



# Utilization of Cervical Cancer Screening Services among Women Aged 18 to 59 Years in Laikipia East Sub-County, Kenya

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## Abstract

### INTRODUCTION

Cervical cancer, a preventable disease, continues to be the leading cause of death resulting from cancers in Kenya. Despite free cervical cancer screening services in all government hospitals in Laikipia County, the screening uptake remains low at 19% compared to the WHO target of 70%. Hence, understanding the barriers and facilitators is important in informing targeted interventions.

### MATERIALS AND METHODS

A mixed-method cross-sectional study was done in Laikipia East Sub-County, Kenya, between July and August 2022. The participants were women aged between 18 to 59 years. Data was collected on demographic factors and cervical cancer screening utilization. Also, qualitative data was collected using 5 FGDs and 6 KIIs to get more insights. Chi-square tests and odds ratios were calculated using STATA version 15 to assess associations and determine the level of significance.

### RESULTS

Out of the 272 participants, 32.4% (n=88) had ever screened for cervical cancer. The logistic regression analysis indicates that as women age, their likelihood of undergoing screening increases, particularly for those aged 50-59, who show a tenfold higher likelihood of screening [OR 10.40 (3.20-33.82), *p*-value <0.001]. Conversely, unemployment is associated with a reduced likelihood of screening [OR 0.42 (0.18-0.99), *p*-value 0.047] while individuals earning 50-200 USD per month exhibit an increased likelihood [OR 2.25 (1.30-3.87) *p*-value 0.004]. However, religion, marital status, and education level factors do not show a significant association with the utilization of cervical cancer screening as indicated by *p*-values of 0.735, 0.069, and 0.765, respectively.

### CONCLUSION AND RECOMMENDATIONS

Laikipia county government offers free cervical cancer screening in all government-run facilities but many, especially those aged 25-49, lack awareness. It is vital to boost awareness through community education on cervical cancer causes and prevention, emphasizing screening as preventive. Affordable treatment is also crucial for community reassurance post-diagnosis.

**Keywords:** Laikipia, Cervical Cancer, Cross-Sectional, Screening Utilization, Kenya

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## Introduction

Utilization of cervical cancer screening services refers to the proportion of eligible women who have been screened for cancer of the cervix uteri<sup>1</sup>. Cancer of the cervix uteri, commonly known as cervical cancer, is cancer that develops

in a part of a woman's reproductive organ known as the cervix<sup>2</sup>. It is a major public health concern worldwide. Globally, cervical cancer is the fourth most frequently occurring cancer<sup>3</sup>, with more than five hundred thousand cases reported, and three hundred thousand succumbing from cervical cancer<sup>4</sup>. As of 2020, the global incidence and



mortality rates were 13.1 and 17.7 per 100,000 persons, respectively <sup>5</sup>. Approximately 84% of cervical cancer cases and 88 % of cervical cancer deaths occur in low and middle-income countries (LMIC) <sup>4, 6</sup>. In Africa, in the year 2020, cervical cancer was ranked the second most frequent <sup>3</sup>, with an incidence rate of 25.6 per 100,000 persons and a mortality rate of 17.7 per 100,000 persons <sup>5</sup>. In Kenya, cervical cancer was the second leading cause of cancer-related morbidity and the leading cause of cancer-related mortality among women. The incidence rate was 31.3 per 100,000 persons, while the mortality rate was 20.6 per 100,000 persons <sup>4</sup>.

Cervical cancer screening utilization is low in LMICs <sup>7</sup>. In Kenya, a LMIC country, the uptake is way below the World Health Organization (WHO) recommendation of 70%. According to the Kenya Health Demographic Survey (KDHS) 2022, the uptake was 17% <sup>8</sup>. This was also reflected in Laikipia county where the uptake was 19% <sup>8</sup> despite the free cervical cancer screening services in government-run health facilities. In addition, studies have shown that indeed cervical cancer screening uptake is low in Kenya and also in different counties <sup>7, 9, 10</sup>. Some of the factors that have been attributed to the low uptake include low socioeconomic status, lack of access, cervical cancer screening misperceptions, and poor implementation of relevant laws and policies <sup>6, 10, 11, 12</sup>.

In Laikipia County, some of the challenges faced in cervical cancer control include inadequate treatment capacity, especially for patients with advanced stages of the disease, the lack of a comprehensive population-based cancer registry and the absence of a risk-factor surveillance framework, all of which would inform decision-making. As a result, patients diagnosed with advanced cancer are routinely referred to specialized centres outside the county, as there is no established cancer centre. It has thus become challenging to track the trends in screening, diagnosis, treatment, and ultimate linkage to the outcomes as documentation is often lacking. Therefore, deriving accurate county-specific incidence and mortality rates remains a challenge. However, according to the secondary

data from the birth and death registries in Laikipia County, cervical cancer was the leading cause of death. The data collated between October 2020 and April 2021 indicated that cervical cancer was the third leading cause of cancer-related mortality, accounting for 15% of all cancer-related deaths. Further, it was the leading cause of cancer-related mortality among women.

To reduce cervical cancer-related morbidity and mortality, the WHO recommends several screening methods which include: Cervical Cytology (Pap smear, Liquid-Based Cytology and Visual Inspection by Acetic Acid, and Visual Inspection with Lugol's Iodine [VIA VILI]) and Human Papilloma Virus (HPV) testing <sup>4</sup>.

Cervical cancer screening is the testing for precancerous lesions and cancer around the cervix <sup>4</sup>. It is most effective before a woman develops symptoms because, at this stage, the cancer is more amenable to prevention through treatment of abnormal lesions <sup>4</sup>. One of the screening methods recommended by the WHO is the use of Visual Inspection with Acetic Acid (VIA), and subsequent cryotherapy for treatment. The combination is the most efficient and cost-effective technique, especially in LMICs <sup>4</sup>. If properly availed, and sufficient awareness created, the techniques can increase the uptake of cervical cancer screening, with early management of suspicious lesions, resulting in decreased morbidity and mortality.

The Kenya Ministry of Health mandates all government-run hospitals to offer basic cervical cancer screening services in a bid to scale up early diagnosis and treatment. To achieve this, the County Government of Laikipia, through the Laikipia Health Service, implemented the policy on free cervical cancer screening across all government-run health facilities. The policy requires all government hospitals, including level 2 facilities (dispensaries) to offer free VIA screening. In addition, the government has been conducting regular workplace training for healthcare workers. However, despite these efforts, the KDHS conducted in the year 2022 indicated that the uptake was at 17 percent <sup>8</sup>. The trend is attributed to multiple factors associated



with the uptake of cervical cancer screening such as sociodemographic factors, access to the facilities, community awareness and perceptions, and leadership strategies<sup>13, 14, 15</sup>.

It is thus evident that, despite the national and county governments developing strategies to improve access to cervical cancer screening services, utilization remains below the target elimination coverage of 70%. Prior studies have investigated the barriers and facilitators to screening uptake. However, there is a paucity of evidence on the determinants of cervical cancer screening utilization amongst the population within Laikipia County, Kenya. Therefore, this study aimed to assess the utilization of this screening among women aged 18-59 years, residents in Laikipia East Sub-County.

The primary objective of this study was to assess the utilization of cervical cancer screening services among women aged 18-59 years, residents in Laikipia East Sub County, Kenya.

The specific objective was to investigate socio-demographic factors that influence the utilization of cervical cancer screening services among women aged 18-59 years.

## **Materials and Methods**

### **Study setting, design, and population**

A community-based, mixed-method, cross-sectional study was conducted within the Laikipia East sub-county for fifteen days between July and August 2022. Laikipia East Sub-County is located in the Rift Valley region at the foot of the leeward side of Mount Kenya. According to the census that was conducted in 2019, the sub-county has a total estimated population of 102,815, with 30,240 households. Females accounted for 50,732 of the total population, with 24% (n=12,176) being women of reproductive age<sup>16</sup>. Further, the sub-county has 27, 4, 2 and 1 levels II, III, IV and V hospitals, respectively. They include 25 government-run hospitals, five private hospitals and four faith-based hospitals.

### **Inclusion and exclusion criteria**

For the survey, women aged between 18 to 59 years who had stayed in the Laikipia East sub-county for a period not less than six months were included. However, those who were

critically ill, could not hear, or were mentally unstable were excluded. In addition, one focus group discussion (FGD) for each of the five community units was conducted. Also, 6 key informant interviews (KIIs) were conducted to provide more insight.

### **Sample size and sampling procedure**

The sample size was obtained using the Fisher's formula<sup>17</sup>. The study aimed to include 264 participants, based on an alpha of 0.05, 95% confidence level, and Laikipia East cervical cancer screening utilization of 22%. Further, 26 (10% of the sample size) were added to address the issues that may arise due to the non-response rate. As a result, the study aimed at administering 290 interviews. The sampling frame was applied focusing on eligible women. Stratification was done based on the five community units (CU) and a disproportionate purposive sample drawn across the strata. Also, the qualitative data was collected by conducting 5 Focus Group Discussions (FGDs) each from the 5 CUs and 6 Key Informant Interviews (KIIs).

### **Data collection and procedures**

A mixed-method approach was used to collect both quantitative and qualitative data. Quantitatively, survey data were collected using a structured questionnaire, with questions adapted and tailored from tools that have been used in previous studies<sup>18, 19</sup>. Qualitative tools were also used to collect FGD and KII data. Face-to-face interviews and group discussions were conducted by the researchers and two research assistants over 15 days. Audio recordings were used to collect qualitative data, which were transcribed, coded and analyzed thematically

### **Data quality control**

Before data collection, research assistants were trained on the tools. The tools were assessed, pre-tested, and validated before actual data were collected. Pre-testing was done in Mukogodo Eastward, in the Laikipia North sub-county, including 30 respondents (10%).

A total of 272 respondents participated in the survey. Further, one FGD was conducted in each of the five community units. The FGDs included representatives of community health



volunteers (CHVs), Christian, Muslim, women and men groups, with 8 to 10 participants per session. Further, there were 6 KIIs, including two health facility in-charges, one private hospital cervical cancer focal person, one FBO hospital cervical cancer focal person, one representative from a cancer clinic at the county referral hospital and one cervical cancer focal person from the county referral hospital's comprehensive care clinic.

### Data analysis

Survey data was cleaned using Microsoft Excel Version 2010 and exported to Stata Version 15 for further analysis. Descriptive analysis, based on proportions, was done on demographic factors. Chi-square tests were done to identify associations between independent variables and the utilization of cervical cancer screening. Further, odds ratio (OR) analysis was done to quantify the magnitude of the associations. Also, key thematic areas were derived for FGDs and KIIs. This included fear of cervical cancer screening, distance, cost of screening, being at

risk of cancer and lack of time. These themes were used to support findings from the survey data.

### Ethical considerations

The study was approved by the Laikipia Health Service. Further, the survey participants gave verbal consent to participate in the study while the FGD and KII participants gave written consent for their audio recording.

## Results

### Demographic information

All 276 participants who were approached accepted to participate in the study. However, four dropped out during the interview, arising from emotional distress as they had a close person afflicted with cancer. The four were excluded from the analysis. Based on the remaining 272 participants, 47.1% (n= 128) had attained secondary education and 12.9% (n= 35) had tertiary education. The majority were married and living with their partners (59.2%, n=161). Further, the majority of the respondents were self-employed (55%, n=147).

**Table 1:**  
Socio-Demographic Profile of Study Participants

	Variable	N (%)
Age (Years)	18-24	57(21.0)
	25-29	54(19.9)
	30-39	87(32.0)
	40-49	46(16.9)
	50-59	28(10.3)
Religion	Christian Catholic	40(14.7)
	Christian Protestant	205(75.4)
	Muslim and non-believers	27(9.9)
Marital status	Separated and widowed	28(10.3)
	Married/Living with a partner	161(59.2)
	Single/Never married	83(30.5)
Education status	No formal education	10(3.7)
	Primary school	99(36.4)
	Secondary school	128(47.1)
	Tertiary education	35(12.9)
Occupational Status	Employed	42(15.4)
	Self-employed	149(54.8)
	Unemployed	81(30.0)
Monthly income	Less than 50 USD	159(58.5)
	50-200 USD	93(34.2)
	More than 200 USD	20(7.4)
Know about cervical cancer	Yes	247(90.8)
	No	25(9.2)
Know about cervical cancer screening	Yes	223(90.3)
	No	24(9.7)



However, 58.5% (n= 159) were earning less than USD 50 (Kshs. 5,000) per month. In terms of religion, the majority were Christian protestants (75.4%, n= 205). Overall, the majority of the participants (90.8%, n= 247) knew about cervical cancer, among whom 90.3% (n= 223) knew about its screening. Table 1.

### Association of demographic factors with cervical cancer screening uptake

The logistic regression analysis indicates that as women age, their likelihood of undergoing screening increases, particularly for those aged 50-59, who show a tenfold higher likelihood of screening [ OR 10.40 (3.20-33.82), *p*-value <0.001]. Table 2.

Conversely, unemployment is associated with a reduced likelihood of screening [OR 0.42 (0.18-0.99), *p*-value 0.047] while individuals

earning more than 50 USD were more likely to screen with those earning 50-200 USD per month exhibiting an increased likelihood [OR 2.25 (1.30-3.87) *p*-value 0.004]. Table 2.

However, religion, marital status and education level factors do not show a significant association with the utilization of cervical cancer screening as indicated by *p* values of 0.735, 0.069, and 0.765, respectively. Table 2.

### Factors hindering the utilization of cervical cancer screening

Out of the 272 participants, only 32.4% (n= 88) had ever screened for cervical cancer. Most of the women who had not been screened either feared the screening process (33%) or lacked time (22%), while a minority (7%) cited the cost of cervical cancer screening as being too expensive. Figure 1.

**Table 2:**

Association between Socio-Demographic Factors and Uptake of Cervical Cancer Screening in Laikipia East Sub County, Kenya, 2022 (n=272).

Variables	Ever screened n (%)	Never screened n (%)	Subtotal n (%)	Chi <sup>2</sup> P- value	OR	95%CI	OR P-value
Total	88(39.5)	135(60.5)					
Age, years*				<0.001*			
18-24	5(8.8)	52(91.2)	57(21.0)		1.0(Ref)		
25-29	13(24.1)	41(75.9)	54(19.9)		3.3	1.09-10.0*	0.035
30-39	34(39.1)	53(60.9)	87(32.0)		6.67	2.42-18.39*	<0.001*
40-49	22(47.8)	24(52.2)	46(16.9)		9.53	3.22-28.21*	<0.001*
50-59	14(50.0)	14(50.0)	28(10.3)		10.4	3.20-33.82*	<0.001*
Religion				0.735			
Christian Catholic	15(37.5)	25(62.5)	40(14.7)				
Christian Protestant	65(31.7)	140(68.3)	205(75.4)				
Muslim and unbelievers	8(29.6)	19(70.4)	27(9.9)				
Marital status				0.069			
Separated	13(46.4)	15(53.6)	28(10.3)				
Married/Living in	55(34.2)	106(65.8)	161(59.2)				
Single/Never married	20(24.1)	63(75.9)	83(30.5)				
Education status				0.765			
Primary school	34(31.2)	75(68.8)	109(40.1)				
Secondary school	44(34.4)	84(65.6)	128(47.1)				
Tertiary education	10(28.6)	25(71.4)	35(12.9)				
Occupational Status*				0.002*			
Employed	14(33.3)	28(66.8)	42(15.4)		1.0(Ref)		
Self-employed	60(40.3)	89(59.7)	149(54.8)		1.35	0.66-2.77	0.416
Unemployed	14(17.3)	67(82.7)	81(29.8)		0.42	0.18-0.99*	0.047*
Monthly income*				0.010*			
Less than 50 USD	40(25.2)	119(74.8)	159(58.5)		1.0(Ref)		
50-200 USD	40(43.0)	53(57.0)	93(34.2)		2.25	1.30-3.87*	0.004*
More than 200 USD	8(40.0)	12(60.0)	20(7.4)		1.98	0.76-5.20	0.164

\*Indicates that the factors are significantly associated with cervical cancer screening utilization at 95%CI.

To have more understanding of why there is low uptake of cervical cancer screening, FGDs and KIIs discussion were conducted. During FGD, participants in all five sessions concurred that the community members feared cervical cancer screening because of the outcome. People are not ready to receive positive results because it will lead to stress. One participant reported:

*“... most people decline to go for screening because they will be shocked if they are told that they have cervical cancer. Problems start there hence they prefer not to know their health status. Just like HIV, people don't like knowing their health status because if they test positive, they get mental problems which in turn compromise their health. Generally, people have fear”.*

Key informants also confirmed that people do not like knowing their health status because they have fear of knowing that they have cancer:

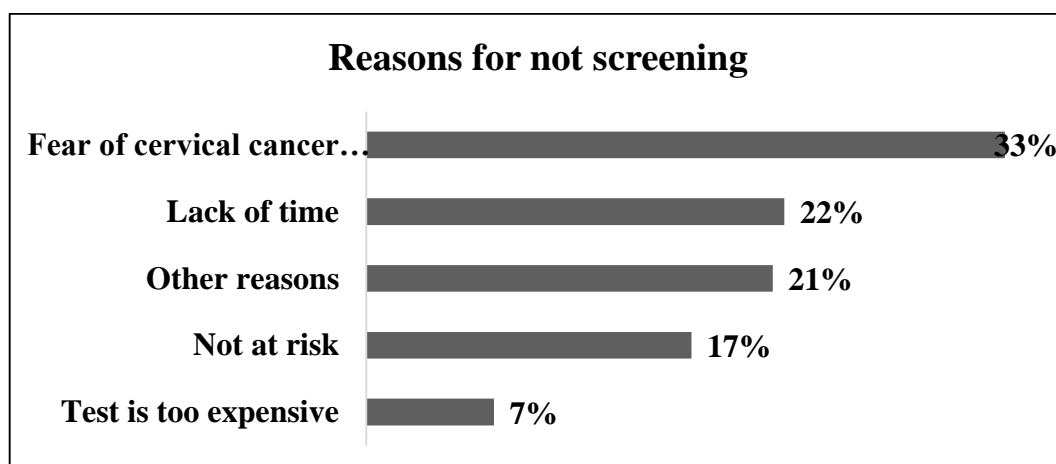
*“...people fear the word cancer hence when you tell them to screen for cervical cancer, they decline because they view cervical cancer as any other form of cancer and they believe that cancer cannot be treated”.*

Others could not go to the health facility to seek screening services either due to lack of time or the fact that they felt they were not at risk.

## Discussion

### Socio-demographic factors

The study sought to understand why utilization of cervical cancer screening services is still low despite the government offering free VIA tests, one of the most common screening methods, in all government-run hospitals. In this study, we found that age, occupation status, and monthly income influence how people utilize cervical cancer screening services. Notably, age emerged as a significant determinant, with a clear trend of increasing screening likelihood as women aged. Although our findings contradicted a study in Uganda <sup>20</sup>, which reported that age did not influence utilization, findings from Jamaica and Nepal <sup>11, 21</sup> demonstrated that younger women were less likely to go for screening yet they were the most sexually active, with the highest risk of human papillomavirus (HPV) exposure and persistent infection. Therefore, it is important to have age-related considerations when developing screening promotion interventions. Conversely, employment status surfaces as a noteworthy factor affecting screening behaviour. This concurred with the findings from Ethiopia, Kenya, Nepal, and Somalia <sup>10, 22, 23, 24, 25</sup>. Further, our study concurred with other studies that have shown that occupation and monthly income played a role in determining utilization <sup>11, 21</sup>.



**Figure 1:** Reasons nor Not Screening among Women Aged 18-59 Years in Laikipia East Sub-County, 2022.

In this study, people who earned less than 50 USD in a month were less likely to screen. On the flip side, those earning more than 50 USD per month were more likely to screen, highlighting the influence of economic factors on screening behaviour.

Intriguingly, religion, marital status, and education level did not significantly influence the utilization of cervical cancer screening. These findings suggest that, in this context, these socio-demographic factors do not play a substantial role in determining screening behaviour.

### **Factors hindering utilization of cervical cancer screening**

The results of this cross-sectional study reported a relatively higher level of cervical cancer screening utilization (32.4%, n= 88), in comparison to previous reports. Screening uptake of 20.6% has been reported in Central Uganda <sup>20</sup>, with other previous findings within Kenya reporting an uptake of 16.4% <sup>9</sup>. However, although the utilization was higher than what other studies have shown, the coverage remains very low compared to WHO's 70% recommended coverage.

Although screening services are offered for free, the community fear the screening process and does not give it priority. On further probing during FGD and KII, it was noted that people had a fear of the unknown. In addition, as much as most reported to have ever heard about cervical cancer and cervical cancer screening, they did not have sufficient knowledge about the causative and preventive measures for cervical cancer. Hence, it is crucial to reframe the way information is conveyed to the community, emphasizing that screening serves as a key preventive measure rather than solely a diagnostic tool. This approach would help to dispel the fear of uncertainty and foster the perception of screening as an integral component of routine health assessments. Studies have shown that giving relevant information to the community could significantly affect the utilization of cervical cancer screening <sup>11,20,21</sup> which could

result in early diagnosis and ease of treatment of pre-cancerous lesions, thus reducing cervical cancer-associated morbidity and mortality.

Another factor that was cited as a reason for not screening was lack of time. Despite the efforts by the government to offer free cervical cancer screening services in all government hospitals, people did not have time to go for screening. Therefore, there is a need for the government to have a mechanism for providing services to the community. For example, the government could have more regular cervical cancer screening outreaches.

Therefore, despite the government advocating for and offering free screening services, the need for screening was not obvious to the community, especially the younger age groups (25-49 years), who are the main target of cervical screening. As a result, our study noted that there is a need for community sensitization on causes and preventive measures. This could be achieved by re-packaging the information being disseminated to the community, emphasizing that cervical cancer screening is a preventive not solely a diagnostic measure. This would include informing the community about the risk factors and preventive measures for cervical cancer. In addition, the community needs reassurance by offering affordable treatment services should a test turn positive for cervical cancer, as most are low-income earners.

### **Limitations**

The study's scope, limited to a single sub-county, raises considerations regarding the generalizability of its findings. Socio-demographic factors can vary significantly between different counties and countries, potentially influencing the applicability of the study's results to a broader population.

Further, while the study reported a high prevalence of cervical cancer screening compared to previous findings, the reliance on self-reporting introduces a potential source of bias. Self-reported data may be subject to recall bias, where participants may inaccurately recall their screening behaviours. This could result in



an overestimation of screening rates, impacting the study's findings.

To enhance the external validity of the study, future research could consider expanding the geographical scope to include several counties or even countries. This would allow for a more diverse and representative sample, enabling a more robust generalization. Additionally, employing more subjective measures, such as medical records would mitigate potential biases associated with self-reported data, improving the accuracy of the study's findings.

In conclusion, while the study provides valuable insights into cervical cancer screening utilization in the specific county, caution should be exercised in generalizing these findings to the broader population.

## Conclusion and Recommendations

The nuanced insights garnered from the logistic regression analysis are pivotal for shaping targeted interventions in cervical cancer prevention. The identification of age and economic status as significant determinants in screening behaviour presents actionable avenues for improving screening uptake.

Specifically, the tenfold higher likelihood of screening among women aged 50-59 underscores the importance of tailoring awareness campaigns to cater for different age groups. Focusing on those aged 18-49 years, who may not exhibit the same propensity for screening, becomes crucial. Crafting age-specific messaging and outreach strategies could effectively bridge the awareness gap and encourage proactive screening practices among this demographic.

Moreover, the association between unemployment as well as those earning less than 50 USD per month and reduced screening likelihood emphasizes the impact of economic factors on screening behaviour. Interventions should address economic barriers, ensuring that screening and treatment services are not only accessible but also financially feasible for those facing unemployment or limited income. Implementing subsidized or free screening and

treatment programs for economically vulnerable groups could be a viable approach.

In a nutshell, tailoring interventions to address age and economic disparities can enhance screening utilization within the population.

**Conflict of interest statement.** The authors declare that there was no conflict of interest.

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