



## **Awareness and Preventive Practices related to Cervical Cancer among Women in Pokhara Metropolitan City**

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### **Abstract**

**Background:** Cervical cancer is primarily caused by persistent infection with the human papillomavirus (HPV) and is considered one of the most preventable forms of cancer. Early detection through regular screening is essential, as it enables the identification of precancerous cervical cell changes and allows for timely intervention and treatment. This study aims to assess the level of knowledge regarding cervical cancer screening and its utilization.

**Methods:** This study employed a descriptive cross-sectional design and was conducted among 464 married women residing in Ward No. 13 of Pokhara Metropolitan City. Participants were selected using a purposive sampling technique. Data were collected through face-to-face interviews using a structured questionnaire that included items on demographic characteristics, reproductive history, awareness of cervical cancer and its screening, and the utilization of screening services.

**Results:** A total of 464 married women participated in the study. Among them, 419 (90.3%) had heard of cervical cancer. Among those who had heard of cervical cancer, 377 (90%) demonstrated poor awareness of cervical cancer and its screening. Only 82 women (17.7%) had undergone cervical cancer screening, and among those screened, 50 (61%) reported having a Pap smear test. The most commonly reported reason for not undergoing screening was the absence of perceived health problems, followed by inadequate knowledge about the test. Factors such as educational status, occupation, age at marriage, parity, and age of childbirth showed a significant association with screening awareness.

**Conclusion:** Although most participants had heard of cervical cancer, the overall level of awareness was poor, and the utilization of screening was low. Targeted culturally sensitive



educational interventions and awareness programs are needed to improve knowledge and promote regular cervical cancer screening among married women.

**Keywords:** Cervical cancer, screening, knowledge, Pokhara

## **Introduction**

Cervical cancer remains a major global public health issue and is currently the fourth most common cancer among women worldwide. In 2022, an estimated 660,000 new cases and 350,000 deaths were reported, with approximately 94% of these deaths occurring in low- and middle-income countries (WHO, 2025). The highest burden is observed in South Asia, sub-Saharan Africa, and Central America, largely reflecting inequalities in access to human papillomavirus (HPV) vaccination, screening services, and timely treatment (Stelzle et al., 2021). Inadequate screening coverage, limited awareness, and shortages of trained health professionals contribute significantly to high incidence and mortality rates (WHO, 2024).

The World Health Organization has articulated the 90–70–90 global strategy to accelerate cervical cancer elimination, targeting 90% HPV vaccination coverage among girls by age 15, at least two lifetime screenings for 70% of women by ages 35 and 45, and appropriate treatment of 90% of those diagnosed with cervical disease by 2030 (WHO, 2020; Canfell et al., 2020). Projections indicate that attainment of these integrated targets could reduce cervical cancer mortality among women aged 30-69 years by approximately one-third by 2030 and nearly 99% by 2120 (Narasimhamurthy & Kafle, 2022).

In South Asia, cervical cancer continues to pose a substantial health challenge. A considerable proportion of cases are invasive and primarily associated with high-risk HPV types 16 and 18 (Acharya & Karmacharya, 2017). Cervical cancer is largely preventable and highly treatable when detected early (Arbyn et al., 2020). In Nepal, cervical cancer remains a leading cause of cancer-related morbidity and mortality among women, with an incidence rate of 16.4 per 100,000 women. More than 80% of cases are diagnosed at advanced stages, reducing survival outcomes (Shrestha et al., 2023). Although national guidelines recommend Visual Inspection with Acetic Acid (VIA) for women of reproductive age, screening coverage remains limited, with only a small proportion of women ever screened (Acharya & Karmacharya, 2017; Gyawali et al., 2015).

Nepal screening guidelines aim to screen 70% of women aged 30-60 years using a “screen-and-treat” approach based primarily on VIA. Free VIA services are available at government hospitals and health posts, and Pap smear testing is offered where laboratory capacity exists. Despite these provisions, utilization remains low (Shrestha et al., 2021, MOHP, 2024). In Pokhara, cervical cancer screening and treatment services are available at government and private hospitals. Notably, the Pokhara Academy of Health Sciences provides comprehensive services, including VIA, Pap smear, Colposcopy, biopsy, and cryotherapy for the detection and management of cervical cancer cases. Low awareness, financial barriers, and shortages of trained healthcare providers further restrict utilization of screening services (Thapa, 2018).



Evidence from Nepal indicates a substantial gap between awareness and actual preventive practices. While many women acknowledge the importance of cervical cancer screening and express willingness to undergo testing, the majority have never had a Pap smear (Priyadarshini et al., 2025). Other studies similarly report that although awareness exists, understanding of screening benefits and positive attitudes toward regular testing remain inadequate (Baral et al., 2020). Further, education level, sociocultural beliefs, stigma, fear, age, and knowledge about the disease (Darj et al., 2019; Dozie et al., 2021) are major obstacles to screening participation. Therefore, this study aimed to assess awareness and preventive practices related to cervical cancer among women in Pokhara Metropolitan City. This study will provide insights into the level of awareness of cervical cancer, its risk factors, screening methods, and utilization of screening services, as well as the factors influencing participation in screening. The findings will help inform recommendations for future interventions aimed at increasing awareness and improving screening uptake.

### **Methods and Materials**

A community-based cross-sectional study was conducted among married women aged 21-65 years residing in a ward number 13 of Pokhara Metropolitan City, Nepal. This area is an urban area and not so far from the main government health facility of Pokhara city, and consists of different castes and religious groups of people. The sample size was estimated using Kelsey's formula with a 95% confidence level and 80% power through OpenEpi, yielding a final sample of 464 participants after adjusting for a 20% non-response rate. The purposive sampling technique was used to select eligible married women who met the inclusion criteria from the study area.

Data was collected through interviews using a structured questionnaire. The questionnaire consisted of three sections. The first section included items on participants' demographic and reproductive information. The second section assessed awareness of cervical cancer, covering its meaning, symptoms, risk factors, preventive measures, screening methods, and management. There were a total of 17 questions, with a total score of 49. Each correct response was scored as 1, and each incorrect response was scored as 0. For multiple-response questions, each correct response received 1 point. Awareness levels were categorized based on Blooms cut off-points: scores  $\leq 60\%$  (0-29) were considered poor, scores  $> 60$  to  $\leq 80\%$  (30-39) satisfactory, and scores  $> 80\%$  (40-49) considered good. The third section focused on preventive practices, including utilization of cervical cancer methods such as VIA, Pap Smear, or other tests, which were analyzed as screened or not screened using frequency and percentages. Participants who had not undergone screening were further asked about reasons for non-utilization of services to identify the possible barriers.

Primary data were collected by the researcher and team by interview using a structured questionnaire developed based on an extensive review, experts' consultation, and screening guidelines. The questionnaire was initially prepared in English, translated into Nepali, and then back-translated into English to ensure consistency. The tool was pretested, and the average time to complete the interview was approximately 20-30 minutes. Reliability testing showed



acceptable internal consistency, with coefficients of 0.73 for the knowledge section and 0.8 for the practice section. Data collection was conducted in a private setting, and codes were used instead of personal identifiers.

Ethical approval for the study was obtained from the Institutional Review Committee of Pokhara University (163/76/77), along with formal permission from Pokhara Metropolitan City. All participants were fully informed about the purpose and procedures of the study, and written informed consent was obtained before data collection. Participation was voluntary, and respondents were assured of confidentiality and their right to withdraw from the study at any time without consequences. The collected data were edited, coded, and entered into Epi Info and then exported to SPSS version 28 for analysis. Both descriptive and inferential statistical methods were applied, including frequencies, percentages, means, and standard deviations, while associations between variables were examined using the chi-square test. A p-value of less than 0.05 was considered statistically significant.

**Results**

Out of 464 women, 46.3% were in the 21-35 years age group, with a mean age of 37.83± 10.75 years. The majority of women 82.1% belonged to the Hindu religion. Regarding educational attainment, 59.7% of participants were literate; among them, 38.3% had completed secondary level education. More than half of the respondents 58.0% were house manager. Additionally, 90.5% of the participants reported a monthly family income ranging between Rs 5000 - 75000. With regard to reproductive characteristics, the mean age at marriage was 20.02 ± 3.52 years. Nearly half of the respondents 45.9% had been married for 1-15 years. Most of the respondents 69.8% were multiparous, having two or more children. The mean age at first childbirth was 21.78±3.48 years, with most women delivering the first child between 20 to 24 years of age. Regarding contraceptive use, 39.2% of women reported using contraceptive methods; among them, 40.1% used oral contraceptive pills. Additionally, 16.2% of the participants had attained menopause, and among these women, 32% reported that their age at menopause ranged between 46 and 50 years. A family history of cervical cancer was reported by only 3.7% of respondents.

**Table 1**

***Knowledge of Respondents on General Aspects of Cervical Cancer Screening (n=419)***

<b>Correct Responses</b>	<b>Number</b>	<b>Percent</b>
<b>Heard about cervical cancer</b>	419	90.3
<b>Risk factors of cervical cancer* (n=418)</b>		
Sexually active at an early age (before 18 years)	217	59.9
Multiple sexual partners	248	59.3
Previous sexually transmitted infection	163	39.0
Weak immune system	125	29.9
Prolonged use of hormonal contraceptives	138	33.0
Intrauterine device	146	34.9



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Cigarette smoking	130	31.1
Previous abnormal Pap smear	122	29.2
Mother or sister (s) with cervical cancer	126	30.1
<b>Sign and Symptoms of Cervical Cancer* (n=417)</b>		
Bleeding after sex	228	54.7
Painful sex	190	45.6
Persistent vaginal discharge that smells unpleasant	272	65.2
Back, leg or pelvic pain	197	47.2
Vaginal bleeding between periods	156	37.4
Blood in vaginal discharge	71	17.0
Bleeding after menopause	150	36.0
<b>Cervical Cancer is preventable</b>	303	72.3
<b>Preventive Measures* (n=303)</b>		
Prompt treatment of Sexually Transmitted Infections	223	73.6
Avoiding multiple sexual partners	203	67.0
Getting HPV vaccine	84	27.7
Avoiding early exposure to sexual action (before 18 years)	87	28.7
Using condoms	80	26.4
Avoiding prolonged use of hormonal contraceptives	80	26.4
Avoiding smoking	92	30.4
Maintaining meticulous perineal hygiene	111	36.6
Regular screening or check-up	142	46.9
<b>Treatment of cervical cancer*</b>		
Surgery	293	85.9
Chemo-radiation therapy	161	47.2
Radiation therapy	101	29.6
Chemotherapy	110	32.3

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**\*Multiple Responses**

A large proportion of respondents 90.3% reported having heard about cervical cancer screening. Out of those who heard about cervical cancer, more than half identified early sexual activity 59.9% and multiple sexual partners 59.3% as risk factors for cervical cancer. Persistent foul-smelling vaginal discharge was recognized as a symptom by 65.2% of respondents. In addition, 72.3% acknowledged that cervical cancer is preventable, and 73.6% identified prompt treatment of sexually transmitted infections as an important preventive measure. Surgery was reported as a treatment option by 85.9% of respondents (Table 1).



**Table 2**

***Knowledge regarding Cervical Cancer Screening (n=419)***

Correct Responses	Number	Percent
<b>Screening detects cervical cancer</b>	330	78.8
<b>Eligible criteria for cervical cancer screening</b>		
All women aged $\geq 21$ years or sexually active for the last 3 years	99	29.9
<b>Screening methods used to detect cervical cancer*</b>		
VIA	98	35.5
Pap Smear	236	85.5
Biopsy	141	51.1
Colposcopy	31	11.2
<b>Purpose of Cervical Cancer Screening*</b>		
Detect the state of cervical cancer	256	80.3
Discover precancerous cellular changes early	134	42.0
Treatment of precancerous stages	82	25.7

***\*Multiple Responses***

A total of 78.8% of respondents reported that screening is used to detect cervical cancer, whereas only 29.9% correctly identified the eligibility criteria for cervical cancer screening. The Pap smear was recognized as a screening method by 85.5% of respondents. Additionally, 80.3% stated that the purpose of cervical cancer screening is early detection of cervical cancer (Table 2).

**Table 3**

***Knowledge regarding Pap Smear and VIA Test (n=419)***

Correct Responses	Number	Percent
<b>Meaning of Pap Smear Test</b>		
Test that collects cells from the cervix to detect abnormal changes	326	77.8
<b>First Initiation of Pap Smear Test</b>		
At age 21 years	178	42.5
<b>Best Time to Perform Pap Smear Test</b>		
7 days of menstruation	239	35.5
<b>Interval of Pap Smear Test</b>		
Every 3 years	65	15.5
<b>Meaning of VIA</b>		
Test to identify the early stage of cancer	271	64.7
<b>Time to Perform VIA Test *</b>		
Anytime except heavy menstrual flow	72	20.3
Postpartum after 6 weeks	32	9.0
At 21 years of age	228	64.2
Post abortion after 2 weeks	18	5.1



Anytime except for severe infection of the vagina	64	18.0
<b>Interval of the VIA Test</b>		
Every 3 years, if the test result was normal	88	21.0

**\*Multiple Responses**

A majority of respondents 77.8% correctly identified the meaning of the Pap smear test; however, only 42.5% were aware of the appropriate age for its initiation. While many respondents indicated that the test should be performed seven days after menstruation, only 15.5% correctly identified the recommended three-year screening interval. Regarding the VIA test, 64.7% of respondents correctly understood its meaning, and 64.2% recognized 21 years as the appropriate age for initiation. Nevertheless, only 21.0% correctly reported the recommended screening interval (Table 3).

**Table 4**

***Cervical Cancer Screening Practices and Barriers (n=464)***

Correct Responses	Number	Percent
<b>Screening for Cervical Cancer</b>		
Yes	82	17.7
<b>Type of Screening Performed</b>		
VIA	24	29.2
Pap smear	50	61.0
Biopsy and colposcopy	8	9.8
<b>Reason For Performing Test*</b>		
For the preventive purpose	40	48.8
Doctors recommendation	38	46.3
Heard about it	17	20.7
<b>Barriers to Cervical Cancer Screening*</b>		
Lack of knowledge	108	28.3
Feeling healthy	305	79.8
Not advised by anyone	67	17.6
No time	32	8.4
Embarrassment	57	14.9
Afraid of pain	22	5.8
Afraid of bad results	20	5.2

**\*Multiple Responses**

In this study, 17.7% of respondents had undergone cervical cancer screening, and among them, 61.0% underwent a Pap smear. More than half, 48.8% of respondents reported that they underwent screening for preventive purposes, and based on a doctor’s recommendation, by 46.3%. The majority of respondents 79.8% reported that not having any symptoms or feeling healthy was a major barrier to cervical cancer screening, followed by 28.3% who perceived a lack of knowledge as an obstacle (Table 4).

**Table 5**

*Level of Knowledge on Cervical Cancer and its Screening (n=419)*

Level of Knowledge	Frequency	Percent
Poor	377	90
Satisfactory	30	7.1
Good	12	2.9

*Mean ±SD : 19.14± 7.93, Min:5, Max: 49*

Of 419 respondents, 90.0% demonstrated a poor level of knowledge regarding cervical cancer and its screening (Table 5).

**Table 6**

*Factors Associated with Level of Knowledge and Sociodemographic Variables (n=419)*

Variables	Knowledge level			Chi-square analysis		
	Poor	Satisfactory	Good	$\chi^2$	Df	p-value
<b>Age of the respondents</b>						
Equal to mean (37.83 years)	185 (86.9%)	20 (9.4%)	08 (3.8%)	4.68	2	0.09
Greater than mean (> 37.83 years)	192 (93.2%)	10 (4.9%)	04 (1.9%)			
<b>Education status</b>						
Illiterate	39 (92.9%)	3 (7.1%)	0	10.31	4	0.03*#
Can read or write	112 (96.6%)	3 (2.6%)	1 (0.9%)			
Literate	226 (86.6%)	24 (9.2%)	11 (4.2%)			
<b>Occupation</b>						
House managers	222 (91.8%)	18 (7.4%)	2 (0.8%)	8.56	2	0.01*#
Others	155 (87.6%)	12 (6.8%)	10 (5.6%)			
<b>Age at marriage</b>						
≤20 years	256 (93.1%)	13 (4.7%)	6 (2.2%)	8.77	2	0.01*
> 20 years	121 (84.0%)	17 (11.8%)	6 (4.2%)			
<b>Duration of marriage</b>						

≤17 years	188 (87.0%)	19 (8.8%)	9 (4.2%)	4.73	2	0.09
>17 years	189 (93.1%)	11 (5.4%)	3 (1.5%)			
<b>Parity</b>						
Nulliparous	33 (76.7%)	03 (7.0%)	07 (16.3%)	31.8	4	0.001*
Primipara	64 (91.4%)	06 (8.6%)	0 (8.6%)			
Multi & Grand multipara	280 (91.5%)	21 (6.9%)	05 (1.6%)			
<b>Age at childbirth</b>						
≤ 20 years	134 (95.0%)	6 (4.3%)	01 (0.7%)	6.55	2	0.03*
>20 years	243 (87.4%)	24 (8.6%)	11 (4.0%)			

$\chi^2$  Chi-square, \*significant at  $p$  value  $<0.05$  level, #Fisher exact test

A statistically significant association was found between the level of knowledge regarding cervical cancer and its screening and variables such as literacy level, occupation, age at marriage, parity, and age at first childbirth. However, no significant association was observed with religion, income, contraceptive use, menopausal status, or family history of cervical cancer (Table 6).

Furthermore, cervical cancer screening practice showed no significant association with the selected background variables.

## Discussion

Cervical cancer screening detects precancerous lesions early, preventing invasive cancer and reducing mortality. The study was conducted to assess awareness and preventive practices related to cervical cancer among 464 women in Pokhara Metropolitan City.

In the current study, knowledge of cervical cancer and its screening was generally poor, with only 2.9% of respondents demonstrating good knowledge and 7.1% satisfactory knowledge, while 90% exhibited poor knowledge. The critical gap in awareness of cervical cancer and the level of knowledge may often reflect the recognition of a disease, but limited knowledge on causes, risk factors, or preventive measures. This aligns with findings from Thapa and Dhakal (2019) in Nepal, where 96.2% had poor awareness, and none had good awareness. Similar trends are observed in India, where 67.5% had no knowledge and only 5% demonstrated good knowledge (Khatuja et al., 2022). However, slightly higher awareness levels were reported in Chitwan, Nepal, with 16.3% showing good knowledge, 22.9% fair knowledge (Ranabhat et al., 2023), and a study from mid-western Nepal where 87% participants had inadequate knowledge (Thapa et al., 2018). Overall, these studies highlight that knowledge about cervical cancer and screening remains low in many settings, suggesting a critical need for targeted health education interventions. These variations in screening knowledge may be attributed to differences in a



study location, cultural variations, educational level, sample size, availability of services, source of information obtained, and their perceptions on health risk.

In the present study, 17.7% of respondents had undergone cervical cancer screening, which is consistent with previous studies conducted in Nepal reporting similar rates of 17.6% and 17.9%, respectively (Kumari et al., 2022; Bhattarai & Bajracharya, 2024). However, lower uptake has been reported in Nigeria at 0.7% (Olubodun et al., 2019). Similarly, a study conducted in Dharan, Nepal, found that only 8.7% of women had practiced cervical cancer screening (Rai et al., 2020). In contrast, higher rates were observed in other studies, such as 38.3% in Nepal (Ranabhat et al., 2023) and 36% in Ethiopia (Gelassa et al., 2022), while another Ethiopian study reported only 3.8% utilization. These variations indicate that cervical cancer screening uptake remains low, possibly due to differences in population characteristics, awareness levels, accessibility of services, and healthcare infrastructure.

The findings of this study highlight that the primary reasons for non-participation in the screening were feeling healthy 79.8%, indicating a widespread perception that preventive action is unnecessary in the absence of symptoms. Lack of knowledge, not being advised by anyone were also a notable contributor, suggesting perceived insufficient awareness and limited guidance from health care providers or community sources play a role in less participation. Similar findings were reported in a study conducted in midwestern Nepal (Thapa et al., 2018) and South Central Ethiopia (Shero et al., 2023).

In this study, a statistically significant association was found between the level of knowledge regarding cervical cancer and its screening and variables such as age, literacy level, age at marriage, duration of marriage, parity, and age at first childbirth. This finding is consistent with Baral et al. (2025), who reported significant associations between awareness levels and age, ethnicity, husband's education level, and duration of marriage. Similarly, Kumari et al. (2022) found a significant association between knowledge level and age and education, while Rijal and Dawadi (2024) also reported associations with age, education, occupation, and age at marriage. However, Rai et al. (2020) found no significant association between knowledge and socio-demographic variables, highlighting inconsistencies across different study populations.

In the present study, screening practice showed no significant association with the selected background variables. In contrast, Rai et al. (2020) reported a significant association between screening practice and place of residence, while Thapa et al. (2018) found a significant association with educational status. Similarly, Ranabhat et al. (2023) observed that utilization of cervical cancer screening services was associated with respondents' level of education, family type, shyness, and the absence of uterine problems. These discrepancies among studies may reflect variations in study settings, population characteristics, and access to screening services.

However, the findings should be interpreted in light of certain limitations. The results cannot be generalized beyond the study area due to lack of randomization, which may introduced selection bias, as participants were selected based on selection criteria rather than chance, potentially affecting the representativeness of the results. Future studies should employ



probability sampling to enhance representativeness. The use of multiple-response questionnaire items on cervical cancer and its screening may have led to response bias and limited the accuracy of participants' answers. Furthermore, respondents who had not heard about cervical cancer may not have provided reliable answers to practice-related questions.

### **Conclusion**

In conclusion, this study revealed a markedly low level of knowledge regarding cervical cancer and its screening among participants, accompanied by poor uptake of cervical cancer screening. These findings indicate a substantial gap in awareness and preventive practices. Education, occupation, parity, and age at childbirth were the significant factors that affect the level of knowledge. Thus, it is recommended that targeted culturally sensitive health education, provider-initiative counseling, and community-based awareness interventions addressing misconceptions about feeling healthy and perceived low awareness about screening need to be implemented to improve awareness and enhance participation in cervical cancer screening.

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