

# Child health service provision in Ethiopia: Outpatient, growth monitoring and immunization

Theodros Getachew<sup>1</sup>, Ibrahim Kedir<sup>1</sup>, Abebe Bekele<sup>1</sup>, Atkure Defar<sup>1</sup>, Mekonnen Tadesse<sup>1</sup>, Habtamu Teklie<sup>1</sup>, Kassahun Amenu<sup>1</sup>, Terefe Gelibo<sup>1</sup>, Yibeltal Assefa<sup>2</sup>, Amha Kebede<sup>1</sup>, Agazi Ameha<sup>3</sup>

## Abstract

**Background:** Ethiopia has made tremendous effort by cutting under five mortality by two third from the 167 in 1999 to 68 in 2012. Nevertheless, nearly 277,186 under five children die each year mostly from diseases which can be prevented or treated. Sound information on the supply and quality of health services is necessary for health systems management, monitoring, and evaluation.

**Objective:** The objectives of this study are to assess the availability of child health services and how often these services are available in Ethiopian health facilities.

**Method:** The assessment is part of the 2014 Ethiopia Service Provision Assessment Plus (ESPA+) Survey which was designed to be a cross-sectional study, which combines MEASURE DHS SPA, World Health Organization's service Availability and Readiness Assessment (SARA) and the World Bank's Service Delivery Indicator (SDI). A total of 1,327 health facilities were assessed. All hospitals, selected health centres, private clinics (Higher, Lower, & Medium), and health posts were assessed using a facility inventory questionnaire. .

**Results:** Among all facilities, 62 % of them provide all three basic child health services (out-patient curative care for sick children, routine childhood vaccination services (EPI), and routine growth monitoring services) as a package. Seventy three percent of government facilities provide all three basic child health services. While 68 % of rural facilities provide all the services, in urban settings, 32 % of the facilities provide all the three basic child health services while majority of Health centres (82 %) provide all the services, only 1 % of lower clinics provide all three basic services. Out-patient curative care for sick children is the most commonly provided (95 %) service of all the three basic services. These services are almost universally available across all facility types, except in higher clinics which are less than 80 %. Among all facilities offering outpatient curative care for sick children, majority (78 %) of them offer the service 5 or more days per week at the facility.

**Conclusion:** Majority of facilities provide all three basic child health services (Outpatient Curative Care, Child Vaccination, and Child Growth Monitoring). Out-patient curative care for sick children is the most commonly provided service. Government facilities mostly provide all three basic child health services. Among all facilities offering outpatient curative care for sick children, majority of them offer the service 5 or more days per week at the facility. [*Ethiop. J. Health Dev.* 2017;31(2):67-74]

**Key words:** Availability, Child health service, Frequency

## Background

World Health Organization (WHO) and also United Nations Children's Fund (UNICEF) have estimated that about 10 million children under five years of age die each year, largely from preventable causes. Many sick children who are brought to health care providers do not receive adequate assessment and treatment (1). Ethiopia has made tremendous effort by cutting under five mortality by two third from the 167 in 1999 to 68 in 2012. Nevertheless, nearly 277,186 under five children die each year mostly from preventable or treatable diseases (2).

Sound information on the supply and quality of health services is necessary for health systems management, monitoring, and evaluation. The efforts to scale up interventions for HIV/AIDS, malaria, safe motherhood, child health, and to achieve the Millennium Development Goals (MDGs) through global health partnerships have drawn attention to the need for strong

country monitoring of health services, covering the public, private-for profit, and the private not-for-profit sectors, and their readiness to deliver key interventions (3). Children and young people with complex needs are a very vulnerable group with multifarious mix of health and social care needs which represent a real challenge for those seeking to provide health services.

With the increased demand for accountability and the need to demonstrate results at country and global levels, information is needed to track how health systems respond to increased inputs and improved processes over time and the impact such inputs and processes have on improved health outcomes and better health status (3).

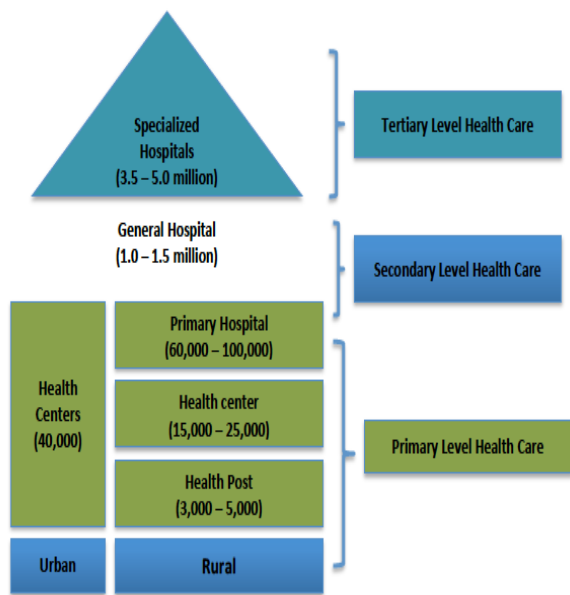
Ethiopia is a Federal Democratic Republic Government and composed of nine Regional States and two City Administrations. The health sector has recently introduced a three-tier health care delivery system: Tier

<sup>1</sup>Ethiopian Public Health Institute, Addis Ababa, Ethiopia E-mail: tedi.getachew@yahoo.com, ibro.kedir@yahoo.com, abebe1277belay@gmail.com, atid1999@yahoo.com, mekonnta@gmail.com, habtamuteklie2@yahoo.com, kassishg2@yahoo.com, mamater.1986@gmail.com, amha.kebede@gmail.com;

<sup>2</sup>UQ, School of Public Health, University of Queensland, Brisbane, Australia, E-mail: yibeltalassefa343@gmail.com;

<sup>3</sup>UNICEF, Addis Ababa, Ethiopia E-mail aameha@unicef.org

one is a Woreda/District health system comprised of a primary hospital, health centres and their satellite health posts connected to each other by a referral system. Tier two is composed of general hospitals, while tier three is made up of specialized hospitals (4).



This study provides indicators on basic child health services at national level for the different facility types and managing authority as well as aggregate indicators at the regional level.

### Objective

The objectives of this study are to assess the availability of child health services and how often these services are available in Ethiopian health facilities.

### Method

**Study design and location:** Ethiopia is a Federal Democratic Republic Government under the 1994 constitution and composed of nine Regional States and two City Administrations. A total of 23,144 functional and formal sector health facilities are available in Ethiopia which included: 214 hospitals, 3,317 health centers, 15, 525 health posts, and 4,088 private clinics (categorized under higher, medium and lower clinics).

This study is a cross-sectional study, which combines MEASURE DHS SPA, World Health Organization's service Availability and Readiness Assessment (SARA) and the World Bank's Service Delivery Indicator (SDI).

Information was collected from a representative sample of facilities managed by the government, non-governmental organizations (NGOs), and private for-profit organizations in all 9 regions and 2 city administrations of the country to provide a comprehensive picture of the strengths and weaknesses of the service delivery environment for each assessed service.

Information on child health service was collected from a representative sample of health facilities (hospitals, health centres, health posts, and private clinics) managed by the government, non-governmental organizations (NGOs), and private for-profit organizations across all regions of the country. The survey was conducted from 10 March to 25 July 2014.

**Data Sources:** The data used in this study came from the 2014 Ethiopian service provision assessment Plus Survey (SPA+). To achieve the objectives of this assessment and to capture information from different categories, data was collected using a facility inventory questionnaire. The survey used stratified random sample designed to provide representative results for Ethiopia, for different facility types and different management authorities, and for each of the 11 regions of the country. The sample size determination has been achieved by controlling the survey precision at region level and by facility type at national level. The data is nationally and sub-nationally representative and internationally comparable. There were a total of 1,165 health facilities included in this analysis. Data was collected by senior health officers and nurses who were given a four week intensive training on data collection tools and instruments and the data were collected using tablets in electronic base with CAPI (Computer Assisted Personal Interview) designed using CSpro.

**Sampling:** Ethiopia has a skewed population distribution at regional level; the sample allocation for the assessment takes the skewed population distribution of the country into account. Out of the eleven regions, the three most populated regions (Oromia, Amhara, and SNNP) represent 83% of the total population of the country (5) and thus a large proportion of facilities will come from these regions. The sample size for the study was determined by a combination of census and random samples. Because of their importance and their limited numbers, all hospitals were included in the survey and allowing for inclusion of newly identified hospitals in the survey. A representative sample of health centers and clinics were selected and included in the survey. A total sample size of 1,327 health facilities were selected, including 321 health posts and 10 newly identified hospitals. Health posts were independently selected, analyzed, and reported. The sample size determination achieved by controlling the survey precision a regional level and by facility type at national level. The formula used for the sample size calculation is given by

$$n = \frac{(1 - p)}{\epsilon^2 p}$$

where  $\epsilon$  is the requested relative standard error for estimating a proportion  $P$ . With the proposed sample size, for an indicator at 30% level a "good" survey precision was achieved at national level by facility type; a "good-to-acceptable" precision was achieved at regional level for the higher level health facilities, that is, facilities not including the health posts. For the health posts, only "moderate" survey precision was guaranteed at regional level since they will be reported separately from the other health facilities.

**Training and Data Collection:** The questionnaires were pretested to detect any possible problems in the flow of the questionnaires, gauge the length of time required for interviews, as well as any problems in the translations. The pretest also helped to detect any problems with the data entry programs. The main training for the survey took place from February 06, 2014 – March 09, 2014. Main data collection took place from March 10, 2014, to July 25, 2014. The team leader had responsibility of checking all questionnaires before leaving the facility. Each team was given a list of facility to visit, list of facilities name, type, and location.

**Data cleaning and analysis:** Data was cleaned by checking of range, structure and selected set of checks for internal consistency. All data editing programs were conducted using CSPro software. Different relevant issues related with the survey were considered during the management and analysis of the data. Descriptive analysis was performed using CSPro tabulation. Several

conventions were observed during analysis including, unless and otherwise indicated, only those items observed by the interviewers themselves considered to be available.

**Result**

In total, 1,327 health facilities (223 hospitals, 298 health centres, 485 private clinics, and 321 health posts) participated in this study. Of these, data were collected from 1,165 (88%) of the facilities. 11% of the facilities were closed or not functional; 1% of facilities were not interviewed for various reasons including: security reason, inaccessible for various reason, inability to obtain consent, and facility type change (e.g. changed to a special dental clinic).

This study assessed the availability of three basic child health services: out-patient curative care for sick children, routine childhood vaccination services (EPI), and routine growth monitoring services.

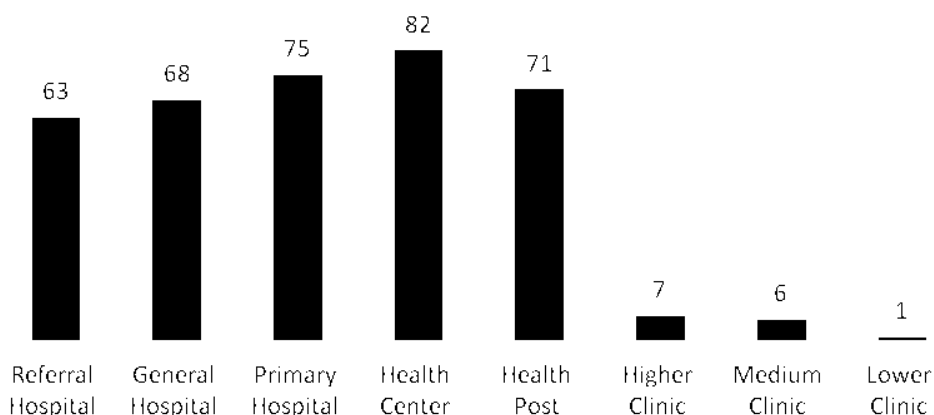


Figure 1: Percentage of facilities offering all three basic child vaccination services by facility type, Ethiopia

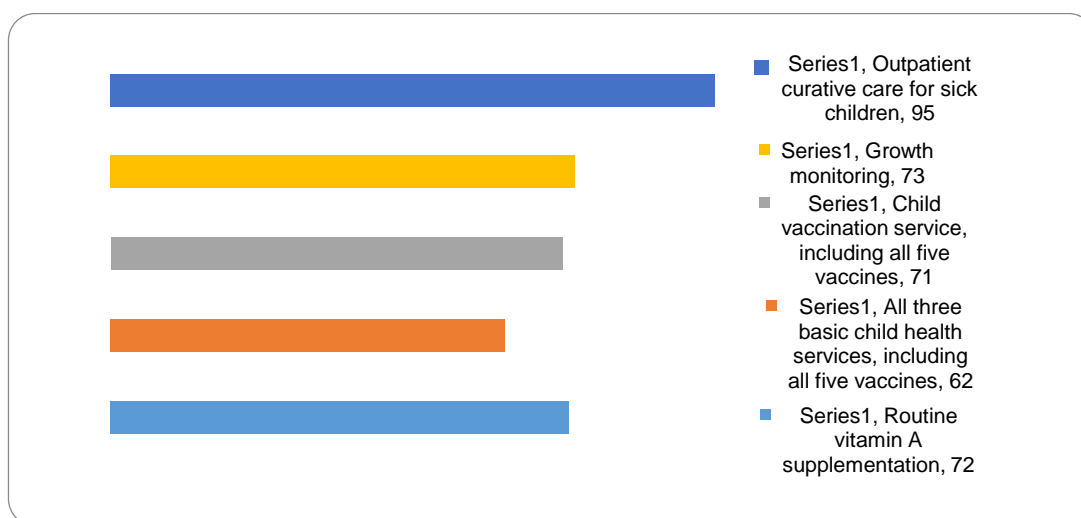


Figure 2: Percentage of facilities providing basic child health services, Ethiopia

Government facilities (73 %) provide all three basic child health services. Sixty eight % of facilities in rural areas provide all the services, while only 32 % of facilities in urban areas provide all the services.

At regional level, facilities in Tigray (78 %) offer all three basic child health services, while only 15 % of facilities in Addis Ababa offer all three services as a package and 68 % of facilities in rural areas offer the services compared to 32 % of facilities in urban areas.

Out-patient curative care for sick children (95 %) is the most commonly provided service of all the three basic services. These services are almost universally available across all facility types, except in higher clinics which is less than 80 %.

Although on average 71 % of all facilities offer child vaccination services, majority of health centres (88 %) and health posts (81 %) offer the service, compared with only 2 % of lower clinics. Government facilities (82 %) are the most likely to offer childhood vaccination services and facilities in rural areas are more likely (77 %) to offer the services than facilities in urban areas (35 %) (Table 1).

Seventy-two % of facilities provide routine vitamin A supplementation. Most of the health centres (85 %) and the health posts (83 %) provide vitamin A supplementation than other facility types. More facilities in Amhara region (80 %), Tigray (79 %), SNNP (78 %) and in rural areas (78 %) provide the service than other regions and residence respectively.

Among all facilities offering outpatient curative care for sick children, majority (78 %) of them offer the service 5 or more days per week at the facility. While among all facilities offering growth monitoring service, 37 % of them offer the service 5 or more days per week and health posts are least likely (23 %) to provide the service 5 or more days per week at the facility.

Facilities providing child vaccination services were assessed for frequency of routine child vaccination services and it was found that, 20, 19, 18, 8, 7 % of them provide polio, pentavalent, pneumococcal, measles, and BCG vaccination services respectively for 5 or more days at the facility (Table 3).

Table 1: Among all facilities, the percentages of facilities offering specific child health services, by background characteristics, Ethiopia 2014

Background characteristics	Percentage of facilities that offer:							Number of facilities
	Outpatient curative care for sick children	Growth monitoring	Child vaccination <sup>1</sup>	All three basic child health services	Child vacc+ <sup>2</sup>	All three basic child health services, including all vaccines <sup>3</sup>	Routine vitamin A supplementation	
<b>Facility type</b>								
Referral Hospital	88	72	78	63	78	63	47	2
General Hospital	97	78	74	68	74	68	67	7
Primary Hospital	100	81	81	75	81	75	73	3
Health Center	99	89	89	82	88	82	85	182
Health Post	96	83	82	72	81	71	83	802
Higher Clinic	74	19	8	7	8	7	5	13
Medium Clinic	88	15	7	6	7	6	8	37
Lower Clinic	86	5	2	1	2	1	3	119
<b>Managing authority</b>								
Government/ public	96	85	84	74	82	73	83	990
Other governmental (military, prison, federal police)	86	0	3	0	3	0	2	4
Private for profit	86	7	1	1	1	1	3	163
NGO (mission/ faith-based, nonprofit)	96	74	67	60	67	60	68	8
<b>Region</b>								
Tigray	91	87	81	78	81	78	79	54
Afar	100	34	52	25	49	25	73	14
Amhara	96	75	67	64	67	64	80	269
Oromia	94	75	78	65	78	65	70	432
Somali	95	50	62	38	61	37	72	39
Benishangul Gumuz	97	64	83	53	83	53	15	21
SNNP	96	80	74	70	70	67	78	285
Gambella	91	21	47	21	41	20	21	10
Harari	86	63	59	55	59	55	61	3
Addis Ababa	82	22	17	15	16	15	14	31
Dire Dawa	84	67	63	60	63	60	63	5
<b>Urban/rural</b>								
Urban	87	39	38	35	35	32	37	176
Rural	96	79	78	68	77	68	78	989
Total	95	73	72	63	71	62	72	1,165

<sup>1</sup> Routine provision of pentavalent (DPT+HepB+HiB), polio, and measles vaccination in the facility to children

<sup>2</sup> Routine provision of pentavalent (DPT+HepB+HiB), polio, measles, BCG, and pneumococcal vaccination in the facility

<sup>3</sup> Includes outpatient curative care for sick children, growth monitoring, and all five child vaccinations.

Table 2: Among all facilities offering outpatient curative care for sick children and growth monitoring, the percentages of facilities providing the service at specific frequencies, by background characteristics, Ethiopia 2014

Background characteristics	Outpatient curative care for sick children				Growth monitoring			
	1-2	3-4	5 or more days	Number of facilities	1-2	3-4	5 or more days	Number of facilities
<b>Facility type</b>								
Referral Hospital	0	0	100	2	0	4	96	1
General Hospital	0	1	98	7	7	0	90	6
Primary Hospital	0	0	100	3	5	2	93	2
Health Center	0	0	98	180	8	0	86	162
Health Post	20	11	69	766	18	4	23	668
Higher Clinic	0	4	94	10	0	0	100	3
Medium Clinic	0	0	96	33	0	0	100	6
Lower Clinic	0	0	99	103	0	0	84	6
<b>Managing authority</b>								
Government/ public	16	9	74	952	16	3	36	837
Other governmental (military, prison, federal police)	0	0	100	3	-	-	-	0
Private for profit	0	0	98	140	1	0	98	11
NGO (mission/ faith-based, nonprofit)	0	1	99	8	1	2	81	6
<b>Region</b>								
Tigray	3	3	92	50	3	0	53	47
Afar	3	3	94	14	55	0	40	5
Amhara	10	4	85	257	6	3	52	202
Oromia	26	9	65	407	17	4	33	323
Somali	4	4	92	37	27	9	54	20
Benishangul Gumuz	3	0	94	20	10	0	50	13
SNNP	6	12	81	275	24	2	21	229
Gambella	8	5	85	9	9	19	40	2
Harari	2	10	88	3	20	3	63	2
Addis Ababa	2	2	93	26	2	0	96	7
Dire Dawa	0	0	97	4	24	4	65	3
<b>Urban/rural</b>								
Urban	9	4	86	153	11	0	78	69
Rural	15	8	76	950	16	3	33	784
Total	14	8	78	1,103	16	3	37	853

Note: Some facilities provide the service less than one day per week; therefore, the total %ages may not add to 100 %.

Table 3: Among facilities offering routine child vaccination services, the percentage of facilities providing the service at specific frequencies, by background characteristics, Ethiopia 2014

Background characteristics	Routine polio vaccination				Routine pentavalent vaccination				Routine measles vaccination				Routine BCG vaccination				Pneumococcal vaccination			
	1-2	3-4	5 or more days	Number of facilities	1-2	3-4	5 or more days	Number of facilities	1-2	3-4	5 or more days	Number of facilities	1-2	3-4	5 or more days	Number of facilities	1-2	3-4	5 or more days	Number of facilities
<b>Facility type</b>																				
Referral Hospital	4	4	92	1	4	4	92	1	76	4	20	1	54	12	35	1	4	4	92	1
General Hospital	9	1	88	6	8	1	88	6	63	0	33	5	62	1	33	6	10	1	87	6
Primary Hospital	12	0	88	2	19	0	81	2	40	2	24	2	40	0	19	2	19	0	81	2
Health Center	13	0	77	165	13	1	74	165	47	0	26	162	49	0	21	162	15	2	71	164
Health Post	12	5	5	660	12	5	4	679	10	5	3	667	10	2	4	662	11	5	4	655
Higher Clinic	0	0	88	1	0	38	51	1	38	0	51	1	81	0	8	1	0	38	51	1
Medium Clinic	59	0	41	3	56	0	44	3	58	3	37	3	58	0	40	3	56	0	44	3
Lower Clinic	52	0	39	2	52	0	39	2	66	0	25	2	91	0	0	2	52	0	39	2
<b>Managing authority</b>																				
Government/ public	12	4	20	831	12	4	19	850	18	4	8	836	18	2	7	830	12	4	18	827
Other governmental (military, prison, federal police)	100	0	0	0	100	0	0	0	50	0	0	0	50	0	0	0	100	0	0	0
Private for profit	9	2	77	3	4	18	66	3	67	3	12	2	71	0	17	3	4	18	65	3
NGO (mission/ faith-based, nonprofit)	47	0	52	5	47	0	52	5	57	0	42	5	73	1	20	5	47	0	52	5
<b>Region</b>																				
Tigray	0	0	25	46	0	0	26	44	5	0	16	45	6	0	10	45	0	0	25	46
Afar	19	0	45	7	24	0	37	8	33	0	28	7	28	0	28	7	20	0	41	7
Amhara	10	6	23	181	9	6	21	181	14	6	6	181	21	0	3	180	10	6	20	181
Oromia	13	4	18	336	12	5	17	350	22	4	6	343	20	2	5	343	12	5	17	343
Somali	24	27	43	25	24	27	43	25	27	27	37	25	30	27	34	24	24	27	42	24
Benishangul Gumuz	4	0	11	18	4	0	11	17	3	0	8	18	3	0	8	18	4	0	11	18
SNNP	16	0	15	212	16	0	13	217	16	0	6	210	14	0	10	206	15	0	11	201
Gambella	9	0	24	5	11	0	22	5	18	0	10	5	17	0	15	5	8	0	27	5
Harari	27	3	55	2	27	3	55	2	64	0	9	2	70	0	6	2	30	3	52	2
Addis Ababa	4	0	96	5	3	8	89	5	78	0	6	5	61	5	8	5	7	8	86	5
Dire Dawa	10	2	71	3	15	2	66	3	41	0	10	3	35	0	10	3	12	0	67	3
<b>Urban/rural</b>																				
Urban	13	3	75	67	13	3	74	67	60	3	20	67	62	3	14	67	14	3	79	61
Rural	12	4	15	772	12	4	14	791	15	4	7	777	15	2	7	772	12	4	13	773
Total	12	4	20	840	12	4	19	858	18	4	8	844	18	2	7	838	12	4	18	835

Note: Pentavalent = DPT (diphtheria, pertussis and tetanus) + HiB + HepB ; BCG = bacillus Calmette-GuTrin

Note: Some facilities provide the service less than one day per week; therefore, the total %ages may not add to 100 %

## Discussion

Child health services are widely available in Ethiopia's health facilities, 63% of facilities provide all three basic child health services. As an individual service, outpatient curative care for sick children is one of the most widely available of all child health services in Ethiopia, provided by 95 % of facilities. Growth monitoring and child vaccination are each offered by seven of every ten facilities.

Compared with other African countries, availability of basic child health services is similar with Malawi and Kenya, in which all three basic child health services are available in 67% and 68 % of facilities respectively. But, higher than Senegal in which only 44 % of facilities provide all three basic child health services. Availability of outpatient curative care service in Ethiopian health facilities (95%) is also similar with other African countries like Malawi, Senegal, Kenya, and Bangladesh. Growth monitoring service, in Ethiopian health facilities, is equally available as facilities in Malawi (73%), but less available than facilities in Senegal (87%) and more available than facilities in Bangladesh (62.1%). In Ethiopia, child vaccination service availability is more or less similar with those African countries (72%), except with Senegal in which child vaccination service is available only in 45% of the facilities (6-9).

Regarding frequency of availability of child health services, child health services are given in less frequency (less number of days per week) than Malawi. Ninety six % of facilities in Malawi give child outpatient curative care service 5 or more days per week, while 78% of Ethiopian health facilities give the service 5 or more days per week. Growth monitoring service is also given 5 or more number of days per week by 40 % of facilities in Malawi and 37% of Ethiopian health facilities. Four in ten facilities in Malawi provide routine pentavalent vaccination service 5 or more days per week, but only 19% of Ethiopian facilities provide the service 5 or more days per week (6).

## Conclusions:

In view of the above result, the following conclusions are drawn:

More than half of the facilities provide all three basic child health services (Outpatient Curative Care, Child Vaccination, and Child Growth Monitoring). All the three basic child health services are provided mostly in Government owned facilities. Out-patient curative care for sick children is the most commonly provided service of all the three basic services. Among all facilities offering outpatient curative care for sick children, majority of them offer the service 5 or more days per week at the facility.

## Recommendations

Private health facilities should be encouraged and the private-government partnership should be strengthened to provide child health services. Efforts are needed to increase the number of days on which child health services are provided per week. BCG and Measles vaccination should be provided more frequently per

week among those facilities providing child vaccination services.

## Competing interests

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

## Acknowledgements

World Bank and ICF International under the MEASURE DHS Project rendered technical support while the United States Agency for International Development (USAID), World Bank, UNICEF, Irish Aid, and World Health Organization provided the financial support.

## References

1. World Health Organization (WHO). Management of childhood illness in developing countries: Rationale for an integrated strategy. Geneva, WHO/CHS/CAH/98.1A (rev.1 1999): World Health Organization; 1999.
2. World Health Organization (WHO). Child Health Epidemiology Reference Group. Geneva: World Health Organization; 2010.
3. World Health Organization (WHO). Service Availability and Readiness Assessment (SARA) Reference Manual. Geneva, WHO/HIS/HSI/2014.5 Rev.1: World Health Organization; 2015.
4. Federal Democratic Republic of Ethiopia, Minister of health. Health Sector Development Plan IV (HSDP IV) 2010/11 - 2014/15. Addis Ababa, Ethiopia: FMOH; 2010.
5. Central Statistical Agency [Ethiopia]. The 2007 Population and Housing Census of Ethiopia. Statistical Summary Report at National Level. Addis Ababa, Ethiopia: Central Statistical Agency; 2008.
6. Ministry of Health (MoH) [Malawi] and ICF International. Malawi Service Provision Assessment (MSPA) 2013-14. Lilongwe, Malawi, and Rockville, Maryland, USA: MoH and ICF International; 2014.
7. Agence Nationale de la Statistique et de la Démographie (ANSD) [Senegal] and ICF International. Continuous Service Provision Assessment Survey in Senegal 2012–2013 (SCSPA 2012–2013). Rockville, Maryland, USA: ANSD and ICF International; 2013.
8. National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Medical Services (MOMS) [Kenya], Ministry of Public Health and Sanitation (MOPHS) [Kenya], Kenya National Bureau of Statistics (KNBS) [Kenya], ICF Macro. Kenya Service Provision Assessment Survey 2010. Nairobi, Kenya: National Coordinating Agency for Population and Development, Ministry of Medical Services, Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics, and ICF Macro; 2011.
9. National Institute of Population Research and Training (NIPORT) [Bangladesh], and ICF International. Bangladesh Health Facility Survey 2014 [2014 BHFS] preliminary report. Dhaka-1205 Bangladesh and Rockville, Maryland, USA: ANSD and ICF International; 2014.