

Research Article

Factors Influencing the Awareness of Cervical Cancer Screening and Practice Among Women Attending Butaro District Hospital, Burera District, Rwanda, 2025

Niyihoza Roger Chadrack¹ , Tefera Tezera Negera^{2, *}, Eric Mugabo¹ 

¹Epidemiology and Disease Control Option, Mount Kenya University, Kigali, Rwanda

²Public Health, Mount of Kigali University, Kigali, Rwanda

Abstract

Persisting as a substantial global health burden for women, even though Cervical cancer is largely preventable through early screening, with HPV vaccination. Globally, cervical cancer stands as fourth most frequent malignancy affecting women. This study assesses the factors influencing awareness and practices of cervical cancer screening among women attending Butaro District Hospital in Burera District. A descriptive cross-sectional with quantitative method was used, with purposive sampling targeting women aged 21-65 years attending the hospital's family planning department. The sample size involved 250 participants. Data was collected using structured, closed-ended questionnaires, and analyzed in SPSS Version 31.0.0. Descriptive statistics, Chi-square analysis, and Logistic regression, with p value < 0.05. Only 53.6% of women demonstrated good awareness, while 46.4% had poor awareness. Screening practice was reported by 63.1% (95% CI: 56.9-69.0) Awareness significantly influenced screening compared to poor awareness (OR = 2.601, 95% CI [1.524-4.439], p < 0.001). For Socio-demographic, higher income (AOR = 3.140, 95% CI [1.333-7.393], p = 0.009) increase the screening practice compared with lower income. Secondary education and above (AOR = 3.371, 95% CI [1.495-7.603], p = 0.003) compared to primary or no formal education. Being married increased the odds of screening AOR = 4.200, 95% CI [1.375-12.830], p = 0.012). Cervical cancer screening practices among women in Rwanda remain constrained by poor awareness, low education, poverty, and single marital status. Therefore, strengthening procedure-focused health education at facility level, and expanding outreach screening services is essential to increase cervical cancer screening uptake.

Keywords

Cervical Cancer, Cervical Cancer Screening Practice, Burera District

1. Introduction

To this very day, most death causal agents among women worldwide include Cervical cancer remains, without not mentioning that it is indeed a pressing health challenges for this gender globally [1]. Although it is largely preventable, it still

results in hundreds of thousands of deceases yearly. Taking the magnitude of the problem from the WHO report in 2024, being the fourth most prevailing cancer among women across the world, with approximately 660,000 new cases and 350,000

*Correspondence: Tefera Tezera Negera (teferatezera9@gmail.com)

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deaths [2]. Its development is primarily attributed to chronic infection with specific high-risk human papillomavirus (HPV) types, yet effective tools exist to combat it: strategic implementation of human papillomavirus immunization, systematic screening routines, and on time intervention for pre-neoplastic lesions [3-5].

The screening coverage serves as a critical monitoring benchmark within WHO's elimination strategy [2]. As stated by WHO in March 2024, as of recommendation women must fulfill cervical cancer screening at intervals of 5 to 10 years, commencing at the age of 30 (if HPV test only used) or at age of 21 (if Pap Smear test used), while those living with HIV should be screened every three years starting at age 25 [2, 6]. WHO encourages a minimum of two lifetime screenings with a high-performance HPV test, first at age of 35, with another one at 45, in order to lineup with the global cervical cancer elimination strategy [2].

The screening rate has been in upshift over the years, in 2019 the coverage of global cervical cancer screening among female aged 30 - 49 years was 15%, 28% in 2016, while it was 32% in 2017 years, and 36% overall, and this is against the WHO's target set at 70% in 2030 [7, 8].

In high-income countries, organized screening programs, such as Pap smears and HPV testing have dramatically reduced in-cidence and mortality over the past decades, at the rate of 50 to 80 percent [9].

The picture looks very different in Africa, for instance, countries with limited resources, particularly those in Sub-Saharan Africa (SSA), bear the greatest setback, reaching for an estimated 84% of all counted cases [10]. Here, age-standardized incidence rate (ASR) is highest in Eastern Africa at 40.4 per 100,000, with Eswatini recording the world's peak rate of 95.9 per 100,000 [11]. Structural challenges, limited healthcare infrastructure, shortages of trained personnel, and inadequate laboratory capacity, in the combination with cultural barriers and economic constraints to hinder access to screening [12, 13]. While Cervical cancer screening vaccination campaigns have been introduced in several countries, coverage remains uneven, and many women are still unaware of the importance of regular screening [4, 14, 15].

Rwanda sits within this challenging regional context but has made notable strides. The government has prioritized cervical cancer prevention through its National Cancer Control Plan (2020 - 2024) and has integrated screening into broader reproductive health services [16]. By becoming the first African nations to roll out nationwide HPV vaccination for adolescent girls, and gaining high coverage [17]. In Rwanda, the screening was introduced in 2014 through a VIA-based approach, yet coverage remained low at around 10% by 2019 due to limited demand, inconsistent service availability, staff turnover, and frequent equipment breakdowns [17]. Of the very recently, the country introduced mobile mass screening campaigns with high-precision HPV DNA testing, raising coverage to 24% [17], with the commitment to reach and cross beyond the

WHO 90-70-90 elimination targets, by ensuring that 70% of women aged 30 - 49 undergo screening by 2030 using HPV DNA testing [18].

Butaro District Hospital in Burera District represents a unique setting for this inquiry. As Rwanda's National Cancer Center of Excellence, Butaro provides specialized oncology services, including surgery, chemotherapy, and pathology support [19]. Women attending this hospital come from diverse backgrounds, many from rural communities where health literacy and access to preventive services are constrained. Understanding how these women perceive cervical cancer screening, what influences the translation of that knowledge into practice is crucial. This study focused on this population because their experiences reflect both the opportunities and challenges of Rwanda's cancer control efforts. By situating the research in Butaro District hospital, we aimed to generate insights that can inform local interventions while contributing to the broader national and regional fight against cervical cancer, while improving cervical cancer screening.

2. Materials and Methods

2.1. Study Area

Setting for this study was Butaro District Hospital, located in Rwanda's Burera District. Butaro District Hospital served as a referral facility for the district and beyond, receiving patients from across Rwanda for cancer treatment, among other many specialized health care services. It was also the referral hospital for 18 health centers within Burera District, making it a central hub for health services in the region.

Geographically, Butaro District Hospital is situated at latitude 1°24'35" S and longitude 29°50'24" E. The hospital was established in 2011 and had a capacity of approximately 150 beds. According to Partners in Health (2022), the hospital received around 1,200 patients annually for cancer-related services, reflecting its critical role in Rwanda's national cancer care system.

Butaro District Hospital provided a compelling setting for investigating this study's objectives. Its position as a referral center ensured access to a diverse population of women from both rural and urban backgrounds, offering reliable data for the study objectives. The hospital's specialized oncology services, combined with its role in coordinating care across multiple health centers, made it uniquely suited for examining how awareness and screening practices were shaped by sociodemographic and health system factors.

2.2. Study Design and Period

A descriptive cross-sectional, quantitative study was carried out from November 2025 to April 2026.

2.3. Populations

2.3.1. Source Population

All Women seeking services from PF departments, who visited Butaro district hospital during the period of data collection.

2.3.2. Study Population

According to the guideline of CDC towards the cervical cancer screening, the target population for this study was made of women of aged 21 - 65 years attending Butaro District Hospital (6), specifically, who sought health services from PF department

2.4. Inclusion and Exclusion Criteria

2.4.1. Inclusion Criteria

Women aged 21 - 65 years attending Butaro District Hospital.

Clinically eligible for cervical cancer screening women (not currently diagnosed with advanced cervical cancer).

2.4.2. Exclusion Criteria

Women who fulfil fore mentioned eligibility criteria but declare the person motives of not participating in the study.

Critically ill Women or unable to respond to the questionnaire at the time of data collection.

2.5. Sample Size Determination and Technique

2.5.1. Sample Size Calculation

Calculation of sample size used single population proportion formula

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2} \quad (1)$$

Where:

- 1) n = required sample size
- 2) Z = Z-score at 95% confidence level (1.96)
- 3) p = estimated prevalence of cervical cancer screening (18%

at national level)

- 4) d = margin of error (0.05)

Substituting the values:

$$n = \frac{(1.96)^2 \cdot 0.18 \cdot (1-0.18)}{(0.05)^2} = 227 \quad (2)$$

To account for a 10% non-response rate, the sample size was adjusted:

$$n_{final} = 227 + (227 \times 0.10) \approx 250 \quad (3)$$

Thus, overall sample size will be 250 women attending Butaro District Hospital.

2.5.2. Sampling Technique and Procedure

This study employed purposive sampling to select women attending Butaro District Hospital in Burera District. The choice of this technique was deliberate, as it ensured inclusion of participants who were directly relevant to the study objectives, women within the recommended screening age group (21 - 65 years) who sought FP services at the hospital. This was simply because random sampling would risk including individuals outside the target population or those without exposure. For recruiting participants, women were approached directly at Butaro District Hospital while seeking services in departments such as family planning and maternal health. Eligible women aged 21 - 65 years were identified in waiting areas, detailed regarding study along with invitation to have a part in study voluntarily [20]. Only those who provided informed consent were enrolled, ensuring that the set sample size

2.6. Study Variable

2.6.1. Dependent Variable

Cervical cancer screening practices

2.6.2. Independent Variable

1. Socio-demographic factors consisted of age, marital status, education level, household income, and employment status.
2. Awareness scores: as poor awareness and good awareness.

2.7. Operational Definitions

Table 1. Definitions of operational key terms.

Awareness	The level of knowledge and understanding that women attending Butaro District Hospital have towards cervical cancer, possible risk factors, and the advantages of screening. Measured using structured questionnaires generating scores (21).
Butaro District	A public referral hospital resides in Burera District, Butaro Sector. It serves as the Cancer Center of Excellence

Awareness	The level of knowledge and understanding that women attending Butaro District Hospital have towards cervical cancer, possible risk factors, and the advantages of screening. Measured using structured questionnaires generating scores (21).
Hospital	and provides outpatient, reproductive health, and oncology services [19].
Cervical Cancer	An impaired cell division disease of the cervix, mainly due to persistent infection with high-risk HPV strains. In this study, cervical cancer was considered in terms of prevention through screening rather than treatment outcomes among eligible adult women from LMI countries, [1, 21, 22].
Factors Influencing	Socio-demographic, cultural, and individual-level factors (e.g., education, age, marital status, occupation, household size, and income) that may affect women's awareness and screening practices [23, 24].
Practice	The actual behaviours and actions taken by women in relation to cervical cancer screening, including whether they have ever been screened, frequency of screening, and adherence to recommended guidelines [25, 26].
Screening	The medical process of detecting cancerous or precancerous changes in the cervix before symptoms appear [26-29]. In this study, screening refers specifically to methods available at Butaro District Hospital, such as Pap smears or VIA.

2.8. Data Collection Procedures

Prior to data collection, enumerators underwent training on ethical considerations, neutrality, and effective interview techniques to avoid influencing responses. At the end of each day, the supervisor reviewed completed questionnaires to ensure quality and consistency. All participants were approached at the hospital, were explained with a clear line of the study, and were asked for self-consent before participation. This process ensured respect for participant autonomy and guaranteed accurate, reliable data collection within the two-week study period.

2.9. Data Processing Analysis

All data were analyzed using SPSS v31. Awareness was measured through ten items scored as 1 for Yes and 0 for No responses. A composite score was computed using the Compute Variable function, and then recoded into a binary outcome: poor awareness (<5) and good awareness (≥ 5). Comparing of frequencies and percentages, descriptive statistics presented the distribution of awareness levels. Screening practice was assessed through a single item on whether respondents had ever undergone cervical cancer screening. Responses coded as "Yes" or "No" were analysed using descriptive statistics to present proportions of uptake. A chi-square analysis of independence determined whether awareness levels were significantly associated with screening uptake. Odds ratios

with 95% confidence intervals were reported to quantify the strength of association, with the threshold of significance set at $p\text{-value} < 0.005$. Chi-square (for influence computing) and Binary logistic regression (for computing the strength of influence) were used with dependent variable; screening practice (Yes = 1, No = 0). Age, education, marital status, household size, women's occupation status, and household monthly income were independent variables. AOR with 95% CI was presented, and $p\text{-value} < 0.05$.

2.10. Ethical Consideration

Ethical clearance was given by the Mount Kenya University Research Ethics Committee and permission from the Butaro District Hospital was obtained before data collection outset. Informed consent was secured from all women attending Butaro District Hospital, with clear explanation of the study's purpose, procedures, confidentiality safeguards, and the free will to stop out at any time without consequence. Participation was voluntary, with no monetary or material incentives, ensuring decisions were free from coercion. Confidentiality was maintained through anonymizing of records, encryption of digital data, and secure storage of physical files. Access was limited to authorized team members, and datasets were anonymized after analysis. Special attention was given to vulnerable groups, including young, single, divorced, or widowed women from low socio-economic backgrounds. The research team was trained in cultural sensitivity to engage participants respectfully and adapt consent procedures to their needs. half (58.2%) aged 31-40 years. Education levels were low 53.3% having primary, 20.5% secondary. Marital status leaned heavy on married (76.2%). Household size exceeded 4 for 60.2%, under 4 for 39.8%. Income averaged 58,680 ($\pm 46,690$) RWF monthly, with most of them (29.5%) making 20,001-50,000 FRW. The farmers 43.9% was the most identified occupation with the valid percentage of 43.9% (Table 2).

3. Results

3.1. Socio-demographic Traits of Participants

Mean age was 38.46 (± 7.94) years, pointing to a mainly middle-aged group ripe for community health insights. Over

Table 2. Socio-demographic traits of participants.

Variable	Frequency (n)	Valid Percentage (%)	Mean $\pm$ SD
Age (years)			38.46 $\pm$ 7.94 years
21-30	26	10.7	
31-40	142	58.2	
41-50	59	24.2	
51-65	17	7.0	
Marital Status			
Single	15	6.1	
Divorced	32	13.1	
Widowed	11	4.5	
Married	186	76.2	
Household Size			
Less than 4	97	39.8	
4 and above	147	60.2	
Monthly Income (RWF)			58,680 $\pm$ 46,690 RWF
$\leq$ 20,000	62	25.4	
20,000-50,000	72	29.5	
50,001-100,000	71	29.1	
Above 100,000	39	16.0	
Occupation			
Housewife	26	10.7	
Farmer	107	43.9	
Civil servant	57	23.4	
Self-employed	54	22.1	
Education Level			
None	64	26.2	
Primary	130	53.3	
Secondary education and above	50	20.5	

3.2. The Awareness Score of Cervical Cancer Among Women Attending Butaro District Hospital

Awareness score for cervical cancer came from ten items. Each "Yes" got 1 point, "No" got 0. Total score summed up. Then recoded: poor awareness below 5, good awareness 5 or more. Frequencies and percentages showed the split. Good awareness hit 53.7%. Poor awareness took 46.3%. So, most women at Butaro District hospital had fair grasp. But nearly half still lag, pointing to education gaps (Figure 1).

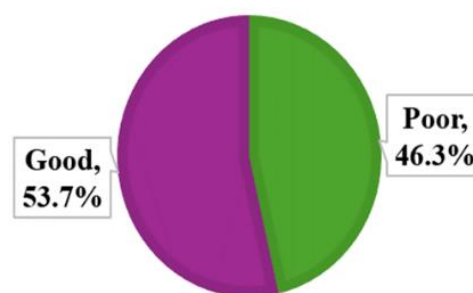


Figure 1. Awareness Score of cervical cancer among women attending Butaro District Hospital.

3.3. The Level of Cervical Cancer Screening Practices Among Women Attending Butaro District Hospital

Out of 244 participants, 154 (63.1%) reported having been

screened. The remainder, 90 (36.9%), had not. Over six in ten women engaged with screening services. The 95% CI for yes responses (56.9-69.0%) confirms reasonable precision around this estimate. For no responses, CI spans 31.0-43.1% (Table 3).

Table 3. The level of cervical cancer screening practices.

Variable	Frequency (n)	Valid Percentage (%)	95% CI	
			Lower (%)	Upper (%)
Screened for cervical cancer				
Yes	154	63.1	56.9	69.0
No	90	36.9	31.0	43.1

3.4. Socio-demographic Factors Influencing Cervical Cancer Screening Practices Among Women

The analysis demonstrated a strong significant association between the awareness level of participants and their cervical cancer screening practices. Respondents with a "Good" awareness level were 2.601 times more likely to have undergone screening compared to those with "Poor" awareness (OR = 2.601, 95% CI [2-4], $p < 0.001$) (Table 4).

Table 4. Multivariate analysis results: association between awareness score and cervical cancer screening practice.

Variable	Screening Status		OR	95% CI	p-value
	Yes n (%)	No n (%)			
Awareness level					
Poor	58 (51.3)	55 (48.7)	ref		
Good	96 (73.3)	35 (26.7)	2.601	1.524-4.439	<0.001

3.5. Socio-demographic Factors Influencing Cervical Cancer Screening Practices Among Women

The multivariate logistic regression analysis (AOR) highlights several independent predictors of cervical cancer screening uptake after adjusting for potential confounders, Table 4. Monthly income remains a strong determinant amongst others; women earning 50,001-100,000 RWF are over 3.140 times more likely to have screening compared to those with the lowest income (AOR = 3.140, 95% CI [1-7], $p = 0.004$). Furthermore, educational achievement significantly influ-

ences their screening behavior, with participants having secondary education or above being nearly 2.601 times more likely to go for services than those with no formal education (AOR = 2.601, 95% CI [1-6], $p = 0.036$). Marital status also presented as a significant predictor, particularly for widowed (AOR = 6.728, 95% CI [1-44], $p = 0.046$) and married women (AOR = 4.111, 95% CI [1], $p = 0.022$), both of whom showed substantially higher odds of screening compared to single respondents. Lastly, age maintains a specific influence, as women aged 31-40 years are significantly more likely to seek screening than the 21-30 age group (AOR = 2.560, 95% CI [1-6], $p = 0.046$). Underscoring that, even when all other influences considered economic stability, formal education, and marital support structures are the most decisive factors facilitating cervical cancer screening (Table 5).

Table 5. Multivariate analysis for Socio-demographic factors influencing cervical cancer screening practices.

Variable	Screening Status		AOR	95% CI	p-value
	Yes n (%)	No n (%)			
Age (years)					
21-30	11 (42.3)	15 (57.7)	ref		
31-40	99 (69.7)	43 (30.3)	2.560	1.019-6.434	0.046
41-50	32 (54.2)	27 (45.8)	1.564	0.574-4.255	0.382
51-65	12 (70.6)	5 (29.4)	2.005	0.505-7.957	0.323
Marital Status					
Single	5 (33.3)	10 (66.7)	ref		
Divorced	15 (46.9)	17 (53.1)	1.554	0.394-6.125	0.529
Widowed	8 (72.7)	3 (27.3)	6.728	1.034-43.766	0.046
Married	126 (67.7)	60 (32.3)	4.111	1.231-13.732	0.022
Monthly Income (RWF)					
≤ 20,000	27 (43.5)	35 (56.5)	ref		
20,000-50,000	48 (66.7)	24 (33.3)	2.476	1.168-5.246	0.018
50,001-100,000	52 (73.2)	19 (26.8)	3.140	1.447-6.816	0.004
Above 100,000	27 (69.2)	12 (30.8)	2.516	1.008-6.276	0.048
Education					
None	31 (48.4)	33 (51.6)	ref		
Primary	85 (65.4)	45 (34.6)	1.796	0.929-3.472	0.082
Secondary education and above	38 (76.0)	12 (24.0)	2.601	1.062-6.367	0.036

4. Discussion

The finding obtained showed that 53.7% of women at Butaro District Hospital possess good awareness of cervical cancer presents a compelling standpoint with data India and Nigeria, which demonstrated a high awareness rate of CCS [30, 31].

Possibly due to, sustained national cervical cancer initiatives and routine health education at health facilities, including pre-screening IEC sessions delivered by nurses [32, 33]. On one hand, this level of literacy is significantly higher than the 31.3% reported in urban Nigerian settings [34] and surpasses the 31.8% basic knowledge level previously identified in rural Rwandan cohorts [35]. Suggesting that, the Mission 2027 national strategy and the intensive community health worker (CHW) mobilization in Rwanda are successfully elevating general awareness [36].

However, regarding technical versus procedural knowledge, it was obviously low. While there was awareness of screening

frequency (70.9%), a high part about 71.3% were unaware that cervical cancer is preventable. This disconnects mirrors findings in East African meta-analyses where knowledge of where to go did not correlate with understanding disease etiology [37]. This gap is frequently attributed to limited access to health information channels (such as TV, radio, internet, and smartphones, and health messages), low literacy, time-constrained counseling in primary care, and sociocultural barriers to discussing sexual health, all of which are more pronounced in rural areas [31, 38, 39]. The most consistent gap of the screening awareness was found in countries like Ghana, Tanzania despite having the more opportunities with the cervical cancer screening services and programmes [39, 40].

Furthermore, the 31.6% awareness of the Pap smear in this study contrasts sharply with urban Kigali findings, where 50% of women demonstrated higher knowledge [41]. Likely, due to poorer access to information, whereas urban Kigali women benefit from more frequent exposure to health services and screening information, which is even consistence with studies from other regions [41, 42]. This confirms a persistent rural-

urban divide, coherent to what was reported in Ghana [43]; while Butaro women recognize the existence of services, they lack the "biological literacy" regarding HPV and pre-cancerous lesions identified as a primary barrier in recent qualitative Rwandan studies, even though have been putting strong effort in advocating the screen of cervical [44-46].

The observed screening prevalence of 63.1% at Butaro District Hospital represents a significant departure from historical regional levels, signaling a robust shift in health-seeking behavior. When compared to a broad African context, this Figure markedly outperforms the 14% uptake reported in recent sub-Saharan meta-analyses [47], suggesting that the decentralization of oncology services in Rwanda is yielding superior outcomes compared to centralized models in Nigeria or Ethiopia. This high engagement aligns with the Butaro District hospital's health strategy of integrated care, mirroring findings by [48, 49], who argued that proximity to a specialized cancer center inherently bolsters screening confidence.

While obtained findings (62.8%) demonstrate success, they remain in tension with the WHO 90-70-90 global elimination targets which mandate 70% screening coverage by 2030 [50]. This shortfall, nearly 7.2% below the global gold standard parallels a recent Rwandan national survey where screening rates plateaued at 60% due to persistent socio-economic barriers [51]. However high than SSA rate, which was identified at only 21.2% [44]. One must argue whether this "high" uptake is representative byproduct of aggressive clinical outreach a phenomenon noted in recent Burundian rural studies where high numbers did not equate to sustained longitudinal follow-up [52]. Thus, while the 62.8% prevalence is a triumph for rural Rwanda, the 37.2% non-participation rate remains a stubborn indicator of the last mile challenge in cervical cancer elimination.

The observed association between elevated awareness and screening uptake ($OR = 2.601$, $p < 0.001$) establishes a definitive cognitive-behavioral structure within the target population. On one hand, obtained results mirror the broader African consensus that health literacy acts as a primary catalyst for preventive action [39, 44, 53]. For instance, similar predictive trend was identified in Nigeria, where women with comprehensive knowledge were thrice as likely to utilize screening services [54]. This suggests that the 2.63 times increase in likelihood found here is not an anomaly but a reflection of a continental shift toward informed health-seeking behavior.

However, despite the statistical significance, a disparity persists: 26.9% of those with high awareness still failed to screen. This knowledge-practice gap aligns with the critiques from different studies which argue that cognitive literacy is often neutralized by structural deterrents like "fatalism" or "service-point phobia" [55, 56]. Furthermore, this study data implies that the influence of awareness is highly variable, perhaps mediated by the "provider-client" relationship prevalent in rural Burera. While study from Kigali found that urban Rwandan women leverage awareness for elective screening,

obtained data suggests that for rural women, awareness likely interacts with the guidance and encouragement of Community Health Workers [41].

There was identification of age, marital status, economic capacity, and educational attainment as the primary drivers of screening behavior at Butaro District Hospital.

Age appeared to influence cervical cancer screening practice in this study, with women aged 31-40 years being 2.5 more likely to have CCS than those aged 21-30 years ($AOR = 2.56$, $p = 0.046$). Consistent with recent evidence showing that screening uptake tends to increase with age because older women usually have more frequent contact with health services, greater exposure to reproductive health information, and a stronger perception of personal risk [41]. Although, women in the older age groups are still often under-screened in many low-resource settings [42, 43, 57]. The most attributions of this are the exposure to media, the educational levels, the wealth level of the households, while in Uganda the free government screening opportunities was a significant attribution [58, 59]. As in most cases they face more access barriers, lower provider recommendation, and the mistaken belief that screening is no longer necessary after a certain age [60, 61].

The marital status was highly influential, particularly the noteworthy 6.728 times increase in odds for widowed women ($AOR: 6.728$, $p = 0.046$). Traditionally, married women have higher screening practice due to spousal support, as evidenced by [45, 53, 55, 62]. The high screening practice may be due to widowed and older women (51-65 years) may engage more with the health system due to co-morbidities or increased contact with community health workers (CHWs) during family-based interventions, and they don't have the restriction of any kind the that would be imposed from partners as married women [57].

Economically, women in the middle-income category (50,001-100,000 RWF) were above three times more likely to screen ($AOR = 3.140$, $p = 0.002$) initially appears to corroborate the "Economic Constraint Hypothesis" prevalent in Sub-Saharan literature from Kenya, Ghana, and particularly Ethiopia where the transport fees were the at most influence [44, 63-66]. Yet in a nation like Rwanda, where Mutuelle de Sant é aims for universal coverage, why does a modest income gradient still exert such disproportionate influence? It stands to reason that while the clinical procedure may be subsidized, the hidden costs such as the transportation from remote sectors of Burera and the opportunity cost of agricultural labor might remain prohibitive for those in the lowest quintile [65, 67], which were common in-fluencing factors in LMICs across Africa [39, 62, 63].

The education has a significant role in screening practice, where having secondary or higher significantly increased the odds about three times ($AOR = 2.90$, $p = 0.036$). This is because, it improves health literacy, risk perception, and the ability to understand and act on prevention messages, and recent African evidence shows that formal education consistently predicts higher screening uptake [4, 44, 64, 68].

Therefore, in rural settings such as Butaro, formal education remains a key pathway for dismantling misconceptions and reducing the stigma associated with cervical cancer screening. Considering that limited schooling is consistently linked to poorer screening knowledge, reduced uptake, as documented in countries including Nigeria, Ghana, Kenya, and Ethiopia [49, 65, 68].

5. Conclusions

This study achieved a high response rate, supporting the credibility of the findings. With about two-thirds of participants have been screened of cervical. This can be explained by the fact that over half demonstrated adequate overall knowledge. However, there is still a persisting gap, particularly regarding preventability and specific screening methods which more clinical knowledge, supposedly because the higher formal education level is at low rate in this population.

Awareness showed a clear relationship with screening behavior, as women with better knowledge were more likely to utilize services. Moreover, screening was more common among women in their middle reproductive years, those with higher educational attainment, and individuals with relatively stable income. Marital status further influenced uptake, with married and widowed women showing greater engagement compared to others.

Overall, the findings suggest that cervical cancer screening in this setting is shaped by a cross-cut of knowledge, economic status, education, and social nature, while persistent informational gaps continue to limit optimal utilization of services.

Abbreviations

AOR	Adjusted Odds Ratio
ASR	Age-Standardized Incidence Rate
CDC	Centers for Disease Control and Prevention
CHW	Community Health Worker
CI	Confidence Interval
FP	Family Planning
HPV	Human Papillomavirus
OR	Odds Ratio
PF	Planning Facility
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization

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Conflicts of Interest

There is no conflict of interest, as declared by the author.

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