

An Observational Study to Assess the Awareness and Knowledge about Cervical Cancer, Pap Smear Testing and its Use and HPV among WomenReshita¹, Swati²¹Senior Resident, Department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India²Senior Resident, Department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India

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Conflict of interest: Nil

Abstract**Aim:** The aim of the present study was to assess the awareness and knowledge about cervical cancer, Pap smear testing and its use and HPV among women living in urban women in Bihar region.**Methods:** A questionnaire-based survey, using face-to-face interviews, was carried out at department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India. Women aged 16 years and above were approached in different public sites thus increasing the chance of covering women from different social groups. A total of 500 women agreed to voluntarily participate in the study. The women were interviewed by two trained researchers who had extensive knowledge of cervical cancer, screening and HPV.**Results:** Of the interviewed women, 51% reported never being married, 63% had a university level of education and 52% were employed. The majority of the women were of low income (70%). Of the 500 participating women, 92% had heard of cervical cancer. Among these women, 64% felt moderately/extremely concerned about cervical cancer. Only 20% of women reported knowing the causes of cervical cancer. The most frequently cited causes of cervical cancer were abortion and sexually transmitted infection (including HPV) respectively in 30% and 28%. The less frequently cited causes of cervical cancer were early pregnancy and high parity (2%). When asked about the possibility of developing cervical cancer one day, 40% of women believed they had no risk. Participating women acquired information about cervical cancer mostly from either foreign media or medical workers was 28% and 27% respectively.**Conclusion:** Our study highlights the lack of knowledge about cervical cancer in women. There is a real necessity to inform women about cervical cancer screening. Education campaigns involving the local media may be a good approach to inform women.**Keywords:** Cervical cancer, Pap smear test, HPV, Knowledge, urban womenThis is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

According to the WHO, cervical cancer is the 4th most common cancer and third most common cause of death affecting women globally. In 2020, over 600,000 women were diagnosed, and 342,000 women died from cervical cancer worldwide. 90% of all new cases and deaths occurred in low- and middle-income countries. [1] Worldwide, more than 70% of cervical cancers are caused by two strains of human papillomavirus (HPV) 16 and 18. These strains are also called high-risk strains of HPV. [2,3]

Cervical cancer is a highly preventable and curable disease when detected and treated early in its precancerous stage. Medical science has provided effective evidence-based interventions for the prevention, early detection and treatment of the disease. As a result, no woman should be in the

position to suffer or die from cervical cancer and its complications. Unfortunately, this is not the reality. Cervical cancer has remained a common disease as noted by the larger worldwide cancer statistics. In 2012, cervical cancer was the 4th most common cancer seen among women worldwide. While it was the 2nd commonest female cancer in developing countries after breast cancer, cervical cancer was uncommon in developed nations, where it was not even rated among the top 10 female cancers. [4] Regular cervical cancer screening with Papanicolaou (Pap) smear testing has remained an effective public health intervention in the prevention and subsequent reduction of the incidence, morbidity and mortality of cervical cancer disease. [5-7] Though the modalities of screening could either be organized mass screening program or

opportunistic screening, it has been demonstrated that only organized mass screening of the populace that targets all women at risk is known to be effective. [8] Over the past 40 years, this population based method of screening has drastically reduced the incidence and mortality of cervical cancer by as much as 65% in the developed world. [9,10]

Despite the high prevalence of cervical cancer, many studies have shown that women's knowledge about HPV, cervical cancer and cervical screening is very low. [11-14] Moreover, the uptake and success of cervical cancer screening is determined by women's knowledge and awareness of cervical cancer. [14]

The aim of the present study was to assess the awareness and knowledge about cervical cancer, Pap smear testing and its use and HPV among women living in urban women in Bihar region.

Materials and Methods

A questionnaire-based survey, using face-to-face interviews, was carried out at department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India for one year. Women aged 16 years and above were approached in different public sites thus increasing the chance of covering women from different social groups. A total of 500 women agreed to voluntarily participate in the study. The women were interviewed by two trained researchers who had extensive knowledge of cervical cancer, screening and HPV. The interviews were conducted in Hindi, the national language of the country. All participants gave written consent and confidentiality was ensured through the use of code numbers rather than participants' names.

Questionnaire Data and Process

A questionnaire based on a literature review and a previously published questionnaire¹⁵ was designed in English. The questionnaire was translated into Hindi and then translated back into English for quality assurance. The items on the questionnaire were divided into four sections: (i) demographic characteristics of the participants, and awareness, knowledge, and information sources of (ii) cervical cancer, (iii) Pap smear testing and (iv) HPV. Information on age, marital status, occupation,

number of children, level of education and monthly income was collected.

During the interview, if the participant had never heard about cervical cancer, she was asked if she had ever heard about Pap smear testing. If the answer was again no, she was asked if she had ever heard about Human Papillomavirus/HPV. If this answer was also no, the questionnaire was finished for this participant, to eliminate answers due to guessing. Two knowledge scores were created: one for the entire population of the study and one to measure the knowledge level about HPV for women who had heard about HPV. The participants received 1 point for correct answers and 0 for either wrong answers or when the answer was "I don't know". Questions regarding specific knowledge about cervical cancer, Pap smear testing and HPV were considered to create the overall knowledge score. The knowledge questions were grouped and the mean score was computed to determine the overall knowledge of participants. The participants who scored average or above were considered as "knowledgeable" and the others as "not knowledgeable". For participants who answered questions about HPV (on the basis that they had indicated that they had heard of HPV), three levels of knowledge were defined: a low level of knowledge (0-2 correct answers), a fair level of knowledge (3-4 correct answers) and an excellent level of knowledge (5-6 correct answers). At the end of the questionnaire, an information session about the disease was given to the participant when they answered 'yes' to the last question: "Do you think you need information about this disease?"

Data Analysis

Statistical analysis was performed using Epi info6 software. Logistic regression analysis was used to identify the effect of demographic characteristics on the level of knowledge about cervical cancer, Pap smear testing and HPV. Odds ratio and 95% confidence intervals were used to identify the strength of association. Associations were considered statistically significant at $p < 0.05$.

Results

Table 1: Characteristics of the study participants

Characteristics	N
Age	
<30	300 (60)
30-39	115 (23)
40-49	60 (12)
≥50	25 (5)
Marital status	
Never married	255 (51)
Ever married	245 (49)
Occupation	
Student	200 (40)

Unemployed/housewife/retired	40 (8)
Employed	260 (52)
Education	
No school	10 (2)
Primary school	15 (3)
Secondary school	160 (32)
University	315 (63)

Of the interviewed women, 51% reported never being married, 63% had a university level of education and 52% were employed.

Table 2: Participants' awareness and knowledge of cervical cancer, and information source about cervical cancer, Pap smear testing and HPV

Questions	N
Have you ever heard of cervical cancer?	
No	40 (8)
Yes	460 (92)
Are you concerned about having/developing cervical cancer?	
No	105 (21)
A little	75 (15)
Moderately	120 (24)
Extremely	200 (40)
Do you know the risk factors/causes of cervical cancer?	
No	400 (80)
Yes	100 (20)
Risk factors for cervical cancer cited by the respondents?	
Abortion	150 (30)
Sexually transmitted infection	140 (28)
Smoke	110 (22)
Multiple partners	100 (20)
Insert products/fingers into the vagina	90 (18)
Sex at an early age	75 (15)
Lack of hygiene	50 (10)
Alcohol/Drug	40 (8)
Excessive sex	20 (4)
Heredity	15 (3)
High parity	10 (2)
Early pregnancy	10 (2)
Self-perceived chance of developing cervical cancer?	
Non existent	200 (40)
Very low	100 (20)
low	60 (12)
moderate	70 (14)
High	70 (14)
Information source about cervical cancer?	
Foreign media	140 (28)
Local media	135 (27)
Medical staff	130 (26)
Family/friends	95 (19)
Information source about Pap smear test?	
Medical staff	260 (52)
Foreign media	115 (23)
Local media	60 (12)
Family/friends	65 (13)
Information source about HPV?	
Foreign media	325 (65)
Medical staff	175 (35)
Local media	0
Family/friends	0

Of the 500 participating women, 92% had heard of cervical cancer. Among these women, 64% felt moderately/extremely concerned about cervical cancer. Only 20% of women reported knowing the causes of cervical cancer. The most frequently cited causes of cervical cancer were abortion and sexually transmitted infection (including HPV) respectively in 30% and 28%. The less frequently

cited causes of cervical cancer were early pregnancy and high parity (2%). When asked about the possibility of developing cervical cancer one day, 40% of women believed they had no risk. Participating women acquired information about cervical cancer mostly from either foreign media or medical workers was 28% and 27% respectively.

Table 3: Knowledge and attitudes toward the Pap smear test

Questions	N
Have you ever heard about Pap smear test?	
No	360 (72)
Yes	140 (28)
We use pap smear test	
To prevent cervical cancer	420 (84)
To prevent infection in genital tract of women	135 (27)
To prevent sexual transmitted infection in general	25 (5)
Undergone a pap smear test	
No	175 (35)
Yes	325 (65)
How many times?	
At one time	240 (48)
2-3 times	210 (42)
>3times	50 (10)
Motivation to undergone a pap smear test	
On demand of doctor	350 (70)
By yourself	60 (12)
Both	90 (18)
Feel pain during Pap smear test?	
Yes	175 (35)
No	325 (65)
Feel embarrassed?	
Yes	300 (60)
No	200 (40)
Normal frequency for doing pap smear test	
Every year	380 (78)
Every 2-3years	110 (22)
Reasons for not making pap smear test:	
negligence	250 (50)
I don't have the financial resources	60 (12)
I think it is not important	70 (14)
I am afraid to discover a grave disease	70 (14)
I am afraid of pain	50 (10)

Only 28% of the study participants had heard about cervical cancer prevention through screening. Among these, 65% had a Pap smear previously. The principal motivation to undergo Pap smear testing as cited by these women was “the demand of their doctor” (70%). Some women reported being

embarrassed about the test (60%) and had experienced pain during screening (35%). The main reason given by women who had never been screened for cervical cancer but had heard about it was neglect (50%).

Table 4: Participants' knowledge of HPV

Questions	Participant's correct answer
HPV can cause urinary infection?	100 (20%)
HPV is the principal risk factor of cervical cancer?	325 (65%)
HPV can cause genital warts?	250 (50%)
HPV infect only women?	200 (40%)
HPV is a sexually transmitted infection?	350 (70%)
HPV can cause genital warts?	250 (50%)
Condom gives total protection against HPV?	250 (50%)

The majority of respondents reported that HPV is the principal risk factor of cervical cancer (65%) and was acquired sexually (70%).

Discussion

Cervical cancer is the fourth most common cancer among women worldwide, with an estimated 528,000 new cases and 266,000 deaths in 2012. [16] Human papillomavirus (HPV) is thought to be the most common sexually transmitted infection worldwide and more than 75% of sexually active adults have had HPV infection in their lifetime. [17] The correlation between the presence of this virus and the development of precancerous lesions that may lead to cervical cancer is clearly established. Cervical cancer is one of the few preventable human cancers, its prevention is based on the early diagnosis of precancerous lesions whose treatment generally makes the development of cancer almost impossible. [18]

The most common cause of cervical cancer is Human Papillomavirus (HPV) infection, which is the most common sexually transmitted infection worldwide with women having multiple sex partners or who have sex with men who had many other partners. [19] Though there are 140 types of HPV virus, it is found that only 40 of them are sexually transmitted, and among them only two high risks HPV types 16 and 18 are reported to be responsible for more than 80% of cervical cancer in India. [19,20] Of the interviewed women, 51% reported never being married, 63% had a university level of education and 52% were employed. Of the 500 participating women, 92% had heard of cervical cancer. Among these women, 64% felt moderately/extremely concerned about cervical cancer. Only 20% of women reported knowing the causes of cervical cancer. The most frequently cited causes of cervical cancer were abortion and sexually transmitted infection (including HPV) respectively in 30% and 28%. The less frequently cited causes of cervical cancer were early pregnancy and high parity (2%). When asked about the possibility of developing cervical cancer one day, 40% of women believed they had no risk. Participating women acquired information about cervical cancer mostly from either foreign media or medical workers was 28% and 27% respectively. Only 28% of the study participants had heard about

cervical cancer prevention through screening. The risk factors that were most frequently cited included abortion, sexually transmitted infection, smoking, multiple sexual partners, inserting products/fingers into the vagina, sex at an early age and lack of hygiene. In African societies, incorrect risk factors for cervical cancer such as abortion, lack of hygiene and the insertion of products/fingers into the vagina are commonly cited by women. [21,22] This suggests that accurate information about cervical cancer and its causes needs to be available to women through mass campaigns that also dispel false traditional beliefs about cervical cancer. The other risk factors commonly cited by women were related to sexual comportment and were identified in the literature as risk factors for cervical cancer. [23]

Among these, 65% had a Pap smear previously. The principal motivation to undergo Pap smear testing as cited by these women was "the demand of their doctor" (70%). Some women reported being embarrassed about the test (60%) and had experienced pain during screening (35%). The main reason given by women who had never been screened for cervical cancer but had heard about it was neglect (50%). The majority of respondents reported that HPV is the principal risk factor of cervical cancer (65%) and was acquired sexually (70%). In the present study, the major barrier cited by women in use for cervical cancer screening was negligence; fear of discovering a serious disease was also cited by the interviewed women. These barriers to screening were mentioned in previous studies. [11,24] Negligence may suggest the need for an aggressive information campaign about this disease. However, fear reflects a poor understanding of the natural history of cervical cancer and of the principle behind cervical cancer screening. Moreover, this suggests that the acceptability of cervical screening could be high if women were simply informed.

Conclusion

Our study highlights the lack of knowledge about cervical cancer in women. There is a real necessity to inform women about cervical cancer screening. Education campaigns involving the local media may be a good approach to inform women.

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