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ORIGINAL ARTICLE

Study of Awareness of HPV Vaccine Among MBBS Medical Students and Paramedical Workers in National Capital Region Institute of Medical Sciences, Meerut, U.P., India

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Abstract

Background Carcinoma cervix is one of the few malignancies where an etiological agent HPV has been identified and primary prevention with HPV vaccination is available, but awareness regarding this even in MBBS students and paramedical workers is limited.

Objective To evaluate awareness among MBBS students and paramedical workers regarding prevention of cervical carcinoma with HPV vaccination (its availability, effectiveness, route, cost, number of doses, age group, safety and approval). To assess the participants after HPV vaccination awareness demonstration.

Methodology In this cross-sectional study, 290 medical students and 140 paramedical workers were included. Their knowledge and awareness regarding cervical cancer and HPV vaccination was evaluated through a questionnaire. A small session regarding HPV vaccination awareness was also conducted. Data were analysed using statistical package for social sciences (SPSS) ver. 21 software.

Results Majority of MBBS students and paramedical workers were aware regarding cervical cancer, and its prevention by HPV vaccine but awareness regarding route of transmission of HPV, route, dose and approval of vaccination was higher in MBBS student. Most of the students were willing to get vaccinated after the study and showed good response after HPV vaccination awareness demonstration.

Conclusion The current study suggests that MBBS students and paramedical workers have overall good knowledge and awareness about carcinoma cervix, HPV and HPV vaccination.

Keywords Carcinoma cervix · HPV vaccination · MBBS students · Paramedical workers

Introduction

Malignancies are emerging as the second most common cause of deaths worldwide leading to increase in death by 17.0% between 2005 and 2015 [1]. Up to 60 per cent of total cancer cases are preventable, and nearly 15% of all cancers are due to infective origin [2]. Success in prevention of malignances has led to reduction in morbidity and mortality in developed countries. Recent world wide data suggest that annual new cases of cervical cancer are 3% (i.e. 604,127 cervical cancer cases out of total 19,292,789 cancer cases), while annual deaths due to cervical cancer cases are 3.3% (i.e. 341,831 cervical cancer deaths out of 9,958,133 total cancer deaths). In India, cervical cancer accounted for 9.4% of all cancers and 18.3% (123,907) of new cases in 2020 [3]. Cervical cancer is the second leading cause of cancer and related deaths among women in India [4]. Unawareness regarding the availability of preventive measures results in ineffective prevention. The situation is more alarming in the rural areas where the majority of women are illiterate and ignorant about the

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hazards of cervical cancer as well as healthcare resources are scarce [5].

Carcinoma cervix is one of the few malignancies where an etiological agent HPV has been identified, and primary prevention with vaccination is available. High-risk strain of human papilloma virus 16 and 18 (HPV) has been identified as the etiological agent in 70% of cervical carcinoma cases [6]. It has been estimated that more than 80% of the sexually active women acquire HPV infection by 50 years of age [7]. The major preventive measure against carcinoma cervix is the use of HPV vaccine. The good thing about this vaccine is that besides giving prevention to the vaccinated individual, it reduces prevalence of HPV virus in the general population. This results in reduction of infection even in unvaccinated individuals thereby producing herd immunity [8]. Vaccine is also effective against 90% of genital warts caused by HPV 6 & 11 infections [9]. Two vaccines licensed globally are available in India: a quadrivalent vaccine (GardasilTM marketed by Merck) and a bivalent vaccine (CervarixTM marketed by Glaxo Smith Kline) [10]. Additional advantage of vaccine may be in the reduction of health care expenditure due to less need of screening programme, biopsy and other invasive procedure required in follow-up of patients [16]. Awareness and education programmes are mandatory to make full use of vaccine for masses for cervical cancer prevention. HPV vaccines are highly effective in preventing cervical infection/cancer when given before initiation of sexual activity or exposure. HPV vaccination reduces the risk of developing cancers caused by HPV at other sites such as anus [11], oropharynx [12, 13], vagina and vulva [14, 15].

In May 2018, the World Health Organization (WHO) elimination programme fixes following targets for India to achieve by 2030 [17]:

- 90% girls fully vaccinated by 15 years of age with two doses of HPV vaccine;
- 70% women screened with a high-performance test at 35 and 45 years of age;
- 90% of women with cervical pre-cancer and cancer receive treatment to achieve a goal of less than four cases per 100,000 women.

Materials and Methods

The present cross-sectional study was conducted in National Capital Region Institute of Medical Sciences, Meerut, India from July 1, 2021, to January 31, 2022, after approval by the Institution Ethical Committee (IEC 28/NCRIMS 20/OBG002OP/21–12-2020). This study included 290 medical students and 140 paramedical workers after prior informed consent. A pre-designed questionnaire was given to the participants which include following information:

1. Socio-demographic profile of study participants.
2. Prevention of HPV.
3. Knowledge and attitude regarding HPV vaccination.
4. Acceptability of HPV vaccine among girls.
5. Practice assessment of HPV vaccination.

A duration of 10–15 min was given to fill the questionnaire. After the data collection was complete, proformas were analysed. Incompletely filled questionnaires were excluded. Students were told that the data were confidential and would be used for research purpose only. Thereafter, small session regarding the HPV vaccination awareness was conducted. Following the awareness session, practice assessment of HPV vaccination was conducted for all participants.

Statistical Analysis

Data were entered on excel sheet and were analysed using Statistical Package for Social Sciences (SPSS) ver.21 software. Data were analysed using percentages, and results were obtained.

Results

Demographic profile of MBBS students shows that the maximum number of students who participated in the study were of 20–22 years age, predominantly females (57.4%), and none of the participants were married at the time of our study belonging to upper middle class. On the other end, participants from paramedical workers were mostly > 22 years age group (83.5%), female (65%), married (56 0.5%), parous (64.3%) and belong to middle class family (Table 1).

Assessment of knowledge about etiology of cervical cancer using questionnaire revealed that the majority of the MBBS students and paramedical workers were having knowledge about the causative agent, mode of transmission and prevention of cervical cancer. The participants were not having enough idea about early detection of cervical cancer (Table 2).

Awareness regarding the availability of HPV vaccine against cervical cancer was 92% among MBBS students ($N = 240$) and 88.6% among paramedical workers ($N = 140$). Among the MBBS students and paramedical workers, 94.1% and 78.6% know that the vaccine is approved by Govt. of India. While evaluating the awareness regarding the target age group for HPV vaccination, 192 (66.3%) MBBS students and 92(65.7%) paramedical

Table 1 Demographic characteristics among MBBS students and paramedical workers

Demographic characteristics	Category	MBBS students (N = 290)	Paramedical workers (N = 140)
Age	< 20 years	39(13.4%)	-
	20–22 years	154(53.2%)	23(16.5%)
	> 22 years	97(33.4%)	117(83.5%)
Gender	Male	123(42.6%)	49(35%)
	Female	167(57.4%)	91(65%)
Marital status	Married	–	61(43.5%)
	Unmarried	290(100%)	79(56.5%)
Socio-economic status	Low	–	68(48.6%)
	Middle	132(45.5%)	72(51.4%)
	Upper middle	1582(54.6%)	-
Parity	Nulliparous	–	50(35.7%)
	Parous	–	90(64.3%)

workers stated correctly as 9–26 years, whereas 98 (33.7%) MBBS students and 48(34.3%) paramedical workers stated it as 27–35 years. The knowledge of MBBS students (89.6%) about HPV vaccination was higher as compared to paramedical workers (42.87%). The attitude towards HPV vaccination of MBBS students (91.37%) was also much higher as compared to paramedical workers (57.14%). The route and dose of HPV vaccine was known correctly by a maximum number of MBBS students, whereas majority of the paramedical workers had no idea about it (Table 3).

Discussion

The study was aimed at knowing the knowledge and attitude of MBBS students and paramedical workers towards HPV vaccination. Since HPV vaccine information is part of curriculum for all medical students, awareness regarding this among MBBS students was expected to be more as compared to paramedical workers. The present study holds importance in developing countries. Cervical cancer is a common gynaecological cancer, and lack of awareness of its basic knowledge, its burden and the insufficient screening tests for cervical cancer are important barriers to disease prevention. It has been estimated that vaccinating 70% of Indian target population (adolescent girls) will reduce more than 50% lifetime risk of cancer.

Socio-demographic profile of MBBS students in our study showed that most of the students were of 20–22 years of age and were female. Similar study done by J. Singh and S.S. Baliga et al. [18] also involved mean age of medical students to be 20.55 years, and awareness among female was more regarding screening and preventive measures of cervical cancer. In our study, no MBBS student was married and belongs to upper middle socio-economic status similar to a study done by Shetty et al. [19] (Table 1).

In our study, 95% of the MBBS students and 94.3% of paramedical workers were aware about cervical cancer which is higher than previous studies done by Ganju et al. [20] (66%) and Tongtong et al. [21] (51.9%) (Table 2).

Awareness regarding the availability of HPV vaccine against cervical cancer was 89% among MBBS students (N = 240) and 90% among paramedical workers (N = 140). AbdAllah et al. [22] found 54.1% and Ghotbi et al. [23] from Nader found 55.6% of the participants were aware about the HPV vaccines and its use. A study by Swarnapriya et al. [24] showed that 60.1% of the students knew that this vaccine is given against carcinoma. This number was 30.96% in the study by Das et al. [25]. Study from Netherlands by Lenselink et al. [26] showed that 29.5% had ever heard of HPV (Table 3).

In our study, among MBBS students 92.1% and 71.4% of paramedical workers knew that HPV is sexually acquired as compared to Das et al. [25] who found that 91.5% of the medical students knew that HPV was sexually transmitted (Table 3).

The limitation of our study is that the study population are medical students and paramedical workers. The main source of information for the participants was their study materials, and it is obvious that their knowledge would be better than the general population, but the most promising finding is that most of students were willing to get vaccinated after the study. We have distributed information leaflets after collecting the questionnaire from the students. This was aimed at improving their knowledge of HPV infection and uses of HPV vaccination.

Table 2 : Awareness about etiology of cervical cancer among MBBS students and paramedical workers

Awareness about etiology of cervical cancer	MBBS students (N = 290)	Paramedical workers (N = 140)
1. Have you ever heard of cervical cancer?	275(95%)	132(94.3%)
a. Yes	15(5%)	8(5.7%)
b. No	–	–
c. Do not know		
2. Can sex with HPV-infected partner give infection to partner?	273(94.1%)	112(80%)
a. Yes	17(5.9%)	22(15.7%)
b. No	–	6(4.3%)
c. Do not know		
3. Have you ever heard of HPV?	275(94.9%)	130(92.8%)
a. Yes	15(5.1%)	8(5.7%)
b. No	–	2(1.4%)
c. Do not know		
4. Is HPV infection the main cause of cervical cancer?	267(92.1%)	124(88.6%)
a. Yes	22.9(7.9%)	4(2.8%)
b. No	–	12(8.6%)
c. Do not know		
5. How HPV is acquired?	3(1.1%)	26(18.6%)
a. By food	20(6.8%)	14(10%)
b. By injection	267(92.1%)	100(71.4%)
c. By sexual contact		
6. Can HPV be detected in early stage?	174(60%)	48(34%)
a. Yes	116(40%)	92(66%)
b. No		
7. Can cervical cancer be preventable?	270(93%)	117(83.6%)
a. Yes	20(7%)	23(16.4%)
b. No		
8. Is cervical cancer has mortality?	279(96.2%)	41(29.3%)
a. High	11(3.8%)	87(62.1%)
b. Medium	–	12(8.6%)
c. Low		
9. Can sex with HPV-infected partner give infection to partner?	273(94.1%)	112(80%)
a. Yes	17(5.9%)	22(15.7%)
b. No		6(4.3%)
c. Do not know		

Periodic reinforcement of awareness in the form health camps by health care professionals among school students and their parents will improve the vaccine uptake. The aim should be that at least all girls are vaccinated before their sexual debut.

Conclusion

The current study concludes that MBBS students and paramedical workers have good knowledge and attitude regarding cervical cancer and HPV vaccine, its availability, effectiveness, route, safety and approval by government of India. On the other hand, the idea about cost of vaccine, number of doses and age group for vaccination is relatively less. As expected, HPV vaccination being the part of

Table 3 : Awareness about HPV vaccine among MBBS students and paramedical workers

Awareness about HPV vaccine	MBBS students (N = 290)	Paramedical workers (N = 140)
1. Have you ever heard of HPV vaccination?	258(89%)	126(90%)
a. Yes	32(11%)	4(2.8%)
b. No	–	10(7.2%)
c. Do not know		
2. Does HPV vaccine protect the girls and women from cervical cancer?	267(92.1%)	124(88.6%)
a. Yes	23(7.9%)	8(5.7%)
b. No	–	8(5.7%)
c. Do not know		
3. Is HPV vaccine approved by Government of India?	273(94.1%)	110(78.6%)
a. Yes	17(5.9%)	24(17%)
b. No	–	6(4.3%)
c. Do not know		
4. Has the cervical cancer rate declined after use of vaccine?	267(92.1%)	124(88.6%)
a. Yes	23(7.9%)	10(7%)
b. No	–	6(4.3%)
c. Do not know		
5. Has HPV vaccine been safely given to adolescent girls?	256(88.15%)	130(92.9%)
a. Yes	34(11.9%)	4(2.8%)
b. No	–	6(4.3%)
c. Do not know		
6. Is HPV vaccine available free of cost in national program of INDIA?	155(53.5%)	100(71.4%)
a. Yes	135(46.5%)	34(24.3%)
b. No	–	6(4.3%)
c. Do not know		
7. Did you have previous knowledge about HPV vaccination?	260(89.6%)	60(42.87%)
a. Yes	30((10.3%)	80(57.14%)
b. No		
8. Would you like to receive HPV vaccine?	265(91.37%)	80(57.14%)
a. Yes	30(10.34%)	51(36.42%)
b. No	5(1.72%)	9(6.4%)
c. Don't know		
9. Source of information for you on HPV vaccine	170(58.6%)	14(10%)
a. Textbooks	30(10.3%)	28(20%)
b. Media	35(12.06%)	33(23.57%)
c. Friends	55(18.96%)	65(46.4%)
d. Internet		
10. What are the number of doses of HPV vaccine for complete protection in the age group of less than 15 years?	21(7.2%)	26(18.6%)
	182(62.7)	19(13.6%)
a. One	87(30)%	95(67.8%)
b. Two		
c. Three		
11. What are the number of doses of HPV vaccine for complete protection in the age group after 15 years?	25(8.6%)	31(22%)
a. One	100(34.4%)	70(50%)
b. Two	165(56.8%)	39(28%)
c. Three		

Table 3 (continued)

Awareness about HPV vaccine	MBBS students (N = 290)	Paramedical workers (N = 140)
12. What is the route of HPV vaccination?	9(3%)	18(12.8%)
a. Oral	281(97%)	112(80%)
b. Injection	–	10(7.2%)
c. Do not know		
13. Should HPV vaccination be included in national immunisation programme?	280(96.6%)	116(82.8%)
a. Yes	10(3.4%)	10(7.2%
b. No	–	14(10%)
c. Do not know		
14. What is the age group of HPV vaccination?	192(66.3%)	92(65.7%)
a. 9 to 26 years	98(33.7%)	48(34.3%)
b. 27 to 35 years		

medical curriculum, the overall knowledge among MBBS students was more as compared to paramedical workers. The practice assessment showed that all the participants uplift their level of knowledge after HPV vaccination awareness demonstration.

Declartions

Conflict of interest The author declare that they have no conflict of interest.

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