

Awareness on cervical cancer and screening practice among married women in selected wards of Pokhara Metropolitan city

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ABSTRACT

Introduction: Cervical cancer is a major public health issue in low and middle income countries like Nepal. Despite being preventable and treatable, high incidence and mortality persist due to low awareness and screening. This study aimed to assess awareness and screening practices related to cervical cancer. **Methods:** A descriptive cross-sectional study was conducted among 257 married women aged 30 to 60 years in Pokhara Metropolitan City using simple random sampling. Data were collected through structured face to face interviews, entered into Epi Data version 3.1, and analyzed using SPSS version 16.0. Descriptive and inferential statistics, chi square test and Pearson's correlation coefficient were applied for analysis. **Results:** Among respondents, 142(55.25%) were aged 30–40 years, 123(50.20%) had secondary education, and 105(40.86%) were homemakers. Marriage between ages 15 to 19 years was reported by 140(54.47%). Adequate awareness of cervical cancer was found in 122(47.47%), and 106(41.25%) had undergone screening. Awareness was significantly associated with age, ethnicity, husband's education, and duration of marriage. Screening practice was significantly associated with age, ethnicity, income, age at marriage, duration of marriage, and menstruation status. A weak positive correlation was observed between awareness and screening practice. **Conclusions:** Over half of the married women exhibited inadequate awareness and low screening uptake. Enhancing cervical cancer education and promoting screening uptake is recommended.

Keywords: Awareness, cervical cancer, married women, screening practice.

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INTRODUCTION

Cervical cancer is the fourth most common cancer among women worldwide. In 2022, there were about 6,60,000 new cases and 3,50,000 deaths, with most fatalities occurring in low- and middle-income countries.¹ Early detection is key to effective treatment and cure.² Prevention strategies include HPV vaccination, regular screening, and treatment of precancerous lesions.³ The WHO recommends screening every 5 to 10 years starting at age 30.⁴ In Southern Asia, 7.9 % of women had cervical cancer and 82.8% of them had invasive cervical cancer caused by HPV types 16 and 18.⁵

In many developing countries, lack of awareness and understanding of cervical cancer and screening options remains a major barrier to prevention.⁶

In Southern Ethiopia, cervical cancer screening rates were very low. Factors affecting the uptake of cervical cancer screening include women's knowledge, attitude, monthly income, sources of information and history of sexually transmitted infections.⁷ A systematic review conducted in Iran observed around half of the women were familiar with cervical cancer and Pap-smear test with less than 45% having completed at least one lifetime test.⁸ Women

in Islamabad exhibited low awareness of cervical cancer and poor knowledge of current screening methods. Most women believe that Pap smear is only performed for those with symptoms.⁹ Nearly half of the women and their family decision-makers in remote areas of Bangladesh showed limited knowledge about the risk factors and symptoms of cervical cancer.¹⁰ In Nepal, where females comprise approximately 55% of the population, the incidence rate of cervical cancer is 16.4 cases per 1,00,000 individuals.¹¹ More than 80% of cervical cancer cases in Nepal are diagnosed late, which worsens the prognosis. Only 16% of women in Nepal get screened for cervical cancer.⁵ National guidelines 2010 of Nepal stress the importance of screening for cervical cancer using the VIA method for women of childbearing age. However, the number of women getting screened remains very low.¹² A study conducted in Nepal indicated that 58% of participants lacked awareness of cervical cancer, 26.6% were aware of screening tests for its prevention, and 82.7% had never undergone any form of screening.¹³ Another study found that 47% of women had adequate knowledge about cervical cancer, HPV, and its screening, while only 13.6% had undergone cervical cancer screening.¹⁴

Barriers such as socio-cultural issues, low funding, limited laboratory services, and privacy concerns further hinder regular screening.¹⁵ Another study highlighted a lack of sufficient knowledge and practices, emphasizing the need for health camps and awareness programs to enhance understanding and encourage participation in cervical cancer screening within communities.¹⁶ Several studies in Nepal have reported limited awareness of cervical cancer and its screening services, resulting in low participation in government-provided screening programs.^{5,17,18} In this context, the present study aimed to assess the level of awareness and screening practices among married women in selected wards of Pokhara Metropolitan City.

METHODS

A descriptive cross-sectional study design was adopted to assess awareness of cervical cancer and screening practices among married women in Pokhara Metropolitan City. Data collection was conducted from September 8 to October 5, 2024 in ward number 5, 7, 9, 16 and 17 of Pokhara Metropolitan City. The study population comprised married women aged 30 to 60 years residing within the municipality. The sample size was calculated using Cochran's formula¹⁹, yielding a required sample of 254 married women.

A simple random sampling technique was employed to select five wards 5, 7, 9, 16 and 17 by lottery from a total

of 33 wards in Pokhara Metropolitan City. In the absence of a sampling frame for married women aged 30 to 60 years, proportional allocation was conducted based on the total number of households in the selected wards, which totaled 34,592. The sample of 257 women was allocated proportionally as follows: 46 from ward 5, 36 from ward 7, 33 from ward 9, 48 from ward 16, and 94 from ward 17.

In each ward, the researcher positioned themselves at a central junction and employed a bottle-spinning method to determine the initial sampling direction. The first household in the indicated direction was selected as the starting point. Subsequently, the house opposite to the door of the selected house was surveyed until the required sample size was reached. From each household, one eligible individual was interviewed. When multiple eligible individuals were present, selection was performed using a random lottery method. If no eligible individual was available or present during data collection, the subsequent household was selected. The same sampling procedure was applied across the remaining selected wards to ensure consistency in data collection.

Women aged 30 to 60 years without a history of medical or psychiatric illness, major recent life stressors such as bereavement or sexual assault within the past three months, and who provided informed consent were eligible for the study. Women diagnosed with cervical cancer or those who had undergone total hysterectomy were excluded.

A structured interview schedule was developed by the researcher following an extensive review of relevant literature and consultation with subject experts. The instrument comprised three sections. The first section covered background variables including sociodemographic and reproductive information. The second section assessed awareness of cervical cancer and its screening through 19 structured items, including multiple response questions, with a maximum score of 51. One point was assigned for each correct response and zero for incorrect or no responses. Awareness was categorized as adequate or inadequate based on the mean score, following reference.²⁰ The third section assessed cervical cancer screening practices, measured as a dichotomous variable (performed or not performed), based on participants' reported history of utilizing screening services.

Content validity of the instrument was established through an extensive literature review and expert consultation. The scale-level content validity index (S-CVI) was calculated to assess both relevance and clarity. For the awareness section, the S-CVI average values were 0.95 for relevance and 0.98

for clarity, while the S-CVI universal agreement values were 0.89 for both. The practice-related item demonstrated perfect agreement, with S-CVI average and S-CVI universal agreement values of 1.00. The instrument was pretested among 30 married women from Ward 4, which was excluded from the main study. Cronbach's alpha was 0.76, indicating acceptable reliability.

Data were collected after obtaining ethical approval from the Institutional Review Committee of Tribhuvan University, Institute of Medicine (Ref. No. 84(6-11) E2 081/082). Written permission was also secured from the Health Section of Pokhara Metropolitan City, and relevant authorities were informed of the study's objectives and procedures. Informed written consent was obtained from each respondent prior to data collection. Voluntary participation was ensured, and confidentiality was maintained by using the information solely for research purposes. The collected data were coded and entered into Epi Data version 3.1, then exported to Statistical Package for the Social Sciences (SPSS) version 16.0 for analysis. Descriptive statistics, including frequency, percentage, mean, range, and standard deviation, were computed for the study variables. Inferential statistics, such as the Chi-square test and Pearson's correlation coefficient, were used. A p-value of <0.05 was considered statistically significant.

RESULTS

Out of 257 women, more than half of the respondents 142(55.25%) were between the ages of 30 and 40 years. The mean age was 40.75 ± 8.12 years. Almost all of the respondents 247(96.11%) were Hindu, and the majority 192(74.71%) belonged to the Brahmin/Chhetri ethnic group. Regarding family type, the majority of respondents 172(66.93%) were living in nuclear families. Likewise, 228(88.72%) of the respondents had received information about cervical cancer from the media. Similarly, in terms of proximity to health facilities, most of the respondents 195(75.88%) resided more than 30 minutes walking distance away. Almost all of the respondents 252(98.05%) did not have the habit of smoking.

Most of the respondents and their husbands were literate, which was 245(95.33%) and 254(98.83%), respectively. Regarding the level of education, 123(50.20%) of the respondents had secondary education. Likewise, 121(47.45%) of the respondents' husbands had secondary-level education. Similarly, 105(40.86%) of the respondents were homemakers or engaged in business. Less than half of the respondents' husbands 102(39.69%) were involved in their own business. Regarding family income, 91(35.41%)

of the families had an income ranging from Rupees 48,751 to 97,450.

A total of 140(54.47%) of the respondents were married between the ages of 15 and 19 years. Likewise, 108(42.02%) of the respondents had been married for 20 years or more. Regarding sexual activity, 140(54.47%) had their first sexual intercourse between the ages of 15 and 19. The majority of respondents 164(63.81%) had regular menstruation. Almost all of the respondents 248(96.50%) reported no family history of cervical cancer. Among those who had not undergone screening, the most commonly reported reason 145(96.03%) was the absence of symptoms and 113(74.8%) lack of awareness. A small proportion 4(2.65%) cited difficulty in accessing the hospital as the reason for not having a screening test.

In this study, 122(47.47%) of respondents demonstrated an adequate level of awareness regarding cervical cancer, while 135(52.53%) had inadequate awareness. A statistically significant association was found between awareness levels and age ($p=0.035$), ethnicity ($p=0.011$), husband's level of education ($p=0.005$), and duration of marriage ($p=0.014$). Additionally, cervical cancer screening practices were significantly associated with age ($p<0.001$), ethnicity ($p=0.004$), monthly income ($p=0.002$), age at marriage ($p=0.025$), duration of marriage ($p<0.001$), and menopausal status ($p=0.003$).

Table 1: Awareness on cervical cancer among respondents

| Correct Responses | Number | Percentage |
|--|--------|------------|
| It is the abnormal growth of cells in the cervix | 73 | 28.40% |
| HPV virus is the main cause of cervical cancer | 116 | 45.15% |
| Risk factors* | | |
| Poor perineal hygiene | 237 | 92.22% |
| Sexually Transmitted infection | 187 | 72.76% |
| Multiple sexual partner | 184 | 71.60% |
| Family history(mother/sister) | 184 | 71.60% |
| Early marriage and sexual intercourse | 179 | 69.65% |
| Repeated childbirth | 148 | 57.59% |
| Prolong use of OCPs | 147 | 57.20% |
| Genital Warts | 122 | 47.47% |
| Cigarette/Tobacco use | 91 | 35.41% |
| Obesity | 52 | 20.23% |
| Sign and Symptoms* | | |
| Heavy periods | 224 | 87.16% |
| Foul smelling vaginal discharge | 224 | 87.16% |
| Lower abdominal pain | 223 | 86.77% |
| Intermenstrual bleeding | 173 | 67.32% |
| Bleeding after menopause | 143 | 55.64% |
| Persistent low back pain | 142 | 55.25% |
| Bleeding after sexual intercourse | 140 | 54.47% |
| Painful sexual intercourse | 136 | 52.92% |
| Swelling of legs | 65 | 25.29% |
| Women aged 30 to 60 years are at risk of developing cervical cancer | 220 | 85.60% |

* Multiple Responses

In this study, 73(28.40%) of respondents correctly

identified the meaning of cervical cancer; and 116(45.15%) recognized HPV as its primary cause. Poor perineal hygiene was acknowledged as a risk factor by 237(92.22%) of respondents. Additionally, 224(87.16%) identified heavy menstrual bleeding and foul-smelling vaginal discharge as symptoms, while 220(85.60%) indicated that women aged 30–60 years are at greater risk. (Table 1)

Table 2: Awareness on preventive measures for cervical cancer among respondents

| Correct Responses | Number | Percentage |
|---|------------|---------------|
| Cervical cancer can be prevented | 257 | 100.00 |
| Preventive measures* | | |
| Maintain perineal hygiene | 238 | 92.61% |
| RTI/STI treatment | 237 | 92.22% |
| Regular gynecological examination | 231 | 89.88% |
| Avoid multiple sex partners | 229 | 89.11% |
| Avoid early marriage | 211 | 82.10% |
| Regular cervical screening | 203 | 78.99% |
| Avoid repeated childbirth | 190 | 73.93% |
| Avoid prolong use of OCPs (>5 years) | 182 | 70.82% |
| HPV Vaccination for girl child | 173 | 67.32% |
| Avoid cigarette/tobacco use | 154 | 59.92% |
| Awareness of HPV vaccine | 125 | 48.64% |
| Recommended ages for vaccine | 69 | 26.85% |

*Multiple Responses

All respondents reported that cervical cancer is a preventable disease. Most 238(92.61%) identified maintaining perineal hygiene as a preventive measure. Additionally, 125(48.64%) had heard of the HPV vaccine, while 69(26.85%) correctly stated that the recommended age for vaccination is between 9 and 14 years. (Table 2)

Table 3: Awareness on cervical cancer screening among respondents

| Correct Responses | Number | Percentage |
|---|--------|------------|
| Cervical cancer screening methods* | | |
| Pap smear test | 209 | 81.32% |
| VIA (Visual Inspection with Acetic acid) | 184 | 71.60% |
| HPV DNA (Human Papilloma Virus Deoxyribonucleic acid) | 39 | 15.18% |
| LBC (Liquid based cytology) | 33 | 12.84% |
| Need of cervical cancer screening* | | |
| Women aged 30 to 60 | 250 | 97.28% |
| Women with multiple sexual partner | 239 | 93.00% |
| Women who had a family history of cervical cancer | 220 | 85.60% |
| Sexually active women | 172 | 66.93% |
| Meaning of Pap smear test | | |
| Test to identify cancerous cells in the cervix | 148 | 57.59% |
| Meaning of VIA test | | |
| Test to visualize the cervix with acetic acid | 64 | 24.90% |

| | | |
|--|-----|--------|
| Meaning of HPV DNA test | | |
| Test to detect the presence of genetic material from HPV | 59 | 22.96% |
| Cervical cancer screening start at the age of 30 | 155 | 60.31% |
| PAP and VIA testing should be done every 3 years | 27 | 10.51% |
| HPV DNA testing should be done every 5 years | 39 | 15.18% |
| Best time for screening is 10–20 days after menstrual period. | 91 | 35.41% |
| Cervical cancer screening can stop after 65 with two consecutive negative tests | 170 | 66.15% |

*Multiple Responses

In this study, 209(81.32%) of respondents identified the Pap smear test as a method of cervical cancer screening. Nearly all participants 250(97.28%) were aware that women aged 30 to 60 years require regular screening. More than half 148(57.59%) recognized the Pap smear test as a means of detecting cancerous cells in the cervix. Only 64(24.90%) were aware of the VIA test, and 59(22.96%) were familiar with the HPV DNA test. Regarding the recommended age for initiating screening, 155(60.31%) stated it begins at 30 years. Only 27(10.51%) were aware of the three-year screening interval for VIA and Pap smear tests, and 39(15.18%) correctly identified the five-year interval for the HPV DNA test. Additionally, 91(35.41%) indicated that the optimal time for screening is 10 to 20 days after menstruation, while 170(66.15%) reported that screening should be discontinued at the age of 65. (Table 3)

Table 4: Cervical cancer screening practice among respondents

| Variables | Number | Percentage |
|--|--------|------------|
| Cervical cancer screening practice | | |
| Performed | 106 | 41.25% |
| Not performed | 151 | 58.75% |
| Regularity for screening (n=106) | 35 | 33.01% |
| Type of screening performed *** (n=106) | | |
| Pap smear | 76 | 71.70% |
| VIA | 37 | 34.91% |
| HPV DNA test | 3 | 2.83% |
| Age at first screening (n=106) | | |
| 30-40 | 73 | 69.52% |
| 41-50 | 27 | 24.76% |
| 51-60 | 6 | 5.71% |
| Place of screening * | | |
| Hospital | 84 | 79.24% |
| Camp | 25 | 23.58% |
| Clinic | 7 | 6.60% |

*Multiple Responses

More than half of respondents 151(58.75%) reported that they had never undergone cervical cancer screening, while 35(33.01%) stated they had done so regularly. Among

those screened, 76(71.70%) had received a Pap smear test. Most respondents 73(69.52%) had been screened between the ages of 30 and 40 years. Furthermore, 84(79.24%) indicated that the screening was conducted in a hospital setting. (Table 4)

Table 5: Correlation between awareness on cervical cancer and cervical cancer screening practice

| Pearson correlation (r) | Awareness | Screening Practice | p-value |
|-------------------------|-----------|--------------------|---------|
| Awareness | 1.000 | 0.182** | 0.003** |
| Screening Practice | 0.182** | 1.000 | |

Pearson correlation coefficient significant at p value 0.01 level (2-tailed)

A weak positive correlation exists between awareness of cervical cancer and screening practices ($r=0.182$, $p=0.003$). Linearity was confirmed through a linearity test. (Table 5)

DISCUSSION

Awareness of cervical cancer is crucial for promoting regular screening and reducing related morbidity and mortality. The study was conducted to assess awareness on cervical cancer and screening practice among 257 married women residing in Pokhara Municipality. The current study found that 122(47.47%) of respondents had an adequate level of awareness regarding cervical cancer, while 135(52.53%) had an inadequate level. These findings were consistent with a study conducted in Ethiopia, where 53.7% of respondents demonstrated adequate awareness and 46.3% showed inadequate. ²⁰ Similar results were reported in a study from Nepal, in which 46.5% of respondents had adequate awareness and 53.5% had inadequate awareness. ²¹ Another study from Nepal also supported these findings, reporting 34.4% of respondents with adequate and 65.6% with inadequate awareness of cervical cancer. ¹⁶

The findings of the present study were dissimilar to those of a study conducted in Nepal, where 17.1% of respondents had an adequate level of awareness, while 82.9% had an inadequate level of awareness of cervical cancer. ²² A study conducted in the mid-western rural region of Nepal found that only 12.6% of respondents had an adequate level of knowledge, while the majority (87.4%) had an inadequate level of knowledge. ²³ In contrast, a study conducted in India revealed that 91% of respondents had an adequate level of knowledge and 9% had an inadequate level. ²⁴ These differences could be attributed to variations in demographic factors, educational status, healthcare access, and exposure to awareness initiatives.

The findings of the present study showed that 106(41.25%)

of respondents had undergone cervical cancer screening, while 151(58.75%) had not. These results were consistent with a study conducted by Ranabhat et al. ²⁵ in Chitwan, Nepal, where 38.3% had been screened and 61% had not. In contrast, earlier studies in India and Nepal reported much lower screening rates, with only 9.5% and 13.6% of respondents undergoing cervical cancer screening, respectively. ^{24,23} These differences may be attributed to variations in study populations, cultural attitudes, levels of awareness, and access to healthcare services.

The current study found that 76(71.70%) of respondents had undergone a Pap smear test and 37(34.91%) had undergone a VIA test. Additionally, 32(30.18%) reported undergoing both Pap smear and VIA tests every three years. The majority 73(69.52%) received cervical cancer screening between the ages of 30 and 40. Among respondents who had not been screened, 145(96.03%) cited the absence of symptoms as the primary reason. These results are consistent with those reported by Ranabhat et al. ²⁵ In contrast, a study in Biratnagar, Nepal, found lower screening rates, with only 31% having undergone Pap smear testing and 8.3% VIA testing. Furthermore, 42.9% of respondents in that study were screened between ages 30 and 40, and 85.2% identified lack of health insurance as a barrier to screening. ²⁶ The variation in findings may be due to differences in healthcare access, socioeconomic factors, and healthcare policies between the study settings.

The present study revealed association between level of awareness and age ($p=0.035$), level of husband's education ($p=0.005$), and duration of marriage ($p=0.014$). However, variables such as monthly income, occupation, distance of nearest health facility and family history of cervical cancer were not significantly associated with level of awareness. These findings were supported by a study conducted by Rijal et al. ²¹ where an association was found with age at p value <0.001 and level of husband's education at p value <0.001 while level of education, monthly income, occupation and family history of cervical cancer were not statistically significant. Another study conducted in Chitwan, Nepal found no significant association between level of awareness and education, religion, occupation and duration of marriage. ²⁷ The study findings were contrast with a study conducted in Syangja, Nepal which showed no significant association between awareness of cervical cancer and factors such as age, ethnicity and education ¹⁷. This suggest that these variables may not have a significant impact on awareness in this case.

The present study revealed an association between cervical cancer screening practices and age at p value

<0.001, ethnicity ($p=0.004$), monthly income ($p=0.002$), age at marriage ($p=0.025$), duration of marriage at p value <0.001 and menstruation status ($p=0.003$). However, variables such as religion, type of family, level of education, occupation, distance to nearest health facility and family history of cervical cancer were not significantly associated with cervical cancer screening practices. A study conducted by Rai et al.²⁸ in Dharan, Nepal observed no significant association between cervical cancer screening practices and age, monthly income, age at marriage, religion, occupation and family type. The findings were not supported by the study conducted by Thapa et al.²³ which had found a significant association between education and family history of cervical cancer with cervical cancer screening practices.

In the present study, there was a weak positive correlation between awareness on cervical cancer and cervical cancer screening practice among married women ($r=0.182$, $p=0.03$). The findings were similar to a previous study conducted by Chhetri et al.¹⁷ in Syangja, Nepal, which showed a weak positive relationship between awareness and practice of cervical cancer screening ($r=0.20$). In contrast, a study conducted in Chitwan, Nepal, found a strong negative correlation between knowledge and practice score ($r=-0.194$).¹⁶ The variation in findings could be attributed to differences in study populations settings. Moreover, factors such as cultural norms, socioeconomic status and access to health care may have influenced the relationship between awareness and screening practices.

The study was conducted only in the selected wards of Pokhara Metropolitan City which may limit its generalizability.

CONCLUSIONS

More than half of the married women in Pokhara Metropolitan City demonstrated inadequate awareness of cervical cancer, and over half had not undergone cervical cancer screening. Significant associations were identified between awareness levels and factors such as age, ethnicity, husband's education, and duration of marriage. Similarly, cervical cancer screening practices were significantly associated with age, ethnicity, monthly income, age at marriage, duration of marriage, and menopausal status. A weak positive correlation was observed between awareness and screening practices. These findings highlight the need for targeted health education programs and awareness campaigns to enhance cervical cancer knowledge and promote screening uptake.

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AUTHORS' CONTRIBUTIONS

SB and RT conducted the literature review and conceptualized the study. SB, RT and PS performed data collection. RT, SB and PS carried out data analysis, interpretation, and preparation of results. SB, RT and PS drafted the manuscript, which was reviewed and approved by both authors. All authors take full responsibility for the integrity and accuracy of the work.

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