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Original Research Article

Awareness and attitude towards human papillomavirus vaccination for cervical cancer prevention among college students in South Kerala

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ABSTRACT

Background: Carcinoma cervix is the second most common cancer among women, and the most common cause of cancer deaths in developed countries, but the awareness regarding it's prevention by HPV vaccine is limited. This study targets to identify the awareness of cervical cancer and HPV vaccine among the college students.
Methods: An observational cross-sectional study was conducted among 963 college students of Kollam district of South Kerala, using a semi-structured questionnaire.
Results: Among the study subjects, only 48.6% had previously heard about HPV vaccine, 85.6% knew HPV causes cervical cancer, 80.2% recommends HPV vaccine to their siblings and peers. Medical students had better awareness, practice of HPV vaccination was less among medical and non-medical students; 11.6% medical students and 4.9% non- medical students had taken HPV vaccination.
Conclusions: Even though awareness regarding cervical cancer is present, to increase the practice of HPV vaccination, proper health education regarding HPV vaccination is of prime importance among college students.

Keywords: Awareness, Cervical cancer, HPV, HPV vaccination, Practice

INTRODUCTION

Cervical cancer is the most common cause of cancer death among women in the developing countries. Sexually transmitted human papilloma virus (HPV) infection is the most important risk factor for cervical intraepithelial neoplasia and invasive cervical cancer.[1] Two human papilloma virus (HPV) types (16 and 18) are responsible for nearly 50% of high grade cervical pre-cancers.[2]

Cervical cancer is a health crisis impacting women and their families across the world especially in low-resource settings. In 2022, an estimated 604,237 women were diagnosed with cervical cancer globally, representing 6.5% of all female cancers. Today, more women are dying of cervical cancer than are dying in childbirth. Female mortality due to cervical cancer is twice that of breast cancer. A woman living with HIV is six times more likely to develop cervical cancer than her HIV-negative peers.[3] HPV viruses are also responsible for vaginal, vulvar, anal, oral, throat and penile cancers.

India holds responsibility for 25% of worlds' cervical cancer load. The HPV vaccination is of public health importance. Compliance with cervical Pap smear screening is low in India. The currently available vaccines are safe and efficacious.

The Indian Academy of Paediatrics Committee on Immunisation (IAPCOI) recommends offering HPV vaccine to all females. Since protection is seen only when the vaccines given before infection with HPV, the vaccine should be given prior to sexual debut. The vaccine should be popularised among parents as a cervical cancer-preventing vaccine as opposed to vaccine against a sexually transmitted infection.

Vaccine available against HPV are Bivalent (HPV2) -this vaccine contains HPV types 16 and 18. Quadrivalent (HPV4) - this vaccine contains HPV types 6,11,16 and 18. Nonvalent (HPV9): this vaccine contains HPV types 6, 11, 16, 18, 31, 33, 45, 52 and 58. The awareness and acceptability of HPV vaccination is less among general population.

All girls (>9 years) and adolescent girls should receive this vaccine. Catch-up vaccination may be offered to older women. This vaccine is licensed for use till 45 years.[4] But greatest reduction in HPV 16 infection is noticed when vaccination is taken before the transition in sexual behaviour, hence early vaccination before the onset of sexual activity is considered most effective. Therefore, this study focuses on young adult population between the age of 18-25 years.

The current study was designed to assess the awareness regarding cervical cancer, HPV infection and HPV vaccination among college students.

METHODS

An observational cross-sectional study was conducted from February 2023 to November 2023 among College students of Kollam district, South Kerala. According to the study conducted by Pandey et al[5], sample size was estimated by using the formula $n=4pq/l^2$, with an allowable error (l) of 3, p value of 69% - correct knowledge regarding age for giving HPV vaccination, q= 100-p, sample size was calculated as 950 and 963 samples were included in the study.

Inclusion criteria

Undergraduate students aged 18 and above were included.

Exclusion criteria

Study participants who refused to give consent were excluded.

Data collection

From the list of medical and non-medical colleges of Kollam district, 4 colleges i.e. 2 medical colleges and 2 non-medical colleges were selected randomly by lottery method. From the selected colleges, students were selected by convenient and sample size was completed. Permission was taken and data collection was done through Google forms. Pre-tested, validated self-administered 26- point questionnaire was used for data collection. The questionnaire included questions to assess the awareness and attitude of students regarding cervical cancer, HPV infection, HPV vaccination. Ethical clearance obtained. Informed consent was taken prior to data collection and confidentiality of information was maintained.

Statistical analysis

Summarization and analysis of data was carried out using Software Statistical Package for Social Sciences (SPSS version 20). Mean, standard deviation, percentages, Chi-square tests were used for analysis, $p \leq 0.05$ is considered to be significant.

RESULTS

The study collected responses from 963 college students (mean age = 20.8, standard deviation = 2.36) i.e, 414 (42.9%) medical students and 549 (57.01%) non- medical students from the Kollam district of Kerala. The age of study participants ranges from 17-31 years. There were 446 (46.3%) male participants and 517 (53.7%) female participants.

Majority of the participants, 529 (54.9%) belonged to the age group of 17-20 years, 807 (83.8%) belonged to nuclear family and 919 (95.4%) were unmarried (Table 1).

Table 1: Sociodemographic characteristic of study population.

Variable	Category	N (%)
Age (in years)	17-20	529 (54.9)
	21-24	332 (34.5)
	>25	102 (10.6)
Type of family	Joint	156 (16.2)
	Nuclear	807 (83.8)
Gender	Male	446 (46.3)
	Female	517 (53.7)
Marital status	Unmarried	919 (95.4)
	Married	44 (4.6)

In the questions to assess to assess the awareness, among the total study participants, 468 (48.6%) have heard of HPV vaccine, 817 (84.8%) were aware that the causative organism of cervical cancer was a virus, 824 (85.6%) of the students were aware that HPV infection causes cervical cancer, 218 (22.6%) knew the correct cost of HPV vaccine, 307 (31.9%) were aware about Cervarix and Gardasil vaccines used for HPV vaccination in India, only 288 (29.9%) participants knew the age group for administration of HPV vaccine, 752 (78.1%) were aware of papsmear as screening test for Cervical cancer, 685 (71.1%) students selected the ideal age group for doing pap smear correctly, which is 21-65 years, 700 (72.7%) students knew the correct number of doses of HPV vaccination.

In the questions to assess the attitude of participants (table 2) towards HPV and HPV vaccine, out of the total participants, only 75 (7.8%) had taken HPV vaccine. Among them247 (25.6%) consider that HPV vaccine will cause adolescents to feel overprotected and are likely to engage in high risk sexual behaviour, 772 (80.2%) said

they would recommend HPV vaccine to their siblings and peers, 243 (25.2%) answered that only those with high-risk sexual behaviour requires HPV vaccine, 349 (36.2%) thought that male should not take HPV vaccine, 276 (28.7%) considered that HPV infect only those who have multiple sexual partners.

Table 2: Attitude of study participants.

Variables	Category	N (%)
Do you think HPV vaccine will cause adolescents to feel over protected and likely to engage in a high-risk sexual behaviour?	Yes	247 (25.6)
	No	716 (74.4)
Do you recommend HPV vaccine to your siblings and peers?	Yes	772 (80.2)
	No	191 (19.8)
Only those with high-risk sexual behaviour requires HPV vaccine?	Agree	243 (25.2)
	Disagree	720 (74.8)
Do you think male should take HPV vaccine?	Yes	614 (63.8)
	No	349 (36.2)
HPV infect only those who have multiple sexual partners?	Agree	276 (28.7)
	Disagree	687 (71.3)

Table 3: Practice among study population.

Variable	Category	N (%)
Have you taken HPV vaccine?	Yes	75 (7.8)
	No	888 (92.2)
In the past one year has a doctor ever recommended you or any immediate family member HPV vaccine?	Yes	57 (5.9)
	No	906 (94.1)

In the questions to assess the practice of HPV vaccination among the study participants (table 3), only 75 (7.8%) have taken HPV vaccine. Among the students, only 57 (5.9%) agreed that in the past 1 year, they have been recommended by doctor or immediate family member to get HPV vaccination.

According to Figure 1, source of knowledge about HPV and HPV vaccine was mostly from medical professionals followed by teachers, peers/colleagues, TV/radio and newspapers. Unfortunately, 273 (28.3%) students have not previously heard of the same.

Percentage of candidates who have heard of HPV vaccine were 63% among medical and only 37.7% among non-medical students and the finding was found to be statistically significant (p=0.000).

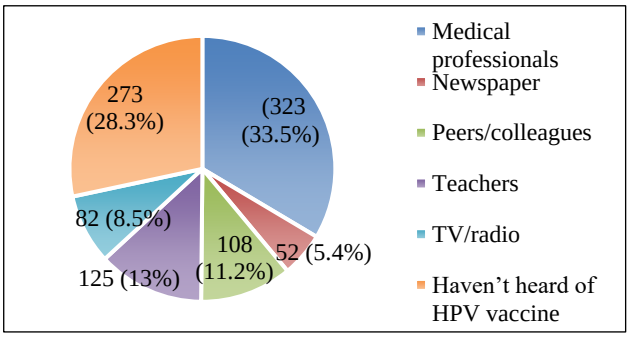

Figure 1: Source of your knowledge about HPV and HPV vaccine.

Among the medical students, 96.8% correctly answered that HPV infection causes cervical cancer but 77% non-medical only correctly answered and the finding was found to be statistically significant (p=0.00).

Majority, 91.5% of medical were willing to recommend the vaccine to their siblings and peers, whereas only 71.6% of the non-medical population were willing to do so and the finding was found to be statistically significant (p=0.000).

Regarding the practice of HPV vaccination, 11.6% of medical and 4.9% of non-medical population had taken the HPV vaccination and observation was found to be statistically significant (p=0.000).

Table 4: Association of awareness, attitude, practice towards HPV and HPV vaccination among medical and non-medical students.

		Medical students (%)	Non-medical students (%)	Total (%)	
Have you heard of HPV vaccine	No	153 (37.0)	342 (62.3)	495(51.4)	$\chi^2 = 60.661$ df = 1 p value=0.000
	Yes	261 (63.0)	207 (37.7)	468 (48.6)	
Which cancer among them is caused by HPV	Cervical cancer	401 (96.8)	423 (77)	824 (85.6)	$\chi^2 = 628.149$ df = 4
	Lung cancer	2 (0.5)	31 (5.6)	33 (3.4)	

Continued.

		Medical students (%)	Non-medical students (%)	Total (%)	
	Oral cancer	6 (1.4)	48 (8.7)	54 (5.6)	p value=0.000
	Stomach cancer	5 (1.2)	47 (8.6)	52 (5.4)	
Would you recommend HPV vaccine to your siblings and peers	No	35 (8.5)	156 (28.4)	191(19.8)	$\chi^2 = 59.145$ df = 1 p value=0.000
	Yes	379 (91.5)	393 (71.6)	772 (80.2)	
Have you taken HPV vaccine	No	366 (88.4)	522 (95.1)	888 (92.2)	$\chi^2 = 14.648$ df = 1 p value=0.000
	Yes	48 (11.6)	27 (4.9)	75 (7.8)	

DISCUSSION

This study was conducted among 963 college students which included 414 (42.9%) medical students and 549 (57.01%) non- medical students from the Kollam district of Kerala. The age of study participants range from 17-31 years. There were 446 (46.3%) male participants and 517 (53.7%) female participants.

Among the participants, 54.9 % were from age group of 17 to 20, 34.5% from age group 21 to 24 and 10.6% ≥ 25 years. In a similar study, conducted by Adolescents' Health Committee of FOGSI from April 2009 to March 2010, the age group under study included was 13 to 19 years, out of which 463 is high school students and 537 in front college students.[6]

According to our study population,414 were medical students and 549 were non-medical students. In a similar study conducted by Hebbar et al, 277 were medical and 341 non-medical students.[7]

According to our study 48.6% have heard of vaccine but 51.4% have not heard of it, 85.6% were aware that HPV causes cervical cancer and 80.2% would recommend HPV vaccine to their siblings and peers. In a similar study conducted by Khanna et al about community awareness of HPV screening and vaccination in Odisha, 68.8% have never heard of HPV and 11.9% were aware that Human Papilloma Virus is the main cause of cervical cancer, 82.9% women thought that vaccination prevent disease, and 74.8% said they make the decision to vaccinate their children.[8] In another study conducted by Rahman et al regarding awareness about HPV vaccine and its uptake among women from Delhi and Rohtak, 18% of the study population have heard about the vaccination.[9] They concluded that women tend to have less knowledge about cervical cancer vaccine and immunization.

According to our study 25.6% believed HPV vaccine will cause adolescents to feel overprotected and engage in high-risk sexual behaviour whereas 74.4% do not think so. In a similar study conducted by Walles et al, 28% of respondents were identified to believe that there is increased incidence of multiple sexual partners among those who received protection against various STDs.[10]

According to our study, 85.6% responded that HPV causes cervical cancer. In a similar study conducted by Ramavath et al, 77.2% were not aware of the virus that causes cervical cancer.[11]

According to our study, 93.7% medical students had good knowledge about HPV vaccine, whereas only 55.2% of non-medical students showed the same competency. In a similar study conducted by Rasheed et al, out of 1580 students- girls had more knowledge about cervical cancer and HPV vaccine, and students from biology major had more knowledge and awareness about cervical cancer when compared to non-biology group.[12]

In this study, we found that medical students had better awareness towards cervical cancer, HPV infection than non-medical students. In general, the practice of HPV vaccination is very less in both medical and non-medical students.

The awareness regarding cervical cancer, HPV infection and HPV vaccine is limited in general population. College students form an integral part of the community who need awareness regarding the same.

CONCLUSION

Awareness regarding cervical cancer, HPV infection and HPV vaccine was more among medical students than non-medical students in our study. In this study very less number of students have taken HPV vaccination. This has shown the importance of creating awareness among college students on HPV vaccination. Improving the awareness regarding HPV vaccination can have potential benefit in improving the practice of HPV vaccination among college students. The conversation regarding safe sexual practices should be without taboo. To increase practice, there is an increased need of providing proper health education among college students especially among non-medical courses. Active interventions from the side of government is necessary. Recent advancements in the indigenous production of HPV vaccine might help in potentially lowering the price range and thus increasing accessiblity to the middle and lower class.

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