ORIGINAL ARTICLE

Awareness of Cervical Cancer Screening Among Women Attending Gynecology Clinics

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ABSTRACT

Background: Cervical cancer is preventable and can be detected early with screening, which can help to lower the morbidity and mortality from the disease. The purpose of this study was to determine the awareness of women's screening for cervical cancer in gynecology clinics. **Methods:** This cross-sectional descriptive study included 175 women attending gynecology clinics. A structured interviewer-administered questionnaire was used to collect data, which included information on cervical cancer prevention, Pap smear testing, HPV infection testing, screening without symptoms, previous gynecological consultation, and sources of information about screening. A score of awareness was computed, and participants were divided into good, moderate, or poor awareness. Relationships with sociodemographic and health-care related factors were explored. **Results:** In general, 103(58.9%) of women were aware, and 72(41.1%) were not aware. Of the 121 respondents (69.1%) who recognized Pap smear as a screening test, 68 (38.9%) knew that HPV testing could be used for screening, and 83 (47.4%) knew that screening might be recommended when there are no symptoms. There was a significant increase in awareness, from 32.3% for women with primary education or less to 83.3% for women with graduate education ($p<0.001$). **Conclusion:** Awareness was moderate, with key gaps in knowledge around HPV-based screening and symptom-independent screening. Clinic-based education and subsequent intervention studies should reinforce informed participation in screening, particularly among women who have not been extensively educated or provided with information.

Keywords: Uterine Cervical Neoplasms; Mass Screening; Papanicolaou Test; Papillomavirus Infections; Health Knowledge, Attitudes, Practice; Health Education.

INTRODUCTION

Although cervical cancer is not the most common form of the disease, there are significant differences in incidence and deaths from cervical cancer in resource-limited countries [1]. The main cause is persistent infection with high-risk human papillomavirus (hrHPV), and HPV-based testing is a good test for clinically relevant cervical precancer [2]. Women can be screened using cytology, hrHPV testing, or a combination of both to detect high-grade cervical precancer, but the performance of the various strategies is different [3]. Timely screening, along with vaccination and treatment, can significantly cut down the mortality rate of cervical cancer [4]. However, ignorance and lack of awareness are among the most common obstacles to cervical cancer screening for underprivileged populations [5].

There are significant inequalities in screening levels by socio-economic status and among younger and rural women [6]. In a well-resourced context, even among women who are eligible for screening, awareness of primary HPV testing was low (18.9%), yet screening adherence was high [7]. Only 51.3% of women knew about cervical cancer, 34.2% knew about Pap smear, while only 2.1% had undergone screening in Karachi, Pakistan [8]. Likewise, research in deprived parts of the Punjab has also shown that there are specific gaps in cervical screening and HPV related knowledge in all socio-economic and educational groups [9]. In the least-developed countries, there was a strong correlation between knowledge about cervical cancer and screening shown in a 2025 meta-analysis [10]. There is also systematic-review evidence that education interventions are effective in increasing the uptake of screening and increasing knowledge of cervical cancer [11]. However, recent research from clinics in South Asian countries shows significant gaps in knowledge of HPV, screening, and prevention in clinical settings, and gynecology clinics are therefore strategic settings for assessing awareness [12].

The current study aimed to determine the level of awareness of cervical cancer screening among the women attending gynecology clinics. It explored knowledge about Pap smear testing, HPV testing, risk factors for these tests, and screening among asymptomatic women. It also assessed sociodemographic and health-information influences related to appropriate awareness of screening.

METHODOLOGY

This cross-sectional descriptive study was conducted among women who visited the gynecology OPD in a tertiary health care center in Karachi.

The study aimed to evaluate the knowledge and awareness about cervical cancer screening and determine the demographic and healthcare factors that were associated with awareness. During the study period, a convenience or consecutive sampling method was used to recruit a total of 175 women. The sample size was calculated using OpenEpi version 3.0.0 (released 2013, Atlanta, GA, USA), using the formula ($n=Z^2p(1-p)/d^2$), where (n) represents the required sample size, (Z) is the standard normal deviate for a 95% confidence level (1.96), (p) is the anticipated proportion of women aware of cervical cancer screening based on previous literature, and (d) is the desired absolute precision [13]. The women attending the participating gynecology clinics and included in reproductive and premenopausal age groups were eligible. The severe cognitive impairment cases, the cases that were not able to complete the questionnaire, and the cases that had been diagnosed with cervical cancer previously were excluded.

A structured interviewer-administered questionnaire was used to collect data, which was based on existing cervical cancer screening knowledge domains. The questionnaire included questions on various demographic, general knowledge about cervical cancer, awareness of Pap smear screening, knowledge of HPV infection, understanding of screening recommendations, past screening experiences, and sources of health information. For each item of knowledge, 1 point was awarded for a correct answer and 0 points for an incorrect answer or "don't know" answer. Each item's score was added together to get the total awareness score. The participants were then divided into three groups according to the ranges of their scores, namely: good, moderate and poor awareness groups. The participants' knowledge was sought specifically regarding their understanding of screening, the recognition of the Pap smear as a screening test, the link between HPV and cervical cancer, an understanding of the potential to identify the disease prior to symptoms, and knowledge about HPV testing as a screening test. Data regarding the previous consultations with gynecologists and the previous information received about cervical cancer screening were also recorded.

The data collected were input into the statistical software (SPSS version 27.0 (IBM Corp., Armonk, NY, USA; RRID: SCR_016479)) and analyzed using descriptive and inferential statistics. Means and standard deviations were reported for numerical variables and frequencies and percentages were reported for categorical variables. The chi-square test or Fisher's exact test was used to analyze the association of awareness categories with the socio-demographic characteristics. A multivariable logistic regression model was used to determine factors independently associated with adequate awareness. 95% CIs were adjusted for the odds ratio. The two-tailed p-value < 0.05 was considered significant. The ethical clearance certificate was issued by the ethical committees of the relevant institutions. The participants were told the study objective, and informed consent was obtained prior to the participants filling the questionnaire. Personal data of participants were kept confidential during the course of the study.

RESULTS

There were 175 women who attended the gynecology clinics. Overall, 103 (58.9%) participants had adequate knowledge about cervical cancer screening, and 72 (41.1%) participants had limited knowledge. The awareness level was found to be higher among women who had higher education, had ever received a gynecological consultation, and had ever heard about cervical cancer. As for awareness and knowledge, it was relatively good, but limited knowledge of recommended screening intervals and HPV testing. **Table I** shows that among 175 participants, the largest age group was 31–40 years (63(36.0%)), followed by 21–30 years (48(27.4%)), 41–50 years (42(24.0%)), and >50 years (22(12.6%)). The educational status of participants showed that 57(32.6%) had a secondary education, 48(27.4%) were graduates or above, 39(22.3%) had intermediate education, and 31(17.7%) had primary education or below. The majority of participants were married (139(79.4%)), with 36(20.6%) unmarried.

Table I: Socio-demographic Profile of Participants (n=175)

Characteristic	n	%
Age		
21–30 years	48	27.4
31–40 years	63	36.0
41–50 years	42	24.0
>50 years	22	12.6
Education		
Primary or below	31	17.7
Secondary	57	32.6
Intermediate	39	22.3
Graduate or above	48	27.4
Marital status		
Married	139	79.4
Unmarried	36	20.6

As shown in **Table II**, early detection via screening (72.6%), Pap smear testing (69.1%), and cervical cancer prevention (67.4%) were the areas of greatest awareness. The association between HPV and cervical cancer (52.0%, screening without symptoms (47.4%), and HPV testing as a screening method (38.9%) was not as high as expected, and 64.0% knew that regular screening decreases the risk of cervical cancer.

Table II: Awareness of Cervical Cancer and Screening (n=175)

Knowledge Item	Correct n (%)	Incorrect / Don't Know n (%)
Cervical cancer can be prevented	118 (67.4)	57 (32.6)
Cervical cancer can be detected early by screening	127 (72.6)	48 (27.4)
Pap smear is a screening test	121 (69.1)	54 (30.9)
HPV infection is associated with cervical cancer	91 (52.0)	84 (48.0)
Screening may be recommended even without symptoms	83 (47.4)	92 (52.6)
HPV testing can be used for cervical screening	68 (38.9)	107 (61.1)
Regular screening reduces cervical cancer risk	112 (64.0)	63 (36.0)

Overall, 61 participants (34.9%) had good awareness, 42 participants (24.0%) had moderate awareness, and 72 participants (41.1%) had poor awareness of the VTEC-6. When the good and moderate categories are combined, 103 participants (58.9%) would be considered to have adequate awareness, as shown in **Table III**.

Table III: Overall Awareness Classification

Awareness Level	n	%
Good	61	34.9
Moderate	42	24.0
Poor	72	41.1
Adequate awareness (good + moderate)	**103**	**58.9**

The greatest percentage (76, or 43.4%) of participants reported getting information about cervical cancer screening from healthcare professionals, followed by social media/internet (51, or 29.1%) and television/radio (21, or 12.0%). Friends/family was reported for 17 (9.7%) responses, whereas educational programs were the least reported source (10 (5.7%)), as shown in Table IV.

Table IV: Sources of Information about Cervical Cancer Screening (n=175)

Source	n	%
Healthcare professionals	76	43.4
Social media/internet	51	29.1
Television/radio	21	12.0
Friends/family	17	9.7
Educational programs	10	5.7

There was a steady rise in the level of awareness from 10(32.3%) of women with primary education or below to 40 (83.3%) of graduates or above. There was a statistically significant (p<0.001) correlation between education level and awareness, as shown in Table V.

Table V: Awareness According to Educational Level

Education	Adequate Awareness n (%)	Poor Awareness n (%)
Primary or below	10 (32.3)	21 (67.7)
Secondary	28 (49.1)	29 (50.9)
Intermediate	25 (64.1)	14 (35.9)
Graduate or above	40 (83.3)	8 (16.7)
p-value		**<0.001**

Adequate awareness increased progressively with higher educational level, rising from 32.3% among women with primary education or below to 83.3% among graduates or above (Figure 1). The association between educational level and awareness was statistically significant (p<0.001).

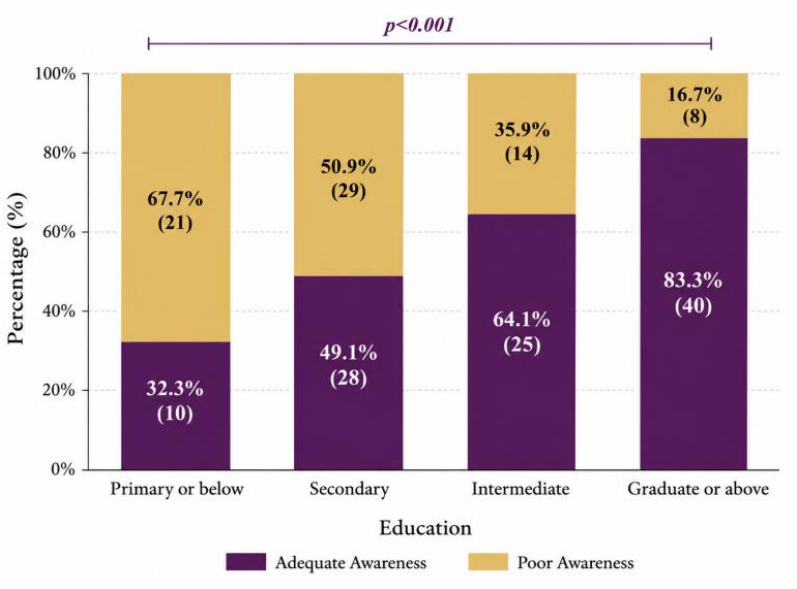


Figure 1: Awareness level according to educational attainment.

Previous knowledge of screening information exposure, graduate education, and prior gynecological consultation showed a significant association with adequate awareness (AOR=3.16, 95% CI: 1.61–6.19; AOR=3.84, 95% CI: 1.72–8.57; and AOR=2.47, 95% CI: 1.25–4.88, respectively). Age >40 years was not significantly associated with awareness (AOR=1.42, 95% CI: 0.76–2.67; p=0.268), as shown in Table VI.

Table VI: Factors Associated with Adequate Screening Awareness

Factor	Adjusted OR	95% CI	p-value
Graduate education or above	3.84	1.72–8.57	0.001
Previous gynecological consultation	2.47	1.25–4.88	0.009
Previous exposure to screening information	3.16	1.61–6.19	0.001
Age >40 years	1.42	0.76–2.67	0.268

This study assessed cervical cancer screening awareness among 175 women attending gynecology clinics. It identified key knowledge gaps regarding HPV testing and screening in asymptomatic women, with awareness significantly associated with educational attainment, previous gynecological consultation, and exposure to screening information.

DISCUSSION

The present study revealed a satisfactory awareness of cervical cancer screening among 58.9% of the women attending the gynecology clinics. The recognition of Pap smear was high (69.1%), but awareness of HPV testing (38.9%) and screening without symptoms (47.4%) was significantly lower. Therefore, knowledge of screening was not synonymous with knowing all the current screening methods. Among women, a similar level of adequate knowledge was reported in a study with 59.4% [14]. Comparable findings were reported in a study where 67.5% of women had heard of cervical cancer and 50.9% were aware of Pap smear testing, although only 13.4% demonstrated a high level of cervical cancer knowledge [15].

The percentage of Pap smear awareness in the present study (69.1%) was higher than that reported among Saudi women in Al Madinah (44.6%) and adult Saudi women in another study (59.9%) [16,17]. However, educated North Indian females were found to have good knowledge of Pap smear and HPV vaccination as compared to approximately three-quarters of educated North Indian females [18]. The low levels of HPV-test awareness found in this study suggest that there are still a significant proportion of women who may view cervical screening primarily as a cytology test. Thai women who were referred post abnormal screening had also limited detailed knowledge, as 26.9% and 20.1% had good HPV and screening knowledge, respectively [19]. Among women referred post abnormal screening, only 26.9% and 20.1% had good HPV and screening knowledge, respectively. Recently, Kuwaiti researchers have also reported that only 55% of women were aware that HPV was a risk factor for cervical cancer [20]. Similar disparities highlight the need to maintain HPV knowledge at or below the level of awareness of general screening.

There was a strong association between education and awareness (ranging from 32.3% for primary education or less compared to 83.3% for graduates), with the latter independently predicting awareness. The same was seen in Omani research, which showed a highly significant correlation between education and knowledge about cervical cancer [21]. A study in a health center in Greece also showed that education was independently related to awareness of the cervical screening program [22]. A large US study found that social-media users were more likely to be aware of HPV and HPV vaccination, supporting the potential role of digital information sources in improving HPV-related awareness [23]. Furthermore, an educational trial in primary care showed an increase in HPV and screening knowledge following a patient-centered digital intervention, which suggests that structured education during a clinic visit is effective [24].

Adequate awareness was independently associated with having been previously referred to a gynaecologist, suggesting that contact with reproductive health services may be an important opportunity for providing reproductive health education. However, a study conducted in an Omani tertiary clinic showed that although 86% had heard of cervical cancer and 55% had heard of Pap testing, only 26% had adequate knowledge [25]. Likewise, 49.5% of the patients who came to the gynecology clinic were aware of Pap screening, while low education status was another significant barrier [26]. These findings have been further supported by uniform counselling in eligibility for screening, HPV testing, and follow-up for women in well-woman visits in 2025 in a two-arm randomized trial, which revealed that structured health education significantly enhanced awareness and screening uptake [27].

There are few limitations in this study, such as a cross-sectional design that does not allow for the interpretation of any causal relationship between variables (education, contact with healthcare, information exposure and awareness). The results might not be generalizable to women who do not have access to health care, and the responses to the questions might be subject to recall or social-desirability bias. Further multicenter longitudinal studies should involve community members, test awareness tools, and establish the relationship between awareness and screening in accordance with guidelines.

CONCLUSION

The findings from this study showed that the awareness of cervical cancer screening was satisfactory among women attending gynecology clinics, that is 58.9%, better in the recognition of pap smear than HPV and screening for asymptomatic women. Awareness was significantly linked to higher education, prior gynecological consultation, and prior exposure to screening information. The results indicate that using a clinic-based education approach was a crucial step in increasing informed participation in cervical cancer screening. Targeted educational interventions and impact on real-life screening uptake among different population groups should be assessed in future studies.

References

1. Li Z, Liu P, Yin A, Zhang B, Xu J, Chen Z, et al. Global landscape of cervical cancer incidence and mortality in 2022 and predictions to 2030: The urgent need to address inequalities in cervical cancer. Int J Cancer. 2025;157(2):288-297. https://doi.org/10.1002/ijc.35369
2. Gupta R, Singh S, Gupta S. Performance characteristics of the point-of-care tests for HPV-based cervical cancer screening: a systematic review and meta-analysis. J Public Health (Oxf). 2025;47(1):e106-e115. https://doi.org/10.1093/pubmed/fdae306
3. Terasawa T, Hosono S, Sasaki S, Hoshi K, Hamashima Y, Katayama T, et al. Comparative accuracy of cervical cancer screening strategies in healthy asymptomatic women: a systematic review and network meta-analysis. Sci Rep. 2022;12(1):94. https://doi.org/10.1038/s41598-021-04201-y
4. Canfell K, Kim JJ, Brisson M, Keane A, Simms KT, Caruana M, et al. Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries. Lancet. 2020;395(10224):591-603. https://doi.org/10.1016/S0140-6736(20)30157-4
5. Farajimakin O. Barriers to cervical cancer screening: A systematic review. Cureus. 2024;16(7):e65555. https://doi.org/10.7759/cureus.65555
6. Appiah RS, Boakye K, Appiah G, Aidoo AA, Acquah-Hagan G, Singh B, et al. Rural-urban variations in cervical cancer screening uptake among women in Ghana: Evidence from the 2022 Ghana Demographic and Health Survey. BMC Womens Health. 2025;25(1):255. https://doi.org/10.1186/s12905-025-03802-3
7. MacLaughlin KL, Jenkins GD, St Sauver J, Fan C, Miller NE, Meyer AF, et al. Primary human papillomavirus testing by clinician- versus self-collection: Awareness and acceptance among cervical cancer screening-eligible women. J Med Screen. 2024;31(4):223-231. https://doi.org/10.1177/09691413241260019
8. Riaz L, Manazir S, Jawed F, Ali SA, Riaz R. Knowledge, perception, and prevention practices related to human papillomavirus-based cervical cancer and its socioeconomic correlates among women in Karachi, Pakistan. Cureus. 2020;12(3):e7183. https://doi.org/10.7759/cureus.7183
9. Sharif M, Majeed HK, Tagar K, Lohana S, Rauf A, Sharif M, et al. Reproductive health-related knowledge, attitude, and practices in women of reproductive age in underdeveloped areas of Punjab, Pakistan. Cureus. 2022;14(11):e31043. https://doi.org/10.7759/cureus.31043
10. Rana T, Chan DNS, Law BMH, Choi KC, Shrestha S, So WKW. Determinants of cervical cancer screening utilisation among women in the least developed countries: A systematic review and meta-analysis. PLoS One. 2025;20(6):e0321627. https://doi.org/10.1371/journal.pone.0321627
11. Zhang M, Sit JWH, Chan DNS, Akingbade O, Chan CWH. Educational interventions to promote cervical cancer screening among rural populations: A systematic review. Int J Environ Res Public Health. 2022;19(11):6874. https://doi.org/10.3390/ijerph19116874
12. Kolambkar S, Tomar M, Arif N, Hussain S, Gupta E, Singh S. HPV vaccination in the WHO South-East Asia Region: a scoping review of uptake, implementation challenges, and pathways to acceleration. Hum Vaccin Immunother. 2026;22(1):2693359. https://doi.org/10.1080/21645515.2026.2693359
13. Sullivan KM, Dean A, Soe MM. OpenEpi: a web-based epidemiologic and statistical calculator for public health. Public Health Rep. 2009;124(3):471–474. https://doi.org/10.1177/003335490912400320
14. Aynalem BY, Anteneh KT, Enyew MM. Knowledge, attitudes, and associated factors of cervical cancer screening among women in Debre Markos town, Northwest Ethiopia: a cross-sectional study. Sci Rep. 2025;15(1):34726. https://doi.org/10.1038/s41598-025-18296-0
15. Al Yahyai T, Al Raisi M, Al Kindi R. Knowledge, attitudes, and practices regarding cervical cancer screening among Omani women attending primary healthcare centers in Oman: a cross-sectional survey. Asian Pac J Cancer Prev. 2021;22(3):775-783. https://doi.org/10.31557/APJCP.2021.22.3.775
16. Zahid HM, Qarah AB, Alharbi AM, Alomar AE, Almubarak SA. Awareness and practices related to cervical cancer among females in Saudi Arabia. Int J Environ Res Public Health. 2022;19(3):1455. https://doi.org/10.3390/ijerph19031455
17. Al Ghamdi NH. Knowledge of human papilloma virus (HPV), HPV-vaccine and Pap smear among adult Saudi women. J Family Med Prim Care. 2022;11(6):2989-2999. https://doi.org/10.4103/jfmpc.jfmpc_2094_21
18. Miglani I, Gandhi U, Laul P. Knowledge, attitude, and practices of the educated women of North India toward cervical cancer. Indian J Community Med. 2025;50(1):202-206. https://doi.org/10.4103/ijcm.ijcm_258_23

19. Khomphaiboonkij U, Sreamsukcharoenchai N, Pitakkarnkul S, Rittiluechai K, Tangjitgamol S. Knowledge of Thai women in cervical cancer etiology and screening. PLoS One. 2023;18(5):e0286011. https://doi.org/10.1371/journal.pone.0286011
20. Aldeyain SJ, Alkhulaifi NS, Almutairi FM, Alenezi RS, Almutairi GM, Alaazmy YA, et al. Knowledge, attitudes and practice toward cervical cancer and its screening among women in Kuwait: a cross-sectional study. J Family Med Prim Care. 2026;15(2):750-755. https://doi.org/10.4103/jfmpc.jfmpc_1750_25
21. Al-Saadi AN, Al-Muqbali AH, Dawi E. Women's knowledge of cervical cancer: a cross-sectional study in Al Buraimi Governorate, Oman. Sultan Qaboos Univ Med J. 2021;21(3):450-456. https://doi.org/10.18295/squmj.4.2021.022
22. Kontonikou S, Kyrkou G, Bothou A, Nanou C, Vivilaki V, Deltsidou A. Investigation of women's knowledge and beliefs about cervical cancer and cervical smear examination: a survey study in Greece. Cureus. 2024;16(12):e75486. https://doi.org/10.7759/cureus.75486
23. Qin L, Zhang X, Wu A, Miser JS, Liu YL, Hsu JC, et al. Association between social media use and cancer screening awareness and behavior for people without a cancer diagnosis: matched cohort study. J Med Internet Res. 2021;23(8):e26395. https://doi.org/10.2196/26395
24. Thiel de Bocanegra H, Dehlendorf C, Kuppermann M, Vangala SS, Moscicki AB. Impact of an educational tool on young women's knowledge of cervical cancer screening recommendations. Cancer Causes Control. 2022;33(6):813-821. https://doi.org/10.1007/s10552-022-01569-8
25. Al Kindi RM, Al Sumri HH, Al Muhdhoori TM, Al Mamari K, Al Kalbani MA, Al-Azri MH. Knowledge of cervical cancer screening among Omani women attending a university teaching hospital: a cross-sectional study. BMC Womens Health. 2024;24(1):40. https://doi.org/10.1186/s12905-023-02870-7
26. Munizar M, Ar Royan H, Yolanda F. Barriers to cervical cancer screening through Pap smear examination among women attending the Gynecology Polyclinic at Dr. Zainoel Abidin General Hospital in 2024: a cross-sectional study. Asian Pac J Cancer Prev. 2025;26(9):3309-3317. https://doi.org/10.31557/APJCP.2025.26.9.3309
27. Mohammed E, Taye G, Assefa M, Addissie A, Jemal A. Effect of health education on cervical cancer screening uptake and knowledge among target women in Addis Ababa: a randomized controlled trial. Cancer Prev Res (Phila). 2025;18(12):769-779. https://doi.org/10.1158/1940-6207.CAPR-25-0188

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