Original Research Article

Cross sectional study of knowledge of cervical cancer and awareness, knowledge and vaccine acceptance human papillomavirus vaccine among school girls of government and private school of Central India

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ABSTRACT

Background: Cervical cancer is the second most common cancer worldwide and in India, it is the number one killer cancer among women. About 500,000 women are diagnosed with cervical cancer contributing to around 270,000 deaths, across the globe every year. Out of these, the burden of 230,000 (85%) deaths is owned by developing countries, with bare minimal resources to cope with the situation. In India alone there are an estimated 132,000 new cases and 74,000 deaths each year. The discovery that human papillomavirus (HPV) is responsible for virtually all cervical cancers opens exciting new possibilities for controlling this disease.

Methods: Randomly 300 girls were selected from private and government schools of central India aged between 16-18 years a semi structured questionnaire was provided to assess knowledge of cervical cancer and awareness, knowledge and vaccine acceptance HPV vaccine among the school girls.

Results: Total 85% of the students are aware about cervical cancer overall. (80% of Government school students and 90% of the private school students) but only 43% of the students have heard about HPV overall, 53% of the students know that cervical cancer is preventable, and 54% of Pvt. School students know that it is preventable. 50% of the students are aware that there are screening methods for cervical cancer, only 3% of the students are aware of all the modes of transmission and 72% are aware about Sexual intercourse is mode of transmission. 39.3% are aware that multiple sexual partners are a risk factor for HPV infection and 38.2% are aware that unprotected sexual intercourse is a risk factor. Only 8.9% are aware that first intercourse at young age is a risk factor and only 13.45% are aware that other STDs are also a risk factor for HPV infection, 55% of the students was aware about availability of vaccine against HPV. 54% of the students are not aware that the vaccine is available in India.

Conclusions: The low level of knowledge indicates that the larger population of less educated women is in greater lack of awareness. During this survey we accessed a population that has not been widely studied and our observations leads to conclude that the absence of an active national cervical screening and awareness program has resulted in the lack of basic knowledge about important risk factors for cervix cancer even among the literate population of school girls.

Keywords: Cervical cancer, HPV

INTRODUCTION

One woman dies of cervical cancer every 8 minutes in India.¹ About 500,000 women are diagnosed with

cervical cancer contributing to around 270,000 deaths, across the globe every year. Out of these, the burden of 230,000 (85%) deaths is owned by developing countries, with bare minimal resources to cope with the situation.²

In India alone there are an estimated 132,000 new cases and 74,000 deaths each year.³ The discovery that human papillomavirus (HPV) is responsible for virtually all cervical cancers opens exciting new possibilities for controlling this disease.⁴⁻⁶

Human papilloma viruses are small, double-stranded DNA viruses that infect the epithelium and induce mutations through the viral E6 and E7 proteins.⁷ Human papillomavirus (HPV) is the one of the most common sexually transmitted infections with 40% of the infection occurring in young women with peaks during the teens and early twenties.

Even though this is the group most at risk, there is considerable lack of awareness regarding cervical cancer, the risk factors associated with it and protective measures against it.

Currently, two vaccines are available against HPV – a bivalent vaccine called Cervarix and a quadrivalent vaccine called Gardasil, both of which are available in India. The vaccines have been proven to be highly effective in preventing HPV infections. The ideal age for vaccination is 13-26 years of age.⁸

Other risk factors for HPV infection, and thereby the potential for subsequent disease, include tobacco smoking, high parity, and long-term hormonal contraceptive use.⁹ Early age of first sexual intercourse has long been associated with an increased risk of cervical cancer, possibly due to the biological predisposition of the immature cervix during adolescence with increased susceptibility to persistent HPV infections and therefore a greater risk of cervical cancer.¹⁰

Age at first sexual intercourse, age at first pregnancy, and age at first marriage are highly interrelated and have similar cervical cancer risk estimates.¹¹ The general population have very little knowledge about the vaccine and vaccine coverage is very low due to a variety of reasons.

The group at highest risk of infection and the target age group of the vaccine particularly have little to no knowledge about cervical cancer or HPV. This study assesses the level of awareness about HPV and cervical cancer including risk factors, screening methods, early signs and awareness about vaccine and its acceptability among schoolgirls aged 16 – 18. This age group is highly susceptible to infection and adequate awareness and education can be very helpful.

METHODS

It was a comparative cross sectional study which was conducted at Government schools and private schools, from a city central India. Simple random technique, Sample size for the study was 300 School girls aged 16 –

18 years (150 from Government and 150 from private schools) Duration of study was 3 months.

Inclusion criteria

School girls from 16 – 18 years of age

Exclusion criteria

Girls not giving consent for the study. Students below 16 years and above 18 years

Ethical considerations

Informed consent is to be taken from the subjects verbally. All information collected through the semi structured questionnaire is kept confidential.

RESULTS

Total 85% of the students are aware about cervical cancer overall. 80% of Government school students and 90% of the private school students have heard about cervical cancer. 43% of the students have heard about HPV overall. 62% of the students in government schools and 24% of the students in private schools have knowledge about HPV.

(χ^2 value: 14.729 p= 0.0001), it is extremely statistically significant 53% of the students know that cervical cancer is preventable, 3% believe that it is not and 44% have no knowledge about it. 52% of Govt. school students know that it is preventable and 54% of Pvt. School students know that it is preventable. 50% of the students are aware that there are screening methods for cervical cancer, 54% in Government schools and 46% in private schools.

Table 1: Knowledge regarding cervical cancer.

	Government	Private	Total
Know about cervical cancer	80%	90%	85%
Knowledge about HPV	62%	24%	43%
Knows about the preventable nature of cervical cancer	26	27	53%
know about screening method being available	27	23	50%
know about screening test	80%	50%	65%

65% of the students are aware that PAP smear is used for screening for cervical cancer. 80% of the government school students are aware of PAP smear being the screening method whereas only 50% of the private school students are aware. Additionally, 34% of the private school students believe that MRI is a screening method

for cervical cancer. Only 3% of the students are aware of all the modes of transmission and 72% are aware about Sexual intercourse is mode of transmission. 83.1% of the students are aware about the sexual mode of transmission

but only 7.2% are aware that HPV can be transmitted by water in swimming pools and 9.6% are aware that it can be spread by skin to skin contact.

Table 2: Awareness about HPV.

		Government	Private	Total
Mode of spread of infection	All modes known	2%	4%	3%
	2 risk factors known	4%	2%	3%
	Only one known	70%	74%	72%
	None	24%	20%	22%
Symptoms of HPV infection		28%	12%	20%
Risk factors for HPV infection	All risk factors known	0	0	0%
	3 risk factors known	6%	6%	6%
	2 risk factors known	2%	6%	4%
	Only 1 known	78%	80%	79%
	None	14%	8%	11%

Table 3: Awareness about cervical cancer.

		Government	Private	Total
Risk factors for cervical cancer	All known	0%	0%	-
	4 known	0%	0%	-
	3 known	2%	0%	2%
	2 known	8%	6%	7%
	only 1	82%	80%	81%
	None	8%	14%	11%
Early symptoms of cervical cancer	All known	0%	0%	-
	4 known	0%	0%	-
	3 known	2%	4%	3%
	2 known	10%	12%	11%
	only 1	56%	50%	53%
	None	32%	34%	33%
Knowledge about when to consult a doctor		82%	96%	89%
Other methods of protection against cervical cancer		22%	18%	20%

Only 20% of the students are aware that warts are the characteristic of HPV infection. 28% of the government school students and 12% of the private school students have awareness about the major symptom of HPV infection. 79% of the students are only aware about one risk factor. 6% are aware of 3 risk factors. 39.3% are aware that multiple sexual partners are a risk factor for HPV infection and 38.2% are aware that unprotected sexual intercourse is a risk factor. Only 8.9% are aware that first intercourse at young age is a risk factor and only 13.45% are aware that other STDs are also a risk factor for HPV infection. 81% of the students only have knowledge of one risk factor.

50.5% are aware that HPV infection is a risk factor but only 5.6% were aware that smoking is among risk factor. 60% of the students only know about one symptom which requires medical attention. 33% of the students

only know about two hygienic practices during menstruation and 32% are only aware about one hygienic practice. 75% of the students only know about one way to maintain vaginal hygiene. Only 22% of the students have complete knowledge about maintaining vaginal hygiene. 53% of the students were aware about one of the early symptoms of cervical cancer. 89% of the students know when to consult doctor. 55% of the students were aware about availability of vaccine against HPV.

54% of the students are not aware that the vaccine is available in India and 45% are aware that it is, 60% of Government school students are aware that the vaccine is available in India whereas only 30% of private school students are aware. 89% of the students are not vaccinated against HPV. 55% of the students are unaware about the fact that whether their family members are vaccinated or not. The family members of only 10% of

the students are vaccinated. Only 45% have been advised about getting vaccinated against HPV. 73.3% of the students were advised about vaccination by their family members. Medical professionals only contributed 8.8%, 49% of the students know that is not safe to have unprotected sexual intercourse/have multiple sexual partners after a full course of HPV vaccine 67% of the students are not aware about protective efficacy of HPV

vaccine and 26% have misconceptions about it. 78% of the students did not know about other methods for protection against cervical cancer. 83% of the students are interested in getting vaccinated against HPV. 67% of the students will not receive vaccine because of inadequate information about the vaccine. 81% of the students would like to receive more advice about HPV and Cervical cancer.

Table 4: Response regarding vaccine.

	Government	Private	Total
Aware about vaccine	54%	56%	55%
Ready to accept vaccine	78%	88%	83%
Availability in India	60%	30%	45%
Percentage of students vaccinated	14%	8%	11%
Family members vaccinated	7%	13%	10%
Been advised about getting vaccinated	44%	46%	45%
Source of advice on vaccination	Family member	81.80%	65.20%
	Medical professionals	4.50%	13%
	Others	13.60%	21.70%
Awareness about efficacy	10%	4%	14%
Would like to receive more advice	70%	92%	81%

DISCUSSION

Present study was conducted on school girls aged 16-18 in a Government and a private school in the city Indore, Madhya Pradesh, India. This study shows a high level of awareness about cervical cancer. 85% of the students are aware about cervical cancer overall. 80% of Government school students and 90% of the private school students have heard about cervical cancer.

This is in concordance with a study conducted by Pandey D et al (Manipal, 2012) even though it was conducted among medical students and this study has been conducted on adolescent school girls.¹² 43% of the students have heard about HPV. Using the χ^2 test, this was found to be extremely statistically significant. A survey from United States (US) reported (Lambert, 2001) 40% of American women aged 18-75 years to have heard of HPV.¹³ None of the Malaysian women respondents aged 21-56 years had heard of HPV. 53% of the students know that cervical cancer is preventable, 3% believe that it is not and 44% have no knowledge about it.¹⁴

50% of the students are aware that there are screening methods for cervical cancer. 65% of the students are aware that PAP smear is used for screening for cervical cancer. In another study conducted in Kolkata only 11% of the respondents knew that PAP test was a screening method.¹⁵ Only 3% of the students are aware of all the modes of transmission and 72% are only aware about one mode of transmission. 83.1% of the students are aware

about sexual mode of transmission but only 7.2% are aware that HPV can be transmitted by water in swimming pools and 9.6% are aware that it can be spread by skin to skin contact. Only 20% of the students are aware that warts are the characteristic of HPV infection.

79% of the students are only aware about one risk factor for HPV infection. None of the students have complete knowledge of all the risk factors. 39.3% are aware that multiple sexual partners are a risk factor for HPV infection and 38.2% are aware that unprotected sexual intercourse is a risk factor.

Only 8.9% are aware that first intercourse at young age is a risk factor and only 13.4% are aware that other STDs are also a risk factor for HPV infection. 81% of the students only have knowledge of one risk factor for cervical cancer. None of the students have complete knowledge of all the risk factors.

There is a lower level of knowledge about the viral etiology of cervical cancer. 50.5% are aware that HPV is a risk factor for cervical cancer. The study by Pandey et al also had a high level of awareness about HPV being the etiology of cervical cancer (89.2%) but this can be attributed to the fact that the study was performed on Medical students, and another study conducted among graduate and post graduate students of various colleges across the city of Kolkata by Saha et al revealed a lower level of knowledge about the etiology of cervical cancer (15%).¹⁵

11.3% of the students identified recurrent cervicitis as a risk factor, 12.4% identified multiparity as a risk factor and 19.2% identified long term use of OCPs as a risk factor and only 5.6% identified smoking as a risk factor. In the Kolkata study, out of all student responders 13%, 15%, 29% respectively could identify early onset of sexual intercourse, parity and cigarette smoking as risk factors of cervical cancer.

In a Malaysian study, women aged 21-56 years could not identify any of these risk factors and the college students in Ghana had very low (1%) awareness of the link between smoking and cervical cancer.^{14,16} A Korean survey found 31.5% women aged more than 20 years to know that sexually transmitted infections (STIs) can cause cervix cancer.¹⁷ However, very few (11.3%) of our study students had such knowledge. Studies in Asian countries also reported low knowledge levels of public on etiologic involvement of STIs and HPV in cervical cancer.^{18,19}

58% of the students have only knowledge of one symptom of genital tract infection. None of the students know about all of the major symptoms and none of the students know when to properly seek medical attention. 60% of the students only know about one symptom of genital tract infection that requires medical attention. 33% of the students only know about two hygienic practices during menstruation and 32% are only aware about one hygienic practice. None of the students know completely about all the hygienic practices during menstruation. 75% of the students only know about one way to maintain vaginal hygiene. Only 22% of the students have complete knowledge about maintaining vaginal hygiene.

53% of the students were aware about one of the early symptoms of cervical cancer. 89% of the students know when to consult doctor. 55% of the students were aware about availability of vaccine against HPV. Awareness regarding the availability of vaccine against cervical cancer in a study conducted among women attending routine gynaecological care in Belgium was only 50%; whereas in the Manipal cohort of medical students it was 75.6%.²⁰

54% of the students are not aware that the vaccine is available in India and 45% are aware that it is, 60% of Government school students are aware that the vaccine is available in India whereas only 30% of private school students are aware. This shows us that government school students are more aware of government programmes. 89% of the students are not vaccinated against HPV.

55% of the students are unaware about the fact that whether their family members are vaccinated or not. The family members of only 10% of the students are vaccinated. Only 45% have been advised about getting vaccinated against HPV. 73.3% of the students were advised about vaccination by their family members. Medical professionals only contributed 8.8%. Only 49%

of the students know that it is not safe to have unprotected sexual intercourse/have multiple sexual partners after a full course of HPV vaccine.

67% of the students are not aware about protective efficacy of HPV vaccine and 26% have misconceptions about it. 78% of the students did not know about other methods for protection against cervical cancer. 83% of the students are interested in getting vaccinated against HPV. 67% of the students will not receive vaccine because of inadequate information about the vaccine.

81% of the students would like to receive more advice about HPV and Cervical cancer. 70% of government school students and 92% of private school students said that they are interested in receiving more advice about HPV and cervical cancer. On applying the χ^2 test, this was found to be statistically significant. The results of our study and that from other studies too suggest that despite the advent of vaccines to prevent HPV and the impact of cervical cancer deaths, especially in developing countries, like India, there has not been any major improvement in HPV awareness in the general population and adolescent girls, who are most at risk of HPV infection and in whom, interventions and behaviour change can bring dramatic results.

CONCLUSION

The results of our study and that from other studies too suggest that despite the advent of vaccines to prevent HPV and the impact of cervical cancer deaths, especially in developing countries, like India, there has not been any major improvement in HPV awareness in the general population and adolescent girls, who are mostly at risk of HPV infection and in whom, interventions and behaviour change can bring dramatic results.

The low level of knowledge indicates that the larger population of less educated women is in greater lack of awareness. During this survey we accessed a population that has not been widely studied and our observations leads to conclude that the absence of an active national cervical screening and awareness program has resulted in the lack of basic knowledge about important risk factors for cervix cancer even among the literate population of school girls.

Unless and until the Indian women gather enough knowledge and awareness on cervical cancer, it would never be possible to accomplish the mission of National Cancer Control Programme. There is need for a countrywide strong knowledge base about cervical cancer so that general public can easily identify the early symptoms of the disease and take preventive measures.

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