Uptake of Cervical Cancer Screening and Its Determinants among Refugee Women in Uganda: Insights from the Uganda Refugee Population-based HIV Impact Assessment

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Abstract

Cervical cancer is the fourth most common cancer in women globally, with 660,000 new cases and 350,000 deaths in 2022. The burden is disproportionately high in low- and middle-income countries (LMICs), particularly sub-Saharan Africa. Despite proven interventions like HPV vaccination and screening, uptake remains low. While cervical cancer screening has been studied in the general population, little is known about uptake among refugee women in Uganda, which hosts approximately 1.7 million refugees. This study examines cervical cancer screening uptake and associated factors among refugee women in Uganda.

Methods

We conducted a cross-sectional secondary analysis of the 2021 Uganda Refugee Population-based HIV Impact Assessment (RUPHIA) survey, focusing on women aged 21–49 in refugee settlements in the West Nile and South-Western regions, which host 90% of Uganda's refugee population. The primary outcome was self-reported cervical cancer screening status. We used descriptive statistics and logistic regression to identify factors associated with screening uptake.

Results

Among 731 women, only 72 (9.8%) reported undergoing cervical cancer screening. The mean age of screened women was 37 years (±7), compared to 32 years (±8) for unscreened women. Screening uptake was significantly higher among women aged 31–39 years (AOR = 2.67, 95% CI: 1.32–5.52, p = 0.007), married women (AOR = 12.0, 95% CI: 1.76–163, p = 0.03), and those in polygamous relationships (AOR = 4.76, 95% CI: 1.96–11.1, p < 0.001)

Conclusion

Cervical cancer screening uptake among refugee women in Uganda is critically low. Integrating culturally sensitive screening programs into refugee health services and addressing socio-economic barriers could improve access and

utilization.

Introduction

Cervical cancer ranks as the fourth most common cancer among women, with an estimated 660,000 new cases and 350,000 deaths recorded in 2022 alone [1,2]. Although it is a global public health concern, low- and middle-income countries (LMICs) bear approximately 85% of the burden, with the highest incidence and mortality rates concentrated in Eastern and Southern Africa [3,4] Evidence demonstrates that comprehensive HPV vaccination coupled with precancer screening can significantly reduce cervical cancer incidence and mortality [5,6], potentially preventing 5.2 million cases and 3.7 million deaths over a decade [7]. However, despite such interventions, cervical cancer remains a leading cause of death in sub-Saharan Africa and other LMICs [8].

In 2020, the World Health Organization (WHO) introduced the 90-70-90 targets, aiming to vaccinate 90% of girls by age 15, screen 70% of eligible women, and ensure 90% of women diagnosed with cervical cancer receive appropriate treatment by 2030 [9].While high-income countries (HICs) have achieved an average screening coverage of 63%, LMICs lag behind with only 19% [10]. Yet, uptake remains alarmingly low, with vaccination rates between 9–10% [11,12], with only 7.5% having been screened in the last five years [12], screening coverage at 7.5% in the last five years, and only 4.8% in rural areas [13]. While studies have explored barriers to cervical cancer screening in various populations, little attention has been given to refugees, despite Uganda hosting approximately 1.7 million refugees as of 2024, making it the fifth-largest refugee-hosting country globally [14]. Although international organizations such as the United Nations High Commissioner for Refugees (UNHCR) provide basic health services, utilization rates remain lower among refugees, and the burden of cervical cancer, as well as awareness of risk factors, is poorly documented in this group [15]. This study seeks to address this gap by examining cervical cancer screening uptake and associated factors among refugee women residing in Uganda, shedding light on their unique healthcare needs and informing strategies to improve preventive care in this underserved population.

Study Design and Setting

This study employed a cross-sectional design using secondary data from the 2021 Uganda Refugee Population-based HIV Impact Assessment (RUPHIA 2021), conducted between October and December 2021[16]. The survey collected cervical cancer screening data through self-reported responses. Participants were asked whether they had ever undergone cervical cancer screening and the timing of their most recent screening. A structured questionnaire was administered to eligible women as part of the survey. The RUPHIA 2021 survey employed a two-stage cluster sampling design. In Stage 1, refugee settlements were selected as primary sampling units (PSUs), stratified by region. In Stage 2, households within selected settlements were systematically sampled, and eligible individuals (adults aged 15 years and older) were recruited for participation. The survey was led by the Government of Uganda through the Ministry of Health, with technical and financial support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the U.S. Centers for Disease Control and Prevention (CDC). Implementation was carried out by ICAP at Columbia University, in collaboration with other government agencies and partners.

Study population and sample size

The survey was conducted in the West Nile and South-Western regions of Uganda, which collectively host approximately 90% of all refugees in the country [17]. The study population comprised adults aged 15 years and older residing in these refugee settlements. A total of 1,877 respondents participated in the

survey, selected based on prior HIV prevalence data from similar surveys. For this analysis, the focus was narrowed to women aged 21–49 years, based on cervical cancer screening guidelines. The American College of Obstetricians and Gynecologists (ACOG) recommends screening for women aged 21–49 [18], while the World Health Organization (WHO) recommends earlier screening for women at higher risk, such as those living with HIV [19] . Of the total survey respondents, 731 women aged 21–49 years were included in this analysis.

Study Variables

The study population comprised adults aged 15 years and older residing in these refugee settlements. A total of 1,877 respondents participated in the survey, selected based on prior HIV prevalence data from similar surveys. For this analysis, the focus was narrowed to women aged 21–49 years, based on cervical cancer screening guidelines. The American College of Obstetricians and Gynecologists (ACOG) recommends screening for women aged 21–49 [18], while the World Health Organization (WHO) recommends earlier screening for women at higher risk, such as those living with HIV [19]. Of the total survey respondents, 731 women aged 21–49 years were included in this analysis. The primary outcome variable was cervical cancer screening status, categorized as either screened or not screened based on the respondents' self-reported responses. Independent variables included the following demographic, socio -economic, and health-related factors: Age categorized as (21–30, 31–40, and 41–49 years), Years lived in the settlement categorized as (0–2, 3–5, and 6+ years), Marital status classified as (never married, married, or widowed/separated), Education level grouped into (never attended school, primary, secondary, and tertiary education), Number of live births (parity) categorized as (0, 1–5, and 6+ children), Relationship type classified as (polygamous, non-polygamous, or not in a union), HIV status classified as (positive or negative), HIV testing history classified as Whether the respondent had ever been tested for HIV (yes or no), Socio-economic status (derived from wealth quintiles and categorized as low (quintiles 1–2), middle (quintile 3), or high (quintiles 4–5)). The wealth quintiles were calculated using the DHS Wealth Index [20].

Data Analysis

The data analysis was performed using R version 4.1.2 (2021-11-01). As the proportion of missing data was negligible, cases with missing values were excluded from the analysis. The uptake of cervical cancer screening was calculated as the percentage of women aged 21-49 years who participated in the survey and reported having undergone screening.

Descriptive statistics were used to summarize the demographic and socio-economic characteristics of the study population, while bivariate and multivariate analyses assessed associations between independent variables and cervical cancer screening status. Results were reported as odds ratios (ORs) with corresponding 95% confidence intervals (CIs).

A significance level of $p < 0.05$ was considered statistically significant for the final model, and all confounding variables were controlled for in the multivariate analysis to ensure accurate estimation of the associations. The potential for missing data was not addressed through imputation or other methods, and cases with missing values were excluded from the analysis

Results

Of the 731 participants, 72 (9.8%) reported having undergone cervical cancer screening. The mean age of screened women was 37 (±7) years, compared to 32 (±8) years for unscreened women. The majority of screened respondents, 67 (93.0%) were residents in the area for at least 6 years.

Table 1. Socio-demographic Characteristics and health outcomes by Cervical Cancer Screening Status blastocyst grades

Characteristic	Category	Not screened	Screened f (%)
Age group			
	21–30	329 (49.9)	22 (30.6)
	31–39	227 (34.5)	36 (50.0)
	40–49	103 (15.6)	14 (19.4)
Region			
	West-Nile	263 (39.9)	34 (47.2)
	South-Western	396 (60.1)	38 (52.8)
Country of origin			
	Burundi	30 (4.6)	3 (4.2)
	Rwanda	17 (2.6)	2 (2.8)
	DRC	265 (40.2)	23 (31.9)
	South-Sudan	297 (45.0)	35 (48.6)
	Others	50 (7.6)	9 (12.5)
Religion			
	Catholic	163 (24.7)	19 (26.4)
	Anglican/Protestant	266 (40.4)	26 (36.1)
	Pentecostal	161 (24.4)	11 (15.3)
	Muslim	21 (3.2)	7 (9.7)
	Others	48 (7.3)	9 (12.5)
Years lived in the area			
	0–2	29 (4.4)	2 (2.8)
	3–5	78 (11.8)	3 (4.2)
	6+	552 (83.8)	67 (93.0)
Marital status			
	Never married	86 (13.0)	4 (5.6)
	Married	409 (62.1)	42 (58.3)
	Widowed/Separated	164 (24.9)	26 (36.1)
Relationship type			
	Polygamous	38 (5.8)	11 (15.3)
	Non-polygamous	388 (58.9)	28 (38.9)
	Not in union/Don’t know	233 (35.3)	33 (45.8)
Education level			
	Never attended	96 (14.6)	8 (11.1)
	Primary	411 (62.4)	45 (62.5)
	Secondary	143 (21.7)	18 (25.0)
	Tertiary	9 (1.3)	1 (1.4)
Socio-economic status			
	Low	268 (40.7)	27 (37.5)
	Middle	240 (36.4)	28 (38.9)
	High	151 (22.9)	17 (23.6)
HIV status			
	Positive	18 (2.7)	5 (6.9)
	Negative	641 (97.3)	67 (93.1)

Parity (Number of children)			
	0	40 (6.1)	2 (2.8)
	1–5	412 (62.5)	47 (65.3)
	6+	207 (31.4)	23 (31.9)

Abbreviations: DRC-Democratic Republic of Congo; f-frequency

Table 2. Univariable and Multivariable Analysis of Cervical Cancer Screening Determinants

		Univariable Analysis			**Multivariable Analysis**		
Characteristic	**Category**	**OR**	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**
Age group							
	21–30	–	–	–	–	–	–
	31–39	2.37	1.37, 4.19	0.002	2.67	1.32, 5.52	0.007
	40–49	2.03	0.98, 4.08	0.049	2.17	0.852,	0.1
Years lived in the area							
	0–2 yrs	–	–	–	–	–	–
	3–5 yrs	0.56	0.09, 4.39	0.5	0.37	0.05, 3.12	0.3
	6+ yrs	1.76	0.51, 11.0	0.4	1.33	0.35, 8.79	0.7
Marital status							
	Never married	–	–	–	–	–	–
	Married	2.21	0.87, 7.50	0.14	12	1.76, 163	0.03
	Widowed/ Separated	3.41	1.28, 11.8	0.027	1.16	0.38, 4.37	0.8
Relationship type							
	Non-Polygamous	–	–	–	–	–	–
	Polygamous	4	1.79, 8.33	<0.001	4.76	1.96,	<0.001
	Not in union	1.96	0.88, 4.17	0.084	0.24	0.02, 1.82	0.2
Education level							
	Never attended	–	–	–	–	–	–
	Primary	1.31	0.63, 3.09	0.5	1.68	0.71, 4.54	0.3
	Secondary	1.51	0.65, 3.81	0.4	2.37	0.89, 6.98	0.1
	Tertiary	1.33	0.07, 8.56	0.8	2.37	0.11, 19.4	0.5
Socio-economic status							
	Low	–	–	–	–	–	–
	Middle	1.16	0.66, 2.03	0.6	1.15	0.61, 2.15	0.7
	High	1.12	0.58, 2.10	0.7	1	0.45, 2.17	>0.9
Ever tested for HIV							
	Yes	–	–	–	–	–	–
	No	0.11	0.01, 0.52	0.031	0.15	0.01, 0.75	0.067
HIV status							
	Positive	–	–	–	–	–	–
	Negative	0.38	0.15, 1.17	0.062	0.46	0.16, 1.54	0.2

Parity (Number of children)							
	0	–	–	–	–	–	–
	1–5	2.28	0.67, 14.3	0.3	1.01	0.25, 6.92	>0.9
	6+	2.22	0.62, 14.2	0.3	0.73	0.15, 5.49	0.7

Abbreviations: OR-Odds Ratio; AOR- Adjusted Odds Ratio; CI-Confidence interval

Majority of respondents, 351 (48%) were in age group 21 – 30. A significant proportion, 434 (59.4%) were based in the Southwestern region. Majority, 619 (84.7%) had lived in that area at least six years. The biggest number, 456 (62.4%) of respondents had attended primary education. Majority, 451 (61.7%) were married and about 416 (57.0%) were in a non-polygamous relation type. A significant proportion, 295 (40.4%) were of low socio-economic status. Majority of those screened, 42 (58.3%) were married women (Table:1).

At the univariable analysis level, factors significantly associated with cervical cancer screening included marital status ($p = 0.027$), relationship type ($p < 0.001$), age group ($p = 0.002$), and having ever been tested for HIV ($p = 0.031$). In the multivariable analysis, the independent factors significantly associated with cervical cancer screening were marital status ($p = 0.03$), relationship type ($p < 0.001$), age group ($p = 0.003$), and having ever been tested for HIV ($p = 0.031$) (Table:2).

Discussion

Several studies have examined cervical precancer screening inequalities related to age, residence, education level, marital status and socio-economic status [21–24]. In our study, women aged 31-39 were more likely to have undergone screening, with their odds of being screened being 2.5 times higher than those in the 21-30 age group. The finding is consistent with majority of studies done in Uganda and beyond. A study conducted in central Uganda examining predictors of cervical cancer screening uptake among women aged 25–49, the findings revealed that women in the 30–39 age bracket had higher screening rates than their younger and older counterparts [25]. A systematic review of barriers and facilitators of uptake of cervical cancer screening among women in Uganda highlighted that, despite the availability of screening services, overall uptake in Uganda remains low, with lifetime screening rates between 4.8% and 30%, with women in their 30s more proactive in seeking screening services, influenced by factors like health consciousness and family planning considerations [25]. This is could be, women in this age group are be more likely to seek healthcare due to increased awareness or health concerns as they grow older. Normally, women in their 30s often become more health-conscious and proactive about preventive care as they recognize the importance of regular check-ups and maintaining their health for themselves and their families. As they visit healthcare providers more frequently for family planning, pregnancy, or postpartum care, this creates opportunities for providers to recommend screening.

Socio-cultural factors, such as the influence of marital status, and relationship type in majority of Sub-Saharan countries play a role in health decisions. Married women and those in polygamous union possibly having greater access to healthcare through their spouses or family networks. Women in polygamous relationships may also recognize a higher potential risk of exposure to sexually transmitted infections (STIs), including HPV, because their partners may have multiple sexual partners. This increased perceived risk can drive them to seek preventive measures like cervical cancer screening. A study conducted in Nigeria assessed married men's knowledge and attitudes towards cervical cancer screening. Findings indicated that men were generally supportive of their wives undergoing screening [26]

The absence of an association between socio-economic status and screening uptake is particularly noteworthy. In many LMICs, wealth is a known determinant of healthcare access, with poorer women being less likely to access screening services [21,27]. A study of 18 resource-constrained countries, of which eight were from sub-Saharan Africa further found that wealth status increased socioeconomic inequalities in cervical precancer screening [28]. In addition, studies that have found low screening rates among women without formal education. In contrast, our study did not find education or socio-economic status to be a significant predictor of screening uptake [29] However, in the refugee context, where there is a degree of uniformity in socio-economic conditions, the typical barriers associated with wealth disparities may not be as pronounced. Additionally, the homogeneity of the refugee community in terms of access to resources and healthcare services might have minimized the impact of socio-economic status on screening behavior.

Conclusion

Our study reveals that a significant proportion of refugee women in Uganda remain at risk for cervical cancer due to low screening uptake. Public health strategies should be tailored to the unique socio-cultural context of refugee communities that include integrating cervical cancer screening programs into refugee health services and ensuring these services are accessible to all women, regardless of their socio-economic status or marital situation.

Limitations of the study

Firstly, the study relied on self-reported data, which is subject to recall bias. Secondly, the use of secondary data made key variables of interest, such as knowledge of cervical cancer, awareness of screening programs, or reasons for not screening not available limiting the scope of the analysis.

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