

Article

Awareness, acceptance and hesitancy regarding human papilloma virus vaccine among nursing students of a rural medical college of Maharashtra

Aitalwad Deepmala¹, Jogdand Mohini¹, Mali Sandeep¹, Aghav Shridhar^{1,*} and Amar Raj¹

¹ Department of Community Medicine, S.R.T.R. Government Medical College, Ambajogai, Maharashtra, India.

* Correspondence: shridharaghav95@gmail.com

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Abstract: Introduction: Human papillomavirus causes many diseases like genital warts, sexual transmitted diseases; cervical cancer. Human papilloma virus vaccine is available for adolescent girls. Though it is effective its use has not increased. Therefore, the current study is designed to determine the awareness, acceptance and hesitancy among nursing students.

Objectives: To study awareness about HPV vaccine and to assess the acceptability and hesitancy regarding HPV vaccine.

Materials and Methods: A cross-sectional study conducted among first year to last year nursing students studying in a rural medical college, Ambajogai. A pretested self-administered structured questionnaire was used for collecting data. Information regarding sociodemographic characteristics, awareness, acceptability, willingness to take the vaccine and spreading information to community were interviewed and recorded. Study period was from 1st July 2022 to 31st August 2022.

Results: Out of 180 students, study carried among 169 those who gave consent and presented at time of study. Among them 27% were 15- 20 years of age group and 73% were in the age group 20-25 years. Most of them belongs to middle (43.7%) and upper middle (36.6%) socioeconomic class. Out of total participants 22.5% were males and 77.5 %were females. 7.7% were married and 92.3% were unmarried. 27.8% were heard about HPV and HPV vaccine.

Conclusion: This study has indicated that very few participants were aware about HPV vaccine. Hesitancy can be reduced by providing proper knowledge about safety and side effects of HPV vaccine.

Keywords: HPV; Vaccination; Acceptance; Hesitancy.

1. Introduction

Human Papilloma virus is one of the most common sexually transmitted infection (STI) and causes a wide spectrum of diseases including anogenital warts and cervical cancers. More than 290 million women have an HPV infection [1]. Persistent infection with one of the high-risk (oncogenic) HPV types is necessary cause of cervical cancer. The virus infects epithelial cells of skin and mucosa, and has also been associated with cancer of the oropharynx, vulva, vagina, anus, and penis [2].

In order to effectively control cervical cancer, the Indian Academy of Pediatrics Committee on Immunization (IAPCOI) approved HPV vaccination for females aged 10-12 years, who can afford the vaccine, in 2008 [3].

It is often noted that the educated population of India accounts for the majority of adolescent girls who have received the HPV vaccine. Few vaccinations are administered at private clinics as a result of low public awareness and knowledge of HPV, HPV vaccines, and cervical cancer. For primary prevention, recently two vaccines, a quadrivalent (HPV 16, 18, 6 and 11) 'Gardasil' and a bivalent (HPV 19 and 18) 'Cervarix' have been introduced for vaccinating young adolescent girls between ages 9-13 and/or 13-26-year young adults [4]. These two HPV vaccines were US FDA (Food and Drug Administration) approved and are commercially available in India(given as 0, 2, 6 months interval 2 or 3 doses by intramuscular route) [5,6]. However, uptake

of HPV vaccination in general has been low due to misperceptions about HPV infection, cervical cancer and HPV vaccine, and due to cultural reasons in India [7].

Vaccine acceptance is defined here as the proportion who answers 'somewhat agree' or 'completely agree' to the question If the health authorities are providing the vaccine at government or private health care facilities [8]. Studies on the vaccine acceptance show that young adolescent girls generally react favourably to the human papillomavirus vaccine (HPV). However, these studies also draw attention to unfavourable views, fears about safety, unidentified side effects, and questions about whether the HPV vaccine actually prevents cervical cancer [9]. Vaccine hesitancy refers to either reluctance to accept or rejection of vaccination when it is available. In 2019, the WHO listed vaccine hesitancy as one of the top 10 threats to global health [10].

Though vaccine is effective and available for prevention of cancer its awareness acceptance is not known. Therefore, the current study was designed to assess the awareness, acceptance and hesitancy among nursing students.

2. Materials and methods

This Cross-sectional observational study was conducted among first year to last year nursing students of a rural medical college, Ambajogai, Maharashtra. Informed consent was taken from patients participating in study. Ethical clearance was taken from institutional Ethical committee. The present Study was carried out from 1st July to 31st August 2022.

2.1. Inclusion criteria

The students who gave informed written consent were included in the study.

2.2. Exclusion criteria

The students who did not give consent and those who were not present at the time of study were excluded.

2.3. Sample Size

All students (169) who gave consent and presented at the time of study were included.

2.4. Data collection

Data collected by using preformed and pretested questionnaire by personal interview method. Written informed consent was obtained prior to the study.

2.5. Statistical analysis

Collected data was entered into Microsoft-Excel 2010 worksheets and coded appropriately. Data Analysis was done by epi info. Descriptive statistics (percentage, frequency) were used to describe the data appropriately. Chi square test was used to show association between sociodemographic characteristics and awareness of HPV vaccine.

3. Results

Majority of the participants in the study were in the age group 21-25 years i.e., 127 (75.1%) and least were 15-20 years of age group i.e., 42 (24.9%), see Table 1. Out of 169 study participants only 50 (29.5%) students were aware about HPV vaccine while 119 (70.5%) were unaware Figure 1.

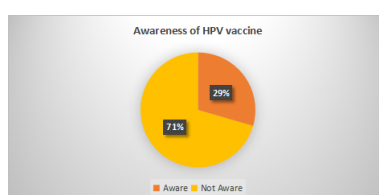


Figure 1. Distribution of study participants on basis of awareness of HPV vaccine

Table 1. Socio-demographic Profile of study participants

SN	Variables	Frequency	Percentage
1	Age group (in years)		
	15 -20	42	24.9
	21-25	127	75.1
2	Gender	Frequency	Percentage
	Male	38	22.5
	Female	131	77.5
3	Marital status	Frequency	Percentage
	Married	14	7.7
	Unmarried	156	92.3
4	Religion	Frequency	Percentage
	Hindu	146	86.4
	Buddhist	16	9.5
	Muslim	7	4.1
5	Type of Family	Frequency	Percentage
	Nuclear	115	68.0
	Joint	47	27.8
	Three generation	7	4.2
6	Socioeconomic Class	Frequency	Percentage
	Upper Class	14	8.2
	Upper Middle Class	62	36.6
	Middle Class	74	43.7
	Lower Middle Class	19	11.2
	Lower Class	0	0.0
7	Total	169	100

In this study we found that there was significant association between age group, gender, type of family and socioeconomic status. The awareness of HPV was more among females compared to males. The age group 21 -25 year was more aware than 15- 20 year. Awareness of HPV was more in those who belongs to upper class of socioeconomic status, see Table 2. 77.8% females were ready to accept HPV vaccine while 34.3% males were hesitating to take the vaccine. 100% study participants from third year batch were willing to take the HPV vaccine, see Table 3.

Among 169 respondents, 64.8% (110/169) reported having vaccine hesitancy. Multiple answers were given by each participant. Overall, 42% of respondents believed that HPV vaccination was unnecessary, 60% of participants stated that repeated vaccination doses, feeling troublesome, 60% did not know where to obtain reliable information, 52% respondents worried about vaccine safety or side effects, 41% reported that they had heard negative news, and 65% reported that where to get vaccinated Table 4.

4. Discussion

Table 1 shows sociodemographic details of study participants. Majority of the participants in the study were in the age group 21-25 years i.e., 127 (75.1%) and least were 15-20 years of age group i.e., 42 (24.9%).

Zohu *et al.*, [11] in 2020 carried out study on HPV vaccine hesitancy among medical students in China. They found out of 850 study participants 74% were in the age group 16 to 26 years while 26% were in the 27 to 45 years of age group. Sevgul Donmez *et al.*, [12] in 2018 did the study on knowledge and perception of female nursing students about HPV, cervical cancer, and attitude towards HPV vaccination in which they found that among 690 participants 56.5% students were in the 18-19 age group.

In present study as per Table 1 male and female participants were 38 (22.5%) and 131 (77.5%) respectively, 156 (92.3%). Similar results found in the study carried out by Mehta S *et al.*, [13] in March 2011 on awareness about human papillomavirus and its vaccine among medical student in University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi, India. They observed in their study that out of 150 medical students 60% males and 40% females. Kamini *et al.*, [14] conducted an observational descriptive study to know the awareness of HPV infection and vaccination among medical students of a government medical college at

Visakhapatnam in Andhra Pradesh. They found that majority of participants were female (56.8%) compared to male (43.1%).

In present study 156(92.3%) were unmarried and 14(7.7%) were married, similar results found in study carried out by Cheung *et al.*, [15] on the acceptability of HPV Vaccines and Perceptions of Vaccination against HPV among Physicians and Nurses in Hong Kong. Out of 1152 participants 640(63.5%) were married while 512(36.5%) were unmarried.

This study shows that out of 169 participants 146(86.4%) were Hindu by religion, 16(9.5%) were Buddhist and very few 7(4.1%) were Muslim by religion. Similar study carried out by Madhivanan *et al.*, [8] on HPV vaccine acceptability among parents of adolescent girls in a rural area Mysore, India. They observed that almost all study participants were Hindu by religion (99.0%).

According modified BG Prasad’s classification 89 (52.7 %) were belonging to Middle Class of socio-economic status, 74(43.9%) were belonging to Upper Middle Class while rest of 3(1.7%) and 3(1.7%) were belongs to Upper Class and Lower Middle Class respectively as per Table 1. Seemitha *et al.*, [16] did the study among medical, dental and nursing students in South India among 988 students, (79.6%) participants belonged to the middle socio-economic status, (3%) were belonged to lower middle and lower socioeconomic status.

Out of 169 study participants only 50(29.5%) students were aware about HPV vaccine while 119(70.5%) were unaware Figure 1.

Table 2. Association between awareness of HPV vaccine and sociodemographic characteristics

Characteristics	Awareness of HPV				Total	x2	p value
	Yes		No				
Age group	N	%	N	%			
15-20 years	6	14.2	36	85.8	42	5.092	0.02
21-25 years	41	32.2	86	67.8	127		
Total	47(27.8%)		122(72.2%)		169		
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Gender						7.295	0.006
Male	4	2.3	34	97.7	38		
Female	43	25.5	88	74.6	131		
Total	47(27.8%)		122(72.2%)		169		
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Religion						1.699	0.09
Hindu	38	26	108	74	146		
Buddhist and Muslim*	9	39.1	14	60.9	23		
Total	47(27.8%)		122(72.2%)		169		
*for statistical evaluation Buddhist and Muslim religion combined							
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Type of family						6.925	0.03
Nuclear	30	26.1	85	73.9	115		
Joint	12	25.5	35	74.5	47		
Three Generation	5	71.4	2	28.6	7		
Total	47(27.8%)		122(72.2%)		169		
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Socioeconomic status						10.68	0.01
Upper Class	9	64.2	5	35.8	14		
Upper Middle Class	15	24.1	47	75.9	62		
Middle Class	17	22.9	57	77.1	74		
Lower Middle Class	6	31.5	13	68.5	19		
Total	47(27.8%)		122(72.2%)		169		
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Batch						32.33	0.00001
First year	3	5.8	48	94.2	51		
Second year	13	21.6	47	78.6	60		
Third year	31	53.4	27	46.6	58		
Total	47(27.8%)		122(72.2%)		169		

Table 3. Distribution of study participants on basis of acceptance and hesitance to take HPV vaccine

Variables	Acceptance to take HPV vaccine		Hesitancy to take HPV vaccine		Total (100%)
	Frequency	Percentage	Frequency	Percentage	
Age					
15-20	22	52.3	20	47.7	42
21-25	56	44	71	56	127
Gender					
Male	25	65.7	13	34.3	38
Female	102	77.8	29	22.2	131
Religion					
Hindu	113	77.3	33	22.7	146
Buddhist	11	68.7	5	31.3	16
Muslim	3	42.8	4	57.2	7
Type of family					
Nuclear	94	81.7	21	18.3	115
Joint	38	80.8	9	19.2	47
Three Generation	6	85.7	1	14.3	7
Socioeconomic status					
Upper Class	11	78.6	3	21.4	14
Upper Middle Class	45	72.5	17	27.5	62
Middle Class	39	52.8	35	47.2	74
Lower Middle Class	13	68.4	6	31.6	19
Lower Class	0	0	0	0	00
Batch					
First year	26	85.2	25	14.8	51
Second year	33	84.1	27	15.9	60
Third year	58	100.0	00	0.0	58

Table 4. Distribution of study participants on basis of reasons of vaccine hesitancy

Reasons for respondent's vaccine hesitancy.	Frequency	Percentage
No vaccination was considered necessary	70	42
Repeated vaccination doses, feeling troublesome	101	60
Don't know where to get good/reliable information	101	60
Fear of needles	104	62
Someone told me they had a bad reaction/ I've been told that vaccines aren't safe	68	41
Worried about vaccine safety/side effects	88	52
Don't know where to get vaccinated	110	65

A study carried out by Kamini *et al.*, [14] on awareness of HPV vaccine among medical students found that overall awareness about HPV vaccine was 54.5%, females (74.7%) were more aware than males (58.3%). Ramavath *et al.*, [17] conducted a cross sectional study on Knowledge and Awareness of HPV Infection and Vaccination Among Urban Adolescents in India. They found that the study group participants are poorly aware about HPV infection and vaccination but are intensely willing to know about it and get vaccinated.

There is a significant association (p-value ($p < 0.05$)) between sociodemographic characteristics and awareness of HPV vaccine, as per Table 2. Similar results found in a study carried by Tusimin *et al.*, [18] on Sociodemographic determinants of knowledge and attitude in the primary prevention of cervical cancer among University Tunku Abdul Rahman (UTAR) students in Malaysia: preliminary study of HPV vaccination in which they found female students having good knowledge (127.9%) compared to male students (72.1%). Mehta *et al.*, [13] did the study in which significant association was found between gender, socioeconomic status and awareness of HPV vaccine.

Kamini [14] study out of 174 medical students, 64.9% were willing to receive/ advice HPV vaccination. The most important factor that deterred the subjects from receiving/ advising HPV vaccination was lack of enough knowledge, followed by high cost and then fear of complications.

Among 169 respondents, 64.8% (110/169) reported having vaccine hesitancy. Multiple answers were given by each participant. Overall, 42% of respondents believed that HPV vaccination was unnecessary, 60% of participants stated that repeated vaccination doses, feeling troublesome, 60% did not know where to obtain reliable information, 52% respondents worried about vaccine safety or side effects, 41% reported that they had heard negative news, and 65% reported that where to get vaccinated.

Similar study was found in Zhou, *et al.*, [11] study a multicentre survey about HPV vaccine hesitancy among medical students. They found among total 728 respondents 62.38% reported having vaccine hesitancy. Overall, 42% of respondents believed that HPV vaccination was unnecessary. 63% of participants did not know where to obtain reliable information, most respondents worried about vaccine safety or side effects (62%), 51% reported negative reactions of others, and 51% reported that they had heard or read negative news.

Madhivanan *et al.*, [8] on HPV vaccine acceptability among parents of adolescent girls in a rural area Mysore, India. Among parents who hesitating to vaccinate their daughter with HPV vaccine, the most frequent reasons for hesitating were, being worried about safety of the vaccine (67.1%), the perception that the vaccination may not be effective (67.1%), that injection may cause pain (65.9%) and their perception that their daughter is at low risk of becoming infected with HPV infection (65.9%).

5. Conclusion

With above discussion there is need for more education to inform the public about HPV, HPV vaccine, and cervical cancer, particularly to nursing students. They have to support and encourage regarding HPV vaccine awareness and acceptability. This study has indicated that acceptance can be increased after they receive a vaccine information sheet regarding the benefits and adverse effects HPV vaccine. Hesitancy can be reduced by giving proper knowledge regarding safety and side effects of HPV vaccine.

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Conflicts of Interest: "The authors declare that they do not have any competing interests."

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