

Availability and readiness of cervical cancer screening service at health facilities in Ethiopia

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Abstract

Background: Globally cancer is the second top cause of death and the inductance is increasing in most countries. In Ethiopia-, cervical cancer is the second prevalent cancer type. It is the most preventable and treatable type of cancer and can be screened and diagnosed early. The need for the availability and readiness of the health facility is inevitable for the provision of these services. This study aimed to assess the availability and readiness of Cervical Cancer Screening Service using the Ethiopian health facility surveys conducted in 2016 and 2018

Method: Data were obtained from Ethiopia service availability and readiness assessment (SARA) 2016 and 2018 which was a national cross-sectional facility-based survey. The availability and readiness of cervical cancer screening service using four tracer items such as; equipment, reagent, training and guideline. Descriptive statistic was used to analyze the availability of cervical cancer screening service. An independent t-test was used to determine the difference between the availability of cervical cancer screening service mean readiness score in 2016 and 2018 using SPSS.

Result: A total of 632 health facilities were included in the study. Nationally, 21% and 33% of the facilities provided cervical cancer screening service in 2016 and 2018, respectively. Among facilities that provide cervical cancer screening services, 30% of the hospitals and 29% of health centers had all tracer items for Cervical Cancer Prevention and Control. However, none of the clinics had all the tracer items to provide cervical cancer screening services, while the service readiness score has remained similar in two periods.

Conclusion: Overall availability of cervical cancer screening services in health facilities was found low. The service availability of cervical cancer screening was increased by 32% in SARA 2018 when compared to SARA 2016, but the service readiness remained similar. The Ministry of Health should distribute and ensure constant availability of guidelines, availability of equipment, reagents, and provision of refresher training to health care providers.

Keywords: Readiness, availability, trend, cervical cancer, Ethiopia

Introduction

Cancer is the leading cause of death, and in most countries around the world, it has increased incidence. Globally, 18.1 million new cases and 9.6 million deaths occurred in 2018, 5.8 % new cases, and 7.3% of death occurred in Africa. This shows cancer in Africa is a growing issue of public health (Bray et al. 2018; IARC 2020).

Cervical cancer is a cancer that grows in the cervix, in which the cells of the cervix become irregular and start to grow uncontrollably, forming tumor. Approximately 90% of intraepithelial neoplasia is attributed to human papillomavirus (HPV) infection. However, all types of HPV can't cause high-grade intraepithelial lesions and cancer. Cervical cancer is the most preventable and treatable type of cancer that can be screened and diagnosed early (Bosch et al. 2006). Different studies show that cervical cancer is the commonest cancer, which causes of death among women in developing

countries, with an estimate of 570,000 new cases and 311,000 deaths globally in 2018 (Lynette 2012; Bray et al. 2018). However, only 0.6% of women ages 18 to 69 years screened for cervical cancer. The majority of women in Sub-Saharan Africa live in rural areas, cervical cancer accounts for 22.5% of all cancer types. The most affected area in Africa is Eastern Africa and its incidence is 34 cases per 100,000 women (Jemal et al. 2011; Ntekim 2012; Gossa 2015).

In Ethiopia, Cervical Cancer is the second most common type of cancer following breast cancer and it is the second leading cause of cancer death among the reproductive age women (Memirie et al. 2018). According to Globocan 2012 estimates, about 40% of cancer cases are preventable and if early detection will be done the possibility of to be cure is high. In low resources setting implementation of cervical cancer screening is very important to prevent morbidity and mortality due to cervical cancer. But different studies in

sub-Saharan Africa showed only a very few women are ever screened for cervical cancer. Lack of awareness, resources, screening tests, and trained health care professionals, unavailability and inaccessibility of cervical cancer screening services are some of the factors that affect screening (Oche et al. 2013; Ferlay et al. 2015; Asseffa 2017). This study aims to assess the 2016 and 2018 availability and readiness of cervical cancer screening service in Ethiopia.

Materials and Methods

Data were obtained from Ethiopia service availability and readiness assessment of SARA 2016 and 2018. The surveys were a national level representative cross-sectional facility based sample stratified by health facility type and managing authority. All hospitals, selected health centers, and clinics were included in the study. WHO annual health facility monitoring tool was used to collect data about service availability, availability of specific items, facility infrastructure, components of support systems, and service delivery environment. Questionnaires were prepared in English and translated into Amharic (WHO, 2015). Both English and Amharic version Questionnaire were loaded and administered using PC tablets through Computer Assisted Personal Interview (CAPI), direct electronic data capture during interview. Data collection template was prepared in the Census and Survey Processing System (CSPro).

Descriptive statistics were used for analyzing the availability of cervical cancer screening service. Service availability was measured by whether the facility provided diagnosis service only and/or provided diagnosis or treatment service. A readiness score was

calculated based on four tracer items such as; Equipment, Reagent, Training and Guideline. An independent t-test was used to determine the difference between the service readiness in 2016 and 2018 using SPSS 20. Ethical Clearance was obtained from Ethiopian Public Health Institute scientific and ethical review office. Informed consent was taken from all facilities in charge. No individual facility level identifier was used to maintain confidentiality and data were maintained in a password protected EPHI server.

Result

Total facilities assessed in SARA 2016 were 547 and 375(68.6%) were public health facilities including Referral, General and primary hospitals, health centers, and health posts, 172(31.4%) were private facilities. Total facilities assessed in SARA 2018 were 632, majority 467(73.9%) were public health facilities and 165(26.1%) were private facilities as mentioned above. Majority of assessed facilities in SARA 2016 and in SARA 2018 were General hospitals 210(38.9%) and 233(36%) respectively. Most of the facilities 431(78.8%) in SARA 2016 and 494 (78.2%) in SARA 2018 were found in Urban areas (Table 1).

Cervical cancer screening services in SARA 2016 and 2018: Availability of cervical cancer screening services was measured by whether the facility provided diagnosis service only and/or provided diagnosis or treatment service. According to SARA 2016 and 2018 report, 114(18%) and 211(33%) of the assessed facilities offered delivery services respectively. Most of the facilities were found in Addis Ababa 34(37%) in SARA 2016 and 46(42%) in oromiya SARA 2018 (Table2).

Table 1: Distribution of health facilities by region, managing authority and location Ethiopia SARA 2016 and 2018

Facility Characteristics	Facility Type In 2016				Facility Type In 2018			
	Hospitals	Health Centers	Clinics	Total	Hospitals	Health Centers	Clinics	Total
Region								
Tigray	17(8.1%)	13(7.9%)	12(7.0%)	42(7.7%)	39(12.9%)	14(8.5%)	12(7.3%)	65(10.3%)
Afar	6(2.9%)	16(9.7%)	16(9.3%)	38(6.9%)	6(2.0%)	16(9.8%)	15(9.1%)	37(5.9%)
Amhara	2(12.9%)	17(10.3%)	17(9.9%)	61(11.2%)	65(21.5%)	17(10.4%)	16(9.7%)	98(15.5%)
Oromia	66(31.4%)	17(10.3%)	16(9.3%)	99(18.1%)	75(24.8%)	16(9.8%)	18(10.9%)	109(17.2%)
Somali	10(4.8%)	16(9.7%)	17(9.9%)	43(7.9%)	11(3.6%)	16(9.8%)	17(10.3%)	44(7.0%)
Ben-Gumuz	2(1.0%)	14(8.5%)	14(8.1%)	30(5.5%)	2(0.7%)	15(9.1%)	14(8.5%)	31(4.9%)
S.N.N.P	27(12.9%)	16(9.7%)	18(10.5%)	61(11.2%)	58(19.1%)	16(9.8%)	15(9.1%)	89(14.1%)
Gambela	1(0.5%)	15(9.1%)	14(8.1%)	30(5.5%)	3(1.0%)	13(7.9%)	14(8.5%)	30(4.7%)
Harari	4(1.9%)	8(4.8%)	11(6.4%)	23(4.2%)	5(1.7%)	8(4.9%)	11(6.7%)	24(3.8)
Addis Ababa	44(21.0%)	22(13.3%)	25(14.5%)	91(16.6%)	32(10.6%)	22(13.4%)	23(13.9%)	77(12.2%)
Dire Dawa	6(2.9%)	11(6.7%)	12(7.0%)	29(5.3%)	7(2.3%)	11(6.7%)	10(6.1%)	28(4.4%)
Managing Authority								
Public	149(71.0%)	163(98.8%)	8(4.7%)	320(58.6)	243(80.2%)	160(97.6%)	7(4.2%)	410(64.9%)
Others	61(29.0)	2(1.2%)	163(95.3)	226(41.4)	60(19.8%)	4(2.4%)	158(95.8%)	222(35.1%)
Location								
Urban	200(95.2%)	8(53.9%)	142(82.6)	431(78.8)	273(90.1%)	86(52.4%)	135(81.8%)	494(78.2%)
Rural	10(4.85)	76(46.1%)	30(17.4%)	116(21.2)	30(9.9%)	78(47.6%)	30(18.2%)	138(21.8%)
Total	210(38.9%)	165(30.2%)	172(31.4)	547(100)	303(47.9%)	164(25.9%)	165(26.1%)	632(100%)

Table 2: Cervical cancer screening services in SARA 2016 and 2018

	2016		2018	
	Facility offer cervical cancer screening	Total number of facilities	Facility offer cervical cancer screening	Total number of facilities
Regions				
Tigray	15(36%)	42	21(32%)	65
Afar	0	38	8(22%)	37
Amhara	15(25%)	61	29(30%)	98
Oromiya	15(15%)	99	46(42%)	109
Somali	7(16%)	43	17(39%)	44
Benishangul Gumuz	10(33%)	30	2(7%)	31
S.N.N.P.	12(20%)	61	35(39%)	89
Gambela	1(3%)	30	1(3%)	30
Harari	2(9%)	23	3(13%)	24
Addis Ababa	34(37%)	91	42(55%)	77
Dire Dawa	3(10%)	29	7(25%)	28
Facility type				
Hospital	86(42%)	210	164(54%)	303
Health center	15(9%)	165	24(15%)	164
Clinics	13(8%)	172	23(14%)	165
Managing Authority				
Public	73(23%)	320	144(35%)	410
Others	41(18%)	226	67(30%)	222
Urban/Rural				
Urban	110(25%)	431	195(40%)	494
Rural	4(3%)	116	16(12%)	138
Total	114(18%)	547	211(33%)	632

Cervical cancer screening services by facility type, managing authority and location: in 2016 and 2018: In hospital cervical cancer screening service was 41% in 2016 to 54% in 2018. In Health center, cervical cancer screening service was 9% in 2016 to 15% in 2018 with a 66.6 percentage increase. In Clinics, cervical cancer

screening service was 8% in 2016 to 14% in 2018 with a percentage increase. The service had increased 23% and 35% with a 52 percentage change in government facilities and 26% and 40% with a 53.8 percentage change in urban facilities with the same year respectively (Figure 1).

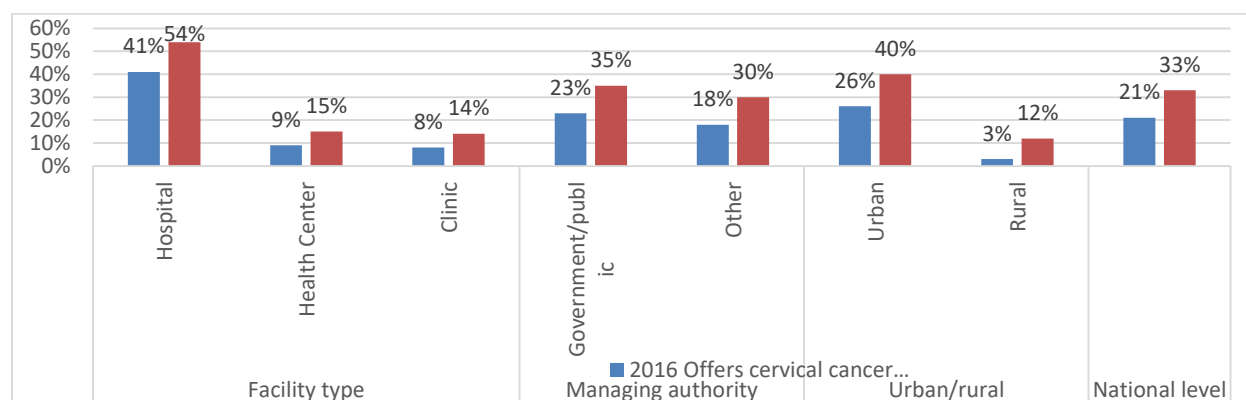


Figure 1: Percentage of facilities that offer cervical cancer screening services by facility type, managing authority and location in 2016 and 2018

Availability of Cervical cancer diagnosis service readiness in SARA 2016& 2018: Cervical cancer diagnosis service readiness was assessed using four tracer items: staff, guideline, speculum and Acetic Acid. Among facilities that provided cervical cancer screening services, In SARA 2016 and 2018, 33(28.9%) and 89(42%) of facilities had guideline for cervical cancer prevention and control, Staff trained in cervical

cancer prevention and control 41(36%) and 116(55%), Speculum 101(89%) and 176(83%), Acetic acid 64(56%) and 115(55%) respectively. Concerned the mean availability of tracer item was 59% in SARA 2018 and 53% in SARA 2016. 56% of the facilities in SARA 2018 and 18% in SARA 2016 have all tracer items (Table3).

Table 3: Percentage of facilities that have tracer items in SARA 2016 and 2018

	2018 Facility Type				2016 Facility type			
	Hospital	Health Center	Clinics	Total	Hospital	Health Center	Clinic	Total
Guidelines on cervical Ca prevention	74(45%)	10(42%)	5(22%)	89(42%)	29(33.7)	4(27%)	0	33(28.9%)
Staff trained on cervical Ca prevention	106(65%)	9(38%)	1(4%)	116(55%)	34(39%)	6(40%)	1(7.7%)	41(36%)
Speculum	144(88%)	17(71%)	15(65%)	176(83%)	79(92%)	11(79)	11(85%)	101(89%)
Acetic acid	99(60%)	10(42%)	6(26%)	115(55%)	55(64%)	4(27%)	5(38%)	64(56%)
Mean availability of tracer item	64%	48%	29%	59%	57%	45%	33%	53%
Percent of facilities with all items	49(30%)	7(29%)	0(0%)	56(27%)	1(20%)	4(27%)	0	21(18%)
Total number of facilities	164	24	23	211	86	15	13	114

Note: Percentage of facilities that have tracer items to provide cervical cancer services among facilities that provide the service (N=211)

An independent t-test was run to check whether there were differences in cervical cancer screening service readiness mean score between 2016 and 2018. As

shown in table 4 at 5% level of significance there was no statistical mean difference between the two years $t(22) = -1.558$, value = 0.12.(Table 4).

Table 4: Independent t-test for cervical cancer services readiness in 2016 and 2018.

Time	N	Mean	Std. Deviation	t	df	Sig. (2tailed)	t-test for Equality of Means			
							Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Mean of readiness Score	2016	113	0.5288	-1.558	252	0.12	-0.05892	0.03781	-0.13338	0.01555
	2018	211	0.5877							

Note: Independent t-test for cervical cancer services readiness among facilities that provide service in 2016 and 2018.

Discussion

According to Sara 2016 and 2018 report, more than 30% of health facilities in Ethiopia provided cervical cancer screening service. This finding was higher than the studies conducted in Tanzania and Libya 8% and 6% respectively (Libya ministry of Health 2017; Tanzania Ministry of Health and Social Welfare 2013). The majority (54.5%) of the facilities that provide cervical cancer screening were found in Addis Ababa, followed by Oromia (42.2%) and the least service was provided Benshangul Gumuz (10%). It is clear that low resource settings may have direct effect on-service availability. According to SARA 2018, One third of facilities in Ethiopia provided cervical cancer screening service. The current finding is higher than studies conducted in Tanzania and Libya, which was 8% and 4% respectively (Tanzania Ministry of Health and Social Welfare 2013) (Libya ministry of Health 2017). The majority (54.5%) of the facilities that provide cervical cancer screening were found in Addis Ababa and followed by Oromia (42.2%) but the least service was facilities in Benshangul Gumuz 10%. It is clear that geographical difference in-service availability has direct relation with access. The study done by Abate and his colleague proved that, patients who are far from the facilities are not able to go to the health facilities easily due to geographical challenges (Abate 2016). The majority of facilities that provides cervical cancer screening were found in urban. However, the previous studies

showed that the prevalence of cervical cancer were highest in rural area but in this study the availability of cervical cancer screening service is very low. This has its own effect on early diagnosis and treatment, which could limit the advancement of the diseases and its burden (Abate 2016). One of the component that can affect the quality of care is availability of essential items (Ntekim 2012). In this regard, Ethiopian facilities are lagging behind. However, the country is struggling to provide quality of cancer care. In the current study, among facilities that provided cervical cancer screening only 27 % of the facilities had all tracer items for cervical cancer prevention and control, 30% of hospitals and 29 % of health centers had all tracer items for cervical cancer prevention and control, and among facilities that provide cervical cancer screening services, clinics didn't have all tracer items that are necessary to provide for cervical cancer prevention and control service. This result show that the majority of facilities that provide cervical cancer screening service without essential items. This affects the availability and quality of service that the facilities provided to the community.

Conclusion and Recommendations

The availability of cervical cancer screening services in Ethiopian was low; and majority of health facilities that provided cervical cancer screening service without essential tracer items. Overall, there were 57.1 % change

between 2016 and 2018 on cervical cancer screening service availability and there is no change on the readiness of health facilities in 2016 and 2018. The Ministry of Health should distribute tracer items which are guidelines, equipment and reagents and ensure constant availability of service by providing training to health providers for cervical cancer screening at all type and level of facilities highly recommended.

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References

- Abate SM (2016). Trends of Cervical Cancer in Ethiopia. *Cervical Cancer*, 1(1):1–4.
- Asseffa NA (2017). Cervical Cancer: Ethiopia's Outlook. *Journal of Gynecology and Womens Health*, 5(2). doi: 10.19080/jgwh.2017.05.555660.
- Bosch FX, Qiao YL & Castellsagué X (2006). The epidemiology of human papillomavirus infection and its association with cervical cancer. *International Journal of Gynecology and Obstetrics*, 94(1):8–21.
- Bery F, Feraly J, Soerjomataram I, Rebeca LS, Lindsey AT & Jemal A (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68:394–424.
- Bruni L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, et al. (2019). *Human Papillomavirus and Related Diseases Report*. Addis Ababa, Ethiopia. pp 65.
- Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. (2015). Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *International Journal of Cancer*, 136(5):359–386.
- FMoH (2015). National Cancer Control Plan 2016 - 2020 of Ethiopia', *Disease Prevention and Control Directorate*. Available at National Cancer Control Plan of Ethiopia (iccp-portal.org)(accessed date: June 5 /2020).
- Gossa W (2015). Cervical cancer screening education in Ethiopia: Challenges and opportunities, *Annals of Global Health*, Elsevier Inc, 81(1):149-157.
- International Agency for Research on Cancer (IARC) (2020). *Cancer Incidence and mortality in Africa. The Global Cancer Observatory*, pp 2. Available at 903-africa-fact-sheets.pdf (iarc.fr) (accessed date: Dec 4/2020).
- Jemal A, Bray F, Melissa M, Ferlay J, Ward E & Forman D (2011). Global Cancer Statistics. *CA: A Cancer Journal of Clinicians*, 61(1):69–90.
- Libya minstry of Health (2017). *Libiya service avallability and readiness assessment*. Available at: http://whqlibdoc.who.int/publications/2011/9780978856373_eng.
- Lynette D (2012). Cervical Cancer: Prevention and Treatment. *Discovery Medicine*, 14(75):125–131.
- Memirie ST, Habtemariam MK, Asefa M, Deressa BT, Abayneh G, Tsegaye B, et al. (2018) 'Estimates of cancer incidence in Ethiopia in 2015 using population-based registry data', *Journal of Global Oncology*, 201(4):1–11.
- Ntekim A (2012). Cervical Cancer in Sub Sahara Africa. *Topics on Cervical Cancer With an Advocacy for Prevention*. pp 52-74.
- Oche MO, Kaoje AU, Gana G & Ango JT (2013). 'Cancer of the cervix and cervical screening: Current knowledge, attitude and practices of female health workers in Sokoto, Nigeria', *International Journal of Medicine and Medical Sciences*, 5(4):184–190.
- Tanzania Ministry of Health and Social Welfare (2013). Tanzania Service Availability and Readiness Assessment (SARA). pp 79.
- Tessema SM, Kifle MH, Asefa M, Tefera BD, Abayneh G, Tsegaye B, et al. (2018). Estimates of Cancer Incidence in Ethiopia in 2015 Using Population-Based Registry Data. *Journal of Global Oncology*, 4:1–11.
- World Health Organization (2015). Reference Manual: Service Availability and Readiness Assessment (SARA) - *An annual monitoring system for service delivery*', *World Health Organization*, pp 208.