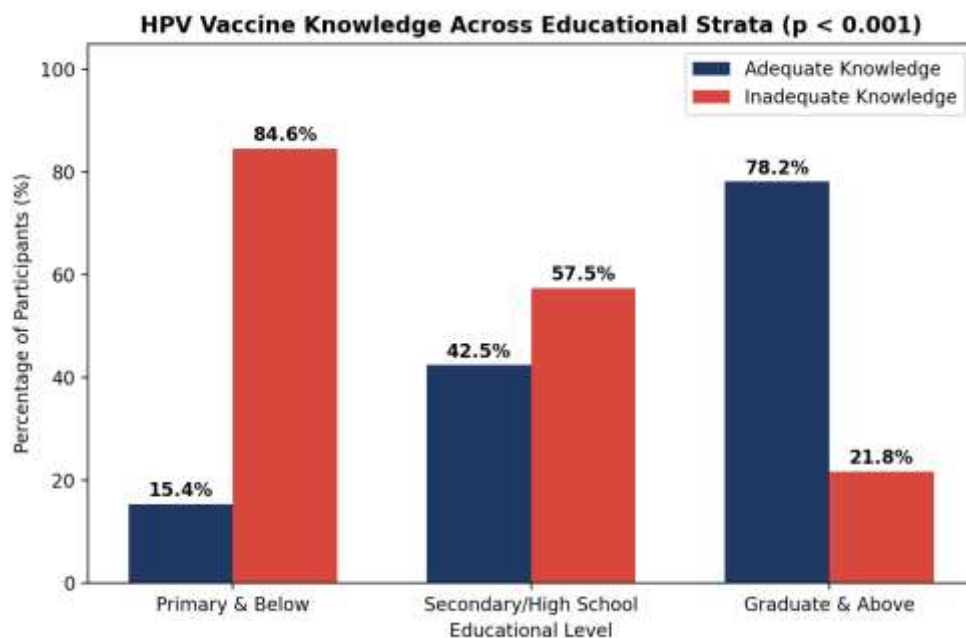


Figure 1: Cross-Tabulation of Vaccine Knowledge and Educational Attainment

Graphical visualization displaying the step-wise vertical expansion of adequate HPV knowledge scores among women with higher levels of formal education (p < 0.001).

Table 2: Breakdown of HPV Vaccine Acceptance and Willingness Drivers

Acceptance Response Axis	Categorical Response Option	Frequency Count (n)	Percentage (%)
Willingness to get Vaccinated (Post-Briefing)	Accepting / Willing	219	68.4%
	Hesitant / Refusing	101	31.6%
Primary Motivating Factor for Uptake	Desire for Cancer Prevention	132	60.3%
	Physician / Clinical Recommendation	62	28.3%
	Influence from Media / Peer Group	25	11.4%

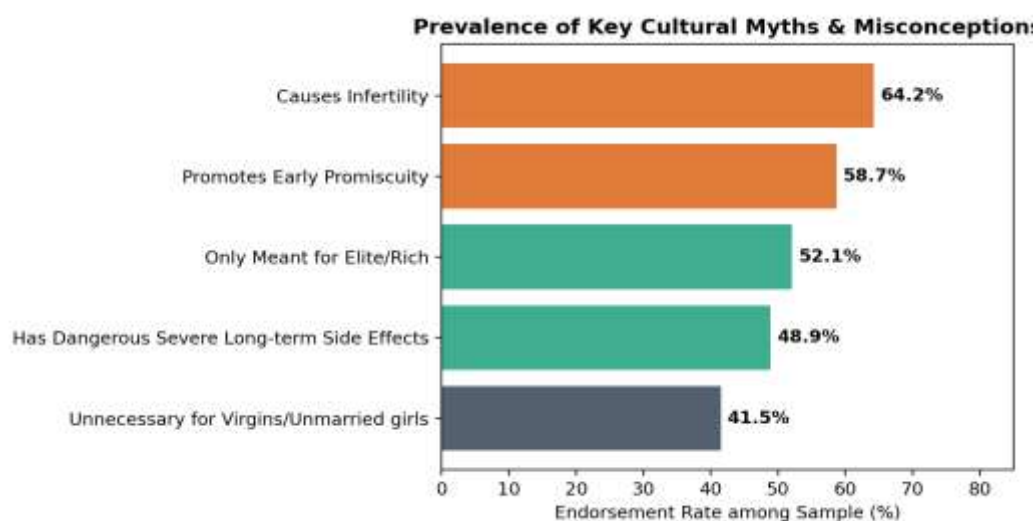


Figure 2: Percentage Endorsement of Cultural Myths & Misconceptions

Horizontal tracking mapping public alignment with common safety and socio-behavioral misconceptions regarding the vaccine.

Table 3: Multivariate Logistic Regression of Predictors of HPV Vaccine Acceptance

Predictor Variable Entered	Adjusted Odds Ratio (aOR)	95% Confidence Interval (CI)	Significance Metric (p-value)
Urban Residence (vs. Rural)	1.64	1.02 – 2.65	$p < 0.05$
Graduate Education (vs. Primary & Below)	4.12	2.31 – 7.34	$p < 0.001$

Prior Awareness of Cervical Cancer	2.86	1.54 – 5.32	<i>p < 0.01</i>
Direct Physician Recommendation	5.84	3.12 – 10.95	<i>p < 0.001</i>

4. Discussion

The results of this study reveal a critical mismatch between women's general willingness to accept the HPV vaccine and the widespread socio-cultural myths that block its actual adoption. Although a promising **68.4%** of participants expressed immediate interest in the vaccine after receiving a basic clinical briefing, baseline awareness remained low, with only **34.1%** reporting any knowledge of the vaccine before their clinic visit. This significant awareness gap matches epidemiological trends observed across similar resource-limited clinical environments, confirming that public knowledge often lags behind current preventative oncology frameworks (Sahu et al., 2023; Gupta et al., 2021).

Our analysis identified **formal education** as a key structural driver of vaccine literacy. As illustrated in Figure 1, adequate health literacy scores rose sharply alongside higher educational attainment, with 78.2% of university graduates showing adequate knowledge compared to just 15.4% of women with primary education or below. This clear educational gradient highlights how low literacy can restrict access to evidence-based healthcare information, leaving individuals more vulnerable to health misinformation and persistent community rumors.

The study also highlights how deeply entrenched cultural myths continue to drive vaccine hesitancy. The widespread belief that HPV vaccination causes future female infertility (endorsed by 64.2% of respondents) reflects profound cultural anxiety regarding reproductive health interventions. This misconception is often amplified by a lack of clear community education regarding the mechanisms of recombinant vaccines. Additionally, the belief that vaccinating adolescent girls might encourage early promiscuity (supported by 58.7% of participants) stems from the social stigma surrounding sexually transmitted infections (STIs). This stigma often prevents open, objective communication regarding viral oncology, causing parents to view a life-saving cancer vaccine through a moral lens rather than a clinical one (Alimoradi et al., 2021).

Our multivariate regression model provides actionable insights for future public health strategies. The finding that direct recommendation from a physician is the strongest predictor of vaccine acceptance (OR = 5.84, 95% CI = 3.12–10.95) emphasizes the essential role of frontline medical workers. Trust in clinical advice remains high; therefore, **proactive counseling** by gynecologists and primary care teams during routine outpatient visits represents a powerful tool for dismantling misconceptions and improving vaccine coverage (Lei et al., 2020).

5. Conclusion & Policy Recommendations

This cross-sectional study demonstrates that while conditional acceptance of the HPV vaccine is high among women attending our outpatient clinic, baseline awareness remains insufficient, and uptake is significantly hindered by deep-seated socio-cultural myths. Widespread misconceptions regarding reproductive safety and the stigmatization of viral oncology represent major barriers to effective preventive care. To address these challenges and achieve public health goals for cervical cancer reduction, the following interventions are recommended:

- **Proactive Institutional Counseling:** Outpatient clinics should establish regular, nurse-led counseling sessions to ensure every woman receiving reproductive healthcare receives clear information regarding cervical cancer prevention.
- **Community Outreach and Myth-Dismantling:** Public health agencies should launch culturally sensitive communication campaigns using regional media to directly address and correct common myths regarding vaccine-induced infertility.
- **School-Based Implementation Programs:** Educational institutions should incorporate HPV vaccine information into youth health programs, positioning vaccination as a routine, vital tool for long-term cancer prevention.
- **Financial Accessibility Frameworks:** Given that many participants view the vaccine as a luxury meant only for higher economic tiers, state subsidized or cost-controlled distribution models are essential to ensure equitable public access.

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