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Original Research Article

Knowledge and attitude towards human papillomavirus and its vaccination among medical students: a cross sectional study

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ABSTRACT

Background: One of the causes of penile cancer in men and cervical cancer in women is infection with the human papillomavirus (HPV). An efficient way to prevent high risk HPV infection is by HPV vaccination. This study was conducted to assess knowledge and attitude towards human papillomavirus and its vaccination.
Methods: The cross-sectional study was done among under graduate medical students. Total 428 students were voluntarily participated. Dichotomous (yes/no) items used to assess knowledge of the students towards human papillomavirus and its vaccination. The 3-point Likert scale (agree, uncertain, disagree) used to assess attitude towards HPV vaccination.
Results: Most 71.49% of them knew that HPV infection may leads to carcinoma cervix whereas only 29.44% knew that HPV infection may leads to penile cancer. Most 76.63% of them agreed to recommend HPV vaccine for adolescent girls whereas only 36.68% agreed to recommend HPV vaccine for adolescent boys.
Conclusions: According to the study, college students had knowledge towards HPV vaccination despite acceptance of HPV vaccination among students were very less. Medical students, can play a big role in giving advice on how to prevent HPV-related penile and cervical cancer.

Keywords: Cervical cancer, Human papillomavirus, Papilloma virus vaccines, Penile cancer

INTRODUCTION

Cervical cancer is the fourth most common cancer among women worldwide, contributing 6.9% of the total number of new cases diagnosed in 2020. An estimated 604000 new cases and 342000 deaths in 2020, according to World Health Organization (WHO) estimates.[1] Human papillomavirus (HPV) is the most common sexually transmitted infection. The Center for Disease Control and Prevention (CDC) highlights the fact that the majority of sexually active individuals become infected with HPV at least once in their lifetime.[2] HPV is a group of more than 200 related viruses and these viruses are classified according to their risk into two groups, low and high-risk groups. Low-risk HPVs mostly cause no disease, however couple of low-risk HPV types can cause warts on or around the genitals, anus, mouth or throat. High-risk HPVs can cause several sorts of cancer. There are about 14 high-risk HPV types, of these two (HPV16 and HPV18) are responsible for most HPV-related cancers (especially cervical, oropharynx, anal, vaginal, vulvar and penile cancers).[3] Unlike other cancers, cervical cancer develops early and affects a woman's reproductive years. The incidence rises in 30-34 years aged and peaks at 55-65 years.[4]

Cervical cancer is ranked as the second most common cancer in women in India. India has a population of approximately 483.5 million women above 15 years of age, who are at risk of developing cervical cancer. The current estimates indicate approximately 123907 new cases diagnosed and 77348 deaths annually in India, accounting around 1/3rd of the worldwide cervical cancer deaths. Indian women faces 2.01% cumulative lifetime

risk and 1.30% cumulative death risk from cervical cancer. HPV serotype 16 and 18 account for nearly 83.2% of cervical cancer in India. At present there are several cervical cancer research programs in India. The national cancer registry program established by the Indian council of medical research, acts as a surveillance system for cancer in India.[5]

Three types of HPV vaccines exist after 2021, together with Gardasil, Gardasil 9 and Cervarix.[6] India has recently launched, first Human papillomavirus vaccine officially on 1st September 2022. It was jointly developed by Serum Institute of India and the Indian Government's Department of Biotechnology. Following positive data from a large phase 2/3 clinical trial, marketing authorization was granted by the Drugs Controller General of India on July 12, 2022, for female and male individuals aged 9-26 years.[7] Keeping all this in mind present study was done.

Objective

To assess knowledge and attitude towards human papillomavirus and its vaccination among medical students.

METHODS

Study participants/study setting/study period

The cross-sectional study was done among under graduate medical students, studying in one of the private Medical College of Chhattisgarh, India. The study period was from February 2022 to July 2022.

Sampling method/number of participants/data collection technique

Convenience sampling technique was used and online survey was done. Study participants were medical students from first year to final year and interns. Total 428 students were voluntarily participated after giving their consent. Questionnaire was sent to them through online Google forms platform mentioning the purpose of the study. Data received through online Google form was transferred to Excel sheet.

Study tools/variables/statistical analysis

The questionnaire structured into three sections. The first section included were socio-demographic data like age, gender, education and socio-economic status of the family. Modified BG Prasad's scale used to classify socio-economic status. The second section included were dichotomous (yes/no) items to assess knowledge of the students towards Human papillomavirus and its vaccination. The variables related to knowledge included were modes of transmission of HPV, HPV infection may leads to plantar and oro-pharyngeal warts, HPV infection may leads to cervical and penile cancer, actual age of receiving HPV vaccination, doses schedule and route of administration of HPV vaccine etc. The third section included were, 3-point Likert scale (agree, uncertain, disagree) questionnaire to assess students attitude towards HPV vaccination. HPV vaccination- is effective for prevention of cervical and penile cancer, is the price of the vaccine affordable by community people, is it recommended for adolescent girls and boys etc. were the variables included to assess attitude of the students towards HPV vaccination. Data analysis was done, by using the statistical software SPSS (version 21.0). Number and percentages were calculated. Statistically significant difference (p value ≤0.05) between male and female for HPV vaccination status was assessed by applying Fisher's exact test. Results were presented in the form of tables.

RESULTS

Table 1 shows the distribution of study participants according to their socio-demographic profile. Age wise distribution revealed most 248 (57.94%) of the participants were in the age group of 21-26 years. Out of 428 participants 219 (51.16%) of them were male. Majority of them 99 (23.14%) were studying in 3rd year part-II followed by 2nd year students 93 (21.72%). According to modified BG Prasad classification most 358 (83.64%) of the participants belongs to class-I followed by class-II 58 (13.55%).

Table 1: Socio-demographic profile of the participants.

Variables		n=428 (%)
Age (years)	18- 20	180 (42.06)
	21-26	248 (57.94)
Gender	Male	219 (51.16)
	Female	209 (48.84)
Education	1st year students	87 (20.32)
	2nd year students	93 (21.72)
	3rd year part-I students	81 (18.93)
	3rd year part-II students	99 (23.14)
	Interns	68 (15.89)
Socio economic status	Class I	358 (83.64)
	Class II	58 (13.55)
	Class III	12 (02.81)

Table 2: HPV vaccination status of the participants.

Variables	HPV vaccination		Total n=428
	Received	Not received	
Male	00	219	219
Female	69	140	209
Total	69	359	428

Fisher's exact test applied. Chi square =83.77, p<0.001.

Table 2 shows number of participants, who received HPV vaccination. Out of 428 participants only 69 (16.12%)

had received HPV vaccination and all of them were female.

Table 3: Knowledge towards human papillomavirus and its vaccination (n=428).

Variables	N (%)
Participants correctly, expanded HPV	345 (80.60)
Participants correctly responded, the modes of transmission of HPV	305 (71.26)
Participants correctly responded, HPV infection may lead to plantar and Oro-pharyngeal warts	182 (42.52)
Participants correctly responded; HPV infection may lead to carcinoma cervix	306 (71.49)
Participants correctly responded; HPV infection may lead to carcinoma penis	126 (29.44)
Participants correctly knew about HPV vaccination	221 (51.64)
Participants correctly knew, HPV vaccination provides protection against carcinoma cervix	218 (50.93)
Participants correctly knew, HPV vaccination provides protection against carcinoma penis	136 (31.77)
Participants correctly knew, actual age to receive HPV vaccination	182 (42.52)
Participants correctly knew, doses schedule of the HPV vaccination	157 (36.68)
Participants correctly knew, route of administration of HPV vaccination	169 (39.48)

Table 3 shows the knowledge of the participants towards human papillomavirus and its vaccination. Most 345 (80.60%) of them correctly expanded HPV and 305 (71.26%) correctly responded the modes of transmission of HPV. Most 306 (71.49%) of them knew that HPV infection may leads to carcinoma cervix whereas only 126 (29.44%) knew that HPV infection may leads to penile cancer. Less than fifty percent 182 (42.52%) participants correctly responded that HPV infection may leads to plantar and Oro-pharyngeal warts. Around fifty percent 221 (51.64%) participants correctly knew about HPV vaccination. 218 (50.93%) correctly responded that HPV vaccination provides protection against carcinoma cervix whereas only 136 (31.77%) correctly responded that vaccination provides protection against carcinoma penis. 182 (42.52%) correctly knew, the actual age to receive the vaccination. Only 157 (36.68%) correctly responded the doses schedule of the vaccine and 169 (39.48%) correctly responded the route of administration.

Table 4 shows attitude of the participants towards human papillomavirus vaccination. 298 (69.62%) participants agreed that HPV vaccination effective for prevention of cervical cancer whereas 130 (30.38%) were uncertain. Only 135 (31.54%) participants agreed that HPV vaccination effective for prevention of penile cancer whereas most 259 (60.51%) of them were uncertain. Most 328 (76.63%) of them agreed to recommend HPV vaccine for adolescent girls whereas only 157 (36.68%) agreed to recommend HPV vaccine for adolescent boys and 244 (57.01%) were uncertain to recommend HPV vaccine for adolescent boys. 135 (31.55%) participants were disagreed that HPV vaccination affordable by community people whereas 208 (48.59%) were agreed that HPV vaccination affordable by community people. Majority 334 (78.04%) of them agreed that doctors should recommend HPV vaccine to their patients.

Table 4: Attitude towards human papillomavirus vaccination (n=428).

Variables		N (%)
HPV vaccination: is effective for prevention of cervical cancer	Agree	298 (69.62)
	Uncertain	130 (30.38)
	Disagree	00 (00)
HPV vaccination: is effective for prevention of penile cancer	Agree	135 (31.54)
	Uncertain	259 (60.51)
	Disagree	34 (07.95)
HPV vaccination: recommend for adolescent girls	Agree	328 (76.63)
	Uncertain	86 (20.09)
	Disagree	14 (03.28)
HPV vaccination: recommend for adolescent boys	Agree	157 (36.68)
	Uncertain	244 (57.01)
	Disagree	27 (06.31)
HPV vaccination: is affordable by community people	Agree	208 (48.59)
	Uncertain	85 (19.86)
	Disagree	135 (31.55)
HPV vaccination: doctors should recommend to their patients	Agree	334 (78.04)
	Uncertain	77 (17.99)
	Disagree	17 (03.97)

DISCUSSION

Human papilloma virus is the causative agent for cervical cancer in female and penile cancer in male. Recent advances in technology have led to introduction of vaccine to prevent HPV infection. The current study aims to assess knowledge and attitude towards human papillomavirus and its vaccination among medical students. The results of this study compared with various studies as follows.

In this study 80.60% participants correctly expanded HPV whereas study done by Swarnpriya et al reported 70.6% participants correctly expended HPV.[8] In the present study 71.26% participants correctly said the modes of transmission of HPV, similar finding 71.8% reported by Adejuyigbe et al in their study whereas Chun et al reported 67.8% and Saswati et al reported 25%.[9-11] In this study 42.52% participants said HPV infection may also leads to plantar and oro-pharyngeal warts, but Saswati et al in their study reported 82% participants said

HPV can cause genital warts and other precancerous lesions.[11] This study shows 71.49% participants knew that HPV infection may lead to carcinoma cervix while only 29.44% participants knew that HPV infection may leads to carcinoma penis. Adejuyigbe et al mentioned 73.90% participants knew that HPV infection may leads to carcinoma cervix and 31.44% knew that HPV infection may leads to carcinoma penis.[9] Goury et al mentioned 67.50% knew that HPV infection can cause carcinoma cervix and 31.25% knew that HPV infection can cause carcinoma penis.[12] This study reports 51.64% correctly knew about HPV vaccination but Jonathan and Chi in their study reported almost all participants had heard of HPV vaccination.[13] In this study 50.93% participants correctly knew that HPV vaccination provide protection against carcinoma cervix while 31.77% correctly knew that HPV vaccination provide protection against carcinoma penis. Saswati et al in their study reported only 6.6% of the students answered that HPV vaccine prevents all type of viruses that causes cervical cancer.[11] Adejuyigbe et al mentioned only 09.30% participants correctly knew that HPV vaccination provides protection against carcinoma cervix.[9] In this study participants correctly knew the actual age (42.52%), the doses schedule (36.68%) and the route of administration (39.48%) of HPV vaccination. Saswati et al reported 59.8% participants gave right answer about route of administration.[11] Adejuyigbe et al reported 26.80% correctly knew the actual age and 12.50% correctly knew the doses schedule.[9] Goury et al reported 35% correctly knew the actual age and 37.49% correctly knew the doses schedule.[12]

In this study most (69.62%) of them agreed that HPV vaccination is effective for prevention of cervical cancer whereas only 31.54% of them agreed that HPV vaccination is effective for prevention of penile cancer. Jonathan and Chi in their study reported 82.6% participants agreed that HPV vaccine can effectively prevent cervical cancer.[13] In this study 76.63% agreed about HPV vaccination recommendation for adolescent girls. Whereas the level of acceptance of HPV vaccination in adolescent girls was slightly lower in the study done by Adejuyigbe et al, here 65.7% agreed.[9] In this study only 36.68% agreed about HPV vaccination recommendation for adolescent boys. Whereas the level of acceptance of HPV vaccination in adolescent boys was more in the study done by Adejuyigbe et al, here 53.6% agreed.[9] In this study 31.55% participants disagreed that HPV vaccine is affordable by community people. Chun et al in their study mentioned 36.9% male and 50.5% female participants were requesting for price regulation and subsidy for HPV vaccination.[10] In this study most (78.04%) of the participants agreed that doctors should recommends HPV vaccine to their patients, almost similar finding mentioned by Adejuyigbe et al in their study (80% participants agreed to recommend HPV vaccine to their future client).[9] Sreshtha et al in their study reported 75.88% had positive attitude towards HPV vaccine recommendation.[14]

CONCLUSION

Nearly 70% of participants recognized that HPV infection may cause carcinoma of the cervix and 29.44% knew that HPV infection may cause penile cancer, despite none of the boys received the HPV vaccine and only 16% of girls received it. The recommendation for HPV vaccination was received well. A good way to boost vaccination acceptance is to lower the price of the vaccine. It is crucial to spread awareness through information education and communication efforts through the media. The public can be guided and the country's acceptance of vaccination can be increased by healthcare professional's correct knowledge, good attitudes and intentions regarding HPV infection and its vaccine.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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