

Knowledge, Attitude, and Practice of Cervical Cancer Screening among Women Infected with HIV in Kasenengwa District of Eastern Province, Zambia

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Abstract

Women living with Human Immunodeficiency Virus (WLHIV) have a higher risk of developing cervical cancer due to their immune-compromised state. Cervical cancer screening leads to early detection and treatment. The aim of the study was to determine the knowledge, attitude, and practices of cervical cancer screening among women infected with HIV in Kasenengwa District, Eastern Province, Zambia. A descriptive cross-sectional study design using a semi-structured questionnaire was used to collect data from 266 WLHIV. Basic descriptive statistics were done using SPSS version 23.0. Almost two-thirds (62.7%) of the 266 WLHIV in the study had adequate knowledge about cervical cancer screening. Almost three-fifths of the respondents (57.1%) had a negative attitude toward cervical cancer screening. The majority (78.2%) had been counselled by healthcare workers on cervical cancer screening with good emotional support from family members (72.9%). About two-thirds (68.4%) of the respondents had been screened for cervical cancer. Most women indicated that they didn't have access to cervical cancer screening services because they did not know where to go (61.5%) and distant screening sites (56.3%) WLHIV in the study had adequate knowledge, but unfavorable attitude towards cervical cancer screening, while two-thirds had been screened for cervical cancer. Accessibility to screening sites was poor. More education and sensitization are needed in the district to eliminate misconceptions about cervical cancer screening, which may influence uptake.

Keywords: Cervical Cancer; Screening; Knowledge; Practice.

Introduction

Cancer of the cervix uteri is the 3rd most common cancer among women worldwide. It is the third most common carcinoma after breast cancer and colorectal cancer [1]. The prevalence of cervical cancer among women living with HIV in sub-Saharan Africa is estimated to range between 1.3% in Kenya and 6% in Nigeria.[2] In Tanzania, the prevalence ranges from 7.3% in Mwanza to 11% in Morogoro [3].

Cervical cancer is highest-burden cancer in

Zambia. In 2018 Zambia had the third highest incidence rate of cervical cancer in the world, with 66.4 new cases per 100,000 women (age-standardized to the world population). Zambia's high incidence of cervical cancer is linked to the heavy burden of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) in the country, with female adult HIV prevalence at 13.8% in 2018.

Zambia established a National Cervical Cancer Prevention Programme in 2006 and has been working on expanding access to primary,

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secondary, and tertiary prevention [4].

Despite the heavy burden of the disease, cervical cancer is a highly preventable disease in women, including those living with HIV.⁵ WHO introduced comprehensive cervical cancer prevention in 2014, which comprises Human Papilloma Virus (HPV) vaccination and cervical cancer screening, targeting women who are at higher risk of developing the disease [6].

Women living with the Human immunodeficiency Virus (WLHIV) have a higher risk of developing the disease, mainly due to their immune-compromised state.[7] Knowledge and attitudes toward cervical cancer screening are crucial in determining the screening intervention's uptake among women [8].

The see-and-treat cervical cancer screening program was started in 2006 in Zambia, initially. Only targeting Human immunodeficiency virus (HIV) positive women before being made available to all women regardless of HIV status [9]. Cervical cancer screening via Visual Inspection with Acetic acid (VIA) is provided free of charge at government clinics in every province of the country where screening services are available [10].

The study provided essential information about knowledge, attitudes, and cervical cancer screening practices among WLHIV in Kasenengwa District of Eastern Province, Zambia, and had some limitations, which included.

1. The study only covered six clinics with more than 100 WLHIV and may not have been representative of all the WLHIV in the Kasenengwa District.
2. Self-reported knowledge, attitude, and cervical cancer screening practices by study participants may have resulted in recall bias, response bias, or self-desirability bias.
3. Since the questionnaires were not self-administered, it may have led to dishonesty in respondents because cervical cancer may be considered a sensitive topic.

4. As this was a cross-sectional study, no inferences can be made regarding causality.

The study aimed to assess the level of knowledge, attitudes, and practices of HIV-infected women on cervical cancer and cervical cancer screening in Kasenengwa District, Eastern Province, Zambia, as no known study had been conducted in the study area.

Findings from this study will provide information to assess the efficacy of the cervical cancer screening program following the integration of these services in selected Antiretroviral Treatment (ART) clinics and outreach activities in the district. These findings may also assist healthcare providers, particularly in ART clinics, in promoting the uptake of cervical cancer screening services among WLHIV. In addition, the study results may contribute to developing guidelines that will strengthen the already existing screening practices in this population. The study will also give insight and serve as a baseline for future research.

Methods

Study Area

The study was conducted in Kasenengwa district which is in the Eastern province and about 610 km from the capital city Lusaka. It shares borders with 4 districts, that is Chipata in the East, Katete in the South, Mambwe in the northwest, and Chipangali in the west.

The district has a population of 133 701 (CSO,2021) with a total of 16 health facilities offering primary health services, of which 8 are health posts, and 8 are rural health centers. Currently, the district has no first-level, second-level, or tertiary hospital.

According to the District Health Information System (DHIS2), there was a total of 3925 people infected with HIV in 2020, of which 3774 were above 15 years and 171 less than 15. The adults on ART 1936 were women aged between 15-49 years.

Study Design

A descriptive cross-sectional study using a semi-structured questionnaire was employed in the six high-volume clinics in the district between 23 December 2021 and 31 January 2022.

Study Population

The study population in this study was women living with HIV aged between 18-49 years who gave consent and access to ART services from one of the six high-volume health facilities in Kasenengwa District.

Inclusion Criteria

To be eligible for inclusion in this study, an individual had to be:

1. Willing and able to give informed consent.
2. HIV-positive woman receiving ART in Kasenengwa District.
3. Aged 18-49 years and with a cervix.

Exclusion Criteria

Individuals who were excluded from this study were:

1. Severely ill WLHIV.
2. Women who have had a total hysterectomy.
3. Not able to speak/understand English or Nyanja.

Sample Size and Sampling

The sample required for the study was conducted using the formula for a single population proportion.

$$N = [Z a/2]^2 \times p[1 - p]/e^2$$

Where N is the desired sample size, and p is the estimated prevalence of cervical cancer.

In screening among women living with HIV, e is the margin of error or precision (5%), and Z is the standard normal value (1.96) corresponding to a 95% confidence interval.

In Kasenengwa estimated prevalence of cervical cancer screening among women living with HIV was 20.4% (DHIS2, 2020). Using 20.4% as the maximum expected prevalence of cervical cancer screening rate among HIV-positive women and adding a 10% proportion of nonresponse, the sample size was, therefore, 274 women infected with HIV.

The number of respondents was distributed proportionally in the six high-volume health centers within the district. A list of female clients attending ART clinics for routine follow-up visits using Electronic Health Records was generated after filtering out non-eligible members. Simple random sampling using Microsoft excel to select 75% of clients in attendance was then performed, and the process was repeated daily to reduce selection bias until the required sample size was obtained for the facility over a period of one month.

Data Collection Methods

The purpose of the study was explained to the participants, and they were presented with an information sheet as well as a consent form. If consent was granted, a face-to-face interview using a semi-structured questionnaire was given to the participant. The questionnaire was developed based on a literature review with modifications in line with research questions and study findings to fit the local context of Zambian women living with HIV infection.

The questionnaire was prepared in English and translated into Nyanja, and back-translated to English to keep the data consistent. The questionnaire assessed the knowledge and attitude toward cervical cancer as well as the practices of cervical cancer screening among women infected with HIV. Each interview took about 30 to 45 minutes.

Variables in the Study

Table 1 describes the major study concepts, variables, and scale of measurement.

Table 1. Variables

Concept	Variable	Definition	Scale of measurement
Dependent Variable			
Cervical cancer screening	Cervical cancer screening	0= never had the screening	Nominal
		1= ever had the screening	
	Time of Screening	1= Before HIV diagnosis	Nominal
		0= After HIV diagnosis	
Independent Variables			
Demographic characteristics	Education	1 = never attended or primary level	Ordinal
		2 = secondary/ university level	
	Religion	1= Christian	Nominal
		2= Others	
	Occupation	1 = not working	Nominal
		2 = working	
	Income	1 = <5000ZMW	Ordinal
		2 = >5000ZMW	
	Age	Age in years	Interval
	Marital Status	0= single	Nominal
1= married			
Time of Diagnosis	Year of diagnosis	Interval	
Number of Pregnancies	Number	Interval	
Individual factors	Knowledge 20 items	The sum of 4 subscales	Nominal
	Risk factors (7 items)		
	Signs and symptoms (6 items)		
	Prevention (4 items)		
	Awareness (3)		
	Attitude 5 items	The sum of 5 items	Nominal
	Fear		
	-procedure		
	-pain		
	-discomfort		
	-bleeding		
	-diagnosis		
Social support network	7 items with 3 subscales	The sum of 3 subscales	Nominal
	Family: Tries to help, emotional support, talk about my problem, and willing to help		
	Friends: Try to help, count on friends, share my problem, and talk about my problem		

	Significant others: special person around me, share my problems, a real source of comfort, and cares about me		
Access to health care services	12 items (8 translated) with 5 subscales	The sum of 5 subscales	Nominal
	Affordability: cost and transport, able to get the services		
	Availability: service providers and facilities		
	Accessibility: Travel time and travel mode		
	Accommodation: Provider, skills, equipment, and Engagements		
	Acceptability: Providers, gender and privacy, Acceptability		

Data Analysis

The collected data were checked for completeness and any inconsistency at all levels of data collection and consolidation to maintain data quality.

Basic descriptive statistics using frequency, percentages, the mean, and standard deviation were done using Statistical Package for Social Sciences (SPSS version 23.0). Descriptions, tables, and graphics were used for data presentation using Microsoft Excel 2019.

Ethics Approval

Ethical approval was obtained from ERES Converge IRB with reference number 2021-Sep-017.

Permission for carrying out the study was sought from the National Health Research Authority with reference number NHRA00003/13/12/2021, Eastern Provincial Health Office, and Kasenengwa District Health Office.

Results

Demographic Characteristics

The study approached 266 participants against the sample size of 274, giving a response rate of 97%. This was due to the fact that the district has 89% of ART clients on 6 monthly multi-dispensation and differentiated service delivery (DSD) models resulting in reduced clinical visits by clients (DHIS2,2021). The respondents' demographic characteristics are summarized in Table 2.

The age of the respondents ranged from 20-65 years (M=36.64, SD =9.059). The number of years since HIV diagnosis ranged from 1-18 years (M=7.07, SD=4.483). The number of pregnancies ranged from 0-10 (M=3.68, SD =2.452). The majority of the respondents (97%) were Christians. Slightly over half (55.6%) were working and mostly as small-scale farmers, 62.4% were married, and more than half (57.5%) had reached primary school level education.

Table 2. Basic Demographic Characteristics of Respondents

Variable	Frequency			Percentage	
	N=266				
Religion					
Christian	258			97.0	
Moslem	5			1.9	
others	3			1.1	
Occupation					
house wife	98			36.8	
working	148			55.6	
others	17			6.4	
Marital status					
single	53			19.9	
married	166			62.4	
divorced/widowed	44			16.5	
No response	3			1.1	
Education Level					
Never attended school	40			15.0	
Primary level	153			57.5	
secondary level	50			18.8	
university level	20			7.5	
don't know/not sure	3			1.2	
Monthly income from all sources					
less than K5000	123			46.2	
K5000-K10000	19			7.1	
over K10000	2			1.6	
don't know/not sure	120			45.1	
Age	N	Minimum	Maximum	Mean	Std. Deviation
Number of years since diagnosis	256	20	65	36.64	9.059
how many pregnancies have you ever had?	241	1	18	7.07	4.483

Cervical Cancer Screening Behaviour

The majority of the respondents (68.4%) had been screened for cervical cancer, with 80.8% having had the screening done after the HIV

diagnosis. Almost three quarters (73.6%) reported having been going for screening every two years as per Zambian Consolidated Guidelines of 2020. (Table 3).

Table 3. Cervical Cancer Screening Behavior

Variable	Frequency		Percentage		
	N=266				
Ever had cervical cancer screening?					
yes	182		68.4		
no	84		31.6		

When screening was done (n=182)		
before HIV diagnosis	30	16.5
after HIV diagnosis	147	80.8
don't know/not sure	5	2.7
Frequency of screening (n=182)		
every year	35	19.2
every 2 years	134	73.6
don't know/not sure	13	7.2
Most recent screening (n=182)		
less than a year ago	74	40.6
more than a year ago	84	46.2
don't know/not sure	24	13.2

Knowledge about Cervical Cancer and Screening

Knowledge about cervical cancer and screening assessed the respondents on risk

factors, signs and symptoms, prevention of cervical cancer, and awareness of cervical cancer and HIV infection, as in Table 4.

Table 4. Knowledge about Cervical Cancer and Screening

Risk factors of developing cervical cancer							
Do you think the following factors may increase the woman's chance of developing cervical cancer?							
Variable							
Cervical cancer screening status		Yes	%	no	%	Total	%
		n=182		n=84		N=266	
Smoking	don't know/not sure	75	41.2%	57	67.9%	132	49.6%
	yes	107	58.8%	27	32.1%	134	50.4%
Having many sexual partners	no/don't know	47	25.8%	37	44.0%	84	31.6%
	yes	135	74.2%	47	56.0%	182	68.4%
Having a sexual partner with partner with many previous sexual partners	no/don't know	64	35.2%	43	51.2%	107	40.2%
	yes	118	64.8%	41	48.8%	159	59.8%
Having an uncircumcised partner	no/don't know	38	20.9%	42	50.0%	80	30.1%
	yes	144	79.1%	42	50.0%	186	69.9%
Having sex at an early age	no/don't know	76	41.8%	51	60.7%	127	47.7%
	yes	106	58.2%	33	39.3%	139	52.3%
Having a weak immune system due to HIV/AIDS	no/don't know	58	31.9%	42	50.0%	100	37.6%
	yes	124	68.1%	42	50.0%	166	62.4%
not going for regular screening increases risk of	no/don't know	59	32.4%	42	50.6%	101	38.1%

cervical cancer	yes	123	67.6%	41	49.4%	164	61.9%
Signs and symptoms of cervical cancer							
Do you think the following are signs and symptoms of cervical cancer?							
Vaginal bleeding between periods	don't know/not sure	80	44.0%	58	69.0%	138	51.9%
	yes	102	56.0%	26	31.0%	128	48.1%
Menstrual periods that are heavier or longer than usual	no/don't know	87	47.8%	57	67.9%	144	54.1%
	yes	95	52.2%	27	32.1%	122	45.9%
Vaginal bleeding after menopause	don't know/not sure	72	39.6%	47	56.0%	119	44.7%
	yes	110	60.4%	37	44.0%	147	55.3%
Vaginal bleeding during or after sex	no/don't know	65	35.7%	41	48.8%	106	39.8%
	yes	117	64.3%	43	51.2%	160	60.2%
Excessive vaginal discharge that smells unpleasant	don't know/not sure	66	36.3%	35	41.7%	101	38.0%
	yes	116	63.7%	49	58.3%	165	62.0%
Pain or discomfort during sexual intercourse	no/don't know	43	23.9%	45	53.6%	88	33.3%
	yes	137	76.1%	39	46.4%	176	66.7%
Prevention of cervical cancer							
What are some of the preventative measures against cervical cancer?							
male circumcision	don't know/not sure	33	18.1%	24	28.6%	57	21.4%
	yes	149	81.9%	60	71.4%	209	78.6%
cervical cancer screening	don't know/not sure	22	12.1%	35	41.7%	57	21.4%
	yes	160	87.9%	49	58.3%	209	78.6%
proper and regular condom use	don't know/not sure	78	42.9%	45	53.6%	123	46.2%
	yes	104	57.1%	39	46.4%	143	53.8%
HPV vaccination	don't know/not sure	38	20.9%	26	31.0%	64	24.1%
	yes	144	79.1%	58	69.0%	202	75.9%
Awareness about cervical cancer screening and HIV							
a woman who is HIV positive should undergo	don't know/not	57	31.3%	47	56.0%	104	39.1%

cervical cancer screening at least once per year	sure						
	yes	125	68.7%	37	44.0%	162	60.9%
A woman who is HIV positive is at higher risk of developing cervical cancer than a woman who is HIV negative	don't know/not sure	57	31.3%	48	57.1%	105	39.5%
	yes	125	68.7%	36	42.9%	161	60.5%
Overall knowledge regarding cervical cancer screening							
Adequate	-	-	-	-	-	167	62.7%
Inadequate	-	-	-	-	-	99	37.3%
Mean	12.586	-	-	-	-	-	-
Range	0-20	-	-	-	-	-	-
Comparison of means							
have you ever had cervical cancer screening?							
yes	13.772	-	-	-	-	-	-
no	10.016	-	-	-	-	-	-
Total	12.586	-	-	-	-	-	-

Almost two-thirds (62.7%) of the participants had adequate knowledge about cervical cancer screening, with an overall mean score of 12.586 out of the maximum score of 20. Comparison of the mean score with regards to screening status showed that those who had been screened before had higher knowledge,

with an average score of 13.772, compared to those that had never been screened before, who scored an average of 10.016 out of the maximum score of 20. (Table 4).

Two-thirds of the respondents (66.5%) responded that there is a treatment for cervical cancer if detected early. (Figure 1).

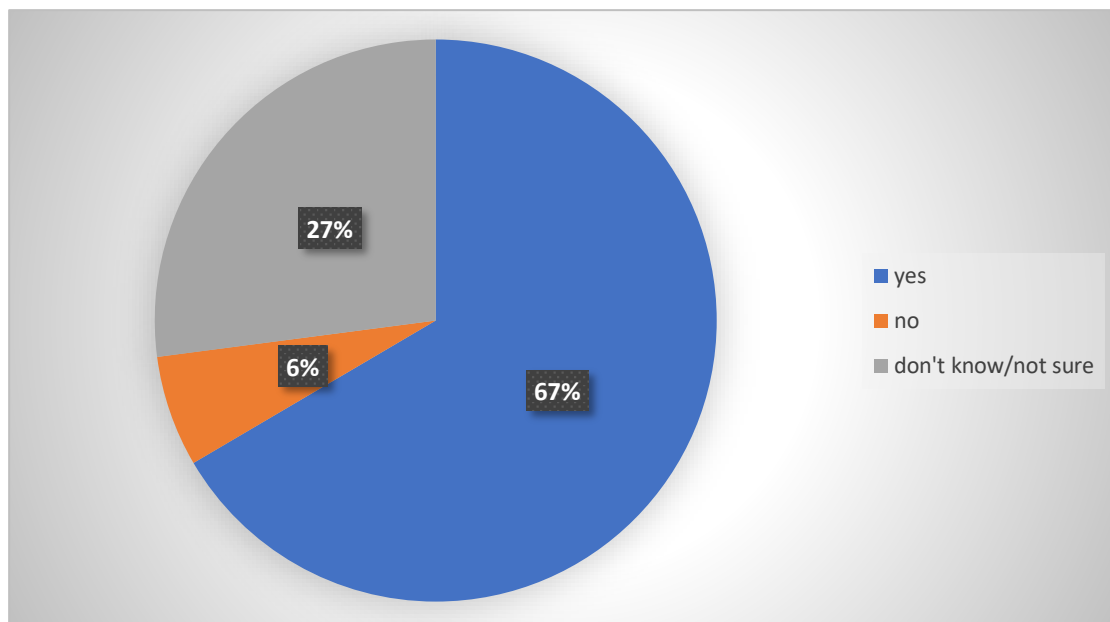


Figure 1. Treatment for Cervical Cancer if Detected Early

Almost half of the participants (45.5%) responded that cervical cancer screening is

conducted by both males, and a third (34.6%) indicated female providers (Figure 2).

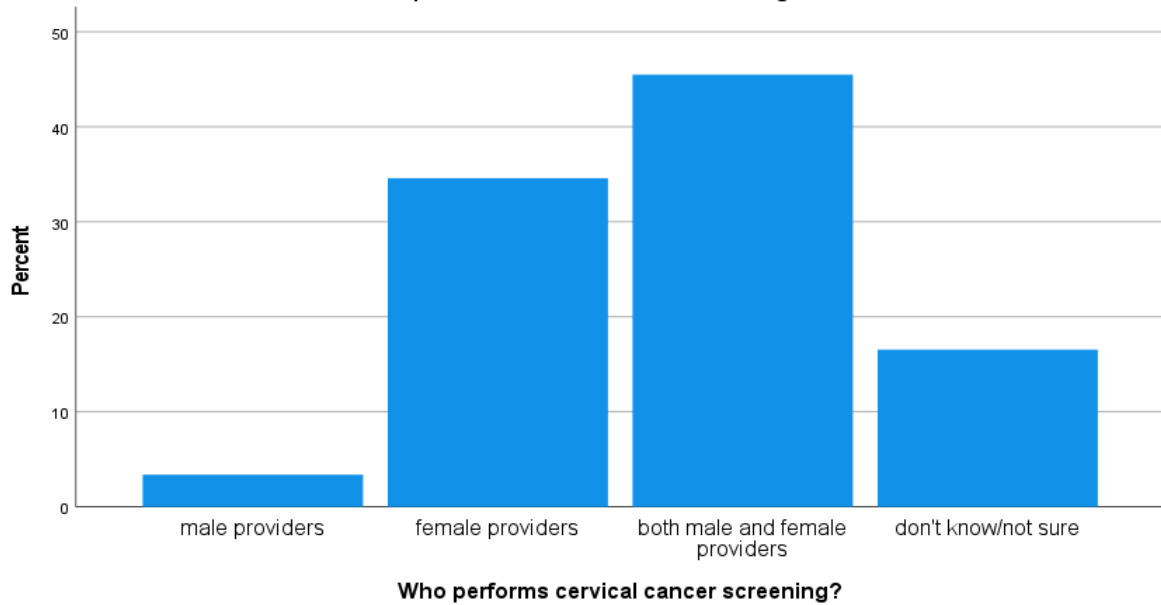


Figure 2. Cervical Cancer Screening Provider

The highest source of information on cervical cancer and screening was from health care providers with 129 respondents (48.5%), followed by family members 45 (16.9%), 40

(15.0%) from friends, 31 (11.7%) from media such as radio and TV, 13 (4.9%) other sources such as posters and public address system and 8 (3.0%) from pamphlets/newspapers. (Figure 3).

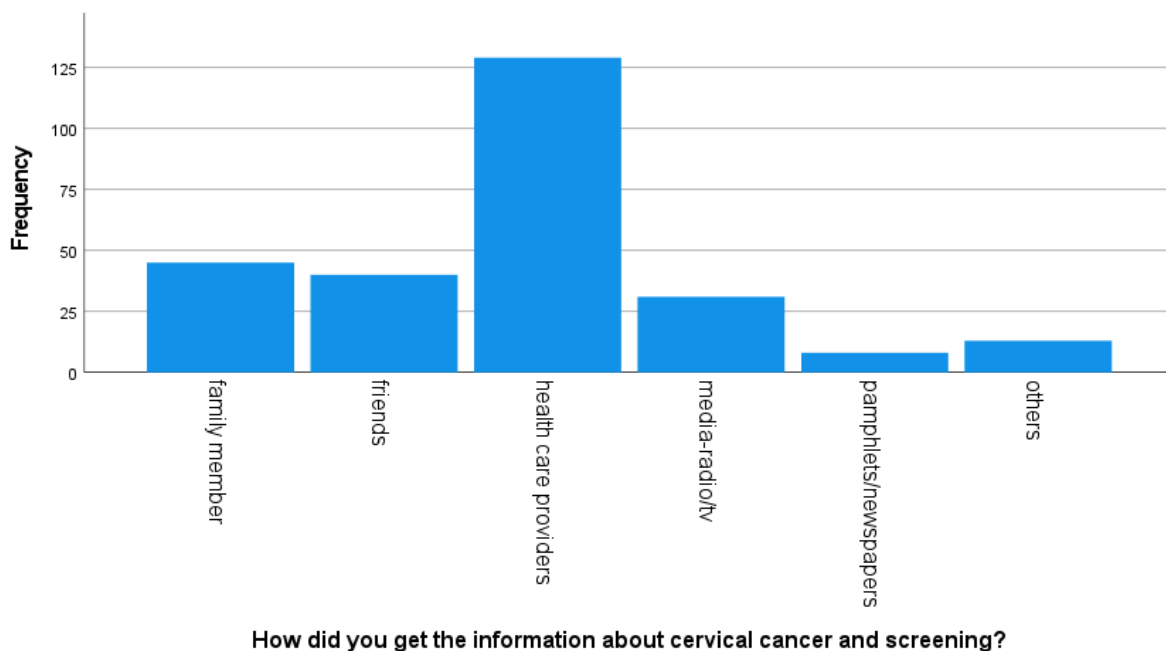


Figure 3. Source of Cervical Cancer Screening Information

Attitude Regarding Cervical Cancer Screening

Almost three fifths (56.0%) indicated they

would be comfortable with female providers only, and 35% indicated both male and female providers (Figure 4).

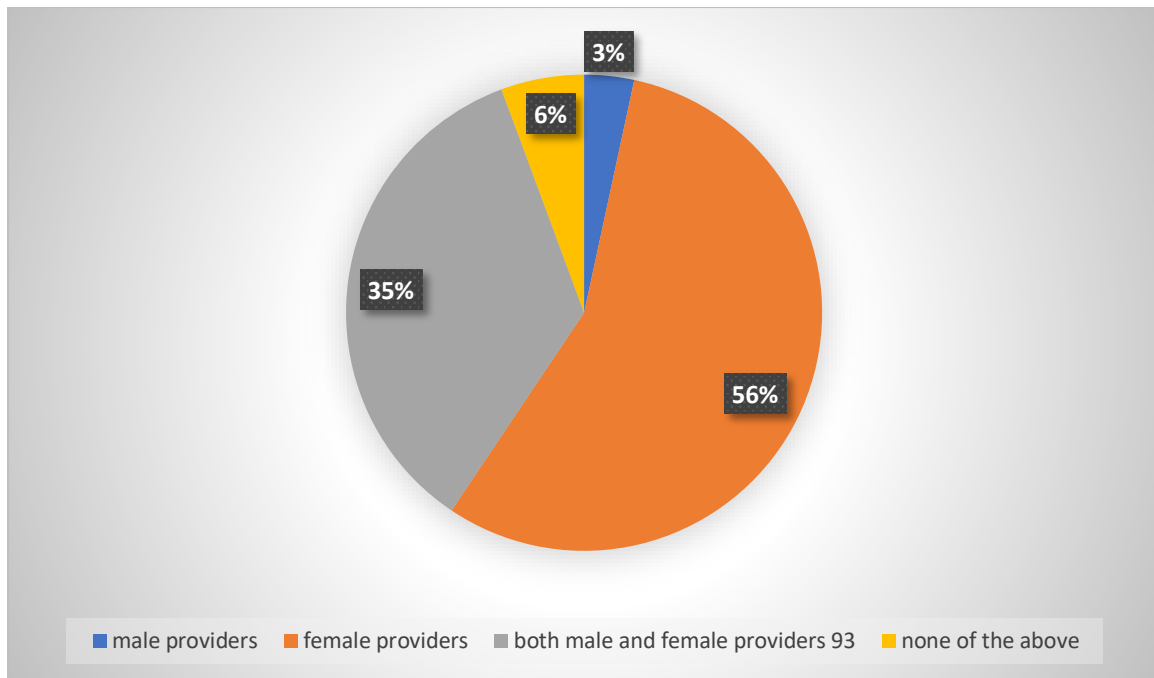


Figure 4. Preferred Provider to Perform Cervical Cancer Screening

From the results, it can be seen that most of the respondents feared the cervical cancer procedure and were afraid to be diagnosed with cervical cancer after undergoing the procedure. About three-fifths were not afraid of pain/discomfort or bleeding during and after cervical cancer procedures.

Less than half 42.9%, had a positive attitude

towards cervical cancer screening, with the majority, 57.1% having a negative attitude. The overall respondent's attitude score about cervical cancer screening was 2.143, with a range of 0-5 (SD = 1.8146). This shows that, overall, the respondents had a negative attitude regarding screening. (Table 5).

Table 5. Attitude Regarding Cervical Cancer Screening

What is your opinion on these questions?							
Variable		Yes	%	No	%	Total	%
Cervical cancer screening status		n=182		n=84		N=266	
Fear cervical Cancer screening procedure	no	82	45.1%	39	46.4%	121	45.5%
	yes	97	53.3%	35	41.7%	132	49.6%
	not sure	3	1.6%	10	11.9%	13	4.9%
Feel shy to expose your private parts during the procedure to young or male service providers	no	78	42.9%	49	58.3%	127	47.7%
	yes	101	55.5%	25	29.8%	126	47.4%
	not sure	3	1.6%	10	11.9%	13	4.9%
Afraid of pain/discomfort during cervical cancer screening procedure	no	114	62.6%	39	46.4%	153	57.5%
	yes	65	35.7%	33	39.3%	98	36.8%
	not sure	3	1.6%	12	14.3%	15	5.6%
Afraid of bleeding during and after cervical cancer screening procedure	no	111	61.0%	49	58.3%	160	60.2%
	yes	62	34.1%	18	21.4%	80	30.1%
	not sure	9	4.9%	17	20.2%	26	9.8%
Afraid of being	no	81	44.5%	37	44.0%	118	44.4%

diagnosed with cervical cancer after undergoing the screening	yes	96	52.7%	34	40.5%	130	48.9%
	not sure	5	2.7%	13	15.5%	18	6.8%
Overall attitude towards cervical cancer screening							
Positive	-	-	-	-	-	114	42.9%
Negative	-	-	-	-	-	152	57.1%
Mean	2.1430	-	-	-	-	-	-
Std. Deviation	1.8146	-	-	-	-	-	-
Range	0-5	-	-	-	-	-	-
Comparison of means							
Have you ever had cervical cancer screening?	Mean		No			Std. Deviation	
yes	2.324		182			1.8296	
no	1.750		84			1.7277	
Total	2.143		266			1.8146	

Social Support Networks

The vast majority of the respondents (87.6%) indicated that they could encourage their friend to go for cervical cancer screening, with 80.5% responding that they had been counseled before by health care providers about cervical cancer screening, 78.2% had friends with whom they would share their results of screening with, and

72.9% indicated that they get emotional support from their family regarding HIV and cervical cancer screening. The overall mean score on social networks by the respondents was 4.9588 (SD= 2.0416) out of the seven questions asked, which shows that they had a good social support system that positively influenced their screening practices. (Table 6).

Table 6. Social Support Networks

Item							
Variable							
Cervical cancer screening status		Yes	%	no	%	Total	%
		n=182		n=84		N=266	
Have health care providers ever counseled (talked to) you about cervical cancer screening?	no/not sure	9	4.9%	43	51.2%	52	19.5%
	yes	173	95.1%	41	48.8%	214	80.5%
Do you get the emotional help and support you need from your family regarding HIV and cervical cancer screening?	no/not sure	36	19.8%	36	42.9%	72	27.1%
	yes	146	80.2%	48	57.1%	194	72.9%
Have your family members ever encouraged you to go for cervical cancer screening?	no/not sure	58	31.9%	65	77.4%	123	46.2%
	yes	124	68.1%	19	22.6%	143	53.8%
Have your friends ever recommended cervical cancer screening to you?	no/not sure	56	30.8%	54	64.3%	110	41.4%
	yes	126	69.2%	30	35.7%	156	58.6%

Can your friends provide social support when found with cervical cancer?	no/not sure	55	30.2%	48	57.1%	103	38.7%
	yes	127	69.8%	36	42.9%	163	61.3%
Do you have friends with whom you can share your results of screening (examination)?	no/not sure	30	16.5%	28	33.3%	58	21.8%
	yes	152	83.5%	56	66.7%	208	78.2%
Can you encourage your friend to go for cervical screening?	no/not sure	9	4.9%	24	28.6%	33	12.4%
	yes	173	95.1%	60	71.4%	233	87.6%
Total		182	100.0%	84	100.0%	266	100.0%
Overall Mean							
Mean		4.9588					
Std. Deviation		2.0416					
Range		0-7					

Access

The majority of the respondents (97.5%) accessed cervical cancer screening services from a government health facility, and only 2.5% accessed the screening services from a

private health facility with bicycle/walking (81.2%) as the common mode of transport. The majority (68%) took more than 30 minutes to get to the clinic/examination site from where they live. (Table 7).

Table 7. Accessibility

Facility where cervical cancer screening is accessed		Frequency	Percent
Valid	government health facility	153	97.5
	private health facility	4	2.5
	Total	157	100
Mode of transport			
Valid	public transport	37	13.9
	private/own car	13	4.9
	bicycle/walk	216	81.2
	Total	266	100.0
Travel time			
Valid	less than 30mins	85	32.0
	more than 30mins	181	68.0
	Total	266	100.0

Discussion

The study aimed to assess the knowledge, attitude, and practice regarding cervical cancer screening among HIV-infected women in the Kasenengwa district of Eastern Province.

The mean age of the respondents was 36.64, with a range of 20-65 years. Cervical cancer is most frequently diagnosed in women between

the ages of 35 and 44, with the average age at diagnosis being 50 [11]. The age range of the respondents was, therefore, representative of the women at risk of developing cervical cancer.

Slightly over half again (57.5%) had reached primary school level as their highest form of education. These findings are consistent with findings from a Zimbabwean study which

found that most of the participants had a grade 7 level education (49.4%), with 24% having never attended school, 26% obtaining an Ordinary Level education, and less than 1% obtaining an Advanced level education [12]. A similar study in the Ivory coast found that the majority (87.2%) had no formal or primary level or secondary education [13].

Despite being a rural district with the majority of respondents (57.5%) having attained primary school level education, the study found that 62.7 % of the women were knowledgeable with regard to risk factors, signs and symptoms, prevention, and awareness about cervical cancer and screening. The findings are inconsistent with findings from a study done in Zambia in which the knowledge grade of 3.03 among women was very low relative to a maximum of ten [10]. The high level of knowledge could be due to the incorporation of cervical cancer and screening information, education, and communication (IEC) at each patient clinical visit in the ART clinic. This is further supported by the findings in this study in which 48.5% of the women got information about cervical cancer and screening from the healthcare worker and is consistent with a study in Zambia in which 56% of respondents indicated health workers as the source of information for cervical cancer and screening [14] and other studies in Ivory Coast [13] and Ethiopia [15] and also in a Nigerian study in which major sources of information about cervical cancer screening was from health workers at 48.2% [16].

However, other studies in Africa found inadequate knowledge levels. The pooled estimate of knowledge of HIV-infected women towards cervical cancer screening in Africa was 43.0% in a systematic review and meta-analysis, which included eight studies and were all health facility based [17].

The knowledge levels were higher in women who had been screened ($M=13.772$) before compared to those that had not been screened ($M=10.016$). This is consistent with findings

from a study in Zambia [14] in which significantly more participants who had knowledge of cervical cancer being curable in early stages were observed to have been screened compared to those that did not. A significantly higher proportion of the participants who believed that screening could prevent cervical cancer (50%) had been screened compared to 6.1% in the group that did not. Findings from a study in Malawi [18] found a higher mean score on knowledge of 11.21 among the screened compared to a score of 9.88 among those not screened out of a maximum score of 13.

Only about two-fifths (42.9%) of women in the study had a positive attitude towards cervical cancer screening, with the majority (57.1%) having a negative attitude. These findings are consistent with a meta-analysis and systematic review of eight studies conducted in Africa in which the pooled estimates of attitude were 38.0% [17]. Research in Zimbabwe suggested that negative attitudes towards screening were influenced by culture [19].

However, most studies conducted in Africa had women with favorable attitudes toward cervical cancer screening. In a study conducted in Zambia¹⁰, 80.2% of the participants showed interest in self-screening. A study in Kenya [5] found that two-thirds of WLHIV had a positive attitude towards cervical cancer screening. In Nigeria [20], there was a generally good attitude to cervical cancer screening of 80.4%. Another study in Swaziland [21] found that 79.3% had a positive attitude, and in Zimbabwe [19], 71.2% had a positive attitude toward the Pap smear test. In Ethiopia [22], 53.3% of the women had a favorable attitude toward cervical cancer screening.

Although most studies have shown that a positive attitude may result in improved participation in screening, a study in Niger [20] among market women revealed that although there was a good attitude towards cervical cancer screening (80.4%), their level of practicing such screening was low at 15.4%. A

negative attitude in the study could be due to myths, misconceptions, and cultural influences. More, therefore, needs to be done to eliminate the negative attitude toward cervical cancer screening.

The overall mean score on social networks by the respondents was 4.9588 (SD= 2.0416) out of the 7 questions asked, which shows that they had a good social support system that positively influenced their screening practices. The results indicate that healthcare workers have counseled them (80.5%) on cervical cancer screening, with the majority (78.9%) being comfortable sharing their results with friends and (72.9%) with good emotional support from family members. Almost three-fifths had been encouraged to go for cervical cancer screening by their friends and family. This finding is similar to a study in Zambia [10] which determined that women's decision to screen was often prompted by peers and family members. It was found that women's perceived approval of partners, family, and friends influenced their screening practices. A similar study in Malawi [18] found the overall respondent's social support networks score about cervical cancer screening ranged from 0-11 ($M = 7.82$, $SD = 2.67$). This shows that, overall, the respondents had social support networks that influenced screening behavior.

The majority of the clients (97.5%) had accessed cervical cancer screening services from a government health facility, 81.2% indicated bicycle/walking as the common mode of transport, and about two-thirds (68%) took more than 30 minutes to get to the clinic/examination site from where they live.

The findings of the study indicate that accessibility and awareness about cervical cancer screening services in the district is low, with only two clinics in the district, i.e., Chiparamba RHC and Madzimawe RHC offering static screening services. The findings are consistent with a Malawian [18] study in which 64.3% used bicycle/walking as the common mode of transport, and 82.1% took

more than 30 minutes to get to the clinic. Similarly, in Swaziland [21], 62.9% indicated travel time to the clinic of more than 30 minutes.

Lack of health facilities in the client's area, lack of information, and fear of being diagnosed with cervical cancer prevented women from getting cervical cancer screening in Ethiopia [15, 22]. Similarly, another study in Zambia [24] found that despite understanding the risk factors for cervical cancer, HIV-positive women did not consistently access cervical cancer screening. A primary barrier mentioned by respondents in the study was the lack of time, reflecting long travel times to clinics and long waiting times at clinics to undergo screening.

The study shows that 68.4% of the respondents had cervical cancer screening, and 80.8% had the screening done after HIV diagnosis. Zambia Consolidated Guidelines of 2020 recommend that if VIA or HPV test is negative, an HIV-positive woman should be rescreened every 2 years. In contrast, in an earlier study in Zambia [10], only 20.7 had been screened. In Malawi [18], 33% of the respondents had a cervical screening, and only 27.8% had cervical cancer screening after HIV diagnosis. The practice of respondents towards screening for cervical cancer from the total study population in Ethiopia [22] was only 38.1%. Overall cervical cancer screening coverage among WLHIV in Ivory Coast [13] was 59.7%. In Tanzania, the self-reported prevalence of cervical cancer screening among women living with HIV was 50.2%. The pooled estimate of the practice of HIV-infected women towards cervical cancer screening in Africa [17] was 41.0%.

Higher cervical screening uptake findings in the study could be attributed to the cervical cancer screening campaign that was conducted in the district in 2021 under PEPFAR and Global Fund support that saw 619 women screened against the target of 722, giving an 86 % coverage and addition of one more static

screening site at Chiparamba RHC with two trained providers.

Conclusion

The study found that despite being a rural district with low education levels, women living with HIV in the study had adequate knowledge but an unfavorable attitude towards cervical cancer screening. About two-thirds of the women had been screened for cervical cancer compared to other studies in Africa, which had lower uptake. Accessibility and awareness about cervical cancer screening services in the district is low, with only two clinics offering static and outreach screening services. Major barriers to accessing cervical cancer screening services were not knowing where to go, distant screening sites with long travel times, lack of transport money, inadequate equipment, and inadequate providers.

Recommendations

National/Provincial Level

1. To provide a consistent supply of cervical cancer screening supplies and equipment
2. Train more healthcare worker providers in cervical cancer screening and treatment
3. Procure vehicles for the district to conduct outreach services in the villages
4. Support scale-up of screening sites to all the high-volume facilities
5. Provision of brochures and visual aids in the local language.

District Level

1. Traditional and Religious leaders' engagement to advocate for cervical cancer screening in their communities and churches
2. Support monthly outreach services in

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health facilities without trained providers using village-based mobile screening

3. Sensitizations on cervical cancer and screening using the public address system and radio programs to eliminate misconceptions on cervical cancer screening, which may influence uptake.

Health Facility Level

1. Routine education and sensitization on cervical cancer and screening at each clinical visit and in the outpatient department.
2. Work with Neighborhood Health Committees to mobilize women for screening using village-based mobile screening.

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Conflict Of Interest

The authors declare that they have no conflicts of interest.

Author Contributions

All authors made substantial contributions in conceptualization and design, methodology, data analysis, and interpretation of data; supervision; took part in drafting the original article and editing; agreed to submit to the current journal, and take responsibility for all aspects of the work.

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