

Evaluation of Cervical Cancer Screening Uptake and Risk Factors Knowledge: Health Beliefs Model (HBM)

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Abstract

Background: Even though 20 million women are eligible for cervical screening in Ethiopia only less than 1% of women are screened. Part of the explanation for the low uptake of cervical cancer (CC) screening could be rooted women's health beliefs and inadequate knowledge of risk factors.

Objectives: To assess women health beliefs on CC screening and CC risk factors knowledge who visited Sister Aklesia Memorial Hospital (SAMH) for any medical reasons in Adama town, Oromia, Ethiopia.

Methods: A cross sectional study was conducted and a total of 412 women participated between September and December 2017.

Results: The average age of women was 44.6 years. Among 28 women who visited health facility, thirteen (3.2%) had underwent screening test either of VIA or Pap test. Association between women's education ($p < 0.05$) and household income ($p < 0.05$) with health facility visit for the purpose of CC screening were found statistically significant. Women didn't visit clinics for screening purpose because they believe "douching every day" can prevent CC; and "no see and treat" system existed; "uncomfortable if a man does the procedure"; "no self-sampling device available" were the main barrier factors. Women believed that they are not susceptible of CC when they don't have sex with many partner ($p < 0.05$) and don't have symptoms ($P < 0.05$), and so they don't need a CC screening test. Significant number of women ($p < 0.05$) didn't consider abnormal CC screening tests without treatment can lead to cervical cancer.

Conclusion: The health belief model could be used to study factors influencing Ethiopian women's participation in cervical cancer screening. Therefore, changing social structure and living condition of women may improve health

through increasing preventive belief and incentives for screening tests. This study is identified several factors influencing cancer screening uptake and compliance.

Keywords: Health Beliefs Model; Cervical Cancer; Screening

Abbreviations: CC: Cervical Cancer; CCS: Cervical Cancer Screening; VIA: Visual Inspection with Acetic Acid; LEEP: Loop Electrical Excision Procedure; FMOH: Federal Ministry of Health.

Introduction

Cervical cancer (CC) is responsible for 230,200 deaths and 444,500 cases of disease annually among women in the developing country [1,2]. The mortality rates for CC are expected to increase by 25 % during the next decade, despite the fact that this is one of the most preventable cancers. In resource-limited countries access to cervical cancer screening (CCS) and vaccination is poor [3]. In sub-Saharan Africa over 80% of CC is detected in late stages [3,4]. There is low survival rate when women had cervical cancer at an advanced stage of disease [5,6].

In Ethiopia, CC is the second most frequent female cancer with incidence rate (16.3%) among women between 15 and 44 years of age next to breast cancer (29.6%) [7]. Ethiopia has 29.4 million women aged 15 years and older and 7.095 women are reported with CC of whom 4,732 die from the disease [7].

Currently in Ethiopia, 200 health facilities are providing VIA screening and cryotherapy treatment and more than 52,000 women were screened in 2016/17. In addition, Loop Electrical Excision Procedure (LEEP) service was scaled up from five to fifteen hospitals. The Federal Ministry of Health (FMOH) is working to scale up Visual Inspection with Acetic Acid (VIA) screening and cryotherapy treatment into 823 districts [8]. Even though 20 million women are eligible for cervical screening in Ethiopia only less than 1% has been screened [8].

Infection with high-risk human papillomavirus (HR HPV) is the cause of almost all CC cases. Early sexual debut, multiple sexual partners, young age at first delivery, multi-parity, immunosuppression, co-infection with other sexually transmitted infections (STIs), cigarette smoking, long-term use of hormonal contraceptives, estrogen-only hormone replacement therapy and obesity are some of the factors that has been associated with an increased risk of developing CC [9].

Appropriate level of knowledge, attitude, and beliefs are key elements for adopting healthy lifestyle, influencing human behaviors, accepting newly introduced preventive measures and determining the stage at which cancer patient presents to health facility [10].

Studies from many parts of the world including Ethiopia have shown lack of awareness within populations regarding CC symptoms, early signs, and the role of screening and HPV vaccination for prevention [11-17]. Cervical cancer's long latency and recognizable pre-cancerous lesions make screening a particularly effective way of prevention as these pre-cancerous lesions, once identified, can be expectantly managed or treated safely and inexpensively in an outpatient setting [13]. It is important to create awareness among communities through educational programs on cancer prevention, preventable risk factors, benefits of early diagnosis, and availability of screening facilities. In the developed countries, CC screening programs have reduced the incidence of invasive lesions up to 80% [12].

Methodology

The goal of this study was to investigate health beliefs on uptake of cervical cancer screening and treatments program and knowledge on cervical cancer risk factors in Adama, Oromiya, Ethiopia. A cross-sectional 412 women participated in this study between September to December 2017 at SAMH. The only inclusion criteria were participants had some level of knowledge and awareness about cervical cancer disease.

The study was conducted in Adama Town, Oromia region, having a total population of 1.356.342 of whom 659.992 are female. As the population of East Shewa also seeks medical care in Adama, this population was also part of the study population. The SAMH Hospital, which is located in Adama Town, is a private hospital with a history of cervical cancer screening programmes and is currently a center in which cervical cancer screening is performed.

Women who came for general medical checkup not primarily for cervical cancer screening were recruited

from this hospital. Women were eligible if they were able and willing to provide written or verbal informed consent. Information on basic demographic, potential barrier to

update of cervical cancer and treatments, knowledge on risk factors were collected from all consenting women by standardized questionnaires.

Categories	Sub-categories	Frequency	Percent	CCHF visit			
				Yes	No	X ²	p-value
Age group	20- 29	39	9.5	39	0	4.684	0.321
	30-39	91	22.1	86	5		
	40-49	135	32.8	124	11		
	50-59	140	34	128	12		
	60-69	7	1.7	7	0		
Education status	Under grade 8	56	13.6	53	3	11.186	0.048
	Under grade 10	191	46.4	184	7		
	Preparatory [University]	8	1.9	8	0		
	Certificate	80	19.4	73	7		
	Diploma	68	16.5	58	10		
	Degree	9	2.2	8	1		
Marital status	Married	193	44.8	180	13	0.643	0.958
	Single	65	15.8	60	5		
	Separated	41	10	38	3		
	Widowed	66	16	61	5		
	Living with partners	47	11.4	45	2		
Age at marriage	<=20 years	303	73.5	281	22	0.39	0.532
	>20 years	109	26.5	103	6		
Type of treatment	Modern	286	69.4	267	19	0.034	0.853
	Traditional	126	30.6	117	9		
History of cervical cancer in your family	No	324	78.6	308	16	82.693	0.000
	Yes	13	3.2	4	9		
	Not Sure	75	18.2	72	3		
Parity	=<3	356	86.4	332	24	0.012	0.912
	>3	56	13.6	52	4		
Household income (ETB]/Month	<1500	212	51.5	211	1	55.739	0.000
	1500-5000	185	44.9	165	20		
	>5000	15	3.6	8	7		
Use of any contraception	No	270	65.5	384	15	184.095	0.000
	Yes	142	34.5	0	13		
Visit clinic for cervical cancer service	No	384	93.2	-	-	-	-
	Yes	28	6.8	-	-	-	-
Previous history of CC Screening test (VIA or PAP)	No	399	96.8	-	-	-	-
	Yes	13	3.2	-	-	-	-

Table 1: Socio-demographic characteristic of the women participants and association between women cervical cancer health facility (CCHF) visit and socio-demographic characteristics (n=412), SAMH, September to December 2017.

Nurses who trained on interview questionnaires and had good experiences on cervical cancer interviewed the women in their native language, either Oromia or Amharic. The inclusion criteria were women between the ages of 20 and 70 years old.

The questionnaire was designed in English and translated into Oromifia and Amharic: the main language

used in the study area and back translated to English with any discrepancies addressed was pretested among a group similar to the study respondents. The questionnaire had three sections. The first section included questions on the participants' demographic characteristics such as age, education status, marital status, age at marriage, history of CC in her family, parity, household income and use of contraception. The study identified two outcomes i.e

women visited health facility for CC purpose previously (1= visited, 0= not visited) and women who was underwent CCS (PAP or VIA) test (i.e. 1= Yes; 0= No).

The second section included nine questions that assessed the respondents' specific risk factors knowledge about cervical cancer prevention. Questions are required "Yes" or "No" responses. The risk factors included unprotected sex, multiple sexual partnerships, smoking, use of contraception, previous exposure to sexually transmitted diseases and early sex onset.

The third section examined women's health beliefs towards cervical cancer screening. The HBM is a well-known health education model that is simple in design and that has been used successfully in health

interventions. The questionnaire was developed based on the HBM theory to assess beliefs related to cervical cancer screening [18,19]. Based on literature reviews on factors influencing screening practice, 71 items were identified and grouped into the five domains of the HBM and checked for clarity and pilot questionnaires were used and corrected accordingly. All items were translated into

Oromia and Amharic language since the majority of participants was from Oromia. Dichotomous responses i.e. Yes or No were used.

The HBM focuses on five determinants: Perceived susceptibility, Perceived severity, perceived benefits [Positive attributes of the action], and perceived barriers [Negative attributes of the action], and cues for action.

A woman agreed that the following risk more likely develop cervical cancer if	(n=412) Percentage
Has unprotected sex	60.40%
Smokes cigarettes	59.20%
Used birth control pill for a long time	56.40%
Had many sexual partners	56.10%
Has many children	41.40%
Not going for regular [Pap] smears or VIA tests	38.30%
Has a sexually transmitted disease or virus	11.70%
Has a weakened immune system	11.20%
Started having sex at a young age	11.20%

Table 2: Women knowledge about risks factors for developing cervical cancer, (n=412), SAMH, September to December 2017.

Ethical Clearance

The ethical committee of the College of Natural Sciences, Addis Ababa University has examined the

project and approved. The SAMH Hospital also approved the project and conducted ethically.

Perception	Disagreed		Agreed		Total Disagreed % (Count)	Total Agreed % (Count)
	Mean	Count (above average)	Mean	Count (above average)		
Perceived susceptibility	10.67	232	4.33	180	71.11 (4099/5768)	28.89 (1668/5768)
Perceived severity	4.77	256	2.23	156	68.17 (1966/2884)	31.83 (918/2884)
Perceived benefit	4.68	235	3.32	177	58.51 (1928/3296)	41.49 (1367/3296)
Perceived barrier	15.04	183	15.13	187	49.70 (6143/12360)	50.28 (6215/12360)
Cues to action	6.15	183	5.85	229	51.27 (2535/4944)	48.73 (2409/4944)

Table 3: Total and average score participant response's on Health Beliefs, (n=412), questionnaires items (PSU=14; PS=7; PB=8; PBA=31; CA=12); SAMH, September to December 2017.

Data Analysis

Statistical analysis was performed using the SPSS version 20 software. Means and standard deviations were used to describe continuous variables. An association was statistically significant if the p-value was less than or

equal to 0.05. Descriptive statistics and bivariate analysis were conducted. Odds ratios and 95% confidence intervals were used as measures of association. Descriptive statistics were conducted to characterize the participants and provide frequencies on individual

questions and risk factors knowledge. Bivariate analysis was conducted to determine the association between

socio-demographic characteristics, health beliefs and risk factors knowledge about cervical cancer prevention.

CCHF Visit						
Items [perceived susceptibility (PSU)]	Disagreed		Agreed		X2	p-value
	Count	%	Count	%		
1. I am not at risk for an abnormal CCS test	273	66.3	139	33.7		
2. I am not at risk for developing cervical cancer	275	66.7	137	33.3		
3. If I have cervical cancer, I can die.	270	65.5	142	34.5		
4. Since I do not have a history of cervical cancer in my family, it is very unlikely that I will get cervical cancer.	285	69.2	127	30.8		
5. Cervical cancer is one of the most common cancers among women my age.	306	74.3	105	25.5		
6. If I do not have symptoms, I do not need a CCS test.	269	63.1	143	33.6	14.567	0.000
7. If I have not had children, I do not need a CCS test.	279	67.7	133	32.3		
8. If I do not have intercourse, I do not need a CCS test.	319	77.4	93	22.6		
9. If I am sterilized, I do not need a CCS test.	285	69.2	127	30.8		
10. If I am not pregnant, I do not need a CCS test	308	74.8	104	25.2		
11. If I do not have sex with many partner, I do not need a CCS test	278	65.3	134	31.5	17.089	0.000
12. If I do pray and fasting accordingly, I do not need a CCS test	280	68	132	32		
13. If I do drink holy water, I do not need a CCS test	327	79.4	79	19.2		
14. If I do not take any contraceptive drug or device use, I do not need a CCS test	295	69.2	117	27.5	15.43	0.001
Items [perceived severity (PS)]						
15. An abnormal CCS test, without treatment, can lead to cervical cancer.	240	56.3	172	40.4	4.444	0.035
16. Not having a CCS test could result in a serious health problem.	276	67	136	22		
17. Cervical cancer may lead to death	281	66	131	30.8	4.591	0.032
18. Cervical cancer would make a women's life very difficult.	310	75.2	102	24.8		
19. Cervical cancer may lead to having a hysterectomy.	308	74.8	104	25.2		
20. Cervical cancer is not a serious health problem.	283	68.7	129	31.3		
21. Cervical cancer can lead to a woman needing to receive chemotherapy or radiotherapy treatment.	268	65	144	35		

Table 4: Women's responses for perceived susceptibility (PSU) and perceived severity (PS) regarding cervical cancer screening and its association to CCHF visit, Pearson's Chi-Square test, (n=412), SAMH, September to December 2017.

A binary outcome of risk factors knowledge was determined and women who had answered "yes" response were considered to be more correctly responded while those who said "no" were considered to have no knowledge.

Results

A total of 412 women participated in the study and those who had some level of knowledge and awareness about cervical cancer disease were included in this study. The mean age of women was 44.6 years (SD=9.3). Two hundred forty seven women (59.9%) and 18.7% (77/412) women were under grade 10 and above certificate, respectively (Table 1).

One hundred ninety three women (46.8%) were married; 11.4% were living with partners and 15.8% (65/412) was never married. Women who had married below age of 20 years were 73.5% (303/412) and rest was married at the age of 21 and older. Relatively higher number of women was used modern medicine of 69.4% (286/412) as compared to traditional treatment, 30.6% (126/412) (Table 1).

More than three-fourth of women 78.6% (324/412) were responded that no history of cervical cancer in their families was known and 3.2% (13/412) reported that there was a cervical cancer family history documented. A total of 356/412 (86.2%) women had children less than three. Almost half of women had household income less

than ETB1500 per month and only 3.6% had monthly income greater than ETB 5000. Women, 34.5% (142/412), were used contraception drug or device in their life time (Table 1).

A total of 6.8% (28/412) women reported that they had visited health facility for purpose of getting cervical cancer service. Accordingly from women who had visited health facility, only 3.2% (13/412), had undergone cervical screening either of VIA or Pap test (Table 1).

CCHF visit						
Items (perceived benefit)	Disagreed		Agreed		X2	p-value
	Count	%	Count	%		
1. Getting a CCS test makes me feel good because it means that I take care of my health.	213	51.7	199	48.3		
2. Getting a CCS test allows for early detection of cervical cancer.	253	59.4	159	37.3	16.803	0.000
3. The CCS test can determine cervical cancer.	217	52.7	195	47.3		
4. Getting a CCS test is a good investment of my time in health.	233	56.6	178	43.2		
5. A CCS test can find cervical cancer when it is possible to cure it.	260	63.1	152	36.9		
6. The CCS can save my life.	235	57	177	43		
7. The CCS test can help to find infection disease.	258	62.6	154	37.4		
8. Getting a CCS test can find another reproductive problems [genitals problems]	259	62.9	153	37.1		
Items (cues to action)						
9. To take care of my health	334	83.5	68	16.5		
10. After hearing something about cervical cancer.	297	72.1	115	27.9		
11. Because a doctor or nurse or midwife told me.	263	60.9	149	34.5	7.842	0.005
12. Because a health center send me mobile text or phone call.	150	36.4	262	63.6		
13. Because my mother spoke to me about it.	190	46.1	222	53.9		
14. Because a friend spoke to me about it.	189	45.9	223	54.1		
15. Because members of my family told me to get it.	77	18.7	335	81.3		
16. Because I listened to or read something in the news or in a television or radio program on CCS	262	60.6	150	34.7	7.666	0.006
17. Because I had genital bleeding.	57	13.8	355	86.2		
18. Because I had pain in my genitals.	277	64.1	135	31.3	8.103	0.004
19. Because someone I know well [family, friend, neighbor] had cervical cancer.	225	54.6	187	45.4		

Table 5: Women's responses for perceived benefit [PB] and cues to action (CA) regarding cervical cancer screening and its association to CCHF visit, Pearson's Chi-Square test, (n=412), SAMH, September to December 2017.

Table 2 shows that a quarter of women (25.2%) didn't give correct answer on risk factors knowledge for cervical cancer. A percentage of 41.4 and 38.3 of women aware that risk factors of having more children and not regularly checked for VIA or PAP screening test could be a likely risk factors.

Women were aware that, 11.2%, early sexual debut was associated with development of CC and 59.2% recognized smoking cigarettes as a risk factor. Use of birth control pill for a longer time was recognized as a risk factor by 56.4%, and multiple births by 41.4% of women (Table 2). On average ($\bar{x}=5.6$) women correctly identified out of the nine risk factors presented in this study.

A total of 6.8% (28/412) participants had visited CCHF previously at least once for cervical cancer checkup (table 1). There was a significant association between women who had graduated at least certificate level and who had visited CCHF (p value =0.048). A significant association was also found between women who had cervical cancer history in their family and previous visit of cervical cancer health facility for checkup purpose (p value =0.000).

Moreover, women's household income that had more than ETB 1500 was significantly associated with a previous visit to a cervical cancer health facility for checkup condition (p value=0.000). From total of 28 women who had visited CCHF, 46.42% (13/28) participants underwent VIA or PAP screening test (p

value =0.000). Almost, 70% of participants with a history of CC in the family (9/13) had visited a CC health facility. Variables like marital status, number of children, age, age at first marriage and type of treatment were not statistical associated with women visit for any kind cervical cancer service.

Health Belief Model Results

A total of 143/412 (33.3%); 134/412 (31.5%) and 117/412 (27.5%) women had misconception regarding CCS test that the test need when they were had symptoms; sex with many partner and contraceptive drug (table 6). Forty percentage (172/412) and 30.8% (131/412) women correctly identified the perceived severity (table 4). Women 159/412 (37.3%) were agreed that getting a CCS test allows for early detection of cervical cancer (table 5). Women were, 31.3% (135/412), and 34.5% (150/412) taken action when they had pain in her genitals and heard about cervical cancer in any media, respectively (table 5).

In table 6, regarding perceived barrier, almost half of women 49.0% (202/412) were concluded that they are not comfortable if they doctor is man and they believed 51.0% (210/412) that CCS test was like an intra-uterine device and couldn't take CCS test because the clinic hadn't have a program of "see and treat" approach. One of a big misconception identified in this study was women, 53.9% (222/412), concluded that douching every day is necessary not to take CCS test.

Woman who visited health facility for cervical cancer screening service were statistical associated with perceived susceptibility when they had symptoms, sex with many partner, and took any contraceptive drug or device use with p-value of 0.000, 0.000 and 0.001, respectively (Table 6).

Table 7 illustrated that woman who visited health facility for cervical cancer screening service were statistically associated with perceived severity when they had an abnormal cervical cancer screening tests and believed that cervical cancer may leads to death with p-value 0.035 and 0.032, respectively. Women perceived benefit when getting a screening test allows for early detection of cervical cancer were statistical significant (p-value=0.000) with health facility visited (Table 5).

Women believed that the main barrier factors for not visiting health facility for screening purpose were "if they do douching every day" (p-value=0.000); "no see and treat" approach available (p-value=0.000); "uncomfortable if a man does the procedure" (p-value=0.001); "if they believe cancer is God will's or traditions of religions" (p-value=0.002); "if a collection device can move the intra uterine device" (p-value=0.002); "fare of found cancer" (p-value=0.000) and "no self-sampling device available" (p-value=0.004) (table 6).

Table 5 indicated that women need some kind of information regarding cervical cancer screening and accordingly they visited health facility when health professional told them about it (p-value=0.005); had a pain in genital (p-value=0.006) and heard about it through media program (p-value=0.006).

In general for all HBM domains the mean score was relatively greater in visited CCHF as compared with didn't visit CCHF. The mean scores for perceived susceptibility, perceived barrier and cues to action domains did show a significant difference between the group that CCHF visited and did not visited with p-value of 0.008, 0.003 and 0.022, respectively, as shown in Table 7.

	CCHF visit					
	Disagreed		Agreed		X ²	p-value
	Count	%	Count	%		
1. I do not have time to get a CCS test.	74	18	338	82		
2. Getting a CCS test only will give me problems.	159	38.6	253	61.4		
3. A CCS test can move the intra uterine device.	202	49	210	51	9.158	0.002
4. Getting a CCS test is painful.	78	18.9	334	81.1		
5. Getting a CCS test gives me some insecurity about my health.	201	48.8	210	51		
6. I fan unmarried or single woman gets a CCS test, people may think that she is having sex.	202	49	210	51		
7. Getting a CCS test is expensive.	213	51.7	199	48.3		
8. Getting a CCS test is embarrassment.	213	51.7	199	48.3	6.532	0.011
9. I do not have a CCS test because I do not know where I need to go.	174	42.2	238	57.8		
10. I prefer that a female gives me the CCS test, because it is uncomfortable	210	51	202	49	10.491	0.001

<i>for me if a man does it</i>						
11. I have not taken the CCS test because they treat me badly in the health care center.	246	59.7	166	40.3		
12. I have not taken a CCS test because when I go, I need to wait a long time to be seen.	238	57.8	174	42.2		
13. I do not know if I need to have a CCS test.	202	49	210	51		
14. If a woman has not had sex, a CCS test could take away her virginity.	249	60.4	163	39.6		
15. My partner/husband does want me to get a CCS test.	255	61.9	157	38.1		
16. It is difficult to get a CCS test because I do not have money for transportation [take a bus, taxi, train].	222	53.9	190	46.1		
17. I have not taken the CCS test because I am afraid to find out if I have cancer.	267	64.8	145	35.2	8.578	0.003
18. I have not taken the CCS test because the health care center is only open during hours when I cannot go.	241	58.5	171	41.5		
19. I have not taken the CCS test because I am embarrassed to have a genital exam.	246	59.7	166	40.3		
20. I do not know at what age it is necessary to have a CCS test.	207	50.2	205	49.8		
21. I do not know how often I need to get a CCS test.	185	44.9	226	54.9		
22. I have not taken a CCS test because it is difficult to get an appointment.	242	58.7	170	41.3		
23. I have not taken the CCS test because the provider not have self-sampling device	277	67.2	135	32.8	8.103	0.004
24. I have language barriers	75	18.2	337	81.8		
25. I do not take CCS test because the clinic do not have a private screening room	261	63.3	151	36.7		
26. I do not take CCS test if there is no voluntary consulting test [VCT] prior to screening tests	242	58.7	170	41.3	4.69	0.03
27. I do not have CCS test because of "no see and treat" approach available	222	53.9	190	46.1	18.956	0.000
28. I have not taken a CCS because I'm not HIV positive	118	28.6	294	71.4	4.724	0.03
29. I have not taken a CCS because cancer is God will's or traditions of religions	204	49.5	208	50.5	9.48	0.002
30. I have not taken a CCS because I do douching every day or every time	190	46.1	222	53.9	21.883	0.000
31. I have not taken a CCS test because I do sex by condom	54	13.1	358	86.9		

Table 6: Women's responses for perceived barriers [PBA] regarding cervical cancer screening and its association to CCHF visit, Pearson's Chi-Square test, [n=412], SAMH, September to December 2017.

In table 7, the largest difference was in the 'perceived barrier' domain, with merely a 1.73 point difference between the two groups. 'Perceived severity' and 'perceived benefit' have the same difference, 0.32, while

'cues to action' had a difference of 0.75. In all the aforementioned domains, the group that CCHF visit scored higher means value.

Domains	Mean [SD]		95% CI	P-value
	Not visited CCHF [n=384]	Visited CCHF [n=28]		
Perceived susceptibility	4.26[2.05]	5.32[1.89]	-1.85, -0.28	0.008
Perceived severity	2.21[1.51]	2.53[1.57]	0.911, 0.25	0.266
Perceived benefit	3.29[1.40]	3.61[1.42]	-0.85, 0.23	0.259
Perceived barrier	15.84[2.93]	17.57[2.81]	-2.86, -0.61	0.003
Cues to action	5.79[1.65]	6.54[1.62]	-1.37, -0.11	0.022

Table 7: Mean total score for Health Belief Model domains between the group that visited and not visited cervical cancer screening facility (n=412), Independent T test.

Discussion

In this study all women had heard at least some level about cervical cancer through different sources in previous time that used as inclusion criteria for health belief model. This might be explained by the fact that the FMOH has given awareness training for patient and health care professionals to implement interventions for reducing the incidence of cervical cancer in the Ethiopia population [8]. In this study the cervical cancer coverage was 3.2% that is higher than national cervical cancer screening coverage rate [8] and that also was supported by other study Bruni L, et al. [20].

The author concluded that health behavior is a personal's beliefs rather than objective reality and therefore women health beliefs is crucial step for promoting cervical cancer screening uptake service [19]. Difference were observed in women age averagely that explained young and old women included in this study and could be seen as a good representative sample [21]. Study done by Author Wassie S, et al. [22] in Ethiopia revealed that 70% of participants didn't agree the effectiveness of traditional medicine that was confirmed also in this study i.e. women were preferred modern medicine for cervical cancer treatment.

Those women knew about cervical cancer disease through their family members, certificate level education and better household income were visited the health facility for the purpose of screening similar findings to our study done previously in Ethiopia [16,23-25]. This is might be concluded as women have inadequate knowledge about prevention and cervical cancer they are not likely to present for screening.

This study revealed women recognized smoking cigarettes, multiple births started sex at earlier age and use of birth control longer were identified as risk factors for cervical cancer disease and these were supported by Mukama, et al. [26]. Although most women identified most risk factors correctly above mean, the perceived susceptibility, severe and barriers influenced usage of cervical cancer screening service that contributed for low coverage cervical cancer screening as indicated by author Chantelle, et al. [27].

Women in this study believed that a cervical cancer screening test needs when they had symptoms; sex with many partner and contraceptive drug and were agreed that getting a CCS test allows for early detection of cervical cancer [28]. However, in sub-Saharan Africa over 80% of CC is detected in late stages of CC [3,4].

In this study women were concluded that they were not comfortable if the doctor was man and not likely to be screened and if the clinic hadn't a program of "see and treat" approach. Women were visited health facilities when they had pain in her genitals and heard about cervical cancer in any media and/or through her doctors or nurses.

One of misconception identified in this study was women concluded that douching every day could be seen as a guarantee for not to take cervical cancer screening test. Study done in USA revealed that vaginal douching is generally viewed as a practice enhancing vaginal hygiene and women believe that it can protect against sexually transmitted disease; however contradictory to these douching increase risk of having HPV of any type [29].

Previous information in Ethiopia revealed that the cervical cancer screening coverage was less than 1% [8] which not supported by this study where 3.2% of higher uptake of cervical cancer screening service found that may be participants' recall bias or small size study population and may not be a good representative data [30]. Our findings were also similar with world Health Organization reported that only 19% screening coverage in developing countries [31].

In our study only 3.2% participants were visited health facility for purpose of cervical cancer screening service whereas study from Southern part of Ethiopia found that more than one thirds of the respondents mentioned visual inspection with acetic acid as a screening method and 11.4% of the respondents were screened for cervical cancer [17]. This may explained due to various reasons like individual beliefs and cultural difference among study groups.

The author summarized that women's belief about cervical cancer was influenced by the culture, knowledge, social background, and the experience of health/illness [10,32]. Women beliefs that they can monitor their health situation if they pre-aware of it and information available about the disease [32]. This author is summarized that various perception beliefs identified and necessary corrective action has to design respective to different culture and social groups [33]. Thus, it is important to consider individual differences, because people may have different combinations of health beliefs [34].

Overall Ethiopia may need structured awareness, educational program and screening use to address different level of individual barrier, susceptibility and severity [35,36]. A continue and uninterrupted individual

beliefs changing program may be necessary at all level since changing people's beliefs is difficult than changing social and economical factors of community. Therefore, changing social structure and living condition of people may improve women health through increasing preventive belief and incentives for screening tests [18].

Free cervical cancer screening tests may not be the last resort rather attention need to educate women to change their perceived susceptibility, severity and barrier through various ways and integrated health belief model may be helpful [37].

To explore the relationship between health beliefs and women health behaviors the conceptual model of health belief model is used to study factors influencing Ethiopian women's participation in cervical cancer screening and may be considered in designing culturally appropriate cervical cancer screening interventions. This model is significantly identified that work has to do to change the women's expectation of disease susceptibility and severity where low number of women considered themselves susceptible to a cervical cancer disease and its severe consequence. Due to lack of information, reminder through media or personal influence and individual beliefs, women didn't test the benefits of taking any preventive action [30,38-40].

Ethiopia is prepared to launch HPV vaccine for women aged at 14 that is a big opportunity for prevention cervical cancer and increase awareness among population where consider as a game changing phenomena.

The limitation of this study was a cross-sectional study that was not possible to link the relationship between belief, cervical cancer risk factor, and screening tests rate. Ideally, a prospective study must be conducted to analyze the relationships between beliefs measured and the screening test as an outcome.

Conclusion

The health belief model could be used to study factors influencing Ethiopian women's participation in cervical cancer screening and may be considered in designing culturally appropriate cervical cancer screening interventions.

Conflicts of Interest

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References

1. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J, et al. (2015) Global cancer statistics, 2012. *CA Cancer J Clin* 65(2): 87-108.
2. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, et al. (2015) Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer* 136(5): E359-386.
3. Bingham A, Bishop A, Coffey P, Winkler J, Bradley J, et al. (2003) Factors affecting utilization of cervical cancer prevention services in low resource settings. *Salud Publica Mex* 45(S3): S408-S416.
4. Cristina Herdman JS (2000) Planning appropriate cervical cancer prevention programs. Seattle Program for Appropriate Technology in Health.
5. Mutyaba T, Faxelid E, Mirembe F, Weiderpass E (2007) Influences on uptake of reproductive health services in Nsangi community of Uganda and their implications for cervical cancer screening. *Reprod Health* 4: 4.
6. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, et al. (2012) Cancer Incidence and Mortality Worldwide. IARC Cancer Base No. 11.
7. ICO/IARC Information Centre on HPV and Cancer (2017) Human Papillomavirus and Related Cancers, Ethiopia.
8. Federal Democratic Republic of Ethiopia Ministry of Health [FMOH] (2016/2017) Improving the performance of the health system: A foundation for universal health coverage.
9. Parkin DM, Bray FI, Devesa SS (2000) Cancer burden in the year 2000. The global picture. *Eur J Cancer* 37(S8): S4-S66.
10. Aswathy S, Quereshi MA, Kurian B, Leelamoni K (2012) Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. *Indian J Med Res* 136(2): 205-210.
11. Dendash KF, Abd El ALL HS, Rafaat AH (2014) Women's health problems in Egypt focusing on

- cancer cervix, national population council and Suez canal university- faculty of Medicine.
12. Kietpeerakool C, Phianmongkhai Y, Jitvacharanun K, Siriratwatakul U, Srisomboon J (2009) Knowledge, awareness and attitudes of female sex workers towards HPV infection, cervical cancer, and cervical smears in Thailand. *Int J Gynaecol Obstet* 107(3): 216-219.
 13. Ebu NI, Mupepi SC, Siakwa MP, Sampsellem CM (2014) Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana. *Int J Womens Health* 7: 31-39.
 14. Notara V, Soultatou P, Tselika A (2012) Lay knowledge of HPV infection and the vaccine against HPV in Greece. *Health Sci J* 6(2): 270-279.
 15. Birhanu Z, Abdissa A, Belachew T, Deribew A, Segni H, et al. (2012) Health seeking behavior for cervical cancer in Ethiopia: a qualitative study. *Int J Equity Health* 11: 83.
 16. Mitiku I, Tefera F (2016) Knowledge about Cervical Cancer and Associated Factors among 15-49 Year Old Women in Dessie Town, Northeast Ethiopia. *PLoS One* 30 11(9): e0163136.
 17. Dulla D, Daka D, Wakgari N (2017) Knowledge about cervical cancer screening and its practice among female health care workers in southern Ethiopia: a cross-sectional study. *Int J Womens Health* 9: 365-372.
 18. Rosenstock I (1974) The health belief model and preventive health behavior. In: Becker M, (Ed.), *The health belief model and personal health behavior*, Charles B Slack, New Jersey, pp: 27-59.
 19. Rosenstock IM, Strecher VJ, Becker MH (1988) Social Learning Theory and the Health Belief Model. *Health Education & Behavior* 15(2): 175-183.
 20. Bruni L, Barrionuevo-Rosas L, Serrano B, Brotons M, Albero G, et al. (2014) ICO information centre on HPV and cancer [HPV Information Centre]. *Human papillomavirus and related diseases in Nepal*.
 21. Yunus NA, Harny MY, Nani D (2018) Non-Adherence to recommended Pap smear screening guidelines and its associated factors among women attending health clinic in Malaysia. *Malays Fam Physician* 13(1): 10-17.
 22. Wassie SM, Aragie LL, Taye BW, Mekonnen LB (2015) Knowledge, Attitude, and Utilization of Traditional Medicine among the Communities of Merawi Town, Northwest Ethiopia: A Cross-Sectional Study. *Evidence-Based Complementary and Alternative Medicine*, Article ID 138073, 7 pages.
 23. Radha Acharya Pandey, Era Karmacharya (2017) Cervical cancer screening behavior and associated factors among women of Ugrachandi Nala, Kavre, Nepal. *Eur J Med Res* 22(1): 32.
 24. Singh M, Ranjan R, Das B, Gupta K (2014) Knowledge, attitude and practice of cervical cancer screening in women visiting a tertiary care hospital of Delhi. *Indian J Cancer* 51(3): 319-323.
 25. Markovic M, Kesic V, Topic L, Matejic B (2005) Barriers to cervical cancer screening: A qualitative study with women in Serbia. *Social Science and Medicine* 61(12): 2528-2535.
 26. Mukama T, Ndejjo R, Musabyimana A, Ali Halage A, Musoke D (2017) Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda. *BMC Women's Health* 17(1): 9.
 27. Chantelle De Abreu, Hannah Horsfall (2014) Black Women's Perceptions and experiences of Cervical Screening. Department of Psychology, University of Cape Town.
 28. National Cancer Institute. Cancer risk: Understanding the puzzle. Cervical cancer-step1: Find out about cervical cancer risk.
 29. Thanh Cong Bui, Thuy Nhu Thai, Ly Thi-Hai Tran, Sanjay S Shete, Lois M, et al. (2016) Association between Vaginal Douching and Genital Human Papillomavirus Infection Among Women in the United States. *The Journal of Infectious Diseases* 214(9): 1370-1375.
 30. Bayu H, Berhe Y, Mulat A, Alemu A (2016) Cervical Cancer Screening Service Uptake and Associated Factors among Age Eligible Women in Mekelle Zone, Northern Ethiopia, 2015: A Community Based Study Using Health Belief Model. *PLoS One* 11(3): e0149908.
 31. Gakidou E, Nordhagen S, Obermeyer Z (2008) Coverage of Cervical Cancer Screening in 57

- Countries: Low Average Levels and Large Inequalities. *PLoS Med* 5(6): e132.
32. McAllister G, Farquhar M (1992) Health beliefs: A cultural division? *Journal of Advanced Nursing* 17(12): 1447-1454.
 33. Gillam SJ (1991) Understanding the uptake of cervical cancer screening: The contribution of the health belief model. *British Journal of General Practice* 41(353): 510-513.
 34. Mikhail B (1981) The health belief model: A review and critical evaluation of the model, research, and practice. *Advances in Nursing Sciences* 4(1): 65-82.
 35. McKie L (1993) Women's views of the cervical smear test: implications for nursing practice-women who have not had a smear test. *Journal of Advanced Nursing* 18(6): 972-979.
 36. Ackerson K, Preston SD (2009) A decision theory perspective on why women do or do not decide to have cancer screening: Systematic review. *Journal of Advanced Nursing* 65(6): 1130-1140.
 37. Ibekwe CM, Hoque ME, Ntuli-Ngcobo B (2010) Perceived benefits of cervical cancer screening among women attending Mahalapye District Hospital, Botswana. *Asian Pacific Journal of Cancer Prevention: APJCP* 11(4): 1021-1027.
 38. Abdullah NN, Al-Kubaisy W, Mokhtar MM (2013) Health Behaviour Regarding Cervical Cancer Screening Among Urban Women in Malaysia. *Procedia-Social and Behavioral Sciences* 85: 110-117.
 39. Frehiwot G, Fekadu M, Mulunesh A, Zelalem B (2013) Comprehensive knowledge about cervical cancer is low among women in Northwest Ethiopia. *BMC Cancer* 13: 2.
 40. Tadesse SK (2015) Socio-economic and cultural vulnerabilities to cervical cancer and challenges faced by patients attending care at Tikur Anbessa Hospital: a cross sectional and qualitative study. *BMC Womens Health* 15: 75.

