

Original Article

Knowledge, Attitude and Practice regarding Cervical Cancer among Women of Reproductive Age Living in Rawalpindi, Pakistan: A Cross-Sectional Study

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^{1,2,3,4,5} Conception of study	Fatima Nazir,	Received: 15/05/2025
^{1,2,3,4,5} Experimentation/Study Conduction	Final Year MBBS Student,	Accepted: 01/08/2025
^{1,2,3,4,5} Analysis/Interpretation/Discussion	Rawalpindi Medical University,	
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^{1,2,3,4,5,6} Facilitation and Material analysis		

Cite this Article: Nazir F, Rasheed S, Zaidi N, Iqbal L, Chand K, Noreen K, Masood A, Qayum M. Knowledge, Attitude, and Practice regarding Cervical Cancer among Women of Reproductive Age living in Rawalpindi, Pakistan: A cross-sectional study. *SJPMC*. 2025; S1:25.

Conflict of Interest: Nil
Funding Source: Nil

Access Online:



Abstract

Background: Cervical cancer is a progressive malignant tumor of epithelial origin, primarily caused by Human papillomavirus (HPV) infection. It is a major but preventable health concern, making awareness of the disease and its prevention crucial. This cross-sectional study assessed knowledge, attitudes, and practices (KAP) regarding cervical cancer among women of reproductive age in Rawalpindi, Pakistan.

Objectives: To evaluate the level of knowledge, attitudes, and practices toward cervical cancer among women in Rawalpindi and analyze their correlation with demographic factors.

Materials and Methods: A self-structured questionnaire adapted from prior research was used. Women aged 15–49, selected via convenience sampling at Holy Family Hospital, Rawalpindi, were interviewed after consent over 3 months. Data were analyzed in SPSS 26. Independent t-tests assessed associations between demographics and KAP scores, while Pearson's correlation examined interrelationships.

Results: Of the participants, 152 (66.6%) had adequate knowledge, 119 (52.1%) showed a positive attitude, and 204 (89.4%) demonstrated sufficient practice. Most were young, unmarried, educated, and nulliparous. Significant associations ($p < 0.05$) were found between marital status, parity, age, and knowledge scores; between parity and attitude scores; and between age, marital status, parity, and practice scores. Pearson's correlation revealed significant relationships between knowledge and attitude scores, and between knowledge and practice scores.

Conclusion: This study provides insight into levels of oxygen saturation and knowledge about conditions affecting it. The findings can inform health care strategies and education programs to increase knowledge of medical students about oxygen saturation

Keywords: Oxygen saturation, pulse oximeter, knowledge

Introduction

Cervical cancer is a type of malignant tumor that develops over time from healthy cervical epithelial cells through a process involving both high-grade and low-grade intraepithelial lesions.² This cancer often progresses silently over a decade or more, showing few symptoms until advanced stages. Cervical cancer ranks as the fourth most common cancer among women globally.³ The high-risk human papillomavirus (HPV), which is sexually transmitted, is linked to almost all cervical cancer cases (99.7%).⁴ Other contributing factors include sexual behaviors, reproductive history, sexually transmitted infections, HIV co-infection, smoking, and high birth rates.⁵ Cervical cancer can often be prevented and successfully treated if detected early. However, it remains common, especially in low-income areas where screening is less accessible.⁶ Routine screenings and timely treatment are crucial to reducing both the occurrence and mortality of this disease. A Pap smear is widely used for the early detection of cervical cancer.⁷ Routine Pap tests are generally recommended for women aged 21-65, regardless of sexual activity, HPV vaccination status, or menopausal status.⁸

Cervical cancer remains a significant global health issue, with its incidence varying considerably by region, likely due to differences in HPV infection rates, the effectiveness of screening programs, and healthcare availability. In 2022, approximately 660,000 new cases and 350,000 deaths were reported, making it the fourth most common cancer among women worldwide.⁹ These figures show an increase

from 2012, when there were 266,000 deaths, and highlight that 90% of fatalities occur in countries with low and medium incomes.¹⁰ In India, cervical cancer is responsible for around 10% of cancer-related deaths, ranking as the third leading cause of cancer mortality. The average 5-year survival rate is 48.7%.¹¹ In Pakistan, cervical cancer is the second most prevalent cancer among women aged 15 to 44 and the third most common among women overall, with around 3,197 deaths annually and 5,008 new cases each year.¹²

To find awareness gaps, misunderstandings about the disease, and obstacles to screening and treatment, it is crucial to comprehend women's knowledge, attitudes, and practices (KAP) around cervical cancer. Performing a KAP study aids in the development of focused health education programs and policy initiatives by offering evidence-based insight into the present state of awareness and behavior among women of reproductive age. This study also aids in the development of culturally relevant and demographically aware public health initiatives targeted at lowering the incidence of cervical cancer in Pakistan by evaluating the correlation between demographic characteristics and KAP level.

Materials and Methods

This study adopted a cross-sectional survey design to evaluate knowledge, attitudes, and practices among women of reproductive age in Rawalpindi. Conducted over three months, the study included women aged 15-49 from the general population in Rawalpindi, excluding those who had undergone hysterectomy. A sample size of 228, with a 95% confidence level and a 5% margin of

error, was calculated using OpenEpi. Data was gathered through convenience sampling from the women visiting Holy Family Hospital in Rawalpindi through interviews. The institutional review board granted approval, and participants were assured that their confidentiality would be maintained and that they could withdraw from the study at any time.

The questionnaire consisted of the first part of demographic variables, including age category, marital status, education level, and parity. The second part consisted of 9 questions to assess the Knowledge level of participants. The third part consisted of 5 questions to assess the attitude of women towards the screening of cervical cancer, and the last part consisted of 6 questions to assess the practice of women. A correct answer on any item resulted in a point, with maximum possible scores of 11 for knowledge, 5 for attitudes, and 6 for practices. Participants who scored at least 6, 5, and 4 points were considered to have adequate knowledge, positive attitudes, and sufficient practice, respectively.

Data was analyzed using SPSS version 26, calculating frequencies, means, and standard deviations for demographic variables, including age, marital status, education level, and parity. Independent t-tests were applied to find affiliation between demographic variables (age, marital status, education, and parity) and scores on knowledge, attitudes, and practices. Age was categorized into younger (15-32) and older (33-49) groups, marital status into married and unmarried, education level into those who received formal education and those who did not

receive formal education, and parity into childless and those with one or more children. Pearson correlation was also used to assess associations among knowledge, attitude, and practice scores.

Results

A total of 228 women aged 15-49 participated. Most were young (63.2%), unmarried (65.4%), had a higher level of education (58.2%), and were childless (69.3%) as presented in Table 1.

To gauge participants' knowledge, they were first asked if they were aware of any diseases affecting the female genital tract. Out of 228 women, 175 (76.8%) gave at least one of the anticipated responses. The majority (82.9%, or 189 women) had heard of cervical cancer, with 155 (68.0%) citing sources such as social media, educational institutions, family and friends, and healthcare facilities as their information sources. Furthermore, 160 women (70.2%) identified key factors that contributed to cervical cancer to be several sexual partners, the use of herbal products for intimate care, sexually transmitted infections, HIV, HPV, and advanced age. Only 29 women (12.7%) knew of someone with cervical cancer within their close social circle. Most participants, 199 (87.3%), were aware that treatments for cervical cancer include surgery, chemotherapy, and radiotherapy, while 156 (68.4%) were informed about preventive measures. However, only 98 women (43.0%) had heard of cervical smears, though 142 (62.3%) understood that early detection of suspicious lesions is possible.

Table 1 Frequency of demographic variables

Variables	Frequency N (%)
Age (years)	
5-32	194 (85.1%)
33-49	34 (14.9%)
Marital status	
Single	149(65.4%)
Married	73(32.0%)
Widowed	5(2.2%)
Divorced	1(0.4%)
Level of education	
No school	3(1.3%)
Primary	9(3.9%)
Secondary	29(12.7%)
Higher	187(82.0%)
Parity	
0 births	158(69.3%)
1 to 2 births	33(14.5%)
3 or more	37(16.2%)

Note. Data are presented as frequencies (percentages).

Overall, the study found that 152 women (66.6%) achieved an adequate knowledge score of 6 or higher. Among these, the majority were younger, single, educated, and had no children. An independent t-test was conducted to examine the correlation between demographic variables—age,

marital status, parity, and education level—and knowledge scores. The results indicated significant associations ($p < 0.05$) between knowledge scores and age, marital status, parity, and education level, as detailed in Table 2.

Table 2 Relationship between Demographic Variables and Knowledge Score.

Parameters	Adequate Knowledge N (%)	Inadequate Knowledge N (%)	P value
Age (years)			
Younger women	106 (69.7%)	38(50%)	0.001
Older women	46 (30.2%)	38 (50%)	
Marital status			
Unmarried	110 (72.3%)	39 (51.3%)	0.001
Married	42 (27.6%)	37 (48.6%)	
Level of education			
Illiterate	5 (3.2%)	7 (9.2%)	0.186
Literate	147 (96.7%)	69 (90.7%)	
Parity			
No children	113 (74.3%)	45 (59.2%)	0.033
1 or more children	39 (25.6%)	31 (40.78%)	

Note. Data presented as frequencies (percentages)

To assess the level of practical action among women in our study, participants were asked what they would do if they experienced vaginal bleeding between menstrual periods. A total of 197 women (86.4%) responded that they would seek medical advice or visit a healthcare facility. When asked about their willingness to consult a doctor regularly for cervical cancer screening, 178 women (78.1%) expressed a positive attitude. Additionally, 166 women (72.8%) indicated they would agree to undergo a smear test. Nearly all participants, 225 women (98.7%), supported the idea of a national screening

program in the future, and 159 women (69.7%) were willing to pay for a smear test.

Overall, 119 women (52.1%) demonstrated an adequate level of attitude toward cervical cancer, achieving a score of 5 or higher. Among these, the majority were younger, single, educated, and had no children. To explore associations between demographic factors: age, marital status, parity, and education level—and attitude scores, an independent t-test was performed. This analysis revealed a significant association ($p < 0.05$) between parity and attitude scores.

Table 3 Relationship between Demographic Variables and Attitude Score

Parameters	Adequate Attitude N (%)	Inadequate Attitude N (%)	p value
Age (years)			
Younger women	70 (58.8%)	74 (67.89%)	0.301
Older women	49 (41.17%)	35 (32.11%)	
Marital status			
Unmarried	73 (61.34%)	76 (69.72%)	0.272
Married	46 (38.65%)	33 (30.27%)	
Level of education			
Illiterate	8 (6.7%)	4 (3.6%)	0.272
Literate	111 (93.27%)	105 (96.3%)	
Parity			
No children	77 (64.7%)	81 (74.3%)	0.028
1 or more children	42 (35.29%)	28 (25.68%)	

Note. Data presented as numbers(percentages)

To evaluate the level of cervical cancer-related practices among women in our study, participants were asked about their most recent gynecological exam, with only 64 women (28.1%) reporting an exam within the last two years. The majority, 194 women (85.1%), reported not using any chemicals or plant-based products for intimate care, and

225 women (98.7%) indicated they had never smoked. Nearly all participants, 227 women (99.6%), had either no or only one sexual partner, and 219 women (96.1%) reported that their partner had no other partners. However, only 15 women (6.6%) had ever undergone a Pap smear test.

Overall, 204 women (89.4%) exhibited an adequate level of practice towards cervical cancer, achieving a score of 4 or higher. Most women with adequate practices were younger, single, educated, and had no children. An independent t-test was used to

analyze the relationship between demographic factors—age, marital status, parity, and education level—and practice scores. Significant associations ($p < 0.05$) were found between practice scores and marital status, age, and parity (Table 4).

Table 4 Relationship between Demographic Variables and Practice Score.

Parameters	Adequate Practice N (%)	Inadequate Practice N (%)	P value
Age (years)			
Younger women	132 (85.29%)	12 (50%)	0.018
Older women	72 (14.75%)	12 (50%)	
Total	204	24	
Marital status			
Unmarried	137 (67.15%)	12 (50%)	0.009
Married	67 (32.84%)	12 (50%)	
Total	204	24	
Level of education			
Illiterate	10 (4.90%)	2 (8.33%)	0.823
Literate	194 (95.09%)	22 (91.67%)	
Total	204	24	
Parity			
No children	145 (71.07%)	13 (54.1%)	0.047
1 or more children	59 (28.92%)	11 (45.83%)	
Total	204	24	

Note. Data presented as numbers(percentages)

Pearson correlation was used to find the association between Knowledge score, attitude score and practice score. Significant association ($p < 0.05$) was found between

Knowledge score and attitude score, Knowledge score and practice score. However, the association between Attitude score and Practice score was not significant.

Table 5 Pearson Correlation between Knowledge Score, Attitude Score, and Practice Score.

		KS	AS	PS
Knowledge score	Pearson correlation	1	0.215	0.159
	Sig.(2-tailed)	-	0.001	0.016
Attitude score	Pearson correlation	0.215	1	0.073
	Sig.(2-tailed)	0.001	-	0.273
Practice score	Pearson correlation	0.159	0.073	1
	Sig.(2-tailed)	0.016	0.273	-

Note. KS stands for Knowledge Score, AS stands for Attitude Score, and PS stands for Practice Score

Discussion

Our study found that 66.67% of women demonstrated adequate awareness of cervical

cancer. This aligns closely with findings from a study conducted by Ambo University College of Medicine and Health Sciences in

Ethiopia, where 68.8% of women showed awareness regarding cervical cancer screening¹³ awareness levels were higher in studies from Yemen¹⁴ and Tanzania¹⁵, where 80.6% and 83.1% of respondents, respectively, reported knowledge of cervical cancer. Variables are attributed to differences in sample sizes, the level of awareness campaigns, and the educational approaches used in these regions. Given that literacy is a barrier, targeting low-education populations through radio programs, TV segments, and community-based initiatives could be beneficial.¹⁶

In our study, unmarried women have higher levels of knowledge than married women¹⁷, which was also observed in another study from Pakistan. This may be due to the reason that single women are more engaged with information sources about cervical cancer. Compared to other studies in Pakistan, our findings reflect improved levels of knowledge, attitudes, and practices among women, as demonstrated in contrast with studies from Azad Kashmir¹⁷ and Karachi¹⁸

A positive attitude toward cervical cancer screening was seen in 52.1% of participants of our study, which is higher than the 45.5% positive attitude reported in Wolaita zone of southern Ethiopia.¹⁹ This difference may stem from the amount of information provided about the need for screening, which plays a crucial role in motivating individuals to seek preventive healthcare.

Approximately 64.7% of women in our study demonstrated adequate practices concerning cervical cancer, possibly due to the higher number of single and married women in our sample who possessed adequate knowledge.

Cultural and religious norms may also contribute, as they influence sexual behavior, thereby promoting healthier practices. While 6.6% of women had undergone a Pap smear test, this is an improvement over a previous Pakistani study that reported a rate of 2.6%,²⁰ suggesting that knowledge and attitude improvements are gradually enhancing practice among women.

Given that women between the ages of 15 and 49 are most susceptible to cervical cancer and its consequences, the findings are highly pertinent to efforts to promote preventative health. The study provides a comprehensive understanding of cervical cancer awareness and behaviors by evaluating the three dimensions of knowledge, attitude, and practice. This understanding can guide more effective health interventions. In addition to describing trends, the study finds significant correlations between demographic characteristics and KAP results using statistical tests (Pearson correlation and independent t-tests).

A potential limitation of this study is that the sample was skewed toward younger, educated women, which may have influenced the results. Additionally, the use of convenience sampling and the single-center design may restrict the ability to generalize these findings to the broader population. Another limitation of this study is its cross-sectional study design; thus, to evaluate how knowledge, attitudes, and practices (KAP) around cervical cancer change over time, longitudinal studies are advised. Such research would yield important information about the long-term efficacy of educational initiatives and legislative modifications. In

order to improve generalizability across various socioeconomic and cultural contexts in Pakistan, future research should involve a broader and more demographically varied population, particularly those in rural areas. Additionally, Changes in knowledge, attitudes, and practices over time could be monitored using a longitudinal method, particularly following interventions like immunization campaigns or awareness campaigns.

Conclusion

Our study indicates an improvement in the levels of knowledge, attitudes, and practices regarding cervical cancer among women compared to previous research in Pakistan. However, further efforts are needed to boost awareness, as cervical cancer remains a significant and rapidly spreading health issue. Public health officials should prioritize nationwide awareness campaigns to encourage cervical cancer early detection and prompt treatment. To boost public participation and lessen the stigma attached to gynecological health issues, these campaigns can make use of social media, mass media, and community outreach

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