A mixed-methods assessment of individual and clinic-level factors associated with uptake of cervical cancer screening services (CCS) in family planning (FP) clinics in Mombasa County, Kenya

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Abstract

A mixed-methods assessment of individual and clinic-level factors associated with uptake of cervical cancer screening services (CCS) in family planning (FP) clinics in Mombasa County, Kenya

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Despite the high incidence of cervical cancer and the availability of CCS services in different healthcare settings in Kenya, uptake remains low. This mixed methods study, nested within a randomized controlled trial testing the efficacy of an implementation strategy, the Systems Analysis and Improvement Approach (SAIA), for increasing CCS, assessed individual and facility-level barriers and facilitators to CCS in 10 FP clinics randomized to the SAIA intervention in Mombasa, Kenya. At the individual level, use of long-acting reversible contraception was associated with an increased likelihood of CCS. Compared to 3.8% (29/756) of women on short-acting contraceptives who received CCS, 7.9% (10/127) of women on long-acting reversible contraceptives received CCS (PR 2.05, 95% CI 0.97 – 3.95; aPR 2.16, 95% CI 1.09 – 4.28) and providers indicated that they were more likely to offer CCS to women receiving IUCDs. Qualitative interviews identified several individual-level barriers such as fear of the screening procedure and results, sociocultural norms, and negative perceptions about CCS, which helped to explain overall low screening rates. At the clinic level, adequate staff training and availability of supplies and equipment were crucial facility-level facilitators for CCS.

Background

Cervical cancer is a leading cause of cancer-related mortality among women globally, particularly in low- and middle-income countries (LMICs) (1). Cervical cancer screening (CCS) aims to detect precancerous cervical lesions that, if left untreated, may lead to progression to cancer. Persistent infection with high-risk human papilloma virus (HPV) types is the major etiological factor leading to the development of precancerous lesions and eventual progression to invasive cervical cancer (2). Invasive cancer of the cervix is preventable and curable if detected and treated in the early stages. In Kenya, cervical cancer is the leading cause of cancer-related deaths and the second most prevalent cancer among females (3). Despite the high incidence of cervical cancer and the availability of CCS services in different healthcare settings in Kenya, uptake remains low. According to the Kenya Demographic and Health Survey (KDHS), only 14% of eligible women reported any lifetime screening for cervical cancer (4). Data from the country's health information system shows that less than 20% of health facilities in Kenya provide screening for cervical cancer and only 10.8% of eligible women had ever been screened for cervical cancer as of 2018 (5). Common barriers to CCS in Kenya include implementation challenges such as staffing, infrastructure, supply issues, and individual factors like women's hesitancy to participate in CCS (6).

The World Health Organization (WHO) recommends that 70% of women should be screened with a high-performance test by 35 years of age and again by 45 years of age, and 90% of women with cervical lesions should receive immediate treatment (7). To reduce the burden of cervical cancer, the Kenyan government has emphasized the need for the provision of screening and appropriate management of cervical pre-cancers to promote timely diagnosis and improved outcomes. The 2018 Kenyan cancer screening guidelines recommend offering CCS to any woman who has ever had sexual intercourse, with a particular emphasis on those between the ages of 25 and 49. The recommended screening interval is 5 years for HIV uninfected women and annually or every two years for women living with HIV, depending on the screening modality (8). Family planning (FP) clinics and HIV comprehensive care clinics are the primary sites identified by the Kenyan Ministry of Health (MOH) to conduct CCS for eligible women. Family planning clinics play a crucial role in women's healthcare, providing a convenient setting for delivery of preventive

services including cervical cancer screening. These clinics serve as entry points for women seeking reproductive health services, making them an ideal setting to reach a large number of sexually active women, at risk of HPV infection, and in need of cervical cancer screening. Specific data entry fields have been incorporated in the hard-copy FP registers (MOH 512) to document screening. While national data on CCS are generally available, systematically collected data on the status of CCS within the FP clinics in Kenya are sparse, despite being an important entry point for women who would benefit from CCS.

The primary aim of this mixed-methods study was to examine individual and clinic-level factors associated with the uptake of cervical cancer screening services in FP clinics in Mombasa County, Kenya. Understanding the individual and clinic-level factors that influence the uptake of CCS in FP clinics is crucial for designing effective interventions to leverage FP clinics as a key CCS provision site and improve screening rates to reduce the burden of cervical cancer in Kenya.

Methods

Study Design

This study was a convergent, mixed-methods analysis nested within a randomized controlled trial testing the efficacy of an implementation strategy, the Systems Analysis and Improvement Approach (SAIA), for increasing CCS in FP clinics in Mombasa, Kenya (9). SAIA is an implementation strategy that helps front-line providers identify systems barriers to service delivery and conduct continuous quality improvement.

Study Setting

The study took place in 10 FP clinics randomized to the SAIA intervention in Mombasa County, Kenya.

Data Collection

Individual-level data for FP clinic clients were abstracted from photographed images of FP registers in the intervention clinics during the 18-month SAIA intervention period. Abstracted variables included data on individual clients' age, HIV serostatus, visit type (new or return), contraceptive type (intra-uterine contraceptive devices, hormonal implants, injectables, oral contraceptives, and condoms), and the method and results of cervical cancer screening. These data were entered into a REDCap database. Quality control was performed by having a study staff member verify that each variable recorded in the database matched the data on the register images. Client names and contact information were obscured during FP register image capture, so no personally identifiable data were abstracted.

Clinic-level variables were obtained from aggregated REDCap data from the baseline in-depth survey. Outcome variables were from the RCT outcomes in intervention clinics where SAIA was implemented. During the baseline in-depth survey, FP clinic staff were asked about clinic practices including the adequacy of resources to conduct CCS, staffing needs, and the number of providers trained to perform CCS. Trial outcomes focused on performance of CCS during the intervention period.

Face-to-face in-depth interviews with FP clinic managers and staff were conducted in the intervention FP clinics to gather detailed views from the FP clinic staff. The interview guide was informed by the Consolidated Framework for Implementation Research (CFIR) inner-setting domain constructs including structural characteristics, networks and communications, organizational culture, and implementation climate. Family planning clinic staff who agreed to participate in IDIs provided written informed consent prior to the interview. Before signing, potential participants had to demonstrate their understanding of key concepts about the informed consent and were reassured that they were free to decline to participate. The interviews were conducted in confidential settings within the FP clinics.

The study received ethical approval from the University of Washington Human Subjects Research Committee and the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee. No individually identifiable data were collected hence no consent was required from individual FP clients.

Statistical analysis

Individual-level analysis was conducted at the visit level. Although variable measurements were assumed to be independent of one another, some individual FP clients may have contributed data at multiple visits. To address this potential bias and ensure data accuracy and consistency, we analyzed data from the fourth quarter of the intervention period (Oct 27, 2020, to Jan 26, 2021) for Aim 1. Since most FP clients received the intramuscular depot medroxyprogesterone acetate injections and oral contraceptive pills quarterly, analyzing one-quarter of data reduced the likelihood that a woman would be counted twice. In addition, women using IUCDs and implants visited the clinics even less frequently, further reducing the likelihood of double-counting within the 3-month period. Facility 01 was excluded from this analysis because no data were captured during the analysis period due to COVID-related closure. Individual FP client characteristics were summarized as proportions or as medians with interquartile range (IQR). Log-binomial regression using a generalized linear mixed effects model to adjust for clustering by FP clinic was used to estimate adjusted prevalence ratios for the association between individual client-level characteristics and uptake of CCS. Women with HIV were excluded from the inferential analysis due to the small sample size (n=2) and the likelihood that they could have received CCS through clinics providing HIV care.

Clinic characteristics were summarized as proportions or as medians with interquartile range (IQR). Because of the small sample size (N=8) of clinics that reported screening, we performed a Fisher's exact test to assess whether there were any associations between each clinic-level characteristic and CCS.

Qualitative data were analyzed using content analysis to identify recurring themes and high-level concepts (10). Both deductive and inductive approaches were employed in codebook development and analysis. The Consolidated Framework for Implementation Research (CFIR) inner setting domain constructs probed in the interview guide guided the deductive approach to describe FP clinic staff and managers' views on barriers and facilitators of CCS. The inductive approach was employed to discover and incorporate new concepts emerging from the interviews to address data that did not conform to the existing framework. Two coders (BO and GW) developed an initial codebook based on the research question. Two transcripts were coded separately by the two coders and reviewed together for agreement. In cases of coding

disagreement, the two coders reviewed the context and reached a consensus on its application across other transcripts. The codebook was refined with the new codes and descriptions and used for the rest of the analysis. We used qualitative software (ATLAS.ti 22 GmbH; Berlin) and manual coding to identify key themes.

After completing quantitative and qualitative analyses, we used a back-and-forth process to integrate both sets of findings and understand how the quantitative associations identified between CCS, clinic, and individual-level characteristics compared with the qualitative themes identified to generate integrated interpretations. Integration of findings involved merging qualitative and quantitative data to gain a comprehensive understanding of the results. A joint display was constructed to summarize qualitative themes with the quantitative results.

Results

Individual-level analysis

Baseline individual-level characteristics are presented in Table 1. Of the 960 women included in the analysis, about half (52.4%, n=503) were in the 25-34 age group. Two-thirds (66.2%, n=636) of the women were return clients and the majority (60.6%, n=582) received the intramuscular depot medroxyprogesterone acetate injection as their contraceptive method. Most (79.6%, n=764) women's HIV status was unknown and less than 1% (0.2%, n=2) were living with HIV.

Table 2 summarizes unadjusted and adjusted prevalence ratios for the association between individual-level factors and CCS. The associations were adjusted for clustering by FP clinic. Cervical cancer screening was reported in 8.6% (22/256) of women in the 15 - 24 age group compared to 11.3% (57/503) of women in the 25 - 34 age group (PR 1.32, 95% CI 0.83 – 2.11), and 13.9% (28/201) of women in the 35+ age group (PR 1.62, 95% CI 0.96 – 2.75). Similar findings were obtained from adjusted analyses (aPR 1.50, 95% CI 0.72 – 3.10) and (aPR 1.84, 95% CI 0.30 – 2.34) respectively. Women with missing HIV status had a CCS prevalence of 9.8% (75/764), compared to 16.5% (32/194) of women without HIV (PR 0.60, 95% CI 0.41 – 0.87). Adjusted analysis yielded a similar association between missing HIV status

and CCS (aPR 0.55, 95% CI 0.35 – 0.87). Compared to 3.8% (29/756) of women on short-acting contraceptives who received CCS, 7.9% (10/127) of women on long-acting reversible contraceptives received CCS (PR 2.05, 95% CI 1.03 – 4.11). This association was similar in adjusted analyses (aPR 2.16, 95% CI 1.09 – 4.28). Cervical cancer screening was reported in 4.7% (11/233) of women visiting the FP clinics for the first time compared to 4.4% (28/636) of women returning to the FP clinic for subsequent visits (PR 1.07, 95% CI 0.54 – 2.11; aPR 0.87, 95% CI 0.43 – 1.78).

Themes regarding providers' perceptions of the criteria they used to select FP clients to whom they most likely offered CCS and barriers to CCS emerged from qualitative interviews and are described below.

Healthcare workers' perceptions of the reasons for selecting patients for cervical cancer screening help to explain why some groups are more likely to receive screening.

Healthcare providers reported that they considered age as a crucial factor when deciding whom to screen for cervical cancer. However, not all providers agreed on what age groups they would prioritize. Some providers preferred to offer screening to older women as they were easier to counsel and convince to undergo screening compared to the younger women, while others found it easier to convince younger women in their twenties to undergo CCS.

"It is easy to counsel elderly women to be screened. You will find the 30 - 40 years will just listen to you and mostly it is the 40-45 that end up being screened," (IDI 03-Female, Nurse).

"I am more likely to screen younger women in the 20-30 years age bracket because they are more cooperative," (IDI 02-Male, Nurse).

Additionally, FP clinic staff indicated that they were more likely to provide screening to women undergoing IUCD insertion, as they were already performing a speculum examination.

"Women are encouraged and offered CCS especially if they are getting an IUCD since we are already down there..when a client is getting the IUCD inserted, the gynaecologist has to do a pap smear, so that's the advantage of this method," (IDI 02-Male, Nurse).

Providers also used women's reported symptoms to determine whether screening should be offered.

"When a woman presents with lower abdominal pain, bleeding, or clots we counsel them to undergo CCS to rule out the possibility of cancer," (IDI 09-Female, Nurse).

While the quantitative findings on individual-level factors mainly yielded facilitators to CCS, two themes emerged from qualitative interviews regarding individual-level barriers to CCS.

Individual perceptions and sociocultural norms hinder the uptake of CCS among women

FP clinic providers identified certain client perceptions of CCS and some sociocultural beliefs as significant barriers to CCS uptake. Clinic staff explained that some women felt embarrassed about undergoing the speculum examination because they deemed it too invasive. Sociocultural beliefs and attitudes, particularly those related to the Muslim culture that predominates in the study area, also interfered with the providers' ability to perform CCS.

"Like I mentioned, the community here is very particular. You will find women all covered up and apart from fear of the procedure, most also are very private about their naked body being seen "uchi" (naked)," (IDI 01 – Male Nurse).

"Culture makes many women not screened. Some say their bodies are their men's property and should not be interfered. You can counsel but at the end she will refuse," (IDI 06-Female Nurse).

Fear of cervical cancer screening and the outcome of the screening procedure

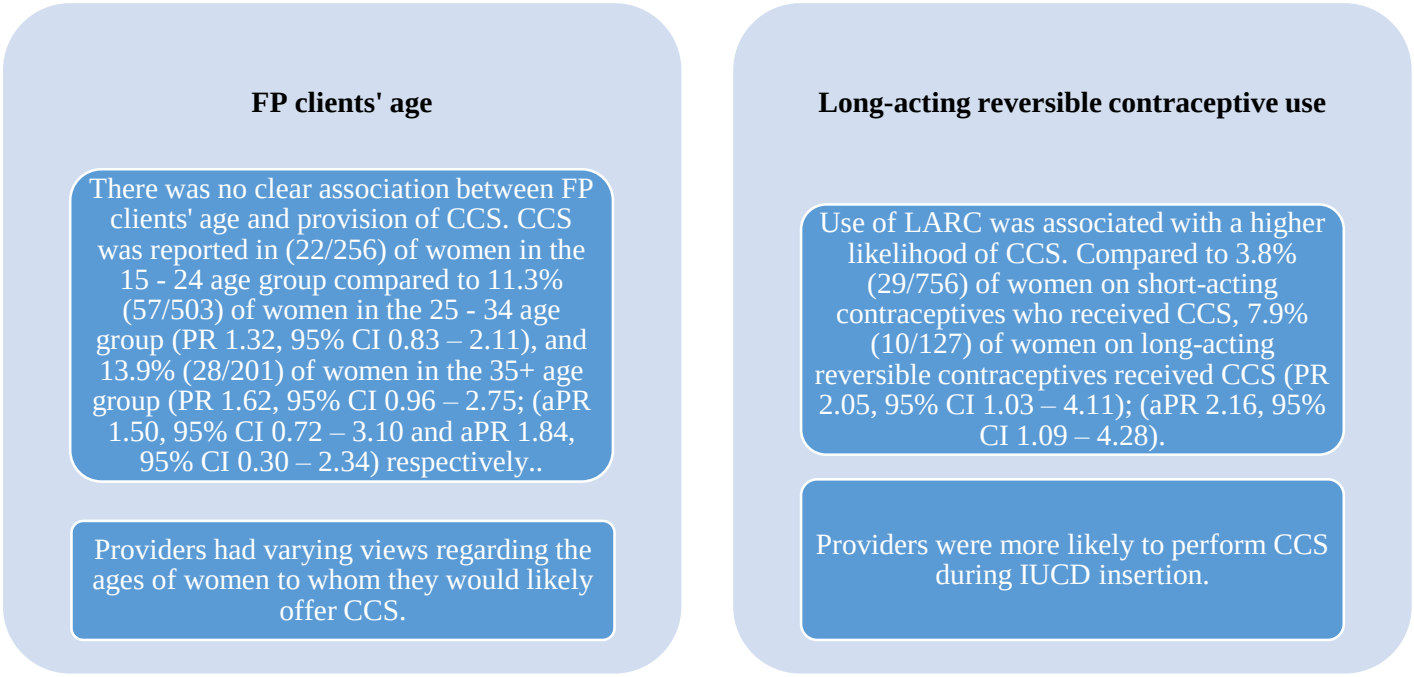
Healthcare providers interviewed identified fear as a major hindrance to screening. Fear of a cancer diagnosis and the screening procedure itself made women opt out of screening.

"There is a general concern on the use of speculums, with some women thinking in their mind that they might transmit infection and being inserted the speculum hurts…You will find that women will tell you they will come baadaye 'later' when you offer CCS. There is a need to educate the clients since many women have fear of the results," (IDI 03-Female).

"Women are mostly scared of the speculum, they think inserting the speculum is painful, but we try to reassure them…In some cases, a client will refuse to be screened because they are scared of a cancer diagnosis," (IDI 06-Female Nurse).

A joint display of the quantitative and qualitative findings is shown in Figure 1 below. Qualitative findings suggested that providers had varying views regarding the ages of women to whom they would likely offer CCS, which may help to explain the lack of a clear association between age and screening in our quantitative data. Interestingly, the qualitative data regarding the use of long-acting reversible contraceptive methods provided both corroboration and explanation for the observation that screening was more likely in this group.

Figure 1. Joint display including summaries of key individual-level quantitative and qualitative results



Clinic-level analysis

Table 3 summarizes the baseline characteristics of the 10 intervention clinics at the start of the intervention period. The majority (70%, n=7) were private clinics and most (70%, n=7) were in urban areas. The median number of healthcare providers was 1 (IQR 0-2), while the median number of providers trained in providing CCS was 0 (IQR 0-1). Most (90%, n=9) clinics reported having both auditory and visual privacy to conduct CCS.

Table 4 provides a summary of clinic characteristics and CCS at baseline. The findings presented are primarily descriptive due to the small number of clinics examined. Cervical cancer screening was provided in 71.4% (5/7) of clinics with more than one provider compared to 100% (3/3) with only a single provider (p=1.0). Additionally, CCS was provided in 75% (3/4) of clinics with at least one provider trained to perform CCS, compared to 83.3% (5/6) of clinics with no providers trained (p=1.0). Cervical cancer screening was provided in 77.8% (7/9) of clinics that reported experiencing outages of supplies and equipment needed for CCS compared to 100% (1/1) of clinics that did not report these stock outages

(p=1.0). In comparison to 75% (6/8) of non-public clinics providing CCS, CCS was provided in 100% (2/2) of public clinics provided CCS (p=1.0). Lastly, CCS was provided in 100% (7/7) of urban clinics compared to 50% (1/2) of non-urban clinics (p=0.067).

Qualitative interviews identified adequate staffing, training of providers to improve their technical expertise on CCS, and availability of screening equipment and supplies as key facilitators.

Adequate staffing, training, and availability of supplies are necessary for healthcare providers to conduct CCS

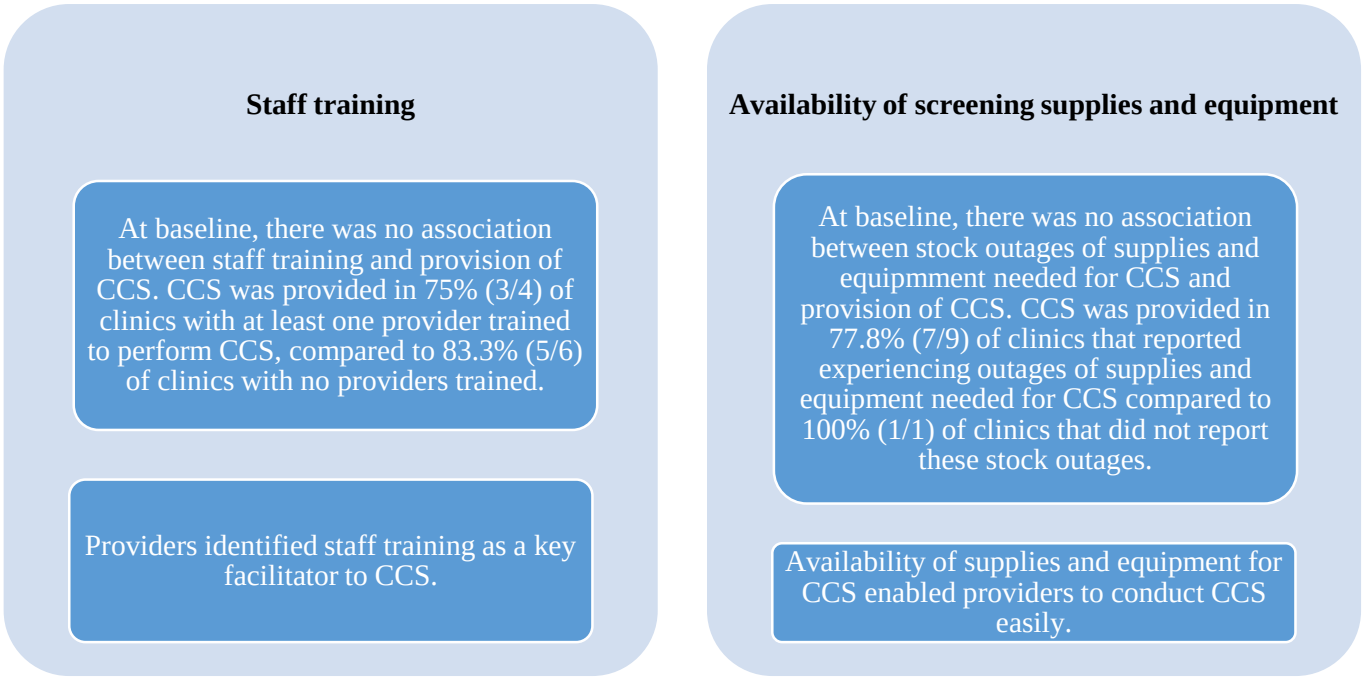
FP clinic providers identified having enough staff, training to conduct CCS, and availability of necessary equipment and supplies for screening as the main facilitators for CCS.

"The training at [one of the local clinics] really helped and it was a nice experience. I can now offer services on CCS but we also need a refresher," (IDI 07-Female, Nurse).

"We received support from [a local non-governmental organization] and the County had disposable speculums at some point. We also received speculums from [one of the local clinics]. SAIA was simple and made us motivated to increase the number of CCS done from 0 to 200 in a year," (IDI 02-Male, Nurse).

A joint display of the quantitative and qualitative data on clinic-level factors and CCS is shown in Figure 2.

Figure 2. Joint display including summaries of key clinic-level quantitative and qualitative results



Discussion

This study examined individual and facility-level barriers and facilitators to CCS in FP intervention clinics in a trial of the SAIA implementation strategy for improving cervical cancer screening rates. At the individual level, use of long-acting reversible contraception was associated with an increased likelihood of CCS, as providers indicated that they were more likely to offer CCS to women receiving IUCDs. Qualitative interviews identified several individual-level barriers such as fear of the screening procedure and results, sociocultural norms, and negative perceptions about CCS, which help to explain overall low screening rates. At the clinic level, adequate staff training and availability of supplies and equipment were crucial facility-level facilitators for CCS.

Prior research on individual-level barriers and facilitators of CCS has demonstrated varied results (11–14). Similar to our study, several studies have identified fear, fatalism, and poor knowledge of, as well as negative perceptions about CCS, as key barriers (15,16). Qualitative findings from this study suggest that clients' age may influence CCS providers' decision to offer CCS. Earlier studies conducted in sub-Saharan Africa have generally found that older women are more likely to receive CCS (17–19). Our data provide somewhat of a contrast to this, with no clear pattern of screening by age, and qualitative data suggesting that some providers targeted women in their twenties because they were easier to convince to get screened, while others chose to screen older women in their forties because they were more likely to accept screening.

The association between the use of long-acting reversible contraception and greater likelihood of CCS has not been studied extensively. Our qualitative data suggest that this finding may be driven by higher performance of CCS in women receiving an IUCD. While some studies found an association between modern contraceptive use and CCS (22–24), it is important to note that these studies were conducted in various settings with diverse populations and healthcare systems, which might influence access to screening services. Our study was based in FP clinics so most women were receiving modern contraception. The finding that LARC is associated with CCS is unique and adds to these earlier data.

The potential association between urban clinics and CCS should be considered in relation to prior studies. Rurality was identified as a key barrier to CCS in a study conducted among 126,731 patients eligible for cervical cancer screening in the US (25). Similar findings were obtained from the 2016 and 2018 Behavioral Risk Factor Surveillance survey data from the US (26) and studies in sub-Saharan Africa (27,28). The underlying causes of lower rates of CCS in rural settings are likely multifactorial and have been attributed to geographic isolation, distance to health facilities, and lack of access to basic healthcare and laboratory services (29).

This study adds to prior research showing that staff training and provision of adequate supplies and equipment are important enablers of CCS (6,11,15,30). Other facilitators identified in studies conducted in sub-Saharan Africa and Belize included incorporating community outreach programs for CCS into clinic schedules (16), and proper supervision of healthcare providers to ensure they offer screening services (31). In addition to barriers identified in this study, other key barriers to screening in similar LMIC settings include cost, proximity of health facility, and healthcare worker negative attitudes to screening (32–34).

This study had several strengths. First, the mixed methods approach allowed for a more comprehensive and nuanced understanding of the research questions. The quantitative results presented key findings from the FP registers, while the qualitative results provided additional data on variables not available in the FP registers and offered explanations for some of the quantitative findings. Additionally, this study provides unique data on CCS in FP clinics, which adds to the literature on the implementation of CCS in other settings by identifying the modifiable barriers in the setting of FP clinics.

The study had some limitations. First, data on key variables such as HIV status were missing for the majority of women, limiting some analyses. Additionally, we did not interview individual FP clients. Client perceptions could have provided additional useful context and should be included in future studies. While the study had a small clinic sample size, yielding essentially descriptive results, many of the results paralleled those of larger studies. Lastly, the study was limited to variables that were captured in FP registers limiting the scope of individual client-level variables that could be analyzed. This limitation was partially mitigated through the use of mixed methods, as the qualitative data from FP clinic providers helped to

explain some of the individual-level factors that they perceived were influencing women's willingness to participate in CCS.

In conclusion, this study demonstrated key barriers and facilitators to CCS at the individual and health facility levels in FP clinics. The findings emphasize the need to address barriers at multiple levels to improve uptake of CCS. Additionally, the findings highlight actionable strategies, such as healthcare provider training, that can be adopted to enhance the provision of CCS services among women attending FP clinics. The integrated approach of offering CCS in FP clinics can improve the early detection and treatment of cervical precancers and cancer.

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Appendix

Appendix 1: Tables and figures

Table 1: Baseline characteristics of 960 women attending FP clinics in Mombasa, Kenya

Characteristic	**Total N = 960 Median (IQR) or n (%)**
Age Categories (years)	
15 - 24	256 (26.7)
25 - 34	503 (52.4)
35 +	201 (20.9)
Visit Type	
New	233 (24.3)
Revisit	636 (66.2)
Missing	91 (9.5)
Individual FP Method	
Condoms	8 (0.8)
Implants	109 (11.4)
Injectables	582 (60.6)
IUCD*	18 (1.9)
Oral contraceptives	166 (17.3)
Missing	77 (8.0)
HIV Status	
Negative	194 (20.2)
Positive	2 (0.2)
Missing	764 (79.6)

* Intrauterine contraceptive device

Table 2: Association between individual-level factors and CCS uptake among women attending FP clinics in Mombasa, Kenya

Characteristics	CCS Performed n = 107 Median (IQR) or n (%)	CCS Not Performed n = 853 Median (IQR) or n (%)	Unadjusted Prevalence Ratio (95% CI)	p-value	Adjusted Prevalence Ratio* (95% CI)	p-value
Age categories (years)						
15 – 24	22 (8.6)	234 (91.4)	Ref	p	Ref	p
25 – 34	57 (11.3)	446 (88.7)	1.32 (0.83 – 2.11)	0.2	1.50 (0.72 – 3.10)	0.3
35+	28 (13.9)	173 (86.1)	1.62 (0.96 – 2.75)	0.9	1.84 (0.30 – 2.34)	0.7
HIV status						
Negative	32 (16.5)	162 (83.5)	Ref		Ref	Ref
Unknown	75 (9.8)	689 (90.2)	0.60 (0.41 – 0.87)	0.008	0.55 (0.35 – 0.87)	0.009
Contraceptive method						
Short-acting contraceptives[a]	29 (3.8)	727 (96.2)	Ref		Ref	Ref
Long-acting reversible contraceptives[b]	10 (7.9)	117 (92.1)	2.05 (1.03 – 4.11)	0.04	2.16 (1.09 – 4.28)	0.03
Visit type						
Revisit	28 (4.4)	608 (95.6)	Ref		Ref	Ref
New	11 (4.7)	222 (95.3)	1.07 (0.54 – 2.11)	0.8	0.87 (0.43 – 1.78)	0.7

*Adjusted for clustering by FP clinic using a generalized linear mixed effects model

[a]Include condoms, injectable, and oral contraceptives

[b]Include IUCD and implants

Table 3: Baseline characteristics of 10 FP intervention clinics (before the SAIA intervention)

Clinic characteristics	**N = 10** **Median (IQR), n (%)**
Location: Urban Not urban	 7 (70) 3 (30)
Clinic type: Public Private Other	 2 (20) 7 (70) 1 (10)
Median number of clinicians	1 (0, 2)
Cervical cancer screening provided at no cost to client	1 (0, 1)
How many providers are trained in CCS?	0 (0, 1)
Management meetings held	9 (90)
Visual privacy? No privacy at all Partial/some privacy Complete privacy	 0 (0) 1 (10) 9 (90)
Auditory privacy? No privacy at all Partial/some privacy Complete privacy	 0 (0) 1 (10) 9 (90)

Table 4: Clinic-level factors associated with the provision of CCS in FP intervention clinics

Clinic characteristics	**CCS captured N=8**	**No CCS captured N=2**	**p-value**
More than one clinician (compared to ≤ 1 clinician)	5 (71.4%)	2 (28.6%)	1.000
Public (as compared to non-public/other)	2 (100%)	0 (0%)	1.000
Urban (as compared to non-urban)	7 (100%)	0 (0%)	0.067
At least one provider trained to perform CCS	3 (75%)	1 (25%)	1.000
Experienced Stock Outages	7 (77.8%)	2 (22.2%)	1.000

Appendix 2: Abbreviations and Acronyms

CCS:	Cervical cancer screening
CFIR:	Consolidated Framework for Implementation Research
FP:	Family planning
HIV:	Human immunodeficiency virus
HPV:	Human papillomavirus
IDI:	In-depth interviews
IUCD:	Intra-uterine contraceptive device
KDHS:	Kenya Demographic and Health Survey
LMIC:	Low and middle-income countries
MOH:	Ministry of Health
MPH:	Master of Public Health
NIH:	National Institutes of Health
PR:	Prevalence Ratio
RCT:	Randomized controlled trial
SAIA:	Systems analysis and improvement approach
SSA:	Sub-Saharan Africa
UW:	University of Washington