RESEARCH ARTICLE

Editorial Process: Submission:03/19/2024 Acceptance:08/06/2025 Published:08/22/2025

Knowledge, Attitudes and Practices of Cervical Cancer Screening among Women Attending Gynecology Clinics at Tertiary Care Hospitals in the Capital City of Pakistan: A Cross-Sectional Survey

Fouzia Zahid Ali Khan[1,2]*, Syeda Batool Mazhar[2], Imose Itua[1]

Abstract

Objective: This study aimed to assess the current level of knowledge, attitudes, and perceptions regarding cervical cancer (CC) screening among women visiting gynecology clinics in tertiary care hospitals of Pakistan, and to identify preferred health promotion methods to enhance access to CC screening and vaccination services. **Methods:** A descriptive cross-sectional survey was conducted among women aged 21-55 years attending outpatient departments of obstetrics and gynecology. The study employed purposive sampling and utilized a pre-validated questionnaire. Data were analyzed using SPSS 21, with bivariate analysis and binary logistic regression to identify predictors of good knowledge. **Results:** The survey involved 370 women, revealing profound gaps in knowledge about CC, with 84.7% demonstrating poor understanding. A significant association was found between education, occupation, income, and knowledge of CC. Furthermore, nearly all respondents expressed a desire for more information on CC and preventive measures, with electronic social media identified as the preferred awareness-raising channel. Encouragingly, 99.7% of women showed willingness towards receiving HPV vaccination if provided free or at low cost. **Conclusion:** The findings underscore a critical need for enhanced awareness and educational interventions to bridge the knowledge gap on CC screening and prevention among Pakistani women. Despite high willingness to engage in preventive practices, barriers such as lack of awareness, limited healthcare access, and socioeconomic factors hinder effective screening uptake. Advocacy and tailored health campaigns are crucial for mobilizing resources and political support to combat CC in Pakistan.

Keywords: Cervical cancer (CC)- cervical cancer screening- KAP- Pap smear- Human papilloma virus (HPV)

Asian Pac J Cancer Prev, **26 (8)**, 2819-2825

Introduction

Cervical cancer (CC) is the fourth most common cancer in women caused by human papilloma virus (HPV) and fourth most leading cause of mortality among women in the world [1]. Most infections caused by HPV are self-limiting, asymptomatic and are eliminated without being noticed, but prolonged exposure to HPV infection for more than ten to fifteen years enhances susceptibility to cervical cancer. Total number of 604,127 newly diagnosed CC cases were reported in 2020 and 341,831 deaths due to CC [2]. About 90% of these deaths occurred in developing countries mainly in Sub-Saharan Africa, Southeast Asia and Central America. There is a huge variation in the epidemiology of CC from country to country and within countries due to inequalities in screening, treatment, and access to vaccination [2]. An eight times difference between developed and developing countries regarding CC incidence and mortality has been reported in the literature [3]. In Western countries, the incidence of CC is 6.8 per 100,000 women in contrast to Sub-Saharan Africa where it is 52.8 per 100,000 women [4].

In Pakistan, more than 49.5 million of the female population is over 15 years of age [5] and according to current statistics every year, 11688 women suffer from CC and 7311 succumb to it [1, 6]. It is the second most common cancer among Pakistani women of age between 15 and 44 years as the incidence has risen from 9 per 100,000 to 19.5 per 100,000 in 2008, thus making it a moderate risk country from a low-risk state [6, 7]. Approximately 68.6 million Pakistani women aged 15 and above are susceptible to CC, with yearly cases surpassing 5,000 [8]. Out of these, over 3,000 succumb to the illness annually, positioning it as the third most common cause of cancer fatalities among women in their reproductive years in Pakistan. One of the main reasons for this high number is lack of awareness and low uptake of screening and vaccination [9, 10] which makes it a concerning

*[1]Department of Public Health, University of Liverpool, United Kingdom. [2]Department of Obstetrics and Gynecology, Pakistan Institute of Medical Sciences. Islamabad, Pakistan. *For Correspondence: fouziazak28@gmail.com*

public health issue. The main objective of our study was to identify the current level of knowledge, attitude, and practices (KAP) about CC screening among women attending gynecology clinics in the tertiary care hospitals and to recognize preferred health promotion methods that can help to promote women's access to healthcare facilities for screening and vaccination against CC in future.

Materials and Methods

Methodology

This is a descriptive cross-sectional survey conducted to assess KAP of Pakistani women towards CC screening in two tertiary care hospitals of Islamabad. Women within the reproductive age range of 21-55 years coming to outpatient departments of obstetrics and gynecology for gynecological evaluation were included. Unmarried females above 21 years of age, either married, divorced, separated or widows of reproductive age with intact uteri were included. Pregnant women, women below 21 years of age, postmenopausal women and those with a history of hysterectomy were excluded.

Ethical Approval

This study was conducted as a fulfillment of Master's thesis from the University of Liverpool. After acceptance of the research proposal, permission to conduct the study was sought and granted by the ethical committees of both tertiary care hospitals of Islamabad. Written permission from these hospitals was then submitted for approval from the Ethical Committee of the University of Liverpool and was granted by the board.

Data Collection and Analysis

Data was collected by the primary researcher through face-to-face interviews in outpatient departments of gynecology clinics. Pre-validated questionnaire devised by different researchers in previous studies was used with slight modification to incorporate constructs of the Health Belief Model with some changes according to socio-cultural norms. They were translated and printed in Urdu to make them comprehensive for all the participants. In some cases, questions were verbally translated into Punjabi (regional) language, where participants were not able to understand Urdu. Purposive sampling technique was used, and sample size was calculated by applying a statistical formula:

$$n = \frac{1.96^2\, P(1-P)}{\varepsilon^2}$$

n= 1.96x1.96x50x50/5x5= 384

Where n= sample size (384), 50% estimated population proportion (P) with correct knowledge was taken as no exact estimate was available. The standard error was taken as 5 with a 95% confidence interval. Written informed consent was obtained. The data gathered from pre-coded questionnaires were entered and analyzed in SPSS 21 provided by the University of Liverpool and saved in a password-protected computer.

The questionnaire commenced with a section on sociodemographic characteristics, followed by a segment evaluating CC knowledge through seven structured questions. Findings from a pilot study revealed limited awareness of risk factors and symptoms among respondents; therefore, detailed inquiries were excluded, and the questionnaire was streamlined to consist predominantly of close-ended, dichotomous questions. Each correct response to knowledge-based questions was assigned a score of one, yielding a maximum possible score of seven. A threshold score of five was established to distinguish between adequate and limited knowledge, with scores above five indicating sufficient understanding and scores below five reflecting inadequate awareness. While the questionnaire primarily comprised close-ended questions, two multiple-choice items were included to assess perceived barriers to CC awareness and strategies for enhancing knowledge dissemination.

Data Analysis

Mean of discrete variables along with standard deviation was computed. Percentages were calculated and summary tables were made for discrete variables like age, age at marriage and number of children. Some nominal variables were displayed in the form of pie and bar charts for a visual appreciation of descriptive statistics. Bivariate analysis was performed by cross-tabulations and chi-square test was carried out to evaluate an association between socio-demographic variables and knowledge of CC. All p-values less than 0.05 were considered statistically significant. Binary Logistic Regression analysis was performed on age, education, income level and occupation to identify predictors of good knowledge.

Participants' attitudes toward CC screening were assessed using a five-item Likert scale. The evaluation was conducted within the framework of the Health Belief Model (HBM) to examine key components, including perceived susceptibility to the disease, likelihood of taking preventive action, and potential for behavior modification regarding CC screening and HPV vaccination. The internal consistency of the attitude section, comprising six questions, was assessed using Cronbach's alpha. Additionally, participants' preferences for receiving further information on CC screening and their preferred channels for awareness-raising were evaluated through multiple-choice options, including electronic and social media, healthcare providers (doctors and hospitals), community health workers, Lady Health Workers, and newspapers. This assessment aims to explore the 'Cues to Action' component of the HBM.

Practices were assessed using dichotomous questions, wherein participants were inquired about the number of marriages, (substituted for the number of partners due to sociocultural considerations), condom use, visit to a doctor in case of illness, previous history of any Pap smear test or an offer of one by any health care provider and the influence of culture in health decision- making. The percentages of participant responses were calculated, and the association between Pap smear practice and knowledge, as well as sociodemographic variables, was

analyzed using the Chi-square test. A p-value of less than 0.05 was considered statistically significant. The overall response rate was 97%, accounting for some participants who initially agreed to participate but later withdrew due to various reasons.

Results

Demographic Variables

Of the total 370 women recruited in the survey, the mean age of women was 33.2 years (SD ± 8.23) with the youngest participant 21 years old and the eldest 56 years of age. The average age of a woman at marriage was 21.1 years (SD± 4.4). Of all the women, 90% were married, 4% were unmarried, and 2% were divorced while 4% were widow. Approximately 29% of women got married before the age of 18 years and only one woman was married after 44 years of age. In the present study, 93.8% of women were Muslims and 6.2% were Christians. Stay at home mothers were 89.7%, professionals like doctors, nurses and others were 5.1% the remaining 4.9% were doing odd jobs. There were 79.7% of women living in urban areas while 20.2 % were residing in rural areas. Only a few women (4%) confessed that they had more than one sexual partner as they got married for more than once and 96.1% claimed to have only one sexual partner. Almost 24% of women were uneducated while women with the highest education level were 13%. A total of 76% (281/370) women had a primary or secondary level of education. More than 59% of the women had a monthly income of less than 20,000 PKR. On the other hand, only 12.2% had a total household income of more than 40,000 PKR.

The sociodemographic characteristic of the participants is shown in Table 1. The majority of the women (99.9%) knew the word "cancer" but 84.8% of them had never heard about CC and HPV. Only 15.6% had some awareness about CC and HPV. Similarly, 14.8% knew at least one risk factor, and 85.2% had no information at all. Those who knew one risk factor also had some idea about one sign or symptom (14%). None of the unmarried women (n=14) knew about CC.

Approximately 80% of women had never heard about Pap smear as a screening test for CC and HPV. None of the women knew that this screening tool is available in majority hospitals. Similarly, only 8.4% of women were aware of the availability of HPV vaccination as a preventive measure against CC. Knowledge of CC, HPV, and Pap smear screening was assessed using seven questions (Table 2). Participants received one point for each correct response, while incorrect or unknown responses were scored as zero. The total knowledge- score ranged from 0 to 7, with a mean score of 1.04 (±2.1 SD) and a mode of 0. Notably, 74.7% of participants scored zero, while only 8.1% achieved the maximum score of 7. A threshold score of 5 was established to categorize knowledge levels; participants scoring at least 5 were classified as having 'good' knowledge, while those scoring below 5 were considered to have 'poor' knowledge. Overall, 84.7% of women demonstrated poor knowledge of CC and its screening. Knowledge disparities were observed between urban and rural populations, with 17% of urban women (51/295) exhibiting good knowledge compared to only 8% of rural women (6/75).

The third section of the questionnaire assessed participants' perceptions of CC risk using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale demonstrated high internal consistency, with a Cronbach's alpha of 0.8. Most respondents (94.9%) were uncertain about their risk of developing CC, while 5% believed they might be at risk in the future, and 2.4% perceived themselves as not at risk. All participants expressed a strong desire for more information on CC and emphasized the need for increased awareness. Additionally, 100% of respondents recognized the importance of screening tests such as Pap smears for early detection. While 96% indicated a willingness to undergo a Pap smear if provided free of charge, 4% hesitated due to reliance on their husbands or in-laws for health-related decision-making.

Around 78% (n=289/370) participants identified electronic social media as the primary channel for CC awareness, and 12.4% (46/370) emphasized integrating

Table 1. Sociodemographic Characteristics of Participants

Characteristics	Number n=370	Percentage %
Age Groups		
21-35	252	68.1
36-45	92	24.9
>45	26	7
Number of Partners		
One	339	92
Two	18	5
No Partner	13	3
Religion		
Islam	23	93.8
Christians	347	6.2
Place of Residence		
Rural	295	79.7
Urban	75	20.3
Marital Status		
Unmarried	14	3.8
Married	332	89.7
Widow	15	4.1
Divorced	9	2.4
Occupation		
Housewives	332	90
Professional	19	5
Students or Others	19	5
Household Income (PKR)		
Unemployed	29	7.83
≤ 10,000	92	24.9
10,001-20000	100	27
20,001-30,000	71	19.2
30,001-40,000	33	8.9
> 40,000	45	12.2

Table 2. Level of Awareness about Cervical cancer, HPV and Pap Smear among Participants

Variables		No of respondents (%)	
		Yes	No
1	Do you know what cervical cancer is?	58 (15.7)	312 (84.3)
2	Do you know what HPV is?	53 (14.3)	317 (85.7)
3	Have you ever heard of Pap smear test?	74 (20)	296 (80)
4	Are you aware of any sign and symptoms of cervical cancer?	56 (15.1)	314 (84.9)
5	Are you aware of any risk factor of cervical cancer?	55 (14.9)	315 (85.1)
6	Do you know that it can be prevented through early screening	58 (15.7)	315 (85.1)
7	Do you know there is an HPV vaccination against cervical cancer?	31 (8.4)	339 (91.6)

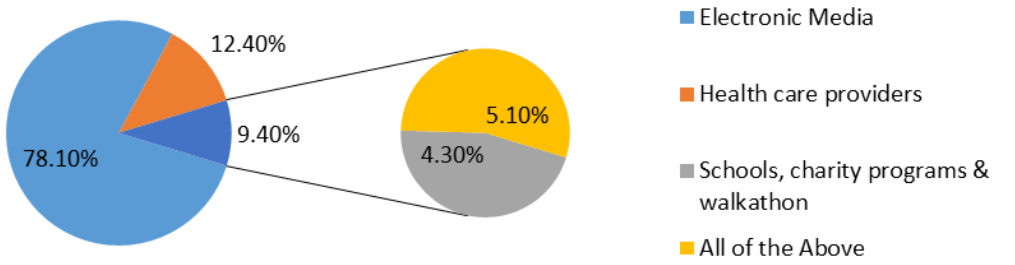

Figure 1. Relative Frequency of Proposed Methods to raise Awareness among General Population

awareness programs into healthcare services, highlighting the role of LHWs and CHWs. A smaller fraction (4%) suggested schools, charity events, and walkathons for spreading awareness, while 5% recommended a combination of all methods as in Figure 1. Additionally, 99.7% of women expressed a willingness to receive the HPV vaccination if it was free or low-cost, indicating a positive attitude towards CC prevention, with only one woman (0.3%) hesitant without specifying a reason

The majority of women (91.6%) had one sexual partner, 4.9% had more than one sexual partner, and others (3.5%) were single. Almost 91.9% of women reported that they never had any screening test for CC and 9.1% of (32) women accepted that they had Pap smear testing on different occasions, but none of them was informed of any positive result or advised for next follow up. Of all the women who had Pap smear, 46% had good overall knowledge of screening (15/32).

Table 3. Predictors of Overall Knowledge for Cervical Cancer Screening (By using Binary Logistic Regression

Risk Factors		Odds Ratio	p- Value	95% CI for Odds Ratio
Age (Years)	21-35	Ref		
	36-45	1.45	0.235	(0.78-2.72)
	>45	0.73	0.702	(0.22-2.74)
Education	None	0.02*	<0.001	(0.95- 1.08)
	Primary	0.03*	<0.001	(0.005- 0.10)
	Secondary	0.12*	<0.001	(0.007-0.13)
	Bachelors	0.77	<0.001	(0.05-0.27)
	Masters	Ref		
Month Income (PKR)	<10,000	0.073*	<0.001	(0.026-0.201)
	10,001-20,000	0.129*	<0.001	(0.055-0.304)
	20,001-30,000	0.213*	<0.001	(0.091-0.499)
	30,001-40,000	0.232*	<0.001	(0.080-0.671)
	>40,000	Ref		
Profession	Housewife	0.195*	<0.001	(0.073-0.521)
	Odd-job or student	0.333		(0.079-1.410)
	Professional	Ref		
Pap Smear Uptake	Yes	32	<0.01	(0.073- 0.346)
	No	Ref		

Odds ratio was considered significant with a p value of <0.05

About 75% of (277/370) women accepted that they never used condoms as a method of contraception. Of all the women who use condoms, 35% had overall good knowledge that condoms can prevent HPV, while only 13% of women who never used condoms (n=282) had good knowledge. Lack of information and request of CC screening by doctors was the major barrier reported by 36.5% of (135/370) women followed by poverty 31.4% (116/370), limited access to health care facilities 19.7% (73/370) and powerlessness 12.4% (46/370). Only 9% of (32/370) women said that culture or tradition can affect their health decision making in choosing preventive measures while 91% (n=338/370) denied its impact.

Bivariate analysis was done between overall cervical cancer knowledge score (CCKS) and other variables. No association was found between different age groups and overall CCKS (x^2=1.762, df = 2, p = 0.41); however, it was observed that among 15% (n=57) women with good knowledge, 63.3% (n=36) of them belonged to the younger age group of 21-35 years. The chi-square analysis between marital status and overall knowledge did not reveal any significant association (x^2=3.89, df= 3, p = 0.27). There was no significant relationship between religion and overall knowledge (x^2= .105, df= 1, p= 0.746).

An analysis between education and knowledge of CC was evaluated by applying Chi-square. Cross tabulation illustrated a significant association between education and those who have good knowledge of CC. (x^2=86.3, df = 4, p = 0.0001). A similar relationship was seen between knowledge and different occupations of women (x^2=13.027, df= 2, p = .001). Those who were professional were more knowledgeable (8/18) in contrast to housewives and others. A significant association was also observed between the place of residence (x^2=3.95, df= 1, p = 0.04), household income (x^2=51.3, df= 5, p= .0001), and Pap smear experience (x^2= 26.6, df = 1, p< .0001) with the overall knowledge. A similar relationship was also found between those who regularly visit a qualified doctor when sick and their overall knowledge (x^2= 24.8, df = 1, p< .0001) which signifies that the majority of woman gain information about Pap smear from health workers. It was observed that there was a significant association between education and attitude to visit doctors (x^2= 76.2, df = 4, p< .0001) which being more educated increases the likelihood of visiting doctor for illness. The study also explored a significant relationship between income status and health seeking behavior to visit doctor (x^2= 26.4, df = 5, p< .0001)

Binary Logistic Regression analysis was performed to predict the level of knowledge by using age, education, monthly income and uptake of Pap smear variables (Table 3) The analysis revealed that age > 45 is not a predictor of CC knowledge (OR, 0.73, 95% CI, 0.95- 1.08, P=0.702) but monthly income (OR, 0.232, CI 0.080-0.67, P=<0.001), and education (OR, 0.02, CI, 0.95-1.08, P <0.001) are good predictors of CC knowledge. Odds Ratios less than 1 shows a negative association or protective effect which means women with high income and high education are less likely to have poor CC knowledge, and screening.

Discussion

CC remains a formidable adversary in the realm of public health, necessitating the dissemination of knowledge and uptake of screening practices as quintessential measures for its effective mitigation. Despite a recommendation from WHO that women over the age of 30 years should be screened for CC every 5-10 years [11] this KAP survey unveils a disconcerting scenario. A stark difference in awareness and knowledge among women is delineated by the fact that only a minority (15%) demonstrated a rudimentary understanding of the disease's signs, symptoms, and risk factors. Furthermore, a staggering 80% of respondents remained unaware of Pap smear screening, a critical diagnostic screening test for CC, echoing the findings from similar studies [1, 6, 10].

In the purview of HPV vaccination, only 8.4% were aware of its correlation with CC prevention, a statistic in harmony with prior research underscoring a pervasive lack of familiarity with the vaccine and its primary preventive role [6, 12]. However these findings are in contrast to another study that showed 54.4% of women were aware of HPV vaccine [13]. The dearth of CC screening knowledge is attributable to myriad factors including lack of education, economic constraints, and restricted access to healthcare facilities [14, 15]

Contradictions abound regarding the association between age and awareness of CC, with the current study not finding significant correlation, aligning with the findings of other cross-sectional analyses [16, 17]. Marital status too did not emerge as a determinant of knowledge, diverging from studies suggesting otherwise [6, 18].

Empirical evidence suggests that pivotal social determinants like education, income, and urban residency are significantly associated with enhanced CC awareness [12, 16]. Moreover, a prevailing uncertainty towards personal risk perception was noted, with a vast majority (97%) uncertain of their susceptibility to CC, mirroring similar results from diverse ethnic groups in England (mainly Muslims) and Vietnamese American women [15, 19, 20].

Interestingly, the inclination to accept HPV vaccination and Pap smear screening by almost every participant was overwhelmingly positive, provided these interventions were economically feasible or complimentary, underscoring the pivotal role of cost in healthcare decision-making. This proclivity towards preventive measures, notwithstanding financial hurdles, underscores an urgent need for comprehensive awareness programs facilitated through electronic media and healthcare personnel to surmount barriers of misinformation and financial constraints as described in previous studies [1, 10], thus paving the way for enhanced screening uptake and, consequently, a reduction in CC morbidity and mortality.

Strengths and Limitations

The primary strengths of this study include its large sample size, cost-effectiveness facilitated by a convenient study design, and the inclusion of a diverse cohort of women representing various sociocultural backgrounds

from both rural and urban regions of Pakistan. Additionally, efforts were made to ensure response consistency by utilizing a structured questionnaire, which was translated into the local language to enhance comprehension and accuracy.

However, the main limitation was convenience sampling to recruit participants, as it is considered a weak sampling approach due to over- representation or under-representation of a target group and the findings cannot be generalized. There is also a possibility of self-reporting bias in accurately reporting knowledge or practices leading to potential inconsistencies in results.

In conclusion, while no single empirical study can fully capture the complexities of health behaviors and knowledge dynamics, this KAP study aimed to identify gaps in awareness, attitudes, and practices related to CC screening among Pakistani women. The findings revealed a significant deficit in knowledge regarding CC prevention and screening, with the majority of women not undergoing screening due to limited awareness, inadequate access to healthcare services, and minimal engagement with health education initiatives. Notably, education, income, and urban residency emerged as key determinants of knowledge levels, with more educated women and those from higher-income households demonstrated greater awareness of CC and relevant preventive measures.

These insights from the KAP study underscore the urgent need for comprehensive advocacy, communication, and social mobilization efforts. Achieving the World Health Organization's goal of cervical cancer elimination by 2030 requires a multifaceted approach, including ensuring 90% HPV vaccination coverage among girls by the age of 15. This necessitates targeted initiatives to enhance the availability, and affordability of the gender-neutral HPV vaccine while simultaneously addressing factors contributing to vaccine hesitancy. Public health campaigns that include men and promote CC screening and prevention through targeted education and outreach programs are essential to transforming health-seeking behaviors and improving screening uptake. Policymakers should evaluate and develop strategies to integrate the HPV vaccine into Pakistan's national immunization program [7, 21]. Addressing these gaps through strategic interventions can significantly contribute to reducing the burden of CC and advancing global elimination efforts.

Author Contribution Statement

FZAK: Conceptualization, methodology, data analysis, writing-original draft, editing, & project administration. SBM: Review and editing. II: Review, editing, supervision.

Acknowledgements

None.

References

1. Hirani S, Khan S, Akram S, Virji SN, Shaikh PA, Naeem E, et al. Knowledge, awareness, and practices of cervical cancer, its risk factors, screening, and prevention among women in karachi, pakistan. Eur J Cancer Prev. 2021;30(1):97-102. https://doi.org/10.1097/cej.0000000000000590.
2. Singh D, Vignat J, Lorenzoni V, Eslahi M, Ginsburg O, Lauby-Secretan B, et al. Global estimates of incidence and mortality of cervical cancer in 2020: A baseline analysis of the who global cervical cancer elimination initiative. Lancet Glob Health. 2023;11(2):e197-e206. https://doi.org/10.1016/s2214-109x(22)00501-0.
3. Ali F, Kuelker R, Taye B. Understanding cervical cancer in the context of developing countries. Ann trop med public health 2012;5:3-15. Ann Trop Med Public Health. 2012;5:3-15. https://doi.org/10.4103/1755-6783.92871.
4. Singhrao R, Huchko M, Yamey G. Reproductive and maternal health in the post-2015 era: Cervical cancer must be a priority. PLoS Med. 2013;10(8):e1001499. https://doi.org/10.1371/journal.pmed.1001499.
5. Fr354. Pakistan demographic and health survey 2017-18. Available from: Https://www.Dhsprogram.Com/pubs/pdf/fr354/fr354.Pdf.
6. Vol. 2 no. 4 (2012): Pakistan journal of public health. Pakistan journal of public health. Available from: Https://pjph.Org/pjph/issue/view/23.
7. Awan UA, Khattak AA. Has pakistan failed to roll back hpv? Lancet Oncol. 2022;23(5):e204. https://doi.org/10.1016/s1470-2045(22)00141-3.
8. Papillomavirus bh. Pakistan: Human papillomavirus and related cancers. Related cancers, fact sheet 2023. Ico/iarc information centre on hpv and cancer. 2023.
9. Burney A, Zafar R. Hpv vaccination as a mode of cervical cancer prevention in pakistan. South Asian J Cancer. 2023;12(1):51-2. https://doi.org/10.1055/s-0043-1764211.
10. Khan GJ, Naeem HS, Khan S, Jamshaid T, Sajid MI, Bashir I, et al. Understanding and responsiveness level about cervical cancer and its avoidance among young women of pakistan. Asian Pac J Cancer Prev. 2014;15(12):4877-83. https://doi.org/10.7314/apjcp.2014.15.12.4877.
11. Who. Cervical cancer [internet]. [cited 2025 mar 26]. Available from: Https://www.Who.Int/news-room/fact-sheets/detail/cervical-cancer.
12. Raychaudhuri S, Mandal S. Socio-demographic and behavioural risk factors for cervical cancer and knowledge, attitude and practice in rural and urban areas of north bengal, india. Asian Pac J Cancer Prev. 2012;13(4):1093-6. https://doi.org/10.7314/apjcp.2012.13.4.1093.
13. Shamsi U, Zahid F, Abdul Jabbar AB, Musharraf MD, Gauhar F, Akbar I, et al. Human papillomavirus vaccine awareness and acceptability for primary prevention of cervical cancer in pakistan: A cross-sectional study. Asian Pac J Cancer Prev. 2024;25(3):813-20. https://doi.org/10.31557/apjcp.2024.25.3.813.
14. Adedimeji A, Ajeh R, Pierz A, Nkeng R, Ndenkeh JJ, Fuhngwa N, et al. Challenges and opportunities associated with cervical cancer screening programs in a low income, high hiv prevalence context. BMC Womens Health. 2021;21(1):74. https://doi.org/10.1186/s12905-021-01211-w.
15. Farajimakin O. Barriers to cervical cancer screening: A systematic review. Cureus. 2024;16(7):e65555. https://doi.org/10.7759/cureus.65555.
16. Hyacinth HI, Adekeye OA, Ibeh JN, Osoba T. Cervical cancer and pap smear awareness and utilization of pap smear test among federal civil servants in north central nigeria. PLoS One. 2012;7(10):e46583. https://doi.org/10.1371/journal.pone.0046583.
17. Shrestha J, Saha R, Tripathi N. Knowledge, attitude and practice regarding cervical cancer screening amongst women visiting tertiary centre in kathmandu, nepal. Nepal J Med Sci.

2013;2. https://doi.org/10.3126/njms.v2i2.8941.
18. Assoumou SZ, Mabika BM, Mbiguino AN, Mouallif M, Khattabi A, Ennaji MM. Awareness and knowledge regarding of cervical cancer, pap smear screening and human papillomavirus infection in gabonese women. BMC Womens Health. 2015;15:37. https://doi.org/10.1186/s12905-015-0193-2.
19. Marlow LA, Wardle J, Waller J. Understanding cervical screening non-attendance among ethnic minority women in england. Br J Cancer. 2015;113(5):833-9. https://doi.org/10.1038/bjc.2015.248.
20. Marlow LA, Waller J, Wardle J. Barriers to cervical cancer screening among ethnic minority women: A qualitative study. J Fam Plann Reprod Health Care. 2015;41(4):248-54. https://doi.org/10.1136/jfprhc-2014-101082.
21. Gul S, Murad S, Javed A. Prevalence of high risk human papillomavirus in cervical dysplasia and cancer samples from twin cities in pakistan. Int J Infect Dis. 2015;34:14-9. https://doi.org/10.1016/j.ijid.2015.02.018.