

Original Article

AWARENESS REGARDING HUMAN PAPILLOMA VIRUS AND ITS VACCINE AMONG FINAL YEAR MBBS STUDENTS

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Author's Affiliation:

¹Assistant Professor, Dept. of Community Medicine, Shree M. P. Shah Medical College, Jamnagar

Correspondence:

Dr. Mithun M Sanghavi,
Email: drmmsanghavi@rediffmail.com

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ABSTRACT

Background and Objectives: Human papilloma virus is the major cause of cervical cancer in women and HPV vaccination is emerging as the most effective option. As the medical students will serve the community in the future, awareness regarding HPV vaccine is very necessary among them. The current study seeks to assess the awareness regarding various aspects of HPV infection and its vaccine among medical students.

Methods: A Cross sectional study was conducted in November 2013 at Shree M P Shah Government Medical College, Jamnagar. Total 160 students of final year M.B.B.S. were included in the study. Data regarding HPV and its vaccine were collected by using pretested semi structured questionnaire by interview technique.

Results: None of the students knew the correct incidence and mortality of cervical cancer in India. More proportion of students stated sex workers (37.50%), women having multiple sexual partners (16.88%) and young sexually active women (18.75%) as a high risk group for HPV. 89.37% of the students stated cervical cancer caused by HPV. 23.75% of the medical students did not know regarding availability of HPV vaccine. The awareness regarding dosage and age schedule, side effects, contraindication, storage temperature, cost, efficacy etc. was lacking in majority of them.

Conclusion: The level of awareness about HPV and HPV vaccine was low and gaps in knowledge existed among medical students. There is need to accelerate efforts of more focused and integrated teaching strategy regarding various aspects of HPV and its vaccine.

Key Words: HPV; vaccine, awareness, medical students

INTRODUCTION

Human papilloma virus (HPV) is a dominant factor for cervical carcinogenesis and has been established as the major cause of cervical cancer in women.¹ HPV serotypes 16 and 18 account for nearly 70% of all cervical cancers worldwide. Non-oncogenic HPV serotypes-6 and 11 contribute over 90% of benign genital infections such as genital warts.² Oncogenic HPV serotypes have also been implicated in the causation of anal, vulvar, vaginal, penile and oropharyngeal cancers.³

Cervical cancer is second most common cancer in women worldwide. The worldwide incidence of cervical cancer is approximately 510,000 new cases annually, with approximately 288,000 deaths worldwide.⁴ Cervical cancer is ranked as the most frequent cancer in women in India. The current estimates indi-

cate approximately 132,000 new cases diagnosed and 74,000 deaths annually in India, accounting to nearly 1/3rd of the global cervical cancer deaths.⁵

Though there are several methods of prevention of cervical cancer but prevention by vaccination is emerging as the most effective option. Especially for doctors, knowledge of HPV and its vaccine is very important for the prevention of health hazards caused by HPV. The various aspects of HPV and its vaccine is a part of curriculum for MBBS study. As the medical students are future doctors and they will serve the community, awareness regarding HPV vaccine is very necessary among them. They also act as a main source of information for the community and can play a pivotal role in spreading awareness among a wide range of population. So I conducted this study among final year M.B.B.S students.

MATERIALS AND METHODOLOGY

A Cross sectional study was conducted in November 2013 at Shree M P Shah Government Medical College, Jamnagar to know the level of awareness regarding various aspects of HPV infection and its vaccine. Total 160 students of final year M.B.B.S. were included in the study after their verbal consent. The participants were assured of anonymity and confidentiality. Data regarding HPV and its vaccine were collected by using pretested semi structured questionnaire by interview technique. A team comprised of the author, one lady medical officer, 2 resident doctors and 5 intern doctors were conducted structured interview for data collection. Proper training was given to all of them regarding all aspects data collection. Data consist of two parts. First part comprise of information regarding HPV infection like Mode of transmission, diseases caused by HPV etc. and information regarding cervical malignancy like incidence, mortality etc. While, Second part comprises of different aspects of HPV vaccine like type, content, dose, age, route, side effects etc. of HPV vaccine.

RESULTS

Total 160 medical students studying in final MBBS were included in the study and out of them 110 males and 50 females. Out of total 160 medical students, only 02 male students were married while rest (158 students) of were unmarried. Table -1 shows age and sex distribution of study participants.

Table 1: Age and sex distribution of study participants

Age (years)	Male (n= 110) (%)	Female (n= 50) (%)	Total (n= 160)(%)
20	18 (16.36)	24 (48)	42 (26.25)
21	61 (55.45)	15 (30)	76 (47.5)
22	25 (22.73)	6 (12)	31 (19.37)
23	5 (4.55)	4 (8)	9 (5.62)
24	1 (0.91)	1 (2)	2 (1.25)

Figure in parenthesis indicate percentage

The questionnaire was designed so as to know the awareness regarding various aspects of HPV infection and cervical malignancy of final year medical students. All were know correct full form of HPV. Table 2 showed the findings of answer given by students regarding various aspects of HPV infection. Though the proportion of male students stated sexual route as a mode of transmission of HPV was higher as compared to female students but this difference was not statistically significant ($X^2 = 1.65$, $df = 1$, $P > 0.05$).

There were various answers stated by students regarding high risk group for HPV infection. More proportion of students stated sex workers (37.50%), women having multiple sexual partners (16.88%) and young sexually active women (18.75%) as a high risk group for HPV. While less proportion of student stated un-

safe intercourse, Lower Socioeconomic class, Thalassemia, Early sexual activity, Married women, Family history, Immunocompromised host, Adolescent girl, poor genital hygiene, Eunuchs, STD patients, smoking, children, recipients of blood transfusion and Old age as high risk group for HPV. More proportion of female students significantly did not know about high risk group for HPV as compared to male students ($X^2 = 20.1$, $df = 1$, $P < 0.01$).

Table 2: Answers stated by medical students about HPV

	Male (n= 110)	Female (n= 50)	Total (n= 160)
Mode of Transmission of HPV			
Sexual	91 (82.73)	31 (62)	122 (76.25)
Blood born	13 (11.82)	2 (4)	15 (9.38)
Vertical	7 (6.36)	0	7 (4.38)
Contact	0	1 (2)	1 (0.63)
Did not Know	13 (11.82)	16 (32)	29 (18.13)
High risk Group for HPV			
Sex Worker	40 (36.36)	20 (40)	60 (37.50)
Multiple Partners	23 (20.91)	4 (8)	27 (16.88)
Young sexually active women	21 (19.09)	9 (18)	30 (18.75)
Unsafe Intercourse	17 (15.45)	0	17 (10.63)
Thalassemia	6 (5.45)	2 (4)	8 (5.00)
Lower SE Class	5 (4.55)	0	5 (3.13)
Early sexual activity	4 (3.64)	1 (2)	5 (3.13)
Did not Know	17 (15.45)	19 (38)	36 (22.50)
Disease caused by HPV			
Cervical cancer	99 (90)	44 (88)	143 (89.37)
Genital Warts	16 (14.55)	9 (18)	25 (15.62)
Ca Oral	7 (6.36)	0	7 (4.37)
viral fever	6 (5.45)	0	6 (3.75)
Malaria	3 (2.73)	0	3 (1.87)
Ca vagina	2 (1.82)	0	2 (1.25)
Ca Uterus	2 (1.82)	1 (2)	3 (1.87)
Ca Vulva	1 (0.91)	0	1 (0.62)
Ca Anus	1 (0.91)	0	1 (0.62)
Laryngeal Papilloma	1 (0.91)	0	1 (0.62)
Condyloma Acuminata	1 (0.91)	0	1 (0.62)
Did not Know	2 (1.82)	2 (4)	4 (2.5)

SE: Socioeconomic, Ca: cancer

Figure in parenthesis indicate percentage

When inquired about diseases caused by HPV, majority (89.38%) of students stated cervical cancer. The answers given by students regarding the name diseases caused by HPV was depicted in Table 2.

Out of total 160 medical students, 23.13% of the students did not know regarding causes of cervical cancer. Significantly more proportion of female students did not know regarding causes of cervical cancer as compared to male students ($X^2 = 47.41$, $df = 1$, $P < 0.01$). Out of those who gave answers, most of the students (82.93%) implicated HPV as a causative agent for cervical cancer. While the other answers regarding causes of cervical cancer was depicted in Table 3. None of the students knew the correct incidence of cervical cancer in India and answers varied from 01% to 40%. It was also observed that none of students knew the correct mortality due to cervical cancer in India and

answers varied from 1 - 70%. All students failed to give correct answer when asked about proportion of HPV infection leads to cervical cancer and the answers varied from 02% to 50%.

Table 3: Causes of cervical cancer stated by medical students

Causes of Cervical Cancer	Male (n= 98)	Female (n= 25)	Total (n= 123)
HPV	86 (87.76)	16 (64)	102 (82.93)
Unsafe intercourse	10 (10.20)	8 (32)	18 (14.63)
Unhygienic condition	3 (3.06)	1 (4)	4 (3.25)
Multiple partners	3 (3.06)	0	3 (2.44)
HIV	2 (2.04)	0	2 (1.63)
Hormonal	2 (2.04)	0	2 (1.63)
Hereditary	0	1 (4)	1 (0.81)

HPV: Human Papilloma Virus, HIV: Human Immunodeficiency Virus; Figure in parenthesis indicate percentage

Table 4: Awareness of medical students regarding different aspects of HPV vaccination

Parameters of HPV vaccine	Male (n=88)	Female (n=34)	Total (n=122)
Name of HPV vaccine			
Gardacil	2 (2.27)	1 (2.94)	3 (2.46)
Cervarix	5 (5.68)	1 (2.94)	6 (4.92)
Both of above	43 (48.86)	6 (17.65)	49 (40.16)
Did not Know	38 (43.18)	26 (76.47)	64 (52.46)
Dose			
Right Answer	46 (52.27)	10 (29.41)	56 (45.90)
Wrong Answer	27 (30.68)	13 (38.24)	40 (32.79)
Did not Know	15 (17.05)	11 (32.35)	26 (21.31)
Site			
Right Answer	27 (30.68)	12 (35.29)	39 (31.97)
Wrong Answer	32 (36.36)	9 (26.47)	41 (33.61)
Did not Know	29 (32.95)	13 (38.24)	42 (34.43)
Route			
Right Answer	54 (61.36)	21 (61.76)	75 (61.48)
Wrong Answer	18 (20.45)	3 (8.82)	21 (17.21)
Did not Know	16 (18.18)	10 (29.41)	26 (21.31)
Male Vaccination			
Right Answer	15 (17.05)	2 (5.88)	17 (13.93)
Wrong Answer	48 (54.55)	16 (47.06)	64 (52.46)
Did not Know	25 (28.41)	16 (47.06)	41 (33.61)
Storage Temperature			
Right Answer	41 (46.59)	9 (26.47)	50 (40.98)
Wrong Answer	16 (18.18)	0	16 (13.11)
Did not Know	22 (25.00)	25 (73.53)	47 (38.52)
Efficacy			
Right Answer	6 (6.82)	0	6 (4.92)
Wrong Answer	36 (40.91)	0	36 (29.51)
Did not Know	46 (52.27)	34 (100)	80 (65.17)
Cost of vaccine			
Right Answer	2 (2.27)	1 (2.94)	3 (2.46)
Wrong Answer	35 (39.77)	5 (14.71)	40 (32.79)
Did not Know	51 (57.95)	28 (82.35)	79 (64.75)

Figure in parenthesis indicate percentage

Right Answer: Dose: 0.5ml, Site: Deltoid region of arm; Route: Intramuscular; Male vaccination: Not licensed; Storage temperature: 2 to 8°C; Efficacy: 96% to 100%; Cost of vaccine: Rs 2000 to Rs 3000 per dose

Out of total 160 medical students, 23.75% of the medical students did not know regarding availability of

HPV vaccine. Though more proportion of female students did not know regarding availability of HPV vaccine as compared to male students but this difference was not statistically significant ($X^2 = 2.73$, $df = 1$, $P > 0.05$). Various questions were asked to those medical students who knew availability of HPV vaccine to assess their awareness regarding various aspects of HPV vaccine. The results were seen in Table 4. More proportion of female medical students did not know regarding various aspects of HPV vaccine i.e. name, dose, site, route, side effects, contraindication, storage temperature, cost etc. as compared to male medical students. Responses of the medical students when asked about side effects and contraindications of HPV vaccine was depicted in Table 5.

Table 5: Side effects and Contraindications stated by Medical Students

HPV Vaccine	Male (n=88)	Female (n=34)	Total (n=122)
Side Effects			
Allergic	28 (31.82)	1 (2.94)	29 (23.77)
Fever	19 (21.59)	7 (20.59)	26 (21.31)
Pain	0 (0.00)	3 (8.82)	3 (2.46)
Rash	11 (12.50)	5 (14.71)	16 (13.11)
Arthralgia	9 (10.23)	0	9 (7.38)
Nausea, vomiting	3 (3.41)	0	3 (2.46)
Local reaction	1 (1.14)	0	1 (0.82)
Pregnancy loss	1 (1.14)	0	1 (0.82)
Headache	1 (1.14)	0	1 (0.82)
Did not Know	40 (45.45)	26 (76.47)	66 (54.10)
Contraindication			
Pregnancy	32 (36.36)	4 (11.76)	36 (29.51)
Hypersensitivity	8 (9.09)	0	8 (6.56)
Immunocompromised host	7 (7.95)	0	7 (5.74)
Case of Cervical Cancer	0	1 (2.94)	1 (0.82)
Did not Know	46 (52.27)	30 (88.24)	76 (62.30)

Figure in parenthesis indicate percentage.

None of the medical students was able to give right answer when asked about content of vaccine, age and dosage schedule of vaccine. When asked about content of vaccine, though some medical students gave answers like HPV, their serotypes, protein but correct amount and correct serotypes were not answered. Similarly different age schedules were answered by medical students. When asked about efficacy of vaccine, the answer varied from 60% to 98% and 5 years to 25 years. In the present study, 64.75% of students were not aware about cost of vaccine and those who gave answers, their answers varied from Rs 100 to Rs 7000 per one dose. Only 25% of students stated that HPV vaccine could protect against other cancers and diseases. Out of 122 students who knew the availability of HPV vaccine, 12 students stated that HPV vaccine could use for prevention of Genital Warts (9.84%), 11 students stated oral cancer (9.02%) and 11 students stated penile cancer (9.02%).

DISCUSSION

The study seeks at the awareness of final year medical students towards various aspects of HPV and its vaccine. Majority of participants in this study were well aware regarding role of HPV virus in the etiology of cervical cancer. Similar finding was observed by S Mehta et al in Delhi and D Pandey et al,^{6,7} while A study conducted by Saha et al in Kolkata revealed a very low level of awareness among the graduate and postgraduate students about this important public health issue.⁸ This low level of awareness in a study by Saha et al in Kolkata is due to the population studies by them are students in non medical profession. In the present study, 10% of the students answered that HPV causes other cancers besides cervical cancer. Contrary to this, a study by S Mehta et al in Delhi found that 44% of the students answered that HPV causes vulval, penile, oral and vaginal cancers while 12% students gave weird answers like leiomyoma of uterus, seminoma and hepatocellular malignancy.⁶

It was observed in the present study that none of the students knew the correct incidence of cervical cancer in India. Similar finding was observed by S Mehta et al in Delhi.⁶ It was found from the present study that sex workers (37.50%), women having multiple sexual partners (16.88%) and young sexually active women (18.75%) as a main risky group for HPV. While A study by Saha et al in Kolkata revealed that 41% thought sexual activity to be associated with cervical cancer but its risk factors, like, 'smoking', 'having multiple sex partners', 'cervical infections', 'early onset of sexual intercourse', 'multiple parity' were recognized by 29%, 3%, 4%, 13% and 15%, respectively.⁸ It is noteworthy that smoking as a risk factor recognized by 29% of the students in the study by Saha et al in Kolkata as compared to 0.625% in the present study. This difference may be due to Saha et al conducted their study in non medical students.

It was revealed in the present study that majority of students (76.25%) stated sexual route as a mode of transmission of HPV while S Mehta et al in Delhi found that 55% students answered that HPV infection spreads by sexual as well as non-sexual route and 38% said that it only spreads sexually.⁶ S Mehta et al in Delhi also found that 64% of students answered that HPV has a vertical transmission as compared to 4.38% of students in the present study.⁶

Awareness regarding the availability of vaccine against cervical cancer in the present study was 76.25%. This finding is consistent with D Pandey et al (75.6%)⁷, while a study by Donders GG et al observed the level of awareness regarding the availability of vaccine against cervical cancer among women attending routine gynaecological care in Belgium was only 50%.⁹ This difference may be due to difference in the medical background of study population. Though more proportion of male students had awareness regarding availability of HPV vaccine as compared to female students in the present study but this difference was not statistically significant. While a study by

D Pandey et al revealed that significantly more proportion of females (83.1%) had a better awareness regarding availability of vaccine as compared to males (65.7%).⁷

The level of awareness regarding various aspects of HPV vaccine was found to be poor among medical students in the present study. Similar findings was seen in the study by S Mehta et al in Delhi.⁶ The Naki, *et al* found that awareness of HPV and its vaccine in the physicians was significantly higher as compared to the non-physician staff.¹⁰ This may be due to Naki, *et al* included physicians in their study who were more competent regarding the knowledge level of HPV infection and more aware of the presence and types of HPV vaccines.

Though 45.9% of students answered correct dose but none of the medical students was able to give correct answer when asked about dosage schedule of vaccine in the present study. S Mehta et al in Delhi found that vaccination schedule was not known to 90% of students.⁶ While D Pandey et al revealed that 40.3% of the participants knew about the correct vaccine schedule.⁷

In the present study, 65.57% of the students did not know regarding efficacy of HPV vaccine. This finding is consistent with S Mehta et al in Delhi in which 68% did not know regarding efficacy.⁶ A level of awareness regarding efficacy of HPV vaccine among medical students was higher in the study by D Pandey et al (76.4%) and study by S Mehta et al (24%) as compared to present study (4.92%). Awareness regarding side effects of HPV vaccine was higher in the present study (48.36%) as compared to study by S Mehta et al in Delhi (31%).⁶ 64.75% of the students did not know regarding cost of vaccine in the present study which was slightly lower than study by S Mehta et al in Delhi (71%).⁶ While correct cost of vaccine was answered by only 8% of the students in the study by S Mehta et al in Delhi as compared to 2.46% of the students in the present study.⁶ In this study, it was also found that more proportion of female medical students did not know regarding various aspects of HPV vaccine compared to male medical students. As cervical cancer is a primary health problem of women, awareness among female students was quite worrying.

LIMITATION

The limitation of this study is that it does not reflect the level of awareness of general population and full fledged medical doctor. The study was based on convenience sampling. Medical students from only one medical college were included which might not reflect the overall awareness of medical students in India. Findings of the present study could not be generalized owing to the small sample size of a priority population. The strength of our study lies in the selection of the study population i.e. medical students, as they are future doctors and most important source of information carriers and dissemination.

CONCLUSION

The study looks at the awareness of final year medical students towards HPV and its vaccine. Though the medical students did not know the incidence and mortality of cervical cancer in India, but they could relate association between HPV and cervical cancer. The level of awareness about HPV and HPV vaccine was low and gaps in knowledge existed among medical students. Being a medical student does not warrant good knowledge and perception on HPV infections and its prevention. The lack of awareness among the medical students represents only the tip of iceberg. The gaps in knowledge regarding HPV and its vaccine would be even more among general population.

RECOMMENDATION

Observation from the present study points towards pressing the need to accelerate efforts of more focused and integrated teaching strategy regarding various aspects of HPV and its vaccine. Our academic curriculum in the medical schools needs to focus more on such very important upcoming issues. Better understanding of the major preventive public health issues by health care professionals will definitely be propagated well in the community. All medical students (today) will not be educators in medical schools, but they are the trustworthy sources to the society with full of information in this internet era.

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