



# Perception and practice of human papilloma virus vaccination among medical students in a tertiary hospital

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## ABSTRACT

### Background

Since the discovery of HPV vaccination has increased hopes on eradicating cervical cancer in future, this study would fulfil the need-based education about HPV and the HPV vaccine targeting adolescents.

### Objectives

To assess the perception and practices regarding HPV vaccination among medical students in a teaching hospital and to determine the various correlating factors with the status of vaccination among the participants.

### Methodology

A Cross Sectional Study was conducted in Sri Venkateshwaraa Medical College Hospital & Research Centre among all medical students from first year to final year under the Department of Community Medicine. The sample size was 600 which were chosen by Systemic Random Sampling technique. The study was carried out for a period of 02 months between June to July 2019. A web-based questionnaire was used as data collection tool

### Results

The mean age of the participants was 19.98(±1.516) years and majority (55%) of the participants was females. Even though high proportion of students has reported that they know about the HPV and it causes cervical cancer (74%) only 29% participants are aware that HPV vaccine can prevent carcinoma cervix. Age of the participant and gender have statistically significance association between knowledge about HPV vaccination with p value < 0.05 and < 0.01 respectively. **Conclusion:** The knowledge regarding HPV vaccination is low among medical students. Only 15% of the participants have been immunized. Among the unvaccinated, 63% are willing to get vaccinated if properly informed so it is necessary to educate and bring about awareness about the HPV, cervical cancer and the HPV vaccine in order to increase the willingness to receive HPV vaccination.

**Keywords:** Human Papilloma Virus, HPV Vaccine, Cervical Cancer

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## INTRODUCTION

Cervical carcinoma is the third most common cancer among women worldwide with an estimated 5, 70, 000

new cases in the year 2018. Approximately 90% of deaths from cervical cancer occur in low- and middle-income countries. The incidence of cervical cancer starts from 30-34 years of age. As cervical carcinoma is the second most common cancer among women in India it remains a significant public health problem threatening women. It constitutes about 22.86% of all cancers among women and 12% of all cancers in both male and female. Human Papilloma Virus (HPV) types HPV 16 and 18 has been proved as the central cause of cervical cancer globally. HPV infection can be attributed to about 90% of anal cancer, 65% of vaginal cancer, 50% of vulvar cancer, 35% of penile cancer and 60% of oropharyngeal cancer. HPV vaccines (both bivalent and quadrivalent) have been demonstrated to prevent the development of high-grade cervical neoplasia effectively, particularly when given to girls before they become sexually active. Since the vaccine is feasible, economically sustainable and cost effective, the World Health Organization (WHO) recommends introduction of HPV vaccination to the National Immunization Programs in countries where prevention of cervical cancer is a public health priority. Globally three types of HPV vaccines; bivalent, quadrivalent and 9 valent are available. In India bivalent and quadrivalent are available. Two doses of HPV vaccine are recommended for children below 15 years at an interval of six months and three doses of HPV vaccine is recommended for those above 15 years and immunocompromised at an interval of zero, one and six months.<sup>(2-6)</sup> The adverse reactions of HPV vaccine are not severe; the reactions reported are pain at the site of injection, tenderness, swelling, fever, headache, myalgia and gastrointestinal symptoms. The combination of HPV vaccine with other vaccines like Recombinant Hepatitis B vaccine has no effect on adverse events. HPV vaccination is primary prevention, since cervical screening only detects precancerous and cancerous changes after they have occurred. Knowledge and attitude have been shown as important determinants for future vaccine acceptance. Recent studies showed that considerably high proportion of respondents show intention to get vaccinated.<sup>(7-10)</sup> Despite the benefits of HPV immunization, acceptance of the vaccination program is not guaranteed, as some of the parents against it due to various reasons. Hence this study was done to enlighten the students about the vaccine and provide health education to the community regarding HPV vaccine through the medical students.

## METHODOLOGY

This Cross-sectional Study was conducted in Sri Venkateshwaraa Medical College Hospital & Research Centre among all medical students from first year to final year under the Department of Community Medicine after obtaining Clearance from the Scientific Research Committee and Institutional Human Ethics Committee. The sample size was 600 chosen by Systemic Random Sampling technique. Study participants were medical students from first to final year of both genders. The study was carried out for a period of 02 months between June to July 2019. A web-based questionnaire consisting of demographic variables, knowledge and awareness regarding HPV vaccine was used as data collection tool. Initial step was collection the lists of students from first to fourth year MBBS, after which e-mail IDs of each student were obtained. Questionnaire related to the study were then sent to their e-mail IDs in Google form following which the data was collected. Data was collected by Google form and Statistical analysis was done using IBM SPSS software version 23.0. Descriptive analysis of all the explanatory and outcome variables was done by using mean and standard deviation for quantitative variables; frequency and percentages for categorical variables. Multivariate logistic regression analysis was done to find out the association between the explanatory variables and knowledge. Simple logistic regression analysis was done for variables with more than two categories. P value of less than 0.05 was considered as statistically significant.

**Table 1: Socio-demographic characteristic of participants (n=600)**

Characteristic of the respondents	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	267	45
Female	333	55
<b>Course</b>		
First year	148	25
Second year	137	23
Third year	180	30
Fourth year	135	22
<b>Father's Education</b>		
Professional Degree	212	35
Graduate	189	32
Intermediate/ diploma	68	11
High School	92	15
Middle school	25	04
Primary school	10	02
Illiterate	04	01
<b>Mother's Education</b>		
Professional Degree	168	28
Graduate	183	31
Intermediate/ diploma	66	11
High School	128	21
Middle school	32	05
Primary school	17	03
Illiterate	06	01

**Table 2: Knowledge on HPV vaccine among the participants (n=600)**

Parameter	Frequency	%
Is HPV infection common in India	424	71
HPV responsible for STI	472	79
HPV transmitted via skin-to-skin contact	213	35
Smoking a risk for HPV infection	224	37
HPV Infection is asymptomatic	320	53
Causes genital warts	478	79
HPV causes cervical cancer	447	74
Men can get infected	445	74
Men are also at risk of getting cancer	319	53
Heard about HPV vaccine	445	74
<b>HPV vaccine provides protection against:</b>	175	29
Cancer cervix	40	07
Laryngeal Papilloma	16	03
Cancer penis	317	52
All the three	52	09
None of the three diseases		
3 doses to be given	155	26
Dosage (0.5 ml)	190	32
Route of administration (IM)	311	52
Site of administration (deltoid)	262	44

Administered at the age (10-25 years)	242	32
Vaccine can be administered in males	286	47
HPV efficacy (90%)	139	23
HPV be administered during pregnancy	207	34
HPV can be administered to already infected person	218	36

## RESULTS

A total of 600 participants were interviewed in the study. The mean age of the participants was 19.98(±1.516) years and majority (55%) of the participants was females. The proportion of study participants from each of the four study years was almost similar, with majority (30%) from third year. The assessment of educational status of their parents showed, 183 (31%) of their mothers and 189 (32%) of their fathers were graduates, 168 (28%) mothers and 212 (35%) have a professional degree. There were only 06 (01%) of the mothers and 04 (01%) of their fathers were illiterate and 17 (03%) of mothers and 10 (02%) of fathers have completed primary schooling. Even though high proportion of students has reported that they know about the HPV and it causes cervical cancer (74%) only 29% participants are aware that HPV can prevent carcinoma cervix. The proportion of participants who are aware about the role of HPV in preventing other diseases like laryngeal Papilloma, genital warts and carcinoma penis was very small ranging from 07 to 30% with majority (52%) replied HPV is the cause for all the three diseases. The proportion of subjects who displayed correct knowledge about dose, route and age of administration was ranging from 25 to 52%. Only 23% of the participants felt that the vaccine had more than 90% efficacy. The proportion of subjects, who reported that the vaccine can be given to males, was 74%. The people who reported pregnancy as contraindication for vaccine was 34% and 36% of the subjects felt that the vaccine can be given even after the person is infected with HPV. The most commonly reported source of information about HPV was their teachers, which was reported by 44% of the participants. The other reported sources of information were internet 16%, newspapers and magazines 02%. The numbers of subjects, who have already received HPV vaccination, were only 16% among the study group.

**Table 3: Source of information on HPV vaccine and willingness to obtain vaccine among participants (n=600)**

Parameters	Frequency	Percentage (%)
<b>Source of information</b>		
Teachers	266	44
Internet	97	16
Newspaper	10	02
Friends	15	03
Family members	08	01
Don't know	188	31
Others	16	03
<b>Total</b>	<b>600</b>	<b>100</b>
<b>HPV immunized</b>		
Yes	95	16
No	290	48
Don't know	215	36
<b>Total</b>	<b>600</b>	<b>100</b>
<b>Willing to take HPV</b>		
Yes	383	64
No	217	36

Total	600	100
Reason for not willing among unimmunized people		
High cost	37	12
Adverse effects	54	19
Doubt on efficacy	41	14
Lack of knowledge	77	27
Others	81	28
<b>Total</b>	<b>290</b>	<b>100</b>

Out of the 600 subjects, 290 participants did not receive the vaccine among whom 64% are willing to take HPV vaccine and the remaining 36% were not willing to receive the vaccine. The most common reasons for the negative attitude were doubts regarding the efficacy of the vaccine (07%), fear of side effects (09%) and high cost of the vaccine (06%). Age of the participant and gender have statistically significance association between knowledge about HPV vaccination with p value < 0.05 and < 0.01 respectively. The education of parents was not statistically significant hence was not associated with knowledge level. (Table 4)

**Table 4: Multivariate Logistic Regression Analysis of Factors Influencing the Knowledge Regarding HPV vaccine among the participants (n=600)**

Parameter	Mean	Standard deviation	p- value
Age	19.98	1.516	<0.05
Gender	1.56	.497	<0.01
Mother' education	2.57	1.439	0.10
Father's education	2.29	1.341	0.95

## DISCUSSION

The findings demonstrate perception and practice of Human Papilloma Virus vaccination among medical students. In the present study majority (55%) of the participants were females and the mean age of the participants was 19.98( $\pm$ 1.516) years, whereas in a study by Mehta S et al. <sup>(11)</sup> the mean age was 21.5  $\pm$  1.2 years. There were 90 males and 60 females studying in second and third year of M.B.B.S. course of the study area. In a study conducted by Swarnapriya K et al. <sup>(1)</sup> assessment of educational status of the mother showed 250 (26.2%) mothers completed secondary schooling, the number of women who completed graduation and post-graduation were 307 (32.1%) and 186

(19.4%) respectively. There were only 40 (04.2%) of the mothers, who were illiterate and remaining 174 (18.2%) have completed primary schooling. In the present study, out of 600 participant's parents, 183 (31%) of their mothers and 189 (32%) of their fathers were graduates, 168 (28%) mothers and 212 (35%) had a professional degree. There were only 06 (01%) of the mothers and 04 (01%) of their fathers were illiterates and 17 (03%) of mothers and 10 (02%) of fathers have completed primary schooling. Study by Wong LP et al. <sup>(2)</sup> in Malaysia reported that the participants have heard of HPV vaccine mainly (45.7%) from their friends, followed by public media (31.4% television, 20%



newspapers, 17.1% radio, and 10.0% magazines). In the present study, the most commonly reported source of information about HPV was their teachers, which was reported by 44% of the participants. The other reported sources of information were internet 16%, newspapers and magazines were only 02%. Study by Pandey D et al. <sup>(12)</sup> showed 75.6% participants to be aware regarding the availability of vaccine against cervical cancer. In the current study, 74% of the participants had good knowledge about HPV vaccination. Study conducted by Niveditha Das E et al. <sup>(13)</sup> at Kerala showed that 91.5% knew about the sexual route of transmission. In our study only 79% of the participants were aware of that HPV is transmitted sexually. In the study by Pandey D et al. <sup>(12)</sup> reported 40% of participants showed correct knowledge about vaccination schedule, while in our study, only 26% of the participants have correct knowledge about vaccination schedule. The most striking aspect of the study is that 23% of the subjects believed that HPV vaccine has more than 90% efficacy. This poor knowledge among the medical students has reflected in the poor uptake of

vaccination, as only 16% have been immunized with HPV Vaccine among the participants. Study by Swarnapriya K et.al. <sup>(1)</sup> showed that age, gender, family history of malignancy and mother's education had no influence on knowledge. Whereas in our study age of the participant and gender have statistically significance association between knowledge about HPV vaccination with p value  $< 0.05$  and  $< 0.01$  respectively. Whereas parents' education was not statistically significant hence was not associated with knowledge level.

### CONCLUSION

The knowledge regarding HPV vaccination is low among medical students. Only 15% of the participants have been immunized. Among the unvaccinated, 63% are willing to get vaccinated if properly informed about the vaccination but 16% of the participants are unwilling to take the vaccination reasons being concerns about efficacy and safety of the vaccine. It is necessary to educate and bring about awareness about the HPV, cervical cancer and the HPV vaccine in order to increase the willingness to receive HPV vaccination.



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