ORIGINAL RESEARCH

Knowledge, Attitude and Practice Towards Cervical Cancer Screening Among Women and Associated Factors in Hospitals of Wolaita Zone, Southern Ethiopia

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Background: Cervical cancer is a worldwide public health concern, and approximately 85% of deaths occurs in developing countries. Thus study is designed to assess knowledge, attitude, and practice towards cervical cancer screening in Wolaita Zone, Southern Ethiopia.

Methods: We conducted a facility-based cross-sectional study. In this research, we used a multi-stage sampling procedure to select 520 participants. Information on socio-demographics, knowledge, attitude, and cervical cancer screening related questionnaires were collected using face-to-face interviews. Data were entered and cleaned in Epi-Data version 3.1 and exported to SPSS version 20 for analysis. For the analysis, we used logistic regression along with odds ratios and 95% confidence intervals. The statistical significance was determined by p <0.05.

Results: Approximately 154 (43.1%) of women had good knowledge, 235 (45.5%) had a favorable attitude, and nearly a quarter (118; 22.9%) had been screened for cervical cancer. Women 30–34 years [AOR=3.02, 95% CI: 1.11, 8.24), women with degree/diploma level of education [AOR=7.3, 95% CI 2.53–21.01), and having sourced information from a health professional [AOR=2.3, 95% CI: 1.27–4.17) were associated with good knowledge of cervical cancer screening. Being single [AOR=3.47, 95% CI: 1.03–11.75] and good knowledge of cervical cancer [AOR=4.76, 95%:2.65–8.57) were significant predictors of a positive attitude towards cervical cancer screening. Women who knew cervical cancer patients [AOR=2.47, 95% (1.37–4.44)] and high monthly income [AOR=3.8, 95% CI: 1.86–7.77] were associated with good practice related to cervical cancer screening.

Conclusion: Knowledge, attitude, and practice towards cervical cancer screening were shallow. The concerned body should aggressively disseminate information on cervical cancer screening, improve the economic status of women, and provide counseling about cervical cancer during health care delivery visits.

Keywords: knowledge, attitude, practice, cervical cancer screening, Ethiopia

Introduction

Cervical cancer is a global public health concern and a chronic non-communicable disease caused by the Human Papilloma Virus. Previous global study report estimated 527,600 cervical cancer cases and 265,700 deaths occurred. Among female cancers, cervical cancer is a leading cause of morbidity and mortality throughout the world.[1,2] Usually, women with cervical cancer do not observe symptoms,

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especially in the early stages. Therefore, the presentation of malignancy in late-stage is vaginal bleeding, invasion, metastasis, and poor prognosis.[3,4] In addition to presenting a significant burden in terms of morbidity and mortality, cervical cancer also increases economic risk, which imposes very high direct costs on health systems, communities, households and lost the productivity of patients, premature death, and disability.[5] The occurrence of cervical cancer-related death is rare in high-income countries.

The average risk of dying from cervical cancer before age 75 is three times higher in resource-poor countries than in more developed regions.[6,7] Cervical carcinoma is still the leading cause of morbidity and mortality among women on the African continent. Mortality remains high. Globally it is 50% mainly because of late presentation, advanced stage of the disease, and absence of access to cervical cancer screening programs for most developing countries.[1,8]

A study in the Tikur Anbessa showed that 30.3% of all cancers diagnosed patients were identified as cervical cancer patients. A study in Ethiopia showed that annually the number of new cases was 7619 with 6081 deaths every year. In addition, 534,000 women over age 15 living with HIV in Ethiopia are among the most vulnerable to cervical cancer. However, very few women receive screening services in Ethiopia.[9,10]

The best predictor of high risk for cervical cancer is age, and the current incidence and mortality of cervical cancer under the age of 30 years is rare. Younger women tend to present with low-grade lesions, which frequently spontaneously regress to normal. In older women, however, the regression rate decreases, resulting in injuries. The WHO recommends "women younger than 30 years old should not be screened for cervical cancer". Evidence related to knowledge, attitude with the practice of cervical cancer screening was limited, particularly in the study area. Therefore, to establish the cervical cancer prevention program and control strategy, this study aimed to assess the level of knowledge attitude and practice of cervical cancer screening and associated factors among females in the reproductive age group.

Methods and Materials
Study Design and Setting
We conducted a facility-based cross-sectional study from January-February, 2017, in Wolaita Zone. Wolaita Zone divided into 15 districts and three town administrations.

The population of Wolaita Zone, based on the 2007 population and housing census projection was 1,928,196, of whom 969,883 (50.3%) are male and 958,313 are female (49.7%), respectively (Source CSA). Females in the reproductive age group constitute 23% of the total population. According to the Wolaita Zone health office report, there was one teaching referral hospitals, two NGO general hospitals, four primary hospitals, 67 health centers, 342 health posts, and 143 private clinics providing services to the community.

Source and Study Population
All 30–49 years old women attending hospitals in Wolaita zone were the population, while a randomly selected women between 30–49 years of age were the sample.

Inclusion and Exclusion Criteria
We included women aged over 30 years and attended ANC, Family Planning, Postnatal care services, and other Outpatient Departments (OPDs); whereas, we excluded women with known mental illness, in labor, and were critically ill.

The Sample Size and Sampling Procedures
We calculated the sample size by using the single population proportion formula. We also, used the Open-Epi statistical software version 3.03 with an assumption of knowledge about cervical cancer screening at 19%, taken from the study done at Addis Ababa, Ethiopia[11] and confidence interval 95% (Z α/2=1.96) power of the test 80% and margin of error 5%, design effect (DE) 2.0. The calculated sample size was 472 and adding a 10% non – response rate, the final sample size was 520.

We used a multi-stage sampling technique. There are 15 districts with seven hospitals. Among the seven hospitals, four were selected using a simple random sampling method. Sample sizes allocated based on the size of population proportion to the respective hospitals. Finally, the selection of the study participants made by using a systematic sampling technique until the allocated sample size was reached.

Data Collection
We collected data using a structured questionnaire that is adopted from a similar study.[12] It has four sections including, socio-demographic characteristics, knowledge about cervical cancer and screening, attitude towards cervical cancer screening, and practice of cervical cancer

994

Cancer Management and Research 2020:12

screening. We collected the data using eight trained nurses who deliver reproductive health services. Data collectors and supervisors received training before the actual data collection regarding the approach, objective of the study and ethical issues. We prepared the questionnaire in English and translated it to Amharic. To check the consistency with the meaning of the Amharic, an expert in language back-translated to English.

Data Management

We made checkups for completeness and consistency of the data through the supervisors. Quantitative data tools were pre-tested before the actual data collection to check the accuracy of responses, clarity of language, and appropriateness of the questionnaire. The study was pre-tested by testing 5% of the total sample size, which was 26. It was done at Christian Hospital a week before the actual data collection.

Operational Definitions

Cervical Cancer

Abnormal growth or proliferation of cells on the opening of the uterus.[13]

Cancer Screening

A procedure that is performed to identify the presence of abnormal cells in a particular tissue.

Knowledge

Questions were delivered to study participants in "Yes" or "No" options, and they were agreed or disagree based on their awareness. Each correct response was given a score of 1 and a wrong answer given a score of 0. Modified Bloom's cut off points were used to categorized the knowledge as good 80–100%, satisfactory 50–79%, and poor below 50%. We computed the mean score to determine the overall knowledge of cervical cancer screening of respondents and it was further classified as poor and good for describing and comparison purposes.[14]

Attitude

we assessed the attitude using a Likert scale. The scoring system used was: strongly disagree =1, disagree=2, indifferent=3, agree= 4, strongly agree=5.The responses were summed and a total score was obtained. Then we calculated the mean score. Those who scored the mean score and above were considered as having a positive attitude, whereas those the women who scored below the mean score were categorized as negative in attitudes towards cervical cancer screening.

Poor Practice

Respondents who never underwent screened for cervical cancer.

Good Practice

Respondents who had been screened for cervical cancer at least once.

Data Processing and Analysis

We entered the data into Epi-Data version 3.1 and exported into SPSS version 20 for analysis using binary and multivariable logistic regression to determine the frequencies and associations between independent and outcome.

We checked all factors with a $p < 0.05$ in the bivariate logistic regression analysis for further confounding effect control by running multivariate logistic regressions. All the continuous data were checked for normality using a histogram and other visual tests. We also checked multicollinearities. We computed the Cronbach's alpha for attitude towards cervical cancer screening and considered >0.7 as adequate.

Hosmer and Lemeshow Goodness of Fit test was used to assess the fitness of the model during multivariate analysis, at $p > 0.05$. The crude and adjusted odds ratios with a 95% confidence interval were reported to measure the strength of the association between independent and outcome variables. The results of multivariate logistic regression were considered statistically significant at $p < 0.05$.

Ethical Consideration

We obtained ethical clearance from the Institutional Review Board of the College of Health Sciences and Medicine, Wolaita Sodo University. The permission letter was obtained from Wolaita Zone Health Department and selected hospitals. We explained the aim of the study to the study participants. We received the informed written consent from each respondent. They were told that documents were kept confidential and they had the right to refuse their participation at any time without penalty. Participants who had cervical cancer during data collection were counseled for better investigation and treatment options as soon as possible.

Results

A total of 516 women participated in the study, which made the response rate to be 99.2%. The overall knowledge of cervical cancer screening, positive attitude towards cervical cancer screening, practice towards cervical cancer screening were 46.1%, 45.5%, and 22.9% respectively.

Socio-Demographic Characteristics of Respondents

From 516 total respondents, 188 (36.4%) were in the age range 30–34, the mean age was 36.8 (± SD 4.98), and the minimum and maximum age were 30 and 49. Most 309 (59.9%) were married. Approximately 266 (51.6%) were Protestants, followed by Orthodox, 168 (32.6%). More than one-third, 177 (34.3%) of the respondents held a diploma or degree, while 110 (21.3%) had no formal education. Most respondents 125 (24.2%) were housewives, 107 (20.7%) were private employees, and 100 (19.4%) were governmental employees. More than half (345; 66.9%) were urban residence with monthly income below 2000 Ethiopian birr 329 (63.8%) (Table 1)

Reproductive Characteristics

Table 2 showed that most respondents (498; 98.5%) had never had sexual intercourse, and most of them (174; 34.2%) had their first sex at the age 15–18 years and 64 (12.6%) at under 15years. The mean age for first sexual intercourse was 19.57 (± SD 3.77) years with a minimum of 12 and a maximum of 35 years. Most respondents (388; 75.9%) had had a single partner while the remaining 123 (24.1%) had had multiple sexual partners. Of all the participants, 305 (61.2%) had used modern contraceptives. Of those 104 (20.2%) used oral contraceptive. Regarding cigarette smoking, 45 (8.7%) respondents were smokers at the time of the survey. Among the respondents who used oral contraceptives, 99 (19.8%) were currently using oral contraceptives. Most respondents 252 (50.4%) had not used a condom during sex. Moreover, 241 (46.7%) knew a mother diagnosed with cervical cancer. Regarding parity 74 (14.3%) were multipara (Table 2).

Knowledge of Cervical Cancer and Its Screening

Regarding symptom-related knowledge, 297 (57.6%) had a poor knowledge with the most known symptom mentioned by respondents being vaginal bleeding (223; 66.8%), and foul-smelling vaginal discharges (213; 63.8%); 282 (54.5%) had poor knowledge of the

Table 1 Sociodemographic Characteristics of the Respondents at Woliata Zone, Ethiopia, 2017

Variable (n=516)	Category	Frequency	Percent (%)
Age	30–34	188	36.4
	35–39	164	31.8
	40–44	97	18.8
	45–49	67	13.0
Religion	Orthodox	168	32.6
	Protestant	36	7.0
	Catholic	266	51.6
	Muslim	46	8.9
Marital status	Single	159	30.8
	Married	309	59.9
	Divorced	24	4.7
	Widowed &separated	24	4.7
Educational status	No formal education	110	21.3
	Primary school	103	20.0
	Secondary school	126	24.4
	Diploma or degree	177	34.3
Residence	Urban	345	66.9
	Rural	171	33.1
Occupation	Housewife	125	24.2
	Student	54	10.5
	Private employ	107	20.7
	Daily labor	29	5.6
	Merchant	101	19.6
	Gov,employee	100	19.4
Monthly income	50–2000	329	63.8
	>2000	187	36.2

prevention and risk factors of cervical cancer. The most known risk factors that predispose to cervical cancer mentioned by respondents were multiple sexual partners (225; 67.4%), early sexual intercourse (186; 55.7%), long term OCP use (130; 38.9%).

The known prevention methods reported by the study subjects were avoiding multiple sexual partners (228; 63.8%), avoiding early sexual intercourse (195; 58.3%), avoiding long term use of OCP (123; 36.8%), and spacing children.

Regarding treatment, most respondents (442; 85.7%) had poor knowledge. Surgery (151; 54.8%), was the most familiar treatment to those who heard of cervical cancer.

Knowledge related to cervical cancer screening were assessed, 362 (70.2%) had poor knowledge about availability, 400 (77.6%) had poor knowledge about screening

Table 2 Reproductive Characteristics of the Respondents Attending Wolaita Zone Hospitals, Southern Ethiopia, 2017

Variable (516)	Category	Frequency	Percent
Every had sex	Yes	498	96.5
	No	18	3.5
Age of first sex	<15 years	64	12.6
	15–18 years	174	34.2
	>18 years	271	53.2
History of casual sex	Yes	123	24.1
	No	398	75.9
Modern contraceptives user	Yes	305	61.2
	No	193	38.8
Oral contraceptives user	Yes	104	33.9
	No	203	66.1
History of condom use	Yes	248	49.6
	No	252	50.4
History of cigarette – smoking	Yes	45	8.7
	No	471	91.3
Knew mother with CC	Yes	241	46.7
	No	275	53.3
Currently OCP user	Yes	99	19.8
	No	400	80.2
Parity	0	156	30.2
	1–4	286	55.4
	>4	74	14.3

interval, 382 (74%) had poor knowledge about screening eligibility, and 429 (83.1%) had poor knowledge about screening methods. Some (202; 60.5%) knew that there is screening for cervical lesions; 77 (38.1%) knew the age at which one can screen, and 62 (68.9%) aware at least of one method of screening.

To determine the overall knowledge of cervical cancer screening of response of the study subject's scores were pooled, and the mean score computed. Respondents who scored above the mean score knowledge were considered as having good knowledge; in this case, respondents who scored above mean value numbered 154 (46.1%), the rest (180; 53.9%) had poor knowledge (Table 3).

Attitude Towards Cervical Cancer and It Screening

Eight questions assessed the attitude of respondents (Table 4), which resulted in a mean score of 19.3 (± SD

6.6), the minimum score was 8, and a maximum score was 32. Based on the mean score, the respondents who scored below the mean score of 281 (54.5%) of the respondents were classified as having negative attitudes and those with higher than the mean score numbered 235 (45.1%) indicating respondents with positive attitudes towards cervical cancer and screening. From all the respondents 174 (33.5%) agreed that cervical cancer is becoming a problem in Ethiopia and also 114 (22.1%) of them strongly agreed that anyone including themselves could have cervical cancer. However, most (197; 38.2%) agreed that cervical cancer screening was essential and 217 (42.1%) were willing to undergo cervical cancer screening (Table 4)

The Practice of Cervical Cancer Screening

Most (398; 77.1%) had never screened for cervical cancer. However, 441 (85.5%) had screened for any reproductive issue such as HIV, STI, and only 118 (22.9%) had only one exposure for the practice of cervical cancer screening. Most (116; 98.3%) had been screened in hospitals and 62 (52.5%) were screened at the initiation of a health professional, 51 (43.2%) were self-initiated and the rest were initiated by friends, community, and mass media (Table 5).

Reasons for Not to Be Screened by Cervical Cancers

Among the reasons mentioned for non-screening, 83.7% mentioned a lack of information and lack of screening service (69.8%), lack of readiness (55%), long waiting time (51.4%), lack of respect (26%), expensive service cost (11.8%), and perception of screening procedure (10.5%) (Figure 1)

Factors Associated with Knowledge of Cervical Cancer Screening

Among the socio-demographic factors age, educational status, and residence was significantly associated with knowledge of cervical cancer screening. Other factors, such as having knowledge with cervical cancer, knowing someone with cervical cancer and those women's source of information from the health professional and community, age of first sex, were associated with the outcome variable.

In multivariate analysis, age, educational status, source of information from health professionals were associated with the outcome variable. The association of age with knowledge of cervical cancer screening among women attending hospital revealed that women in age group 30–34 were three times more likely to have good

Table 3 Composite Knowledge Distribution of Response Among Women Who Heard Cervical Cancer and Its Screening, South Ethiopia 2017, n=516

Knowledge of Cervical Cancer	Response n (%), n=334	
	Yes	No
Knowledge related to the symptom of cervical cancer (CC): Poor 297 (57.6%), Good 219 (42.4%)		
Vaginal bleeding	223 (68.8%)	111 (33.2%)
Vaginal foul smelling discharges	213 (63.8%)	121 (36.2%)
Pain during sex	153 (45.8%	181 (54.2%)
Knowledge related to risk factor of CC: Poor 281 (54.5%), Good 235 (45.5%)		
Acquiring HPV	66 (19.8%)	268 (80.2%)
Multiple sex partner	225 (67.4%)	109 (32.6%)
Multi parity	163 (48.2%)	171 (51.2%)
Early sexual intercourse	186 (55.7%)	148 (44.3%)
Long term OCP use	130 (38.9%)	204 (61.1%)
Cigarette smoking	149 (44.6%)	185 (55.4%)
Do not know risk factor	60 (18%)	274 (82%)
Knowledge related to prevention of CC: Poor 282 (54.5%), Good 234 (45.3%)		
Vaccination for HPV	52 (15.6%)	281 (84.4%)
Avoid multiple sex partner	228 (68.3%)	106 (31.7%)
Avoid early sexual intercourse	195 (58.3)	139 (41.6%)
Spacing children	159 (47.6%)	175 (52.4%)
Avoid long term use of OCP	123 (36.8%)	211 (63.2%)
Early screening	144 (43.2%)	189 (56.8%)
No smoking	150 (44.9%)	184 (55.1%)
Do not know prevention	49 (14.7%)	285 (85.3%)
Knowledge related to the treatment of CC: Poor 442 (85.7%), Good 74 (14.3%)		
Surgery	151 (54.8%)	183 (45.2%)
Chemotherapy	58 (17.4%)	276 (82.6%)
Radiotherapy	128 (38.3%)	206 (61.7%)
Do not know	77 (23.1%)	257 (76.9%)
Knowledge of cervical cancer screening	Response (n=202)	
Availability of screening service	Yes	No
Is the there screening for CC	202 (60.5%)	132 (39.5%)
Knowledge related to screening interval: Poor 400 (77.6%), Good 116 (22.4%)		
Every year	56 (27.7%)	146 (72.3%)
Every three year	39 (19.3%)	163 (80.7%)
Every five year	77 (38.1%)	125 (61.9%)
Do not know	30 (14.9%)	172 (85.1%)
Knowledge related to screening eligibility: Poor 382 (74%), Good 134 (26%)		
Women 30 years age and above	134 (66.3%)	68 (33.7%)
Prostitute (15–29)	43 (21.3%)	159 (78.3%)
Elderly women	12 (5.9%)	190 (94.1%)
Do not know	13 (6.4%)	189 (93.6%)
Knowledge related to CC screening procedure: Poor 429 (83.1%), Good 87 (16.9%)		

(*Continued*)

Table 3 (Continued).

Knowledge of Cervical Cancer	Response n (%), n=334	
	Yes	No
VIA	68 (33.7%)	134 (65.3%)
PAP	30 (14.9%)	172 (85.1%)
Do not know	104 (51.5%)	98 (48.5%)
Composite Knowledge score		
Poor Knowledge	180 (53.9%)	–
Good knowledge	154 (46.1%),	–

Abbreviation: CC, Cervical cancer.

knowledge of cervical cancer screening than women 45–49 years of age [AOR=3.02; 95% CI:1.11–8.24].

The association of educational status with outcome variable among women showed that mothers who had a secondary level of education were about five times more knowledgeable about cervical cancer screening compared with those who did not attend formal education [AOR= 5.2;95% CI:1.73–15.65]. Women who had a degree/or diploma level education were about seven times more knowledgeable about cervical cancer screening compared with those who did not attend formal education [AOR=7.3, 95% CI:2.53–21.01].

Women who had a source of information from health professionals were two times more knowledgeable about cervical cancer screening compared with women who had not had a source of information from health professionals [AOR=2.3; 95% CI:1.27–4.17] (Table 6).

The Associated Factors with the Attitude Towards Cervical Cancer Screening in Wolaita Zone

Analysis of our result found that knowledge of cervical cancer, marital status, and monthly income was associated with the outcome variable in multivariable regression. Women who had good knowledge of cervical cancer 4.8 times more likely to have positive attitudes towards cervical cancer screening than women who had poor knowledge of cervical cancer [AOR=4.76, 95% CI:2.65–8.57].

The association of marital status with the attitude towards cervical cancer screening indicated that women who were single were 3.47times more likely to have a positive attitudes towards cervical cancer screening than widowed[AOR=3.47, 95% CI: 1.03–11.75].

The association of income status with the attitude towards cervical cancer screening indicated that women who had a

Table 4 Attitude of Cervical Cancer and in Wolaita Zone, 2017

Variable (n=516)	Frequency	Percent
Carcinoma of the cervix is highly prevalent in Ethiopia		
Strongly agree	147	28.5
Agree	174	33.7
Neither agree nor disagree	76	14.7
Disagree	112	21.7
Strongly disagree	7	1.4
Carcinoma of the cervix is the leading cause of death among all malignance in Ethiopia		
Strongly agree	129	25
Agree	207	40.1
Neither agree nor disagree	76	14.7
Disagree	104	20.2
Strongly disagree	129	25
Any adult woman including you can acquire cervical carcinoma		
Strongly agree	114	22.1
Agree	201	39
Neither agree nor disagree	82	15.9
Disagree	118	22.9
Strongly disagree	1	0.2
Carcinoma of the cervix cannot be transmitted from one person to another		
Strongly agree	58	11.2
Agree	161	31.2
Neither agree nor disagree	128	24.8
Disagree	166	32.2
Strongly disagree	3	0.6
Screening helps in prevention of carcinoma of the cervix		
Strongly agree	109	21.1
Agree	197	38.2
Neither agree nor disagree	109	21.1
Disagree	101	19.6
Strongly disagree	197	38.2
Screening causes no harm to the client		
Strongly agree	107	20.7
Agree	206	39.9
Neither agree nor disagree	97	18.8
Disagree	103	20
Strongly disagree	3	0.6
Cervical cancer screening is not expensive		
Strongly agree	93	18
Agree	170	32.9
Neither agree nor disagree	86	16.7
Disagree	165	32
Strongly disagree	2	0.4

(*Continued*)

Table 4 (Continued).

Variable (n=516)	Frequency	Percent
If screening is free and causes no harm will you screen		
Strongly agree	217	42.1
Agree	173	33.5
Neither agree nor disagree	33	6.4
Disagree	91	17.6
Strongly disagree	2	0.4

monthly income higher than 2000 Ethiopian birr were 2.46 times more likely to have a positive attitude towards cervical cancer screening compared with women who had a low monthly income [AOR=2.46, 95% CI:1.26–4.82] (Table 7).
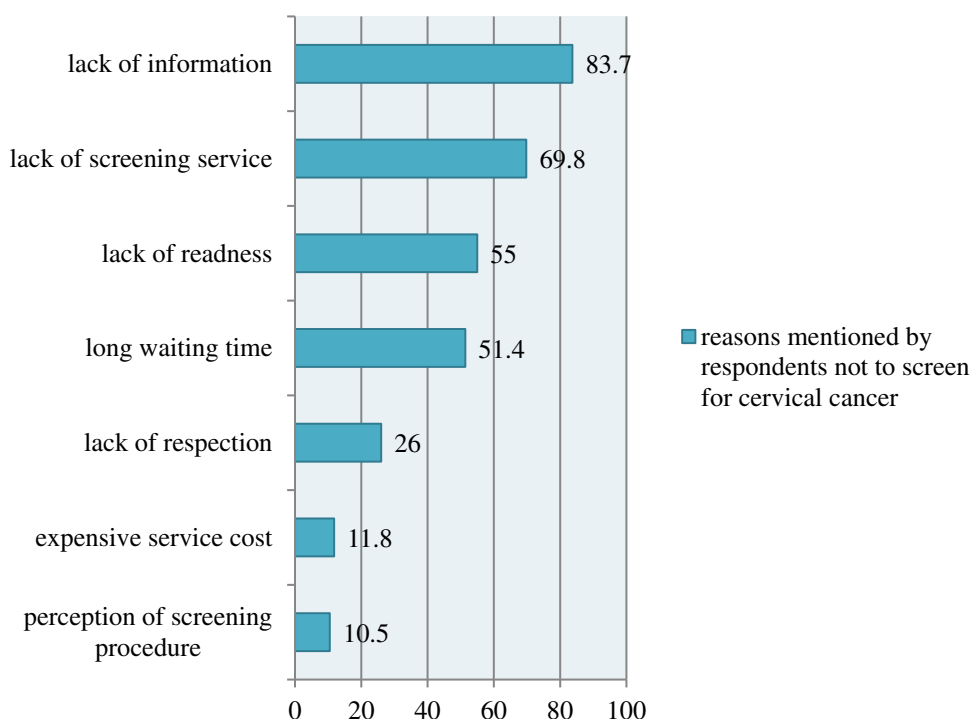
Factors Associated with Practice Towards Cervical Cancer Screening

The association of age with the practice of cervical cancer screening among women who were attending hospital

Table 5 The Response Rate of Respondents Towards Cervical Cancer Screening

Variable (516)	Category	Frequency	Percent
Have you ever screened for reproductive health services like HIV, STI	No	75	14.5
	Yes	441	85.5
Have you ever screened for cervical cancer	No	398	77.1
	Yes	118	22.9
Where did you screen	Hospital	116	98.3
	Other	2	1.7
How many times you screened	Only one	118	100
When was last time you screened	Last one year	30	5.8
	Within the past three years	17	3.3
	More than three years ago	23	4.5
	In this year	52	10.1
Who initiated you to be screened	Health professional	62	52.5
	Self-initiated	51	43.2
	Mass media	17	14.4
	Others	42	35.6

Reasons mentioned by respondents not to screen for cervical cancer

Figure 1 Reasons for not having the practice to use cervical cancer screening among study subjects in southern Ethiopia, 2017, n=516.
Note: Percent exceed 100% because of multiple responses.

revealed that women age group 30–34 were seven times more likely to have good practice in cervical cancer screening compared with women 45–49years of age [AOR=7,95% CI:2.35–21.02]. Women in age group 35–39 were 6.7 times more likely to have a good practice of cervical cancer screening compared with women 45–49 years of age [AOR=6.7,95% CI:2.25–20.10].

The association of education with practice of cervical cancer screening among women attending hospital showed that women who had degree/diploma level of education were 5.2 times more likely to have a good practice regarding cervical cancer screening compared with those did not attend formal education [AOR=5.2,95% CI:1.57–17.49].

Women who had known someone diagnosed with cervical cancer were 2.47 times more likely to have a good practice of cervical cancer screening when compared with mothers who did not know who diagnosed with cervical cancer [AOR=2.47,95% CI:1.37–4.44].

The association of monthly income with outcome variable among women attending hospital revealed that women who had monthly income more than 2000 birr were 3.8 times more likely to have a good practice

regarding cervical cancer screening compared with mothers with low income [AOR=3.8,95% CI: 1.86–7.77] (Table 8).

Discussion

Our study confirmed that the practice of cervical screening in Wolaita Zone is low. The overall knowledge of cervical cancer screening, positive attitude towards cervical cancer screening, practice towards cervical cancer screening were 46.1%, 45.5%, 22.9%, respectively. Age, educational status, knowing someone diagnosed with cervical cancer, sources of information from health professionals were predictors of knowledge of cervical cancer screening. Marital status, monthly income, and good knowledge were significant predictors of attitude towards cervical cancer screening. Age, education, income, and knowing someone diagnosed with cervical cancer was found to be significantly associated with the practice of cervical cancer screening.

The level of knowledge of cervical cancer screening of women attending the hospital of Wolaita zone of this study was 46.1%. This ding was comparable with the research done in Dessie referral hospital and Dessie health Center,

Table 6 Factors Associated with Knowledge of Cervical Cancer Screening in Wolaita Zone, 2017 (n=516)

Variable (516)	Knowledge of Cervical Cancer Screening		COR (95% CI)	AOR (95% CI)
	Good Knowledge	Poor Knowledge		
Age-group				
30–34	66 (58.9%)	46 (41.1%)	2.97 (1.44–6.11)**	3.02 (1.11–8.24)*
35–39	49 (49.5%)	50 (50.5%)	2.03 (0.97–4.21)	1.54 (0.57–4.19)
40–44	24 (31.2%)	53 (68.8%)	0.94 (0.43–2.05)	0.92 (0.32–2.69)
45–49	15 (32.6%)	31 (67.4%)	1	
Educational status				
No formal education	9 (18.4%)	26 (74.3%)	1	
Primary education	6 (11.3%)	47 (88.7%)	0.57 (0.19–1.73)	0.90 (0.21–3.85)
Secondary education	43 (50%)	43 (50%)	4.44 (1.92–10.27)***	5.2 (1.73–15.65)**
Degree &above	96 (65.8%)	50 (34.2%)	8.35 (3.84–18.99) ***	7.3 (2.53–21.01) ***
Residence				
Urban	117 (50.4%)	115 (49.6%)	1.79 (1.11–2.89) *	0.73 (0.35–1.52)
Rural	37 (36.3%)	65 (63.7%)	1	
Know someone diagnose with cervical cancer				
No	52 (34.2%)	100 (65.8%)	1	
Yes	102 (56%)	80 (44%)	2.45 (1.57–3.83) ***	1.44 (0.77–2.70)
Source of information (HW)				
No	40 (28.6%)	100 (71.4%)	1	
Yes	114 (58.8%)	80 (41.2%)	3.56 (2.24–5.67) ***	2.3 (1.27–4.17) **
Source of information (community)				
No	129 (49.6%)	31 (36.5%)	1	
Yes	25 (34.2%)	10 (66.7%)	53 (0.31–0.91) *	0.65 (0.31–1.39)
Age at first sex				
<15	27 (61.4%)	17 (38.6%)	1	
15–18	53 (47.7%)	58 (52.3%)	0.58 (0.28–1.17)	0.85 (0.32–2.26)
>18	70 (40.5%)	103 (59.5%)	0.43 (0.22–0.84) *	0.59 (0.23–1.52)
Currently OCP users				
No	117 (52.2%)	107 (47.8%)	1	
Yes	29 (29.6%)	69 (70.4%)	0.38 (0.23–0.64) *	1.45 (0.72–2.91)

Notes: *p<0.05, **p<0.01, ***p<0.001.

northeast Ethiopia, which was 44 0.2% (38). It was congruent with the survey done in Kathmandu Nepal which was[15] but slightly higher than a similar study in Northwest Ethiopia, Gabon, Tanzania.[16–18] This could be due to the variation in study setting.

Of respondents 45.5% had good knowledge about risk factors for cervical cancer, which was less than the 73.5% finding in a Saudi Arabia study which was conducted among reproductive-age women (35). This difference may be due to cultural and socio-economic differences between these populations.

Women in age group 30–34 were three times more likely to have good knowledge of cervical cancer screening compared with women 45–49 years of age [AOR=3.02 95% CI (1.11, 8.24 which is in line with a Hospital-based cross-sectional study done in Indian.[14] Women who had a degree/or diploma level of education were 7.3 times more knowledgeable about cervical cancer screening compared with that mother did not attend formal education [AOR= 95% CI (2.53, 21.01). Our findings confirmed a previous study was done in Dessie referral hospital and Dessie health center in northeast Ethiopia.[19]

Participants who mentioned health professionals as their source of information were statistically significant predicted to have good knowledge of cervical cancer screening. This finding is consistent with other studies in

Table 7 Factors Associated with the Attitude Towards Cervical Cancer Screening in Wolaita Zone, Southern Ethiopia, 2017 (n=516)

Variable	Attitude Towards Cervical Cancer Screening			
	Positive Attitude	Negative Attitude	COR (95% CI)	AOR (95% CI)
Marital status				
Single	116 (73%)	43 (27%)	3.78 (1.56–9.14)*	3.47 (1.03–11.75)**
Married	97 (31.4%)	212 (68.6%)	0.64 (0.28–1.49)	0.7 (0.23–2.19)
Divorced	12 (50%)	12 (50%)	1.4 (0.45–4.38)	1.28 (0.30–5.45)
Widowed	10 (41.7%)	14 (58.3%)	1	
Educational status				
Primary education	50 (48.5%)	53 (51.5%)	0.73 (0.43–1.25)	1.42 (0.55–3.67)
Secondary education	59 (46.8%)	67 (53.2%)	0.68 (0.41–1.14)	0.82 (0.36–1.86)
Diploma/or degree	64 (36.2%)	113 (63.8%)	0.44 (0.27–0.71)*	0.47 (0.21–1.05)
No formal education	62 (56.4%)	48 (43.6%)	1	
Occupation				
Student	22 (40.7%)	32 (59.3%)	1.10 (0.58–2.12)	0.95 (0.37–2.44)
Private employ	42 (39.5%)	65 (60.7%)	1.04 (0.61–1.76)	0.46 (0.19–1.15)
Daily labor	15 (51.5%)	14 (48.3%)	1.72 (0.76–3.87)	0.65 (0.17–2.45)
Merchant	38 (37.6%)	63 (62.4%)	0.97 (0.56–1.66)	0.4 (0.42–1.49)
Government employ	70 (70%)	30 (30%)	3.74 (2.14–6.55)*	1.07 (0.44–2.62)
House wife	48 (38.4%)	77 (61.6%)	1	
Income				
>2000	100 (53.5%)	87 (46.5%)	1.65 (1.15–2.37)*	2.2 (1.16–4.19)* *
50–2000	135 (41%)	194 (59%)	1	
Knowledge of CC				
Poor	81 (45.5%)	97 (54.5%)	1	
Good	117 (75%)	39 (25%)	3.59 (2.25–5.73)*	4.76 (2.65–8.57)**
Residence				
Rural	90 (52.6%)	81 (47.4%)	1	
Urban	145 (42%	200 (58%)	0.44 (0.27–0.71)*	0.97 (0.54–1.73)

Notes: *Statistically significant in COR, **statistically significant in AOR.

Malaysia and Gabonese[17,20] and might be explained because information gained from health professionals could be comprehensive and more detailed than other sources of information.

Nearly half 45.5% of the respondents had a positive attitude towards cervical cancer screening. This finding is comparable with a study in Northeast Ethiopia, which showed 42.1% (18), but this finding is lower than the research done in Cameroon and Zimbabwean.[21,22] This could be explained by the socio-economic difference between countries. We found that good knowledge of cervical cancer was a predictor of positive attitude towards cervical cancer screening. Previous studies conducted in Northwest Ethiopia, Burkinafaso, and India also confirmed this[14,23,24] and could be explained by information being provided on the importance of cervical cancer screening leading to an increase in the healthcare-seeking behavior

of respondents. Monthly income >2000 birr was a significant predictor of positive attitude towards cervical cancer screening and this is in line with a hospital-based study in India.[14] Of respondents 22.9% had a good practice related to screening for cervical cancer. The result is higher than a study three teaching hospitals in Addis Ababa, Ethiopia in 2008. This discrepancy might be due to the study period[11] but it was comparable with a study in Tanzania, Burkinafaso, and Kenya.[18,24,25] On the other hand, it was lower than research conducted in Cameroon, Botswana, showing 55.7%, and 39%, respectively.[15,18] This difference might be due health care provision strategies and health promotion being different bewteen countries.

We found that women in age group 30–34 were significantly associated with good practice towards cervical cancer screening. The finding is in line with research in India[14] and explained by women aged 30–34 years being

Table 8 Factors Associated with Practice Towards Cervical Cancer Screening in Wolaita Zone, 2017

Variable	Practice Towards Cervical Cancer Screening		COR (95% CI)	AOR (95% CI)
	Good	Poor		
Age				
30–34	53 (28%)	135 (71.8%)	4.9 (1.86–12.78)***	7.03 (2.35–21.02)***
35–39	48 (29.3%)	116 (70.7%)	5.1 (1.94–13.55)***	6.7 (2.25–20.10)**
40–44	12 (12.4%)	85 (87.6%)	1.8 (0.59–5.23)	2.05 (0.61–6.89)
45–49	5 (7.5%)	62 (92.5%)	1	
Education				
No formal education	5 (4.5%)	105 (95.5%)	1	
Primary education	48 (29.3%)	92 (89.3%)	2.5 (0.84–7.49)	1.69 (0.42–6.71)
Secondary education	12 (12.4%)	101 (80.2%)	5.2 (1.92,14.11)**	2.5 (0.71–8.56)
Degree/diploma	77 (43.5%)	100 (56.5%)	16.2 (6.28–41.61)***	5.2 (1.57–17.49)**
Occupation				
Housewife	14 (11.2%)	111 (88.8%)	1	
Student	17 (31.5%)	37 (63.5%)	3.6 (1.64–8.10)**	1.5 (0.51–4.37)
Private employ	39 (36.4%)	68 (63.6%)	4.6 (2.30–8.99)**	0.6 (0.21–1.72)
Daily labor	6 (20.7%)	23 (79.3%)	2.1 (0.72–5.95)	3.99 (0.87–18.25)
Merchant	20 (19.8%)	81 (80.2%)	2 (0.93–4.11)	0.8 (0.26–2.21)
Government employ	22 (22%)	78 (78%)	2.2 (1.08–4.64)	0.93 (0.18–1.56)
Monthly income				
50–2000	50 (15.2%)	119 (63.6%)		
>2000	68 (36.4%)	279 (84.8%)	3 (2.09–4.87)***	3.8 (1.86–7.77)***
Residence				
Urban	92 (26.7%)	253 (73.3%)	2.03 (1.25,3.28)**	0.72 (0.36–1.44)
Rural	26 (15.2%)	145 (84.8%)		
Lack of screening service				
No	55 (35.3%)	101 (64.7%)	1	
Yes	63 (17.5%)	297 (82.5%)	0.039 (0.25–0.59)***	0.31 (0.17–0.56)***
Know someone diagnosed with CC				
No	39 (14.2%)	236 (85.8%)	1	
Yes	79 (32.8%)	162 (67.2%)	3 (1.92–4.55)***	2.47 (1.37–4.44)**
Knowledge of cervical cancer				
Poor knowledge	43 (23.9%)	137 (76.1%)	1	
Good knowledge	62 (40.3%)	92 (59.7%)	2.2 (1.34–3.44)**	0.78 (0.40–1.50)

Notes: **p<0.01, ***p<0.001

more likely to visit health care facilities. Women's education is one of the predictors of the practice for cervical cancer screening. Our result matches research in a hospital-based study done in India.[14]

Women who knew someone diagnosed with cervical cancer had a statistically significant association with screening practice which agrees with a Gondar study.[16] Moreover, this study found that lack of screening service at the health facility level was negatively associated with screening practice. The finding matches the research in Addis Ababa and Kenya.[11,18] Common reasons mentioned

by respondents for not to be screened for cervical cancer was lack of information (83.7%), lack of screening service (69.8%), lack of readiness at health facility (55%), long waiting time (51.4%), and expensive service cost (10.8%). Studies in Addis Ababa, Tanzania, and Kenya confirm our result (11, 20, 26).

Limitation of the Study

This is the cross-sectional study; hence it is not possible to differentiate cause and effect between variables. Also, its

generalizability to the general population is limited because it is an institution based study.

Conclusion

This study revealed that knowledge and attitude towards cervical cancer screening were moderate while practice was low. Respondents' knowledge of cervical cancer regarding gynecologic symptoms, risk factors, prevention methods, treatment options, frequency of screening, screening methods, screening eligibility, and screening procedures were low. Age, educational status, and source of information from health professionals were statistically significant predictors of good knowledge. Positive attitude was predicted by monthly income, knowledge of cervical cancer and marital status. Similarly, knowing someone with cervical cancer, income status, and lack of screening service were significant predictors of screening practice. Therefore, health education and awareness creation regarding cervical cancer should be implemented at primary health care units. Finally, further study is recommended at the community level, including a qualitative component.

Ethics Approval and Informed Consent

Ethical clearance was obtained from the College of Health Science and Medicine, Wolaita Sodo University, Ethiopia. Informed written consent was obtained from the individual participants.

Data Sharing Statement

Data are available to provide for all interested persons on request from the principal author.

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Author Contributions

All authors contributed to data analysis, drafting and revising the article, gave final approval of the version to be published, and also agree to be accountable for all aspects of the work.

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