ORIGINAL ARTICLE

Awareness about human papillomavirus as a cause of cervical cancer and its prevention in the undergraduate female students of Karachi

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Abstract

Objective: To determine the rate of acceptance of human papillomavirus vaccine for prevention of cervical cancer, and to identify causes of its low acceptance and means of encouraging its uptake.

Methods: This cross-sectional study was conducted at five different universities of Karachi, from July to December 2011, and comprised female undergraduate students. The participants, aged between 17-26 years, were in their first four years of undergraduate studies, and were selected from five universities. The distributed questionnaire included queries related to demographic information, knowledge and attitude about sexually transmitted diseases, cervical cancer, human papillomavirus and its vaccine. SPSS 20 was used for data analysis.

Results: Of the 1,277 participants, 1,038(81.3%) filled in the questionnaires correctly. Of them, the awareness level regarding sexually transmitted diseases, cervical cancer, human papillomavirus, and human papillomavirus as a cause of cervical cancer was 863(83.1%), 483(51.3%), 244(23.5%), and 138(13.3%), respectively. Moreover, 200(19.3%) participants were aware of the vaccine and 13(1.3%) had had themselves vaccinated.

Conclusion: Few respondents were aware of all the three topics, i.e. sexually transmitted diseases, cervical cancer and human papillomavirus.

Keywords: Cervical cancer, Pap smear, Human papillomavirus, Human papillomavirus vaccine. (JPMA 67: 27; 2017)

Introduction

Cervical cancer is the fourth most common cancer in females, and the seventh most common cancer overall.[1] Around 85% of these cases occur in developing countries.[1] An estimated 266,000 deaths occurred due to cervical cancer in 2012 worldwide, accounting for 7.5% of all female cancer deaths. Almost nine out of ten (87%) cervical cancer deaths occur in the less developed regions.[1] In Pakistan, the incidence rate of cervical cancer is 6.2%, mortality rate is 5.5% and the 5-year prevalence is 6.7%.[1,2] It is the third-most common cancer in females in Pakistan.[3]

Human papillomavirus (HPV) is the main aetiological agent responsible for cervical cancer.[4] Although the Papanicolaou smear test (Pap smear) can be an effective screening method,[5] a vaccination programme along with screening can help to markedly reduce the incidence further as HPV vaccines help prevent infection against HPV, including types 16 and 18 which cause most of the cases of cervical cancer.[6]

Since cervical cancer has a high rate of incidence in Pakistan, it is crucial not only to detect it in its early stages but to provide people with preventative strategies including vaccinations. The current study was planned to determine the rate of acceptance of HPV vaccine for prevention of cervical cancer in undergraduate female students, to identify causes of its low acceptance and means of encouraging its uptake. Although this study has been conducted previously, it has not been conducted in our set-up on such a large scale,[7] nor does it encompass the details of both the cancer and the vaccine in one survey.[8]

Subjects and Methods

This cross-sectional, questionnaire-based study was conducted at five different universities in Karachi, from July to December 2011, and comprised undergraduate female students. Approval for the study was obtained from the institutional review board of Dow University of Health Sciences (DUHS). Questionnaires were distributed at five universities, each representing one field of study - Medicine, Engineering, Arts, Business and Humanities, which included the departments of English language and Education. Two of the universities were private, two were government and one was semi-private entity. The sample size was taken from each university's administrative office to determine the sample size for each institute. Total female population was 394 in the electrical engineering and information technology departments of the engineering institute, 408 in the English and Education departments of the humanities institute, 207 in the arts

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institute, 230 in the medical institute, and 204 in the business institute. The sample size was calculated using confidence level of 95% and confidence interval of 2, with the help of an online calculator.[9] Only females within the age of 17-26 years who were in their first four years of undergraduate studies were included in the study as the recommended age for HPV vaccination is 9-26 years.[10] The third- and fourth-year students of the medical school were off-site and were excluded.

Permission was taken from the institutes concerned before distribution of the forms, and a basic introduction to the study was given by the investigators. Informed consent was taken from all participants before the forms were filled, which were anonymised. The questionnaire was self-administered and was distributed using quota sampling. It was in the English language and the need for translation into Urdu was not felt as it was conducted in an educated group of students. The questionnaire had a total of 38 questions and comprised four sections - personal profile including demographic information, and knowledge and attitude regarding sexually transmitted diseases (STDs), cervical cancer, HPV, and the acceptance regarding the vaccine.

The data was entered into Microsoft Excel and then exported to SPSS 20 for analysis. Descriptive statistics were used to analyse the data including mean, standard deviation and frequency distribution.

Results

Of the 1,277 participants, there were 339(26.5%), 349(27.3%), 191(14.9%), 210(16.4%), 188(14.7%) in engineering, humanities, arts, medicine and business institutes, respectively. Questionnaires were distributed to all of them. After removing incomplete forms, the number came down to 1038(81.3%), which was used for the final analysis. Of them, 170(16.4%) were business students, 150(14.5%) were art students, 165(15.9%) were medical students, 266(25.6%) were engineering students and 287(27.6%) were from humanities departments. The mean age of the respondents was 20.62±1.54 years. Unmarried respondents were 999(96.2%) while 39(3.8%) were married. The most common source for general information was television 697(67.1%).

When questioned regarding the awareness of STDs,

Table-1: Awareness regarding sexually transmitted diseases (STDs), cervical cancer, human papillomavirus (HPV), HPV as a risk factor for cervical cancer, and HPV vaccine, and acceptability of Pap smear according to the universities.

		Institute				
		Business N (%)	Medicine N (%)	Humanities N (%)	Engineering N (%)	Arts N (%)
Do they know what an STD is?	Yes	166 (97.6%)	165 (100.0%)	220 (76.7%)	169 (63.5%)	143 (95.3%)
	No	4 (2.4%)	0 (0.0%)	67(23.3%)	97 (36.5%)	7 (4.7%)
Have They Heard Of Cervical Cancer?	Yes	112 (65.9%)	159 (96.4%)	106 (36.9%)	70 (26.3%)	85 (56.7%)
	No	58 (34.1%)	6 (3.6%)	181 (63.1%)	196 (73.7%)	65 (43.3%)
Can It Be Prevented?	Yes	54 (31.8%)	117 (70.9%)	72 (25.1%)	58 (21.8%)	29 (19.3%)
	No	3 (1.8%)	5 (3.0%)	11 (3.8%)	21 (7.9%)	19 (12.7%)
	Don't Know	113 (66.5%)	43 (26.1%)	204 (71.1%)	187 (70.3%)	102 (68.0%)
Can It Be Cured?	Yes	44 (25.9%)	81 (49.1%)	56 (19.5%)	64 (24.1%)	32 (21.3%)
	No	14 (8.2%)	21 (12.7%)	17 (5.9%)	20 (7.5%)	10 (6.7%)
	Don't Know	112 (65.9%)	63 (38.2%)	214 (74.6%)	182 (68.4%)	108 (72.0%)
Have They Heard Of HPV?	Yes	12 (7.1%)	152 (92.1%)	31 (10.8%)	30 (11.3%)	19 (12.7%)
	No	158 (92.9%)	13 (7.9%)	256 (89.2%)	236 (88.7%)	131 (87.3%)
Aware that HPV is a risk factor?	Yes	6 (3.5%)	104 (63.0%)	11 (3.8%)	9 (3.4%)	8 (5.3%)
	No	164 (96.5%)	61 (37.0%)	276 (96.2%)	257 (96.6%)	142 (94.7%)
Would They Go For A Pap Smear?	Yes	111 (65.3%)	119 (72.1%)	108 (37.6%)	82 (30.8%)	84 (56.0%)
	No	59 (34.7%)	46 (27.9%)	175 (61.0%)	182 (68.4%)	65 (43.3%)
	Pap Done	0 (0.0%)	0 (0.0%)	4 (1.4%)	2 (0.8%)	1 (0.7%)
Are They Aware Of An HPV Vaccine	Yes	13 (7.6%)	104 (63.0%)	27 (9.4%)	39 (14.7%)	17 (11.3%)
	No	157 (92.4%)	61 (37.0%)	260 (90.6%)	227 (85.3%)	133 (88.7%)
Have They Gotten This Vaccination	Yes	1 (0.6%)	5 (3.0%)	1 (0.3%)	5 (1.9%)	1 (0.7%)
	No	169 (99.4%)	160 (97.0%)	286 (99.7%)	261 (98.1%)	149 (99.3%)

N: Frequency
%: Percentage
STD: Sexually transmitted disease
HPV: Human papillomavirus.

Table-2: Frequency of vaccine acceptance according to the level of knowledge of aetiology of cervical cancer and its prevention.

		Would You Opt for the HPV Vaccination?			
		Yes N (%)	No N (%)	Already Vaccinated N (%)	Total N (%)
Marital Status of the Respondent	Single	561 (54.05%)	426 (41.04%)	12 (1.16%)	999 (96.24%)
	Married	17 (1.64%)	21 (2.02%)	1 (0.10%)	39 (3.76%)
Institute	Business	119 (11.46%)	50 (4.82%)	1 (0.10%)	170 (16.38%)
	Medicine	131 (12.62%)	29 (2.79%)	5 (0.48%)	165 (15.90%)
	Humanities	138 (13.29%)	148 (14.26%)	1 (0.10%)	287 (27.65%)
	Engineering	105 (10.12%)	156 (15.03%)	5 (0.48%)	266 (25.63%)
	Arts	85 (8.19%)	64 (6.17%)	1 (0.10%)	150 (14.45%)
Do they know what an STD is?	Yes	519 (50.00%)	334 (32.18%)	10 (0.96%)	863 (83.14%)
	No	59 (5.68%)	113 (10.89%)	3 (0.29%)	175 (16.86%)
Are They Aware Of Any Contraceptives?	Yes	322 (31.02%)	154 (14.84%)	7 (0.67%)	483 (46.53%)
	No	256 (24.66%)	293 (28.23%)	6 (0.58%)	555 (53.47%)
Have They Heard Of Cervical Cancer?	Yes	360 (34.68%)	162 (15.61%)	10 (0.96%)	532 (51.25%)
	No	218 (21.00%)	285 (27.46%)	3 (0.29%)	506 (48.75%)
Do They Know Anyone Who Had Cervical Cancer?	Yes	25 (2.41%)	18 (1.73%)	1 (0.10%)	44 (4.24%)
	No	553 (53.28%)	429 (41.33%)	12 (1.16%)	994 (95.76%)
Can It Be Prevented?	Yes	215 (20.71%)	108 (10.40%)	7 (0.67%)	330 (31.79%)
	No	30 (2.89%)	29 (2.79%)	0 (0.00%)	59 (5.68%)
	Don't Know	333 (32.08%)	310 (29.87%)	6 (0.58%)	649 (62.52%)
Can It Be Cured?	Yes	168 (16.18%)	103 (9.92%)	6 (0.58%)	277 (26.69%)
	No	46 (4.43%)	35 (3.37%)	1 (0.10%)	82 (7.90%)
	Don't Know	364 (35.07%)	309 (29.77%)	6 (0.58%)	679 (65.41%)
Have They Heard Of HPV?	Yes	172 (16.57%)	64 (6.17%)	8 (0.77%)	244 (23.51%)
	No	406 (39.11%)	383 (36.90%)	5 (0.48%)	794 (76.49%)
Did They Know That HPV Is A Risk Factor?	Yes	99 (9.54%)	33 (3.18%)	6 (0.58%)	138 (13.29%)
	No	479 (46.15%)	414 (39.88%)	7 (0.67%)	900 (86.71%)
Do They Know If HPV Causes Other Illnesses?	Yes	67 (6.45%)	29 (2.79%)	3 (0.29%)	99 (9.54%)
	No	511 (49.23%)	418 (40.27%)	10 (0.96%)	939 (90.46%)
Would They Go For A Pap Smear?	Yes	403 (38.82%)	93 (8.96%)	8 (0.77%)	504 (48.55%)
	No	171 (16.47%)	351 (33.82%)	5 (0.48%)	527 (50.77%)
	Have Already Gotten It Done	4 (0.39%)	3 (0.29%)	0 (0.00%)	7 (0.67%)
Are They Aware Of An HPV Vaccine	Yes	132 (12.72%)	57 (5.49%)	11 (1.06%)	200 (19.27%)
	No	446 (42.97%)	390 (37.57%)	2 (0.19%)	838 (80.73%)
Can HPV Vaccine Prevent Other Illnesses	Yes	35 (3.37%)	15 (1.45%)	5 (0.48%)	55 (5.30%)
	No	543 (52.31%)	432 (41.62%)	8 (0.77%)	983 (94.70%)

N: Frequency
%: Percentage
STD: Sexually transmitted disease
HPV: Human papillomavirus.

cervical cancer and HPV, only 194(18.6%) respondents were aware of all the three topics. Medical students were the most knowledgeable and were the most accepting of the vaccine (Table-1).

Of the 863(83.14%) participants who were aware of an STD, 394(45.7%) responded that they would be sympathetic and 390(45.2%) said they would be supportive of those who have an STD. Besides, 127(14.7%) respondents said they would respond with fear, 230(24.2%) supposed that they would distance themselves and 67(7.8%) noted that they would be unconcerned. Multiple responses were allowed.

Also, 44(4.2%) respondents said they knew someone with cervical cancer. Of the 532(51.25%) respondents who were aware of cervical cancer, 263(49.4%) believed it could be cured, 31(5.8%) believed it could not be cured, while 238(44.7%) did not know. Moreover, 208(39.1%) respondents believed it could be prevented, while 50(9.4%) believed it could not be prevented, whereas 274(51.5%) did not know.

Of the 244(23.51%) participants who had heard of HPV,

142(58.2%) knew how it spread and 138(56.6%) knew that it was a risk factor for cervical cancer. Besides, 99(40.6%) knew that HPV causes other illnesses.

Of the total respondents, 504(48.6%) said that they would undergo a Pap smear, 527(50.8%) opted that they would not, while 7(0.7%) had already undergone the test. Reasons for not opting for the Pap smear test were as follows: "it is embarrassing" 121(15.26%), "socially unacceptable" 44(5.55%); "it might be painful" 104(13.11%); "my parents/spouse won't approve of it" 48(6.05%); "I'm too lazy to go for it" 44(5.17%); "I don't know much about it" 260(32.79%); "it might be time-consuming" 12(1.51%); and "I don't think I need to go for it right now" 132(16.65%). Multiple responses were allowed.

Also, 200(19.3%) respondents were aware of the HPV vaccine. Moreover, 13(1.3%) respondents had been vaccinated against HPV. Of the rest, 578(56.4%) said that they would go for the vaccine, while 447(43.6%) said they would not. Reasons for not opting for the vaccination were as follows: "it is too costly" 44(6.39%); "socially unacceptable" 24(3.48%); "it might be painful" 59(8.56%); "my parents/spouse won't approve of it" 36(5.22%); "I'm lazy" 59(8.56%); "lack of knowledge about the vaccine" 227(32.95%); "mistrust of vaccines in general" 47(6.82%); "I do not think I need it right now" 104(15.09%); "It is too time-consuming and requires multiple (3) doses" 12(1.74%); and "fear of possible side effects (fatigue, headache, diarrhoea, etc.)" 50(7.26%).

Of the total, 498(48%) respondents believed health education should be the top priority in the prevention of cervical cancer, 44(4.2%) believed contraceptives were the most important, 18(1.7%) believed abstinence was the most important. In addition, 157(15.1%) believed vaccination was important while 321(30.9%) had no opinion on it. Besides, 768(74%) respondents believed that there should be mass vaccination programme in Pakistan. The most common reason against mass vaccination was the assumption that cervical cancer was too rare 77(28.9%) (Table-2).

Discussion

One of the aims of our study was to inquire about the level of knowledge regarding cervical cancer and HPV in the undergraduate female students of Karachi. As is evident from the result, there was a definite lack of knowledge and this explains the low acceptance of the vaccine.

Most research studies about attitude towards HPV vaccination have emerged from developed countries, creating a need for more psychosocial research towards vaccine acceptability to be conducted in developing countries[11] such as Pakistan, where social taboos and cultural practices influence attitudes and behaviours more as compared to the West.

Even though 51.3% females were aware of cervical cancer, only 13.3% knew that HPV is a risk factor. Our data is consistent with research conducted here and elsewhere. According to a study conducted in Kenya, only 15% of the female population visiting two healthcare facilities had heard of cervical cancer.[12] Similarly in a research undertaken among Taiwanese undergraduate female population aged 17-36 years, only 49% were aware of HPV.[13] Another study on a huge scale was carried out on the undergraduate female population of four cities in three developing countries.[14] The results of that study reflected ours as awareness regarding HPV was found to be 48.9%, 52.5% and 48.5% in India, Nepal and Sri Lanka, respectively. It pinpointed the lack of knowledge in literate masses, thereby highlighting a greater lack of awareness among the less educated women.[14] These findings also coincide with other locally conducted studies where the awareness rate was similarly low.[7,8]

According to a study from Italy, women's knowledge about HPV infection and cervical cancer was exceptionally poor, as only 23.3% had ever heard of them.[15] A significant proportion of them did not know that vaccination can prevent this cancer and it's availability in Italy.[15] This finding is contrary to the one observed in females attending Florida State University in the United States (US), where 85% of them acknowledged the relationship between HPV infection and cervical cancer.[16] In a research conducted in North Eastern University in the US in 2007, although the population of female college students surveyed had heard of HPV and the HPV vaccine, the predominant reason why they opted not to go for the vaccine was lack of knowledge even if it were offered for free.[17]

In the current study, it was noted that the majority of women who agreed to go for a Pap smear (38.8%) or had already gotten it done (0.39%) also wanted to be vaccinated against HPV. This highlights the fact that vaccination acceptance is higher in individuals who are sensitised to adopt the better known preventive strategies like Pap smear.

According to our research finding, the major reason for not opting for the vaccine was lack of knowledge (32.95%), lack of need (15.09%) and because it might be painful and laziness (both 8.56%). Similarly, in a two-year research conducted in India, the majority was unwilling to go for the vaccine due to lack of knowledge of HPV

vaccine and its safety.[18]

In a research conducted among 449 participants in Malaysia, reasons for vaccine refusal were doubts about safety and efficacy of the new vaccine (27.4%), perceived embarrassment at receiving an STD vaccine (20.7%), and perception of not being at risk of HPV infection (20%).[19]

Furthermore, according to a research done amongst Swedish upper secondary school students, the high cost of vaccination was the greatest obstacle (37%), followed by the fear of needles in girls (19%).[20]

Majority of the population who knew of the vaccine heard about it from the internet (29%). This was followed by awareness through television (24.6%). Consequently, social and mass media should be incorporated in future public health educational campaigns to increase awareness among parents and their daughters of cervical cancer and its prevention.

Most of the respondents (74%) accepted the need for a mass vaccination programme, whereas 26% rejected it as majority of them thought cervical cancer was too rare a disease (7.3%). This concept needs to be cleared as cervical cancer is the third-most common cancer in females in Pakistan,[3] thereby posing a significant threat to the healthcare burden.

Educational campaigns are needed to increase the awareness about HPV and cervical cancer, a view that was echoed by 49% of the respondents. Most of the respondents (48.8%) agreed that increasing awareness would encourage most of the people to get the vaccine. However, this finding is inconsistent with a study done in Italy where having a physician visit for a check-up and information about HPV vaccination was an important predictor of a higher level of knowledge.[15]

Family physicians and other health care professionals should also be enlisted with the task of spreading information regarding cervical cancer and its primary (e.g. vaccine) and secondary prevention (e.g. screening and early detection) measures. Adult vaccination rates are also lower due to the non-serious attitude of the government health officials.[21] Hence, multiple healthcare programmes should be conducted in schools and colleges not only in urban set-up but also in rural areas, where a greater percentage of the population abides.

The current study did not include men as the vaccine was offered to them after our survey was conducted in 2012.

Although a large sample size was taken, one of the main limitations of the study was that it was conducted only in five educational institutes in the city. This does not apply to all female university students and may not be reflective of the entire culturally, economically and linguistically diverse female population of Karachi. Another drawback was that the authenticity of the self-reported questionnaires cannot be accounted for despite the fact that many of the questionnaires were omitted because they were filled incorrectly. As this study was conducted within a specific age-group of 17- to 26-year-olds, it may not be reflective of the awareness and acceptance of the age-group of 11-16 years which is also included in the vaccine eligibility as young women may become sexually active around that age.

Conclusion

Only a few respondents were aware of all the three topics (STD, cervical cancer and HPV). The most common reason for not opting for the vaccine was participants' lack of knowledge about the vaccine. Increasing awareness regarding the cause of cervical cancer as well as its prevention by vaccination would promote increase in acceptance of vaccine.

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