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Original Research Article

Knowledge, attitude and practice towards cervical cancer screening and human papilloma virus vaccine at a tertiary care facility in North India

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ABSTRACT

Background: Cervical cancer continues to be a major health care problem and most common cause of cancer deaths. Many screening methods are available to detect the disease in precancerous stage. Cervical cancer is the only cancer that is preventable with HPV vaccine against the causative agent responsible for this condition. Knowledge and attitude of women determine the likelihood of women undergoing screening procedures and HPV vaccination which will have implications for the future generations. This study was conducted to determine the knowledge, attitude and practice of women towards cervical screening and HPV vaccine.

Methods: This is a facility based observational cross-sectional study conducted at Dr. RMLIMS, Lucknow, over a period of 3 months - January 2019 to March 2019. Women attending gynecology OPD were enrolled after verbally consenting for the study and were required to fill a pre-structured questionnaire which was then analyzed and assessed.

Results: A total of 368 participants answered the questionnaire. Overall, 154 subjects (41.8%) had adequate knowledge regarding cervical carcinoma risk factors, symptoms, screening for cancer and HPV vaccine. Favorable attitude was seen in 315 (85.5%) participants. Ninety-six participants (26.0%) had ever had a cervical cancer screening and 23 participants (6.2%) had ever received HPV vaccine which was very low. Lack of knowledge and cost factors were the main reasons cited for these low screening and vaccination rates among the participants.

Conclusions: The study shows that knowledge was inadequate and screening and vaccination rates were very low in the study population. This highlights the need to educate the community regarding cervical cancer prevention and to make these services readily available at affordable costs to achieve the ultimate goal of elimination of cervical cancer.

Keywords: Cervical cancer screening, Human papilloma virus vaccine

INTRODUCTION

Cervical cancer is a major global health problem being the fourth most common cancer in women worldwide and the most common cause of deaths from cancer in developing countries. According to the Global Cancer Observatory 2018 database, the number of cervical cancer cases reported in the year 2018 were around 5,70,000 with 3,11,000 reported deaths related to the disease. Of these 97,000 new cases and 60,000 deaths

were reported from India.¹ This deplorable state exists even though cervical cancer is the only cancer which can be detected early by routine screening and is preventable by human papilloma virus (HPV) vaccination. Cervical cancer occurs at 30-34 years of age and peaks again at 55-65 years.²

The HPV infection is the most important risk factor for cervical intra-epithelial neoplasia and invasive cervical cancer.³ Nearly 80% sexually active women acquire HPV

infection by the age of 50 years.² The human papilloma virus has over 100 serotypes of which few are oncogenic. Of the high-risk strains, HPV- 16 and HPV- 18 account for 70-75% of cervical cancer cases and 40-60% of its precursors.^{4,5} Oncogenic subtypes also cause other cancers like anal, vulvar, vaginal, penile and oropharyngeal cancers.⁶ HPV -6 and HPV-11 serotypes are associated with benign genital infections such as genital warts.⁷ Although presence of HPV infection is essential in causing cancer, the progression from mere infestation to malignancy depends on other cofactors like early initiation of sexual activity, multiple sex partners, tobacco smoking and co-infection with HIV and long-term use of hormonal contraceptives. Co-infection with chlamydia trachomatis and herpes simplex virus type-2, immunosuppression, low socioeconomic status and poor hygiene are some other cofactors.⁸

Conventional screening methods include cervical cytology using the Pap smear and liquid base cytology. Testing for HPV is a more novel screening method which is gaining much popularity. Studies have shown better results with HPV tests than cytology in protection against pre-invasive and invasive cervical cancer.⁹ Though available in India, these screening techniques are underutilized and only a few women are benefitted. This is mainly due to lack of uniformity in health care sectors in urban and rural areas and restricted availability in government sectors owing to enormous costs involved. Also, the vast population makes it nearly impossible to achieve large scale routine screening of the susceptible population.

Two HPV vaccines, a quadrivalent Gardasil® (16, 18, 6 and 11) and bivalent Cervarix® (16, 18) are available and licenced for use. Both these vaccines have near 100% efficacy.¹⁰ Although approved by Drug Controller General India in 2008, these vaccines have not been included in the Universal Immunization Programme in India largely due to financial reasons.

HPV vaccine as a method of primary prevention and cervical screening and treatment of early lesions as a method of secondary prevention together can help reduce the huge burden of cervical cancer in India. With this in mind, this study was planned to evaluate knowledge, attitude and practice of cervical cancer screening and HPV vaccine use in the general population.

Aims and objectives

- To study the demographic details of the participants
- To assess knowledge of participants about cervical cancer etiology, screening and detection, treatment and vaccines for prophylaxis of cancer
- To assess attitude of participants towards cervical cancer screening
- To assess practice of participants regarding routine screening for cervical cancer and HPV vaccination.

METHODS

The present study is a facility based cross-sectional study conducted at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, over a period of 3 months-January 2019 to March 2019. A pre-structured questionnaire was designed based on several studies pertaining to the topic and included information regarding socio-demographic characteristics of the participants. There were 16 questions related to knowledge and 10 questions to assess attitude. Those study participants who had been screened for cervical cancer through Pap smear/HPV test or those who had received HPV vaccine were regarded as having good practice. Knowledge was assessed using a 16-point scale which had dichotomous response i.e. yes or no. Each yes scored 1 and no 0. A score of >50% was considered optimal (≥ 8 positive responses). Attitude was assessed by 10 statements categorized as 4-point scale: strongly agree, agree, disagree, strongly disagree. Attitude was considered favorable if five or more Strongly Agree or Agree responses were obtained.

Inclusion criteria

- Women attending gynecology OPD for various reasons
- Women consenting to participate in the study.

Exclusion criteria

- Women not consenting to participate in the study
- Women diagnosed with or history of gynecological malignancies, previously diagnosed abnormal cervical smear reports.

Assuming 50% optimal knowledge of the population with 95% confidence interval and 5% non-response rate, sample size was estimated to be 400.

The questionnaires were filled by women attending the gynaecology outpatient for various reasons, after giving informed consent.

Statistical analysis

The filled forms were analysed for results. A response of more than 50% was considered as good for knowledge and attitude. Descriptive statistics such as Mean \pm SD, frequency and proportion were used for analysis of socio-demographic data and KAP of study population. Determinants of practice were analysed by chi square test with p-value <0.05 considered statistically significant.

RESULTS

Response rate in this study was 92% (n=368). The socio demographic profile of the participants is shown in Table 1. Among 368 participants, around 64% belonged to urban areas and 50% were less than 40 years of age.

Nearly 65% of study participants were married and had at least 1 child. Eighty four percent had received some form of education. Around 38% of study population comprised working women and 87% of the participants were Hindus. Mean age of the study subjects was 29.8±6.3 years (SD).

Table 1: Socio-demographic characteristics of the study population.

Variable	Number n=368	Percentage
Residence		
Urban	235	63.8%
Rural	133	36.1%
Age (years)		
18-39	208	56.5%
40-59	115	31.2%
≥60	45	12.2%
Marital status		
Married	242	65.7%
Single, divorced, widowed	126	34.2%
Level of education		
Uneducated	56	15.2%
Basic education or above	312	84.7%
Occupational status		
Employed	142	38.5%
Unemployed	226	61.4%
Religion		
Hindu	321	87.2%
Muslim/others	47	12.7%
Number of children		
None	73	19.8%
1 or more	295	80.1%
Number of female children		
None	142	38.5%
1 or more	226	61.4%

Knowledge of study subjects

All participants were aware of cancers in women and that cancer could develop in uterine cervix. The major sources of information were friends and relatives (45.9%) as depicted in Figure 1, followed by electronic (23.6%) and

print media (15.2%) and least from health care sector (7.6%).

As shown in Table 2, 34% participants knew of HPV as a causative agent for cancer cervix and more than 50% of the participants knew about risk factors of cervical cancer. Nearly half of them were aware of some symptom of cervical cancer. Fifty-six percent participants were aware of some form of cervical screening but only 45% knew early cancer was curable. Nineteen percent participants were aware of the role of HPV vaccine in preventing cervical cancer. Study participants who answered 8 or more questions correctly were considered as having good knowledge. Overall, 154 subjects (41.8%) had good knowledge regarding cervical carcinoma risk factors, symptoms and screening for cancer and HPV vaccine.

Attitude of study participants

The questionnaire was used to assess attitude of study participants towards cervical screening and HPV vaccination. Majority of the study participants had positive attitude towards cervical screening and HPV vaccination.

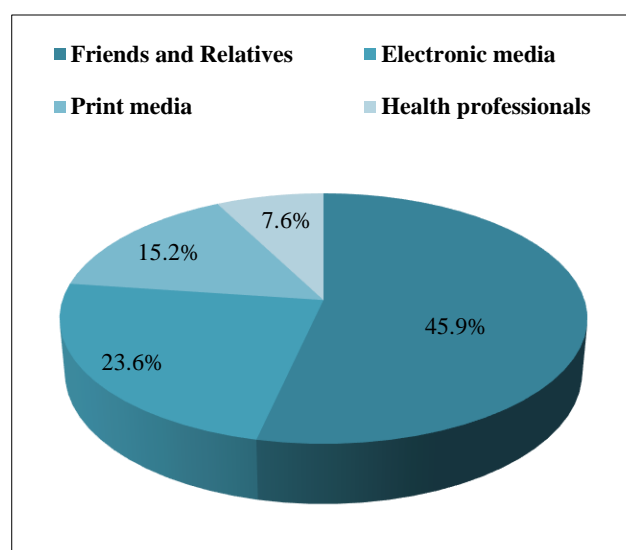


Figure 1: Sources of information about screening tests.

Table 2: Knowledge of cervical cancer risk factors, symptoms, screening and HPV vaccine.

Knowledge of cervical cancer	Yes frequency	Percentage	No frequency	Percentage
Knowledge about risk factors of cervical cancer				
Do you know that human papilloma virus infection is a risk factor for cervical carcinoma?	126	34.2%	242	65.7%
Do you know that having multiple sexual partners is a risk factor for cervical carcinoma?	254	69.0%	114	30.9%
Do you know that having sex at early age is a risk factor for cervical carcinoma?	198	53.8%	170	46.1%

Knowledge of cervical cancer	Yes frequency	Percentage	No frequency	Percentage
Do you know that genital infections could increase risk of cervical cancer?	237	64.4%	131	35.5%
Do you know that smoking is a risk factor for cervical carcinoma?	200	54.3%	168	45.6%
Do you know having children at an early age and having many children increases risk of cervical carcinoma?	149	40.4%	219	59.5%
Do you know HPV virus causes genital warts and other cancers too (vulvar cancer, anal cancer, oral and head and neck, penile cancer in males)?	117	31.7%	251	68.2%
Signs and symptoms of cervical cancer				
Do you know that foul-smelling vaginal discharge is a symptom of cervical carcinoma?	205	55.7%	163	44.2%
Do you know that post coital bleeding is a symptom of cervical carcinoma?	198	53.8%	170	46.1%
Do you know that postmenopausal bleeding (PMB)/intermenstrual/ irregular bleeding is a symptom of cervical carcinoma?	173	47.0%	195	52.9%
Do you know that there may not be any symptoms at all in early stages?	139	37.7%	229	62.2%
Prevention of cancer cervix				
Are you aware of the screening for cervical cancer? PAP, LBC, HPV	207	56.2%	161	43.7%
Do you know that human papilloma virus infection can be detected without any symptoms?	182	49.4%	186	50.5%
Do you know that it is possible to detect cancer cervix in pre-cancer stage with routine screening?	194	52.7%	174	47.2%
Are you aware cervical carcinoma if detected early is treatable?	165	44.8%	203	55.1%
Do you know that it is preventable with a vaccine against HPV?	69	18.7%	299	81.2%

Table 3: Attitude regarding screening practice and HPV vaccine (frequency and percentage).

Attitude related questions	Strongly agree	Agree	Disagree	Strongly disagree
Cervical cancer is a common cancer in women in India	212 (57.6%)	141 (38.3%)	12 (3.2%)	3 (0.8%)
Any adult woman could develop cervical cancer during her lifetime	244 (66.5%)	81 (22.0%)	29 (5.9%)	142 (3.8%)
All women aged 30-65 years should undergo cervical screening	253 (68.7%)	78 (21.2%)	32 (8.7%)	5 (1.3%)
Screening can help in early detection of cancer cervix	149 (40.4%)	102 (27.7%)	88 (23.9%)	29 (7.8%)
Would you go for cervical cancer screening if available free of cost?	302 (82.0%)	48 (13.0%)	10 (2.7%)	8 (2.1%)
Would you like to go for a cervical if it would cause no harm	322 (87.5%)	40 (10.8%)	2 (0.5%)	4 (1.0%)
Would you like to go for HPV vaccination after knowing its role in prevention of cervical carcinoma	295 (80.1%)	54 (14.6%)	11 (2.9%)	8 (2.1%)
Would you go for HPV vaccination if available free of cost?	288 (78.2%)	31 (8.4%)	17 (4.6%)	32 (8.6%)
Would you like to go for HPV vaccination if it caused no harm	308 (83.6%)	41 (11.1%)	9 (2.4%)	9 (2.4%)
Not all women need HPV vaccine	112 (30.4%)	97 (26.3%)	51 (13.8%)	108 (29.3%)

Table 3 depicts attitude of participants towards cervical cancer screening practices and HPV vaccination. Overall

favourable attitude was seen in 315 (85.5%) participants. As depicted in Table 3, 68.7% participants strongly

agreed that women aged 30-65 years should undergo cervical screening, 82% strongly agreed to cervical screening if available free of cost, 80% strongly agreed to HPV vaccination after learning of its role in cervical cancer prevention and 78% strongly agreed to go for HPV vaccination if available free of cost. Most participants agreed to undergo screening and vaccination if they were harmless.

Practice of study participants

Table 4 shows 96 participants (26.0%) had ever had a cervical cancer screening. Of the 272 (73.9%) who had never had a screening, major reasons cited were lack of knowledge about the tests, cost factor and not knowing who needed the tests.

Table 4: Practice of cervical screening and HPV vaccination.

Practice related questions	Yes frequency	Percentage	No frequency	Percentage
Have you ever had a Pap smear test/ HPV test?	96	26.0	272	73.9
Have you ever received HPV vaccine?	23	6.2	345	93.7

Table 5: Chi square analysis of socio-demographic variables and screening practices.

Variable	Percentage	Poor screening practice (n=272)	Good Screening practice (n=96)	Chi square χ^2 p-value
Residence				
Urban	63.8%	160	75	11.45
Rural	36.1%	112	21	p<0.05
Age (years)				
18-39	56.5%	150	58	10.27
40-59	31.2%	80	35	p<0.05
≥60	12.2%	42	3	
Marital status				
Married	65.7%	165	77	12.04
Single, divorced, widowed	34.2%	107	19	p<0.05
Level of education				
Basic education or above	84.7%	238	74	5.96
Uneducated	15.2%	34	22	p<0.05
Occupation				
Employed	38.5%	62	80	109.73
Unemployed	61.4%	210	16	p<0.05
Religion				
Hindu	87.2%	237	84	0.179
Muslim/ others	12.7%	29	12	p=0.671*
Number of children				
1 or more	80.1%	208	87	8.93
None	19.8%	64	9	p<0.05
Female children				
1 or more	61.4%	159	67	3.84
None	38.5%	113	29	p<0.05

*p value <0.05 significant.

As depicted in Table 4, only 23 subjects (6.2%) had ever received HPV vaccine which was very low. The major reasons cited were lack of knowledge about the vaccine and cost factors. There were also fears of side effects and effects on sexual desire.

All the subjects who had received the HPV vaccine had undergone cervical screening at some time.

Table 5 demonstrated chi square analysis of socio demographic variables and screening practices. As shown in the table, good screening practices were significantly related to urban residence and younger age. Those who were married had higher screening rates compared with single women. Educated and employed women had more cervical screening rates. Participants who had children and especially female child had more screening

procedures. Screening practices were not affected by religious beliefs of the individual participants.

DISCUSSION

The study shows that the participants had fair knowledge and favorable attitude towards cervical cancer screening and HPV vaccination even though the number of participants who had ever undergone cervical screening and HPV vaccination were very low.

Factors associated with practice of cervical screening were urban residence, younger age group, those who had children especially female offspring, educated and working women. The major reason for not undergoing screening for cervical cancer was lack of knowledge about the tests. The uptake of HPV vaccine was very low, again majorly due to lack of knowledge and high cost. Religious beliefs of the participants had no bearing on the practices.

In this study, knowledge regarding cervical cancer etiology, symptoms and screening were average. This finding is similar to study done by Gupta RK et al, in north India in 2019, however knowledge of participants is lesser than that reported by Narayana G et al from South India in 2017, and more than that reported by Bansal AB et al in North India.¹¹⁻¹³ The findings are also similar to studies done by Tran NT et al in Korea.¹⁴ Though the knowledge of participants regarding cervical screening was average, more than half (56%) were aware of some form of screening for cervical cancer. This can be attributed to increased awareness in women due to mass media and increased availability of cervical screening in the urban hospitals. This study reflects that more and more women are becoming conscious about self-care and are taking cognizance of possible early symptoms and reporting early to health care providers. However, despite a fair amount of knowledge regarding cervical cancer etiology, signs and screening, the number of participants who had ever undertaken cervical screening was extremely low (26.0%).

The main reasons for this can be attributed to lack of infrastructure and uniform quality of health care provided in different regions in India with large dissimilarities in urban and rural settings. Similar findings have been reported by Elizabeth A et al, which reports screening rate of 29.4% among Indian women with 34% in urban areas.¹⁵ However, the rate of cervical screening is much higher than that reported by Tran NT et al 2011 in Korea.¹⁴

In this study, 85% women had favorable attitude towards cervical screening and majority of those willing to get screened were happier if it caused no harm and was done free of cost. However, women still need to be educated regarding implications of this disease so as to motivate them to take up routine screening especially in places where it is available at affordable costs.

Although 34% women were aware of HPV in cervical cancer etiology and 19% knew of HPV vaccine, a very small number of women had ever received the HPV vaccine (23 or 6.2%). Most of the data available on HPV vaccine is from KAP studies among health care providers and show fair level of knowledge in this cohort.^{16,17} The study by Pandey et al, from North India reports a lower level of awareness (28%) for the HPV vaccine among women.¹⁸ Vaccination rates are higher in the private sector compared with public sector 16 and more in developed nations.^{16,19} Lack of knowledge regarding the vaccine, cost factors and lack of acceptability due to certain beliefs about religious practices and sexual implications are the main reasons cited for low vaccination levels. Also myths regarding safety of this vaccine which resulted from unfortunate events during roll-out of vaccine trials in India can be a hindrance in its use.²⁰ Nevertheless, studies have shown promising results and possibility of success with cost reducing measures such a single dose vaccination and government funding.²⁰ Although the vaccine has long been approved for use by the Drug Controller General, the cost factor stands to be a big obstacle as the vaccine is largely imported for use. The uptake of HPV vaccine in this study was extremely low (6.2%). This finding is similar to many studies in India although they have been done in medical students/health care workers.²¹

This study elucidates the need for community participation in strengthening cervical screening practices and vaccination of young girls to ultimately achieve the aim of elimination of cervical cancer. Also, public-private partnership will ensure availability of cervical cancer screening methods and procuring of HPV vaccines at affordable costs. Citing the example of Australia, which was the first country to introduce universal HPV vaccination and routine screening by HPV testing, is estimated to achieve cervical cancer incidence of less than six cases per 1,00,000 women by 2020 and fewer than four per 1,00,000 by 2028 if the country maintains its current level of coverage of HPV vaccination and screening which have been exemplary.²² Implementation of routine cervical screening programmes and HPV vaccination in national immunization schedule can gradually help reduce incidence of cervical cancer and build up herd immunity against HPV. Although achieving such targets will be a long journey through the next few decades, Rome too was not built in a day!

Thus, the need for increasing awareness among women about cervical cancer and providing screening services and HPV vaccines with emphasis on vaccination of potential female children, rest with the clinician as they are the ones directly in contact with the woman and parents are receptive to advices given by doctors about wellbeing of children.

The drawback in this study was that the data was from a tertiary care facility which may not be representative of the general population. Larger surveys need to be done to

estimate the screening and HPV vaccination rates in the community.

Overall, the study highlights the need for educating the community regarding need for cervical cancer screening methods available at affordable costs. With this in mind authors can take small steps towards the ultimate aim of eliminating cervical cancer.

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