

Knowledge and Awareness of Cervical Cancer and Human Papilloma Virus Vaccine among Medical Students: A Cross-sectional Study

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ABSTRACT

Aim: Cervical cancer is still one of the most common cancers affecting females in India, leading to a lot of mortality and morbidity. Since it is a preventable cancer, the study is aimed to assess the knowledge and awareness of cervical cancer and human papilloma virus (HPV) vaccine among medical students.

Materials and methods: This is a cross-sectional study conducted among the medical students in a tertiary care center in Mahatma Gandhi Medical College & Research Institute, Puducherry, India. Three hundred students were administered a validated 53-point questionnaire regarding knowledge of cervical cancer, its risk factors, preventive measures, HPV vaccine, and screening tests. Data were kept confidential and the results were analyzed by Statistical Package for the Social Sciences software version 16.

Results: The results show 93.3% of students were aware that cervical cancer is caused by HPV, but only 61.4% knew that HPV vaccine was available. Majority of the students were uncertain about age group, number of doses, and side effects of vaccine. Only 11.74% felt the need to get vaccinated in future; 96.64% of students knew that pap smear was used to screen for cervical cancer, but only 57.72% opted to screen themselves or family members in future as they believed that they were not at risk. The common obstacle against vaccination was worry about complications, inadequate information, and efficacy of vaccine.

Conclusion: The study showed that there were misconceptions among medical students regarding cervical cancer, vaccine, and screening, which have to be cleared. Creating awareness among health care workers on risk factors, vaccination, and current methods for cervical cancer screening is a necessary step toward implementing effective prevention programs in the society.

Keywords: Cervical cancer, Human papilloma virus, Primary prevention.

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INTRODUCTION

Cervical cancer is the second most common cancer among women. Every year, 500,000 new cases are diagnosed and 270,000 women die of this disease, mostly (85%) in developing countries.¹ Worldwide, 15% of all cancer cases and nearly 26% of cancer cases in developing countries are attributable to infectious agents, particularly viruses.² Cervical cancer, which is caused by the human papilloma virus (HPV), is the leading cause of cancer mortality in 70 to 80% of cases.³ The approval and recommendation of two vaccines – Gardasil and Cervarix – help to reduce the burden of cervical cancer. However, outstanding barriers to achieving this goal in low-income countries remain. These include high cost of vaccine and vaccine delivery, low cervical cancer screening levels, inaccessibility to medical care, low awareness and knowledge of HPV and cervical cancer, and failure of cervical cancer to be recognized as a major health concern. Lack of knowledge about cervical cancer in the population and among health care workers is a prime barrier for access to cervical cancer prevention. It is crucial that Indian medical students should be aware of the advances and especially of those interventions, which can be utilized, in low-resource settings. Cancer of the cervix is a major health problem in India and accounts for 26.1 to 43.8% of all cancers in Indian women.^{2,4}

Medical students and interns were chosen because they will be sought by the population as the first-line information resources in clearing myths and spreading awareness regarding cervical cancer in future when they become clinicians. Educational initiatives targeting health care professionals have a definitive role in promoting vaccine acceptance and can positively influence screening for cervical cancer.

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MATERIALS AND METHODS

This is a cross-sectional study carried out in the Department of Obstetrics and Gynecology of Mahatma Gandhi Medical College & Research Institute (MGMCRI), Puducherry, India, from June 2016 to December 2016. The study includes 300 medical students, including interns of MGMCRI but excluding final years.

Sample size to be studied is calculated using the formula:

$$n = Z_{\alpha/2}^2 \frac{P(1-P)}{d^2}$$

The proportion of knowledge on HPV vaccine among medical students was taken as 75.6% from the study done by Pandey et al⁵ with $d = 0.05$, $\alpha = 0.05$, with power = 80%, the minimum sample size calculated as 283. To account for nonparticipation and dropouts, around 300 students were included in the study.

A 53-point validated questionnaire assessing knowledge of HPV, cervical cancer, and HPV vaccine was administered to the medical students and interns attending their clinical obstetrics and gynecology posting. All participants were informed that their responses would remain confidential. Various qualitative parameters like knowledge about cervical cancer and risk factors, primary prevention, secondary prevention, and HPV vaccine were assessed. Questionnaire of this study is adapted and elaborated from questionnaires used in other studies and validated by the National Centre for Biotechnology Information.

RESULTS

Sociodemographic Parameters

Table 1 shows that the study sample consisted of 300 medical students in the age group 18 to 25 years with

Table 1: Sociodemographic parameters

Mean age	21
Sex	
Males	155 (52.01%)
Females	143 (47.98%)
Married	
Yes	2 (0.67%)
No	296 (99.32%)

mean age of 21.4 years. There were around equal number of males and females, and most of them were unmarried. Two male students backed out from this study as they were not interested, with sample size reducing to 298.

Table 2 revealed that in our next subset of questionnaires regarding knowledge about the subject of cervical cancer, only 47.65% felt that cervical cancer could be prevented; 9.73% felt it was not preventable; 59% of students were aware that cervical cancer could lead to death, whereas 36.91% presumed that it was not fatal. Only 58.72% of students knew that cervical cancer could be associated with infection. Seven students had history of friends or family members suffering from this disease and only four students felt that this disease could affect them or family members in future. Most of the students knew that the disease had a viral etiology.

Most of the students had knowledge regarding the risk factors for cervical cancer as seen in Table 3, wherein cervical cancer is seen more in early age at first intercourse, has a genetic etiology, is strongly associated with HPV and multiple sexual partners. However, 64.4% felt that human immunodeficiency virus (HIV) infection did not have any role to play in the etiology of cervical cancer; 61.74% felt that condoms decreased the risk of cervical cancer; 52.68% felt that drugs and psychoactive substances were a risk factor for cervical cancer, whereas 44.3% were unable to comment in this regard.

Knowledge about Primary Prevention

A total of 53% students assume that lifestyle modifications like diet rich in antioxidants, vitamins, exercise, prolonged sleep, avoiding processed food could be beneficial in preventing cervical cancer; 61.4% students knew the existence of cervical cancer vaccine, whereas 52.01% knew that it was available in India; 34.9% students were aware that it does not give 100% protection from cervical cancer, but majority were not sure about the efficacy of the vaccine. Majority of the students had a wrong conception that vaccine was given in 30 to 50 years age group and they were not sure about the number of doses of vaccine to be taken; 51.01% felt that boys need not take the vaccine, whereas 29.8% had no idea whether boys could take the vaccine (Table 4).

Table 2: Knowledge about subject of cervical cancer

Question	Yes	No	Do not know
Cervical cancer can be prevented	142 (47.65%)	29 (9.73%)	127 (42.62%)
Can cervical cancer lead to mortality?	176 (59.06%)	110 (36.91%)	12 (4.03%)
Can cervical cancer be associated with infection?	175 (58.72%)	67 (22.48%)	56 (18.79%)
Have your friends or relatives suffered from it?	7 (2.35%)	282 (94.63%)	9 (3.02%)
Do you think this disease could affect you or family members in future?	4 (1.34%)	253 (84.9%)	41 (13.76%)
Cervical cancer is caused by virus	278 (93.29%)	5 (1.68%)	15 (5.03%)

Table 3: Relationship between estimated risk factors and disease

Risk factor	Answer		
	Yes	No	Do not know
Early marriage	295 (98.99%)	29 (0.67%)	1 (0.33%)
Genetic factors	297 (99.66%)	0	1 (0.33%)
Human papilloma virus	278 (93.29%)	5 (1.68%)	15 (5.03%)
Human immunodeficiency virus infection	58 (19.5%)	192 (64.4%)	48 (16.1%)
Multiple sexual partners	280 (93.96%)	5 (1.68%)	13 (4.36%)
Condom use	0 (0)	184 (61.74%)	114 (38.26%)
Drugs/psychoactive substance	157 (52.68%)	9 (3.02%)	132 (44.3%)

Table 4: Knowledge about primary prevention

Question	Yes	No	Do not know
Is there any vaccine for cervical cancer?	183 (61.4%)	55 (18.46%)	60 (20.13%)
Is vaccine available in India?	155 (52.01%)	72 (24.16%)	71 (23.83%)
Does it guarantee 100% protection from cervical cancer?	52 (17.45%)	104 (34.9%)	142 (47.65%)
Correct age group for vaccine is 10–30 years	67 (22.48%)	151 (50.67%)	80 (26.85%)
Can it be given to boys?	57 (19.13%)	152 ((51.01%)	89 (29.87%)
Can it be given to sexually active girls?	203 (68.12%)	7 (2.35%)	88 (29.53%)
Screening for HPV is a prerequisite for vaccination	168 (56.38%)	79 (26.51%)	51 (17.11%)
Can it be given to women already having HPV infection?	104 (34.9%)	176 (59.06%)	18 (6.04%)
Is it safe to have multiple sexual partners after full course of vaccine?	114 (38.26%)	139 (46.64%)	45 (15.1%)
Do vaccinated women require screening?	154 (51.68%)	91 (30.54%)	53 (17.79%)
Have you/family members ever been vaccinated?	1 (0.34%)	285 (95.64%)	12 (4.03%)
Would you like to get vaccinated?	35 (11.74%)	59 (19.8%)	204 (68.46%)

A total of 68.12% students were aware that it could be given to a sexually active girl, but there was a misconception that screening for HPV was mandatory prior to vaccination (56.38%) and that it could not be given to those already having HPV infection (59.06%). Majority of students knew that it was not safe to have multiple sexual partners after full course of vaccine and that vaccinated women also have to undergo screening for cervical cancer. Unfortunately, 95.64% of students were not vaccinated against cervical cancer and only 11.74% felt the need to get vaccinated in future.

Knowledge about Secondary Prevention

Majority of students were aware of symptoms related to cervical cancer like menstrual disturbances, postcoital bleed, smelly or blood-stained vaginal discharge, fever,

as seen in Table 5. However, 59.73% of students felt that cervical cancer may not be present in asymptomatic people. Itching in genital areas was not attributed to cervical cancer symptom by 65.4% students.

Table 6 shows that majority of students (96.64%) were aware that pap smear was used to screen for cervical cancer. Most of them felt that it was not painful or time-consuming and did not cause serious complications (94.97%); 64.7% thought that it was 100% effective in screening for cervical cancer. When it came to undergoing the test themselves or their female family members, opinion was divided, with only 57.72% opting to go for it.

In over 90%, medical school teachings and internet were the most common sources of knowledge and information about HPV vaccination, and 3% of students had

Table 5: Symptoms that may be associated with cervical cancer

Symptoms related to cervical cancer	Answer	
	Yes	No
Asymptomatic	120 (40.27%)	178 (59.73%)
Dysmenorrhea	267 (89.6%)	31 (10.4%)
Menorrhagia/postcoital bleed/metrorrhagia	215 (72.15%)	83 (27.85%)
Smelly vaginal discharge	240 (80.54%)	58 (19.46%)
Blood-stained mucus	186 (62.42%)	112 (37.58%)
Itching in genital areas	103 (34.56%)	195 (65.44%)
High fever	273 (91.61%)	25 (8.39%)

Table 6: Cytological examination

	Answer	
	Yes	No
Are you aware about pap smear?	288 (96.64%)	10 (3.35%)
Is it 100% effective in diagnosing cervical cancer?	193 (64.77%)	105 (35.23%)
Is it painful or time-consuming?	142 (47.65%)	156 (52.35%)
Can test cause serious complications?	15 (5.03%)	283 (94.97%)
Would you or female family members undergo this test in future?	172 (57.72%)	126 (42.28%)

friends or family members who sought their opinion regarding HPV vaccination. The most common obstacle in receiving the vaccination was found to be worry about complications (80%) and inadequate information (35%); 21% wanted to refrain from it as they doubted the efficacy of vaccine and, moreover, it was not found to be 100% effective.

DISCUSSION

The world pattern of cervical cancer indicates that this is predominantly a problem of low-resource-setting countries. The main reason is limited access to screening and treatment facilities. The HPV vaccination alone or combined with screening for carcinoma cervix has been documented as effective interventions in reducing the burden and mortality due to cervical cancer across various settings. There are some international as well as Indian studies testing the awareness of HPV vaccine and knowledge about cervical cancer. McCarey et al⁶ in 2011 studied awareness of HPV and cervical cancer prevention among Cameroonian health care workers and found that several gaps and important misconceptions regarding screening methods were prevalent among the study subjects. Hence, creating awareness among health care workers on risk factors and current methods for cervical cancer screening is a necessary step toward implementing effective prevention programs. In another study, Guducu et al⁷ studied the knowledge of nurses and students of İstanbul Bilim University and affiliated hospitals about HPV and cervical cancer and found that nurses and students of nursing had better knowledge about smear test when compared with students of Medicine (first 3 years) and other health care personnel. Only 52% accepted to get a daughter vaccinated. The main reasons for vaccine rejection were the concerns about vaccine safety (41%), cost of the vaccine (10%), and sexual promiscuity (5%) after vaccination. Religious aspects were not considered as an obstacle.

Pandey et al⁵ studied awareness and attitude toward HPV vaccine among 618 medical students in India and found that majority of participants (89.6%) were well aware of the preventable nature of cervical cancer. Most of them (89.2%) knew that necessary factor responsible for cervical cancer is infection with high-risk HPV. Awareness regarding the availability of vaccine against cervical cancer was 75.6%. Females had a better awareness regarding availability of vaccine, target population for vaccination, and about the catchup program. Overall acceptance of HPV vaccine among the population studied

was 67.8%. Females seemed to be more ready to accept the vaccine and recommend it to others. Majority of participants agreed that the most important obstacle in implementation of HPV vaccination program in our country is inadequate information and 86.2% wanted to be educated by experts in this regard.

In the study by Ojiyi et al,⁸ the awareness of HPV vaccine was high (74.0%), and most of the health workers (67.3%) would recommend the vaccine to their adolescent daughters and clients. Most common source of information was from conferences or class lectures (57.3%). A good number of respondents think that the vaccine would reduce the incidence of cervical cancer which was similar to our study.

CONCLUSION

Doctors play an important role in providing first-hand information to society regarding cervical cancer, its risk factors, and using HPV vaccine to reduce the incidence of cervical cancer. Clearing certain myths and misconceptions at student level will help in better implementation of health programs in the society.

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