Section: Community Medicine

Original Research Article

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT HUMAN PAPILLOMA VIRUS VACCINATION AMONG UNDERGRADUATE FEMALE MEDICAL STUDENTS AT ONE OF THE MEDICAL COLLEGES OF WESTERN INDIA - A CROSS - SECTIONAL STUDY

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ABSTRACT

Background: Cervical cancer remains one of the leading cancers affecting women in India and is the second most common cancer among females aged 15–44 years. It contributes to nearly 14% of all cancers among women. The age-adjusted incidence rate is reported to be 27.0 per 100,000 women, while the age-adjusted mortality rate is 12.4 per 100,000 population. Considering the substantial disease burden and the preventive potential of Human Papillomavirus (HPV) vaccination, the present study was undertaken to assess the knowledge, attitude, and practices regarding HPV vaccination among undergraduate female medical students and to identify factors influencing vaccine uptake.

Materials and Methods: A cross-sectional study was carried out from January to August 2023 among 237 undergraduate female medical students from first to fourth MBBS at GCS Medical College. Participants were selected using a purposive sampling technique. Data were collected using a structured questionnaire to evaluate knowledge, attitude, and practices related to HPV infection and HPV vaccination.

Results: Among the 237 study participants, 14.3% were from the first MBBS, 32.1% from the second MBBS, 31.2% from the third MBBS, and 22.3% from the fourth MBBS. The majority of respondents were aged 21 years (30.8%), followed by 20 years (26.5%). More than half of the participants (54.0%) demonstrated average knowledge regarding HPV infection and vaccination, whereas 35.1% exhibited good knowledge. Although 78.4% of students agreed that HPV vaccination provides protection against cervical cancer, only 24.7% had actually received the vaccine. A statistically significant association was observed between awareness of the protective role of HPV vaccination and vaccination uptake among the participants ($p < 0.05$).

Conclusion: Adequate knowledge regarding the protective benefits of HPV vaccination does not necessarily translate into vaccine acceptance and uptake among medical students. Additional barriers beyond awareness appear to influence vaccination behaviour.

Keywords: HPV, cancer, vaccine, students, knowledge, infection.

INTRODUCTION

Cervical cancer remains a major public health concern and is the second most common cancer among women aged 15–44 years in India. It accounts for nearly 14% of all cancers affecting women in the country. The age-adjusted incidence rate is reported to be 27.0 per 100,000 women,

while the age-adjusted mortality rate is 12.4 per 100,000 population, highlighting the significant disease burden associated with this malignancy.[1] Human Papillomavirus (HPV) infection is one of the most common sexually transmitted infections worldwide and is recognized as the principal etiological factor for cervical cancer. In India, high-risk HPV genotypes, particularly HPV-16 and HPV-18, are responsible for a substantial proportion of cervical cancer cases.[2]

Recent estimates suggest that approximately 132,000 new cases of cervical cancer and nearly 74,000 related deaths occur annually in India, contributing to almost one-third of the global cervical cancer mortality burden.[3] The high mortality rate is largely attributed to inadequate healthcare infrastructure, limited access to screening facilities, delayed diagnosis, and insufficient awareness regarding preventive measures, including HPV vaccination. Unlike many other malignancies, cervical cancer is largely preventable because effective prophylactic vaccines are available against the causative viral infection. Currently, two HPV vaccines are licensed for use in India: the quadrivalent vaccine (Gardasil) and the bivalent vaccine (Cervarix).[4]

Medical students represent future healthcare providers and play a crucial role in educating the community regarding HPV infection, cervical cancer prevention, and vaccination. Their knowledge and perception regarding HPV vaccination can significantly influence future public health awareness and vaccine acceptance. Therefore, the present study was undertaken with the objectives of assessing the knowledge, attitude, and practices regarding HPV vaccination among undergraduate female medical students and identifying factors influencing HPV vaccine uptake among them.[5]

MATERIALS AND METHODS

A cross-sectional study was conducted between July and October 2023 among undergraduate female medical students from the first to fourth MBBS at GCS Medical College using a purposive sampling technique. The sample size was calculated using the formula $N = 4pq/d^2$, where the prevalence (p) was considered as 62.8%, based on the prevalence of high-grade cervical lesions (HSIL/CIN-2/CIN-3/CIS) reported in the HPV and Related Diseases Report, India 2023.[4] With q = 37.2% and the allowable error (d) set at 10% of the prevalence, the minimum required sample size was calculated to be 237 participants.

To ensure content and face validity, a pilot study was conducted among 20 fourth-year MBBS students. As no significant issues were identified, the questionnaire was used without modification. Data were collected using a self-administered, semi-structured questionnaire comprising 21 items designed to assess participants' knowledge, attitude, and practices regarding HPV infection, HPV-related diseases, and HPV vaccination. Students present on the day of data collection were included in the study after obtaining written informed consent. Those unwilling to participate were excluded. To minimize information bias, data collection was completed on a single day, and absent students were not approached subsequently.

The questionnaire included demographic information such as age, educational status, and marital status. Knowledge assessment covered awareness regarding HPV infection, its association with cervical cancer, modes of transmission, asymptomatic nature, preventive measures, vaccine availability, and accessibility. Attitude toward HPV vaccination was assessed using a five-point Likertscale ranging from strongly agree to strongly disagree. Practice-related questions evaluated vaccination status and factors influencing vaccine acceptance or refusal. The confidentiality of participant information was maintained throughout the study. Data were entered and analyzed using SPSS version 26 and Microsoft Excel 2021. Descriptive statistics were used to summarize the data as frequencies and percentages. Continuous variables were expressed as mean ± standard deviation or median, as appropriate. Associations between categorical variables were assessed using the Chi-square test. A p-value less than 0.05 was considered statistically significant. Ethical approval for the study was obtained from the Institutional Ethics Committee, GCS Medical College, vide approval number GCSMC/EC/Research Project/Approve/2023/618.

RESULTS

Table 1: Demographic Details of the Participants

Distribution of sample according to academic year(N=237)		
MBBS (Year)	**Frequency**	**Percentage (%)**
1st	34	14.3
2nd	76	32.06
3rd	74	31.22
4th	53	22.3
Distribution of sample according to age(N=237)		
18	23	9.7%
19	50	21.09%
20	63	26.5%
21	73	30.8%

22	19	8.01%
23	09	3.7%

A Cross-sectional study was conducted among undergraduate Female Medical students at GCS Medical College (1stto 4thyear students) with sample size of 237. The age group of the female medical students was 18-23 years of with mean age 20.18 +1.2. All of them were unmarried. Out of a total of 237 students, the maximum students (73, 30.8%) were 21 years and minimum (09, 3.7%) were 23 years of age.

Table 2:Knowledge score of respondents on awareness of HPV infection and it's vaccination (n=237)

Knowledge	Frequency	Percentage (%)
Poor Score (≤ 4)	13	5.4
Average Score (5-10)	128	54
Good Score (10-14)	96	35.1
Total	237	100

Knowledge about HPV infection- The term "knowledge" refers to one's understanding of specific facts relating to the person, place, or thing in question. For evaluation of knowledge, total 17 questions were asked to the participants which include the respondents' state of awareness about HPV Infection, its relationship with cervical cancers, asymptomatic nature, mode of transmission and prevention, vaccine availability and accessibility. Each question has given 1. So, according to that scoring is given out of 14(5). For ≤4 - poor score, For 5 to 9 – Average and for 10 to 14 – good score. Out of a total of 237 participants 128, 54% had good score (10-14) while only 13, 5.4% got poor score (≤ 4). While evaluating knowledge about the cancers spread by HPV infection apart from cervical cancer, 151, 39.1% of participants replied of vulval cancer while 99, 25.62% and 94, 24.35% of participants replied for anal cancer and penile cancer respectively. Only 19, 4.98% of participants were unaware of any cancer.

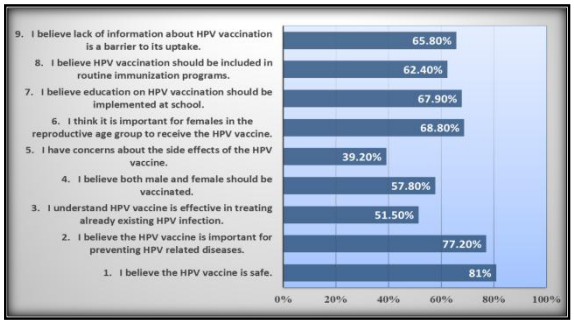

Figure 1: Assessment of The Attitude towards HPV vaccination (n=237) (multiple options)

Attitude towards HPV vaccination: Attitude towards HPV vaccination with multiple options, out of total 237, majority around 192, 81% participants believed that HPV vaccine is safe and 183, 77.20% believed that HPV vaccine is important for preventing HPV related diseases. Around 163, 68.8% believed that it is important for females in the reproductive age group to receive the HPV vaccine and 161, 67.9% asked to include it in routine immunization session. Around 156, 65.8% participants believed that lack of information about HPV vaccination is a barrier to its uptake. While only 93, 39.20% participants concerned about side effects of the HPV vaccine.

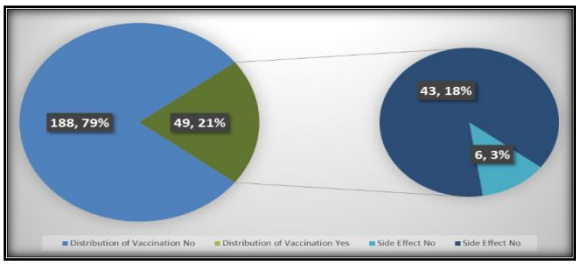

Figure 2:Distribution of the HPV vaccination practice (n=237) and Side effects (n=49)

Practice towards HPV vaccination: In accessing the practice towards HPV vaccination, out of 237 participants 188, 79% did not receive the vaccine but 16% of them were willing to receive the vaccine in future. Out of 49, 21% participants who received the HPV vaccine only 6, 3% had the side effects.

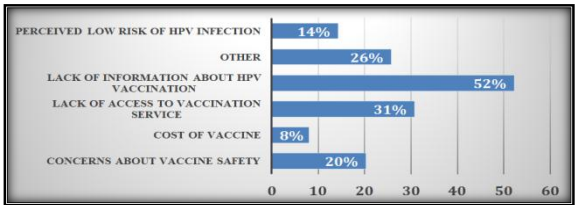

Figure 3:Reason for not getting vaccine (n=188), (multiple option)

In the reasons for not getting vaccinated around 27, 52% participants replied about lack of information about HPV vaccination and 16, 31% were unaware about access of vaccine services. While Only 4, 8% participants concerned about high cost of the vaccine.

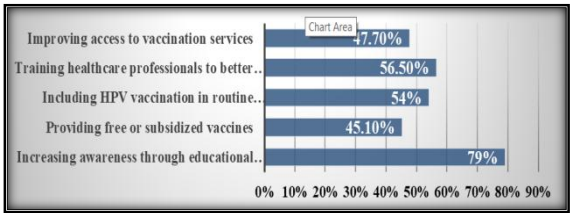

Figure 4:Opinion of Respondents Regarding to Increase the Vaccination (N=237) (multiple option)

While asking about opinion of respondents regarding to increase the vaccination with multiple option (n=237), about 188, 79% participants need to increase the awareness about HPV vaccination through educational campaign while 134, 56.50% responded to train the healthcare professionals for better education and promotion of HPV vaccination. While 107, 45.10% participants demanded free or subsidized rate of the vaccine.

Table 3:Association between the Student Having Knowledge about the Vaccination Protection and Their Practice towards Vaccination

Opinion for Vaccine Protection	Vaccine			
	Taken	Not taken	Total	Chi square=4.63 P value =0.03* <0.05
Agree	44 (23.65%)	142(76.3%)	186(78.4%)	
Disagree	05 (09.8%)	46(90.2%)	51(21.5%)	
Total	49(20.7%)	188(79.3%)	237(100%)	

For the opinion of the participants for having knowledge about the vaccination protection and their practice towards vaccination, out of 49 (20.7%) who have taken the vaccine 44, (23.65%) agreed for it. Out of 188(79.3%) who have not taken the vaccine, 142(76.3%) participants were agreed for it. So, it shows statistically significant association between the knowledge about vaccination and its practice. (Chi square=4.63 with P value =0.03* <0.05).

Table4:Association Between Academic Year and Practice for Vaccination

Academic Year	Vaccine		Total	
	Taken	Not Taken		
1st	6(17.6%)	28(82.3%)	34(14.34%)	Chi square value=7.793 P value = 0.051>0.05
2nd	17(22.3%)	59(77.3%)	76(32.06%)	
3rd	9(12.16%)	65(87.83%)	74(31.22%)	
4th	17(32.07%)	36(67.92%)	53(22.36%)	
Total	49(20.67%)	188(79.32%)	237(100%)	

Out of 34(14.34%) participants from 1st academic year, only 6(17.6%) have taken the vaccine. Out of 76(32.06%) from 2nd academic year, 74(31.22%) from 3rd academic year, 9(12.16%) and
Out of 53(22.36%) from 4th academic year, only 17(22.3%), 9(12.16%) and 17(32.07%) participants respectively taken the vaccine. There is no association found between academic year and practice for vaccination. (Chi square value=7.793with P value = 0.051, >0.05).

DISCUSSION

This study aimed to measure the levels of knowledge, attitudes, and practices of undergraduate Female Medical students regarding cervical cancer, HPV and the HPV vaccine.[6,7] The medical students did not know the incidence of cervical cancer in India, but they could relate its association with cervical cancer.[8] A Cross-sectional study was conducted among undergraduate Female Medical students at GCS Medical College (1stto 4thyear students) with sample size of 237.[9] The age group of the female medical students was 18-23 years of with mean age 20.18+1.2. Over all the students had average knowledge about HPV infection and vaccination.[10] Apart from cervical cancer, 151, 39.1% of participants replied of vulval cancer while 99,25.62% and 94,24.35% of participants replied to anal cancer and penile cancer respectively while in similar study by Mehta et al Forty four percent of the students answered that HPV causes vulval, penile, oral and vaginal cancers.[11] Among the study, out of 237 participants 188, 79% did not receive the vaccine while in study by Seshaiyengar CT et al, 81% participants were not vaccinated.[12] In current study, only 49, 21% participants received the HPV vaccine while in a study by Davis et al,412 (40.9%) respondents had received at least one dose of an HPV Vaccine.[13] In the present study, out of 188(79.3%) who have not taken the vaccine, 142(76.3%) participants were agreed to vaccinate themselves where in a study by Singh et al, most of the females (350, 91.4%) unwilling to vaccinate themselves.[14] With half of the participants (128,54%) scored average in knowledge about HPV vaccine, the study found generally low practice scores, only 49,21% have taken the HPV vaccine while in study.[15]

Limitations:

Our study had some limitations. First, we included female medical students from only one medical college of Ahmedabad city. Second, only female medical students were included from the medical college.

CONCLUSION

About half (54%) of the of respondents have an average knowledge about HPV infection and vaccination and 35.1% have a good score. Out of 237 students majority (78.4%) agreed with the HPV vaccination protection towards cervical cancer but only around one fourth (24.7%) student has taken the vaccine. So, it concludes that having knowledge for vaccine protection against the HPV infection is not sufficient for the student to get vaccinated.

Recommendation: Vaccination should be provided to all eligible female students from the teaching institute, nearby hospitals or PHC etc. As per the responses, availability and accessibility of vaccine is needed for the student to get vaccinated. Awareness for HPV infection can be given to students through educational institute.

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