



## International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR |Volume 2 | Issue 4 | Oct-Dec- 2014  
www.ijamscr.com

Research article

Medical research

### To evaluate the awareness about human papilloma virus (HPV) vaccine in the prevention of cervical cancer amongst the medical students:

#### A KAP study

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#### ABSTRACT

Cervical cancer is the fifth most common cancer in humans, the second most common cancer in women worldwide and the most common cancer cause of death in the developing countries like India. An observational, cross sectional, questionnaire based study conducted in Grant Govt. Medical College & Sir JJ Group of Hospital among 500 medical students of either sex who were either in II year or passed II year of their curriculum. 500 students participated in the study. 480 (96%) were aware of the causative agent of cervical cancer. 346(69.4%) participants were aware regarding the availability of vaccine against cervical cancer. 281(56.2%) of participants were aware that HPV Vaccine is available in India. Overall awareness regarding target population for HPV Vaccination was 138(27.6%). 319 (63.8%) participants knew by which route HPV Vaccine is administered and 187(37.4%) knew when is the vaccine most effective. Unfortunately only 30 (6%) participants were vaccinated. Most common source of information for our study population was electronic media 269(53.4%) such as internet. 398 (79.6%) participants thought most important problem is inadequate information. Only 176 (35.8%) participants thought HPV vaccine is needed for men also and 377(75.4%) participants believed that it is necessary to screen the vaccinated person also. Overall only 67.8% participants showed their acceptance for HPV vaccine. Majority of the participants were lacking knowledge about HPV vaccine in all aspects. Participants have reluctant attitude before onset of this study for this important topic & rarely do they practice it.

**Keywords:** Cervical cancer, Human Papilloma virus, Vaccine.

## INTRODUCTION

Cervical cancer is the fifth most common cancer in humans, the second most common cancer in women worldwide and the most common cancer cause of death in the developing countries.<sup>(1)</sup> The worldwide incidence of cervical cancer is approximately 510,000 new cases annually, with approximately 288,000 deaths worldwide.<sup>(2)</sup> Out of these, the burden of 230,000 (85%) deaths is owned by developing countries, with bare minimal resources to cope with the situation.<sup>(3)</sup> India has a population of approximately 365.71 million women above 15 years of age, who are at risk of developing cervical cancer. The current estimates indicate approximately 132,000 new cases diagnosed and 74,000 deaths annually in India, accounting to nearly 1/3<sup>rd</sup> of the global cervical cancer deaths.<sup>(4)</sup> Indian women face a 2.5% cumulative lifetime risk and 1.4% cumulative death risk from cervical cancer. At any given time, about 6.6% of women in the general population are estimated to harbor cervical HPV infection.<sup>(4)</sup>

Sexually transmitted Human Papilloma virus (HPV) infection is the most important risk factor for cervical intraepithelial neoplasia and invasive cervical cancer.<sup>(1)</sup> As preventing cancer with the help of a vaccine is a comparatively new concept, awareness and education will have important implication in the implementation of this strategy. We hypothesized that awareness programmes conducted at various levels addressing tailored issues will help to successfully implement HPV vaccination in our country. We chose medical students (age group: 17–25) for the simple reason that in a few years these students will be the practicing clinicians, and will be sought by the population as the first line information resources and can play a pivotal role in spreading awareness among a wide range of population. Educational initiatives targeting health care professionals have a definitive role in fostering vaccine acceptance.

As demonstrated by Gonik et al educational interventions can positively influence immunization-related practice patterns.<sup>(5)</sup> Results obtained from present study may also be useful at the policy level to implement awareness programs among the health care professionals about this important public health issue. Therefore this study was planned with the objective to assess the knowledge, extent of covering, and factors affecting the acceptance of HPV vaccine among medical student. This study also planned at creating awareness about the vaccine among the study population.

## MATERIAL & METHODS

This was an observational, cross sectional, questionnaire based study conducted among 500 medical students of Grant Govt. Medical College & Sir JJ Group of Hospital. Students of either sex who were either in II year or passed II year of their curriculum & taught about HPV & its vaccine were included in the study. The only criterion for exclusion was unwillingness of a student to participate in the study.

After obtaining Institutional Ethics Committee (IEC) approval, medical students who consent to participate in the study were briefed about the study and a well-validated questionnaire containing questions to determine their knowledge, extent of coverage, and factors affecting acceptance of HPV vaccination were handed over to the students. Students were allowed to ask questions regarding their participation in the study. The personal right to withdraw from the study at any moment was ensured. Written consent for participation was obtained which was collected separately after it had been signed by the participant in order to avoid personal identification. Thus anonymity and confidentiality of the participants was guaranteed.

A total 22 questions were formulated & students were asked to make a '✓' mark in front of the answer which they feel as correct. To assess Knowledge, Attitude and Practices of the students for cervical cancer and HPV vaccine total 10, 7 & 5 questions for each above mentioned parameter were formulated respectively. For construction and content validity, the questionnaire was reviewed by two senior faculties of Pharmacology and a senior Gynecologist. Responses to the questionnaire were compiled and analyzed by using Microsoft excel software 2010 and accordingly results were prepared.

## RESULTS

A total of 500 student participated in the study, of which 221(46.04%) were males and 279(55.80%) were females. Of the 500 participants, 261(52.20%) were in age group of 20-22 years, whereas 34.4% belongs to 17-19 years and 13.4% belongs to 23-25 years. 445(89%) participants were aware about the screening technique of cervical cancer. Majority of the participants, 480 (96%) were aware of the causative agent of cervical cancer, of which 271(97.13%) were females as compared to 209 (94.57%) males. Just 82(16.4%) participants were aware about the incidence rate of cervical cancer, which included 51

(18.27%) females as compared to 31(14.02%) males. 346(69.4%) participants were aware regarding the availability of vaccine against cervical cancer, females (85.66%) showed better awareness compared to males (48.11%). Regarding availability of vaccine in India, 281(56.2%) of participants were aware that HPV Vaccine is available in India, again, females (73.83%) showed better awareness in comparison to males (33.93%). Overall awareness regarding target population for HPV Vaccination was 138(27.6%). 92 (32.97%) females and 46 (20.81%) males knew this. 69(13.8%) participants knew about the catch up programme which include 27 (12.21%) males and 42 (15.05%) females. 319 (63.8%) participants knew by which route HPV Vaccine is administered which include 121(54.75%) males and 198(70.96%) females. Overall awareness regarding the protective efficacy of HPV Vaccine was 95 (19%). 59(21.14%) females and 36 (16.28%) males knew this. 187(37.4%) participants were aware when is the vaccine most effective which include 124 (44.44%) females in comparison to 63 (28.50%) males. Overall 49 (37.2%) participants believed that once infected vaccine doesn't work which includes 18 (8.14%) males and 31 (11.11%) females. Unfortunately only 30 (6%) participants were vaccinated with HPV vaccine and all were females, inspite of the fact that 126 (25.2%) were questioned previously by their friends or relatives about the vaccine. Just 139 (27.8%) ever searched on internet for some information about the vaccine. Most common source of information for our study population was electronic media 269(53.4%) such as internet. Other sources are medical health professionals 252(50.4%), Government awareness campaign 139(27.8%) and parents 44(8.8%). In our study, 158 (31.6%) participants thought high cost, 50 (17.6%) participants thought fear of complications are the important obstacles for implementation of HPV vaccination program. Though, more than half i.e. 398 (79.6%) participants agreed that most important problem is inadequate information. Positively 382(76.4%) believed the HPV vaccine should be included in national immunization schedule. Only 176 (35.8%) participants thought that yes, HPV is needed for men also and 377(75.4%) participants believed that it is necessary to screen the vaccinated person also. In our study till date only 139 (27.8%) participants has ever advised any one to take this vaccine. Overall only 67.8% participants were showing their acceptance for HPV vaccine. Females, 273 (97.84%), seemed to be more ready to accept the vaccine

as compared to males 72(32.59%) and were ready to recommend it to their family and friends.

All the questions with their correct answers and answers marked by no. of students are shown in table no. 1, 2, 3, &4. The questionnaire distributed to the participant is also attached.

## DISCUSSION

The present study may be amongst the few studies conducted to find out the level of awareness about one of the currently most discussed topic of cervical cancer vaccine, among the future health care providers. Majority of the participants in our study were well aware about the viral etiology and screening technique of the cervical cancer which was in contrast to the study conducted by Saha et al in Kolkata, India which revealed a very low level of awareness among the graduate and postgraduate students about this important public health issue.<sup>(6)</sup> Awareness regarding the availability of vaccine against cervical cancer was 69.4% which was better than a study conducted among women attending routine gynecological care in Belgium <sup>(7)</sup> which showed awareness to be about 50%. Females, comparatively had a better awareness than males regarding availability of vaccine, target population for vaccination and about the catch up program. For our study population the most common source of information was electronic media such as internet followed by medical school teaching, Government awareness campaigning about the vaccine and then parents and friends. Medical teaching will have a definitive impact on the understanding of this important public health issue, with regards to etiology of cervical cancer, availability of the vaccine and its protective efficacy. Majority of participants agreed that most important obstacle in implementation of HPV vaccination program in our country is inadequate information while a study conducted by Bharadwaj et al <sup>(8)</sup> showed high cost of the vaccine as the major concern for mass vaccination program in India whereas Bhatla N et al <sup>(9)</sup> included cost, acceptability, lack of public awareness and infrastructure, concern about unknown side-effects and social and religious barriers. Overall acceptance of HPV vaccine among the participants was 69%. Females seemed to be more ready to accept the vaccine and recommend it to others as compared to males. Acceptance of the vaccine can be increased if the vaccine is included in National Immunization Schedule which is also believed by 76% of the participants. As medical students of only one medical

college was included in this study which might not reflect the overall awareness of medical students in India therefore inclusion of other health care workers like interns, post graduates and nursing students should also be taken in account from other institutes also which might increase the impact in future studies. In the bigger picture all health workers need to be educated about how to help patients to understand the advantages and limitations of this newly popularized cervical cancer prevention strategy.

## CONCLUSION

This study shows that majority of the participants were lacking knowledge about HPV vaccine in all aspects. Participants have reluctant attitude before onset of this study for this important topic & rarely do they practice it. But, this study had created awareness in the students about role of HPV vaccine which can make a change in the knowledge, attitude & practices of them so that a fruitful outcome can be seen for carcinoma cervix in future.

## KNOWLEDGE

**TABLE NO. 1 – NO. OF Participants WITH PROPER KNOWLEDGE ABOUT HPV VACCINE (n=500)**

Question NO.	Nature of question	Various responses given by the participants (%)			
1	Causative agent for cervical cancer	Coxsachie	<b>HPV</b>	EBV	DN
Ans	No. of participants	4 (0.8)	480 (96)	7 (1.4)	5 (1)
3	Incidence rate	1/10	1/100	1/1000	<b>1/10,000</b>
Ans	No. of participants	32(60.4)	111(22.2)	198(39.6)	82(16.4)
4a	Availability of vaccine	<b>Agree</b>	Disagree	Neutral	
Ans	No. of participants	346(69.4)	36(7.2)	106(21.2)	
4b	Availability in India	<b>Yes</b>	No	Don't know	
Ans	No. of participants	281(56.2)	43(8.6)	132(26.4)	
9	When is the vaccine most effective	At puberty	Any time	<b>Before onset of sexual activity</b>	At menopause
Ans	No. of participants	222(44.4)	33(6.6)	187(37.4)	13(2.6)
10	Screening technique	ELISA	<b>Pap smear</b>	Blood investigation	USG
Ans	No. of participants	15(3)	445(89)	14(2.8)	7(1.4)

**TABLE NO. 2 – NO. OF Participants WITH PROPER KNOWLEDGE ABOUT HPV VACCINE (n=500)**

Question NO.	Nature of question	Various responses given by the participants (%)				
5	Age group	0-5	5-10	<b>10-15</b>	15-20	20-25
Ans	No. of participants	21(4.2)	26(5.2)	138(27.6)	274(54.8)	228(45.6)
6	Catch up vaccination	0-5	5-10	<b>10-25</b>	15-20	20-25
Ans	No. of participants	48(9.6)	88(17.6)	69(13.8)	55(11)	54(10.8)
7	Route of administration	S.c	<b>i.m</b>	i.d	Oral	
Ans	No. of participants	74(14.8)	319(63.8)	22(4.4)	24(4.8)	
8	Protection rate	60-70%	70-80%	<b>80-90%</b>	90-100%	
Ans	No. of participants	139(27.8)	186(37.2)	95(19)	29(5.8)	

**TABLE NO. 3 – No. of participants showing different ATTITUDE pattern about HPV vaccine (n=500)**

Question NO.	Nature of question	Various responses given by the participants (%)		
1	Need to vaccinate men	<b>Yes</b>	No	Don't know
Ans	No of participants	179(35.8)	150(30)	154(30.8)
2	Screen that person	Yes	No	Don't know
Ans	No of participants	377(75.4)	32(6.4)	76(15.2)
3	Ever advised any 1	Yes	No	
Ans	No of participants	139(27.8)	345(69)	
4	Will you accept the vaccine	Yes	No	Don't know
Ans	No of participants	345(69)	57(11.4)	57(11.4)
5	Recommend to family	Yes	No	Don't know
Ans	No of participants	399(79.87)	18(3.6)	68(13.6)

**TABLE NO. 4** – No. of participants with different **Practices** about HPV vaccine (n=500)

Question NO.	Nature of question	Various responses given by the participants (%)			
		Yes	No	Don't know	
1	Once infected will the vaccine work	Yes	No	Don't know	
Ans	No of participants	106(21.2)	49(37.2)	186(37.2)	
2	Yourself took this vaccine	Yes	No	Don't know	
Ans	No of participants	30(6)	418(83.6)	32(6.4)	
3	Ever questioned	Yes	No		
Ans	No of participants	126(25.2)	358(71.6)		
4	Searched on internet	Yes	No		
Ans	No of participants	139(27.8)	346(69.2)		
5	Source of knowledge	Govt awareness	Health profess	Parents	Electronic media
Ans	No of participants	139(27.8)	252(50.4)	44(8.8)	269(53.4)
6	Main obstacle	Cost	Lack of awareness	Fear of s/e	Not required
Ans	No of participants	158(31.6)	398(79.6)	50(10)	20(4)
7	Should it be added to NIS	Agree	Disagree	Neutral	
Ans	No of participants	382(76.4)	28(5.6)	74(14.8)	

### Knowledge

1) Which is the causative agent for cervical cancer?

Cox sachie Virus

Human Papilloma Virus

Epstein Bar Virus

Don't Know

2) Which is/are risk factor/s for cervical cancer? ( can tick multiple options)

- Early onset of sexual activity
- Multiple sexual partners
- Poor Hygiene
- Increase age of marriage
- Cigarette smoking
- Early menarche and late menopause

3) What is the incidence rate of cervical cancer in India?

- 1/10  1/100  1/1000  1/10,000

4) A) Do you think, vaccine available against HPV can prevent cervical cancer?

- Agree  Disagree  Neutral

4 B) If yes, Is such kind of a vaccine available in India?

- Yes  No  Don't Know

5) Age group (yrs) for which it is recommended?(can tick multiple option)

- 0-5  5-10  10-15  15-20  20-25

6) Catch up vaccination programme is up to which age/yrs?

- 10-15  15-20  10-25  15-20  20-25

7) What is the route of administration for such vaccine?

- S.C  I.M  I.D  ORAL

8) What is the protection rate with HPV vaccine?

- 60-70%  70-80%  80-90%  90-100%

9) When is the vaccine most effective?

- At Puberty
- At any time of life
- Before onset of sexual activity
- At the end of College life

10) What is the screening technique for cervical cancer?

ELISA	<input type="text"/>
PAP Smear	<input type="text"/>
Blood investigations	<input type="text"/>
USG	<input type="text"/>

**Attitude**

1) What do you think once infected with HPV, will the vaccine work?

Yes  No  Don't Know

2) Have you, yourself took such HPV vaccine?

Yes  No  Don't Know

3) Were you ever questioned by your friends/relatives about the HPV vaccine?

Yes  No

4) Have you ever searched on internet for information regarding HPV vaccine?

Yes  No

5) What can be the source of knowledge from where you will know about the vaccine?

Government awareness Campaign	<input type="text"/>
Health professionals	<input type="text"/>
Parents	<input type="text"/>
Electronic media(Internet)	<input type="text"/>

6) What according to you is the main obstacle in implementing the vaccination programme?

Cost Of The Vaccine	<input type="text"/>
Lack Of Awareness	<input type="text"/>
Fear Of Side Effect	<input type="text"/>
Not Required	<input type="text"/>

7) What do you think, HPV vaccine should be added in national immunization programme?

Agree  Disagree  Neutral

**Practice**

1) Do you think is there any need to vaccinate men?

Yes  No  Don't Know



- 2) Once vaccinated is it necessary to screen that person?  
Yes  No  Don't Know
- 3) Have you ever advised any one to take such vaccine?  
Yes  No
- 4) If provided will you accept the vaccine?  
Yes  No  Don't Know
- 5) Will you recommend it to your family?  
Yes  No  Don't Know

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