

Research Article

Awareness and attitude regarding human papilloma virus and its vaccine among medical students in a medical school in India

Nagasireesha Challa,^{1,*} Venkatachalam Madras,² Supradeeptha Challa³

¹Assistant Professor, ²Professor, Department of Physiology, Sri Venkateswara Medical College, Tirupati, Andhra Pradesh, India

³Assistant Professor, Department of Orthopedics, G.S.L. Medical College, Rajahmundry, Andhra Pradesh, India

Received: 21 September 2014

Accepted: 6 October 2014

*Correspondence:

Dr. Nagasireesha Challa,

E-mail: challanagasireesha@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Human papilloma virus is the major cause of cervical cancer in women and HPV vaccine is the most effective option. Prevention of cancer with vaccine is a new concept. Medical students should be aware of cervical cancer, HPV and its vaccine. This calls for assessment of the knowledge of HPV infection and the acceptability of HPV vaccine among medical students. The aim of this study was to assess awareness of HPV infection and HPV vaccine and to assess attitude toward these vaccines among final year medical students in Sri Venkateswara Medical College, Tirupati.

Methods: It is a cross-sectional study. A total of 127 (59 males and 68 females) final year M.B.B.S. students participated. Data regarding HPV and its vaccine were collected using questionnaire based survey. The questionnaire sought student responses pertaining to the knowledge of cervical cancer, HPV and its vaccine. The data were analyzed using Microsoft Access and Excel software.

Results: Most of the participants know well about the etiology and prevention of cervical cancer but information regarding the dosage, schedule, site and route of administration was lacking in majority of them.

Conclusion: The medical students know the association between Human Papilloma Virus and cervical cancer, but the awareness about HPV vaccine was low among study population. Medical schools should modify their curricula to include teaching methods aimed at improving awareness regarding HPV and its vaccine.

Keywords: Awareness, Human papilloma virus, HPV vaccine, Medical students

INTRODUCTION

Cervical cancer is the 2nd leading cause of cancer deaths in women aged 15 to 44 years in India. 67,477 new cervical cancer deaths occur annually in India.¹ The role of human papilloma virus (HPV) in the genesis of cervical carcinoma is well documented. The HPV 16 and 18 are found to be most commonly associated with invasive cervical carcinoma.² Frequently repeated cytology screening programmes — either organized or opportunistic — have led to a large decline in cervical cancer incidence and mortality in developed countries. In

contrast, cervical cancer remains largely uncontrolled in high-risk developing countries because of ineffective or no screening.³ Since cervical screening only detects precancerous and cancerous changes after they have occurred, HPV vaccination is primary prevention.² 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).⁴ Gardasil has been developed that protects against the two high-risk HPV types (types 16 and 18), which cause 70% of cervical cancers in women and 90% of all HPV-related cancers in men. It also protects

against two low-risk HPV types (types 6 and 11), which cause 90% of genital warts. Cervarix is available, which protects against the same two high-risk HPV types (types 16 and 18).⁵ Both have been shown in several large clinical trials to be safe, well tolerated and can induce strong immunity against the HPV genotypes incorporated in the vaccine.⁶

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. Today's medical students are the future physicians and they will serve the community, it is crucial that they should be aware of the advances as they play an important role in spreading awareness among population. Therefore, the present study is conducted to know the knowledge and awareness of medical students regarding the etiology of cervical cancer, availability of vaccine, target population, side effects, efficacy and dosage of vaccination.

METHODS

The present study was conducted in Sri Venkateswara Medical College, Tirupati, India. The study was approved by the Institution Ethical Committee. The study was undertaken using final year undergraduate students to know the level of awareness regarding various aspects of HPV infection, cervical cancer and HPV vaccine. A self-administered questionnaire designed for the study was given to the students. Students were educated on the purpose of the study and contents and completion of questionnaire. They were told that the data was confidential and for research purpose only. Verbal consent was taken from the participants. The returned questionnaires were checked for completeness and consistency. Improperly filled questionnaires are excluded. A total of 127 questionnaires were used for analysis.

RESULTS

Demographic profile of students shows that the maximum number of students who participated in the study was of 22-24 years age. Among them 59 were males (46.5%) and 68 were females (53.5%).

Table 1: Baseline characteristics of the study population.

| S. No. | Characteristics | Number (N=127) | Percentage (%) |
|--------|-----------------|----------------|----------------|
| 1. | Gender | | |
| | Male | 59 | 46.5% |
| | Female | 68 | 53.5% |
| 2. | Age group (yrs) | | |
| | <22 | 8 | 6.3% |
| | 22-24 | 110 | 86.6% |
| | >24 | 9 | 7.1% |

Student's awareness about etiology of cervical cancer is presented in Table 2. It was observed that 100% of students are aware of the cause of cervical cancer as HPV. Regarding the risk factors of cervical cancer, the most common stated risk factor was cervical infections (48.8%). Other risk factors were early age at first coitus (20.5%), multiparity (18.9%), family history (6.3%), poor hygiene (3.9%) and smoking (1.6%). 95% of participants were aware that the cervical cancer can be prevented. Out of 127, 103 students (81.1%) were aware that the route of transmission of HPV is sexual contact.

Table 2: Awareness about etiology of cervical cancer.

| S. No. | Awareness of etiology | Number (N=127) | Percentage (%) |
|--------|---|----------------|----------------|
| 1. | Cause of cervical cancer | | |
| | (a)Bacteria | 0 | 0% |
| | (b)Virus | 127 | 100% |
| | (c)Fungi | 0 | 0% |
| 2. | Risk factors of cervical cancer include | | |
| | (a)Cervical infections | 62 | 48.8% |
| | (b)Early age at first coitus | 26 | 20.5% |
| | (c)Multiparity | 24 | 18.9% |
| | (d)Family history | 8 | 6.3% |
| | (e)Poor hygiene | 5 | 3.9% |
| | (f)Smoking | 2 | 1.6% |
| 3. | Is Cervical cancer preventable | | |
| | (a)Yes | 120 | 95% |
| | (b)No | 7 | 5% |
| 4. | Transmission of HPV is by | | |
| | (a)sexual contact | 103 | 81.1% |
| | (b)blood borne | 10 | 7.87% |
| | (c)vertical | 5 | 3.94% |
| | (d)injections | 1 | 0.79% |
| | (e)don't know | 8 | 6.3% |

Table 3 shows the results of awareness of Human Papilloma virus and its infectious nature. 113 students (89%) were aware that HPV can cause other cancers also. 70.1% of participants know about the high risk HPV types causing cervical cancer. 118 participants (93%) were aware that the HPV can be detected. 78.7% students stated that the pap smear can detect HPV infection whereas 19.7% stated it as blood investigations and 1.6% stated as PCR.

The results regarding the awareness of availability of HPV vaccine were shown in Table 4. Awareness regarding the availability of vaccine against cervical cancer was 90.5% (N=115). Among the students 77.9% (N=99) know that the vaccine is available in India. While evaluating the awareness regarding the target population for HPV vaccination, 92 participants (72.4%) stated

correctly as 10-30 years whereas 16 (12.6%) stated it as 0-10 years and 19 (15%) as 30-50 years. Majority of students have no idea about male vaccination. About 77 students (60.6%) know the correct number of doses of HPV vaccination while others made guesses. 96 students (75.6%) know that both quadrivalent & bivalent vaccines are available. The vaccination schedule is known correctly by minor fraction of participants. The route, site and dose of HPV were not known correctly by a major proportion of medical students. The results shown in Table 5 indicate that only 11.8% Of medical students know about the protective efficacy of the vaccine. 74.8% of students agreed that there is need of screening after receiving HPV vaccination.

Table 3: Awareness about Human Papilloma virus & its infections.

| S. No. | Awareness about HPV | Number (N=127) | Percentage (%) |
|--------|--|----------------|----------------|
| 1. | Whether HPV causes any other cancer? | | |
| | (a)Yes | 113 | 89% |
| | (b)No | 14 | 11% |
| 2. | High risk HPV types causing 70% of cervical cancer | | |
| | (a)HPV 6&11 | 14 | 11% |
| | (b)HPV 11&18 | 13 | 10.2% |
| | (c)HPV 16&17 | 11 | 8.7% |
| | (d)HPV 16&18 | 89 | 70.1% |
| 3. | Can HPV be detected? | | |
| | (a)Yes | 118 | 93% |
| | (b)No | 9 | 7% |
| 4. | Technique for detection of HPV | | |
| | (a)pap smear | 100 | 78.7% |
| | (b)blood investigations | 25 | 19.7% |
| | (c)PCR | 2 | 1.6% |

Table 4: Awareness about HPV vaccine.

| S. No. | Awareness about vaccine | Number (N=127) | Percentage (%) |
|--------|---|----------------|----------------|
| 1. | Is there any vaccine available for cervical cancer? | | |
| | (a)Yes | 115 | 90.5% |
| | (b)No | 12 | 9.5% |
| 2. | Is the HPV vaccine available in India? | | |
| | (a)Yes | 99 | 77.9% |
| | (b)No | 28 | 22.1% |
| 3. | Age at which HPV vaccine should be given | | |
| | (a)0-10 yrs | 16 | 12.6% |
| | (b)10-30 yrs | 92 | 72.4% |
| | (c)30-50 yrs | 19 | 15% |
| 4. | Was HPV vaccine | | |

| | | | |
|-----|---|----|--------|
| | licensed for males? | | |
| | (a)Yes | 60 | 47.2% |
| | (b)No | 19 | 15% |
| | (c)Don't know | 48 | 37.8% |
| 5. | Number of HPV vaccine doses required for protection | | |
| | (a)one | 10 | 7.9% |
| | (b)two | 37 | 29.1% |
| | (c)three | 77 | 60.6% |
| | (d)four | 3 | 2.4% |
| 6. | The types of HPV vaccine available are | | |
| | (a)bivalent | 16 | 12.6% |
| | (b)quadrivalent | 13 | 10.2% |
| | (c)both | 96 | 75.6% |
| | (d)don't know | 2 | 1.6% |
| 7. | Dosage schedule of HPV quadrivalent vaccine is | | |
| | (a)0,1&6 months | 17 | 13.4% |
| | (b)0,2&6 months | 50 | 39.4% |
| | (c)1,2&6 months | 28 | 22% |
| | (d)don't know | 32 | 25.2% |
| 8. | Dosage schedule of HPV bivalent vaccine is | | |
| | (a)0,1&6 months | 13 | 10.24% |
| | (b)0,2&6 months | 23 | 18.1% |
| | (c)1,2&6 months | 49 | 38.66% |
| | (d)don't know | 42 | 33% |
| 9. | The route of administration of vaccine is | | |
| | (a)intramuscular | 75 | 59 |
| | (b)subcutaneous | 50 | 39.4 |
| | (c)intravenous | 2 | 1.6 |
| 10. | The site of vaccination is | | |
| | (a)deltoid region | 54 | 42.5% |
| | (b)gluteal region | 46 | 36.2% |
| | (c)forearm | 27 | 21.3% |
| 11. | The dose of vaccine is | | |
| | (a)0.1ml | 42 | 33.1% |
| | (b)0.5ml | 43 | 33.8% |
| | (c)1.0ml | 42 | 33.1% |

Table 5: Awareness about protection by HPV vaccine.

| S. No. | Awareness about protection by HPV vaccination | Number (N=127) | Percentage (%) |
|--------|--|----------------|----------------|
| 1. | Cervical cancer protection provided by HPV vaccine is | | |
| | (a)90-100% | 15 | 11.8% |
| | (b)80-90 % | 37 | 29.1% |
| | (c)50-70% | 64 | 50.4% |
| | (d)30-50% | 11 | 8.7% |
| 2. | Will it protect when given to a female already having HPV infection? | | |
| | (a)Yes | 33 | 25.98% |
| | (b)No | 49 | 38.58% |
| | (c)Don't know | 45 | 35.44% |
| 3. | Is it safe to have multiple | | |

| | | | |
|----|---|----|-------|
| | sex partners after full course of HPV vaccine? | | |
| | (a)Yes | 30 | 23.6% |
| | (b)No | 97 | 76.4% |
| 4. | Is screening necessary for HPV after receiving vaccine? | | |
| | (a)Yes | 95 | 74.8% |
| | (b)No | 18 | 14.2% |
| | (c)Don't know | 14 | 11% |

Table 6: Attitude towards HPV vaccine.

| S. No. | Attitude towards vaccination | Number (N=127) | Percentage (%) |
|--------|--|----------------|----------------|
| 1. | Would you like to receive HPV vaccine? | | |
| | (a)Yes | 102 | 80.31% |
| | (b)No | 14 | 11.02% |
| | (c)Don't know | 11 | 8.67% |
| 2. | What is the reason preventing you to receive or advice HPV vaccination? | | |
| | (a)High cost | 42 | 33% |
| | (b)Side effects | 8 | 6.3% |
| | (c)Doubt about effectiveness | 11 | 8.7% |
| | (d)Lack of access & knowledge | 66 | 52% |
| 3. | Source of information for you on HPV vaccine | | |
| | (a)Teachers & textbooks | 76 | 59.8% |
| | (b)Internet | 22 | 17.3% |
| | (c)News paper & TV | 18 | 14.2% |
| | (d)Friends | 12 | 8.7% |
| 4. | Would you like to update your knowledge about HPV vaccine by experts? | | |
| | (a)Yes | 118 | 92.9% |
| | (b)No | 9 | 7.1% |
| 5. | Any of your friends or relatives asked you about HPV vaccination till now? | | |
| | (a)Yes | 18 | 14.2% |
| | (b)No | 109 | 85.8% |

Attitude of medical students towards HPV vaccination is presented in Table 6. Overall acceptance of HPV vaccine among the study group was 80.3% (N=102). Majority of the students (52%) thought lack of access and knowledge was the most important obstacle for receiving HPV vaccination followed by high cost. The most common source of information for our study population was teachers and textbooks (59.8%). Other sources of information include internet (17.3%), news papers and television (14.2%) and friends (8.7%). Majority of the study group (92.9%) like to update their knowledge by experts. About 14.2% of our study participants had been questioned by friends and relatives regarding HPV vaccination.

DISCUSSION

Most of the participants in our study were well aware of the viral etiology and preventable nature of cervical cancer. Similar finding was observed by Pandey et al⁷ and Mehta et al⁸ while Saha et al⁹ reported a very low level of awareness among the female students of premier colleges in Kolkata. In our study, 48.8% students were aware of link between sexual activity and cervical cancer. Out of all the participants 20.5%, 18.9% respectively could identify early age of first coitus and multiparity as risk factors of cervical cancer. But, they have low awareness of the link between smoking and cervical cancer. Smoking is recognized as a risk factor by 29% of the students in the study by Saha et al as compared to 1.6% in our study.

In the present study, majority of students (81.1%) stated sexual route as a mode of transmission of HPV while Mehta et al found in their study that HPV infection spreads by sexual and non-sexual route and 38% said that it only spreads sexually. Mehta et al found that 64% of students answered that HPV has vertical transmission as compared to 3.94% in the present study.

Regarding the awareness of HPV, majority (89%) of the participants agreed that HPV causes other cancers besides cervical cancer whereas Mehta et al found that 44% of 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. Majority know the high risk HPV types. 93% were aware about HPV detection and 78.7% were aware of pap smear while Saha et al reported that only 11% of students heard about pap smear.

The level of awareness regarding various aspects of HPV vaccine was found to be poor among medical students in our study. Awareness regarding the availability of vaccine against cervical cancer in the study conducted by Pandey et al is 67.8% whereas in our study it is 90.5%. But only 77.9% know that it is available in India. 72.4% knew the correct age of vaccination while it is 50% in the study conducted by Mehta et al. 47.2% answered that the vaccine was approved for men whereas it is 40% in the study conducted by Mehta et al. Vaccination schedule was not known to majority of the students and it is similar with the study of Mehta et al. Regarding protective efficacy of the vaccine, 24% gave correct answer in the study of Mehta et al. whereas in our study it is only 11.8%.

In our study it is evident that medical teaching had a definite impact on understanding the etiology, detection and availability of vaccine. But they are not much aware of target population for vaccination, site and route of administration of vaccine and dosage schedule. The results of this study show the importance and necessity of medical teaching to focus on upcoming issues like HPV vaccine.

Medical students should be encouraged for interactive sessions, group discussions, seminars for clarifying their doubts on HPV, cervical cancer and HPV vaccination.

In developing countries like India where HPV infection is high, introducing a national HPV vaccination programme may reduce the incidence of cervical cancer. The Indian Academy of Pediatrics Committee on Immunisation (IAPCOI) recommends offering HPV vaccine to all females who can afford the vaccine (Category 2 of IAP categorization of vaccines).⁴

The major obstacles to implementation of HPV vaccine programs in our country as mentioned by Bhatla N et al included cost, acceptability, lack of public awareness and infrastructure, concern about unknown side-effects and social and religious barriers.¹⁰

Our study has limitations. It is based on convenience sampling. Medical students from only one government medical college were included in the study. It may not reflect the overall awareness and knowledge of medical students in India. Being a self-administered questionnaire the respondents may provide answers they believe to be the most suitable and desirable by the researchers, and not necessarily coming from their own conviction. During the distribution of the questionnaires to participants, the researcher attempted to minimize this by declining to answer questions or to queries regarding the questionnaire items.

CONCLUSION

The study looks at the awareness of final year medical students towards HPV and its vaccine. Though the medical students know the association between HPV and cervical cancer, the level of awareness about HPV and HPV vaccine was low. There are gaps in knowledge and they may be even more among general population. There is an urgent need to bridge this information gap. Medical schools should modify their curricula to include teaching methods aimed at improving HPV vaccination and its related information. There is need for a well-designed HPV education programme integrated into a national cervical cancer prevention and control programme for easily identifying the early symptoms of the disease and to take preventive measures.

ACKNOWLEDGEMENTS

We thank profusely all medical students who took part in this survey work.

Funding: None

Conflict of Interest: None declared

Ethical approval: Not required

REFERENCES

1. WHO/ICO Information Centre on HPV and Cancer (HPV Information Centre) 2014. Mortality from cervical cancer in India (last update 15 ene 2014).
2. Aruna Nigam, Pikee Saxena, Anitha S. Acharya, Archana Mishra, and Swaraj Batra. HPV Vaccination in India: Critical Appraisal. Hindawi Publishing Corporation. ISRN Obstetrics and Gynecology Volume 2014, Article ID 394595, 5 pages.
3. Rengaswamy Sankaranarayanan, Atul Madhukar Budukh, & Rajamanickam Rajkumar. Bulletin of the World Health Organization, 2001, 79: 954–962.
4. K. Kaarthigeyan. Cervical cancer in India and HPV Vaccination. *Indian J Med Paediatr Oncol.* 2012 Jan-Mar; 33(1): 7-12.
5. Seema Farhath, PP Vijaya, P Mumtaj. Cervical Cancer: Is Vaccination Necessary in India? *Asian Pacific Journal of Cancer Prevention.* Vol 14, 2013, pp 2681-2684.
6. Bhudev C. Das, Alok C. Bharti & Mausumi Bharadwaj. Human papillomavirus & cervical cancer: Looking ahead. Editorial. *Indian J Med Res* 130, September 2009, pp 210-211.
7. Deeksha Pandey, Vidhi Vanya, Saurav Bhagat, Binu VS, Jyothi Shetty (2012) Awareness and Attitude towards Human Papillomavirus (HPV) Vaccine among Medical Students in a Premier Medical School in India. *PLoS ONE* 7(7):e40619. doi: 10.1371/journal.pone.0040619.
8. Mehta S, Rajaram S, Goel G, Goel N. Awareness about Human Papilloma Virus and its vaccine among medical students. *Indian Journal of Community Medicine* 2013;38:92-4.
9. Saha A, Nag Chaudhury A, Bhowmik P, Chatterjee R. Awareness of Cervical Cancer Among Female Students of Premier Colleges in Kolkata, India. *Asian Pacific Journal of Cancer Prevention* 2010; 11:1085-1090.
10. Neeraja Bhatla, Elizabeth Joseph (2009) Cervical cancer prevention & the role of human papillomavirus vaccines in India. *Indian J Med Res* 130: 334-40.

DOI: 10.5455/2320-6012.ijrms20141168

Cite this article as: Challa N, Madras V, Challa S. Awareness and attitude regarding human papilloma virus and its vaccine among medical students in a medical school in India. *Int J Res Med Sci* 2014;2:1607-11.