

A COMMUNITY-BASED CERVICAL CANCER SCREENING INITIATIVE IN GUINEA: A RETROSPECTIVE DESCRIPTIVE STUDY

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ABSTRACT

BACKGROUND: Cervical cancer remains a major public health challenge in Guinea, where no organized national screening program exists. Initiatives led by civil society organizations represent a critical access point for prevention services in this context. This study aimed to describe the outcomes of a community-based cervical cancer screen-and-treat program in Guinea.

METHODS: A cross-sectional study was conducted from October 2019 to October 2022 at the Aminata Souaré Screening Center in Conakry. Data were extracted from the center's screening registers using a structured abstraction form. Cervical screening was performed using VIA/VILI, followed by colposcopy and immediate treatment with thermal ablation or LEEP for eligible women, in accordance with WHO screen-and-treat recommendations. Primary outcomes included screening reach, positivity rates, treatment coverage, and loss to follow-up.

RESULTS: A total of 2,392 women underwent cervical cancer screening, of whom 79.05% were first-time participants. VIA and VILI positivity rates were 6.23% and 6.61%, respectively. All 158 VILI-positive women underwent colposcopy; 36.08% had lesions suggestive of precancerous disease, and 2.53% showed features consistent with invasive cancer. Among eligible women, 85.96% received thermal ablation and 8.77% underwent LEEP, yielding a treatment coverage of 94.73%. Loss to follow-up was 5.26%. Among the 17 women with available histology, 8 had CIN2+ lesions confirmed.

CONCLUSION: The NGO-led program achieved substantial screening reach and high treatment coverage, demonstrating the feasibility of integrated cervical cancer screening and treatment in resource-limited settings. However, limited histological confirmation highlights the need for improved diagnostic verification and follow-up to guide program scale-up in Guinea.

KEYWORDS: Cervical cancer; VIA-VILI; screen-and-treat; feasibility study.

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INTRODUCTION

Cervical cancer remains a major public health challenge worldwide, particularly in low- and middle-income countries where access to organized screening programs is limited¹. In Guinea, it represents a significant public health concern, with approximately 2,052 new cases reported in 2022, a burden largely attributable to late diagnosis and insufficient screening coverage².

Early detection of precancerous lesions through effective screening is a key strategy to reduce both the incidence and mortality of cervical cancer³. In high-resource settings, screening relies on HPV testing and cytology, which are highly effective but often difficult to implement in low-resource environments due to cost, infrastructure needs, and limited laboratory capacity⁴.

In such contexts, visual inspection with acetic acid (VIA/IVA) is widely used as a pragmatic alternative. Although visual inspection with Lugol's iodine (VILI) may also be employed, its use is sometimes limited by supply constraints, making VIA the most commonly recommended method⁵. This method allows immediate identification of suspicious lesions and supports a "screen-and-treat" approach during the same visit, as recommended by the World Health Organization (WHO)³. However, its diagnostic accuracy remains lower than HPV-based methods and is dependent on operator performance⁶.

In our setting, the absence of a structured national screening program results in predominantly opportunistic screening and low population coverage, hindering early detection efforts⁷. Community-based initiatives led by non-governmental organizations play a crucial role in bridging this gap, particularly in underserved urban populations. The Association Guinéenne de Lutte contre le Cancer (AGUICAN) has established a permanent screening center in Conakry offering free-of-charge cervical cancer screening and immediate treatment services. In the absence of population-level data on screening coverage in Guinea, documenting the programmatic outcomes

of such initiatives is essential to inform future national policy development.

This study aimed to evaluate the implementation of a community-based, NGO-led cervical cancer screen-and-treat program in Guinea over 37 months, with a focus on reach, treatment coverage, positivity, and loss to follow-up.

Methods

Study Design

This was a retrospective cross-sectional study of routinely collected data on cervical cancer screening over 37 months (October 2019 – October 2022).

Study Setting

The study was conducted at the Aminata Souaré Screening Center in Conakry, Guinea, operated by AGUICAN, a non-governmental organization dedicated to cancer prevention, awareness, and care. The center represents one of the few permanent community-based screening facilities in Guinea. Women accessed the center through various channels, including community outreach campaigns, media awareness initiatives (such as "Pink October"), employer-sponsored programs, and word-of-mouth referrals. The center primarily serves an urban population in Conakry, with occasional attendance from other regions. Services were provided free of charge, with subsidies available through employer-sponsored programs. Screening was performed by trained healthcare professionals, including nurses, general practitioners, and oncologist especially surgeons. Services included clinical breast examination (CBE) with imaging when indicated, and cervical screening using VIA/VILI. Women with positive cervical findings underwent colposcopy and, when eligible, immediate treatment according to WHO guidelines, including thermal ablation or LEEP.

Study Population and Eligibility

The center offers routine cervical cancer screening to asymptomatic women aged 25–65 years. Women younger than 25 years were also screened when they were married or sexually active, as established at the

clinical interview during the visit. This applied to women aged 20 to 24 years. Women older than 65 years were screened only if never previously screened.

Exclusion criteria were: age below 20 or above 65 years with a previous screening, refusal of the procedure or of data use, ongoing treatment for invasive cancer, or history of hysterectomy.

All women recorded in the screening register during the study period were considered. Participation was exhaustive: no sampling was performed.

Screening, Diagnostic and Treatment Procedures

Cervical screening was performed using VIA/VILI. A screening result was positive when an acetowhite lesion was seen on VIA or an iodine-negative lesion on VILI. Women with positive findings underwent colposcopy, and the results were recorded in the centre's registers. A lesion was classified as suspected high-grade when colposcopy showed one or more major changes according to the 2011 terminology of the International Federation for Cervical Pathology and Colposcopy [8]: dense or rapidly appearing acetowhite epithelium, coarse mosaic or coarse punctation, sharp lesion borders, ridge sign or inner border sign. A lesion was classified as suspected invasive cancer when atypical vessels, an irregular or friable surface, an exophytic mass, ulceration or necrosis was seen.

Immediate treatment was offered to those meeting WHO criteria (lesion fully visible, confined to the ectocervix, and with no suspicion of invasive cancer). Thermal ablation was the first-line treatment. LEEP was used for lesions too large or too high-grade for ablation. Biopsies were performed for suspected high-grade lesions or when immediate treatment was not feasible. Suspected invasive cases were referred for specialized care.

Data Collection and Quality Control

Data were extracted from the center's screening registers using a structured form. The variables collected were age, place of residence, type of population (general population or company

employees), previous screening, family history of cancer, available reproductive history, VIA/VILI results, colposcopic findings, biopsy indications, available histology, treatment, and follow-up status. Essential variables were recorded for every woman at registration. Other items, such as reproductive history, were collected on a voluntary basis: screening was free and voluntary, and participants were not pressed to answer. HIV status was not systematically collected. Records were checked for inconsistencies and duplicates. Missing values were kept as missing and were not interpreted as negative findings.

Management of Biases

- Verification bias: histological confirmation was not available for all women with positive screening results.
- Selection bias: participants were self-selected, predominantly urban.
- Loss to follow-up was recorded for all eligible women.

Data Analysis

Data were analyzed using SPSS v21. Categorical variables were expressed as frequencies and percentages, and continuous variables as median and interquartile range (IQR). Exact binomial 95% confidence intervals were calculated for the main proportions. No comparative statistical tests were performed. The positive predictive value (PPV) of VIA/VILI for CIN2+ detection was calculated among women with available histology as an exploratory estimate; sensitivity, specificity, and negative predictive value could not be estimated due to incomplete histological verification.

Results

Patient Characteristics

A total of 2,392 women underwent cervical cancer screening during the study period. The flow of participants is presented in Figure 1. The median age was 37 years [IQR: 29–49]. Most participants resided in Conakry (92.52%). Screening was a first-time experience for 79.05% of women. A

family history of cancer was reported by 10.54%. Sociodemographic characteristics and reproductive history are detailed in Table I.

Table I. Sociodemographic Characteristics and Reproductive History of the Study Population (n = 2,392).

Characteristics		n (%)
Age group	< 25 years	309 (12.92)
	25 – 34 years	779 (32.57)
	35 – 44 years	562 (23.5)
	45 – 54 years	437 (18.27)
	≥ 55 years	305 (12.75)
Place of residence	Conakry	2213 (92.52)
	Other regions	179 (7.48)
Type of population	General population	2047 (85.58)
	Company employees	345 (14.42)
Age at first sexual intercourse	Before 16 years old	18 (0.75)
	16 years or older	75 (3.14)
	Not specified	2299 (96.11)
Gravidity	Nulligravida	45 (1.88)
	Primigravida	138 (5.77)
	Paucigravida	312 (13.04)
	Multigravida	389 (16.26)
	Not specified	1508 (63.05)
Previous cancer screening	Yes	501 (20.95)
	No	1891 (79.05)
Family history of cancer	Yes	252 (10.54)
	No	2140 (89.46)

Screening Outcomes

The VIA positivity rate was 6.23% (149/2,392; 95% CI: 5.3–7.3) and the VILI positivity rate was 6.61% (158/2,392; 95% CI: 5.6–7.7) (Table II). All 158 women with positive VILI results underwent colposcopy. Among these, 57 (36.08%) had lesions suggestive of precancerous disease, and 4 (2.53%) showed features consistent with invasive cancer (Table II).

Histological Findings

Biopsy was indicated in 41 women following colposcopic evaluation. Histological results were available for 17 cases (41.46%). Among these, 8 had CIN2+ lesions (Figure 1). The PPV of VIA/VILI for CIN2+ detection was 47.1% (95% CI: 23.0–72.2).

Management and Follow-up

Among women eligible for treatment, 85.96% received thermal ablation on-site and 8.77% underwent LEEP. Treatment coverage was 94.73% (54/57). Loss to follow-up was observed in 5.26% of women eligible for treatment (Figure 1).

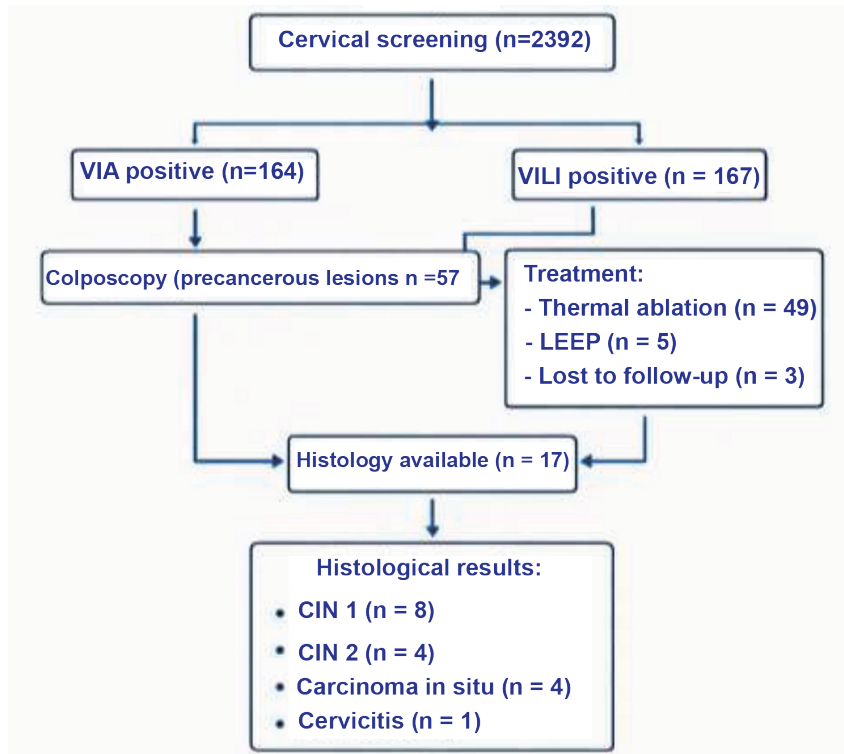


Figure 1: Flow Chart of Cervical Cancer Screening, Diagnostic Confirmation, and Treatment Uptake.

Table II. Cervical Cancer Screening Outcomes and Colposcopic Findings.

Variables		n (%)
Visual Inspection	VIA Positive	149 (6.23)
	VILI Positive	158 (6.61)
Colposcopy Findings	Isolated precancerous lesions	57 (36.08)
	Polyp	34 (21.52)
	Ectropion	23 (14.56)
	Normal	22 (13.92)
	Cervicitis	21 (13.29)
	Nabothian cyst	6 (3.8)
	Suggestive Invasive cancer	4 (2.53)

Screening results for the total cohort (n=2,392). The colposcopy section focuses specifically on the 158 VILI-positive women (6.61%) eligible for specialized examination

DISCUSSION

Over 37 months, this NGO-led program in Conakry screened 2,392 women, most of whom had never previously undergone screening, and treated 94.7% of those identified as eligible. These findings illustrate the capacity of a community-based organization to provide cervical cancer prevention services in a setting where no national screening program was in place. By documenting routine activities from screening to treatment, this study provided practical insights into service delivery in Guinea. Although it cannot establish clinical effectiveness or population-level impact, it highlights opportunities to improve access to screening and treatment in resource-constrained settings.

The high proportion of first-time attendees is an important finding. A systematic review and meta-analysis estimated pooled cervical cancer screening uptake in sub-Saharan Africa at 12.87%⁹, highlighting persistent gaps in access across the region. Although this estimate is not directly comparable with the proportion of previously unscreened women in our study, our findings suggest that free community-based services may engage women who have not previously accessed screening. Free care, outreach activities, and employer-sponsored initiatives may have contributed to attendance by reducing financial and practical barriers¹⁰.

VIA and VILI positivity rates were 6.23% and 6.61%, respectively. In the Care4Afrique pilot, positivity varied across participating sites, reaching 7.7% in Côte d'Ivoire and 12.3% in Benin¹¹. Differences in screening populations, examiner training and interpretation criteria may explain the variation. These proportions describe positive screening results rather than the prevalence of precancerous disease and do not establish diagnostic accuracy. Colposcopy further assessed the 158 VILI-positive women, of whom 36.08% had lesions suggestive of precancer, and 2.53% had findings suggestive of invasive cancer. These results illustrate

the importance of clinical assessment and referral within the screening pathway. However, incomplete histological verification limits conclusions about the true distribution of cervical lesions and the performance of VIA/VILI.

Treatment coverage was high, with 54 of 57 eligible women treated. Thermal ablation accounted for 49 treatments (85.96% of eligible women), while five (8.77%) underwent LEEP. In the Care4Afrique program, 88% of women eligible for thermal ablation accepted same-day treatment [new reference]. Although the indicators and eligibility criteria are not identical, both programs demonstrate the potential for high treatment uptake when screening services are linked to timely treatment.

Providing assessment and treatment at the same center may reduce the need for additional visits and associated transport costs and logistical barriers. Nevertheless, three eligible women were lost to follow-up before treatment. This small number highlights the importance of documenting reasons for non-treatment and strengthening patient tracking. Evidence from a randomized trial in Zambia and an earlier pilot trial supports the use of thermal ablation in appropriate screen-and-treat settings^{12,13}. However, our study assessed treatment delivery rather than treatment effectiveness, as adverse events, recurrence, and post-treatment outcomes were not systematically recorded.

One of the less-discussed but most original features of this program is its solidarity-based financing: employer-sponsored participants subsidized free access for the general population. This is not merely an accounting detail; it is a replicable equity mechanism that allowed a civil society organization to extend coverage without public funding. In a region where financial sustainability is the principal obstacle to program continuity^{14,15}, and where governments have limited fiscal space for preventive health, this kind of cross-subsidy model deserves attention as a scalable intermediate solution.

Free access alone does not fully explain attendance: although screening is free all year and awareness activities continue, the program team observes that attendance peaks during Pink October. This pattern

was not quantified here, and monthly attendance data would be needed to confirm it.

Histological confirmation was obtained for fewer than half of the women for whom biopsy was indicated, largely due to financial barriers to pathology services. This is not a failure of the program. In a screen-and-treat model, care is deliberately based on visual assessment, and neither immediate management nor post-treatment follow-up depends on systematic histological verification³. Improving access to pathology and tracking biopsy completion would strengthen future program evaluations. Similarly, the absence of systematic HIV status data limits characterization of the screened population and interpretation of the findings, given the relevance of HIV to cervical disease progression and treatment outcomes³.

The findings should be considered in the context of the WHO global strategy for cervical cancer elimination, which calls for 90% HPV vaccination coverage among girls by age 15, screening with a high-performance test for 70% of women by ages 35 and 45, and appropriate treatment or management for 90% of women with cervical disease by 2030 [11]. VIA is not considered a high-performance primary screening test under this strategy; therefore, the longer-term development of screening in Guinea will require progress towards HPV-based testing. The experience reported here may inform the organization of complementary community-based services, but wider implementation would require standardized protocols, trained personnel, reliable referral pathways, and appropriate quality monitoring. The program's combination of free services and employer-sponsored subsidies is also worth evaluating, although its financial sustainability cannot be established without a formal cost analysis.

Screening eligibility also warrants attention. Women younger than 25 years accounted for 12.92% of attendees, although age at first sexual intercourse was recorded for only 3.89% of the study population. The available data therefore do not allow verification of the criteria used to screen younger women. As screening outside

recommended age ranges may result in unnecessary investigation or treatment, eligibility criteria should be reviewed against national guidance and WHO recommendations before the model is expanded. For reference, WHO recommends screening women aged 30 to 49 years in the general population, and from 25 years in women living with HIV³.

This study's main strength is the use of routine data collected over 37 months to describe the pathway from screening to treatment in a setting where program-level evidence is limited. Its retrospective design, single urban setting, self-selected participants, incomplete histological verification, and absence of post-treatment follow-up or cost data limit generalizability and preclude conclusions about population impact, diagnostic performance, clinical effectiveness, and financial sustainability. Future multicenter prospective studies should prioritize HPV-based screening where feasible, standardized data collection, referral completion, post-treatment outcomes, and program costs.

Overall, this experience demonstrates the operational feasibility of delivering community-based cervical cancer screening and treatment in Conakry. By reaching women with no previous screening history and treating most eligible patients, the program offers practical lessons for improving access to prevention services and informing the development of a coordinated cervical cancer screening strategy in Guinea.

Conclusion

Over 37 months, this community-based program demonstrated the feasibility of delivering cervical cancer screening and treatment in Conakry, Guinea, in a setting without an organized national screening program. The high proportion of women undergoing screening for the first time and the high treatment coverage among eligible women highlight the potential of accessible, community-based services to improve access to cervical cancer prevention. However, incomplete histological verification and the absence of post-treatment follow-up limit conclusions about diagnostic performance and clinical outcomes. Strengthening diagnostic

pathways, referral tracking and longitudinal follow-up, alongside evaluation of program costs, will be essential to inform the integration of such initiatives into a coordinated national cervical cancer prevention strategy.

Conflict of Interest Statement

The authors declare that they have no conflict of interest related to this study.

Funding Statement

None.

Ethical Considerations

The study used anonymized screening data from the Aminata Souaré Center, analyzed with the agreement of AGUICAN. These are national screening data, available to the national cancer control program. Consent for the use of data was obtained when women agreed to be screened. No identifying information was included. The study followed the principles of the Declaration of Helsinki. Formal ethical approval was not required because the study used anonymized routine programmatic data.

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Data availability

The data used in this study are available from the corresponding author upon reasonable request.

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