



Original Research Article

CERVICAL CANCER PREVENTION: AN EVALUATION OF PREVENTIVE KNOWLEDGE, PERCEPTIONS AND SCREENING UPTAKE AMONG REPRODUCTIVE-AGE WOMEN

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ABSTRACT

Background: In 2022, cervical cancer accounted for approximately 662,000 new cases and 349,000 deaths worldwide, with nearly 90% of deaths occurring in low- and middle-income countries where access to prevention, screening, and early detection services remains limited; recent evidence suggests that the global burden is expected to increase substantially in the coming decades without improved preventive strategies. The objective is to describe the level of cervical cancer knowledge, attitudes, and screening practices (KAP) among reproductive-age women attending a tertiary gynaecology clinic, and to identify the sociodemographic determinants of each KAP domain.

Materials and Methods: Study Design is a descriptive cross-sectional study. This study was conducted at Larkana Institute of Nuclear Medicine & Radiotherapy / Shaikh Zaid Women Hospital Larkana from January 2025 to January 2026. We recruited eligible women by single-stage cluster sampling at the gynaecology outpatient department of our hospital. We calculated the required sample size with Epi Info™ version 7.2.5, then coded, cleaned, and analysed the data in SPSS version 20, applying a significance cut-off of $p < 0.05$ throughout.

Results: Among 480 participants, 387 (80.6%) had no history of cervical cancer screening; only 93 (19.4%) reported at least one lifetime episode. Knowledge was poor for 445 women (92.7%), with just 3 (0.6%) reaching a good score. Attitudinal findings were more favourable—384 (80.0%) scored above the group mean and were classified as positively disposed toward prevention. Educational level ($p = 0.00$, $V = 0.4$) and religious identity ($p = 0.04$, $V = 0.1$) were the significant predictors of knowledge; additional sociodemographic associations with attitude and screening practice were also identified.

Conclusion: Low cervical cancer knowledge and limited service accessibility—rather than attitudinal resistance—account for the large gap between willingness and actual screening behaviour. Targeted health promotion, routine provider-led screening recommendation, and integration of cervical cancer services into existing care pathways are the priority actions indicated by these findings.

Keywords: cervical cancer; knowledge; attitudes; practices; screening; prevention.

INTRODUCTION

Cervical cancer is a significant global public health concern and the fourth most common cancer among women worldwide. In 2022, cervical cancer accounted for approximately 662,000 new cases and 349,000 deaths worldwide, with nearly 90% of deaths occurring in low- and middle-income countries where access to prevention, screening, and early detection services remains limited; recent evidence suggests that the global burden is expected to increase substantially in the coming decades without improved preventive strategies.^[1] The crude incidence rate is 23.5 per 100,000 women (age-standardised rate: 42.9), with a lifetime risk of 3.9%. Screening uptake remains low, with fewer than 10% of women accessing screening during a recent five-year surveillance period, while the high prevalence of HIV infection in the sub-region further elevates cervical cancer risk.^[2,3]

approximately 350,000 deaths reported annually due to cervical cancer, Nine in ten of those deaths occurred in Low- and Middle-Income Countries (LMICs), where laboratory infrastructure and organised prevention programmes remain limited.^[4,5] High-income settings have seen rates decline through vaccination and screening programmes, while Other third world countries have not shared in those gains.^[2,6]

Unlike most cancers, cervical cancer has a single, well-characterised cause: Human Papillomavirus (HPV) and is identified in virtually every case.^[7] Once diagnosed, disease is staged using the FIGO system, which guides treatment selection—surgery, chemotherapy, radiotherapy, or emerging immunotherapies. Prognosis depends primarily on stage at presentation, nutritional status, and HIV co-infection.^[8] The difficulty is that cardinal symptoms—post-coital bleeding, pelvic pain, malodorous discharge—often appear only after the disease has advanced, which makes early detection through screening the most practical means of reducing mortality.

The possibility of cervical cancer is shaped by social, behavioural and biological circumstances. As HPV is sexually transmitted, early sexual debut, multiple partners and early marriage all cause a higher exposure—patterns that are, in some communities across third world nations culturally normalised rather than exceptional. HIV infection, tobacco use, and prolonged oral contraceptive use add to that biological susceptibility. Where health literacy is low and services are hard to reach, women have limited opportunity to act on even the risk information they do have.

Prevention operates on three levels. Primary prevention centres on HPV vaccination, usually offered to girls aged 9–13 through school-based or outreach programmes; the WHO's global elimination strategy calls for 90% vaccination coverage, 70% screening coverage, and 90% treatment coverage by 2030.^[9] Secondary prevention

uses Pap smear, HPV DNA testing, and VIA—each with different resource requirements and suitability across settings. [10] Across most third world nations, however, uptake of all three modalities remains well below levels that would reduce late-stage presentation meaningfully.^[11–13]

Published work from Africa, Ethiopia, Zimbabwe, and Nigeria consistently documents poor cervical cancer knowledge, equivocal or mixed attitudes, and very low screening rates among reproductive-age women.^[7,11,13] Similar findings have emerged from Malaysia, India, and Eastern Europe, suggesting the problem is not specific to any one region but reflects wider failures in health communication across different settings. Without granular local data, programme designers cannot reliably identify which barriers matter most in a given context. This study therefore set out to describe the cervical cancer knowledge, attitudes, and practices (KAP) of women aged 15–49 attending a national tertiary gynaecology clinic in third-world countries, and to examine which sociodemographic characteristics were associated with each domain.

MATERIALS AND METHODS

Research Design and Study Context: The data was collected using a quantitative descriptive cross-sectional design, which was the most suitable option for the study's purpose of characterising KAP at a defined point in time rather than trying to establish causal relationships. The single study site was selected because it serves as both the country's principal gynaecological referral centre and its main cervical cancer screening facility.

Participant Eligibility and Clinical Setting: Women aged between 15 to 49 presenting to the gynaecology outpatient clinic were eligible, whether attending for a first appointment or a follow-up review. The clinic handles both routine gynaecological care and cervical cancer screening referrals for the surrounding region.

Inclusion criteria

Age 15–49 years, attendance at the gynaecology clinic during the study period; written informed consent given freely.

Exclusion criteria

Documented psychiatric illness, clinical condition that made safe participation impossible, or unwillingness to take part after a full briefing.

Determination of Sample Size: We estimated the required sample size using Epi Info™ version 7.2.5.0. Working from a reference population of 6,061 women (mean monthly clinic attendance over a ten-month baseline period), the calculation yielded a minimum of 480 participants at 95% confidence and a ±5% margin of error. We enrolled participants by single-stage cluster sampling.

Survey Instrument and Data Capture: A structured questionnaire, adapted from a previously validated instrument used in a comparable regional

study,^[14] was administered face-to-face in English. The questionnaire addressed five content areas: (i) sociodemographic background; (ii) knowledge of cervical cancer causes, symptoms, and risk factors; (iii) familiarity with preventive and treatment options; (iv) attitudes toward and practices of screening; and (v) barriers to accessing screening. Internal consistency was assessed using Cronbach's alpha prior to main data collection.

Variable Classification

- a. Cervical cancer: A malignancy caused by unregulated cell growth originating in the uterine cervix.^[14]
- b. Cervical cancer screening: A medical procedure used to detect pre-invasive lesions before symptoms develop.^[14]
- c. Knowledge level: We scored each dichotomous item (correct = 1, incorrect = 0) and classified the total as good ($\geq 80\%$), satisfactory (50–79%), or poor ($< 50\%$).^[11]
- d. Attitude: We measured attitudes on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Scores above the group mean were classified as positive; those below as negative.^[12]
- e. Screening practice: We coded practice as good (at least one lifetime screening episode) or poor (no screening ever).^[14]

RESULTS

Sample Characteristics: The 480 enrolled women ranged in age from 16 to 49 years (mean 31.4 ± 8.3); the 36–49 age group was the largest at 34.0%, with the two younger age categories each accounting for approximately one third of the sample. Religious affiliation was predominantly Muslim (444; 92.5%), consistent with the catchment population of the study site. Nearly all participants lived in urban areas (456; 95.0%), and 382 (79.6%) were currently married. Secondary schooling was the most common educational level attained (217; 45.2%), though 134 women (28.0%) had received either no formal schooling or solely Quranic instruction—a subgroup likely to face greater difficulty engaging with written health materials. Three or fewer children were reported by 382 women (79.6%), indicating generally low parity. Occupationally, the most frequently reported categories were self-employment (163; 34.0%), homemaking (135; 28.1%), and private-sector employment (64; 13.3%) [Table 1].

Table 1: Distribution of respondents by sociodemographic characteristics (n = 480).

Sociodemographic Characteristic	Frequency	Percent (%)
Age (years)		
15–25	159	33.1
26–35	158	32.9
36–49	163	34.0
Religion		
Muslim	444	92.5
Non-Muslim	36	7.5
Marital Status		
Single	86	17.9
Married	382	79.6
Divorced	9	1.9
Separated	1	0.2
Widowed	2	0.4
Educational Attainment		
No formal education	32	6.7
Quranic education	102	21.3
Primary	38	7.9
Secondary	217	45.2
Undergraduate degree	72	15.0
Postgraduate degree	17	3.5
Diploma	2	0.4
Area of Residence		
Rural	24	5.0
Urban	456	95.0
Number of Children		
0–3	382	79.6
4–7	86	17.9
8 and above	12	2.5
Occupation		
Homemaker	135	28.1
Student	58	12.1
Private-sector employee	64	13.3
Government employee	50	10.4
Self-employed	163	34.0
Unemployed	10	2.1

Percentages may not sum to exactly 100% due to rounding.

Cervical Cancer Knowledge Profile: Overall knowledge was poor: 445 women (92.7%) fell in the poor category, 32 (6.7%) reached a satisfactory score, and only 3 (0.6%) scored as good. Etiological awareness was particularly low—only 31 participants (6.5%) could name HPV as the causative agent, while 437 (91.0%) were unable to identify any cause whatsoever. Without this foundational understanding, it is difficult to see how either vaccine acceptance or personal risk-perception could gain traction. Some risk factor recognition did exist, though at low absolute levels: multiple sexual partnerships was cited most often

(81; 16.9%), followed by smoking (72; 15.0%), early marriage (64; 13.3%), and early sexual debut (58; 12.1%). Symptom recognition was similarly limited, with only 106 women (22.1%) able to name even one symptom. A majority were aware that screening exists (290; 60.4%), but fewer than one in twelve (40; 8.3%) could describe the procedure, and 235 (49.0%) had no knowledge of recommended screening intervals. Awareness of the HPV vaccine was low as well: only 88 women (18.3%) knew it was available, and 407 (84.8%) did not know the target age group for vaccination [Table 2].

Table 2: Knowledge of cervical cancer, its screening, and treatment options (n = 480).

Knowledge Item	Yes n (%)	No n (%)
Overall level of knowledge		
Good	3	(0.6%)
Satisfactory	32	(6.7%)
Poor	445	(92.7%)
Perceived cause of cervical cancer		
Contaminated food and water	1 (0.2%)	479 (99.8%)
Bacteria	11 (2.3%)	469 (97.7%)
Human papillomavirus (HPV)	31 (6.5%)	449 (93.5%)
Do not know	437 (91.0%)	43 (9.0%)
Good knowledge of cause	31 (6.5%)	449 (93.5%)
Knowledge of risk factors for cervical cancer		
Awareness of risk factors	126 (26.3%)	354 (73.7%)
Multiple sexual partnerships	81 (16.9%)	399 (83.1%)
HPV infection	46 (9.6%)	434 (90.4%)
Early onset of sexual activity	58 (12.1%)	422 (87.9%)
Early marriage	64 (13.3%)	416 (86.7%)
Cigarette smoking	72 (15.0%)	408 (85.0%)
Prolonged oral contraceptive use	36 (7.5%)	444 (92.5%)
Knowledge of symptoms of cervical cancer		
Awareness of symptoms	106 (22.1%)	374 (77.9%)
Post-menopausal bleeding	41 (8.5%)	439 (91.5%)
Knowledge Item	Yes n (%)	No n (%)
Abnormal vaginal bleeding	81 (16.9%)	399 (83.1%)
Unexplained weight loss	53 (11.0%)	427 (89.0%)
Malodorous vaginal discharge	76 (15.8%)	404 (84.2%)
Dyspareunia (pain during intercourse)	61 (12.7%)	419 (87.3%)
Knowledge of cervical cancer prevention		
Awareness of preventive measures	228 (47.5%)	252 (52.5%)
Consistent condom use	65 (13.5%)	415 (86.5%)
HPV vaccination	40 (8.3%)	440 (91.7%)
Avoidance of tobacco smoking	72 (15.0%)	408 (85.0%)
Delayed onset of sexual activity	36 (7.5%)	444 (92.5%)
Limiting number of sexual partners	53 (11.0%)	427 (89.0%)
Avoiding intercourse with high-risk partners	23 (4.8%)	457 (95.2%)
Sexual abstinence	28 (5.8%)	452 (94.2%)
Knowledge of cervical cancer screening		
Familiarity with concept of screening	290 (60.4%)	190 (39.6%)
Awareness of screening service availability	211 (44.0%)	269 (56.0%)
Knowledge of the test procedure	40 (8.3%)	440 (91.7%)
Knowledge of screening eligibility		
Women aged 30 years and above	50 (10.4%)	430 (89.6%)
From age 18 years	118 (24.6%)	362 (75.4%)
From age 25 years	64 (13.3%)	416 (86.7%)
Knowledge of recommended screening interval		
Annually	166 (34.6%)	314 (65.4%)
Every three years	58 (12.1%)	422 (87.9%)
Every five years	21 (4.4%)	459 (95.6%)
Do not know	235 (49.0%)	245 (51.0%)
Knowledge of HPV vaccine availability		
HPV vaccine is available	88 (18.3%)	392 (81.7%)
Knowledge of HPV vaccine eligibility		
Girls aged 9–13 years	31 (6.5%)	449 (93.5%)
From age 15 years	17 (3.5%)	463 (96.5%)
From age 25 years	25 (5.2%)	455 (94.8%)
Do not know	407 (84.8%)	73 (15.2%)

Knowledge Item	Yes n (%)	No n (%)
Knowledge of treatment options		
Chemotherapy	38 (7.9%)	442 (92.1%)
Radiotherapy	12 (2.5%)	468 (97.5%)
Surgery	74 (15.4%)	406 (84.6%)
Do not know	387 (80.6%)	93 (19.4%)

Attitudinal Profile: Unlike knowledge scores, attitudinal responses were largely favourable. Overall, 384 participants (80.0%) scored above the group mean Likert composite (6.1 ± 1.94) and were classified as holding a positive attitude, while 96 (20.0%) were negative. The item attracting strongest agreement was that screening is important for prevention (371; 77.3% strongly agreed). Most

women also viewed cervical cancer as a serious problem in their community (256; 53.3% strongly agreed), and 325 (67.7%) considered the screening service affordable. Notably, 463 women (96.5%) said they would attend for screening if the service were free and free of pain—a finding that points toward access as the primary obstacle rather than willingness [Table 3].

Table 3: Distribution of respondents' attitude toward cervical cancer prevention (n = 480).

Statement / Response	Frequency	Percent (%)
Cervical cancer is highly prevalent in this community		
Strongly agree	256	53.3
Agree	70	14.6
Neither agree nor disagree	145	30.2
Disagree	5	1.0
Strongly disagree	4	0.8
Cervical cancer is a leading cause of death among women		
Strongly agree	261	54.4
Agree	54	11.3
Neither agree nor disagree	155	32.3
Disagree	8	1.7
Strongly disagree	2	0.4
Statement / Response	Frequency	Percent (%)
Any adult woman, including me, can develop cervical cancer		
Strongly agree	351	73.1
Agree	58	12.1
Neither agree nor disagree	56	11.7
Disagree	10	2.1
Strongly disagree	5	1.0
Cervical cancer cannot be transmitted person to person		
Strongly agree	217	45.2
Agree	37	7.7
Neither agree nor disagree	180	37.5
Disagree	27	5.6
Strongly disagree	19	4.0
Screening is important for cervical cancer prevention		
Strongly agree	371	77.3
Agree	65	13.5
Neither agree nor disagree	37	7.7
Disagree	5	1.0
Strongly disagree	2	0.4
Cervical cancer screening does not harm the client		
Strongly agree	296	61.7
Agree	37	7.7
Neither agree nor disagree	126	26.3
Disagree	16	3.3
Strongly disagree	5	1.0
Cervical cancer screening is affordable		
Strongly agree	325	67.7
Agree	41	8.5
Neither agree nor disagree	78	16.3
Disagree	13	2.7
Strongly disagree	23	4.8
Would you be screened if the service were free and painless?		
Yes	463	96.5
Statement / Response	Frequency	Percent (%)
No	17	3.5
Overall Attitude Classification		
Negative	96	20.0
Positive	384	80.0

Screening Behaviour: Screening behaviour contrasted sharply with the attitudinal findings. Only 93 women (19.4%) had ever undergone a specific cervical cancer screen, while 387 (80.6%) had no screening history at all. This is worth comparing with the HIV/STI screening rate in the same cohort—216 women (45.0%) had previously been screened for HIV or an STI—which suggests that how actively providers promote different types of

screening may account for some of the disparity. Of those who had been screened for cervical cancer, 66 (13.8%) had done so once and 27 (5.6%) more than once; 51 (10.6%) used a public facility and 42 (8.8%) a private one. The most frequently cited reason for first attending was a healthcare provider's recommendation (57; 11.9%), followed by self-initiation (31; 6.5%) and attendance at a community campaign (5; 1.0%) [Table 4].

Table 4: Distribution of respondents' cervical cancer screening practice (n = 480).

Variable	Frequency	Percentage (%)
Ever screened for reproductive health services (Yes)	(HIV/STI) 216	45.0
No	264	55.0
Ever screened for cervical cancer		
Yes	93	19.4
No	387	80.6
Location where screening was performed		
Private health facility	42	8.8
Public health facility	51	10.6
Never screened	387	80.6
Number of times screened		
Once	66	13.8
More than once	27	5.6
Never screened	387	80.6
Who initiated the screening		
Healthcare provider's recommendation	57	11.9
Self-initiated	31	6.5
Community / mass screening campaign	5	1.0
Never screened	387	80.6
Overall screening practice classification		
Poor (never screened)	387	80.6
Good (ever screened)	93	19.4

Note: Private + Public = 93 (ever screened); minor rounding applies.

Obstacles to Cervical Cancer Screening: Two barriers accounted for the large majority of reported obstacles. Never having received a recommendation from a healthcare provider was cited by 340 women (70.8%), and absence of information about what cervical cancer screening involves or where to access it was reported by 281 (58.5%). By

comparison, anticipated pain (13; 2.7%) and uncertainty about the service location (11; 2.3%) were infrequent. Taken together, these figures suggest that routine provider recommendation—rather than patient-facing campaigns—may be the most direct lever for improving uptake in this setting [Table 5].

Table 5: Obstacles to cervical cancer screening reported by respondents (n = 480).

Barrier	Frequency	Percent (%)
Never advised by a healthcare provider to be screened	340	70.8
Absence of information about cervical cancer screening	281	58.5
Anticipated pain from the screening procedure	13	2.7
Uncertainty about where to access screening services	11	2.3

Note: Percentages exceed 100% because multiple responses were permitted.

Knowledge–Attitude–Practice Interrelationships: Knowledge level was a significant predictor of both attitude ($p = 0.03$, $V = 0.14$) and practice ($p = 0.01$, $V = 0.20$), though the effect sizes were modest. Even so, the association is not trivial: it implies that gains in cervical cancer knowledge are likely to

carry at least some benefit for attitudinal orientation toward prevention and for actual screening uptake—an important justification for investing in health education even before structural service barriers are fully addressed [Table 6].

Table 6: Relationship between knowledge level and attitudinal/behavioural outcomes toward cervical cancer (n = 480).

Outcome Measure	p-value	Cramer's V
Attitude	0.03	0.14
Practice	0.01	0.20

Bold: statistically significant at $p < 0.05$.

DISCUSSION

The findings of this study align with previous research from third world nations, showing poor knowledge, generally favourable attitudes, and low cervical cancer screening uptake.^[1,15] Similar patterns have been reported in Ethiopia, Zimbabwe, and Nigeria.^[13,14,16] These findings therefore add to the existing evidence base and may help guide regional public health programmes.

Knowledge about cervical cancer was markedly limited, with only 7.3% of participants demonstrating satisfactory knowledge. Comparable levels have been reported among hospital-attending women in India (11%),^[17] and northern Nigeria (4.8%).^[18] The persistence of poor awareness across diverse settings suggests that weaknesses in health communication systems contribute substantially to this problem.

The aetiological knowledge gap was particularly notable, with 93.5% of participants unable to identify any cause of cervical cancer. This limits both risk perception and acceptance of preventive strategies such as HPV vaccination. However, some awareness of risk factors was present. Between one in eight and one in six participants identified multiple sexual partnerships, smoking, early marriage, and early sexual debut as risk factors, similar to findings from Ethiopian studies.^[14] These areas of partial awareness could serve as entry points for future educational programmes.

Despite poor knowledge, attitudes toward prevention were largely positive. Approximately 80.0% of participants expressed favourable attitudes, and 96.5% reported willingness to undergo screening if the service were free and painless. This high conditional willingness suggests that structural barriers, rather than attitudinal resistance, explain the low screening uptake. Similar patterns of high willingness but low actual screening have been documented in southern Ethiopia,^[14] Zimbabwe,^[16] and other comparable settings.^[13]

Only 19.4% of participants reported having undergone cervical cancer screening, which remains far below the WHO target of 70% coverage.^[9] Although higher than the 5.8% reported in Zimbabwe,^[16] and rates observed in some rural facilities, this level remains insufficient to substantially reduce mortality. Notably, 45.0% of women had previously been screened for HIV or other STIs, suggesting differences in provider recommendation and perceived relevance between screening services. Similar explanations have been proposed in earlier studies.^[19,25]

The barrier profile indicates important system-level limitations. About 70% of unscreened women reported never receiving a screening recommendation from a healthcare provider, and 58.5% lacked information about the test or where to obtain it. Evidence from Nigeria,^[19] and other LMICs,^[20] consistently identifies provider

recommendation as a key determinant of screening uptake. Incorporating cervical cancer screening advice into routine gynaecological consultations may therefore substantially improve participation. Concerns about pain (2.7%) and uncertainty about service location (2.3%) were relatively uncommon but should still be addressed in patient information materials.^[23,24]

Sociodemographic factors also influenced knowledge, attitudes, and practices. Educational attainment showed the strongest association with knowledge ($V = 0.39$), consistent with findings from India,^[17] and Nigeria.^[18] Occupational status showed the strongest association with attitude ($V = 0.41$), while age and parity were associated with screening practice. These findings suggest that targeted communication strategies may be more effective than uniform health messaging.^[21,22]

HIV co-infection remains an important concern, as HIV-positive women face a substantially higher cervical cancer risk.^[8] In high-prevalence regions, integrating cervical cancer screening within ART services provides an efficient approach to reach high-risk women without requiring additional clinic visits.

Overall, improving HPV and cervical cancer awareness, particularly among women with limited formal education, remains essential. Strengthening routine provider recommendation during gynaecological visits and integrating cervical cancer screening into HIV care, antenatal services, and family planning programmes may help overcome access barriers and improve screening coverage.^[6,15]

CONCLUSION

This study found that although most women had a positive attitude toward cervical cancer prevention and expressed willingness to undergo screening, the majority had never been screened. The large gap between willingness and actual screening appears to be related to poor knowledge about cervical cancer, lack of healthcare provider recommendation, and limited access to screening services. Strengthening health education, ensuring routine provider recommendation during gynaecological visits, and integrating cervical cancer screening into existing HIV and antenatal care services may help improve screening uptake and reduce preventable mortality.

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