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EVALUATION OF CERVICAL CANCER SCREENING UPTAKE AND RISK FACTORS KNOWLEDGE: HEALTH BELIEFS MODEL (HBM)

Eshetu L Haile^{a,b}, Gurja Belay^a, Sharon A. Ransom^c, Jean-Pierre Van geertruyden^b, Johannes-Paul Bogers^{b,d}

a Addis Ababa University, Ethiopia; b University of Antwerp, Belgium; c International Partnership for Reproductive Health, USA; d Algemeen Medisch Laboratorium (AML), Belgium,

Correspondence to:

Eshetu Lemma Haile,

Faculty of Medicine and Health Sciences, Laboratory of Cell Biology & Histology

University of Antwerp, Belgium;

P.O.Box 21790 code 1000, Tel:+251911635684, email: eshetulema@gmail.com

Addis Ababa, Ethiopia

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 belief "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.

Conclusions: 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.

Key words: Cervical cancer; VIA; Pap test; Barriers; Screening; Ethiopia

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].

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 cryotheray 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, multiparity, 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 [11- 14] including Ethiopia [21-23] have shown lack of awareness within populations regarding CC symptoms, early signs, and the role of screening and HPV vaccination for prevention. 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,

Table 1: Socio-demographic characteristic of the women participants and association between women cervical cancer health facility (CCHF) visit and socio-

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		
5-5-1	30 – 39	91	22.1	86	5				
	40 - 49	135	32.8	124	11				
	50 - 59	140	34.0	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		0.0.0		
	Preparatory	8	1.9	8	0				
	[University]	C C		·	· ·				
	Certificate	80	194	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		
Marital Status	Single	65	15.8	60	5	0.010	0.000		
	Separated	41	10.0	38	3				
	Widowed	66	16.0	61	5				
	Living with	47	11.4	45	2				
	nartners			то					
Ane at marriane	~ -20 years	303	73.5	281	22	0 390	0 532		
Age at manage	>20 years	109	26.5	103	6	0.000	0.002		
Type of treatment	Modern	286	69.4	267	19	0.034	0.853		
rype of treatment	Traditional	126	30.6	117	q	0.004	0.000		
History of cervical	No	324	78.6	308	16	82 693	0.000		
cancer in your		024	70.0	000	10	02.000	0.000		
family									
lanny	Yes	13	32	4	9				
	Not Sure	75	18.2	72	3				
Parity		356	86.4	332	24	0.012	0 912		
T anty	>3	56	13.6	52	4	0.012	0.012		
Household income	~1500	212	51 5	211	1	55 730	0.000		
(FTRI)/Month		212	01.0	211	1	00.700	0.000		
	1500-5000	185	44 9	165	20				
	<u> \5000</u>	15	36	8	7				
lise of any	No	270	65.5	384	15	184 095	0.000		
contracention	NO	210	00.0	504	10	104.035	0.000		
contraception	Yes	142	34 5	0	13				
	105	172	04.0	0	10				
Visit clinic for	No	384	93.2	-	-	-	-		
Service	Vaa	00	<u> </u>						
Duraniana biatam - (res	28	6.8 00.0	-	-	-	-		
CC Screening test	NO	399	96.8	-	-	-	-		

demographic characteristics (n=412), SAMH, September to December 2017.

(VIA or PAP) Yes 13 3.2 - - -

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

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 (17,18) to assess beliefs related to cervical cancer screening. 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.

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

A woman agreed that the following risk more likely develop	(n=412)
cervical cancer if	Percentage
Has unprotected sex	60.4%
Smokes cigarettes	59.2%
Used birth control pill for a long time	56.4%
Had many sexual partners	56.1%
Has many children	41.4%
Not going for regular [Pap] smears or VIA tests	38.3%
Has a sexually transmitted disease or virus	11.7%
Has a weakened immune system	11.2%
Started having sex at a young age	11.2%

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. 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.

	Г	Disagraa	4		Aare	ed	Tot	al			
	L	Jisagieet	A		Agre	eu	Disag	reed	Total	Agreed	
Perception		C	ount								
		(al	bove								
	Mean	ave	erage)	Mean	Count	(above average)	% (Co	ount)	% (0	Count)	
Perceived											
susceptibility		10.67	232		4.33	180	71	.11 (4099/5	5768]	28.89 (1668/5	768)
Perceived seve	erity	4.77	256		2.23	156	68	.17 (1966/2	2884)	31.83 (918/28	384)
Perceived ben	efit	4.68	235		3.32	177	58	.51 (1928/3	8296)	41.49 (1367/3	296)
Perceived barr	rier	15.04	183		15.13	187	49	.70 (614312	2360)	50.28 (6215/12	2360)
Cues to action		6.15	183		5.85	229	51	.27 (2535/4	944)	48.73 (2409/4	944)

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.

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.

					CCHF Vi	sit
Items [perceived susceptibility (PSU)	Disagree	ed	Agreed		X ²	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	285	69.2	127	30.8		
unlikely that I will get cervical cancer.						
5. Cervical cancer is one of the most common cancers among women my	306	74.3	105	25.5		
age.						
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	295	69.2	117	27.5	15.430	0.001
CCS test						
Items [perceived severity (PS)		•		•		
15. An abnormal CCS test, without treatment, can lead to cervical	240	56.3	172	40.4	4.444	0.035
cancer.						
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	268	65	144	35		
chemotherapy or radiotherapy treatment.						

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).

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.

					CCHF vi	sit
	Disagre	ed	Agreed	ł	X ²	p-
						value
Items (perceived benefit)	Count	%	Count	%		
22. Getting a CCS test makes me feel good because it mean	s 213	51.7	199	48.3		
that I take care of my health.						
23. Getting a CCS test allows for early detection of cervical	253	59.4	159	37.3	16.803	0.000
cancer.						
24. The CCS test can determine cervical cancer.	217	52.7	195	47.3		
25. Getting a CCS test is a good investment of my time in he	alth. 233	56.6	178	43.2		
26. A CCS test can find cervical cancer when it is possible to	260	63.1	152	36.9		
cure it.						
27. The CCS can save my life.	235	57	177	43		
28. The CCS test can help to find infection disease.	258	62.6	154	37.4		
29. Getting a CCS test can find another reproductive problem	ns 259	62.9	153	37.1		
[genitals problems]	- II.					
Items (cues to action)						
30. To take care of my health	334	83.5	68	16.5		
31. After hearing something about cervical cancer.	297	72.1	115	27.9		
32. Because a doctor or nurse or midwife told me.	263	60.9	149	34.5	7.842	0.005
33. Because a health center send me mobile text or phone ca	all. 150	36.4	262	63.6		
34. Because my mother spoke to me about it.	190	46.1	222	53.9		
35. Because a friend spoke to me about it.	189	45.9	223	54.1		
36. Because members of my family told me to get it.	77	18.7	335	81.3		
37. Because I listened to or read something in the news or in	a 262	60.6	150	34.7	7.666	0.006
television or radio program on CCS						
38. Because I had genital bleeding.	57	13.8	355	86.2		
39. Because I had pain in my genitals.	277	64.1	135	31.3	8.103	0.004
40. Because someone I know well [family, friend, neighbor] h	ad 225	54.6	187	45.4		
cervical cancer.						

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 (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 0.0.035 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.

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

					CCHF v	risit
	Disagre	ed	Agreed		X ²	p-value
	Count	%	Count	%		
41. I do not have time to get a CCS test.	74	18	338	82		
42. Getting a CCS test only will give me problems.	159	38.6	253	61.4		
43. A CCS test can move the intra uterine device.	202	49	210	51	9.158	0.002
44. Getting a CCS test is painful.	78	18.9	334	81.1		
45. Getting a CCS test gives me some insecurity about my health.	201	48.8	210	51.0		
46. I fan unmarried or single woman gets a CCS test, people may	202	49	210	51		
think that she is having sex.						
47. Getting a CCS test is expensive.	213	51.7	199	48.3		
48. Getting a CCS test is embarrassment.	213	51.7	199	48.3	6.532	0.011
49. I do not have a CCS test because I do not know where I need	174	42.2	238	57.8		
to go.						
50. I prefer that a female gives me the CCS test, because it is	210	51	202	49	10.491	0.001
uncomfortable for me if a man does it						
51. I have not taken the CCS test because they treat me badly in	246	59.7	166	40.3		
the health care center.						
52. I have not taken a CCS test because when I go, I need to wait a	238	57.8	174	42.2		
long time to be seen.						

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53. I do not know if I ne	ed to have a CCS test.	202	49	210	51			
54. If a woman has not	had sex, a CCS test could take away her	249	60.4	163	39.6			
virginity.								
55. My partner/husband	does want me to get a CCS test.	255	61.9	157	38.1			
56. It is difficult to get a	CCS test because I do not have money for	222	53.9	190	46.1			
transportation [take	a bus, taxi, train].							
57. I have not taken the	CCS test because I am afraid to find out if I	267	64.8	145	35.2	8.578	0.003	
have cancer.								
58. I have not taken the	CCS test because the health care center is	241	58.5	171	41.5			
only open during ho	urs when I cannot go.							
59. I have not taken the	CCS test because I am embarrassed to	246	59.7	166	40.3			
have a genital exam).							
60. I do not know at wh	at age it is necessary to have a CCS test.	207	50.2	205	49.8			
61. I do not know how c	often I need to get a CCS test.	185	44.9	226	54.9			
62. I have not taken a C	CCS test because it is difficult to get an	242	58.7	170	41.3			
appointment.								
63. I have not taken the	CCS test because the provider not have	277	67.2	135	32.8	8.103	0.004	
self-sampling device								
64. I have language bar	rriers	75	18.2	337	81.8			
65. I do not take CCS te	est because the clinic do no have a private	261	63.3	151	36.7			
screening room								
66. I do not take CCS te	est if there is no voluntary consulting test	242	58.7	170	41.3	4.690	0.03	
[VCT] prior to scree	ning tests							
67. I do not have CCS t	est because of "no see and treat" approach	222	53.9	190	46.1	18.956	0.000	
available								
68. I have not taken a C	CCS because I`m not HIV positive	118	28.6	294	71.4	4.724	0.03	
69. I have not taken a C	CCS because cancer is God will`s or	204	49.5	208	50.5	9.480	0.002	
traditions of religion	S							
70. I have not taken a C	CCS because I do douching every day or	190	46.1	222	53.9	21.883	0.000	
every time								
71. I have not taken a C	CS test because I do sex by condom	54	13.1	358	86.9			

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.

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.

	Mear	95% CI	P-value	
Domains	Not visited CCHF	Visited CCHF		
	[n=384]	[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

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 screening coverage rate [8] and that also was supported by other study Bruni L et al [30].

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 [18]. 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 [15]. Study done by Author Wassie S et al [39] in Ethiopia revealed that 70% of participants didn't agree the effectiveness of traditional medicine

that were 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 [22, 34] were visited the health facility for the purpose of screening similar findings to our study done previously in Ethiopia [29, 38]. 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 [33]. 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 [35].

Women in this study believed that a cervical cancer screening test needs when they had symptoms; sex with many partner [37] and contraceptive drug and were agreed that getting a CCS test allows for early detection of cervical cancer. 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 [40].

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 [19]. Our findings were also similar with world Health Organization reported that only 19% screening coverage in developing countries [36].

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 [23]. 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, 24]. Women beliefs that they can monitor their health situation if they pre-aware of it and information available about the disease [24]. This author is summarized that various perception beliefs identified and necessary corrective action has to design respective to different culture and social groups [25]. Thus, it is important to consider individual differences, because people may have different combinations of health beliefs [26].

Overall Ethiopia may need structured awareness, educational program and screening use to address different level of individual barrier, susceptibility and severity [27, 28]. 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 [17].

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 [32].

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 [19, 31].

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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