



Research Article

Open Access, Volume 6

Assessment of Knowledge, Attitude, and Practice Regarding Human Papillomavirus (HPV) Vaccination Among Nursing Officers in a Tertiary Government Cancer Hospital

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Abstract

Background: Cervical cancer is largely attributable to persistent high-risk Human Papillomavirus (HPV) infection and is preventable through HPV vaccination. Nursing officers are frontline health educators whose knowledge, attitudes, and personal practices can influence vaccine acceptance in the community. This study assessed knowledge, attitude, and practice regarding HPV vaccination among nursing officers.

Methods: A descriptive cross-sectional study was conducted among 100 nursing officers. The sample size was calculated using a single-proportion formula with finite population correction. Data were collected using a pre-structured, self-administered questionnaire covering socio-demographic characteristics, knowledge of HPV infection and vaccination, attitudes toward vaccination, and vaccination-related practices. Data were analysed using descriptive statistics and expressed as frequencies and percentages.

Results: All participants were aware of HPV. Most knew that HPV causes cervical cancer (80%) and that cervical cancer is preventable by vaccination (78%). However, knowledge gaps were observed regarding the recommended vaccination schedule, prevention of other HPV-related cancers, vaccine types, and availability for both males and females. Attitude was favourable, as all participants considered HPV vaccination necessary for cervical cancer prevention and were willing to recommend it to daughters or relatives. However, perceived barriers were common: 70% reported cost, fear of side effects, and difficulty accessing vaccination services. Personal uptake was low; only 5% had received HPV vaccination, and none had completed a three-dose schedule.

Conclusion: Nursing officers demonstrated high awareness and favourable attitudes toward HPV vaccination, but vaccine uptake was very low. Targeted education, improved access, and institutional vaccination support are needed to strengthen HPV vaccine advocacy and practice.

Keywords: Papillomavirus vaccines; Papillomavirus infections; Uterine neoplasm; Cervical neoplasms; Health knowledge; Attitudes; Practice; Nurses.

Manuscript Information: Received: Aug 01, 2026; Accepted: Aug 24, 2026; Published: Aug 31, 2026

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Citation: Farooq O, Kalyankar B, Rathod A, Chavan S, Kodgire J. Assessment of Knowledge, Attitude, and Practice Regarding Human Papillomavirus (HPV) Vaccination Among Nursing Officers in a Tertiary Government Cancer Hospital. *J Oncology*. 2026; 6(2): 1214.

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Introduction

Cervical cancer remains a major public health concern and continues to contribute substantially to cancer-related morbidity and mortality among women, particularly in low- and middle-income countries [1]. Persistent infection with high-risk oncogenic Human Papillomavirus (HPV) types is the principal causative factor in the development of cervical cancer [2]. Among these, HPV types 16 and 18 are responsible for the majority of cervical cancer cases worldwide [3]. In addition to cervical cancer, HPV infection is also associated with other anogenital cancers, oropharyngeal cancers, and genital warts, thereby making HPV prevention an important component of reproductive and public health programmers.

The introduction of prophylactic HPV vaccines has significantly strengthened primary prevention strategies against cervical cancer [4]. These vaccines are most effective when administered before exposure to HPV, particularly during adolescence, and have demonstrated high efficacy in preventing persistent HPV infection and precancerous cervical lesions [5]. Despite the availability of safe and effective vaccines, HPV vaccine uptake remains suboptimal in many settings. Barriers such as inadequate awareness, vaccine cost, fear of adverse effects, sociocultural concerns, limited access to vaccination services, and misconceptions regarding sexual behavior continue to affect acceptance and coverage [6].

Healthcare workers play an essential role in improving awareness and acceptance of HPV vaccination [7]. Among them, nursing officers are often the first point of contact for patients and families in hospitals, immunization clinics, maternal and child health services, and community-based health programmers. Their knowledge, attitudes, and personal practices regarding HPV vaccination can directly influence vaccine counselling, parental decision-making, and community acceptance [8]. Nurses who possess accurate and comprehensive knowledge are better positioned to address misconceptions, provide evidence-based counselling, and motivate eligible individuals to receive vaccination.

However, previous studies have shown that although healthcare professionals may have general awareness of HPV and its association with cervical cancer, important gaps often persist regarding vaccine eligibility, dosing schedules, gender indications, safety, efficacy, and broader protection against HPV-related diseases. Moreover, a favorable attitude toward vaccination does not always translate into personal vaccine uptake or consistent recommendation practices [9]. Understanding this gap is important because healthcare workers' personal acceptance of vaccination may enhance their confidence in recommending it to others.

In this context, the present study was conducted to assess the knowledge, attitude, and practice regarding HPV vaccination among nursing officers. The study aimed to identify existing awareness levels, perceptions, barriers, and vaccination practices in this professional group.

Materials and methods

Study design and setting: A descriptive cross-sectional study was conducted among nursing officers to assess their knowledge, attitude, and practice regarding human papillomavirus infection and HPV vaccination.

Study population: The study population comprised nursing officers who were willing to participate in the study.

Sample size calculation: The sample size was calculated using the formula for estimating a single proportion. Since the expected prevalence of adequate knowledge regarding HPV vaccination among nursing officers was not known, a prevalence of 50% was assumed to obtain the maximum sample size. At a 95% confidence level and 5% absolute precision, the initial sample size was calculated as 384. As the accessible study population was finite, finite population correction was applied. Considering a finite population of 135 nursing officers, the corrected sample size was calculated to be approximately 100. Therefore, 100 nursing officers were included in the study.

Inclusion criteria: Nursing officers who provided consent and were available during the study period were included.

Exclusion criteria: Nursing officers who did not provide consent or submitted incomplete responses were excluded from analysis.

Data collection tool

Data were collected using a pre-structured, self-administered questionnaire. The questionnaire consisted of four sections:

1. Socio-demographic characteristics
2. Knowledge regarding HPV infection and HPV vaccination
3. Attitude toward HPV vaccination
4. Practice related to HPV vaccination

The socio-demographic section included age, educational status, marital status, parity, residence, religion, smoking status, monthly household income, sexual activity, and family history of cancer. The knowledge section assessed awareness of HPV, its association with cervical cancer, vaccine preventability, recommended age, dosing schedule, vaccine safety, route of administration, and indications in males and females. The attitude section assessed perceptions regarding the necessity of HPV vaccination, willingness to recommend vaccination, perceived barriers, fear of side effects, sociocultural concerns, and need for education. The practice section assessed personal vaccination status, number of doses received, reasons for vaccination or non-vaccination, vaccination status of children or family members, and recommendation practices.

Data collection procedure: After obtaining consent, participants were asked to complete the questionnaire. Confidentiality of responses was maintained throughout the study. The collected data were checked for completeness before analysis.

Statistical analysis

Data were entered into a spreadsheet and analyzed using descriptive statistics. Categorical variables were summarized as frequencies and percentages. Results are presented in tabular form.

Ethical considerations: Participation in the study was voluntary. Informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity of the respondents were maintained throughout the study.

Results

A total of 100 nursing officers were included in the study. The socio-demographic characteristics of the participants are presented in (Table 1). The highest proportion of participants belonged to the 25-30 year age group (38%), followed by 20-25 years (25%) and 30-35 years (20%). Smaller proportions were aged 40-45 years (12%) and 35-40 years (5%), while none of the participants were older than 45 years. Most participants were graduates (76%), while 24% had postgraduate education. All participants were nursing officers by occupation.

With regard to marital and obstetric characteristics, 87% of participants were married and 13% were unmarried. Most participants were multigravida (80%), whereas 20% were nulligravida. A large majority of respondents resided in urban areas (95%), while only 5% belonged to rural areas. Regarding religion, most participants were Hindu (85%), followed by Muslim (8%) and Christian (7%). All participants were never smokers and reported a monthly household income of more than ₹40,000. Most respondents were sexually active (87%), and 10% reported a family history of cancer (Table 1).

Table 1: Socio-demographic characteristics of the study participants (N=100).

Variable	Category	Frequency (n)	Percentage (%)
Age group, years	20-25	25	25
	25-30	38	38
	30-35	20	20
	35-40	5	5
	40-45	12	12
	>45	0	0
Educational status	Graduate	76	76
	Postgraduate	24	24
Occupation	Nursing officer	100	100
Marital status	Married	87	87
	Unmarried	13	13
Parity	Nulligravida	20	20
	Multigravida	80	80
Residence	Urban	95	95
	Rural	5	5
Religion	Hindu	85	85
	Muslim	8	8
	Christian	7	7
	Others	0	0
Smoking status	Never smoker	100	100
Monthly household income	>₹40,000	100	100
Sexual activity	Sexually active	87	87
	Not sexually active	13	13
Family history of cancer	Present	10	10
	Absent	90	90

Knowledge regarding HPV and HPV vaccination is summarized in (Table 2). All participants had heard of HPV. A majority knew that HPV causes cervical cancer (80%) and that cervical cancer is preventable by vaccination (78%). Regarding the recommended age for HPV vaccination, 44% identified less than 15 years, 44% identified 15-26 years, and 12% did not know the recommended

age. Knowledge regarding the number of vaccine doses varied: 25% reported one dose, 25% reported two doses, 38% reported three doses, and 12% did not know the required number of doses.

All participants perceived the HPV vaccine to be safe and effective. However, knowledge regarding broader HPV vaccine benefits was limited, as only 11% knew that HPV vaccination can prevent other cancers, while 78% responded negatively and 11% did not know. Awareness that pregnancy is a contraindication to HPV vaccination was reported by 78% of participants. Only 40% were aware of different types of HPV vaccines. The most commonly reported source of information was healthcare providers (34%), followed by government or public health campaigns (32%), school or university sources (22%), and social media (11%). More than half of the participants knew that HPV causes genital warts (56%), and 70% knew that HPV is sexually transmitted. Awareness that HPV vaccination does not provide 100% protection against cervical cancer was reported by 56% of participants. Only half of the respondents were aware that the HPV vaccine is available for both males and females, and 78% were aware of the route of administration of the vaccine (Table 2).

The attitude of nursing officers toward HPV vaccination is shown in Table 3. All participants expressed a favorable attitude toward HPV vaccination for cervical cancer prevention, with 44% strongly agreeing and 56% agreeing that HPV vaccination is necessary. All participants were willing to recommend HPV vaccination to their daughter or relative. However, 56% believed that HPV vaccination may encourage early sexual activity, while 22% disagreed and 22% were unsure.

Several perceived barriers to HPV vaccination were identified. Cost was reported as a barrier by 70% of participants. Similarly, 70% reported difficulty in finding a place to receive HPV vaccination, and 70% expressed fear of vaccine-related side effects. Most participants (70%) supported inclusion of HPV vaccination in the national immunization schedule. Regarding perceived susceptibility, 60% believed they were at future risk of HPV infection, whereas only 30% perceived themselves to be at future risk of cervical cancer. Nearly all participants agreed that cervical cancer is a severe disease (97%). Fear of being perceived as sexually active after receiving HPV vaccination was reported by 34% of respondents, while 56% did not share this concern and 10% responded "maybe." Family members were reported to influence the decision to receive HPV vaccination by 11% of participants, while doctors were reported to influence the decision by 25%. A large majority of participants (90%) felt that education regarding HPV vaccines should be provided in schools and colleges (Table 3).

Practice related to HPV vaccination is presented in (Table 4). Only 5% of participants had received HPV vaccination, while 95% had not been vaccinated. Among the vaccinated participants, 2% had received one dose and 3% had received two doses; none had completed a three-dose schedule. All vaccinated participants had received the vaccine between 15 and 26 years of age. The reasons reported for receiving vaccination were doctor's advice (3%) and self-awareness or preventive purpose (2%).

Among the stated reasons for non-vaccination, lack of adequate awareness was the most common reason (30%), followed by doubts regarding vaccine efficacy (20%), high cost of the vaccine (15%), fear of side effects (15%), non-availability of the vaccine

(12%), and not considering vaccination necessary (8%). Only 5% of participants reported that their children or family members had received HPV vaccination. Despite low personal uptake, 70%

of participants had advised someone to take HPV vaccination, and 70% expressed willingness to recommend HPV vaccination to others in the future (Table 4).

Table 2: Knowledge regarding HPV and HPV vaccination among nursing officers (N=100).

Knowledge item	Response	Frequency (n)	Percentage (%)
Awareness of HPV	Yes	100	100
Knowledge that HPV causes cervical cancer	Yes	80	80
	No	20	20
Knowledge that cervical cancer is preventable by vaccination	Yes	78	78
	No	22	22
Recommended age for HPV vaccination	<15 years	44	44
	15-26 years	44	44
	Don't know	12	12
Number of HPV vaccine doses required	One dose	25	25
	Two doses	25	25
	Three doses	38	38
	Don't know	12	12
Perception that HPV vaccine is safe and effective	Yes	100	100
Knowledge that HPV vaccine can prevent other cancers	Yes	11	11
	No	78	78
	Don't know	11	11
Awareness that pregnancy is a contraindication	Yes	78	78
	No	12	12
	Don't know	10	10
Awareness of types of HPV vaccines	Yes	40	40
	No	60	60
Source of information	Healthcare providers	34	34
	Government/public health campaigns	32	32
	School/university	22	22
	Social media	11	11
Knowledge that HPV causes genital warts	Yes	56	56
	No	22	22
	Don't know	22	22
Knowledge that HPV is sexually transmitted	Yes	70	70
	No	30	30
Knowledge that HPV vaccine does not provide 100% protection against cervical cancer	Yes	56	56
	No	11	11
	Don't know	33	33
Awareness that HPV vaccine is available for both males and females	Yes	50	50
	No	50	50
Awareness of route of HPV vaccine administration	Yes	78	78
	No	22	22

Table 3: Attitude toward HPV vaccination among nursing officers (N=100).

Attitude item	Response	Frequency (n)	Percentage (%)
HPV vaccination is necessary for cervical cancer prevention	Strongly agree	44	44
	Agree	56	56
Willingness to recommend HPV vaccination to daughter/relative	Yes	100	100
Belief that HPV vaccination encourages early sexual activity	Yes	56	56
	No	22	22
	Don't know	22	22
Perception that cost is a barrier to HPV vaccination	Yes	70	70
	No	30	30

Opinion that HPV vaccination should be included in the national immunization schedule	Yes	70	70
	No	30	30
Perceived future risk of HPV infection	Yes	60	60
	No	20	20
	Don't know	20	20
Perceived future risk of cervical cancer	Yes	30	30
	No	70	70
Belief that cervical cancer is a severe disease	Agree	97	97
	Disagree	3	3
Difficulty in finding a place to receive HPV vaccination	Yes	70	70
	No	30	30
Fear of side effects of HPV vaccination	Yes	70	70
	No	30	30
Fear of being perceived as sexually active after HPV vaccination	Yes	34	34
	No	56	56
	Maybe	10	10
Influence of family members on decision to receive HPV vaccination	Yes	11	11
	No	33	33
	Maybe	56	56
Influence of doctors on decision to receive HPV vaccination	Yes	25	25
	No	75	75
Need for education about HPV vaccines at schools/colleges	Yes	90	90
	No	10	10

Table 4: Practice related to HPV vaccination among nursing officers (N=100).

Practice item	Response	Frequency (n)	Percentage (%)
Ever received HPV vaccination	Yes	5	5
	No	95	95
Number of doses received	One dose	2	2
	Two doses	3	3
	Three doses	0	0
Age at which HPV vaccination was received	≤15 years	0	0
	15-26 years	5	5
	>26 years	0	0
Reason for receiving HPV vaccination	Doctor's advice	3	3
	Self-awareness/preventive purpose	2	2
Reasons for not receiving HPV vaccination	Lack of adequate awareness	30	30
	High cost of vaccine	15	15
	Fear of side effects	15	15
	Non-availability of vaccine	12	12
	Did not consider it necessary	8	8
	Doubts regarding efficacy	20	20
Children/family members received HPV vaccination	Yes	5	5
	No	95	95
Ever advised anyone to take HPV vaccination	Yes	70	70
	No	30	30
Willingness to recommend HPV vaccination to others in future	Yes	70	70
	No	30	30

Discussion

The present study demonstrated a clear disparity between awareness, attitude, and actual practice regarding HPV vaccination among nursing officers. All participants were aware of HPV, and most recognized its association with cervical cancer and the preventive role of vaccination. However, detailed knowledge was incomplete, particularly regarding the recommended vaccination schedule, broader protection against HPV-related cancers, and vaccine availability for both males and females. This pattern is consistent with Chawla et al., who reported variable knowledge regarding vaccine indications, target age group, and schedule among healthcare providers in India [10]. The findings suggest that general awareness among nursing officers does not necessarily indicate comprehensive or practice-oriented knowledge.

The favorable attitude observed in the present study is encouraging. All participants agreed that HPV vaccination is necessary for cervical cancer prevention and expressed willingness to recommend the vaccine to daughters or relatives. Similar positive attitudes were reported by Pelullo et al., where most nursing students were willing to recommend HPV vaccination as future healthcare professionals [11], also found that most medical and paramedical students supported HPV awareness programmes, school- and college-based education, and inclusion of HPV vaccination in the national immunization schedule [12,13]. These findings indicate that healthcare-related groups generally accept the public health value of HPV vaccination when they understand its preventive role.

Despite favorable attitudes, the present study found very low personal vaccine uptake, with only 5% of nursing officers having received HPV vaccination and none completing the three-dose schedule. This knowledge–practice gap resembles the findings of Gaurav et al., who reported low vaccination uptake among both medical and nursing students despite reasonable knowledge levels [14,15]. Mandal et al. similarly observed that although young female doctors and nursing officers had acceptable knowledge and positive attitudes, good practice remained low [14]. These comparisons indicate that professional exposure and awareness alone are insufficient to ensure vaccine uptake unless access, affordability, and institutional encouragement are addressed.

The barriers identified in this study further explain the poor uptake. Cost, fear of side effects, and difficulty in accessing vaccination services were each reported by 70% of participants. Lack of adequate awareness, doubts regarding efficacy, and non-availability of the vaccine were also reported as reasons for non-vaccination. These findings are comparable to Gupta et al., who identified fear of adverse effects, high cost, and doubts regarding vaccine efficacy as important reasons for non-vaccination [12]. Gaurav et al. also showed that willingness to receive vaccination would increase substantially if the vaccine were free [13]. Therefore, improving coverage may require subsidized vaccination, workplace-based vaccine availability, and clear counselling regarding safety and efficacy.

A notable finding was that 56% of participants believed that HPV vaccination may encourage early sexual activity, reflecting persistent sociocultural misconceptions even among healthcare professionals. Abdelaliem et al. showed that poor knowledge among nursing students was associated with less favorable

attitudes, supporting the need for structured education to correct misconceptions. In the present study, 90% of participants felt that HPV vaccine education should be provided in schools and colleges, highlighting recognition of the need for systematic health education.

Conclusion

The study found high awareness and favorable attitudes toward HPV vaccination among nursing officers; however, personal vaccine uptake remained very low. Important knowledge gaps persisted regarding vaccine schedule, gender eligibility, and broader cancer prevention benefits. Cost, fear of side effects, limited access, and inadequate awareness were key barriers. Targeted educational interventions, institutional vaccine access, and policy-level support are needed to improve vaccination practices among nursing officers and strengthen their role as HPV vaccine advocates.

References

1. Hull R, Mbele M, Makhafa T, Hicks C, Wang SM, et al. Cervical cancer in low and middle-income countries. *Oncol Lett.* 2020; 20(3): 2058-74. doi:10.3892/ol.2020.11754.
2. Shi N, Lu Q, Zhang J, Li L, Zhang J, et al. Analysis of risk factors for persistent infection of asymptomatic women with high-risk human papilloma virus. *Hum Vaccin Immunother.* 2017; 13(6): 1404-11. doi:10.1080/21645515.2016.1239669.
3. De Martel C, Plummer M, Vignat J, Franceschi S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. *Int J Cancer.* 2017; 141(4): 664-70. doi:10.1002/ijc.30716.
4. Barra F, Leone Roberti Maggiore U, Bogani G, Ditto A, Signorelli M, et al. New prophylactics Human Papilloma Virus (HPV) vaccines against cervical cancer. *J Obstet Gynaecol.* 2019; 39(1): 1-10. doi:10.1080/01443615.2018.1493441.
5. Chatterjee S, Chattopadhyay A, Samanta L. HPV and cervical cancer epidemiology-current status of HPV vaccination in India. *Asian Pac J Cancer Prev.* 2016; 17(8): 3663-73.
6. Josten K, Dhar RR, Reshmi B, Krishna VN, Vennila J. Barriers to HPV vaccination among adolescent girls in India: A scoping review. *Indian J Med Res.* 2025; 162(6): 743-53. doi:10.25259/IJMR_1834_2025.
7. Thanasa E, Thanasa A, Kamaretsos E, Paraoulakis I, Balafa K, et al. Awareness regarding human papilloma virus among health professionals and will to accept vaccination: A systematic review. *Cureus.* 2022; 14(10). doi:10.7759/cureus.30855.
8. Ramesh PS, Krishnamurthy S, Shrestha S, Nataraj SM, Devegowda D. Knowledge, awareness and prevalence of human papillomavirus among local university students and healthcare workers in South India: A cross-sectional study. *Clin Epidemiol Glob Health.* 2021; 12: 100839. doi: 10.1016/j.cegh.2021.100839.
9. Yaqub O, Castle-Clarke S, Sevdalis N, Chataway J. Attitudes to vaccination: A critical review. *Soc Sci Med.* 2014; 112: 1-11. doi: 10.1016/j.socscimed.2014.04.018.
10. Chawla PC, Chawla A, Chaudhary S. Knowledge, attitude & practice on human papillomavirus vaccination: A cross-sectional study among healthcare providers. *Indian J Med Res.* 2016; 144(5): 741-9. doi: 10.4103/ijmr.IJMR_1106_14.

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11. Pelullo CP, Esposito MR, Di Giuseppe G. Human papillomavirus infection and vaccination: Knowledge and attitudes among nursing students in Italy. *Int J Environ Res Public Health*. 2019; 16(10): 1770. doi:10.3390/ijerph16101770.
 12. Gupta H, Sharma P, Dubey S, Gupta U, Vikram A. Knowledge, attitude and practices regarding HPV vaccination among medical and paramedical students in North India. *Nepal J Obstet Gynaecol*. 2022; 17(34): 39-47. doi:10.3126/njog.v17i34.48049.
 13. Gaurav A, Bahadur A, Khoiwal K, Bhattacharya N, Chaturwedi J. Knowledge, attitude and practice towards HPV vaccine among medical and nursing students in AIIMS Rishikesh. *Indian Obstet Gynaecol*. 2019; 9(4): 34-7.
 14. Mandal M, Sarkar S, Panda S. A cross-sectional observational study analyzing the knowledge, attitude, and practice of young female nursing officers and female doctors about the human papillomavirus vaccine. *Cureus*. 2024; 16(8). doi:10.7759/cureus.66284.
 15. Abdelaliem SMF, Kuaia AM, Hadadi AA, Alhujayri AK, Al Anazi AA, et al. Knowledge and attitudes toward human papillomavirus and vaccination: A survey among nursing students in Saudi Arabia. *Healthcare (Basel)*. 2023; 11(12): 1766. doi:10.3390/healthcare11121766.