

Assessment of Knowledge and Attitude on Human Papilloma Virus Infections, Cervical Cancer and HPV Vaccinations among Healthcare Students in a Tertiary Care Hospital, Tamilnadu

H. Sumayya Fathima¹, D. Sumetha Suga², V. Kalpana Devi³, B. Ananthi⁴

¹PG Resident, Department of Microbiology, ACS Medical College and Hospital, Tamilnadu, India

²Assistant Professor, Department of Microbiology, ACS Medical College and Hospital, Tamilnadu, India

³Professor, Department of Microbiology, ACS Medical College and Hospital, Tamilnadu, India

⁴Professor & HOD, Department of Microbiology, ACS Medical College and Hospital, Tamilnadu, India

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Corresponding Author: Dr. D. Sumetha Suga

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Abstract:

Introduction: According to estimates, there will be about 350,000 deaths from cervical cancer in 2022 and 660,000 new cases worldwide, making it the fourth most frequent malignancy among women. If caught early and given the right care, cervical cancer (CC) is a disease that can be prevented. The most important risk factor for CC is Human Papilloma virus (HPV) and the strains that are most frequently associated are HPV 16 and HPV 18. HPV vaccine can effectively prevent people from developing CC, if administered at the right time with appropriate age. Creating awareness about the route of transmission and role of HPV vaccination as preventive measures, will majorly contribute to the declination of incidence rate of cervical cancer case. Healthcare medical and paramedical students play a significant role as part of front-line support in delivering holistic care to patients. They act as a bridge between the community and health care sector. They play a major role in educating and creating awareness of Human Papilloma virus (HPV) infection, and its prevention. Hence this study was done to understand the knowledge and attitude of healthcare students towards HPV infection, cervical cancer and HPV vaccination.

Methodology: This study was designed as a cross-sectional questionnaire based study. Validated questionnaire tool was prepared and assessment was made among 630 healthcare students of the age group >18 years. Their knowledge and attitude regarding cervical cancer (risk factors, screening and prevention) and HPV was explored and analysis was done using SPSS software.

Results: 60.8% Healthcare students had knowledge that HPV can cause cervical cancer and 62.7% were aware that HPV vaccine can effectively prevent cervical cancer. The overall knowledge assessment showed that majority of the student group had below average score. 70 participants scored above average, 204 participants scored average and 356 participants scored below average. 14.6% girls were HPV vaccinated and 26.5% were not aware of their vaccination status. The study demonstrated a positive attitude towards willingness to get vaccinated and spreading awareness to friends and families. In our study, 76.9% of Male students were also aware that vaccination for HPV is also available for both gender.

Conclusion: The study results showed the need for educational and awareness sessions on HPV virus infections among healthcare students. Health care providers must share the knowledge to the students which can contribute majorly in spreading the awareness among young adults, patients and community regarding uptake of HPV vaccinations and prevention of acquiring HPV infection.

Keywords: Human Papilloma Virus infection, Healthcare students, cervical cancer, HPV vaccination.

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Introduction

Cervical cancer (CC) ranks as the 2nd most cancer among women between 15 and 44 years of age [1]. The incidence of cervical cancer cases has been projected to increase from 570,000 to 700,000 between 2018 and 2030, with the annual number of mortality projected to increase from 311,000 to 400,000 [2]. WHO has recommended all nations to strengthen strategies to eradicate cervical

carcinoma by 2030 and a combined policy of high coverage HPV vaccination for girls between 9–14 years of age group and affordable cervical cancer screening test for women belonging to 35–45 years of age can potentially reduce its impact as a public health problem [3]. Human papillomavirus (HPV) is the most common cause of CC [4]. HPV is a non-enveloped double stranded DNA virus belonging to

the family Papillomaviridae[5]. HPV16 and 18 variants are the high risk oncogenic viruses and contribute to 70% of CC and 6 and 11 strains are, low-risk viruses and produce benign genital warts and cervical lesions[6]. Thus, CC being a major health issue, warrants the need to spread awareness and sensitise women population through health education and creating awareness. A comprehensive approach is the need of the hour with components of early screening, diagnosis, treatment and preventive measures[7].

HPV vaccination holds a promising path for primary prevention of CC and HPV associated conditions[8]. The Indian Academy of Pediatrics Committee on Immunisation (IAPCOI) recommends HPV vaccine immunisation to all females who can afford[9]. Vaccine is more effective and protective when given prior to sexual debut that is before infection with HPV. It is recommended by the American College of Obstetricians and Gynecologists that all female patients between the ages of 9 and 26 who have not received their vaccination should be offered the HPV vaccine [9].

To achieve WHO global strategy of 90-70-90 by 2030, the dire need to educate and create awareness among healthcare students becomes a vital necessity. The healthcare students are the future frontline warriors who are the bridge between the community and healthcare sector, creating awareness and spreading the importance of HPV vaccination and Cervical carcinoma prevention among them will have an impact in the community, among their families and surrounding environment.

Hence the current study was designed to assess the knowledge and attitude on Human Papilloma Virus (HPV) infections and HPV vaccine among healthcare students.

Materials and Methods:

This study was designed as a cross-sectional questionnaire based study. The study population included 630 healthcare students from a medical and paramedical college in Chennai, Tamilnadu for duration of three months. After the Institutional Ethics Committee approval, Informed consent was obtained from all the participants before the commencement of the study. The questionnaire was distributed to all students who expressed their interest in participating in the survey.

Initially a pilot study was conducted by using the crafted questionnaire among 15 candidates. With the suggestions, feed backs and responses received, the questionnaire tool was reframed and was validated. The Validated questionnaire was used as the study tool. The Participants willing to take part in the survey were included. The study tool is composed of three sections i) Socio Demographic

profile, ii) knowledge assessment section iii) Attitude assessment towards HPV infection and vaccinations. The assessment of the knowledge was performed using a score-based method. One point was given for each correct answer and the points summed to create the score. The possible knowledge score ranged from 0 to 15 points; below average was a score of 0–7, average score was 8–10 and above average score was 11–15. Attitudes towards Human papillomavirus vaccination, was assessed using 5-point Likert-scale. Responses were categorized from 1-Strongly agree, 2-Agree, 3-Neutral, 4-Disagree, to 5-Strongly disagree. Scores from each participant were averaged, lower scores represented positive attitude and higher scores represented negative attitudes. Data was analysed using SPSS software version 28.0 and Excel. Values <0.05 were considered to be statistically significant.

Results:

Among the 630 participants, the mean age of the participants was 20 to 21 years. 64.3% of the participants were female participants and 45.1% of the participants belonged to Internship of college. 32.9% students opted internet as the source of information, 29.2% opted textbook as source of information. 4.9% of the students were educated by doctors about the HPV infections and vaccinations as mentioned in table 1.

As per Table 2, 87% of the students were aware of “what is a sexually transmitted infection” and 60.8% knew that HPV causes cervical cancer. 48.4% of students were aware that early onset of sexual life increases risk of cervical cancer. Students who had good knowledge about HPV vaccine, also agreed to that vaccination can effectively prevent cervical cancer. As per Table 3, the results demonstrated 50.6% positive attitude among participants regarding the HPV vaccines capability to protect against Cervical cancer. 44% agreed that vaccination is available and are willing to get vaccinated and 51.3% agree to recommend vaccination and spread awareness to friends and families. As per table 4, only 14.6% of the girl participants were HPV vaccinated and 26.5% were not aware of their vaccination status. Awareness among parents of the participants about HPV infection and its vaccination was only 22.9%. This may significantly be the cause for the low vaccination rate. 70 participants scored above average, 204 participants scored average and 356 participants scored below average.

Finally, 60% students agreed that all Gynaecologists, paediatricians, family physicians and primary care providers should recommend HPV vaccine to their patients. Statistical significant data was seen in Association between Knowledge score and demographic variables-gender and age as

per Table 5 and Association between knowledge and Gender as per Table 6.

Table 1: Distribution of subjects according to their Demographic Characteristics

Demographic detail	Frequency	Percentage (%)
Age:		
19	93	14.8
20	224	35.6
21	236	37.5
22	61	9.7
23	16	2.5
Gender:		
Male	225	35.7
Female	405	64.3
Year of Study:		
Third year	248	39.4
Final year	98	15.6
Internship	284	45.1
Source of information:		
Doctor	31	4.9
Formal education	73	11.6
Friends	35	5.6
Internet	207	32.9
Others	100	15.9
Textbook	184	29.2

Table 2: Knowledge of students regarding screening and preventive measures of cervical cancer

Questions	Response	Frequency	Percentage (%)
Do you know what a Sexually Transmitted Infections is?	Yes	548	87.0
	No	36	5.7
	Don't Know	46	7.3
Can HPV cause Cervical Cancer?	Yes	383	60.8
	No	60	9.5
	Don't Know	187	29.7
Does HPV affect both men and women?	Yes	425	67.5
	No	61	9.7
	Don't Know	144	22.9
Does early onset of sexual debut increases risk of Cervical Cancer?	Yes	305	48.4
	No	85	13.5
	Don't Know	240	38.1
Does HPV cause Herpes infections?	Yes	231	36.7
	No	143	22.7
	Don't Know	256	40.6
Do you know what Pap smear is?	Yes	272	43.2
	No	152	24.1
	Don't Know	206	32.7
Can HPV be transmitted by genital skin to skin contact?	Yes	295	46.8
	No	148	23.5
	Don't Know	187	29.7
What is the mode of transmission of cervical cancer?	Blood borne	54	8.6
	Injections	38	6.0
	Sexual contact	355	56.3
	Mother to newborn	16	2.5
	Don't know	167	26.5
Did you know there is a vaccine for HPV?	Yes	395	62.7
	No	70	11.1
	Don't Know	165	26.2
Can HPV vaccine effectively prevent most cervical cancer?	Yes	312	49.5
	No	76	12.1

	Don't Know	242	38.4
Is HPV vaccine most effective if given to people who have never had sex?	Yes	207	32.9
	No	96	15.2
	Don't Know	327	51.9
Does HPV vaccine cause significant side effects?	Yes	186	29.5
	No	150	23.8
	Don't Know	294	46.7
Are you vaccinated against HPV (atleast one dose) ?	Yes	92	14.6
	No	371	58.9
	Don't Know	167	26.5
Who should receive HPV vaccine?	Girls	83	13.2
	Boys	29	4.6
	Both	518	82.2
Do your parents know about HPV infections and vaccine?	Yes	144	22.9
	No	304	48.3
	Don't Know	182	28.9

Table 3: Attitude of students regarding screening and preventive measures of cervical cancer

Questions	Response	Frequency	Percentage (%)
HPV virus is serious and life threatening	Positive Attitude	397	63.0
	Neutral	194	30.8
	Negative Attitude	39	6.2
HPV vaccine is capable of preventing the occurrence of cervical cancer	Positive Attitude	325	51.6
	Neutral	264	41.9
	Negative Attitude	41	6.5
Willingness to receive HPV vaccine	Positive Attitude	277	44.0
	Neutral	254	40.3
	Negative Attitude	99	15.7
Recommend HPV vaccine to friends	Positive Attitude	323	51.3
	Neutral	239	37.9
	Negative Attitude	68	10.8
Gynaecologists, Treating Physicians and healthcare providers should recommend vaccine to their patients	Positive Attitude	378	60.0
	Neutral	213	33.8
	Negative Attitude	39	6.2

Table 4: Knowledge Score of the participants

Score	Frequency	Percentage (%)
Below average	356	56.5
Average	204	32.4
Above average	70	11.1
Total	630	100.0

Table 5: Association between Knowledge score and other demographic variables

Demographic variables	Knowledge score			p-value
	Below average	Average	Above average	
Gender:				0.008*
Male	145 (64.4%)	62 (27.6%)	18 (8.0%)	
Female	211 (52.1%)	142 (35.1%)	52 (12.8%)	
Age:				0.001*
19	57 (61.3%)	19 (20.4%)	17 (18.3%)	
20	129 (57.6%)	73 (32.6%)	22 (9.8%)	
21	136 (57.6%)	76 (32.2%)	24 (10.2%)	
22	29 (47.5%)	30 (49.2%)	2 (3.3%)	
23	5 (31.3%)	6 (37.5%)	5 (31.3%)	

Table 6: Association between knowledge and Gender

Questions	Gender		p-value
	Female	Male	
Can HPV cause cervical cancer			0.001*
Yes	267 (65.9%)	116 (51.6%)	
No	30 (7.4%)	30 (13.3%)	
Don't know	108 (26.7%)	79 (35.1%)	
Can HPV vaccine effectively prevent most cervical cancer?			0.028*
Yes	216 (53.3%)	96 (42.7%)	
No	48 (11.9%)	28 (12.4%)	
Don't know	141 (34.8%)	101 (44.9%)	
Are you vaccinated against HPV?			0.000*
Yes	55 (13.6%)	37 (16.4%)	
No	262 (64.7%)	109 (48.4%)	
Don't know	88 (21.7%)	79 (35.1%)	
Who should receive HPV vaccine?			0.000*
Girls	51 (12.6%)	32 (14.2%)	
Boys	9 (2.2%)	20 (8.9%)	
Both	345 (85.2%)	173 (76.9%)	

P-value < 0.05 is considered to statistically significant

Discussion

Cervical cancer being a preventable disease, still remains the second most common cancer in 15-44 years age group.[1] Vaccination of the target group acts as a primary prevention control measure.[18] This study aimed to determine the Knowledge and attitude related to HPV infection, vaccination and CC among healthcare students. The mean age of our participants was 20-21 years which was similar to the study conducted by Jyoti Singh et al among medical students.[9] In our study, ratio of male: female students was 36:64 which was similar to the study conducted by W.-C. Tung *et al* where the male: female ratio was 41:59 [16] and contrast to the study conducted by N. Akshoy *et al* where the male: female ratio was 28:72.[10]The questionnaire was answered maximally by internship students (45.7%) which was similar to the study conducted by N. Akshoy *et al* where internship students responded in major(38.9%).[10]

The knowledge about the HPV vaccinations and its disease progress was obtained from internet by 32.9% % followed by 29.2% via textbooks, which was similar to the study done by N. Akshoy *et al* (37.5% by social media), [10]and the result was in contrast with the study done by Jyotisingh *et al* where awareness obtained through textbook was 65.3%.[9]

60.8 % of students were knowledgeable that HPV causes CC which was similar to the study conducted by Priyadarshani *et al* where 58% of students had similar knowledge on CC. [19]

In a study conducted by Jyoti Singh *et al* 52.52% agreed that sexual contact is the common mode of

transmission of CC which was similar to our study. [9]

51.6% of male students were aware that HPV causes CC which was similar to the study conducted by J.M. Soares Junior *et al* where only 40% of male students had knowledge about CC.[11]42.7 % male students agreed that HPV vaccine can effectively prevent CC which was contrast to J.A. Goldfarb *et al* study in which 71.4% male respondents agreed.[4] 76.9% of our male students believed that both male and female are to be vaccinated with HPV vaccine ,while in N. Akshoy *et al* only 65.9% of male respondents agreed that both should receive HPV vaccine. Overall only 14.6 % of female students were vaccinated which was similar to N. Akshoy *et al* study where only 15.5% of female students were vaccinated.[10]

Cervical cancer can be eradicated through a multi-pronged approach that includes cervical screening and HPV vaccination programs. HPV vaccine has significantly reduced cervical cancer incidence by about 70% and provides protection against HPV related malignancies.[12,13]

Although 44% of respondents exhibited positive attitude to receive HPV vaccination, only 51% of students were willing to recommend the vaccine. Gynaecologists, treating physicians and primary healthcare providers should recommend vaccine to patients, which was strongly accepted by 60% of our respondents which was similar to study conducted by W.C. Tung *et al* (64%). As per the study conducted by Goruntla Narayana *et al* only 33% of treating physicians recommend HPV vaccine in their routine practice.[18]

Conclusion

Our study demonstrated significant knowledge gaps among healthcare students that need to be addressed, which can be provided through educational programs incorporated in our present Medical curriculum. As a solution to knowledge gaps, integrated teaching approach with frequent lectures and awareness sessions can be implemented emphasising need and benefit of HPV vaccination. The usage of internet is relatively high and can be channelized as a powerful tool for spreading awareness about HPV infection and HPV vaccination. Gynaecologists and healthcare providers have great opportunities to educate and guide patients and young adults to increase awareness and uptake of HPV vaccine for cancer prevention.

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