Section: Community Medicine

Original Research Article

AWARENESS OF HUMAN PAPILLOMA VIRUS AND ITS VACCINATION AMONGST THE UNDERGRADUATE MEDICAL STUDENTS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: HPV infection is a well-known cause of cervical cancer. In India, an estimated 77,348 deaths occur each year (Globocan2020). Less than 1% of girls in India have received the HPV vaccine. (NFHS-5) So, this study is done to analyse perceptions of MBBS students about HPV and the vaccine used to treat it. The Objectives was 1. To assess the knowledge of medical students about human papilloma virus and 2. To assess the knowledge, attitude, and practice of medical students about HPV vaccine.

Material and Methods: Cross sectional study was conducted among 250 MBBS Students of GIMS, Kalaburagi, Karnataka. Simple random sampling was used to achieve the required sample size. Data was collected from Nov 2023 to Jan 2024 using a semi-structured questionnaire. Scoring System was used for analysing the knowledge. Data was entered in MS excel and was analysed using SPSS version 26.

Results: The response rate of the students was 100 %. 50.4 % of the students had good knowledge of HPV virus and HPV vaccine whereas 23.2% students had very good knowledge of the same. 56.4 % of students agreed that they would get vaccine if it was free. 54.8 % students strongly agreed that would pay for vaccine, 51.6% and 54.8 % of the students strongly agreed that they would recommend it to their friends and their future clients respectively. Only 5.6 % of female students were vaccinated against HPV.

Conclusion: Despite good knowledge and attitude, the vaccination coverage was very poor among female medical students and nil among boys.

Keywords: Awareness, Human Papillomavirus, Vaccination, Students, Medical.

INTRODUCTION

An HPV infection is a type of virus that frequently results in growths on the skin or mucous membranes (warts). Certain human papillomavirus (HPV) infections result in warts, while others may lead to various cancers. Not all HPV infections result in cancer. Cervical cancer is known to be caused by human papillomavirus (HPV) infection, and there is mounting evidence that HPV also plays a significant role in head and neck cancers and other anogenital malignancies, including anus, vulva, vagina, and penis.[1]

With an estimated 1, 23,907 new cases and 77, 348 deaths annually (Globocan2020), cervical cancer is the second most frequent cancer in India and accounts for over one-fifth of the cancer's global burden. The primary causes of the increased death rate are inadequate healthcare infrastructure in low-resource environments and a lack of knowledge about the availability of screening tools and vaccines against the human papilloma virus (HPV). This particular cancer can be avoided since it results from a persistent viral infection for which there is a vaccination. Cervical cancer must be caused by HPV infection, a sexually transmitted infection. Approximately 80% of cervical malignancies and

63% of high-grade cervical precancerous lesions in India are caused by high-risk HPV strains 16 and 18[2].

Our best line of defense against HPV-related cancer is HPV vaccination. The national immunization schedule's inclusion of the HPV vaccine will surely strengthen the effort to prevent cervical cancer. There are now three vaccine types available in India as of 2022. The FDA licensed the use of the quadrivalent vaccination, Gardasil, in June 2006, and India has been using it since 2008. It targets HPV-6, 11, 16, and 18 strains of the human papillomavirus (HPV). In India, between 80–85% of all cervical cancer cases are caused by HPV-16 and HPV-18. Ninety percent of genital warts are caused by HPV-6 and -11, which, although benign, can cause great distress to the patient. India has been able to utilize the nonvalent Gardasil-9 vaccine, which guards against infection with all nine HPV strains, since 2018. It further contains five high-risk HPV types—31, 33, 45, 52, and 58—account for roughly 10% of cervical cancer cases in addition to 6, 11, 16, and 18. Quadrivalent Cervavac It targets HPV-6, 11, 16, and 18 strains of the human papillomavirus (HPV). Since January 2023, this is the first domestic vaccine made in India that is offered for sale. India's first-ever domestic HPV vaccine could shift the game because it will be more widely available and less expensive.[2]

India as presently less than 1% of girls are vaccinated and less than 2% of Indian women have ever been screened according to NFHS-5[2]. Thus, it is necessary for medical students to be aware of HPV vaccination, so that they can influence the community in accepting HPV vaccine thus helping in increasing the HPV vaccination Coverage in India. Hence my study is to assess the understating of medical students regarding HPV and vaccine against it.

MATERIAL AND METHODS

A cross-sectional study was conducted among medical students at Gulbarga Institute of Medical Sciences, Kalaburagi, Karnataka. As per previous study done by Dr. Goury Choudhary at el on 2018, 18 % of the students had correct knowledge about HPV vaccine3, thus taking the prevalence of 18% and confidence interval of 95% with precision of 5% the sample size was calculated as 250.A list of all the students from each year or batch was provided by the academic section of the college. From each batch that is from 1st year, 2nd year, 3rd year, final year, and intern, 25 Male and 25 female students (total = 50/batch) were selected using random number generator to meet the required sample size. After reviewing literature, a semi structured questionnaire was prepared [3,6] and it was used for collection of data. After taking informed written consent, data was collected from November 2023 and February 2024. Questionnaires consisted of questions on I. socio – demo graphic profile, II. Questions on HPV Virus, III. Questions on HPV vaccination, IV. Questions on attitude towards the HPV vaccine, V. Questions on practice of HPV vaccine. A score system was used to assess the knowledge of students regarding HPV virus and HPV vaccine together. There was total of 20 questions on HPV virus and vaccine. Each correct answer was given 1 mark and for the wrong answer 0 marks. Grading of knowledge was done as follows: 0 – 5 (Very Poor), 6 -10 (Poor), 11 -15 (good) and 16 – 20 (Very good). Students not willing to give consent were excluded from the study. Data collected was entered into Microsoft excel and was analyzed using SPSS V26.

RESULTS

Sociodemographic profile of the students

In our study 250 students were enrolled with a 100% response rate. The median age of the students was 22 and the mean age was 21.4. Age of the students ranged from 18 to 26 years. 53.6 % of the students belonged to 21 – 23 years age group followed by 18 – 20 years (35.2%) and 24 – 26 years (11.2 %) age group. There were 125 female and 125 male students in our study. 80.4 % of the students belonged to Hindu religion, 18.8 % Muslim and 0.4 %each from Sikh and Christians. The majority of the students, that is 49.2 % belonged to upper class socioeconomic status as per modified BG Prasad scale. It was observed that 48.8 % of student's father were self-employed whereas 81.2 % of mothers were housewife. Only 13.2 % of students had family members working in the health sector. [Table 1]

Knowledge on Human Papilloma Virus

64% of the students knew that there were more than 100 types of HPV virus, 92.4 % of the students were aware that HPV causes cervical cancer whereas 4.8 % of students were not aware about it. 68.2 % of the students knew that HPV causes penile cancer. 93.6 and 44 % percent of students knew that HPV is transmitted sexually and by skin to skin contact respectively. It was seen that 90 % of students were aware that women should be screened for HPV. Only 36.8 % of the students knew of the fact that condoms do not provide complete protection against HPV. [Table 2]

Knowledge on HPV Vaccine

Majority of the students (88.9 %) knew HPV vaccine prevents cervical cancer. Only 39.2 % of the students knew about the preferred target group for HPV vaccine, 74.8 % of the students correctly knew about the number of doses of HPV vaccine. Only 35.6 % of the students were aware that the said vaccine is not included in National immunization schedule of India and 44.8 % of the students knew that HPV vaccine is contraindicated in pregnancy. [Table 3]

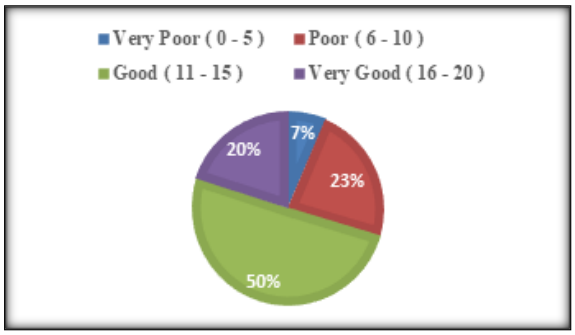

Figure 1: Knowledge of HPV Virus and Vaccine among students (%)

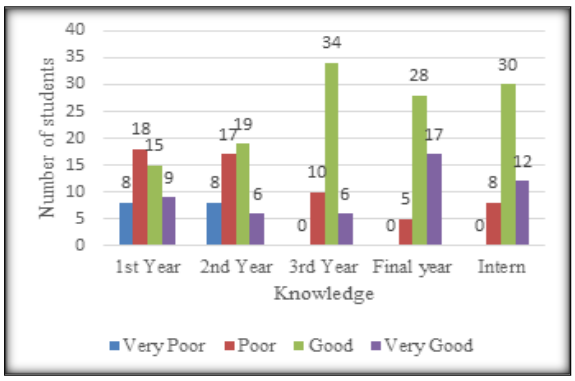

Figure 2: Year wise grading of students

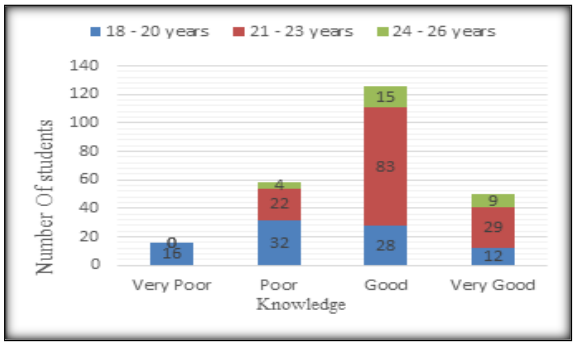

Figure 3: Age wise distribution of knowledge

Overall, Knowledge of HPV virus and Vaccine amongst the students

To assess the overall knowledge of students about the HPV virus and Vaccine used against it, a score system was developed and used as mentioned in methodology. 50.4 % students had good knowledge followed by 23 % poor knowledge, 20 % very good knowledge and 7 % of the students had very poor knowledge (Figure 1). Significance of all the sociodemographic profile against knowledge was checked using chi square test. It was seen that with the increase in year, the knowledge increased and with the increasing age also the knowledge of students increased which was found to be statistically significant (P = 0.00: P<0.05). Figure 2 represents the year wise grading of knowledge and figure 3 represents the age wise distribution of knowledge

Practice of HPV Vaccine amongst students

It was observed in our study that only 7(2.8 %) students had taken single dose of vaccination. All the 7 students were female. Only 38 (15.2%) had advised their family members/friends for HPV vaccination (Table 4). Most common reason for not taking the single dose of HPV vaccine among students was that they were not aware of the availability of the vaccine (61.2%) followed by non-availability of vaccine (26.4%), sexually not active (5.6 %), high cost (4 %), fear of needles (2.0%) and parents won't allow (0.8%). [Figure 4]

Figure 4: Reasons for not taking HPV vaccine among students (%)

Attitude on HPV vaccine among the students

56.4 % and 38.4 % of the students strongly agreed and agreed respectively that they would get the vaccine if it was free. 54. 8 % of the students agreed that they would pay for the vaccine whereas 34 % strongly agreed. 29.2 % strongly agreed and 28.8 % agreed that HPV vaccination would not necessarily protect them from other sexually transmitted disease. 22.8 % of the students strongly believed that only sexually active women should take the vaccine. 51.6 % of the students strongly agreed that they would recommend the vaccine to their friends and colleagues, and 54.8 % of the students strongly agreed that they would recommend the vaccine to their future clients. [Table 4]

Table 1: Sociodemographic characteristics of the students

S/No.	Questions	Frequency	Percent	Cumulative percent
1.	**Age (Years)**			
	a. 18 – 20	88	35.2	35.2
	b. 21 – 23	134	53.6	88.8
	c. 24 – 26	28	11.2	100.0
2.	**Sex**			
	a. Male	125	50.0	50.0
	b. Female	125	50.0	100.0
3.	**Religion**			
	a. Hindu	201	80.4	80.4
	b. Muslim	47	18.8	99.2
	c. Christian	1	0.4	99.6
	a. Sikh	1	0.4	100.0
4.	**Socioeconomic status (Modified BG Prasad)**			
	a. Upper class	123	49.2	49.2
	b. Upper Middle	60	24.0	73.2
	c. Middle Class	21	8.4	81.6
	d. Lower Middle	21	8.4	90.0
	e. Lower Class	25	10.0	100.0
5.	**Father's qualifications**			
	a. Professional	47	18.8	18.8
	b. Graduate	103	41.2	60.0
	c. Diploma	19	7.6	67.6
	d. Senior secondary	26	10.4	78.0
	e. Secondary	29	11.6	89.6
	f. Primary	11	4.4	94.0
	g. illiterate	15	6.0	100.0
6.	**Father's occupation:**			
	a. Government employee	48	19.2	19.2
	b. Non - Govt. employee	74	29.6	48.8
	c. Self-employed.	122	48.8	97.6
	d. Retired	6	2.4	100.0
7.	**Mother's education:**			
	a. Professional	22	8.8	8.8
	b. Graduate	68	27.2	36.0
	c. Diploma	13	5.2	41.2
	d. Senior secondary	27	10.8	52.0
	e. Secondary	50	20.0	72.0
	f. Primary	22	8.8	80.8
	a. illiterate	48	19.2	100.0
8.	**Mother's occupation:**			
	a. Government employee	21	8.4	8.4
	b. Non - Govt. employee	24	9.6	18.0
	c. Self-employed.	2	0.8	18.8
	a. Housewife	203	81.2	100.0
9.	**Is there any family member in Health Sector?**			
	a. Yes	33	13.2	13.2
	a. No	217	86.8	100.0
10.	**Year Studying In:**			
	a. 1st Year	50	20.0	20.0
	b. 2nd Year	50	20.0	40.0
	c. 3rd Year	50	20.0	60.0
	d. Final year	50	20.0	80.0
	a. Intern	50	20.0	100.0

Table 2. Knowledge questions on Human papilloma virus asked to the students.

S/No.	Questions	Frequency	Percent	Cumulative percent
1.	**There are more than 100 types of HPV.**			
	d. Yes (Correct)	160	64.0	64.0
	e. No	30	12.0	76.0
	f. I don't Know	60	24.0	100.0
2.	**HPV Causes Cervical Cancers**			
	c. Yes (Correct)	231	92.4	92.4
	d. No	7	2.8	95.2
	e. I don't Know	12	4.8	100.0
3.	**HPV Causes Penile Cancer**			
	b. Yes (Correct)	171	68.4	68.4
	c. No	35	14.0	82.4
	d. I don't Know	44	17.6	100.0
4.	**HPV is a sexually transmitted disease.**			
	f. Yes (Correct)	234	93.6	93.6
	g. No	7	2.8	96.4
	h. I don't Know	9	3.6	100.0
5.	**HPV can be cured by taking antibiotics.**			
	h. Yes	52	20.8	20.8
	i. No (Correct)	172	68.8	89.6
	j. I don't Know	26	10.4	100.0
6.	**HPV can heal by itself.**			
	e. Yes (Correct)	74	29.6	29.6
	f. No	146	58.4	88.0
	g. I don't Know	30	12.0	100.0
7.	**Using a condom provide Complete protection against HPV.**			
	b. Yes	124	49.6	49.6
	c. No (Correct)	92	36.8	86.4
	d. I don't Know	34	13.6	100.0
8.	**It's important for women to be screened for HPV.**			
	b. Yes (Correct)	225	90.0	90.0
	c. No	7	2.8	92.8
	d. I don't Know	18	7.2	100.0
9.	**Most people with genital HPV have visible signs and symptoms.**			
	b. Yes	95	38.0	38.0
	c. No (Correct)	107	42.8	80.8
	d. I don't Know	48	19.2	100.0
10.	**HPV Causes Oropharyngeal Cancer**			
	b. Yes (Correct)	178	71.2	71.2
	c. No	31	12.4	83.6
	d. I don't Know	41	16.4	100.0
11.	**HPV is transmitted by skin-to-skin contact.**			
	a. Yes (Correct)	110	44.0	44.0
	b. No.	111	44.4	88.4
	c. I don't Know	29	11.6	100.0

Table 3: Knowledge questions on HPV Vaccine asked to the students

S/No.	Questions	Frequency	Percentage	Cumulative percent
1.	**HPV vaccine prevents cervical cancer.**			
	a. Yes (Correct)	221	88.4	88.4
	b. No	13	5.2	93.6
	c. I don't Know	16	6.4	100.0
2.	**HPV vaccine prevents genital warts.**			
	a. Yes (Correct)	190	76.0	76.0
	b. No	30	12.0	88.0
	c. I don't Know	30	12.0	100.0
3.	**Preferred target group for HPV vaccine is.**			
	a. 9 - 14 years (Correct)	98	39.2	98
	b. 15 - 26 years	109	43.6	109
	c. 27 - 45 years	26	10.4	26
	d. > 26 years	17	6.8	17

4.	**HPV vaccines can be given to boys.** **a.** Yes (Correct) b. No c. I don't Know	 153 53 44	 61.2 21.2 17.6	 61.2 82.4 100.0
5.	**Required number of doses for vaccine is 2 as per WHO.** **a.** Yes (Correct) b. No c. I don't Know	 187 9 54	 74.8 3.6 21.6	 74.8 78.4 100.0
6.	**If a person is HPV DNA positive, the vaccine is not recommended.** **a.** Yes b. No (Correct) c. I don't Know	 80 93 77	 32.0 37.2 30.8	 32.0 69.2 100.0
7.	**There are three types of HPV vaccines available in India.** **a.** Yes (Correct) b. No c. I don't Know	 129 33 88	 51.6 13.2 35.2	 51.6 64.8 100.0
8.	**HPV Vaccine is included in Immunization Schedule of India.** **a.** Yes b. No (Correct) c. I don't Know	 89 124 37	 35.6 49.6 14.8	 35.6 85.2 100.0
9.	**HPV Vaccine is not recommended in:** **a.** Lactating/Breastfeeding mother b. Pregnant women (Correct) c. HIV Patients **d.** None of the above	 49 112 42 47	 19.6 44.8 16.8 18.8	 19.6 64.4 81.2 100.0

Table 4: Attitude on HPV Vaccine of the students

S/No.	Questions	Frequency	Percentage	Cumulative percent
1.	I would get the vaccine if it were for free. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree.	 141 96 10 3	 56.4 38.4 4.0 1.2	 56.4 94.8 98.8 100.0
2.	I would pay for the vaccine if I could. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree.	 85 137 23 5	 34.0 54.8 9.2 2.0	 34.0 88.8 98.0 100.0
3.	I would be embarrassed to ask my parents/guardians about vaccination. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree.	 59 43 98 50	 23.6 17.2 39.2 20.0	 23.6 40.8 80.0 100.0
4.	If I get the vaccination, it's not necessary for me to be protected against other sexually transmitted infections. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree.	 73 72 54 51	 29.2 28.8 21.6 20.4	 29.2 58.0 79.6 100.0
5.	Only sexually active women should receive the vaccine. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree	 57 36 96 61	 22.8 14.4 38.4 24.4	 22.8 37.2 75.6 100.0
6.	My parents would not allow me to get the vaccine. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree	 56 20 106 68	 22.4 8.0 42.4 27.2	 22.4 30.4 72.8 100.0
7.	I wish to get more information about HPV and HPV-vaccine. a. Strongly agree.	 136	 54.4	 54.4

	b. Agree c. Disagree d. Strongly disagree	105 8 1	42.0 3.2 0.4	96.4 99.6 100.0
8.	I would recommend it to my friends and colleagues. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree	129 117 3 1	51.6 46.8 1.2 0.4	51.6 98.4 99.6 100.0
9.	I would recommend it to my future clients. a. Strongly agree. b. Agree c. Disagree d. Strongly disagree	137 111 2 0.0	54.8 44.4 0.8 0.0	54.8 99.2 100.0 0.0

Table 5: Practice of HPV Vaccine amongst students

S/No.	Questions	Frequency	Percentage	Cumulative percent
1.	**Have you ever taken a single dose of HPV vaccine.** a. Yes b. No	7 243	2.8 97.2	2.8 100.0
2.	**Have you ever advised your family members/Friends for HPV Vaccine.** a. Yes b. No	38 212	15.2 84.8	15.2 100.0

DISCUSSION

The Budget 2024 included a focus for cervical cancer, the second most frequent cancer identified in women in India. On February 1st, Finance Minister Nirmala Sitharaman stated that females would receive a cervical cancer vaccination. Given that the government has declared that it intends to include the human papillomavirus (HPV) vaccine in the country's immunization program, it is likely that the cost of cervical cancer vaccines would decrease. The immunization would then become a regular part of a girl's immunization routine at nine years old. The Cervavac vaccine, manufactured in India and distributed by Serum Institute, would be used in the campaign. The vaccine is only now offered in private hospitals. Over the course of the following three years, all girls between the ages of nine and fourteen will receive vaccinations in their schools or neighboring government primary health institutions. The campaign will be launched with assistance from the ministries of education, women and child development, and health. State and federal officials attested to the fact that in 2023 there were workshops on HPV vaccination administration. To guarantee the efficient provision of vaccines at centers, representatives from the three coordinating ministries will get training. Before the vaccination is distributed, communication strategies are also prepared for to make sure there is no hesitation. Additionally, the Indian Council of Medical Research (ICMR) was advised by the National Technical Advisory Group on Immunization (NTAGI) to carry out studies investigating the effectiveness of a single-dose HPV vaccination regimen in children aged 9 to 15.[4]

In this study it was seen that 92.4 % of students knew that HPV causes Cervical cancer, 93.6 % of the students were aware that HPV is a sexually transmitted disease, 68 % of students knew that HPV causes penile cancer and 49.6 % of the students were of the opinion that condom provide complete protection against HPV whereas only 36.8 % knew that it does not provide complete protection. In a similar study done by Dr. Goury Choudhary et al,[3] it was seen that 97.5 % of the students know that HPV is a sexually transmitted disease. 67.5% of students implicated that HPV is a causative agent of cervical cancer. Only 31.25% of students know HPV can cause penile cancer while 70% students don't know about it. 66.25% of students know HPV can cause genital warts whereas 86.25% students know HPV can heal by itself. 62.5% of students were of the opinion that condoms prevent HPV infection. The difference in the result may be due to the study subjects as in my study all the years that is from 1st year to interns were included whereas in the study done by Dr. Goury Choudhary et al only 1st year and 2nd year students were included. Also, with the passage of time and with governments effort to aware the public as whole regarding HPV virus and vaccine, the knowledge of the students may have increased.

In the present study 88.4 % of the students knew that HPV vaccine prevents cervical cancer, only 40 % of students were aware of the preferred target group for HPV vaccination which is 9 to 14 years of age as per WHO, similar findings were seen in a study done by Sumita Mehta et al.[5] It was interesting to know that 50 % of the students believed that HPV vaccine is included National Immunization Schedule of India which is not true as till date the HPV vaccine is not included in the schedule. Majority of the student (50.4%) had good knowledge about HPV Virus and HPV vaccine. In a similar study done by Charu Sharma et al it was found that 44% of students had average knowledge.[6]

Out of the 125 female students in the present study, only 7 (5.6%) participants had received the HPV vaccination. Similar vaccination acceptance rate of 6% and 10% was observed in two different medical

colleges of India and slightly higher rate of 21.1% in a Brazilian study. [7,8] The willingness to accept vaccine was 66.8% in a study by Mehta et al. [5], 67.8% by Deeksha Pandey et al,[9] and 64% by Kamini et al [10]. versus 88% in our study. A positive development is highlighted during this study that 98.4% respondents agreed to recommend the vaccine to friends and colleagues whereas 99 % agreed to recommend it to future patients.

Medical students have a special opportunity to encourage HPV vaccination in the future because they are prospective HPV vaccine recipients. Our students' mean knowledge score was 12.2, falling into the good knowledge group. The goal of this article is to decrease the incidence of cervical cancer in the nation by educating the public about HPV virus infection and preventive measures through the help of medical professionals. Only family doctors and other highly skilled and driven healthcare professionals will be able to effectively complete this task of educating teenage girls about the HPV vaccine.

CONCLUSION

Despite, having good knowledge and good attitude among majority of the students, the vaccination status of students was poor. Most of the students knew of the vaccine but they were not sure about the availability of the vaccine in their local place. It may be due to High cost of HPV vaccine because of which only selected clinics have the vaccine and non-inclusion of HPV vaccine in National Immunization schedule yet. HPV Vaccine should be made availed at all the govt. hospital free of cost, so that the vaccination status may increase, thus reducing the incidence of cervical cancer. It is good to know that recently this year government has announced to introduce the HPV vaccine in the immunization schedule of India for adolescent girls which the beneficiaries can avail at the school or in the nearby primary health centre.[2]

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