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Research Article

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Knowledge, Attitude, And Practice Towards Cervical Cancer Screening Among HIV Positive Women in Addis Ababa, Ethiopia

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Abstract

Background: *A higher prevalence of pre-cancerous and invasive cervical cancer among HIV positive population compared to their HIV negative cohorts have been documented. Ethiopia is among the world countries with high HIV/AIDS and cervical cancer prevalence. The screening practice is opportunistic and its coverage is very low.*

Objectives: *To determine the knowledge, attitude and practice towards cervical cancer and its screening among HIV positive patients in Addis Ababa.*

Methods: *A facility based cross-sectional study was conducted among 415 HIV positive women at selected ART centers in Addis Ababa. Descriptive statistics was used to summarize the data. A two-tailed t-test was used to compare the difference for the means. Crude and adjusted odds ratios were used to measure the strength of associations between independent and outcome variables.*

Result: *The mean age of the participants was 38.6 ± 10.6 years. Ninety-six percent of the participants heard about cervical cancer but only 18.2% of the participants were reported to have good knowledge about cervical cancer and its screening. Fifty-four percent of the subjects had positive attitude towards cervical cancer screening and 49.4% the participants were screened at least once. Age above 30 years (AOR=3.41,95%CI 1.52-7.63), first-hand information about cervical cancer from health workers (AOR=1.85,95%CI 1.11-3.07), and print media (AOR=15.36,95%CI 1.82-129.56), and having positive attitude towards cervical cancer screening (AOR=3.98,95%CI 2.34-6.78) were significantly associated with the screening practice.*

Conclusion: *The poor knowledge and low uptake of the screening practice among these vulnerable segments of the population, especially in the referral centers will emphasize the existence of serious loophole in the prevention and management of this deadly but preventable cancer. We inspire all stakeholders engaged in the care of women living with HIV/AIDS to explore for the alternative strategies to improve the knowledge and uptake of the screening practice.*

Keywords: HIV, Cervical Cancer, Screening

Introduction

Cervical cancer is the second most common cancer in women worldwide and the leading cause of cancer related deaths among women in developing countries. Worldwide, cervical cancer affects about 500,000 new women each year. About 85% of the global burden of cervical cancer and 90% of the deaths were reported in sub-Saharan Africa [1].

Ethiopia, having more than 110 million people, has huge burden of cervical cancer, an estimated 19,836 new cases (26.4 per 100,000 women) and 16,283 deaths reported in 2012 [2]. These figures most likely underestimate the actual number of cases and deaths, given the low level of awareness, limited access for screening and treatment services, and lack of a representative population-based cancer registry. Access to cervical cancer screening was extremely limited for the most women in Ethiopia until the single visit approach (SVA) for cervical cancer prevention (CCP) service was introduced by Pathfinder International in 2009 G.C [3-6].

The HIV/AIDS situation in Ethiopia is similar to the sub-Saharan African countries, and is characterized by a low-intensity, mixed epidemic and self-sustaining transmission with a prevalence of 1.1%. In 2016, there were 720,000 people were living with HIV, of which 27,104 were newly diagnosed cases [7, 8].

Several studies have reported a higher prevalence of pre-invasive and invasive cervical cancer in HIV positives since the first

report by Nicole et al in 1998 (9-12). From around 35/100,000 new cervical cancer cases diagnosed annually in sub-Saharan African countries, 60% live with HIV infection (13-14). As opposed to the approximately 10% abnormal screening test result in the general population, in women with HIV the proportion of the abnormal screening test ranges from 20-30% [15, 16].

While performing regular screening is known to prevent the disease by a significant percentage, the practice of regular screening in Ethiopia is limited and covers less than 1% of at-risk women [17-19]. HIV positive women are at particularly higher risk of developing cervical cancer. Knowing the factors that facilitate or hinder their knowledge, attitude, and practices towards cervical cancer is imperative to design evidence-based preventive strategies. This study is aimed to determine such factors among HIV/AIDS patients having follow up in selected ART centers in Addis Ababa, where an integrated and comprehensive HIV/AIDS care and cervical cancer screening, diagnosis, and treatment services are delivered.

Materials & Methods

Ethical Consideration

A study protocol is approved by the Ethical Review Committee (ERC) of the Department of Obstetrics and Gynecology, College of Health Sciences as per the standard. The respondents at each study site were individually approached, informed about the study, and requested to participate voluntarily. Those consented were assured about the privacy and confidentiality of the information; all questionnaires were anonymous, and no part of the information obtained during the interview will be stored or entered in to the patient's file.

Study Setting

The study was conducted at the capital of the country, Addis Ababa, from December 1/2020 to May 30/2021 in ART centers in the three selected public hospitals, namely; Tikur Anbassa Specialized (TASH), Gandhi Memorial (GMH), and Zewuditu Memorial (ZMH). TASH is a university teaching and referral hospital, while the other two, are affiliate to Addis Ababa University. These hospitals are located at the heart of the capital, that has a population of around five million as projected by UN world urbanization prospects, serve all patients coming from the city and its surrounding as well as from all corners of the country referred or self-referred, have a dedicated clinics that provide an integrated service to all HIV/AIDS patients.

Study design and sampling

A cross-sectional design was used to assess the knowledge, attitude, and practice towards cervical cancer and its screening among HIV positive women age above 18 years. The participants were patients registered and on follow up in the aforementioned hospitals during the study period selected using systematic random sampling technique. Participants who fulfil the selection criteria were approached for the interview after obtaining written informed consent. Those patients who were critically ill, have psychiatric illness, or who do not consent were excluded. The sample size was calculated using for the three different objectives; knowledge, positive attitude, and prevalence of screening practice, and the one with the largest sample size was obtained using the prevalence of positive attitude, 377, then by adding 10% non-response rate, the final minimum sample size was 415 (19-20).

$$n = (z\,\alpha/2)^2\, p\,(1-p) / d^2$$

n= required sample size; z= the standard normal score at 5% level of significance with a tabulated value of 1.96; p=sample proportion of intention to cervical awareness, knowledge and attitude from previous studies and d=degree of precision assumed to be (0.05).

Data collection tools and procedures

All HIV-positive women visiting the study site for follow-up were subjected to a knowledge test guided by a questionnaire specifically designed for the present study. Standard questionnaire developed from the similar study done previously to assess knowledge and attitude on cervical cancer patients and screening practice in HIV positive women on follow up. The revised questionnaire translated into Amharic (the national language) for ease of communication and better understanding both by the data collectors and the study subjects.

Data collection took for an average time of 10 min/participant. The questionnaire consisted of three sections. The first section focuses on sociodemographic and clinical characteristics of the subjects; the second section concentrates on the knowledge about cervical cancer for those who heard of cervical cancer; and the third section emphasizes their attitude towards cervical cancer screening practice. Seropositivity and immune status retrieved from the medical records of the patients. After the completion of the interview, women were counseled on cervical cancer screening.

Data Quality Management

Data quality was assured by pretesting the questionnaire at ZMH ART center on 20 subjects who were not included in the actual study. Data was collected by trained and experienced nurses working in the ART centers of the respective hospitals. Data quality was checked at all levels of data collection and aggregation.

Statistical Analysis

Data was collected, checked for completeness, then entered in to SPSS version 21 statistical package. Further data cleaning performed to check for outliers, missed values and any inconsistencies before the analysis using the software.

Descriptive statistics like frequency tables, proportions, and mean were used as appropriate to describe the independent variables. Bivariate and multivariate analysis was performed to observe associations between variables. An OR with 95% CI and p-value < 0.05 were used to observe the presence of statistical significance. The level of cervical cancer knowledge measured by adding up the total score from 29 questions on cause, risk factors, and prevention and treatment options for cervical cancer among HIV- infected women who had ever heard of cervical cancer. Responses to each question were categorized into correct and incorrect and the median of combined score was calculated. Participants who scored above the median considered to be knowledgeable about cervical cancer but those who scored at or below the median considered to be less knowledgeable.

Attitude assessed using Likert's scale, the questions have nega-

tive and positive responses that ranges from strongly disagree to strongly agree. The responses summed up and a total score was obtained for each respondent. The mean score was calculated, and those who scored above the mean labeled as having positive attitude but those that scored less than or equal to the mean labeled as having negative attitude.

Results

As shown in Table 1, 415 HIV positive women participated in the study with the age range of 21-76 years and mean age of 38.6±10.8 years. Majority, 181(43.6%) of the participants were married. More than half of the participants, 143 (53%) have achieved grade 10 and above, and only 52 (12.5%) have no formal education. The median monthly income for participants was 1000 with interquartile range (IQR) of 3000 (ETB).

Table 1: Socio-demographic and disease characteristics of the participants, N=415, May 30/2021

Age in years	Number (%)
18-30	106(25.5%)
31-40	146(35.2%)
>40	163(39.3%)
Ethnicity	
Oromo	113(27.2%)
Amhara	159(38.3%)
Tigray	23(5.5%)
Others*	120(28.9%)
Marital status	
Single	85(20.5%)
Married	181(43.6%)
Divorced	76(18.3)
Widowed	73(17.6%)
Religion	
Orthodox	316(76.1%)
Muslim	39(9.4%)
Protestant	55(13.3%)
Others**	5(1.2%)
Education	
No formal education	52(12.5%)
Up to grade 10	143(34.5%)
More than 10th grades	220(53%)
Job	
Housewife	136(32.8%)
Student	26(6.3%)
Government employee	110(26.5%)
Private	143(34.5%)
Income, ETB***	
<600	169(40.7%)
601-1650	77(18.6%)
1651-3200	92(22.2%)
3201-5250	62(14.9%)
5251-7800	12(2.9%)
7801-10900	3(0.7%)
Number of children	
0	121 (29.2%)
1	104(25.1%)
2-4	190(45.8%)
= >5	15(3.6%)

Duration of HIV after diagnosis (years)	
<=1	20(4.8%)
2-4	60(14.5%)
5-10	153(36.9%)
>10	182(43.9%)
Clinical stage of HIV	
I	12 (2.9)
II	70 (16.9)
III	117 (28.2)
IV	216 (52.0)
*Gurage, Silte, Somali and those who did not volunteer to tell their ethnicity **Catholic and Traditional religion followers ***ETB- Ethiopian birr (1USD=43.531birr)	

Fifty-five (14.6%) of the subjects started sexual debut before the age of 17 years and the mean age at the start of sexual debut for all participants was 19.5±3.3 years. Ninety-seven (23.4%) have had casual sex at least once and 56 (57.7%) of them have had casual sex more than once. Two hundred ninety-four (70.8%) of the participants have children with mean age at first delivery was 24 ± 5.8 years, and 190 (45.8%)) were multiparous.

One hundred eighty-six (47%) used condom at least once, of which, 147 (79%) and 37 (19.9%) used with regular and casual partner respectively, while only 4 (2.1%) used always. Sexually transmitted infection (STI) was reported in 42 (10%), and vaginal discharge syndrome was the commonest reported, 30 (69%). The average baseline CD4 count was 284 cells/mm3, with the range of 30-1300 cells/mm3, and the average duration of HIV diagnosis and duration on ART were 9.7 and 9.4 years respectively.

Four hundred two (96%) of participants have heard about cervical cancer and majority of them first heard from health workers 179 (44.5%) followed by radio and television 173 (43%). Only 73 (18.2%) of the participants were assessed to have good knowledge about cervical cancer and its screening. Of the twenty-nine knowledge questions about cervical cancer (risk factors, symptoms, screening, treatment and preventions) asked, participants responded with maximum and minimum responses of 23 and 0 respectively, with the mean score of 6.86 ± 5.38.

As depicted in Table 2, only 9 (2.2%) of the study participants mentioned HPV as causative agent for cervical cancer. The common risk factors stated by the respondents in the decreasing order; multiple sexual partners 259 (64.7%), HIV infection 99 (24.6%), and early sexual debut 97 (23.4%) respectively.

Table 2: Risk factors stated by participants, N=415, May 30/2021

Risks	Correctly answered (%)
Multiple partners	259(62.4%)
Early sexual debut	97(23.4%)
HPV infection	9(2.2%)
Early delivery	43(10.4%)
Multiparity	43(10.4%)
OCP	26(6.3%)
Smoking	18(4.5%)
HIV infection	99(23.9%)

Among the respondents who heard about cervical cancer, 176 (43.8%) mentioned blood -mixed vaginal discharge as symptom of cervical cancer followed by pelvic pain 116 (28.9%) but only 70 (17.4%) of the respondents stated post coital bleeding as the symptom of cervical cancer. Similarly, 376 (90%) of the participants of the same cohort, consider that cervical cancer is curable if managed early. The common treatment modalities cited were chemotherapy 260 (65.1%) and radiotherapy 168 (40.5%), and half (51.3%) of the subjects anticipate treatment of cervical cancer affordable.

Three hundred eighty (94%) of the study subjects recognize the availability of screening for cervical cancer and 219 (56.6%) of them first heard about the screening from health workers. Two hundred sixty-one (62.9%) of the participants replied to who should be screened question; most stated commercial sex workers (CSW) 170 (43.8%) but only 47 (11.3%) of the respondents' stated that all women of age above 21years and who had sexual debut. The interval for screening was stated correctly by 139 (35.8%) of the participants (3-5 years), but most, 368 (88.6%) don't know the available screening methods.

Most stated methods by participants to prevent cervical cancer; avoiding multiple sexual partners 253 (62.9%), circumvent early sexual intercourse 125 (31.2%), and prevention of STI 108 (26.9%). Only 24 (6%) of the respondents described HPV vaccine as prevention strategy (Table 3).

Table 3: Participants' response to knowledge question about cervical cancer screening and prevention methods, May 30/2021.

Knowledge items	Correct response N (%)
Who should be screened	
*All women age ≥ 21	47(11.3%)
**CSW	170(43.8%)
HIV positives	44(10.6%)
I don't know	154 (37.1)
Screening methods	
pap smear	43(10.4%)
VIA	4(1%)
I don't know	368(88.6%)
Prevention methods	
Avoid multiple sexual partner	253(62.9%)
Avoid early pregnancy	21(5.2%)
Avoid early sexual intercourse	125(31.2%)
Avoid or quit smoking	16(4%)
HPV vaccination	24(6%)
Prevent STI by safe sex	108(26.9%)
*Have sexual debut, **CSW-commercial sex workers	

As depicted in Table 4, 205 (49.4%) were screened at least once previously. Among those who were not screened, lack of information about the screening 88 (42.5%) and perceived absence of risky sexual behavior 74 (35.7%) were the two most commonly stated barriers. Interestingly, more than half, 231 (57.5%) of the total study subjects have planned to be screened in the near future, of which 181 (77%) have planned in the coming one year.

Table 4: Barriers for not being screened stated by participants, N=210, May 30/2021.

Barriers	Frequency	Percent
No screening site	6	2.8
Limited information	92	43.6
Sites are too far	4	1.9
No education to promote		
Screening	7	3.3
No risky sexual behavior	74	35.1
I don't know about the test	20	9.5
Against my religion and culture	2	0.9
It may be painful	3	1.4
Am afraid of test yielding cancer	2	0.9

As represented in Table 5, income, current job, educational level, and source of information were shown to have significant association with the knowledge on cervical cancer and its screening. Those whose first sources of information about cervical cancer was print medias were 3.4 times more likely to be knowledgeable (P=0.032; 95%CI, 1.11-10.6) as compared to those who first heard about cervical cancer from radio and television.

Table 5: Binary and multiple regression analysis on factors associated with knowledge about cervical cancer, May 30/2021.

Age	p value	COR	95% CI	P value	AOR	95% CI
21-30	0.206	1				
31-40	0.169	1.6	0.82-3.09			
>=40	0.989	1.0	0.50-1.97			
Ethnicity						
Oromo	0.795	1				
Amhara	0.871	1.1	0.54-2.04			
Tigre	0.495	0.8	0.40-1.51			
Others	0.759	1.2	0.39-3.54			
Marital status						
Single	0.755	1				
Married	0.78	1.1	0.56-2.14			
Divorced	0.795	0.9	0.38-2.06			
Widowed	0.486	0.7	0.30-1.75			
Religion						
Orthodox	0.171	1				
Muslim	0.692	0.8	0.33-2.08			
Protestant	0.491	0.8	0.33-1.68			
Others	0.041	6.6	1.08-40.69			
Educational level						
No education	0.001	1		0.070	1	
Up to grade 10	0.877	1.1	0.34-3.58	0.920	0.9	0.2-4.0
Grade 10 and above	0.021	3.6	1.21-10.55	0.165	2.7	0.6-11.3
Diploma and degree	0.005	5.5	1.69-17.75	0.594	1.5	0.28-8.83
Current job						
Housewife	0.001	1		0.801	1	
Private work	0.003	3.1	1.46-6.37	0.325	0.5	0.1-1.8
Government employee	0.001	4.8	2.25-10.01	0.490	0.6	0.1-0.3
Student	0.5	0.5	0.06-3.95	0.999	0.0	0.00
Income, ETB						
≤600	0.001	1		0.001	1	
601-1650	0.954	1.0	0.28-3.24	0.324	2.2	0.4-11.0
1651-3200	0.001	5.1	2.20-11.62	0.001	9.8	2.4-39.0
3201-5250	0.001	19.9	8.59-46.11	0.000	47.9	10.2-223.6
5251-7800	0.001	16.9	4.52-62.98	0.000	53.9	7.6-381.6
7801-10900	0.999	0	0			
Have child						
Yes	0.792	1.1	0.600-1.952			
No		1				
Number of children						
1	0.199	1				
2 to 4	0.130	0.5	0.25-1.19			
>=5	0.190	0.8	0.37-1.21			

First age of sexual debut						
<17	0.06	2.5	0.96-6.56	0.280	2.0	0.55-7.45
≥17		1				
Duration of HIV after diagnosis						
<1	0.725	1				
1 to 4	0.989	1.0	0.28-3.60			
5 to 10	0.683	0.8	0.23-2.55			
>10	0.524	0.7	0.20-2.21			
Stage of HIV						
I	0.988	1				
II	0.907	1.1	0.21-5.73			
III	0.989	1.0	0.19-4.93			
IV	0.971	1.0	0.20-2.21			
First source of Information						
Radio/TV	0.109	1			1	
Family	0.128	0.3	0.7-1.3	0.12	0.24	0.04-1.49
Print medias	0.032	3.4	1.11-10.6	0.48	1.75	0.36-8.44
Health workers	0.795	1.1	0.6-1.8	0.86	1.06	0.51-2.20
School	0.999	0.2	0	0		.

Compared to the unemployed, private and government employees were 3 and 4.7 times more likely to be knowledgeable, (P=0.003; 95%CI,1.46-6.37), and (P=0.001; 95% CI, 2.25-10.01) respectively. As compared to subjects who never attend school, those who attended high school and those who have college/university level education were 3.5 (P=0.021; 95%CI, 1.21-10.54) and 5.4 (P=0.005; 95%CI, 1.68-17.75) times more likely to have good knowledge score respectively. In contrast to subjects' monthly income less than 600 ETB/month; those who earn between 1600-3200, 3200-5250, and 5251-7800, were 5 times (P=0.001; 95%CI, 2.20-11.62), 20 times (P=0.001;95%CI, 8.59-46.11), and 16 times (p=0.001; 95%CI, 4.52-62.98) respectively, were more likely to have good knowledge score. After adjusting for confounding variables, only maternal monthly income (p=0.001) was shown to have an independent and significant association with the knowledge score (Table 5).

On binary regression; level of education, duration of HIV, first source of information, current job, and monthly income were significantly associated with attitude towards cervical cancer screening. There was no significant association between the participants age, ethnicity, religion, marital status, parity, stage of HIV, and baseline CD4 level with attitude towards cervical cancer screening (Table 6).

Table 6: Binary and multiple regression analysis on factors associated with attitude towards cervical cancer screening, May 30/2021.

Age	p value	COR	95% CI	P value	AOR	95%CI
21-30	0.417	1				
31-40	0.197		1.4, 0.83- 2.33			
>=40	0.317		1.3, 0.78- 2.12			
Ethnicity						
Oromo	0.124					
Amhara	0.300		0.8, 0.46- 1.26			
Tigre	0.028		0.4, 0.13- 0.89			
Others	0.117		0.7, 0.38- 1.11			
Marital status						
Single	**0.004**	1				
Married	0.093		1.6, 0.98-2.67			
Divorced	0.303		1.4, 0.74-2.67			
Widowed	0.092		0.6, 0.3-1.10			
Religion						
Orthodox	0.082	1		0.255	1	
Muslim	0.012		0.4, 0.2-0.82	0.107	0.5	0.19-1.17

Protestant	0.628		0.9, 0.48-1.54	0.166	0.6	0.28-1.24
Others	0.475		0.5, 0.08-3.14	0.748	0.7	0.09-5.60
Educational level						
No education	**0.001**	1		0.035	1	
Up to grade 10	**0.001**		3.8, 1.84-7.61	**0.006**	3.1	1.38-7.0
Grade 10 and above	**0.005**		2.6, 1.34-5.36	**0.044**	2.4	1.02-5.49
Diploma and degree	**0.001**		4.7, 2.0-10.97	**0.019**	3.9	1.25-12.07
Current job						
Housewife	**0.001**	1		0.259	1	
private work	0.796		1.1, 0.66-1.71	0.857	0.9	0.41-2.08
government employee	**0.001**		2.7, 1.54-4.55	0.241	1.7	0.69-4.32
Student	0.914		1.0, 0.39-2.27	0.595	1.7	0.25-11.12
Income						
≤600	0.108	1		0.829	1	
601-1650	0.087		1.6, 0.93-2.82	0.333	1.6	0.63-3.81
1651-3200	**0.040**		1.7, 1.02-2.89	0.671	1.2	0.51-2.79
3201-5250	**0.011**		2.2, 1.19-4.02	0.638	1.3	0.463.46
7801-10900	0.463	2.5	0.21-27.81	0.587	0.48	0.03-6.77
Have child						
Yes	0.71	1.1	0.69-1.71			
No		1			1	
Number of children						
1	0.237	1				
2 -4	0.160	0.2	0.39-1.17			
>=5	0.178	0.7	0.47-1.14			
Age of sexual debut						
<17	0.178	0.7	0.37-1.20			
>=17		1			1	
Duration of HIV						
<1	0.271	1				
1 – 4	0.920	0.9	0.32-2.74			
5 -10	0.411	1.5	0.56-4.04			
>10	0.320	1.6	0.61-4.35			
Stage of HIV						
I	0.422	1				
II	0.306	0.5	0.11-1.96			
III	0.141	0.4	0.08-1.40			
IV	0.239	0.4	0.11-1.71			
Source of information about cervical cancer						
Radio/TV	**0.001**	1		0.001	1	
Family	0.382	0.7	0.31-1.55	0.772	0.9,	0.32-2.29
Print medias	0.150	2.3	0.73-7.13	0.332	1.9, 3	0.51-7.20
Health workers	**0.001**	2.4	1.52-3.60	**0.001**	3.0, 1	1.77-5.15
School	0.482	1.9	0.31-11.74			0.00

Compared to the study subjects who never attend school, those who attended up to grade 10, above grade 10, and who got diploma/degree were 3.7 (p=0.001; 95%CI, 1.84-7.61), 2.6 (p=0.005; 955CI, 1.34-5.36), and 4.7 (P=0.001; 95%CI, 2.03-10.97) times more likely to have positive attitude towards cervical cancer screening respectively. Women whose monthly income was between 1651- 3200 and 3201-5250 were 2.2 (p=0.011; 95%CI, 1.19-4.02) and 1.7 (p=0.040;95%CI, 1.02-2.89) times more likely to have positive attitude towards cervical cancer screening than those who earn ≤ 600 ETB per month.

Government employees were 2.7 (p=0.001; 95%CI, 1.54-4.55) times more likely to have positive attitude towards cervical cancer screening than housewives. Participants who obtained first source of information about cervical cancer from health workers were 2.4 (P=0.001; 95%CI, 1.52-3.60) times more likely to have positive attitude towards cervical cancer screening than those whose source of information were television and radio. On multiple regressions analysis, only educational level (p=0.035) and source of information (p=0.001) were strongly associated with attitude score. Attitude score was significantly higher (AOR=3.02; 95%CI, 1.77-5.15) if the source of information about cervical cancer were health workers.

Age, marital status, source of information about cervical cancer, current job, monthly income, parity, good knowledge score, and positive attitude were significantly associated with screening practice on binary logistic regression. Women in the age category of 30-40years and those above 40years were 3.8 (p=0.001; 95%CI, 2.20-6.71) and 3.9 (p=0.001; 95%CI, 2.26-6.73) times more likely to be screened compared to those of 21-30 years.

Married participants were 4.3 (P=0.001; 95%CI, 2.38-7.72) times more likely to be screened than single ones. As compared to subjects whose monthly income was ≤ 600ETB, those who earn 5250-7800 were 4.3 (p=0.034; 95%CI, 1.11-16.38) times more likely to have screening. Subjects whose first sources of information about cervical cancer were print media and health workers were 8.9 (p=0.004; 95%CI, 1.94-41.26) and 2.2 (p=0.001; 95%CI, 1.44-3.39) times more likely to be screened than those whose sources were radio or television.

Participants with good knowledge score and positive attitude were 2 and 3.9 times more likely to be screened than women with poor knowledge and those with negative attitude towards cervical cancer screening respectively, (p=0.005; 95%CI, 1.25-3.58) (p=0.001; 95%CI, 2.59-5.97).

Only maternal age (p=0.001), first source of information (p=0.005), and attitude score (p=0.001) were independently associated with cervical cancer screening practice in this study. Screening practice increase if the source of information was print media (AOR=15; 95%CI, 1.82-129), maternal age (AOR=5.9; 95%CI, 2.26-15.34) and attitude score (AOR=3.98; 95%CI, 2.34-6.78) but decrease with parity (AOR=0.3; 95%CI, 0.10-.96) (Table 7).

Table 7: Binary and multiple regression analysis on factors associated with cervical cancer screening practice, May 30/2021.

Age	p value	COR	95% CI	P	AOR	95%CI
21-30	0.001	1		**0.001**	1	
31-40	0.001	3.8	2.20-6.71	**0.003**	3.4	1.52-7.63
>=40	0.001	3.9	2.26-6.73	**0.001**	5.9	2.26-15.34
Ethnicity						
Oromo	0.201	1				
Amhara	0.849	1.0	0.64-1.71			
Tigre	0.292	0.6	0.23-1.54			
Others	0.146	1.5	0.87-2.49			
Marital status						
Single	**0.001**	1		0.063	1	
Married	**0.001**	4.3	2.38-7.72	0.373	1.5	0.60-3.76
Divorced	**0.001**	3.9	1.94-7.71	0.978	1.0	0.35-2.76
Widowed	**0.009**	2.5	1.26-5.04	0.342	0.6	0.20-1.74
Religion						
Orthodox	0.067	1		0.142	1	
Muslim	0.040	0.5	0.23-0.96	0.162	0.5	0.23-1.27
Protestant	0.160	0.7	0.36-1.17	0.084	0.5	0.26-1.08
Others	0.247	3.7	0.40-33.22	0.404	2.7	0.26-26.37
Educational level						
No education	0.831	1				
Up to grade 10	0.555	1.2	0.63-2.34			
Grade 10 and above	0.967	1.0	0.53-1.91			

Diploma and degree	0.616	1.2	0.55-2.66			
Current job						
Housewife	**0.001**	1		0.358	1	
Private work	0.825	0.9	0.58-1.52	0.374	1.4	0.64-3.18
Government employee	**0.024**	1.8	1.08-3.07	0.114	2.1	0.84-5.08
Student	**0.010**	0.2	0.07-0.71	0.403	2.394	0.39-18.56
Income						
<600	0.134	1		0.563	1	
601-1650	0.068	1.7	0.96-2.91	0.998	1.0	0.42-2.38
1651-3200	0.054	1.7	0.98-2.79	0.770	0.9	0.38-2.02
3201-5250	0.201	1.5	0.81-2.66	0.346	0.6	0.23-1.66
5251-7800	**0.034**	4.3	1.11-16.38	0.206	2.9	0.55-15.63
7801-10900						
	0.999	0	0	0.999		0.000
Have child						
Yes	0.007	1.9	1.18-2.99	0.038	3.9	1.08-14.18
No		1			1	
Number of children						
1	0.007	1		0.077	1	
2 – 4	0.205	0.7	0.40-1.21	0.162	0.6	0.31-1.21
>=5	**0.001**	0.4	0.25-0.62	0.043	0.3	0.10-.96
age of sexual debut						
<17	0.714	0.9	0.49-1.61			
>=17		1				
Duration of HIV						
<1	0.582	1	1			
1 – 4	0.520	0.7	0.24-2.04			
5 -10	0.956	1.0	0.36-2.58			
>10	0.872	1.1	0.41-2.85			
Stage of HIV						
I	0.874	1	1			
II	0.710	0.8	0.21-2.82			
III	0.884	0.9	0.26-3.16			
IV	0.667	0.8	0.22-2.58			
First source of information about cervical cancer						
Radio/TV	**0.001**	1		**0.005**	1	
Family	0.410	0.7	0.31-1.60	0.259	0.6	0.21-1.51
Print medias	**0.004**	8.9	1.94-41.26	**0.012**	15.4	1.82-129.56
Health workers	**0.001**	2.2	1.44-3.39	**0.017**	1.8	1.11-3.07
School	0.999	0.0	0.00	1.00	0.0	0.00
Knowledge on cervical cancer and screening						
Good knowledge score	0.005	2.1	1.25-3.58	0.137	1.7	0.83-3.61
Poor knowledge score					1	
Attitude towards cervical screening						
Positive attitude	**0.001**	3.9	2.59-5.97	**0.001**	3.9	2.34-6.78
Negative attitude					1	

Discussion

The low knowledge score of 18.2% observed in our study was comparable to the report from Gondar town, Northwest of Ethiopia (21.2%), but higher than the report from Nigeria (9.95%). However, the finding in our study was far lower than the study by Netsanet Shiferaw where the knowledge was stated to be 44%. Such wide difference in the knowledge could possibly be explained by the difference in the setting and the population studied as well as the primary objective of the study, for instance, the hospitals in the Netsanet et al study were within the "Tesfa Addis" project, whose primary objective was to increase access to the cervical cancer prevention services [20, 21].

The significant association of the good knowledge score with higher level of education, high income, employment, and print media was similar with study done in India, where, age > 30y, higher level education, and being employed were associated with good knowledge score [22].

The most common risk factors for cervical cancer stated by our study participants; having multiple sexual partners (62.4%), sexually transmitted infections (24.9%), and young age at sexual debut (24.4%), were similar to the study done in Ambo university hospital, Central Ethiopia, where history of multiple sexual partners (35%) and sexually transmitted infections (18%) mentioned as most common risk factors, and the Nigerian study by Maxwell, the commonest risk factor cited was having life time multiple sexual partners (16%) [20, 23].

The finding in our study that only 2.2% of the participants stated HPV as cause is similar to the Nigerian study, though slightly higher, only 8% of the women in Nigeria mentioned HPV as a cause of cervical cancer (24-25). Lack of knowledge, the risk of acquiring, the mode of transmission, and the preventive measures on HPV will hinder preventive strategies including but not limited to safe sexual practice and accept HPV vaccine [26].

Only a quarter of the participants (24.6%) in our study indicated HIV infection as a risk factor for cervical cancer, a finding consistent with the study from Zimbabwe in which 27% of the respondents were able to identify HIV as a risk factor [27].

The Knowledge on HPV vaccine is crucial for its uptake (28). In our study only 6% of respondents mentioned HPV vaccine as prevention strategy, though introduced in Ethiopia in 2018 and over a million school girls of age 14 years vaccinated. A similar finding reported from South Africa where 2.2% of respondents relate HPV infection to cervical cancer [29].

The knowledge on common and early cervical cancer symptoms is important for an early detection and treatment of the disease for the patients who missed the screening opportunity. In our study, only 40% of the subjects described at least one symptom, the commonest symptom reported was abnormal vaginal discharge (43.8%), the finding similar to the report from Ambo university hospital, where 39% of respondents mentioned at least one symptom of cervical cancer [25]. Contrary to our findings, the commonest symptom reported by the women in Hawassa, Southern Ethiopia, was pelvic pain, the difference partly be due to the population studied and the methods [30].

Seventy-nine percent of the respondents in our study believed screening will prevent cervical cancer and more than 90% of the study participants thought cervical cancer is curable with early diagnosis. This is similar to the study done in Gonder, Northwest Ethiopia, in which 73.8% of respondents believed that cervical cancer is curable [19].

About 65% of women in our study mentioned one modality of treatment, almost twice as much as mentioned in the study done by Netsanet Shiferaw et.al [21]. The commonest treatment modality described by our study subjects, specific drug given by health professionals, contrasts the study by Saba Shiferaw in which the commonest modality of treatment reported was radiation therapy [31].

Though 90% of the participants in this study knew the existence of the screening practice for cervical cancer, majority (43.8%) reported CSW as candidates for screening, and only 12.4% of the participants stated all women above the age 21 and who had sexual debut should be screened. Most worrying was only 10.6% of the subjects mentioned the need for screening of HIV infected women. Regarding the interval for screening, about one third (35%) of women correctly mentioned 3-5 years. This is in contrast to the study in South Africa, where 54.5% and 65.7% of the study participants mentioned the correct screening age group and screening interval respectively [32]. As shown in the result section, most subjects (88.6%) don't know the available screening methods, only few identified pap smear and VIA, 11.3% and 1.5% respectively. The above findings sufficiently addressed the prevailing gap in the prevention of this deadly cancer in our population.

The screening practice in our subjects seems much improved from the previous studies. Almost half (49.4%) of the participants had been screened at least once, much higher than the Nigerian study, only 10% of the women had Pap smear [33]. In contrast, the screening practice in our study participants is lower than the rate in Kenya (84%) [34]. It is important to note the presence of a strong national cervical cancer screening program in Kenya since 2001.

The report in this study that older age, married women, those with good knowledge score, and with positive attitude are likely to be screened, is similar with study done in Botswana by Mingo et.al in which screening was more common among women who were older and had higher incomes [35].

The common reasons stated among those who never screened were, limited information about cervical cancer and the perceived absence of risky sexual behavior. This is in contrast to the findings from the study in Gonder where the main reasons cited were absence of symptoms (88.7%), emotional barriers like fear of test result (71%), and embarrassment (68.8%) [19].

Conclusion

Though most HIV infected women enrolled in this study have heard of cervical cancer, their knowledge score and screening practice were found out to be low. In our study, it is clearly specified that women above thirty years, those with better income and higher education, and those having positive attitude perform

well in their level of knowledge and screening practice. We recommend to make a rigorous effort to educate women and empower them economically so that they will have better access to information and improve their health seeking behavior, easily access and utilize the available health resources.

Limitation of the study

The fact that this study was done at the centers that provide an integrated HIV/AIDS and cervical cancer care, will enlighten the health professionals and other stake holders the existing gap on the cervical cancer prevention endeavors. However, the generalization of this findings to the HIV positive women in the country unappealing, since the setting may differ in terms of level of awareness, educational level, and the exposure to the information sources.

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