

## Original Research Article

# Knowledge, attitude and practice study about HPV and its vaccination among medical college students in North India

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## ABSTRACT

**Background:** Cervical cancer is one of the most important cancers in women. Cervical cancer is primarily caused by sexually transmitted human papilloma virus (HPV) infection. It has been proven that HPV vaccination, preferably before initiation of sexual life, is highly effective in HPV and cervical cancer prevention. So, this study was conducted to study the knowledge, attitude and practice about the significance of HPV and its vaccination among medical students.

**Methods:** This was a cross-sectional observational study conducted in a medical college. 200 medical students were requested to fill a questionnaire which covered demographic details, knowledge, attitude and practice towards HPV vaccination for cervical cancer prevention.

**Results:** Majority of the students knew that HPV may cause cancer in humans (94%), leading to cervical cancer in females (84.5%) and about the availability of its vaccine in India (79%). But only a few students were aware that it may even lead to cancer in males (52.5%), knew the correct dosing schedule (60%) and that even vaccinated female may develop cancer (36.5%). 74.5% considered its vaccine to be safe, 71.5% considered it effective and 68% considered it protective against sexual partner. Only 33.5% were vaccinated but 92.5% said that they would recommend HPV vaccine to their family.

**Conclusions:** Though the knowledge and attitude about the significance of HPV and its vaccination is good among the medical college students, but the practice of vaccination is poor.

**Keywords:** Knowledge, Attitude, Practice, Human papilloma virus, Human papilloma virus vaccination

## INTRODUCTION

Cervical cancer is one of the most important cancers in women, with an estimate of 468,000 cases occurring in developing and undeveloped countries.<sup>1</sup> India accounts for one-fifth of the world burden for cancer.<sup>2</sup> Cancer of the cervix is a major health problem in India and accounts for 26.1-43.8% of all cancers in Indian women.<sup>3,4</sup> In India, approximately 1,32,000 new cases and 80,000 deaths occur in a year.<sup>5</sup> Unlike other cancers with broad-spectrum etiologies, cervical cancer is primarily caused by sexually transmitted human papilloma virus (HPV)

infection, in particular HPV-16 and -18. Sexual activity and age may influence HPV transmission.

HPV is a member of the family Papillomaviridae. They are small, non-enveloped deoxyribonucleic acid (DNA) viruses.<sup>6</sup> They are classified according to DNA sequence using the L1 open reading frame of the genome. Over 100 serotypes of HPV have been discovered, of which 15-20 are oncogenic. The lag period between the oncogenic HPV infection and the invasive cervical cancer is 15-20 years. Though immune system can clear a single HPV infection easily, a small proportion of women

affected by persistent virus infection may undergo malignant transformation of cervical epithelial cells.

Genital HPVs have been divided into high-risk types, probable high-risk types and low-risk types.<sup>7</sup> Worldwide, high-risk type HPV-16 and 18 contribute over 70% of all cervical cancer cases (HPV-16 being the most prevalent, present in at least 50-60% and HPV-18 in at least 10-12%). Similarly, in Indian women, the most common prevalent genotypes are HPV-16 and 18.<sup>8</sup> Non-oncogenic HPV serotypes-6 and 11 contribute over 90% of benign genital infections such as genital warts.<sup>9</sup> There is 50-80% risk of acquiring genital HPV and 5% for genital warts in lifetime.<sup>10</sup> Oncogenic HPV serotypes have also been implicated in the causation of anal, vulvar, vaginal, penile and oropharyngeal cancers.<sup>11</sup>

HPV infection is the most common sexually transmitted disease worldwide. It has been estimated that at least 50% of sexually active people had acquired genital HPV infection during their lifetime.<sup>12</sup>

The prevalence of genital HPV infection was 14% in females aged 26-30 years.<sup>13</sup> The prevalence of HPV type 16 was found to be exclusively high. Low-risk (LR) HPV types 6 and 11 cause almost all cases of genital warts.<sup>14</sup>

It has been proven that HPV vaccination, preferably before initiation of sexual life, is highly effective in HPV and cervical cancer prevention.<sup>15</sup> Prevention of HPV would, therefore, reduce the incidence of cervical cancers as well as genital warts, along with the morbidity, mortality and costs associated with these diseases.

Two types of prophylactic vaccines have been approved by the USFDA (US food and drug administration) and are available for vaccination of adolescent girls and females of reproductive age group. According to the study of Basu et al prophylactic HPV vaccination can reduce the burden of cervical cancer in India by more than 75 per cent.<sup>16</sup>

Healthcare providers in hospitals and primary health centers (PHCs) including the medical students constitute the most visible, front-line personnel providing health education to patients and the general population. Since medical students play an integral role in educating women in the prevention of diseases, they can influence cervical cancer screening adherence and health promotion among women. So, this study was conducted to study the knowledge, attitude and practice about the significance of HPV in causing cancer in humans and its vaccination among medical students.

## **METHODS**

### ***Study design***

This was a cross-sectional observational study conducted from November 2019 to July 2020 and MBBS

undergraduates from Rama Medical College, Hospital and Research Centre, Hapur were recruited. Students under 18 were withdrawn. Written and informed consents were obtained from all participants. Data was collected through self-reported questionnaires. A questionnaire was prepared which covered demographic details, knowledge, attitude and practice (KAP) towards HPV vaccination for cervical cancer prevention.

### ***Inclusion criteria***

Inclusion criteria were, undergraduate students at Rama Medical College Hospital and Research Centre, Hapur. Students consenting to participate in the study.

### ***Exclusion criteria***

Students with less than 18 years of age and students not completing questionnaires were excluded from this study.

### ***Demographics***

Personal particulars including age, gender and their MBBS batch were collected.

### ***Knowledge of HPV vaccination***

Participants' knowledge was assessed by 6 questions including (1) whether HPV can cause cancer in humans, (2) whether HPV can cause cervical cancer (3) whether HPV can cause penile cancer, (4) is HPV vaccine available in India, (5) number of doses of HPV vaccines, (6) can vaccinated women develop cancer.

### ***Attitude towards HPV vaccination***

The participants were asked about their views on the safety of HPV vaccination, its effectiveness in cancer prevention, and sexual partner protection.

### ***Practice of HPV vaccination***

Participants were asked to indicate their HPV vaccination status; whether they had (1) completed the full course or ongoing vaccination (2) never vaccinated and (3) don't know their vaccination status.

For those who did not receive HPV vaccination, their rationales were explored, including lack of prior knowledge about HPV vaccination, the price, effectiveness, side effects, or some other reason. Participants were asked to indicate their views towards HPV vaccination about its usefulness for and whether they would recommend HPV vaccine to their families.

### ***Statistical analysis***

The data was entered in microsoft excel and analyzed using SPSS (statistical package for the social sciences) software. Descriptive statistics formed the basis of the

analysis. Percentages were evaluated for the categorical variables.

## RESULTS

The study was conducted on 200 medical students. There were 33.3% males and 66.7% females.

### HPV knowledge

Total 94% of the students knew that infection with HPV can cause cancer in humans (Table 1). Among girls

97.74% were correct while 86.57% of the boys were correct (Table 2).

Total 84.5% students correctly answered that it can lead to cervical cancer in females, but only 52.5% students knew that it can even lead to cancer in males. Though 87.97% girls correctly knew that HPV may lead to cervical cancer, only 54.14% girls knew it to be a causative agent for penile cancer as well. Similarly, 77.61% boys knew it to be causative agent for cervical cancer, only 49.25% boys said that it could lead to penile cancer.

**Table 1: Knowledge of all students.**

Result	Right		Wrong		Don't know	
	N	%	N	%	N	%
Can HPV cause cancer in humans	188	94	6	3	6	3
Can HPV cause cervical cancer	169	84.5	9	4.5	22	11
Can HPV cause penile cancer	105	52.5	30	15	65	32.5
Is HPV vaccine available in India	158	79	15	7.5	27	13.5
Number of doses of HPV vaccine	120	60	10	5	70	35
Can vaccinated women develop cancer	73	36.5	69	34.5	58	29

**Table 2: Comparative knowledge of male and female.**

Result	Right %		Wrong %		Don't know %	
	Male	Female	Male	Female	Male	Female
Can HPV cause cancer in humans	86.57	97.74	8.96	0	4.48	2.26
Can HPV cause cervical cancer	77.61	87.97	8.96	2.26	13.43	9.77
Can HPV cause penile cancer	49.25	54.14	8.96	18.05	41.79	27.82
Is HPV vaccine available in India	73.13	81.95	8.96	6.77	17.91	11.28
Number of doses of HPV vaccine	53.73	63.16	4.48	5.26	41.79	31.58
Can vaccinated women develop cancer	37.31	36.09	44.78	29.32	17.91	34.59

Total 79% students were aware that vaccination against HPV infection is available in India and but only 60% knew about the correct of doses of vaccination. 81.95% girls versus 73.13% boys were aware about the availability of vaccination, while 63.16% girls versus 53.73% boys were aware of the correct dosing schedule.

Only 36.5% students correctly answered that risk of cancer is still there even after vaccination, which warrants routine screening of vaccinated women, and the response was similar in girls and boys, 36.09% girls and 37.31% boys correctly answered this.

### HPV vaccination attitude

Total 74.5% students consider vaccine to be safe, only 1.5% students consider it to be unsafe while 24% students were not sure about its safety (Table 3).

Total 71.5% students said that the vaccine would be effective against cancer, 6% that it would be ineffective while 22.5% were not sure of its effectiveness.

While 79.7% girls versus 64.18% boys and 75.19% girls versus 64.18% boys considered vaccine to be safe and effective respectively (Table 4).

Total 68% students answered that HPV vaccination can be protective for sexual partner as well. 71.64% boys consider it to be protective for sexual partner as compared to only 66.17% girls.

### HPV vaccination practice

Only 33.5% students were vaccinated while 62% were not vaccinated. 4.5% students said that they didn't know their vaccination status (Table 5).

All of the vaccinated students were females and none of the boys were vaccinated. On asking about the reason for not being vaccinated, 42% didn't get vaccinated due to lack of knowledge, 22% were doubtful of its effectiveness, 10% were afraid of the side effects, 6% because of its high cost, and rest due to other reasons like

being male, or they didn't consider the vaccine to be important, etc (Figure 1).

A majority of the students (92.5%) said they would recommend HPV vaccination to friends and family.

**Table 3: Attitude of all students.**

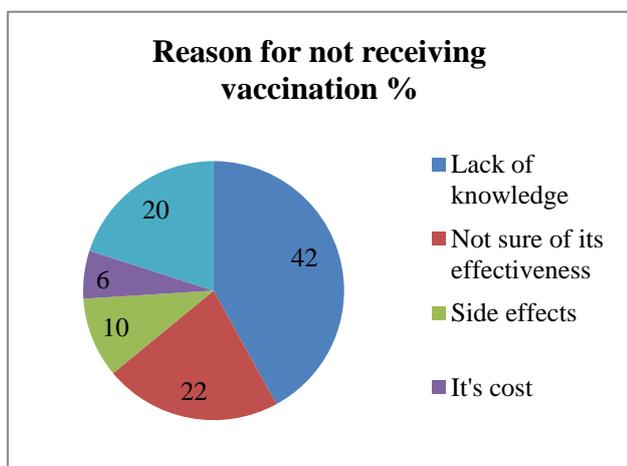
Result	Right		Wrong		Don't Know	
	N	%	N	%	N	%
Is HPV vaccine safe?	149	74.5	3	1.5	48	24
Is it effective in cancer prevention?	143	71.5	12	6	45	22.5
Is it protective for sexual partner?	136	68	15	7.5	49	24.5

**Table 4: Comparative attitude of male and female.**

Result	Right %		Wrong %		Don't know %	
	Male	Female	Male	Female	Male	Female
Is HPV vaccine safe?	64.18	79.7	4.48	0	31.34	20.3
Is it effective in cancer prevention?	64.18	75.19	13.43	2.26	22.39	22.56
Is it protective for sexual partner?	71.64	66.17	4.48	9.02	23.88	24.81

**Table 5: Practice of all students.**

Result	Yes		No		Don't know	
	Number	%	Number	%	Number	%
Are you vaccinated	67	33.5	124	62	9	4.5
Would you recommend HPV vaccine to your family	185	92.5	9	4.5	6	3



**Figure 1: Reason for not receiving vaccination.**

**DISCUSSION**

Cervical cancer is one of the vaccine preventable cancers caused primarily by HPV infection.

In the present study among medical students we found that majority of the students knew that HPV may cause cancer in humans (94%), leading to cervical cancer in females (84.5%). The results are similar to the study done in Greater Noida, Uttar Pradesh in which 91 per cent of the respondents were aware about the fact that HPV was the principal cause of cervical cancer.<sup>17</sup>

In our study 52.5% students knew that HPV can even lead to cancer in males which is more than the study done in Delhi in which only 44% of the students answered that HPV causes vulval, penile, oral and vaginal cancers.<sup>18</sup>

Although 79% students were aware that vaccination against HPV infection is available in India and but only 60% knew about the correct of doses of vaccination which shows the lack of knowledge of students towards HPV vaccination. This is an issue of concern as these are future doctors and because of this lack of knowledge, they will not be able to motivate the society for vaccination against HPV.

Only 36.5% students correctly answered that risk of cancer is still there even after vaccination. So, students must be made aware that even after completing the vaccination for HPV the person can develop cancer, which warrants routine screening of vaccinated women.

In our study we found that majority of the students (74.5%) considered vaccine to be safe and 71.5% students believed that the vaccine would be effective against cancer. The results were less as compared to the study done in Vietnam in which 92.8% considered vaccine to be safe and 90.8% believed that the vaccine is effective.<sup>19</sup> This may be due to inappropriate marketing of the vaccine by the pharmaceutical companies in India. Total 68% students answered that HPV vaccination can be protective for sexual partner as well. This is a very important aspect of HPV vaccination to be explained to

the general population while counseling for HPV vaccination.

In our study only 33.5% students were vaccinated and all of the vaccinated students were females. On asking about the reason for not being vaccinated, the most common reason was due to lack of knowledge (42%) which again emphasizes the fact that without proper knowledge the practice of even medical college students is below average. The lack of knowledge among the general population will be much higher as compared to the medical college student which is a cause of concern for the health care sector, particularly at the grass root level in the rural and sub-urban population.

## CONCLUSION

Though the knowledge and attitude about the significance of HPV and its vaccination is good among the medical college students, but the practice of vaccination is poor. Since medical college students can play a vital role in educating the women and prevention of disease, there is need of educating medical students regarding the role of HPV vaccination in the prevention of cervical cancer.

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