Service availability and readiness for major non-communicable diseases at health facilities in Ethiopia

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Abstract

Introduction: No assessment was conducted previously in Ethiopia to monitor, review and evaluates the availability and readiness of health facilities for non-communicable diseases (NCDs). Thus, the present study aims to provide evidence on service availability and readiness for NCDs in Ethiopia.

Method: A Service Availability and Readiness Assessment (SARA) was conducted in Ethiopia in 2016. The survey used stratified random sampling design to provide data for 11 regions in Ethiopia for different facility types and managing authorities. A total of 547 public and private health facilities were included in this analysis (210 hospitals, 165 health centres and 172 clinics). Data were collected using CAPI (Computer Assisted Personal Interview) designed using CSPro 6.3 Software. This study uses tracer indicators in data analysis. Tracer indicators aim to provide objective information about whether or not a facility meets the required conditions to support provision of basic or specific services with a consistent level of quality and quantity.

Result: Overall, among all health facilities offering service for NCDs, the availability of diagnosis and/or management of diabetes, cardiovascular disease, chronic respiratory disease and cervical cancer were 22%, 41%, 45% and 2%, respectively. Cervical cancer diagnosis was the least available; only 2 in 10 facilities offered this diagnosis service. Among all health facilities offering services for NCDs, the availability of trained staff for diabetes, cardiovascular disease, chronic respiratory disease and cervical cancer prevention and control were 10%, 7%, 8% and 61% respectively. Among health facilities that were offering diabetes diagnosis and/or management services, none of them had all thirteen services. On average, 53% of facilities had seven of the thirteen items. Among facilities that provided cardiovascular disease services, only 1% of them had all twelve items. On average, 41% of these facilities had six of the twelve items. Among health facilities that offered diagnosis and/or management of chronic respiratory disease, no facility had all eleven items. On average, approximately three out of ten health facilities had six of the eleven items. From health facilities that were providing diagnosis and/or management of cervical cancer, only five out of ten health facilities had all four items. On average, 72% of facilities had two out of the four items.

Conclusion: Overall, service availability and readiness of the health facilities to provide NCDs related health services are suboptimal. The overall level of diabetes diagnosis and/or management by health facilities was unsatisfactory and it varied between urban (34%) and rural (5%) health facilities. In general, cervical cancer diagnosis was rarely provided and no rural health facilities offered this service. We hope that the findings of this study will prompt appropriate national policy response for NCDs towards improved health care service delivery across health facilities. [*Ethiop. J. Health Dev.* 2017;31(Special Issue):384-390]

Key words: NCD, availability, readiness, Ethiopia

Introduction

Non-communicable diseases continue to be important public health problems in the world. Of 56.4 million global deaths in 2015, 39.5 million, or 70%, were due to non-communicable diseases (NCDs). The four prevailing NCDs are cardiovascular diseases, cancers, diabetes and chronic lung diseases. The burden of these diseases is rising disproportionately among lower income countries and populations (1). NCDs are largely preventable through interventions focusing on common risk factors such as tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol (2). In order to improve health care services for NCDs, WHO recommended countries to integrate NCDs into primary health care by expanding the package of Primary Health Care (PHC) services(3).

The 2013 Ethiopian Health Sector Development Program (HSDP) IV Annual Performance Report enumerated major activities accomplished by the country's health sector. These included the establishment of NCD unit at Federal Minstry of Health (FMOH) in collaboration with a local (?) partner; Cervical cancer screen started in 25 hospitals in five regions (Tigray, Amhara, Oromia, SNNP, and Addis Ababa); A national formulary for chemotherapy drugs was created; A national comprehensive design for radiotherapy and nuclear medicine site expansion was generated; Population-based cancer registry was established under Tikur Anbessa Specialized Teaching Hospital; Piloting of Mental Health Gap Action Program (mhGAP) was implemented in 20 primary health care (PHC) facilities in four regions (Tigray, Amhara, Oromia and SNNP) (4).

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Health indicators describing long-term program achievements and effects on the populations are used to describe the overall health of the population. Indicators such as the prevalence of diabetics or other NCDs can be obtained through surveys conducted at the household level. These indicators, in turn, are affected by a number of factors, such as accessibility to health services, and the capacity and quality with which the services are delivered. A health facility requires minimum infrastructure and supplies to operate effectively. Thus, selected indicators need to be measured to obtain data on the facilities, supplies, and services for informed decision-making.

No assessment was conducted previously in Ethiopia to assess service availability and readiness for NCDs though this is beneficial to monitor, review and evaluate NCD related health service delivery. Thus, the present study aimed to assess NCDs service availability and readiness for better monitoring and evaluation of NCDs- related health service delivery to provide objective baseline information of health facilities' readiness to offer required services to the population.

Method
Study setting: Ethiopia has introduced a three-tier health care delivery system: level one is a district (*woreda*) health system that comprises a primary hospital, health centres and their satellite health posts connected to each other by a referral system. Level two is a general hospital and level three is a specialized hospital (5).

Data Sources: The data used in this study were part of the 2016 Ethiopian Service Availability and Readiness Assessment (SARA) survey. Core to the SARA framework is the strengthening of a common platform for monitoring, evaluation and review for National Health System. SARA is designed to function as a systematic tool to support annual verification of data and service delivery at the facility level. SARA provides evidence-based data on health system progress to inform the annual health sector review, identifies gaps and weaknesses causing suboptimal service and low intervention, and provides baseline data for planning and monitoring scale-up intervention for improvement of service delivery (6). This study uses tracer indicators in data analysis. Tracer indicators aim to provide objective information about whether or not a facility meets the required conditions to support provision of basic or specific services with a consistent level of quality and quantity. Service availability in this study means types of service offered: diagnosis and/or management. Tracer indicators for service readiness are measured in terms of trained staff and guidelines,

equipment, diagnostics, medicines and commodities for each of the service types.

Data collection approach: A facility inventory questionnaire was used to obtain information on the readiness of the facilities to provide NCD services. The most knowledgeable person about the organisation of the facility was interviewed by the data collectors. Data were collected using CAPI (Computer Assisted Personal Interview) designed using the software CSPro 6.3.

Sampling technique and sample size determination: The sampling method for SARA was stratified by health facility type and managing authority sample designed to provide representative results for Ethiopia, facility types and management authorities, and each of the country's 11 regions. An updated list of all health facilities in Ethiopia was obtained from the recently completed census of health facilities from Ministry of Health. The sample allocation for the survey considered the skewed health facility distribution of the country into account. The following formula was used to calculate the sample size:

$$n = \frac{[[(z2* p * q) + ME2]}{[ME2+ z2* p * q / N]]*d}$$

Where

N = Total number of Facilities in each stratum,

z = the square of the normal deviate at the required confidence level (3.84 is the square of the normal deviate (1.96) needed to provide an estimate at the 95% level of confidence)

p = the proportion of facilities with the attribute of interest (proportion of facilities with basic amenities were 47%) (Basic Amenities = mean availability of seven basic amenities items (%): power, improved water source, room with privacy, adequate sanitation facilities, communication equipment, access to computer with Internet, emergency transportation) (SPA+ Survey, 2014).

q = 1-p

ME = margin of error (15%)

d = the design effect (assuming 1.5) because of regional stratification.

Result
Percentage of the surveyed facilities: A total of 547 health facilities were included in this analysis (210 hospitals, 165 health centres, and 172 clinics). Over half (59%) of all the health facilities in this analyses were public health facilities. Seventy-nine percent of facilities visited were from urban areas. Hospitals constituted the largest proportion at 38%, Health Centres accounts 30% of all facilities (Table 1).

Table 1: **Percentage of facilities assessed, by region, facility type, and managing authority, Ethiopia, 2016**

Regions	Number of facilities	Percentage
Tigray	42	8
Afar	38	7
Amhara	61	11
Oromiya	99	18
Somali	43	8
Beni. Gumuz	30	5
S.N.N.P	61	11
Gambella	30	5
Harari	23	4
Addis Ababa	91	17
Dire Dawa	29	5
Facility type		
Referral hospital	32	6
General hospital	117	21
Primary hospital	61	11
Health center	165	30
Higher clinic	23	4
Medium clinic	64	12
Lower clinic	85	16
Managing authority		
Government	320	59
Other	227	41
Residence		
Urban	431	79
Rural	116	21

NCD service availability: Overall, only 22% of health facilities reported offering diabetes diagnosis and/or management services. About four out of ten health facilities (41%) reported offering cardiovascular disease diagnosis and/or management services. Forty-five percent of facilities reported offering chronic respiratory disease diagnosis and/or management services. Only 2% of health facilities reported offering cervical cancer diagnosis and/or management services (Figure 1).
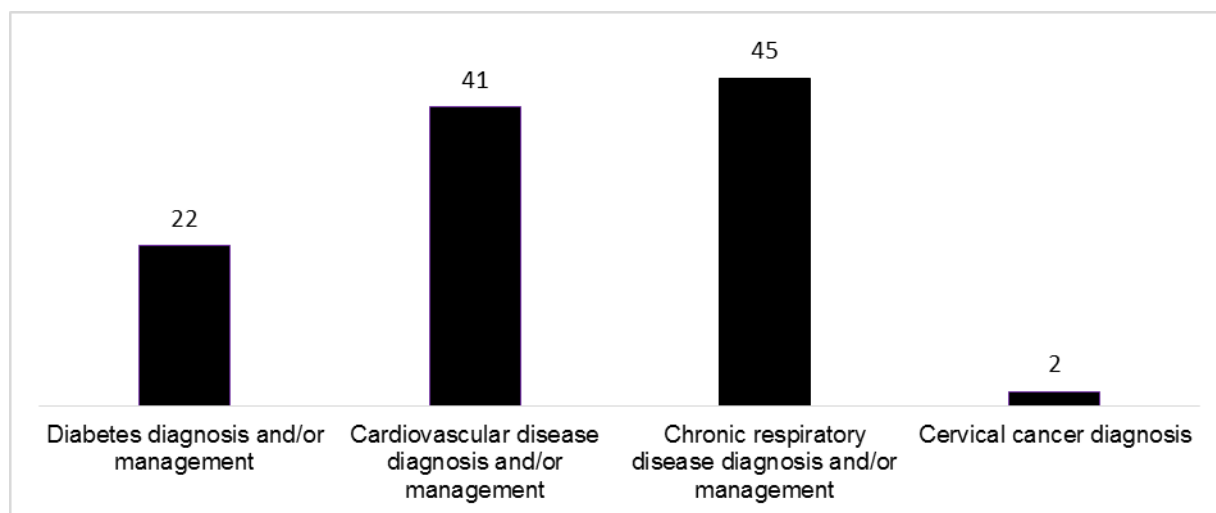
Figure 1: **Percentage of facilities that offer different NCD services, Ethiopia, 2016**

Comparing between the regions, diabetes diagnosis and/or management services was widely available in Dire Dawa (82%) and less available in Amhara (13%) region. Great variation existed in the availability of this service between facility types (ranging from 91% in referral hospitals vs. 5% in lower clinics). Diabetes diagnosis and/or management services was more likely available in facilities located in urban areas (35%) than facilities in rural areas (5%) and was less likely available in government facilities (19%) compared with other managing authorities (26%).

Cardiovascular disease diagnosis and/or management services was widely available in Dire Dawa (82%), and less available in Gambela (30%) and S.N.N. (30%) (Table 2). Cardiovascular disease diagnosis and/or management services was more likely available in hospitals settings than other facility types. Government facilities (51%) are more likely to offer this service compared with other managing authorities (30%). However, there was a small difference in providing this service between facilities in urban areas (43%), and in rural areas (38%).

Chronic respiratory disease diagnosis and/or management services was more likely available in hospitals than other facility types (varying from 92% in general hospitals vs. 11% in lower clinics). This service was also more likely available in government facilities compared with other managing authority (56% and 33%, respectively). However, there was no observed difference between facilities in urban and rural areas in chronic respiratory disease diagnosis and/or management services.

Cervical cancer diagnosis and/or management services was more likely available in hospitals compared with other facility types. It is also relatively more likely to be available in government facilities compared with other managing authority (3% and 1%, respectively). However, this service was low in all regions (the highest is 14% in Harari, and not at all available in Afar, Oromiya and Benishangul-Gumuz) (Table 2).

Table 2. **Percentage of facilities that offer different NCD services, by region, facility type, managing authority, and urban/rural, Ethiopia, 2016**

Regions	Diabetes diagnosis and/or management	Cardiovascular disease diagnosis and/or management	Chronic respiratory disease diagnosis and/or management	Cervical cancer diagnosis	Total number of facilities
Tigray	29	36	56	5	42
Afar	35	43	53	0	38
Amhara	13	33	27	4	61
Oromiya	15	45	58	0	99
Somali	24	40	40	1	43
Beni. Gumuz	20	63	70	0	30
S.N.N.P	16	30	28	1	61
Gambella	34	30	57	1	30
Harari	55	71	46	14	23
Addis Ababa	68	68	75	7	91
Dire Dawa	82	82	82	9	29
Facility type					
Referral hospital	91	84	91	56	32
General hospital	90	92	92	38	117
Primary hospital	89	89	89	10	61
Health center	16	50	55	2	165
Higher clinic	69	61	69	4	23
Medium clinic	65	71	76	1	64
Lower clinic	5	10	11	0	85
Managing authority					
Government	19	51	56	3	320
Other	26	30	33	1	227
Residence					
Urban	34	43	45	4	431
Rural	5	38	45	0	116
Total	22	41	45	2	547

NCD service readiness: Readiness to provide diabetes services was assessed based on the presence of the thirteen tracer items. In general, among health facilities that were offering diabetes diagnosis and/or management services, none of them had all thirteen items. On average, 53% of facilities had seven of the thirteen items. Almost all health facilities had a blood pressure apparatus (100%) and an adult weight scale (97%). However, only few health facilities had guidelines (16%) and staff trained in diabetes diagnosis and treatment the past two years (10%) during the survey. Availability of medicines was also low, among facilities providing diabetes services, the availability of injectable insulin was 18%%, and Gliclazide tablet or glipizide tablet in stock was 4% on the day of the assessment. (Figure 2).
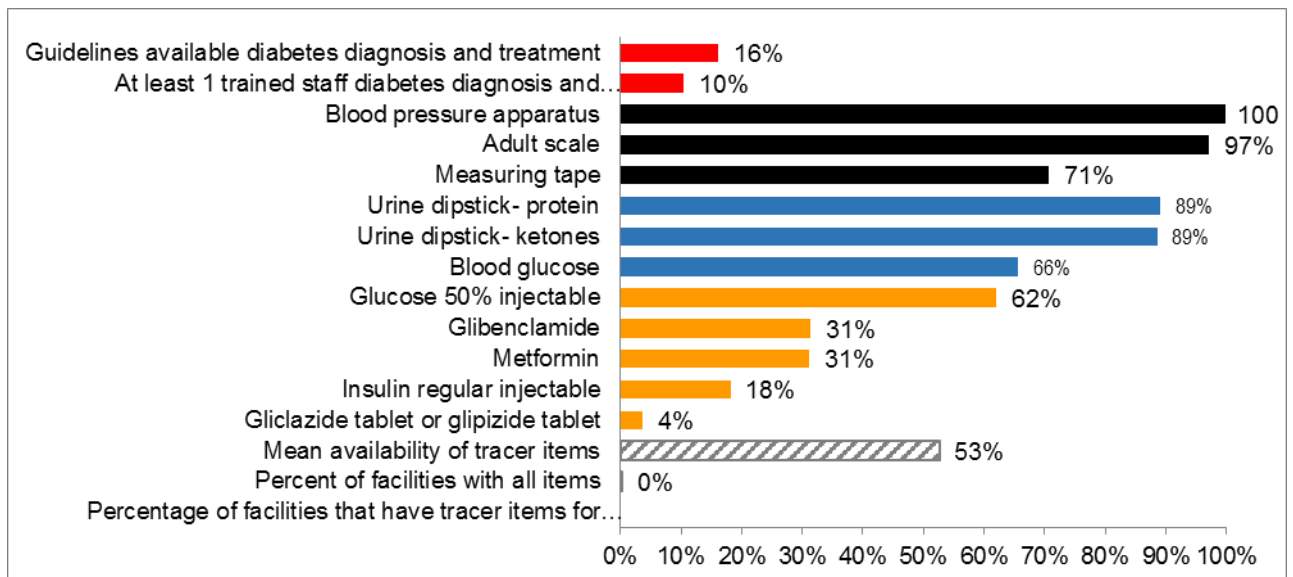
Figure 2: **Percentage of facilities that have tracer items for diabetes services among facilities that provide this service, Ethiopia, 2016**

Readiness to provide cardiovascular disease services was assessed based on the presence of the twelve tracer items. Overall, among facilities that provided services for cardiovascular diseases, only 1% of them had all twelve items. On average, 41% of facilities had six of the twelve items. Few facilities had guidelines (9%) and staff trained in the past two years (7%) in diagnosis and/or management of cardiovascular conditions. Availability of medicines was also low: only about half

of facilities providing health services for cardiovascular conditions had aspirin in stock on the day of the assessment and much lower availability of other. Availability of equipment items (stethoscope, blood pressure apparatus and adult scale) was high (100%, 100% and 88%, respectively). However, these items are not specific to diagnosing and managing cardiovascular conditions. (Figure 3).
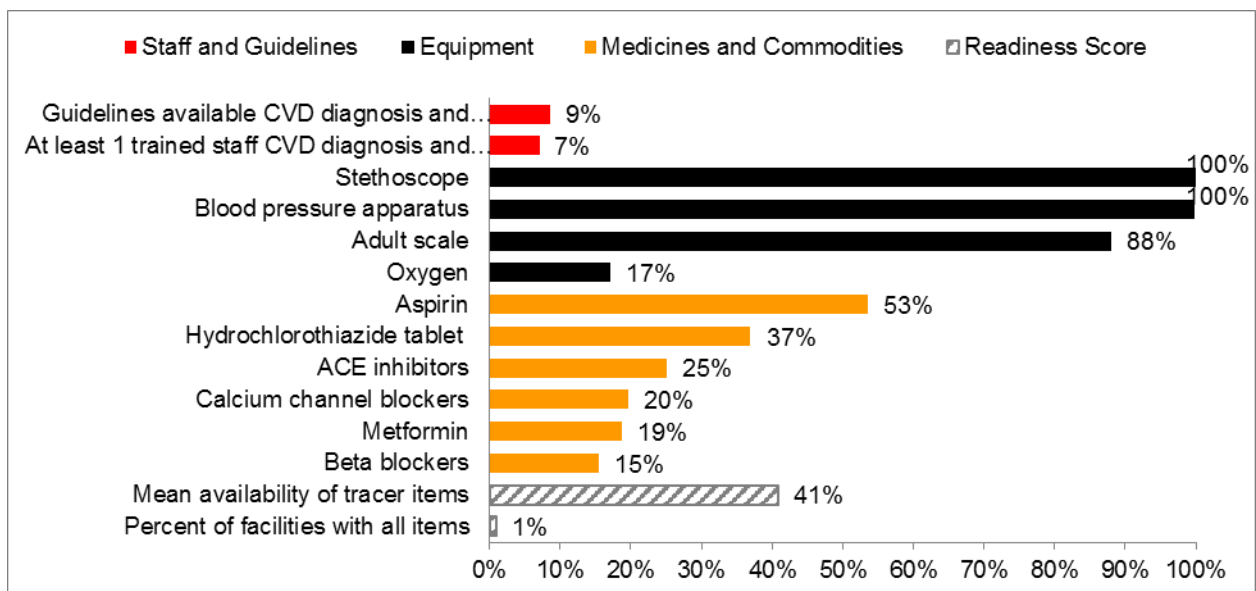

Figure 3: **Percentage of facilities that have tracer items for cardiovascular disease services among facilities that provide the service, Ethiopia, 2016**

Readiness to provide health services for chronic respiratory disease (CRD) was assessed based on the presence of the eleven tracer items. In general, among health facilities that offered diagnosis and/or management of chronic respiratory disease, no facility had all eleven items. On average, approximately three out of ten health facilities had six of the eleven items. Epinephrine injectable had the highest availability in

this category, but were present in only about half (54%) of facilities providing CRD services. However, equipment such as the stethoscope was available in all health facilities. But equipment items more specific to treating CRDs were lacking, such as, oxygen tanks (15%), peak flow meters (5%) and spacers for inhalers (4%) (Figure 4).
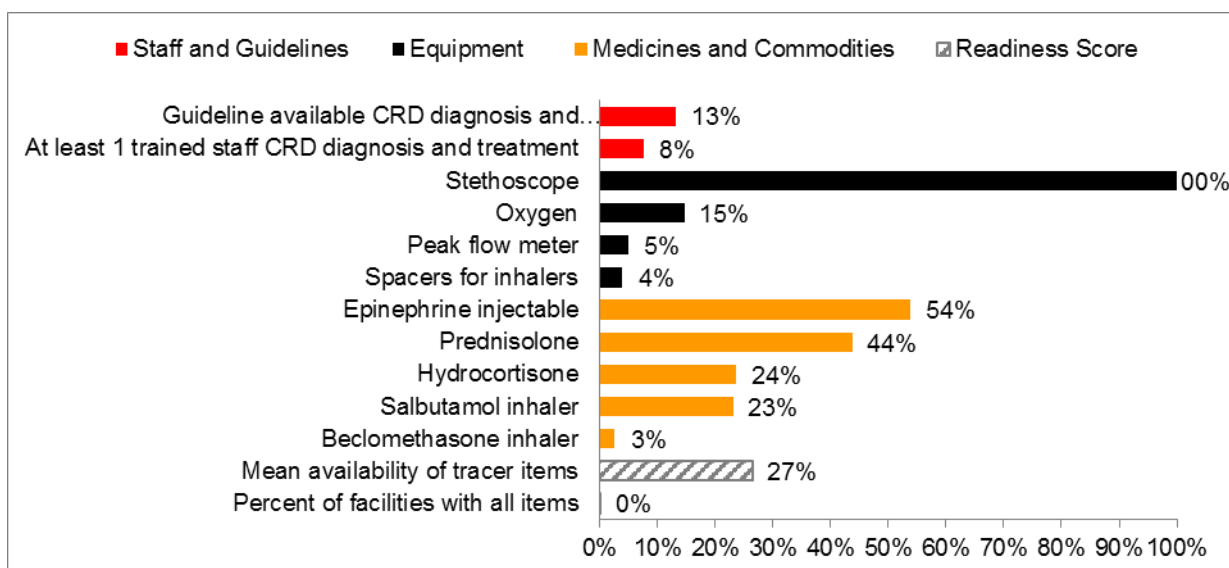
Figure 4: **Percentage of facilities that have tracer items for chronic respiratory disease services among facilities that provide the service, Ethiopia, 2016**

Readiness to provide health services for cervical cancer services was assessed based on the presence of the four tracer items. In general, among health facilities that are providing diagnosis and/or management of cervical cancer, about five out of ten health facilities had all four items. On average, 72% of facilities had two out of the four items. Six out of ten facilities had staff trained in cervical cancer prevention and control, and about five out of ten had guidelines for cervical cancer prevention and control. Almost all of the facilities (96%) had speculum and 77% of facilities had acetic acid (Figure 5).
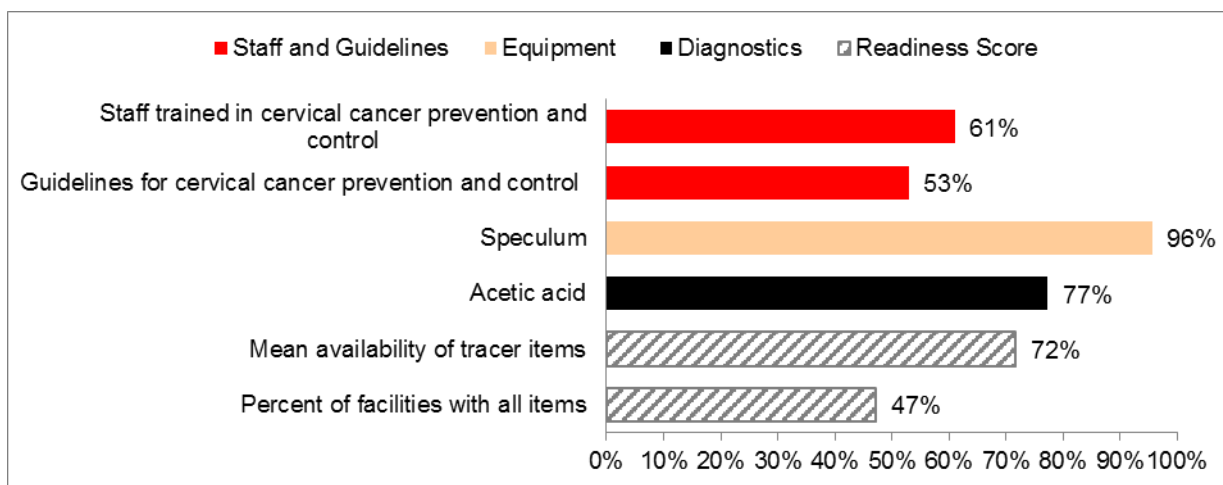

Figure 5: **Percentage of facilities that have tracer items for cervical cancer services among facilities that provide the service, Ethiopia, SARA 2016**

Discussion
Based on this survey, the availability of major NCD services are suboptimal in Ethiopia. In addition, we observed lower availability of health services in nongovernment facilities with the exception of diabetic service availability. These differences impact the ability to provide equitable access for patients. As stated in the limitation section, this study did not explore reasons for the low availability of tracer items reported. These data should stimulate further enquiry as to why the tracer items were not available.

This is the first study on the availability and readiness of major NCD in Ethiopia in a comprehensive manner and, thus, it's difficult to discuss and compare with other similar studies conducted in country. However, a 2014 study showed that 59% of facilities in Ethiopia offer services for diabetics (7). This difference is due to the definition of the indicator "service availability." The facility was considered as offering a service if providers in the facility diagnose, prescribe treatment, or manage patients with diabetes but in our study, it is considered as a provider if only diagnosis and/or manage diabetics. Other similar studies have been conducted in other African countries. There is no methodological difference between our study and those conducted in other African countries, although they are completed during different time periods. The diagnosis and/or management of diabetic service in Ethiopia is higher as compared to those in Tanzania (12%) (8), and

Sierra Leone (12%) (9). But lower than Uganda (34%) (10).

This survey provides no information on the diagnosis and management of hypertension or the treatment choices of health care professionals. On the other hand, recent estimates suggest that many individuals with hypertension in Africa are unaware of their condition (11).

Limitation of the study: The findings of the study do not described the reason for suboptimal service readiness. The study is limited by not including the viewpoints of health workers. Qualitative data would have supplemented and expanded the findings of the study.

***Conclusion*:**
Overall service availability and readiness of the health facilities to provide NCD related health services are suboptimal. The overall diabetes diagnosis and/or management service provision level by health facilities is not satisfactory and the variation is high among urban (34%) vs rural (5%) health facilities. Cervical cancer diagnosis service is provided at low level in general and no health facilities from rural areas offer this service. We hope that the findings of this study may prompt appropriate national policy response to improve NCD health care service delivery across all health facilities.

Competing interests
The corresponding author declares that there is no financial or non-financial competing interest.

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