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AWARENESS ABOUT HPV VACCINATION IN WOMEN AND THEIR ATTITUDE IN WESTERN UTTAR PRADESH

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ABTRACT

Introduction: Cervical cancer is the second most common malignancy among Indian women, primarily caused by human papillomavirus (HPV) infection. Despite the availability of a safe and effective HPV vaccine, uptake in India remains low due to limited awareness, cultural barriers, and inadequate public health outreach. The Objective of the study is to assess the level of knowledge, awareness, and acceptance of HPV vaccination among young women and identify key barriers affecting vaccine uptake and screening participation.

Materials and Methods: A cross-sectional study was conducted from June to December 2024 at Muzaffarnagar Medical College, involving 200 women aged 13–25 years attending the Obstetrics and Gynecology OPD. Data were collected through a pretested semi-structured questionnaire assessing knowledge of cervical cancer, risk factors, awareness of HPV vaccination, and attitudes towards vaccine acceptance. Statistical analysis was done using SPSS version 26.

Results: The majority (64.5%) identified cervical cancer as an abnormal cell growth, and 60.5% recognized HPV as its primary cause. While 62% were aware of the HPV vaccine, only 67% expressed willingness to receive it. Healthcare workers were the main source of information (37.5%). Key barriers included high cost (40%), fear of side effects (30%), and lack of awareness (17.5%). Misconceptions regarding post-vaccination sexual practices were also prevalent.

Conclusion: Despite moderate awareness, significant knowledge gaps and misconceptions persist. Enhanced health education, policy-level HPV vaccine integration into national programs, and improved accessibility are critical to increasing vaccine uptake and reducing cervical cancer burden.

Key Words: HPV vaccine, Cervical cancer, Awareness

INTRODUCTION

Cervical cancer is the second most common cancer among Indian women, with a significant burden attributed to human papillomavirus (HPV) infection. India contributes nearly one-fifth of the global cervical cancer cases, with approximately 123,000 new cases and 77,000 deaths annually. [1,2] The high mortality rate is primarily due to late-stage diagnosis, lack of awareness, and insufficient screening programs. Despite being a preventable disease, cervical cancer continues to pose a major public health challenge in India, particularly in rural areas where healthcare access is limited. [3]

The HPV vaccine is a highly effective tool for preventing cervical cancer, yet its uptake in India remains low. [4] The World Health Organization (WHO) recommends HPV vaccination for girls aged 9-14 years, but national-level immunization coverage is still limited. [5] As of 2023, only a few Indian states, including Sikkim and Delhi, have implemented public HPV vaccination programs, while most rely on private-sector availability. [6] High vaccine costs, lack of awareness, and cultural misconceptions contribute to the poor vaccination rates. Moreover, misinformation about the vaccine's safety and efficacy further hinders its acceptance among parents and adolescents. [7]

Screening for cervical cancer is another critical aspect of prevention, yet participation in routine screening remains inadequate in India. The WHO recommends that women undergo cervical screening at least twice in their lifetime—at ages 35 and 45—using high-performance HPV tests. [8] However, in India, screening programs are often opportunistic rather than systematic, leading to disparities in coverage. Government initiatives like the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS) have attempted to integrate cervical cancer screening into primary healthcare services, but challenges such as infrastructure gaps and trained personnel shortages persist. [9]

Efforts to improve HPV vaccination and cervical cancer screening in India require a multi-pronged approach, including policy-driven vaccine inclusion in national immunization programs, large-scale awareness campaigns, and accessible, cost-effective screening services. [10] The recent launch of India's first domestically developed HPV vaccine, CERVAVAC, is expected to improve vaccine affordability and availability, potentially increasing coverage nationwide. [11] Strengthening school-based vaccination programs, engaging healthcare providers, and addressing vaccine hesitancy through community education will be crucial in reducing the cervical cancer burden in India. [12] This study aims to assess the knowledge, awareness, and acceptance of HPV vaccination among young women in India. Additionally, it seeks to evaluate the factors influencing vaccine hesitancy and identify barriers to screening participation.

MATERIALS AND METHODS

This cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Muzaffarnagar Medical College, from June 2024 to December 2024. The study aimed to assess the knowledge, awareness, and acceptance of the HPV vaccine among young women. A total of 200 participants were enrolled in the study, selected from outpatient department (OPD) attendees who met the inclusion criteria. Ethical clearance was obtained from the Institutional Ethics Committee, and informed written consent was obtained from all participants before enrolment.

The study population included women aged 13 to 25 years who were eligible for HPV vaccination and consented to participate. Women who had already been diagnosed and treated for advanced cervical cancer or were critically ill were excluded from the study. Data collection was done using a pretested, semi-structured questionnaire, which included sections on sociodemographic characteristics, knowledge about cervical cancer, risk factors, awareness of HPV vaccination, and willingness to receive the vaccine. The questionnaire was developed in both English and Hindi to ensure clarity and comprehension.

The principal investigator and trained data collectors administered the questionnaire through face-to-face interviews. Strict confidentiality was maintained throughout the data collection process. The collected data were checked for completeness and accuracy before entry into a Microsoft Excel spreadsheet. Statistical analysis was performed using SPSS software version 26. Descriptive statistics were used to summarize categorical variables as frequencies and percentages, while the chi-square

test was applied to determine associations between variables. To minimize bias, all interviewers followed a standardized protocol, and random verification of data entry was performed. The study findings were interpreted based on the responses received. The results were analyzed to assess the level of knowledge, attitude, and acceptance of HPV vaccination among the participants.

RESULTS

The study included 200 participants, with the majority (32.0%) belonging to the 22-25 years age group. The educational background varied, with 45.0% having completed graduation and above, while 35.0% had secondary education and 20.0% had primary education. In terms of marital status, 70.0% were single, while 30.0% were married. Regarding employment status, 40.0% were employed, whereas 60.0% were unemployed. A family history of cervical cancer was reported by 29.5% of participants, while 70.5% had no such history (Table 1).

Table 1: Sociodemographic Characteristics of Study Participants

Variables		N	Percentage (%)
Age (years)	13-15	26	13.0
	16-18	51	25.5
	19-21	59	29.5
	22-25	64	32.0
Education Level	Primary	40	20.0
	Secondary	70	35.0
	Graduate and above	90	45.0
Marital Status	Single	140	70.0
	Married	60	30.0
Employment Status	Employed	80	40.0
	Unemployed	120	60.0
Family History of Cervical Cancer	Yes	59	29.5
	No	141	70.5

Awareness regarding cervical carcinoma was moderate, with 64.5% correctly identifying it as an abnormal growth of cells in the cervix. However, 11.0% mistakenly believed it was swelling in the cervix, and 10.9% did not know its meaning. Regarding the cause of cervical cancer, 60.5% identified HPV infection, while 15.0% attributed it to prolonged use of oral contraceptive pills (OCPs), and 7.0% associated it with smoking (Table 2).

Table 2: Knowledge on Cervical Carcinoma

Knowledge of Cervical Carcinoma		N	Percentage (%)
Meaning of Cervical Cancer	Pain in the cervix	10	5.0
	Swelling in the cervix	22	11.0
	Abnormal growth of cells in the cervix	129	64.5
	Wound in the cervix	17	8.5
	Don’t know	22	11.0
Cause of cervical Cancer	HPV infection	121	60.5
	Multiple pregnancies	25	12.5
	Prolonged use of OCPs	30	15.0
	Smoking	14	7.0
	Poor hygiene	10	5.0

Knowledge about HPV vaccination was relatively high, with 62.0% of participants being aware of its availability. The majority (60.0%) believed that the vaccine should be given between 10-30 years of age. Additionally, 80.0% correctly identified pregnancy as a contraindication for the vaccine. The primary source of information on HPV vaccination was healthcare workers (37.5%), followed by TV/internet (27.5%), family/friends (25.0%), and newspapers (10.0%) (Table 3).

Table 3: Knowledge about HPV Vaccination

Knowledge on HPV Vaccination		N	Percentage (%)
Availability of HPV Vaccination	Yes	124	62.0
	No	42	21.0
	Don't know	34	17.0
Age Group to be Given (years)	0-10	17	8.5
	10-30	120	60.0
	30-50	47	23.5
	>50	16	8.0
Pregnancy is a Contraindication	True	160	80.0
	False	40	20.0
Sources of Information on HPV Vaccine	Healthcare workers	75	37.5
	TV/Internet	55	27.5
	Family/Friends	50	25.0
	Newspapers	20	10.0

Regarding risk factors, 59.0% of participants identified sexually transmitted infections (STIs) as a significant contributor, while 56.0% mentioned smoking/tobacco use. Other risk factors recognized were multiple sexual partners (54.5%), poor perineal hygiene (54.0%), and early marriage and sexual exposure (51.0%). (Figure 1)

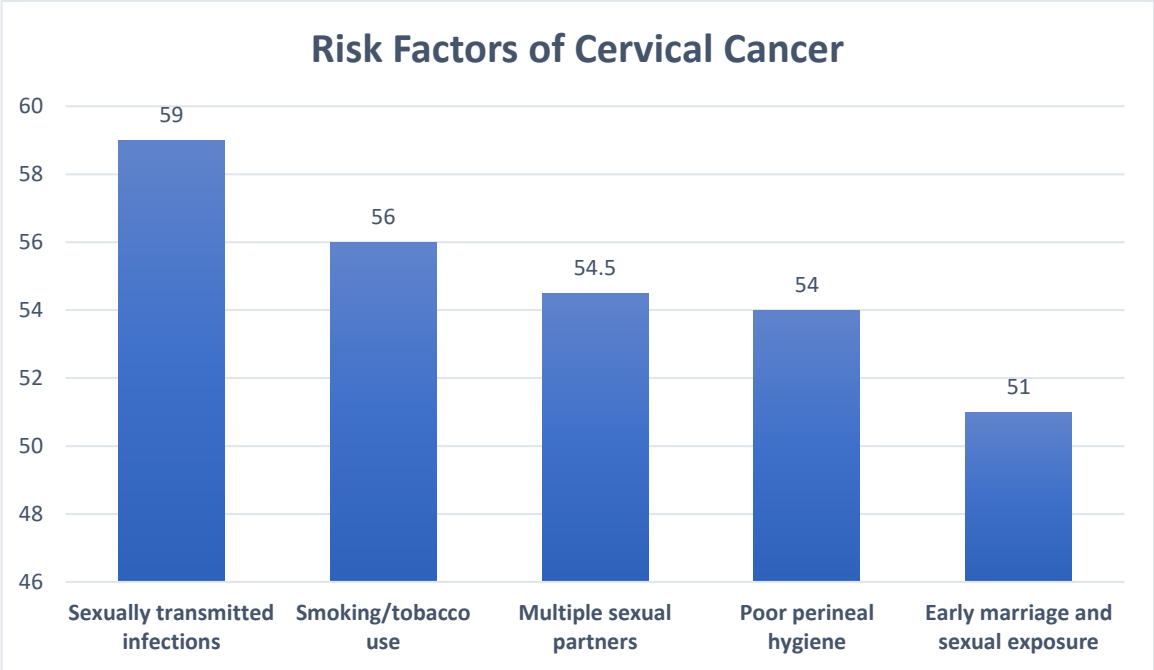

Figure 1: Bar chart showing Risk Factors of Cervical Cancer

Awareness of cervical cancer symptoms was varied, with 70.5% identifying foul-smelling vaginal discharge as a symptom, while 51.5% recognized post-coital bleeding, and 62.0% reported lower abdominal pain as a symptom (Figure 2).

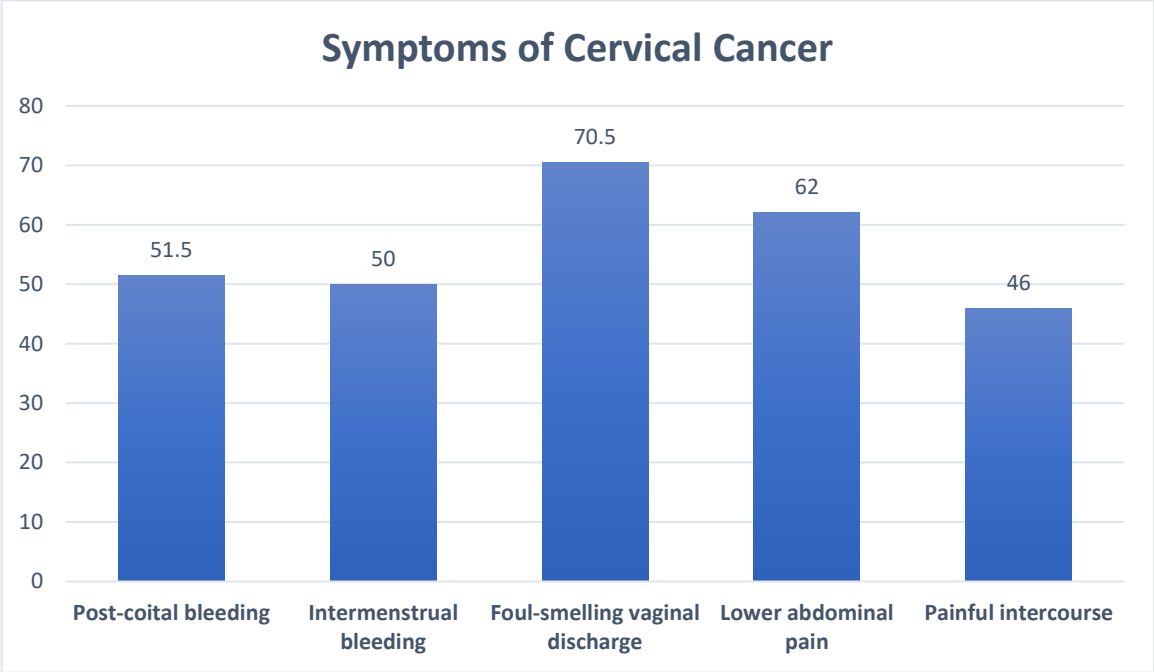

Figure 2: Bar chart showing Symptoms of Cervical Cancer

The attitude and acceptance of HPV vaccination varied among participants. 57.5% believed screening should be conducted before HPV vaccination, while 60.5% agreed that vaccinated women should still undergo cervical cancer screening. However, misconceptions were observed, as 38.0% believed that it was safe to have sex without condoms after HPV vaccination, and 41.5% thought it was safe to have multiple sexual partners after full HPV vaccination. (Table 4) Despite these concerns, 67.0% of participants were willing to receive the HPV vaccine, while 20.0% declined vaccination, and 13.0% remained undecided. (Figure 3)

Table 4: Attitude and Acceptance of HPV Vaccination

Question	**Yes (%)**	**No (%)**	**Don't Know (%)**
Do you need screening before HPV vaccination?	57.5	24.5	18.0
Do vaccinated women still need cervical cancer screening?	60.5	25.5	14.0
Is it safe to have sex without condoms after HPV vaccination?	38.0	45.5	16.5
Can a woman with HPV infection get vaccinated?	43.0	34.0	23.0
Is it safe to have multiple partners after full HPV vaccination?	41.5	41.5	17.0

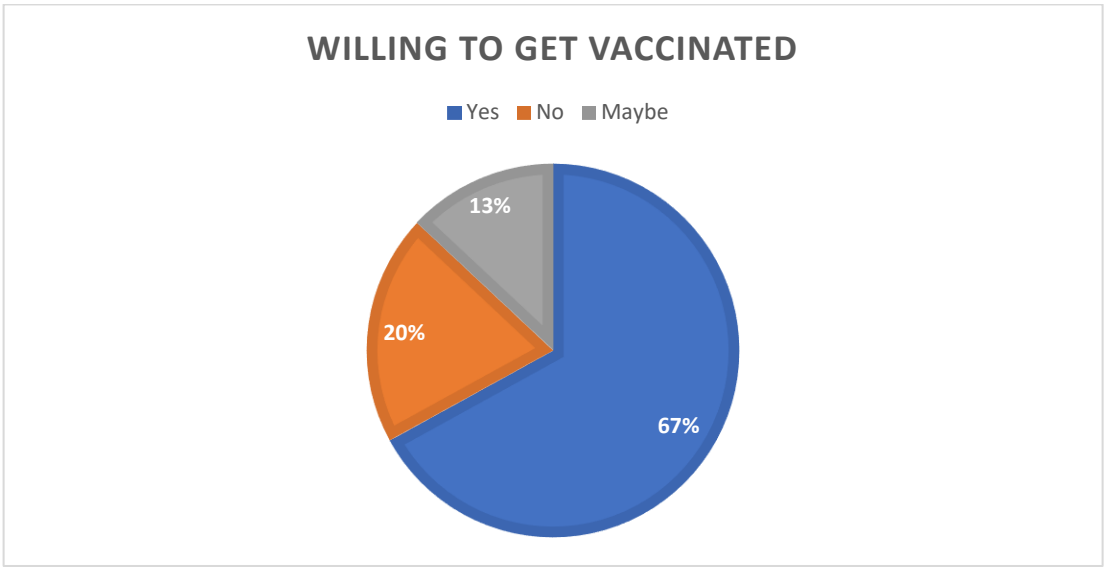

Figure 3: Pie chart showing Willingness to get HPV vaccination

Regarding vaccine efficacy, 41.0% of participants believed the vaccine was 90% effective, while 40.5% considered it to be 70% effective. (Table 5)

Table 5: Vaccine Efficacy and Barriers to Vaccination

Vaccine Efficacy against HPV infection	N	Percentage (%)
50%	27	13.5
70%	81	40.5
90%	82	41.0
100%	10	5.0

Several barriers to HPV vaccination were identified, including high cost (40.0%), fear of side effects (30.0%), lack of awareness (17.5%), and religious/cultural beliefs (12.5%). (Figure 4)

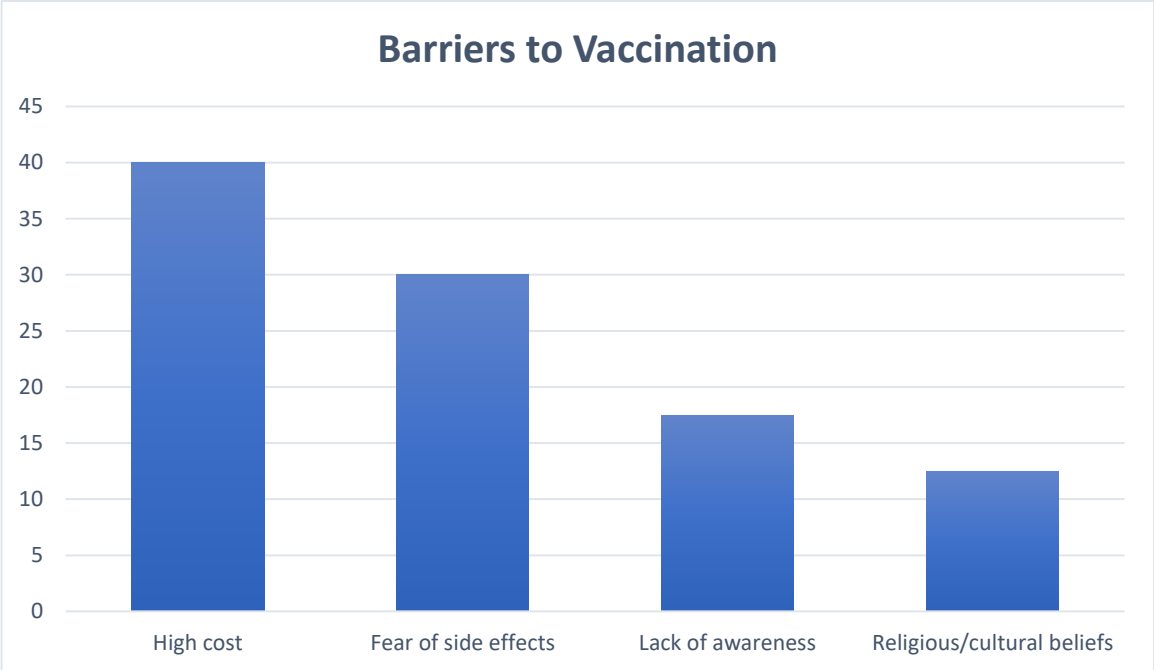

Figure 4: Bar chart showing Barriers to HPV vaccination

DISCUSSION

This study evaluated awareness, knowledge, and acceptance of HPV vaccination and cervical cancer among young women, revealing that while awareness was moderate, there remains a significant

knowledge gap regarding specific causes, symptoms, and preventive measures. The majority of participants (32%) belonged to the 22–25 years age group, a demographic consistent with other studies targeting reproductive-age populations. Similar to findings by Chande et al., a substantial proportion of participants (64.5%) could correctly identify cervical cancer as an abnormal growth in the cervix, and 60.5% recognized HPV infection as a primary cause. [13] This indicates some baseline awareness, though misconceptions persist, such as attributing cervical cancer to oral contraceptives and poor hygiene, highlighting the need for targeted health education.

The role of healthcare workers as the main source of information (37.5%) aligns with previous studies by Abdullahi et al., Juntasopeepun et al. and Arunkumar P et al., where professional guidance significantly influenced awareness and attitudes. [14-16] Television and internet sources were also notable contributors to participants' knowledge. However, despite 62% of respondents being aware of the HPV vaccine, many demonstrated poor understanding of its scope and limitations. Misconceptions regarding safe sexual practices post-vaccination, such as the belief that it eliminates the need for condoms or allows for multiple sexual partners, were particularly concerning and reflect critical gaps in sexual and reproductive health education.

Risk factor awareness was reasonably high, with STIs, smoking, multiple partners, and early sexual debut commonly identified. These findings align with studies from Northern Uganda (Mukama et al.) and underscore the potential for prevention if awareness is translated into action. [17] However, acceptance of HPV vaccination, though promising at 67%, was impeded by identifiable barriers. High cost (40%) and fear of side effects (30%) emerged as primary obstacles, consistent with findings from studies by Montgomery et al. and Basu et al. [18,19] These issues reflect broader structural and informational barriers that must be addressed through policy-level interventions and public health initiatives.

Despite knowledge deficiencies, the willingness to receive the vaccine and the belief in its efficacy (with 81.5% believing it to be 70–90% effective) point to a favorable attitude towards prevention. As observed in research by Arunkumar P et al. and Charakorn et al., even limited knowledge did not hinder vaccine acceptability, suggesting that with proper counseling by healthcare professionals, uptake can be improved. [16,20] Integrating HPV vaccination into national immunization schedules and ensuring affordable access, as advocated by several experts, would likely reduce these barriers and increase coverage, particularly in underserved communities.

This study has several limitations. Firstly, being a cross-sectional study, it captures knowledge and attitudes at a single point in time and does not assess changes over time or after educational interventions. Secondly, the sample was limited to a single geographic area and may not be representative of the wider population, thus limiting generalizability. Thirdly, reliance on self-reported data introduces the possibility of response bias, particularly in areas related to sexual health where social desirability may influence answers. Lastly, the study did not explore in-depth reasons behind vaccine hesitancy or cultural influences in detail, which could have provided more context for the observed attitudes. Future research should consider longitudinal designs and broader demographic representation to strengthen evidence and guide policy.

CONCLUSION

The present study highlights that although a considerable proportion of young women were aware of cervical cancer and the availability of the HPV vaccine, critical gaps persist in their understanding of its causes, risk factors, and preventive measures. Misconceptions regarding vaccine efficacy and post-vaccination sexual behavior remain prevalent, underscoring the need for comprehensive, evidence-based health education. Despite these challenges, the overall willingness to receive the HPV vaccine was encouraging, suggesting that targeted awareness campaigns and improved access—particularly through integration into national immunization programs—could significantly enhance vaccine uptake. Addressing identified barriers such as cost, fear of side effects, and lack of reliable information is essential to strengthening cervical cancer prevention efforts and reducing disease burden in the long term.

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