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MYTHS, MISCONCEPTIONS, AND ACCEPTANCE OF HUMAN PAPILLOMAVIRUS VACCINATION AMONG WOMEN IN A RURAL COMMUNITY: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Cervical cancer remains one of the major preventable cancers affecting women, and prophylactic human papillomavirus (HPV) vaccination is central to current elimination strategies. In rural communities, however, acceptance often turns less on access alone and more on what women have heard, feared, or been told about fertility, safety, and sexual stigma.

Methods: This cross-sectional study included 200 women aged 14 to 45 years from a rural community. Recorded variables were age, education, occupation, socioeconomic status, prior awareness of HPV, awareness of its link with cervical cancer, selected vaccine-related misconceptions, and willingness to accept HPV vaccination. Continuous variables were summarised as mean \pm standard deviation, while categorical variables were expressed as frequency and percentage. Group comparisons used the independent-samples t test and chi-square test.

Results: The mean age of participants was 30.4 ± 8.6 years. Overall, 134 women (67.0%) had heard of HPV, 103 (51.5%) knew of the HPV–cervical cancer link, and 104 (52.0%) expressed vaccine acceptance. Misconceptions remained frequent, with 84 women (42.0%) believing that the vaccine causes infertility, 72 (36.0%) linking it with promiscuity, and 96 (48.0%) considering it unsafe or experimental. Acceptance was higher among younger participants (mean age 24.2 ± 6.1 vs 37.1 ± 5.1 years, $p < 0.001$), and it showed significant associations with education, socioeconomic status, HPV awareness, and all three misconceptions.

Conclusion: HPV vaccine acceptance in this rural sample was moderate and moved closely with awareness, education, and social position, while misinformation remained a major drag on uptake. Counselling in such settings needs to address infertility fears, sexual stigma, and safety concerns directly, rather than relying on generic awareness messages alone.

Keywords: Human Papillomavirus Vaccine, Cervical Cancer Prevention, Vaccine Acceptance, Myths, Misconceptions, Rural Women, Cross-Sectional Study.

INTRODUCTION

Cervical cancer is one of the few major cancers that can be prevented through vaccination, screening, and timely treatment. Global elimination efforts have therefore placed HPV vaccination at the centre of prevention, particularly before sexual debut, because the protective effect is greatest when immunisation occurs early.^[1,2] Yet the burden remains uneven.

Women in low- and middle-income countries continue to carry a disproportionate share of cervical cancer incidence and mortality.^[3]

India remains central to that public health challenge. National fact sheets continue to show a large pool of women at risk, and cervical cancer still contributes substantially to cancer morbidity among Indian women.^[4] In this setting, HPV vaccination is not only a biomedical intervention. It is also a social decision, shaped by family authority, affordability, local trust in health systems, and the kinds of rumours that spread far more easily than formal medical advice.

Published work from Karnataka and other Indian settings has shown that awareness of HPV and its relation to cervical cancer remains inconsistent. Some women have heard of cervical cancer but not of HPV itself. Others know the name of the vaccine without understanding why it is recommended or for whom.^[5-7] What follows is predictable. Preventive intent gets diluted by uncertainty, and uncertainty makes space for myths.



www.ajmrhs.com
eISSN: 2583-7761

Date of Received: 08-02-2026
Date Acceptance: 30-03-2026
Date of Publication: 04-04-2026

10.65605/a-jmrhs.2026.v04.i01.pp1027-1033

Those myths are not trivial. Studies from India have repeatedly described fears that HPV vaccination may impair fertility, encourage sexual permissiveness, or produce harmful long-term effects.^[8-10] Such concerns can shape decision-making even where the vaccine is theoretically available. Rural women, especially those with limited access to trusted counselling, may end up judging the vaccine through social meanings rather than through evidence.

The present study examined myths, misconceptions, and acceptance of HPV vaccination among women aged 14 to 45 years in a rural community. The aim was not only to estimate willingness to accept vaccination, but also to identify the belief patterns and social gradients that appeared to influence that willingness.

MATERIALS AND METHODS

Study Design and Setting: This was a community-based cross-sectional study conducted in a rural community for a period of 6 months.

Participants: The analytical sample comprised 200 females aged 14 to 45 years who were included in the study master chart.

Study Variables: The recorded variables were age, education level, occupation, socioeconomic status, prior awareness of HPV, awareness of the HPV–cervical cancer link, belief that HPV vaccination causes infertility, belief that it promotes promiscuity, belief that it is unsafe or experimental, and self-reported willingness to accept HPV vaccination.

Operational Definitions: Vaccine acceptance was defined as a recorded “Yes” response to willingness to accept HPV vaccination. Awareness of HPV referred to prior awareness of HPV as an entity. Awareness of the cancer link referred to correctly identifying the association between HPV and cervical cancer. Misconceptions were analysed as binary responses for infertility, promiscuity, and safety or experimental concerns.

Statistical Analysis: Data were analysed using Python. Continuous variables are presented as mean ± standard deviation, and categorical variables as frequency and percentage. Mean age was compared between participants who accepted and those who did not accept vaccination using the independent-samples t test. Associations between categorical variables and vaccine acceptance were evaluated with the chi-square test. A two-sided p value below 0.05 was considered statistically significant.

RESULTS

A total of 200 women aged 14 to 45 years were included. The mean age was 30.4 ± 8.6 years. The largest age stratum was 30–39 years (79, 39.5%), followed by 20–29 years (57, 28.5%). Most participants had secondary education (106, 53.0%), were homemakers (68, 34.0%), and belonged to middle or lower socioeconomic strata (Table 1).

Overall awareness was mixed. While 134 women (67.0%) had heard of HPV, only 103 (51.5%) recognised its link with cervical cancer. Misconceptions remained common. 84 participants (42.0%) believed that vaccination could cause infertility, 72 (36.0%) associated it with promiscuity, and 96 (48.0%) considered it unsafe or experimental. Overall, 104 women (52.0%) reported that they would accept HPV vaccination (Table 2, Figures 1 and 2).

Acceptance showed a marked age gradient. Women who accepted vaccination were substantially younger than those who did not (24.2 ± 6.1 vs 37.1 ± 5.1 years, $t = 16.13$, $p < 0.001$). Acceptance was universal in the 14–19-year group, remained high in the 20–29-year group, then fell sharply across the older strata, with no acceptance recorded in women aged 40–45 years (Table 3, Figure 4).

Education and socioeconomic position were also strongly associated with acceptance. All graduates accepted vaccination, whereas none of the illiterate or primary-educated participants did so. A similar pattern was seen across socioeconomic categories, where acceptance rose from zero in the lower stratum to universal acceptance in the upper-middle stratum. Across occupations, acceptance clustered among students, teachers, self-employed women, unemployed women, and healthcare workers, while no laborer reported willingness to accept vaccination (Table 3, Figure 3).

Knowledge-related factors showed the strongest pattern. Among women who had heard of HPV, 104 of 134 (77.6%) accepted vaccination, whereas none of those unaware of HPV did so. Nearly every woman who knew the HPV–cervical cancer link accepted vaccination. In contrast, acceptance was absent among women endorsing infertility or promiscuity myths, and it was also absent among those who considered the vaccine unsafe or experimental. Each of these associations was statistically significant (all $p < 0.001$) (Table 3, Figures 1 and 2).

Characteristic	N	%
Age, mean ± SD (years)	30.4 ± 8.6	
Age group: 14–19	28	14.0
Age group: 20–29	57	28.5
Age group: 30–39	79	39.5
Age group: 40–45	36	18.0

Education level: Illiterate	25	12.5
Education level: Primary	41	20.5
Education level: Secondary	106	53.0
Education level: Graduate	28	14.0
Occupation: Homemaker	68	34.0
Occupation: Laborer	54	27.0
Occupation: Student	47	23.5
Occupation: Self-employed	12	6.0
Occupation: Teacher	11	5.5
Occupation: Unemployed	6	3.0
Occupation: Healthcare Worker	2	1.0
Socio-economic status: Lower	66	33.0
Socio-economic status: Lower Middle	45	22.5
Socio-economic status: Middle	73	36.5
Socio-economic status: Upper Middle	16	8.0

Table 1. Socio-Demographic Characteristics of the Study Participants (N = 200)

Values are presented as frequency and percentage unless otherwise stated

Variable	Response	N	%
Heard of HPV	Yes	134	67.0
	No	66	33.0
Aware that HPV is linked to cervical cancer	Yes	103	51.5
	No	97	48.5
Belief that vaccine causes infertility	Yes	84	42.0
	No	116	58.0
Belief that vaccine promotes promiscuity	Yes	72	36.0
	No	128	64.0
Belief that vaccine is unsafe/experimental	Yes	96	48.0
	No	104	52.0
Vaccine acceptance	Yes	104	52.0
	No	96	48.0

Table 2. Hpv-Related Awareness, Misconceptions, and Vaccine Acceptance

Percentages are calculated using the full sample as denominator

Factor	Accepted N (%)	Not Accepted N (%)	Test Statistic	P Value
Age, mean ± SD (years)	24.2 ± 6.1	37.1 ± 5.1	t = 16.13	<0.001
Age group: 14–19	28 (100.0)	0 (0.0)	$\chi^2 = 110.03$	<0.001
20–29	51 (89.5)	6 (10.5)		
30–39	25 (31.6)	54 (68.4)		
40–45	0 (0.0)	36 (100.0)		
Education level: Graduate	28 (100.0)	0 (0.0)	$\chi^2 = 113.82$	<0.001
Illiterate	0 (0.0)	25 (100.0)		
Primary	0 (0.0)	41 (100.0)		
Secondary	76 (71.7)	30 (28.3)		
Occupation: Healthcare Worker	2 (100.0)	0 (0.0)	$\chi^2 = 135.66$	<0.001
Homemaker	26 (38.2)	42 (61.8)		
Laborer	0 (0.0)	54 (100.0)		
Self-employed	12 (100.0)	0 (0.0)		
Student	47 (100.0)	0 (0.0)		
Teacher	11 (100.0)	0 (0.0)		
Unemployed	6 (100.0)	0 (0.0)		
Socio-economic status: Lower	0 (0.0)	66 (100.0)	$\chi^2 = 116.56$	<0.001
Lower Middle	27 (60.0)	18 (40.0)		
Middle	61 (83.6)	12 (16.4)		
Upper Middle	16 (100.0)	0 (0.0)		
Heard of HPV: No	0 (0.0)	66 (100.0)	$\chi^2 = 103.63$	<0.001

Yes	104 (77.6)	30 (22.4)		
Aware of HPV–cervical cancer link: No	1 (1.0)	96 (99.0)	$\chi^2 = 192.09$	<0.001
Yes	103 (100.0)	0 (0.0)		
Infertility myth present: No	104 (89.7)	12 (10.3)	$\chi^2 = 153.33$	<0.001
Yes	0 (0.0)	84 (100.0)		
Promiscuity myth present: No	104 (81.2)	24 (18.8)	$\chi^2 = 118.64$	<0.001
Yes	0 (0.0)	72 (100.0)		
Unsafe/experimental myth present: No	104 (100.0)	0 (0.0)	$\chi^2 = 196.01$	<0.001
Yes	0 (0.0)	96 (100.0)		

Table 3. Factors Associated with HPV Vaccine Acceptance

Row percentages are calculated within each factor category

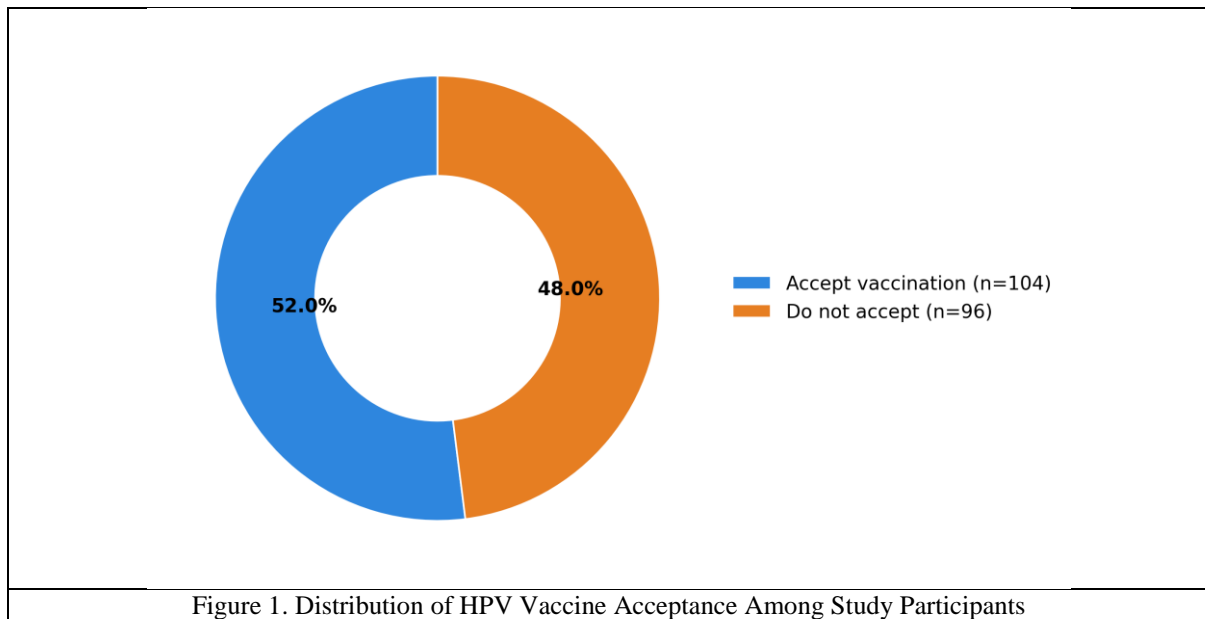


Figure 1. Distribution of HPV Vaccine Acceptance Among Study Participants

The donut chart shows the overall split between women willing and unwilling to accept HPV vaccination.

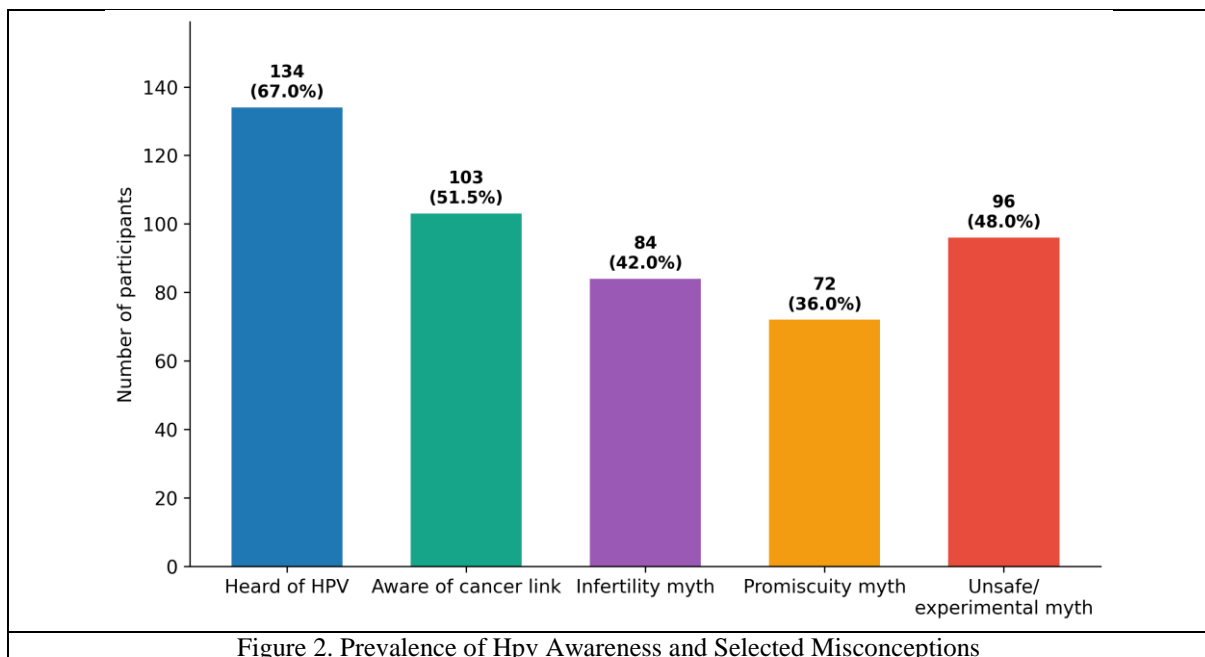


Figure 2. Prevalence of Hpv Awareness and Selected Misconceptions

Bar labels display count and percentage for each parameter.

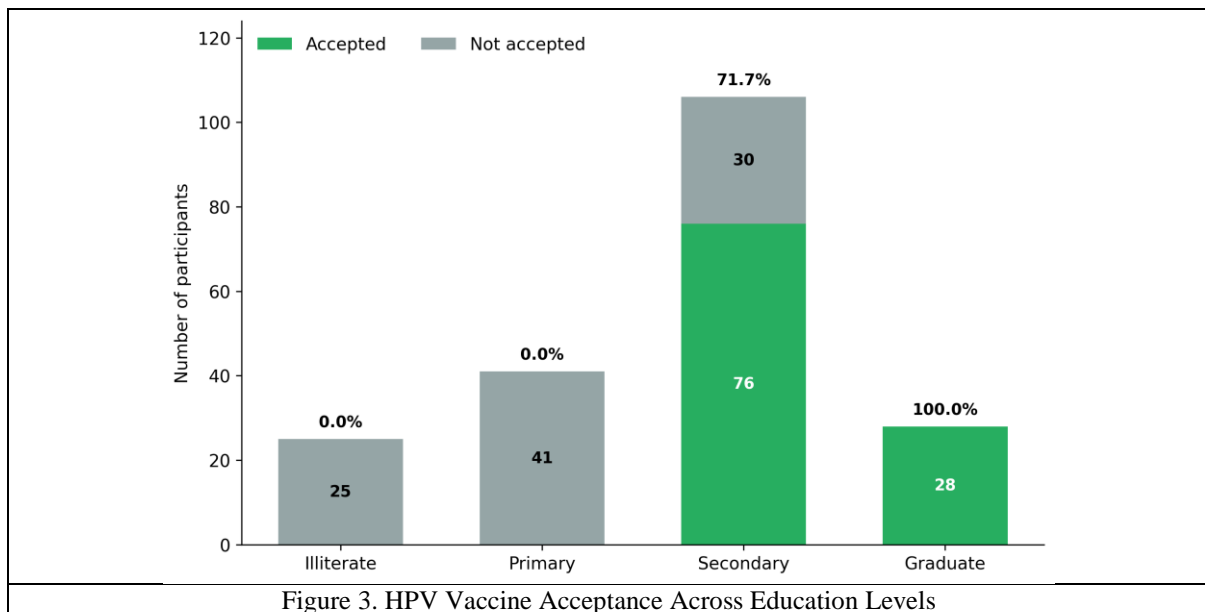


Figure 3. HPV Vaccine Acceptance Across Education Levels

Stacked segments show category counts, and the label above each bar denotes the acceptance percentage within that education stratum.

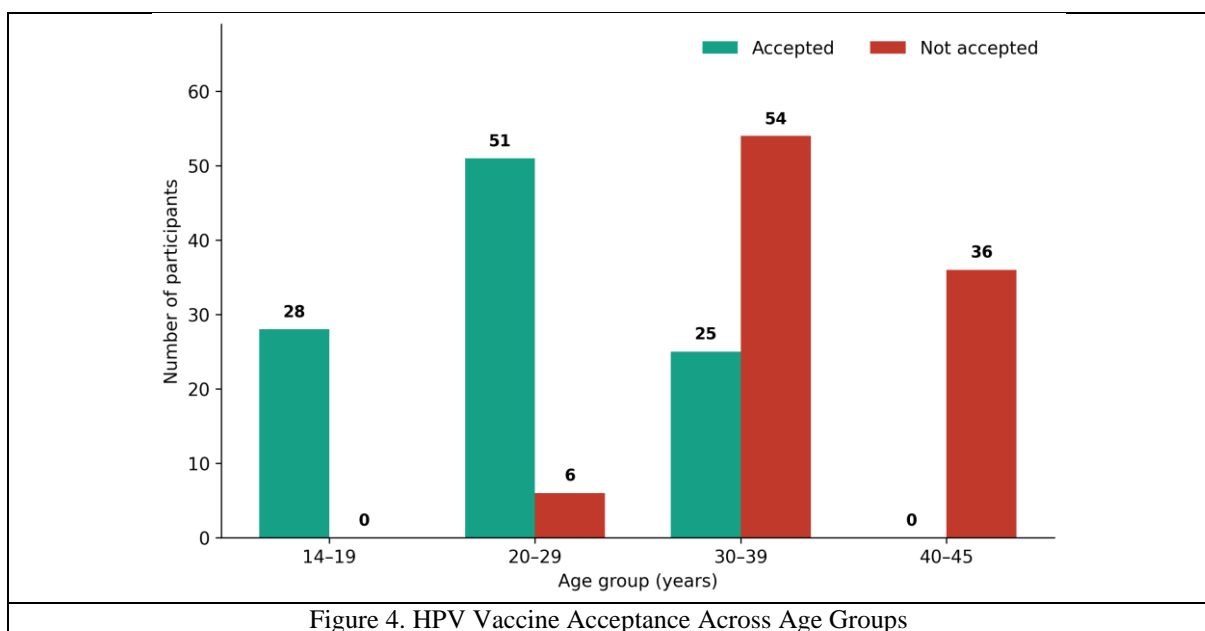


Figure 4. HPV Vaccine Acceptance Across Age Groups

Values above the bars indicate the number of participants in each acceptance category.

DISCUSSION

This study shows that HPV vaccine acceptance in a rural community was not simply a matter of whether women had heard about the vaccine. It appeared to depend on how that information had been filtered through age, education, social position, and a small set of persistent myths. Just over half of the participants expressed willingness to accept vaccination, but the internal pattern was far from even. Acceptance clustered among younger

participants, especially adolescents and young adults, and fell sharply across older age groups.

The overall direction of these findings is consistent with Indian literature. Studies from Karnataka and other parts of South India have repeatedly shown that awareness of HPV and its relation to cervical cancer remains incomplete, even among women who are otherwise familiar with reproductive health concerns.^[5-7] When baseline understanding is weak, vaccine decisions tend to be guided by fragments of

information, family opinion, and local narratives rather than by preventive logic alone.

The present findings also underline how powerful misinformation can be. Beliefs that the vaccine could cause infertility, encourage promiscuity, or be unsafe were each strongly associated with refusal. This is important in the Indian rural context, where reproductive decisions are often socially embedded and where concerns about fertility can override broader cancer-prevention messaging. Similar anxieties have been described in studies involving women, parents, students, and even physicians, suggesting that misinformation is not confined to the community level.^[8-10]

The age gradient was especially striking here. Acceptance was universal in the 14–19 year group and remained high in women aged 20–29 years, but it dropped markedly beyond 30 years. That pattern likely reflects more than age alone. Younger participants may be more receptive to preventive messaging, more exposed to school- or media-based information, or less likely to interpret HPV vaccination through marital and fertility anxieties. Older women may view the vaccine as less relevant to themselves, or they may frame it within concerns about safety, sexual reputation, and family acceptability.^[8-13]

Education and socioeconomic position also followed a clear gradient. Graduates and women from the upper-middle stratum were far more likely to accept vaccination, while acceptance was absent in the least advantaged groups. The relationship is plausible. Education shapes health literacy, but it also influences where information comes from and how confidently rumours can be challenged. Indian studies have similarly shown that trusted counselling, school-linked messaging, and recommendation from health personnel can improve acceptability when communication is simple and direct.^[9,10,14]

These findings carry practical implications. Rural HPV vaccine programmes are unlikely to succeed through generic awareness campaigns alone. What seems more useful is targeted counselling that openly addresses the fears women already hold, especially around fertility, sexual stigma, and vaccine safety. Frontline workers, nurses, school teachers, and primary care doctors may be particularly important in this setting because they can translate biomedical advice into language that feels relevant and credible at community level.

The study has limitations. Its cross-sectional design does not allow temporal interpretation, and the available variables were limited to those captured in the masterchart. More nuanced determinants such as parity, marital status, family influence, physician recommendation, and prior vaccination experience were not available for analysis. Responses were also recorded in binary form, which may have

compressed hesitancy and uncertainty into simple yes or no categories. Even so, the observed pattern is coherent and practically useful. It points to the specific misconceptions and social gradients that rural HPV communication strategies need to address.

CONCLUSION

HPV vaccine acceptance in this rural community was moderate and strongly shaped by age, awareness, education, and socioeconomic position. Misconceptions were not peripheral beliefs. They sat close to the centre of refusal, particularly fears related to infertility, promiscuity, and safety. Rural vaccination efforts are therefore likely to be more effective when counselling moves beyond general awareness and directly addresses the specific concerns women already carry.

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How to cite this article: Dr. Vasanthalakshmi A.V, MYTHS, MISCONCEPTIONS, AND ACCEPTANCE OF HUMAN PAPILLOMAVIRUS VACCINATION AMONG WOMEN IN A RURAL COMMUNITY: A CROSS-SECTIONAL STUDY, *Asian J. Med. Res. Health Sci.*, 2026; 4 (1):1027-1033.

Source of Support: Nil, Conflicts of Interest: None declared.