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Knowledge Attitude and Practice regarding Cervical Cancer and HPV Vaccination among Medical Students in India: A Cross - Sectional Study

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Abstract: ***Background: Global strategy to accelerate the elimination of cervical cancer as a public health problem. SDG 2030 target - 3.4 is 30% reduction in mortality from cervical cancer. The objective of the study to assess the knowledge among medical student about cervical cancer and HPV vaccination. Method: A cross - sectional study was done on 198 MBBS students from 1st and 3rd year. Questionnaire was used which consisted of 33 questions of multiple - choice type and results were analyzed using percentages and chi square test. P value <0.05 was considered significant. Results: The knowledge regarding cervical cancer was 80 (82%) in male and 84 (84%) in female.67 (69%) of males and 71 (71%) had knowledge about cervical cancer preventive measures. Knowledge regarding HPV vaccine was 61 (63%) males, 63 (63%) females with no statistically significant association. Complete vaccination status was seen in 2 (2.04%) male students and 11 (11%) female students with a p value of 0.010 and this association was statistically significant.1 (1%) male student and 14 (14%) female student received incomplete vaccination.78 (79%) males and 91 (91%) females were willing to get vaccinated with HPV vaccine with p value 0.001, and the association was statistically significant. Conclusion: There was good knowledge among medical students regarding cervical cancer, its prevention, and HPV vaccine in both males and females. Willingness to get vaccinated in male students was less compared to female students.***

Keywords: CC - Cervical cancer, HPV - Human Papilloma Virus, SDG sustainable development goals

1. Introduction

Cervical cancer is the fourth most common cancer among women globally, with an estimated 604 000 new cases and 342 000 deaths in 2020 [1]. Cervical cancer is the second commonest cancer among female in India and Human Papilloma Virus (HPV) is an important causative agent of the disease [2]. India has a population of 436.76 million women, aged 15 years and older, who are at the risk of developing cervical cancer of which annually, 1, 22, 844 women are diagnosed with cervical cancer and 67, 477 die due to cervical cancer [2]. cervical cancer is caused by the human papilloma virus (HPV); HPV - 16 and HPV - 18 are predominantly responsible for 70%–80% of the total cases [2]. Based on Indian studies, about 82.7% of invasive cervical cancers have shown the presence of HPVs 16 or 18 [2.] As evidence, cervical cancer is a major public health issue in India which creates the need to spread awareness among the female population regarding its risk factors and preventive measures. Cervical cancer can be prevented and cured through a comprehensive approach comprising of prevention, early diagnosis, application of various screening methods and treatment measures [3] The health care professionals play a vital role in prevention and spreading awareness regarding cervical cancer and HPV vaccines. Health care professional's including the paramedical staff comprise the most visible front - line personnel providing health education to the patients and the general population [4]. Recent advances in technology have led to introduction of HPV vaccine to prevent HPV infection, which will directly help in reducing the incidence of cervical, ano - genital cancers and genital warts. Vaccination is also recommended for boys as it is also implicated in penile, ano - rectal and oral cancer. Males also have a role in transmission of HPV infection to females [5]. As the HPV vaccine is a recent introduction and is targeted towards 9 - 26 age group, the awareness about this vaccine in the general population appears to be less.9 - 14 years is the ideal age for administering this vaccine because it provides maximum immunogenicity of the vaccine at that age [6] In a study conducted in Mangalore among medical students, 78.35% students were aware about cervical cancer prevention; 82.47% were aware that cervical cancer is caused by virus; 74.22% were aware about the availability of the vaccine [7]. In a study conducted in Manipal among medical students, only 28.4% of male students were aware that there is a need for vaccination in men [8]. The HPV vaccine is a newer addition in the universal immunization schedule. Hence its awareness is less compared to other vaccines. There is a need to create awareness among medical students as they are the future doctors who will work for the betterment of the society. The current study was done to assess the awareness and knowledge regarding Cervical cancer and HPV Vaccination and also to know about the acceptability of HPV vaccination among medical student.

The present study was done with the following objectives:

1) To assess the knowledge regarding cervical cancer and HPV vaccination.
2) To seek the attitude towards getting vaccinated.
3) To know the vaccination status among the medical students.

2. Materials and Methodology

A cross sectional observational study was conducted on students of First and third year MBBS (128 and 70 respectively) studying in Terna medical college, Navi Mumbai. During the period of 1st November - 31st December 2022. The study was approved by institutional ethical committee.

Inclusion criteria was students willing to participate in the study, Exclusion criteria was those who were not willing to participate in the study. After obtaining written informed consent, questionnaire was administered to students. Data

was collected by using pre - designed, pre - tested self - reported questionnaires.

Questionnaire consisted of 33 questions out of which, 10 questions assessed knowledge about cervical cancer, 8 questions assessed knowledge about its preventive measures, 11 questions assessed knowledge about HPV vaccinations, 2 questions assessed attitude and 2 questions assessed practice regarding HPV vaccination. The assessment of knowledge was done using a score - based method. A correct response to each question was given 1 point and incorrect answer or don't know was given 0 point. Percentages based on correct answers were calculated and compared for each question separately for both male and female students and also compared between 1st and 3rd year students. Data was analyzed using Statistical Package for Social Sciences (SPSS) ver.20.0 software.

chi - square test was applied to test the association between the baseline characteristics and the score was obtained. p value< 0.05 was considered to be statistically significant.

3. Results and Discussion

Out of 198 medical students who participated, 98 (49.5%) were males and 100 (50.5%) were females while 128 (64.65%) students were from 1st year and 70 (35.35%) were from 3rd year. The ages ranged from 17 - 25 years and the mean age was 20 years with standard deviation of +1.7920

Table 1: knowledge of students regarding cervical cancer.

Questions	Male N (%)	Female N (%)	Chi square	P value	1st year N (%)	3rd year N (%)	Chi square	P value
1) Cervical cancer is preventable	94 (95%)	100 (100%)	4.166	0.058	125 (97%)	69 (98%)	0.191	1
2) Virus is the etiology of cervical cancer	94 (95%)	92 (92%)	1.335	0.248	118 (92%)	68 (97%)	1.952	0.162
3) HPV is the causative agent for cervical cancer	92 (93%)	95 (95%)	0.119	0.730	120 (93%)	67 (95%)	0.335	0.564
4) Mode of transmission of cervical Cancer	85 (86%)	85 (85%)	0.123	0.726	110 (85%)	60 (85%)	0.002	0.966
5) Cervical cancer be identified in the early Stages	84 (85%)	79 (79%)	1.207	0.272	102 (79%)	61 (87%)	2.386	0.122
6) long term use of hormonal contraceptives is a risk factor	72 (73%)	74 (74%)	0.007	0.932	94 (73%)	51 (72%)	0.781	0.377
7) Early sexual intercourse is a risk factor	54 (55%)	65 (65%)	5.126	0.024	59 (46%)	60 (85%)	29.624	0.000
8) Multiple sexual partners are a risk factor	82 (83%)	91 (91%)	1.923	0.166	106 (82%)	67 (95%)	6.329	0.012
9) Poor personal genital hygiene is a risk factor	88 (89%)	95 (95%)	1.914	0.166	116 (90%)	64 (91%)	1.674	0.196
10) smoking is a risk factor	65 (66%)	65 (65%)	0.039	0.844	72 (56%)	58 (82%)	14.207	0.000
Total Questions	80 (82%)	84 (84%)	0.195	0.659	101 (79%)	56 (80%)	0.33	0.856

Table 1, shows that in the present study, about 95 - 100% of respondents said that cancer cervix is preventable.92 (93%) male respondents and 95 (95%) female respondents were aware that HPV virus causes cervical cancer. In the study conducted by Tripathy et al 94.3% of students implicated that HPV is a causative agent of cervical cancer, which is similar to the present study [9]. In a study conducted by Gollu et al 67 (95.7%) males and 79 (98.8%) females. Whereas 66 (97.1%) from 2nd year and 80 (97.6%) from 3rd year knew that cervical cancer is caused by HPV virus [10]

54 (55%) male and 65 (65%) female gave correct response for early sexual intercourse as a risk factor for cervical cancer and this association was found statistically significant.

While 106 (82%) and 64 (95%) respondents of 1st and 3rd year respectively said multiple sexual partners as a risk factor for cervical cancer which was also found statistically significant. In general, among the respondents 80 (82%) males and 84 (84%) females, whereas 101 (79%) from 1st year and 56 (80%) 3rd year had correct knowledge regarding cervical cancer. (Table1)

Table 2: Knowledge of students regarding preventive measures of cervical cancer.

Questions	Male N (%)	Female N (%)	Chi square	P value	1st year N (%)	3rdyear N (%)	Chi square	P value
1) various screening techniques								
PAP	84 (85%)	79 (79%)	0.935	0.334	96 (75%)	67 (95%)	0.695	0.404
VIA	12 (12%)	11 (11%)	1.043	0.307	1 (0.78%)	22 (31%)	0.045	0.831
VILI	9 (9.1%)	10 (10%)	0.038	0.845	2 (1.5%)	17 (24%)	26.934	0.000
Don't know	11 (11.2%)	18 (18%)	1.818	0.178	28 (21%)	1 (1.4%)	15.33	0.000
2) The screening interval	40 (40%)	42 (42%)	0.029	0.866	57 (44%)	25 (35%)	1.450	0.229
3) Sexual relationship with a single partner	89 (90%)	93 (93%)	0.318	0.573	115 (89%)	67 (95%)	2.100	0.147
4) Personal genital hygiene	95 (96%)	99 (99%)	1.062	0.303	125 (97%)	69 (98%)	0.191	0.662
5) Vaccination	87 (88%)	95 (95%)	2.58	0.108	115 ((89%)	67 (95%)	2.100	0.147
6) Regular scanning for cervical cancer	95 (96%)	95 (95%)	0.480	0.488	123 (96%)	67 (95%)	0.017	0.897
7) Barrier methods for contraception	94 (95%)	97 (97%)	0.170	0.680	124 (96%)	67 (95%)	0.179	0.672
8) Good nutrition	79 (80%)	89 (89%)	2.709	0.100	106 (82%)	62 (88%)	1.167	0.280
Total Questions	67 (69%)	71 (71%)	0.162	0.687	86 (67%)	52 (75%)	1.080	0.299

Table 2 shows, 84 (85%) male respondents against 79 (79%) female respondents were aware of PAP smear as one of the screening techniques while 96 (75%) of 1st year against 67 (95%) of 3rd year respondents were aware of PAP smear as one of the screening technique. But only 35 - 45 % respondents were aware of the right screening interval. In

general, 67 (69%) of male respondents and 71 (71%) female respondents had correct knowledge about the various preventive measures of cervical cancer. While 86 (67%) 1st year respondents as compared to 52 (70%) 3rd year respondents were aware of the right preventive measures. The knowledge about preventive measures among the respondents was not statistically significant (p>0.05). (Table 2)

Table 3: Knowledge of Students Regarding Cervical Cancer Vaccine

Questions	Male N (%)	Female N (%)	Chi square	P value	1st year	3rd year	Chi square	P value
1) Vaccines are available in India	89 (90%)	99 (99%)	6.91	0.009	121 (94%)	67 (95%)	0.132	0.716
2) Types of vaccines available in India	65 (66%)	65 (65%)	0.039	0.844	73 (57%)	57 (81%)	11.94	0.001
3) Both boys and girls can be vaccinated	48 (48%)	47 (47%)	0.078	0.780	61 (47%)	34 (48%)	0.015	0.902
4) Age for vaccination	75 (76%)	87 (87%)	3.647	0.056	112 (87%)	50 (71%)	7.857	0.005
5) No. of doses required for age 9 - 14yrs	55 (56%)	50 (50%)	0.745	0.388	72 (56%)	33 (47%)	1.507	0.220
6) No. of doses required for age 15 yrs and above	27 (27%)	30 (30%)	0.145	0.704	43 (33%)	14 (20%)	4.07	0.043
7) Vaccine can be given to sexually active girls	91 (92%)	89 (89%)	1.447	0.229	114 (89%)	66 (94%)	1.170	0.279
8) No screening is required before vaccination	44 (44%)	48 (48%)	0.191	0.662	58 (45%)	34 (48%)	0.193	0.660
9) Vaccine can be administered to those infected with HPV	60 (61%)	59 (59%)	0.102	0.749	74 (57%)	45 (64%)	0.791	0.374
10) Post vaccination one cannot have multiple sexual partners	64 (65%)	58 (58%)	1.117	0.291	78 (60%)	44 (62%)	0.071	0.791
11) Cervical cancer screening is required following vaccination	69 (70%)	63 (63%)	1.222	0.269	81 (63%)	51 (72%)	1.867	0.172
Questions Total	61 (63%)	63 (63%)	0.012	0.913	63 (62%)	37 (64%)	0.025	0.875

Above table 3 shows, 89 (90%) male respondents and 99 (99%) female respondents were aware of availability of vaccine for it in India and the association was found statistically significant (p<0.05) (table 3). A study conducted by Pandey et al. showed that 65.7% males and 83.1% females knew about the availability of HPV vaccine [8].

73 (57%) 1st year compared to 57 (81%) 3rd year respondents gave the correct response about types of vaccine available in India and this association was statistically significant (p<0.05) (table 3).

112 (87%) 1st year as compared to 50 (71%) 3rd year respondents were knowing about the correct age group for vaccination and the association was statistically significant (p<0.05). The correct response for the number of doses required for age 15 yrs. and above was given by 43 (33%) 1st year and 14 (20%) 3rd year respondents and this association was statistically significant (p<0.05) (Table 3) The significant association between 1st year students and the correct knowledge about the age group of vaccination and number of doses required for age 15 yrs and above may be because of other sources of knowledge like word of mouth, internet, magazine etc.

Table 4: Attitude towards HPV Vaccination

Questions	Male N (%)	Female N (%)	Chi square	P value	1st year N (%)	3rd year N (%)	Chi square	P value
1) Willingness to get vaccinated	78 (79%)	91 (91%)	11.623	0.001	112 (87%)	57 (81%)	0.582	0.445
2) Recommendation of vaccination to others	93 (94%)	96 (96%)	0.709	0.598	120 (93%)	69 (98%)	0.995	0.319

Table 4, revealed that 91 (91%) female as compared to 78 (79%) male respondents were willing to get vaccinated and this association was statistically significant (p<0.05).1St year respondents were showed more willingness for vaccination compared to 3rd year respondents (Table 4). In a study done by Mehta et al 88% showed willingness to get vaccinated [11]. Among the respondents, 93 (94%) males and 91 (91%) females were ready to recommend the vaccine to others. In a study conducted by Singh et al 85.55% students showed willingness for HPV vaccination [12].3rd year respondents were showed more willingness for recommending vaccination to others as compared to 1st year respondents (Table 4). This reflected the fact that only 79% males were willing to get vaccination for themselves compared to 94% males willing to advice vaccination to others. In a study conducted by Fu et al. among medical students in Chong - qing, China, 57.2% males and 78.5% females were willing to receive or advise HPV vaccination [13]. In a study conducted by Berenson et al. in U. S. among 231 medical students, 81 (66.4%) female students and 16 (14.7%) male students reported initiating the vaccine [14].

Table 5: Practice of HPV Vaccination

Questions	Male N (%)	Female N (%)	Chi square	P value	1st year N (%)	3rd year N (%)	Chi square	P value
1) Completed full course of vaccination	2 (2%)	11 (11%)	6.678	0.010	5 (3%)	8 (11%)	4.101	0.043
2) Initiated vaccination	1 (1%)	14 (14%)	12.351	0.000	5 (3%)	10 (14%)	7.233	0.007

Though in the present study, among the respondents 80 (82%) males and 84 (84%) females, whereas 101 (79%) from 1st year and 56 (80%) 3rd year had correct knowledge regarding cervical cancer as well as 91 (91%) females as compared to 78 (79%) male respondents were willing to get HPV vaccine, only 2 (2%) of the male and 11 (11%) females were fully vaccinated (table 5). Also, 1 (1%) male student and 14 (14%) female students was found to have taken partial course of

vaccination and this was statistically significant shown in Table 5. Study conducted by Gollu et al showed 1 (1.42%) male student had received partial course of vaccination with 3 (4.3%) of the males had received complete vaccination while 1 (1.25%) females had received partial course of vaccination and 11 (13.8%) had received complete course of vaccination [10]

The implementation of knowledge and actual practice of taking HPV vaccine was found less among the male and female respondents as well as 1st year and 3rd year respondents. So the targeted health education interventions may have huge positive impact not only on the acceptance of vaccination in general, but also on their intention to recommend the vaccine for others.

4. Conclusion

Awareness and knowledge about cervical cancer its preventive measures and HPV vaccination was good among students. Vaccination status is poor among both males and females. Willingness to get vaccinated in male students was less compared to female students. Hence, there is a need to motivate male students towards vaccination. Therefore, more awareness has to be created about HPV vaccine among medical students through emphasis in the curriculum.

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