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Original Research Article

Knowledge and awareness of cervical cancer prevention and HPV vaccination among medical and nursing students in a tertiary care hospital

Radha B. P. Thangappah*, Mohana Priya A. Senthilkumar, Gayathri Sureshababu, Poovizhi Dharmalingam, Anitha Palanisamy, Vidhya Subramanian, Sri Varshitha Desu

Department of Obstetrics and Gynecology, Sri Muthu Kumaran Medical College Hospital and Research Institute, Chennai, Tamil Nadu, India

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***Correspondence:**

Dr. Radha B. P. Thangappah,

E-mail: radhaprabhu54@ymail.com

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ABSTRACT

Background: This study was done to assess the level of knowledge and awareness about cervical cancer and its prevention among medical and nursing students.

Methods: This descriptive cross-sectional study was conducted during 2022 in a tertiary care hospital in Chennai. The study included 407 subjects; 224 medical students, and 183 nursing students and consent was obtained from each participant prior to the study. A questionnaire survey was used to assess their knowledge on cervical cancer and its prevention.

Results: Out of the 407 participants, 95.5% of the medical students and 30.6% of the nursing students knew that HPV virus causes cervical cancer. Medical students had more knowledge on risk factors. 84.38% of medical students and 43.72% of nursing students were aware that vaccine is available for the prevention of cervical cancer. Overall nursing students had limited knowledge on cervical cancer and its prevention. 51.79% of the medical students and 27.87% of the nursing students acquired their knowledge about HPV vaccine through social media. The uptake of HPV vaccine was very low among both medical and nursing students.

Conclusions: The results of our study demonstrate that there is a need for creating more awareness about cervical cancer and its prevention among medical and nursing students.

Keywords: Cervical cancer, HPV vaccine, Knowledge, Medical and nursing students

INTRODUCTION

Though cervical cancer is a preventable cancer, a huge burden of cervical cancer has been reported globally, especially from the developing countries. The recent report by WHO on cervical cancer has shown that, 604 000 new cases of cervical cancers were diagnosed in 2020 and there were 342 000 deaths related to the disease.¹ In India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease every year.² The age standardized incidence of cervical cancer in India is 22/100,000 women and is the highest in South Asia.²

WHO has set a goal to reduce the global annual age-standardised incidence of cervical cancer to 4 per 100 000 women in the 21st century. In order to achieve this, WHO has recommended to vaccinate 90% of all girls by the age of 15 years, to screen 70% of women twice in their life time at ages 35 years and 45 years and to treat 90% of precancerous cervical lesions detected during screening.³ There are number of barriers to achieve this goal especially in low income countries. The high cost of vaccine and low cervical cancer screening coverage are important hurdles to cross to achieve this goal. Besides, there is also lack of knowledge and awareness about cervical cancer and its

prevention among the public as well as among the health care providers. Health care providers (medical and para medical staffs) play a major role in educating women in the prevention of cervical cancer. Indian medical and nursing students when they graduate to become professionals, they form the first-line information resources for our population. Therefore, it is important that their level of knowledge on cervical cancer prevention is assessed, so that the lacunae can be identified and necessary educational activities on cervical cancer prevention can be undertaken.

Objective

The objective of this study was to assess the level of knowledge and awareness of cervical cancer prevention among medical and nursing students.

METHODS

This was a descriptive cross-sectional study conducted from September 2022 to December 2022 by the department of obstetrics and gynecology at a tertiary care hospital in Chennai. The study included 407 subjects; 224 medical students, and 183 nursing students, all in their first and second year of study. Convenience sampling technique was used. The study was limited to one day only and those who were present on that day and those who were willing to participate were included in the study. Students who did not give consent for the study were excluded from the study. This was a questionnaire based survey using pre-tested validated questionnaire. The

questionnaire included demographic details, knowledge about genital cancers, risk factors and preventive measures for cervical cancer and knowledge about HPV vaccination and the source of information. The students were given 30 minutes to complete the questionnaire. The data collected were analysed using SPSS system. Institutional ethical committee approval was obtained to conduct this study and consent was obtained from each participant and confidentiality of the participants was maintained. After collecting the proformas, an informative talk was given to the students on cervical cancer and its prevention.

Statistical analysis

Collected data were entered in excel sheet and statistical analysis was carried out using coGuide software 2020, version 1.0, India: BDSS corp.

RESULTS

This study included 224 medical students and 183 nursing students. 69.65% of medical students and 73.77% of the nursing students were aged less than 20 years. The mean age of the medical students and the nursing students were 19.5 ± 1.52 and 19.54 ± 1.49 years respectively. There were more number of males among the medical students (42.86%) as compared to the nursing students (23.5%). Majority of the medical students (99.5%) had their schooling in city schools, whereas only 57.38% of nursing students had their schooling in city schools and the difference between the two groups was statistically significant (Table 1).

Table 1: Demographic details.

Variables	Course		Chi square	P value
	Medical students N=224	Nursing students N=183		
Age distribution (years)				
<18	68 (30.36%)	50 (27.32%)	4.659	0.199
19-20	88 (39.29%)	85 (46.45%)		
21-22	65 (29.02%)	42 (22.95%)		
≥23	3 (1.34%)	6 (3.28%)		
Gender distribution				
Male	96 (42.86%)	43 (23.5%)	16.786	<0.001
Female	128 (57.14%)	140 (76.5%)		
School education- city/periphery				
City	223 (99.55%)	105 (57.38%)	114.534	<0.001
Periphery	1 (0.45%)	78 (42.62%)		

On analyzing the students' knowledge on cervical cancer and its prevention, it was seen that, 98.66% of the medical students and 71.58% of nursing students were aware that the commonest female genital cancer in India is cervical cancer. Among the nursing students, the other answers that were given were uterine cancers by 13.66% and ovarian cancers by 8.2%. On assessing their knowledge on the cause of cervical cancer, 95.5% of the medical students

and only 30.6% of the nursing students knew that HPV virus causes cervical cancer. The other answers that were given were herpes simplex virus (HSV) infection and general infections. Nearly 53.55% of the nursing students were not aware of any cause for cervical cancer. In the questionnaire on the knowledge on risk factors for cervical cancer, it was seen that medical students had more knowledge on risk factors; early marriage 47.32%,

multiple partners 52.23%, poor hygiene 45.5% and smoking 48.21%. Nursing students had limited knowledge on these parameters and there was statistically significant difference between the two groups. The other answers that were given were immune deficiency, genetic factors and oral contraceptive (OC pill) use. 93.3% of the medical students and 62.3% of the nursing students knew that cervical cancer is preventable. On analyzing their knowledge on modes of prevention, 74.64% of the medical students were aware that both use of vaccines and

Papanicolaou's smear (Pap smear) used for screening are preventive measures for cervical cancer. 21.05% answered that only pap smear testing is a preventive measure and 4.31% answered that vaccine is the only preventive measure. Among the nursing students, only 26.32% were aware that both vaccine and Pap smear testing are preventable measures (the questionnaire did not include other screening methods such as visual inspection methods and HPV testing in this survey) (Table 2).

Table 2: Knowledge on cervical cancer and its prevention.

	Course		Chi square	P value
	Medical students N=224	Nursing students N=183		
Commonest genital cancer in India				
Cervical cancer	221 (98.66%)	131 (71.58%)	63.234	<0.001
Uterine cancer	1 (0.45%)	25 (13.66%)		
Ovarian cancer	1 (0.45%)	15 (8.2%)		
Don't know	1 (0.45%)	12 (6.56%)		
Cervical cancer is caused by				
HPV virus	214 (95.54%)	56 (30.6%)	191.851	<0.001
HSV virus	3 (1.34%)	9 (4.92%)		
Infection	1 (0.45%)	20 (10.93%)		
Don't know	6 (2.68%)	98 (53.55%)		
Risk factors for cervical cancer				
Early marriage	106 (47.32%)	20 (10.93%)	62.408	<0.001
Multiple partners	117 (52.23%)	14 (7.65%)	91.713	<0.001
Poor hygiene	102 (45.54%)	60 (32.79%)	6.832	0.009
Infections	12 (5.36%)	42 (22.95%)	27.092	<0.001
Smoking	108 (48.21%)	36 (19.67%)	35.888	<0.001
Alcoholism	0 (0%)	15 (8.2%)		
Immune deficiency	2 (0.89%)	33 (18.03%)	37.644	<0.001
OC pill use	0 (0%)	5 (2.73%)		
Genetic factors	14 (6.25%)	45 (24.59%)	27.332	<0.001
Is cervical cancer preventable (N=407)				
Yes	209 (93.3%)	114 (62.3%)	61.461	<0.001
No	14 (6.25%)	47 (25.68%)		
Don't know	1 (0.45%)	22 (12.02%)		
Modes of cervical cancer prevention (N=323)				
Vaccine	9 (4.31%)	31 (27.19%)	No statistical test was applied- due to 0 subjects in the cells	
Pap smear	44 (21.05%)	38 (33.33%)		
Both	156 (74.64%)	30 (26.32%)		
None	0 (0%)	15 (13.16%)		

On assessing the knowledge on HPV vaccine, only 84.38% of medical students and 43.72% of nursing students were aware that vaccine is available for the prevention of cervical cancer. Among those who knew about the availability of HPV vaccine further questions were asked with regards to ideal age for vaccination, whether it can be given to sexually active women and whether HPV vaccine can prevent other cancers. There was limited awareness on ideal age for vaccination among both medical and nursing students; only 14.29% of medical students and 6.25% of nursing students were aware that the ideal age for

vaccination is between 9 to 14 years. 88.89% of medical students knew that HPV vaccine can be given to sexually active women also. 76.84% of the medical students and 31.65% of the nursing students were aware that HPV vaccine can prevent other cancers and the difference between the two groups was statistically significant and the medical students were more knowledgeable than the nursing students (Table 3). On analysing whether the place of schooling had influence on the level of the participants' knowledge about availability of HPV vaccine, it was seen that those who had studied in the city schools were more

knowledgeable (73.48%) compared to those who had studied in the peripheries (35.44%) and the difference

between the two groups was statistically significant p value <0.001.

Table 3: Knowledge on HPV vaccine.

Is there a vaccine for cervical cancer (N=407)				
	Medical students (N=224)	Nursing students (N=183)	Chi square	P value
Yes	189 (84.38%)	80 (43.72%)	78.546	<0.001
No	34 (15.18%)	83 (45.36%)		
Don't know	1 (0.45%)	20 (10.93%)		
Ideal age for HPV vaccination (N=269)				
	Medical students N=189	Nursing students N=80	No statistical test was applied- due to 0 subjects in the cells	
9-14 years	27 (14.29%)	5 (6.25%)		
15-25 years	124 (65.61%)	39 (48.75%)		
Up to 45 years	38 (20.11%)	17 (21.25%)		
Not known	0 (0%)	19 (23.75%)		
Can HPV vaccine be given to sexually active women				
	Medical students N=189	Nursing students N=80	No statistical test was applied- due to 0 subjects in the cells	
Yes	168 (88.89%)	36 (45.57%)		
No	21 (11.11%)	19 (24.05%)		
Don't know	0 (0%)	24 (30.38%)		
Can HPV vaccine prevent any other cancer				
Yes	146 (76.84%)	25 (31.65%)	79.706	<0.001
No	42 (22.63%)	29 (35.44%)		
Don't know	1 (0.53%)	26 (32.91%)		
Source of acquiring knowledge on HPV vaccination (N=407)				
Social media	116 (51.79%)	51 (27.87%)	103.236	<0.001
Family doctors	23 (10.27%)	1 (0.55%)		
Friends	16 (7.14%)	6 (3.28%)		
Parents and family members	36 (16.08%)	19 (10.48%)		
Not heard	33(14.74%)	106 (57.92%)		
Whether HPV vaccine was taken (N= 268 female students)				
	Medical students (128)	Nursing students (140)		
Yes	8 (6.25%)	2 (1.43%)	4.327	Fisher exact p value
No	120 (93.75%)	138 (98.57%)		0.052

51.79% of the medical students and 27.87% of the nursing students acquired their knowledge about HPV vaccine through social media. Parents and family members were source of information in 16.08% of medical students and 10.48% of nursing students. The knowledge was also acquired from friends and family doctors in 10% of participants. 14.74% of the medical students and 57.92% of the nursing students mentioned that they have not heard about HPV vaccine. Among the 268 female students, only 6.25% of the medical students and 1.43% of the nursing students have taken the HPV vaccination (Table 3).

DISCUSSION

In order to achieve the WHO goal of reducing the incidence of cervical cancer to 4 per 100 000 women in the 21st century, the following areas should be addressed: availability of low cost HPV vaccine, increasing the cancer

screening coverage and creating awareness among the public as well as among the medical and para medical personnel about the importance of HPV vaccination and the need for screening with available strategies. As medical and nursing students are going to be the future torch bearers to disseminate the knowledge and create awareness among the public about health related areas, in this study they were chosen as the target study population and their level of knowledge on cervical cancer prevention was assessed.

98.66% of the medical students had good knowledge and were aware that cervical cancer is the commonest genital cancer affecting women in India, whereas only 71.58% of nursing students had this knowledge. In a study from India involving 200 medical and paramedical students in 2020, 79% were aware that cervical cancer is most common cause of gynaecological cancer.⁴ In our study 95.54% of

the medical students knew that cervical cancer is caused by human papilloma virus (HPV) infection and other studies have also shown similar findings.^{5,6} Whereas the knowledge on HPV virus as a causative agent for cervical cancer is low among nursing students; only 30.6% of them knew HPV virus as a cause for cervical cancer. On the contrary, in the study by Radhika et al, about 79.1% of nursing students knew that HPV virus is implicated in the aetiology of cervical cancer.⁷

In this study, majority of medical students were aware of the various risk factors for cervical cancer, whereas nursing students had limited knowledge. Similar to our study, AbdAllah et al also showed that 57.8% of nurses had poor knowledge with regards to the risk factors for cervical cancer.⁸

On analysing the knowledge on cervical cancer prevention, 93.3% of the medical students and 62.3% of the nursing students were aware that cervical cancer is preventable. Other studies have also shown similar findings.^{4,5,7} With regards to the methods of cervical cancer prevention, 75% of medical students were aware that both vaccine and pap smear are measures to prevent cervical cancer. However, the knowledge among the nursing students was limited as only 26% of them were aware of both interventions as preventive measures. In Radhika et al study, in the pretest, only 29% of nursing students were aware about the methods of cancer prevention.⁷ In the study by Aswathy et al from Kerala only 74.2% knew that cervical cancer could be detected early by a screening test.⁹

It is nearly two decades since the introduction of HPV vaccine globally. However, the knowledge on the availability of HPV vaccine among health care professionals is still limited. Earlier studies by Ghotbi et al in 2012, and by AbdAllah et al in 2016 showed that only 50% to 54% of the respondents knew about HPV vaccine and its use.^{8,10} Some of the recent studies are also showing similar findings.^{4,11} In a study from Jordan, only 40.5% of medical students knew about the availability of the HPV vaccine.⁶ However, our study and as well as other studies have shown that more than 80% of medical students knew about HPV vaccine.^{5,12,13} Though our medical students had more knowledge about HPV vaccine, their knowledge on ideal age to start vaccination was limited. It is also important to note that, our study as well as other studies have shown that nursing students have limited knowledge, with only 50% of them aware of HPV vaccine.¹³ The findings from our study as well as from other reports have shown that the awareness about HPV vaccine is still inadequate among health care professionals, especially among nursing students and therefore, there is an urgent need to create awareness among them.

The rate of vaccination against HPV is less in developing countries, not only among the public but also among the health care professionals. The important reasons for not getting vaccinated against cervical cancer is the lack of

knowledge regarding the availability of the vaccine, non-availability, fear of side effects and the cost of the vaccine. Even in those who had knowledge about HPV vaccine, the rate of vaccination is less. In our study only 6.25% of the medical students and 1.43% of the nursing students had taken the vaccine. Similar to our findings, in the study by Ganju et al in 2017, 5.5% and in Swarnapriya et al study in 2015, 6.8% were vaccinated.^{13,14} In a global study by Gismondi et al, in 2021, 39.8% of the medical students had received the HPV vaccine.¹⁵

The importance of taking HPV vaccine to prevent cervical cancer should be emphasized to the health care providers and public through reliable sources. In this regard, social media seems to play a major role in creating awareness and knowledge about HPV vaccination. In our study nearly 50% of the medical students and 28% of nursing students acquired their knowledge about HPV vaccination through social media. Other sources of information were family doctors (10.27%), family members (16%) and friends. As only 10% of students came to know about HPV vaccination through family doctors, it is important that doctors should play a major role in disseminating the information about HPV vaccination. Information and advice given by the physicians will be well received and accepted by the public compared to the social media and this will have a major impact in reducing the incidence of cervical cancer. Other studies have also shown media as an important source of information on HPV vaccine.^{8,9}

CONCLUSION

Though cervical cancer is the commonest gynaecological cancer in India, its awareness, knowledge on risk factors and preventive measures are inadequate, not only among the public but also among the health care providers. Our study has shown that there is overall lack of awareness among the nursing students with regards to cervical cancer prevention and the uptake of vaccine is very low among both medical and nursing students. Periodical surveys such as ours can identify gaps and lacunae among the students, so that necessary measures can be taken to impart knowledge in them. Educational initiatives targeting health care providers will go a long way in promoting vaccine acceptance among the public. If properly informed, they will function as useful link for spreading information from health care system to the general public for the successful prevention of cervical cancer. This will also improve the vaccine up take among the students.

This study also highlights the need for the family doctors to take more efforts and responsibility in encouraging the use of HPV vaccine among their clients for the prevention of cervical cancer.

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REFERENCES

1. World Health Organization. Cervical cancer. Available from: <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>. Accessed on 2 July 2023.
2. ICO Information Centre on HPV and Cancer (Summary Report 2014.08.22). Human Papillomavirus and Related Diseases in India; 2014. Available from: https://hpvcentre.net/link_media/methodologies.pdf. Accessed on 2 July 2023.
3. World Health Organization. Global strategy to accelerate the elimination of cervical cancer as a public health problem. Geneva: World Health Organization; 2020. Available from: <https://apps.who.int/iris/bitstream/handle/10665/336583/9789240014107-eng.pdf>. Accessed on 2 July 2023.
4. Gupta P, Kaveeshwar M, Patil A. Awareness and knowledge of cervical cancer in medical and paramedical staff-an observational study. *Indian J Obstet Gynecol Res.* 2020;7(1):28-32.
5. Pandey D, Vanya V, Bhagat S, Vs B, Shetty J. Awareness and attitude towards human papillomavirus (HPV) vaccine among medical students in a premier medical school in India. *PLoS One.* 2012;7(7):e40619.
6. Alsous MM, Ali A, Al-Azzam S, Karasneh R, Amawi H. Knowledge about cervical cancer and awareness about human papillomavirus vaccination among medical students in Jordan. *Peer J.* 2021;9:e11611.
7. Radhika S, Najma RA, Bharadwaj I. Awareness of nursing students towards cancer and their comparison with medical students. *Int J Res Med Sci.* 2020;8:2542-6.
8. AbdAllah AAA, Hummeida ME, Elmula IMF. Awareness and attitudes of nursing students towards prevention of cervical cancer. *J HPV Cervic Cancer.* 2016;1:106.
9. Aswathy S, Quereshi MA, Kurian B, Leelamoni K. Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. *Indian J Med Res.* 2012;136(2):205-10.
10. Ghotbi N, Anai A. Assessment of the knowledge and attitude of female students towards cervical cancer prevention at an international university in Japan. *Asian Pac J Cancer Prev.* 2012;13(3):897-900.
11. Shetty S, Prabhu S, Shetty V, Shetty AK. Knowledge, attitudes and factors associated with acceptability of human papillomavirus vaccination among undergraduate medical, dental and nursing students in South India. *Hum Vaccin Immunother.* 2019;15(7-8):1656-65.
12. Chawla PC, Chawla A, Chaudhary S. Knowledge, attitude and practice on human papillomavirus vaccination: a cross-sectional study among healthcare providers. *Indian J Med Res.* 2016;144(5):741-9.
13. Ganju SA, Gautam N, Barwal V, Walia S, Ganju S. Assessment of knowledge and attitude of medical and nursing students towards screening for cervical carcinoma and HPV vaccination in a tertiary care teaching hospital. *Int J Community Med Public Health.* 2017;4:4186-93.
14. Swarnapriya K, Kavitha D, Reddy GM. Knowledge, attitude and practices regarding hpv vaccination among medical and para medical in students, India a cross sectional study. *Asian Pac J Cancer Prev.* 2015;16(18):8473-7.
15. Gismondi M, Augustine AM, Tahir Khokhar MAR, Khokhar HT, Twentyman KE, Florea ID, et al. Are medical students from across the world aware of cervical cancer, HPV infection and vaccination? A cross-sectional comparative study. *J Cancer Educ.* 2021;36(4):682-8.

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