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Barriers and facilitators to cervical cancer screening uptake among women aged 25-49: insights from a cross-sectional study in Kiambu County, Kenya

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ABSTRACT

Background: Cervical cancer ranks fourth in terms of incidence and mortality among women, despite being a highly preventable disease. To prevent cervical cancer, screening is essential. This study aimed to determine the barriers and Facilitators to cervical cancer screening among women aged 25-49 in Kiambu Town, Kiambu County, Kenya.

Methods: This study employed a descriptive cross-sectional design, where qualitative and quantitative data were obtained for triangulation purposes. Participants in the study were chosen using a multi-stage sampling technique. Barriers and facilitators to cervical cancer screening were assessed using binary logistic regression and chi-square analysis. For quantitative data analysis, SPSS version 29 was utilized, and $p \le 0.05$ was the threshold for statistical significance. Thematic analysis was used to examine the qualitative data.

Results: In this study, the uptake of cervical cancer screening was 40.2%. Shorter travel times of 1-30 minutes to the nearest hospital (OR=2.9, 95% CI: 0.130-0.753, p=0.01) and shorter waiting times of 1-30 minutes (OR=2.3, 95% CI: 0.253-1.365, p=0.04), were found to be facilitators to cervical cancer screening which increased the odds. Conversely, poor patient-friendly services (OR=7.8, 95% CI: 0.002-1.241, p=0.009) reduced the odds of cervical cancer screening. **Conclusions:** This study showed suboptimal uptake of cervical cancer screening among Kiambu women. Multipronged approaches are needed to address barriers such as long travel and waiting times which could enhance cervical cancer screening uptake. These insights are critical for reducing the cervical cancer burden among women in Kenya.

Keywords: Cervical cancer, Screening, Uptake, Women

INTRODUCTION

Cancer of the cervix is among the four most common cancers in women globally, with an estimated 660,000 new cases predicted by 2022. 94 percent of the 350,000 cervical cancer deaths globally that year happened in low-or middle-income nations. A review and meta-analysis carried out in Sub-Saharan Africa revealed that 12.87% of women had cancer detected through cancer of the cervix screenings. In East Africa, 40% of all cancer cases in women are associated with cervical cancer. In another cross-sectional study amongst women of reproductive age

in Kiambu County only 20% had ever been screened for cervical cancer.³ Cervical cancer is a significant public health challenge in Kenya, with a high incidence and mortality rate.

Screening rates in Kenya are still low, ranging from three to 25%, even though the World Health Organization recommends streamlined screening procedures that involve testing for the human papillomavirus and providing basic treatment to women who test positive.⁴ Cervical cancer screening is further complicated for women in rural Kenya by interpersonal, social,

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geographic, and cultural barriers. These barriers, when combined with restricted access to screening services, have prevented the majority of at-risk women from ever getting screened.⁴ As a result, many cases manifest later, when access to treatment is more challenging and costly.

Cervical cancer screening is crucial for early detection and prevention of cervical cancer.² Although there is ample evidence of barriers to cervical cancer screening, creating successful interventions requires an understanding of the factors that encourage uptake. Women in their study identified workshops and community health workers (CHWs) as screening facilitators for cervical cancer screening.⁵ In other LMIC contexts, CHWs have been found to be successful in raising women's awareness of cervical cancer.⁵

In 2022, there were approximately 350,000 cervical cancer deaths and 660,000 new cases, making it the fourth most common cancer in women worldwide. The incidence and mortality rates of cervical cancer are highest in low- and middle-income nations. This is a reflection of significant disparities caused by social and economic factors, barriers to national HPV vaccination, and lack of access to cervical screening and treatment services. Persistent human papillomavirus (HPV) infection is the cause of cervical cancer. Cervical cancer is six times more common in women with HIV than in those without the virus. Effective and reasonably priced methods of preventing cervical cancer include screening for and treating pre-cancerous lesions and receiving a prophylactic HPV vaccination.

Cervical cancer is preventable. In the African region, however, it is the most prevalent cause of cancer, accounting for 12% of all newly diagnosed cancers in both men and women annually and 22% of all cancers in women. In Africa, cervical cancer claims the lives of 23 out of every 100,000 women each year, and 34 out of every 100,000 women receive a cervical cancer diagnosis. Low cervical cancer screening coverage is a major contributing factor to Sub-Saharan Africa's highest cervical cancer rates globally. Of sub-Saharan Africa's 48 countries, 21 have cervical cancer as the leading cause of death for women. According to their meta-analysis and systematic review, 12.87% of women in sub-Saharan Africa were screened for cervical cancer.

In their study, 40% of all cancer cases in women in East Africa are associated with cervical cancer. This primarily highlights how inadequate national prevention and control programs such as screening, detection at an early stage, and vaccination are in most African countries. ¹² In 2020, cancer of the cervix represented 12% of all cancer cases diagnosed in Kenya, and the disease has been reported to have killed 3,200 persons. This makes it the primary cause of cancer-related deaths in the nation. ¹³ In 2018, only approximately 16% of the 2,927 medical centers that were sampled provided screening, despite Kenya having a national vaccination action in place for

more than ten years. ¹⁴ This indicates that the utilization of screening is still low. In Kenya, 16.81% of women were screened for cervical cancer. ¹⁵

Despite the accessibility of services for screening, the rate of cervical cancer screenings among women in Kiambu Town Sub County, Kiambu County, Kenya, is low. To improve cervical cancer prevention efforts, it is vital to understand the health system factors impacting this population's screening behavior. This study aimed to determine barriers and facilitators to cervical cancer screening uptake among women aged 25-49 years in Kiambu Town, Kiambu County, Kenya.

METHODS

Study design

In order to determine the barriers and facilitators to influencing the use of cancer screening uptake among women aged 25-49 in Kiambu Town sub-county, Kiambu County, Kenya, the study employed a descriptive cross-sectional study design.

Study area

Kiambu County used to be a part of the central province of Kenya. The capital is Kiambu, and the largest town is Thika. Kiambu County has the second-highest population in Kenya, after Nairobi County. 1,187,146 men and 1,230,454 women make up the county's total population of 2,417,735 as of the 2019 census. ¹⁶ There are 796,241 family units with an average size of three people, indicating that the population density of Kiambu County is 952 persons/km². ¹⁷ The study was conducted in Kiambu Town sub-county. The sub-county occupies 189.1 km² and has a population of 145,903 people. There are 17 sublocations with about 55,755 households.

Study population

Women in Kiambu Town Sub-County, Kiambu County, Kenya, between the ages of 25 and 49, made up the study population.

Sample size determination

The sample size of 249 participants for quantitative data was determined by the Fischer formula 1998, and 246 study participants were recruited for this study. The research was carried out in August 2024.

Sampling technique

Multi-stage sampling was used to choose the study site and participants. First, because Kiambu County has one of the highest rates of cervical cancer, purposive sampling was used to select the county. 15 Second, out of the twelve sub-counties in Kiambu County, the researcher selected the Kiambu town sub-county using simple random

sampling. The sub-county of Kiambu Town was divided into four wards. The wards were further clustered into sublocations. There are seventeen clusters, or sub-locations.

Simple random sampling was adopted to get the study respondents from sub-locations. If the randomly chosen household didn't have a woman aged 25-49 years another household was chosen randomly.

Data collection tools and procedures

Semi-structured research-administered questionnaires were used to collect quantitative data, while key informants and focused group guides were used to collect qualitative data. Data on the use of cervical cancer screening services, social demographics, and health system factors was collected using Semi-structured research-administered questionnaires. A key informant guide was used to conduct key informant interviews. The researcher served as the moderator for the focused group discussions, which were led by the researcher using a focused group guide. Eight to twelve people made up each focused group, and the point of saturation served as the guide for the discussions.

Statistical analysis

Anomalies, extreme values, outliers, and matches were removed from the quantitative data using an Excel spreadsheet. For analysis, cleaned data was imported into SPSS version 29 from Excel. Percentages and frequencies were used in the descriptive analysis. A 95% confidence interval chi-square test was used to investigate the relationship between health system factors, and the uptake of cervix screening services for cancer.

A p value of less than or equal to 0.05 indicated that a variable was significant. Using chi-square tests, objectively significant variables were keyed into a binary logistic regression model at a 95% confidence interval to control for confounding effects and find additional associations. The analysis of the qualitative data was done using thematic analysis.

Ethical consideration

The research complied with ethical standards and obtained approval from the Jomo Kenyatta University of Agriculture and Technology Ethical Review Committee (JKU/ISERC/02317/1358) and a research license from the National Commission for Science, Technology, and Innovation (NACOSTI/P/24/38276).

Prior to data collection, the study participants provided written informed consent. Participants' confidentiality and privacy were strictly adhered to when using unique codes rather than their names. Anonymized study participant data was safely stored to guard against unauthorized personnel accessing it.

RESULTS

As provided in Figure 1 below, more than a third (n=99, 40.2%) of the study respondents had been screened for cervical cancer. More than half (n=147, 59.8%) of the study respondents reported having never been screened for cervical cancer.

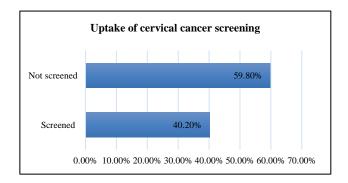


Figure 1: Uptake of cervical cancer screening.

Multiple responses on the method of screening for cervical cancer

Table 1 provides multiple responses on the method of screening for cervical cancer. Screening for cervical cancer through VIA/VILI was the most (n=61,41.8%) reported method of cervical cancer screening. More than a third (n=53, 41.8%) of the study participants reported being screened for cervical cancer through an HPV test. Only a few (n=32, 21.9%) of the study respondents had been screened through cytology screening.

Table 1: Multiple responses on the method of screening for cervical cancer.

Cervical cancer screening method frequencies							
Cananina mathad	Responses						
Screening method	N	%					
Screened through HPV test	53	36.3					
Screened through VIA/VILLI	61	41.8					
Screened through cytology	32	21.9					
Total	146	100.0					

Social demographic characteristics of the study respondents

Table 2 provides descriptive statistics on the social demographic characteristics of the study participants. Nearly quarter of the participants (n=75, 30.5%) were between the ages of 35 and 39. Nearly half of the study participants (n=117, 47.6%) had completed secondary school. Married people made up more than half (n=142, 57.7) of the study participants. Majority of the respondents (227, 92.3%) reported having no history of the disease. Regarding the participants' religion, all (n=246, 100%) of the study respondents identified as Christians. Over a quarter (n=103, 41.9%) of the study participants made less than 10,000 Kenyan shillings per

year. Most study participants (n=206, 83.7%) had a multiparous parity status, according to the study respondents' parity status. The mean age of the study respondents was 36.8.

Barriers and facilitators to cervical cancer screening

Distance to the hospital (χ^2 =11.710, df=2, p=0.003), privacy observation (χ^2 =233.775, df=2, p<0.001), satisfaction with healthcare services (χ^2 =218.215, df=2, p<0.001), waiting time at the hospital (χ^2 =241.936, df=3, p<0.001), availability of cervical cancer screening services (χ^2 =222.029, df=2, p<0.001) and patient-friendly health services (χ^2 =238.257, df=3, p<0.001) were statistically correlated with cervical cancer screening. Conversely, cervical cancer screening was not statistically correlated with outreach programs (χ^2 =0.193, df=1, p=0.66).

These findings disagreed with the qualitative findings.

"In rural and peri-urban areas of Kiambu, women might face challenges accessing healthcare services due to distance, cost, or lack of transportation. I would say we occasionally carry out outreach programs that bring services closer to the community through mobile clinics or local health events- make screening more accessible and convenient......" (KII 1, community health extension worker, 2024).

As provided in Table 3 below, study respondents who reported taking between 1-30 minutes to the nearest hospital were 2.9 more times likely to seek cervical cancer screening services as compared to those who reported taking more than one hour (OR=2.9, 95%CI; 0.130-0.753, p=0.01). Study participants who reported a waiting time of between 1-30 minutes were 2.3 times more likely to seek cervical cancer screening services as compared to those who reported waiting for more than one hour (OR=2.3, 95%CI; 0.253-1.365, p=0.04). The presence of poor patient-friendly health services reduced the odds of cervical cancer screening services by 7.8 (OR=7.8, 95%CI; 0.002-1.241, p=0.009).

These findings agreed with the qualitative findings where one of the focused group discussants noted that;

"It has always been uncomfortable for me. The employees don't take the time to explain things and appear hurried. They seem irritated when you ask them questions. I'm hesitant to return because it's awkward and embarrassing......" (participant 3, Age 34, FGD 1, 2024).

Table 2: Descriptive statistics on social demographic characteristics.

Variables	Categories	n	%	Mean	STD
Age in years	25-29	47	19.1	36.8	6.13
	30-34	37			
	35-39	75	30.5		
	40-44	65	26.4		
	45-49	22	8.9		
Education level	College/university	55	22.4		
	Vocational	24	9.8		
	Secondary	117	47.6		
	Primary	47	19.1		
	No formal education	3	1.2		
Marital status	Married	142	57.7		
	Divorced	12	4.9		
	Single	69	28		
	Widowed	11	4.5		
	Separated	12	4.9		
Cervical cancer history	Yes	19	7.7		
	No	227	92.3		
Income level	>30000 Ksh	22	8.9		
	20001-30000 Ksh	43	17.5		
	10001-20000 Ksh	78	31.7		
	<10000 Ksh	103	41.9		
Parity status	Multiparous	206	83.7		
	Primiparous	34	13.8		
	Nulliparous	6	2.4		
Religion	Christians	246	100		

Table 3: Binary logistic regression with significant variables on barriers and facilitators to cervical cancer screening.

Variables	В	SE	df	OR	95% CI		D 1
					Lower	Upper	P value
Patient-friendly health services			3				0.01
Good	2.519	2.688	1	0.21	0.002	1.241	0.271
Fair	0.180	1.023	1	1.197	0.162	4.221	1.00
Poor	-0.611	0.438	1	7.81	0.010	1.632	0.009
I don't know				(Ref)			
Privacy observation			2				1.70
Yes	0.084	0.073	1	0.760	0.140	0.392	0.086
No	-3.076	1.556	1	0.043	0.210	0.894	1.329
I don't know				(Ref)			
Satisfaction with CCSS			2				2.25
Yes	1.455	1.161	1	0.390	0.003	1.423	0.998
No	0681	0.329	1	0.506	0.185	0.872	1.070
I don't know				(Ref)			
CCS availability			2				1.016
Yes	2.316	1.403	1	199	0.820	5.282	0.090
No	-3.467	1.801	1	0.131	1.430	2.632	3.650
I don't know				(Ref)			
Waiting time			3				0.001
1-30 minutes	4.946	0.415	1	2.3	0.253	1.365	0.04
31-60 minutes	0.193	1.354	1	0.015	0.320	2.639	1.360
>1 hour	-2.137	2.789	1	0.516	0.029	0.764	2.071
I don't know				(Ref)			
Distance to the hospital			2				0.04
1-30 minutes	0.173	0.536	1	2.9	0.130	0.753	0.01
31-60 minutes	-0.287	1.127	1	0.750	1.104	4.621	1.690
>1 hour				(Ref)			

DISCUSSION

More than one-third (40.2%) of the participants in the study had undergone cervical cancer screening. These results were similar to a study conducted in Ethiopia that found 38.7% of women utilized cervical cancer screening. A different study conducted in Ethiopia found that a greater percentage of women (62.9%) were screened for cervical cancer. In a different systematic review and meta-analysis, the uptake of cervical cancer screening was lower (18.17%). The difference between recorded prevalence can be attributed to different age groups and different sampling strategies. In addition, the differences in the recorded prevalence of cervical cancer screening across studies can result from a complex interplay of factors, including variations in healthcare access, cultural influences, and government policies

From this study, short time taken to reach the nearest health facility and less waiting time were identified as facilitators to cervical cancer screening uptake. Respondents who reported taking between 1-30 minutes to the nearest hospital were 2.9 more times likely to seek cervical cancer screening services as compared to those who reported taking more than one hour. These findings

were concurrent to those of a study done in Cameroon where there was an association between distance and uptake of cervical cancer screening showing long distance can be barrier to screening. The possible explanation for this is that traveling long distances to a hospital requires more time, which can be a significant deterrent for women with work, family responsibilities, or other commitments. The time needed to travel, wait for services, and return home may discourage them from seeking cervical screening services.

Women who reported taking Waiting time of between 1-30 minutes in the facility were 2.3 times more likely to seek screening services as compared to those who reported waiting for more than one hour. Similar findings were reported in a systematic review done in LMICs where long waiting times reduced the odds of cervical cancer screening. ²² Similar findings were also reported in a study done in Kenya. ²³ Experiencing long wait times can lead to frustration and dissatisfaction with the healthcare system. If women have negative experiences, they may be less likely to go back for routine preventive screenings, including cervical cancer tests.

Poor patient-friendly health service was found to be barrier to cervical cancer screening where women were 7.8 less likely to seek cervical cancer screening services. Women may perceive that healthcare providers don't care about their comfort or concerns if the services are not patient-centered. This lack of perceived care can reduce trust in the healthcare system, discouraging screening. These findings agreed with those of a study done in Embu County Kenya, where patient-friendly health services were associated with the uptake of cervical cancer screening services.²⁴

The presence of recall bias was expected due to the reliance on participants' memory when reporting their screening history and associated factors. To overcome this bias, the research used a carefully designed research questionnaire to minimize recall bias. Social desirability bias was expected in this study because the study relied on self-reporting. To overcome this bias the researcher ensured the responses were anonymous and could not be traced back to individual participants.

CONCLUSION

The uptake of cervical cancer screening was low (40.2%) in this study. Less distance to health facilities and shorter waiting times were identified as facilitators to the uptake of screening services. Respondents who lived within 1-30 minutes of the nearest hospital were 2.9 times more likely to be screened than those living over an hour away. Shorter waiting times of 1-30 minutes were associated with a 2.3-fold increase in screening uptake compared to longer waits. Poor patient-friendly services were identified as barriers to seeking screening services where women were 7.8 times less likely to seek screening.

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