

Factors Associated with the Uptake OF Cervical Cancer Screening Among HIV-Positive Women Attending Immune Suppressed Syndrome Clinic at Mbarara Regional Referral Hospital

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Research Article

Keywords: Cervical cancer screening, Immune Suppressed Syndrome, HIV patients

Posted Date: July 5th, 2023

DOI: <https://doi.org/10.21203/rs.3.rs-3110544/v1>

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Abstract

Purpose

This study determined the prevalence of precancerous cervical lesions, uptake of cervical cancer screening (CCS), and its associated factors among HIV-positive women attending the Immuno-Suppression Syndrome (ISS), and the Colposcopy and Cervical Pathology Clinics of Mbarara Regional Referral Hospital (MRRH).

Patients and methods:

This was a cross-sectional study conducted at the ISS Clinic of MRRH, southwestern Uganda. Data were collected using semi-structured questionnaires among 303 confirmed HIV-positive patients between January 2020 and April 2020. Descriptive, bivariate, and multivariate analyses were conducted.

Results

The majority of the respondent 179(59.1%) had screened for cervical cancer and of the 124 unscreened women, 5(4.0%) had precancerous cervical lesions. HIV-positive women directed by healthcare staff in their most recent visit (AOR = 7.7, 95%CI: 4.08–14.63, $p < 0.01$), women from villages where outreaches were conducted (AOR = 4.4, 95%CI: 1.94–10.05, $p < 0.01$), and women that were attended to by two skilled health workers (AOR = 5.1, 95%CI: 1.81–14.43, $p < 0.01$) were more likely to go for CCS.

Conclusion

The uptake of CCS services among HIV-positive women attending ISS clinic was generally high. The prevalence of precancerous cervical lesions was generally low. This study demonstrates that referrals, outreaches, and the presence of skilled health workers enhanced the uptake of cervical cancer screening among HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital.

Introduction

Cervical cancer (CC) is one of the most common female-specific malignancies and one of the leading causes of mortality with varying prevalence worldwide [1]. Globally about 12% of HIV-positive women have CC [1], 20–25% within Sub-Saharan Africa (SSA) [2], 42.7% in East Africa [1], causing 2275 deaths per year [1, 3], and about 25.2% within Uganda [3]. Human papillomavirus (HPV) is a known cause of CC with up to 70% of the total CC cases [6]. The prevalence of HPV among Ugandan women is high, estimated to be 33.6% [7], yet HIV causes the persistence of HPV infection and promotes the quick progression of precancerous cervical lesions to cervical cancer [4]. Although HPV vaccination in Uganda is low at 2%, it remains the known primary preventive method against CC [8]. The HPV test for screening for cervical

cancer would be the most ideal due to its high sensitivity of 96.1% and specificity of 90.7% however it is very costly and not readily available in low-income counties like Uganda [9].

Cervical cancer screening (CCS) offers opportunities for early detection of precancerous lesions, which upon treatment prevents progression to invasive CC [4, 5]. In areas where CCS is low, most of the cases present late with stage III or IV of CC [3, 7]. At Mbarara Regional Referral Hospital (MRRH), cervical cancer screening with acetic acid led to a steady increase in the detection of precancerous cervical lesions between 2009 and 2015 [3]. In areas where cervical cancer screening is low, most of the cases present late with stage III or IV cervical cancer [3, 7]. Visual inspection under acetic acid (VIA) is an inexpensive and suitable method for CCS in low-income countries compared to a Pap smear [6, 9]. Women living with HIV are at an increased risk of cervical cancer when compared with those without HIV [10]. A nationwide survey done in 245 HIV clinics in Uganda found that a very low number (30.3%) of women living with HIV had screened for cervical cancer with only 26.9% screened in the western region [8]. Therefore, we sought to describe the uptake of cervical cancer screening services, the factors associated with cervical cancer screening, and the common precancerous cervical lesions among women living with HIV at Mbarara Regional Referral Hospital, southwestern Uganda.

Material and methods

Data Source and Study Design

This was a descriptive cross-sectional study conducted at Mbarara University Regional Referral Hospital (MRRH) from January 2020 to April 2020, is located on the Mbarara-Kabale Highway, approximately 269 kilometers (167 mi) southwest of Kampala, Uganda's capital and largest city.

Ethical approval was sort and gotten from the Mbarara University of Science and Technology Research Ethics Committee (No. 2015/MMED/030/PS), and informed consent was obtained from all the patients.

Study participants

HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital who consented to participate in the study were recruited for the present study. Women with HIV-negative status were excluded from the study.

Sample size determination

The sample size was determined using the sample size estimation formula [11]:

$$n = \left[\frac{Z_{\alpha/2}^2 \sigma^2}{\delta^2} \right]$$

where $Z_{\alpha/2} = 1.96$ standard normal value at 5% level of significance

σ^2 = Variance of the continuous outcome of interest or s^2 where s is the standard deviation

Estimated standard deviation = Range/4 = (35 - 0)/4 = 8.75 [11]

δ = Marginal error. The margin of marginal error for the present study was considered as 1

The determined sample size was 303, after adjusting for a 10% non-response rate.

Sampling procedure

Out of all Patients attending the Immune Suppressed Syndrome Clinic, the average monthly number of women was estimated by considering the number of service users in the past six months. Using a systematic random sampling technique, every woman who is HIV positive and arrived for follow-up care was selected to participate in the study provided they consent.

Data collection and tool

An interviewer-administered questionnaire was used to collect socio-demographic data (marital status, occupation, Religion, age, education, and parity), and medical and health system-related reasons as to why women do not screen for cervical cancer. The questions on medical and health system-related reasons as to why women do not screen for cervical cancer were generated following a thorough literature search. Women who had not screened for cervical cancer within a period of 12 months were subjected to VIA. Women with precancerous cervical lesions were referred to a cervical cancer clinic for management.

Statistical analysis

Summary statistics were used to characterize the study population. The patient demographic, health, and medical characteristics were compared between participants who had CCS and those without CCS using Chi-squared analysis for categorical variables. P-values < 0.05 were considered statistically significant. Multivariate logistic regression was used to identify factors associated with the uptake of cervical cancer screening. All analyses were performed using Stata software (Version 14.0, StataCorp, College Station, TX).

Results

Sociodemographic characteristics

The results of the sociodemographic feature of our study population showed that of the 303 patients recruited, the majority of the women living with HIV were married (53.5%), Christians (81.5%) with at least a parity of one (94.4%) and relied on one media (69.3%). More than half (51.8%) were from outside Mbarara district and had attained primary education (54.1%) (Table 1).

Table 1
Sociodemographic characteristics

Characteristics		Frequency	Percent
Marital status	Single	38	12.5
	Married	162	53.5
	Widowed	62	20.5
	Divorced	41	13.5
Occupation	Student	2	0.7
	Employed	128	42.2
	Housewife	15	5.0
	Peasant	158	52.2
Religion	Christians	247	81.5
	Muslim	23	7.6
	Pentecostal	28	9.2
	Others	5	1.7
District of origin	Mbarara	146	48.2
	Others	157	51.8
Age in years	25–29	53	17.5
	30–34	44	14.5
	35–39	66	21.8
	40–44	62	20.5
	45–49	78	25.7
Education	Primary	164	54.1
	Secondary	85	28.1
	Post- secondary	20	6.6
	Others	34	11.2
Media	None	24	7.9
	One media	210	69.3
Parity	2 or more	69	22.8
	No Child	17	5.6

Characteristics	Frequency	Percent
1+	286	94.4

Cervical cancer screening services utilization

The majority of 179(59.1%) of the HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital who participated in the present study utilizes cervical cancer screening services (Fig. 1).

Prevalence of precancerous cervical lesions

Of the 124 HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital and previously unscreened for cervical cancer, 5(4.0%) participants had precancerous cervical lesions, out of which 2(1.6%) were suspicious for cervical cancer (Fig. 2).

Factors associated with uptake of cervical cancer screening

The result of the bivariate analysis revealed that patients who were on ART (UOR = 9.1, 95%CI: 1.08–76.14, $p < 0.05$), referred by health staff (UOR = 11.9, 95%CI: 6.66–21.30, $p < 0.01$), received outreach in their community (UOR = 6.8, 95%CI: 3.34–13.92, $p < 0.01$) were more likely uptake cervical cancer screening among the HIV positive women attending ISS clinic at Mbarara Regional Referral Hospital at the significance of 5% margin of error ($p < 0.05$) (Table 2). The presence of more than one skilled health worker in the recent visit prior to the study (UOR = 10.0, 95%CI: 3.87-25.00, $p < 0.01$) was also associated with more likely to utilize cervical cancer screening services among the HIV-positive women attending ISS clinic at Mbarara Regional Referral Hospital ($p < 0.05$) (Table 2).

Table 2
Bivariate analysis of the Factors associated with uptake of cervical cancer screening

		Uptake		UOR (95%CI)	<i>p</i>
		Yes, n(%)	No, n(%)		
SOCIO-DEMOGRAPHIC FACTORS					
Marital status	Married	92(56.79)	70(43.21)	1.0	0.386
	Not married	87(61.7)	54(38.3)	1.2(0.77–1.94)	
Age in years	25–29 years	37(69.8)	16(30.2)	1.0	0.275
	30–34 years	26(59.1)	18(40.9)	0.6(0.27–1.47)	
	35–39 years	41(62.1)	25(37.9)	0.7(0.33–1.53)	
	40–44 years	31(50.0)	31(50.0)	0.4(0.20–0.93)	
	45–49 years	44(56.4)	34(43.6)	0.6(0.27–1.17)	
Occupation	Not gainfully employed	75(58.59)	53(41.41)	1.0	0.884
	Gainfully employed	104(59.43)	71(40.57)	1.0(0.65–1.65)	
Religion	Christians	166(60.36)	109(39.64)	1.0	0.157
	Others	13(46.43)	15(53.57)	0.6(0.26–1.24)	
Education	No or primary	113(57.07)	85(42.93)	1.0	0.330
	Secondary +	66(62.86)	39(37.14)	1.3(0.78–2.07)	
District of origin	Mbarara	85(58.2)	61(41.78)	1.0	0.770
	Others	94(59.87)	63(40.13)	1.1(0.68–1.69)	
Media source	No	15(62.5)	9(37.5)	1.0	0.722
	Yes	164(58.78)	115(41.22)	0.9(0.36–2.02)	
Parity	One child	10(58.82)	7(41.18)	1.0	0.983
* <i>p</i> < 0.05. ** <i>p</i> < 0.01					

		Uptake		UOR (95%CI)	<i>p</i>
		Yes, n(%)	No, n(%)		
SOCIO-DEMOGRAPHIC FACTORS					
2 or more		169(59.09)	117(40.91)	1.0(0.37–2.73)	
HEALTH FACILITY-RELATED FACTORS					
Skilled staffs on previous visit	One present	126(51.43)	119(48.57)	1.0	< 0.001**
	> One present	53(91.38)	5(8.62)	10.0(3.87–25.90)	
Community Outreach	No	112(49.6)	114(50.4)	1.0	< 0.001**
	Yes	67(87.0)	10(13.0)	6.8(3.34–13.92)	
Referred by Staff	No	21(21.65)	76(78.35)	1.0	< 0.001**
	Yes	158(76.70)	48(23.30)	11.9(6.66–21.30)	
MEDICAL RELATED FACTORS					
Prior miscarriage	Yes	2(66.67)	1(33.33)	1.0	0.789
	No	177(59.0)	123(41.0)	0.7(0.06–8.02)	
HIV stage	1st	177(59.4)	121(40.6)	1.0	0.788
	2nd	2(40.0)	3(60.0)	0.5(.075–2.768)	
ART	No	1(14.3)	6(85.7)	1.0	0.015*
	Yes	178(60.1)	118(39.9)	9.1(1.08–76.14)	
* <i>p</i> < 0.05. ** <i>p</i> < 0.01					

The result of the multivariate analysis revealed that HIV-positive women who were directed by health staff in the most recent visit were 7.7 times more likely to have screened for cervical cancer screening compared to those who were not directed (AOR = 7.7, 95%CI: 4.08–14.63, *p* < 0.01). HIV-positive women from villages where outreaches were conducted had 4.4 times the odds to have screened for cervical cancer compared to those who were not directed (AOR = 4.4, 95%CI: 1.94–10.05, *p* < 0.01). Also, HIV-positive women attended to by two skilled health workers had 5.1 times the odds to have screened for cervical cancer compared to those who were not directed (AOR = 5.1, 95%CI: 1.81–14.43, *p* < 0.01) (Table 3).

Table 3
Multivariate analysis of the Factors associated with the uptake of cervical cancer screening

		Uptake		UOR(95%CI)	<i>p</i>	AOR(95%CI)	<i>p</i>
		Yes, n(%)	No, n(%)				
ART	No	1(14.3)	6(85.7)	1.0	0.015*	1.0	0.293
	Yes	178(60.1)	118(39.9)	9.1(1.08–76.14)			
Referred by Staff	No	21(21.65)	76(78.35)	1.0	< 0.001**	1.0	< 0.001**
	Yes	158(76.70)	48(23.30)	11.9(6.66–21.30)			
Community Outreach	No	112(49.6)	114(50.4)	1.0	< 0.001**	1.0	< 0.001**
	Yes	67(87.0)	10(13.0)	6.8(3.34–13.92)			
Skilled staffs present	One	126(51.43)	119(48.57)	1.0	< 0.001**	1.0	0.004*
	>One	53(91.38)	5(8.62)	10.0(3.87–25.90)			

Discussion

The finding from the present study revealed that the majority of 179 (59.1%) HIV-positive women attending the ISS clinic at Mbarara Regional referral hospital utilized cervical cancer screening services. This study reports a higher proportion as compared to gynecology oncologic reports about cervical cancer screening and treatment in Uganda, reported uptake of cervical cancer screening services to be low, with a baseline lifetime screening rate for cervical cancer estimated range of 4.8–30% [7]. This difference may be attributed to the fact that this study focused on the most susceptible patients to cervical cancer since they were HIV positive. Also, the prevalence of cervical cancer screening was higher than that reported in the national cross-sectional survey done between August and November 2016 among 5,198 women aged 15 to 49 years from 245 HIV clinics in Uganda to determine knowledge and uptake of cervical cancer screening and the number of people who have undergone HPV vaccination found the overall uptake of cervical cancer screening to be 30.3% [8]. In a cross-sectional study done to determine comprehensive knowledge and uptake of cervical cancer screening among 302 women living with HIV/AIDS attending the outpatient clinic at the University of Gondar Referral and Teaching Hospital in Northwest Ethiopia, lower uptake of cervical cancer screening of 23.5% was reported [12]. This can be attributed to continued interventions by the government and other interested parties in the fight against cervical cancer such as community outreach programs and media.

We further found that women directed by hospital staff were more likely to screen for cervical cancer compared to those who were not directed by hospital staff. This finding is similar to the previous finding by Ndejjo et al., [10] who reported that in Uganda patients who were attended to by a skilled health worker

had higher uptake of cervical cancer screening. Receiving HIV care service from nearby low-volume level two health centers was associated with an increased likelihood of cervical cancer screening [8]. Our study indicated that outreaches enhanced the uptake of cervical screening. Our observation is in line with the finding of Peitzmeier et al. [13] who while examining the effectiveness of various outreach methods in engaging patients in the USA among overdue 1,100 patients for cervical cancer screening found out that compared to patients receiving usual care, patients in the multimodal (AOR 2.3, 95% CI 1.4–3.6) and telephone (AOR 1.7, 95% CI 1.1–2.8) outreach groups were significantly more likely to receive cervical cancer screening during the follow-up period. Furthermore, our study showed that women attended to by more skilled staff were more likely to have screened for cervical cancer. This observation is in line with the finding of Nakisige et al. [7] who suggested the ineffectiveness of cancer screening services uptake in health facilities in Uganda is due to a lack of personnel with specialized skills. Contrary to the previous findings by Wanyenze et al. [8], our study reported that being on antiretroviral therapy was associated with improvement in cervical cancer screening services uptake.

Conclusion

The proportion of women utilizing cervical cancer screening services among HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital was generally high. This study also demonstrated that referrals, outreaches, and the presence of skilled health workers influenced the uptake of cervical cancer screening among HIV-positive women attending the ISS clinic at Mbarara Regional Referral Hospital. Qualitative research is needed in investigating the views and opinions regarding barriers and facilitators for the uptake of cervical cancer screening services at the ISS clinic.

Declarations

Ethics approval and consent to participate

This study was approved by the Mbarara University of Science and Technology Research Ethics Committee (No. 2015/MMED/030/PS). Informed consent was obtained from all the patients and all methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable

Availability of data and materials

Data for the present study will be made available by the corresponding authors following a reasonable request

Competing interests

The authors declare no conflict of interest. The work was part of Victoria Kavira's dissertation for the Master of Medicine in Obstetrics & Gynecology at Mbarara University of Science and Technology.

Funding

The study did not receive funding

Authors' Contributions

VK, VA, and JTA conceptualized the study; VK, VA, JTA, IMU, and LT designed the study; VK, AO and JN collected the data; IMU, JTA and LT conducted the statistical analysis, VK, VA, JTA, and IMU conducted data interpretation. VK, JN, JTA, AO and LV drafted the initial manuscript while VK, VA, JTA, IMU, LT, AO and JN reviewed it for intellectual content. All authors approved the final version for publication and remain in agreement to ensure that questions related to the integrity of any part of the work are resolved

Acknowledgments

The authors convey appreciation to the participants and research assistants for availing the data and Members of the Faculty of Medicine for all the support.

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Figures

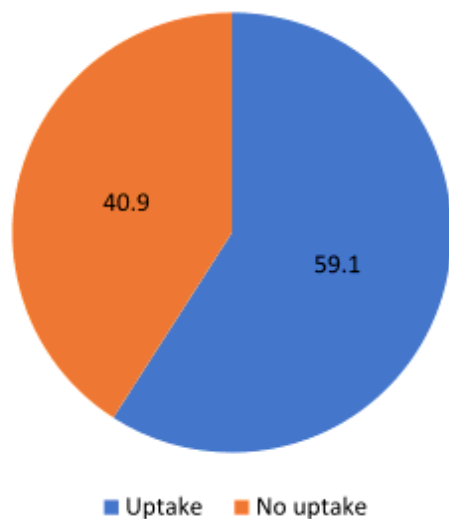


Figure 1

Proportion of women utilizing cervical cancer screening services among HIV positive Women attending ISS clinic at Mbarara Regional Referral Hospital

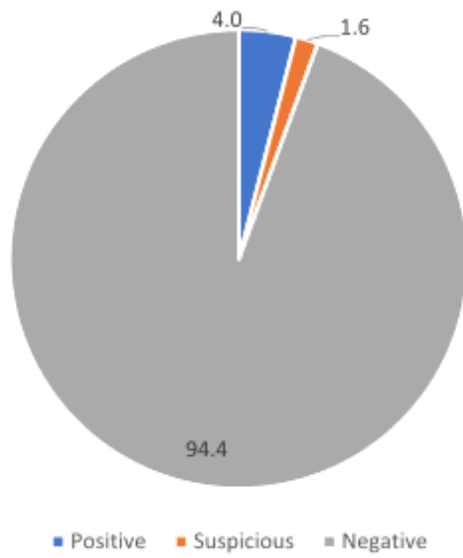


Figure 2

Prevalence of precancerous cervical lesions among previously unscreened HIV positive women attending ISS clinic at MRRH (n=124).