

## Knowledge and Awareness of Cervical Cancer Risk Factors among Educated Youth: A Cross Sectional, e-Questionnaire Based Survey among the College Students of Jammu City

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**Abstract:** Cervical cancer is a leading cause of cancer-related mortality among women in India, and India has the largest burden of cervical cancer patients in the world. One out of every five women suffering from this disease belongs to India. The objective of this study was to assess knowledge and awareness of cervical cancer risk factors among college going female students of Jammu University and to study about their behavior regarding prevention and screening of cervical carcinoma. A descriptive self-administered, e-questionnaire was employed for data collection. Data analysis was done using descriptive statistics. Two hundred and fifty two female students (n = 252) between the age group 17 and 25 years participated with a response rate of 100%. Majority of students (81.7%) were aware of the term cervical cancer. However, only 68 (26.9%) thought that they could suffer from it as they had the perception that it affects married women or elderly only. Assessment of knowledge regarding the risk factors of cervical cancer revealed that only 99 (39.2%) knew that it is transmitted through sexual contact. With regard to attitude of the students towards cervical cancer, around 157 (62.3%) knew that regular screening leads to early diagnosis of the cancer. This study highlights unawareness of various aspects of cervical cancer among educated young women in Jammu city and the critical need for sustained continuing educational interventions to emphasize the importance and awareness of cervical cancer.

**Keywords:** Cervical cancer, awareness, knowledge, Jammu city.

### INTRODUCTION

Cervical cancer is a leading cause of cancer-related mortality among women in India, and India has the largest burden of cervical cancer patients in the world. One out of every five women suffering from this disease belongs to India. Genital infection with human papilloma virus is one of the known factors for causation of cervical cancer [1]. Also, there are many associated risk factors like personal hygiene, too many children, not enough spacing between children, low nutrition levels, early marriage, early pregnancy, multiple sexual partners, smoking all contributing to risk factors for this cancer [2]. It 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 [3]. However, in developing countries, cervical cancer remains the most common cause of cancer-related deaths among women [4].

Youth brings significant physical, psychological and social development [5]. Risk taking behavior and susceptibility to social influence increase at a time when young people are becoming more independent in decision-making and action [6, 7]. Initiation and persistence of risk behavior is influenced by youth's perception of the conditional risk associated with specific behaviours, as well as understanding of the potential short-term and long-term health consequences associated with such behaviors [8, 9]. Knowledge, attitude and practice level of the students is very essential about the signs and symptoms of cervical cancer, risk factors, benefits of early diagnosis and treatment, availability of health services and prevention methods (HPV vaccination) [10]. The students' knowledge and attitude about the disease is influenced by socio demographic factors and the availability and accessibility of health services. In turn, screening behavior is a complex outcome of many factors operating at individual, family, and community levels [11]. Intervention which addresses risk awareness in youth may therefore be particularly useful and influence

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health related behaviours in adulthood [12]. However, participation in prevention and screening initiatives is low and there is sub-optimal knowledge and awareness of cancer risk factors among the girl students of Jammu district.

We therefore conducted a cross-sectional e-questionnaire based survey among the college students of Jammu city to assess awareness of cancer risk factors and the effectiveness of this educational intervention. Further, the study was used as an opportunity to study the behavior of respondents regarding prevention and screening of cervical carcinoma and impart health education on causes and preventive measures of cancer cervix.

## MATERIALS AND METHODS

After obtaining ethical clearance from Institutional Ethics Committee of the Government Medical College & Hospital, Jammu, a community based, cross-sectional survey was conducted in the Jammu city involving college going female students. Participation was anonymous and voluntary and after taking verbally informed consent, each participant was given a tablet PC to fill up a self-administered, pilot tested e-questionnaire seeking beliefs and practices related to cervical cancer. Pre-testing of the questionnaire was done after which necessary changes were made. The questionnaire included close-ended questions, except for socio-demographic characteristics. The items on the questionnaire were divided into four sections: (i) demographic characteristics of the participants, (ii) awareness and knowledge cervical cancer, (iii) warning signs (iv) vaccination (v) screening. Women between 17 years and 22 years were invited and included and those older than 25 years and who refused consent were excluded.

*Sample size* was calculated using the formula  $4pq/L^2$ , where 'p' is the prevalence rate,  $q=(100-p)$ , and 'L' is the allowable error taken into consideration which is 20% of the prevalence rate. Prevalence rate was rounded off to be 30% according to a survey. Hence putting the values into formula  $(4 \times 30 \times 70 / 36 = 233.33)$  a sample size of 250 students was taken after rounding off.

First of all, a list of all the colleges' girls, falling within the municipal limits of Jammu city was obtained from the directorates of education and technical education. Selection of college was done by systematic random sampling technique. For study purpose, the colleges were selected by 'draw of lots' for each category of college. The head of institution of each selected college were contacted and appraised about the purpose and procedure of study and his/her permission was sought in written form. In case any head of institution refused to allow the conduct of study in his/her college, then next college was selected through the draw of lots. On reaching the college on

predetermined day and time the girl students were contacted with the mediation of the concerned head of institution/teacher. The purpose of study was explained to them and their consent to participate in study was obtained assuring confidentiality of the answers to the questions. The visits to the colleges were made twice a week during the break time in the respective colleges. In each visit approximately 10-15 students were interviewed.

Two knowledge scores were created; one for the entire population of the study and other 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". 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". The interviews lasted 10 minutes on average. At the end of the questionnaire, an information session about the disease was given to the participant about cervical cancer, vaccination and prevention. Interactive feedback session was held at the end of the interview. Questions were invited. They were apprised of the facts regarding cervical cancer-causation, transmission, clinical features, diagnosis, treatment and prevention. They were further advised to seek gynecological consult should they experience any signs or symptoms pertaining to cervical cancer. They were also motivated to speak up among their colleagues and female family members.

## RESULTS

The total size of the study subjects who were actual respondents during the data collection period was 252. The participants' age ranged from 19-22 years with a mean age of 20 years (40.4%). Of all the ethnic groups studied, majority were Dogri 148 (58.7%) and Muslims 64 (25.3%) followed by Kashmiri 21 (8.3%) and Punjabi 14 (5.5%). Religion wise, a total of 192 (76.1%) were Hindu, Sikhs 37 (14.6%) followed by Muslims 12 (4.7%). Majority of respondents were single/never married 249 (98.8%) and 196 (77.7%) were living with parents/guardians against 56 (22.2%) who were living single.

In this study, majority (81.7%) of college going girls of Jammu city had heard of cervical cancer. A total of 200 (79.3%) girls thought that it is a deadly disease in absence of timely intervention. Only 68 (26.9%) thought that they could suffer from it as they had the perception that it affects married women or elderly only. Significant number (62.3%) of girls thought it could be infectious. However only a few girls (39.2%) knew that it is transmitted through sexual contact. A fair number of respondents (62.3%) knew that regular screening leads to early diagnosis of the cancer. Majority (60.3%) of the participants reported

social media as their source of information regarding cervical cancer.

As indicated from this study, 171 (67.8%) respondents considered poor personal hygiene and 170 (67.4%) considered poor genital hygiene to be the most important risk factors of cervical cancer. A total of 135 (53.5%) also acknowledged that early menopause, use of oral contraceptives and intra- uterine devices (53.9%), having sex with multiple partners (57.5%) and not going for regular screening tests (58.3%) are also significant risk factors. Respondents also correctly identified early menarche (44.8%), marriage at early age (42%), sexually active at early age (44.8%), multiple pregnancies (42%), previous history of STDs (44.4%) as significant risk factors.

However, only 74 (29.3%) could identify smoking, old age (25%), alcohol consumption (33.3%) as important risk factors. This could be attributed to low attention given to media promotion, variations in health information provision about cervical cancer and its exposure. In addition, differences in socio-cultural conditions, health education at healthcare facilities and other behavioral change interventions regarding the cervical cancer prevention and control program of Jammu.

A good number of respondents attributed the effects of increased intake of fruits and vegetables (52.3%), regular physical exercise (46.4%), intake of vitamin supplements (44%), proper relaxing sleep (44.4%), avoiding highly processed food (40.8%) and decreased stress levels (41.6%) in decreasing the risk of cervical cancer. However, only 47 (18.6%) correctly identified breast feeding as a preventive factor in cervical cancer.

As observed from the study, the age of occurrence of cervical cancer by majority of the respondents was correctly known to be between 30-50 years (46.8%). Majority of the girls thought that vaginal bleed between the periods (56.3%), difficulty in passing urine (52.3%), unpleasant smelling vaginal discharge (53.5%), and heavier/longer menstrual periods (53.5%)

were the major warning signs for the detection of cervical cancer.

HPV vaccination can be an effective method to prevent cervical cancer, especially in a country with limited healthcare resources for screening and treatment. In this study, dismal number (25%) of the respondents had heard about the vaccination. There was no consensus on the age of getting the first vaccination. Only 5 (1.98%) respondents had received it on recommendation of their doctor.

Only 67 (26.5%) were aware that screening tests are available for cervical cancer. Majority (74.6%) thought that married women should get screened for cervical cancer and a lesser number (19.8%) thought that only elderly women should get screened. Only 6 (2.3%) girls had got screening done on themselves. These findings show that the level of knowledge about cervical cancer screening remains low among this population. Further, around 136 (53.9%) agreed that even healthy women should get screened for the cancer and 174 (29.3%) said that screening is important even for a female with no family history of cervical cancer. It is critical to raise awareness regarding the importance of regular screening in this population.

Of all the girls interviewed, 160 (81.6%) girls living with family had heard of cervical cancer but only 46 (23.4%) girls living independently had heard of it. Also, 98 (50%) of girls living with family correctly knew the age of occurrence of cervical cancer to be between 30-50 years, but only 20 (35.7%) girls living independently knew about this. The 20 girls who had a known patient of cervical cancer had a better understanding of the topic as compared to rest who had previously no exposure to the topic whatsoever. Majority (60.3%) of the participants reported social media as their source of information regarding cervical cancer, which shows that the media plays an important role in disseminating health educational information. Therefore, there is need for a health-education program about cervical cancer that incorporates the media through diverse channels; such a program could be very impactful.

**Table-1: Socio-Demographics information**

#	Socio-Demographics characteristics	Number (%)
<b>1</b>	<b>Age group</b>	
	• Less than 18	3 (1.1%)
	• More than 18	249 (98.8%)
<b>2</b>	<b>Ethnicity</b>	
	• Dogri	148 (58.7%)
	• Muslims	64 (25.3%)
	• Kashmiri	21 (8.3%)
	• Punjabi	14 (5.5%)
	• Gujar	5 (1.9%)

#	Socio-Demographics characteristics	Number (%)
<b>3</b>	<b>Religion</b>	
	• Hindu	192 (76.1%)
	• Sikh	37 (14.6%)
	• Muslims	12 (4.7%)
	• Others	11 (4.3%)
<b>4</b>	<b>Language spoken</b>	
	• Hindi	137 (54.3%)
	• Punjabi	10 (3.9%)
	• Dogri	58 (23.01%)
	• Kashmiri	14 (5.5%)
	• Urdu	14 (5.5%)
	• Others	19 (7.5%)
<b>5</b>	<b>Marital Status</b>	
	• Single/Never married	249 (98.8%)
	• Married/Living with a partner	3 (1.19%)
<b>6</b>	<b>College Study year</b>	
	• First year	3 (1.1%)
	• Second year	106 (42.06%)
	• Third year	132 (52.3%)
	• Fourth year	1 (0.39%)
	• Fifth year	10 (3.9%)
<b>7</b>	<b>Living arrangement</b>	
	• Living with parents/Guardians	196 (77.7%)
	• Rented/PG/Hostel	56 (22.2%)

Table-2: Knowledge &amp; Attitude on Cervical cancer and its screening (n=250)

#	Knowledge Questions	n (%)
<b>1</b>	<b>Cervical Cancer</b>	
	• Have you ever heard of cervical cancer?	206 (81.7%)
	• Do you think it can lead to death?	200 (79.3%)
	• Is it infectious?	157 (62.3%)
	• Does it get transmitted through sexual contact?	99 (39.2%)
	• Do you think regular screening leads to early diagnosis of the cancer?	157 (62.3%)
	• Do you think cervical cancer is related to HIV?	51 (20.2%)
	• Do you think cervical cancer is related to any medications?	65 (25.7%)
<b>2</b>	<b>Risk Factors</b>	
	• Smoking	74 (29.3%)
	• Alcohol consumption	84 (33.3%)
	• Old age	63 (25%)
	• Early menarche	113 (44.8%)
	• Early menopause	135 (53.5%)
	• Marriage at early age	106 (42.06%)
	• Condoms	74 (29.3%)
	• Sexually active at early age	113 (44.8%)
	• Use of oral contraceptives and intra-uterine devices	136 (53.9%)
	• Having sex with multiple partners	145 (57.5%)
	• Poor personal hygiene	171 (67.8%)
	• Poor genital hygiene	170 (67.4%)
	• Having multiple pregnancies	106 (42.06%)
	• Having early pregnancy	86 (34.1%)
	• Miscarriage/abortion	99 (39.2%)
	• Use of public swimming pools	65 (25.7%)
	• Previous history of sexually transmitted diseases (STD)	112 (44.4%)
	• Having uncircumscised sexual partner	70 (27.7%)
	• Not going for regular screening tests	147 (58.3%)

#	Knowledge Questions	n (%)
3	<b>Warning Signs</b>	
	• Vaginal bleed between periods	142 (56.3%)
	• Persistent lower back pain	86 (34.1%)
	• Persistent pelvic pain	110 (43.6%)
	• Difficulty in passing urine	132 (52.3%)
	• Unpleasant smelling vaginal discharge	135 (53.5%)
	• Itching in genital area	119 (47.2%)
	• Discomfort during intercourse	82 (3.5%)
	• High fever	32 (12.65)
	• Tender breasts	40 (15.8%)
	• Heavier/longer menstrual periods	135 (53.5%)
	• Persistent diarrhea	26 (10.3%)
	• Vaginal bleed during/after intercourse	79 (31.3%)
	• Vaginal bleed after menopause	102 (40.4%)
	• Blood in stool/urine	104 (41.2%)
	• Unexplained weight loss	99 (39.2%)
4	<b>Factors decreasing the risk</b>	
	• Regular physical exercise	117 (46.4%)
	• Vitamin supplements	111 (44%)
	• Proper relaxing sleep	112 (44.4%)
	• Avoiding highly processed food	103 (40.8%)
	• Weight loss	85 (33.7%)
	• Restraining from casual sex	86 (34.1%)
	• Decreased stress levels	105 (41.6%)
	• Increased intake of fruits and vegetables	132 (52.3%)
	• Breast feeding	47 (18.6%)

## DISCUSSION

Knowledge, attitude and practices of the community about any disease including cervical cancer and its factors offer crucial opportunity for comprehensive prevention and control strategies of the disease. Therefore, this study addressed knowledge, attitude and practice as an entry point for the prevention and control of cervical cancer and its associated factors among the young women of Jammu. The main aim was to encourage preventive health care and to create awareness so that early detection of the disease is made possible. Although the knowledge on cervical cancer and preventive measures were low, their willingness to prevent disease was so high. Therefore, targeted interventions are required toward improving access to screening for cervical cancer among this age group.

Despite our important findings, this study has a several potential limitations. First, being a part of short-term research project with limited funding, the sample size was modest (n=250), and the results from this study therefore cannot be generalized to all Jammu women. Nonetheless, this study was unique as it was the first to be conducted among college going student in Jammu. In addition, this study also had a very high response rate (100%). This was probably because the women contacted had an opportunity to receive advice about their health concerns from trained health care professionals.

## CONCLUSION

Knowledge and attitude are the two most interlinked domains for prevention and control of cervical cancer [13]. This study highlighted the importance of awareness creation, increasing knowledge, promoting active searching for health information and experiences of receiving information from any information sources regarding cervical cancer. The findings also strongly indicated that different health information dissemination strategies may be required for women to increase knowledge about and attitude towards prevention and control of cervical cancer

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**Conflict of Interest:** None declared

**Ethical approval:** The study was approved by the Institutional Ethics Committee, Govt. Medical College, Jammu.

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