Federal democratic republic of Ethiopia
Federal Ministry *of* Health

SPECIAL BULLETIN

18TH Annual Review Meeting 2016

SPECIAL ISSUE:

The Challenge of Monitoring Health Inequalities Using Available Data in a Low-income Country: The Experience of Ethiopia p.7

Dr Kesete -Birhan Admasu
Minister of Health, Federal Democratic Republic of Ethiopia

Contact Information: The Editorial team is happy to receive comments and question regarding tthe bulletin. For further information, please contact Mr Zemedu Mohammed email zemedu2003@gmail.com or zemedumohamed@yahoo.com

Forward

The Federal Ministry of Health (FMOH) Policy and Planning Directorate (PPD) would like to extend its warm welcome to the participants of the 18th Annual Review Meeting (ARM) and readers of this year's special bulletin.
This Special Annual Review Meeting Bulletin is the fifth issue in a series that has been published for the last five years as part of the publications distributed in the ARM.

The purpose of this special bulletin is to present key research highlights that have been conducted in the health sector in the past few years and to further stimulate discussion among stakeholders in the health sector and partner health workforce, to further motivate the conduct of research in health sector priority areas.

This year, PPD is presenting research articles and reviews with special focus on agendas and topics related to the Health Sector Transformation Plan (HSTP) to its esteemed readers. This year's articles include topics such as health care quality, equity, data quality and utilization for informed HSTP management, maternal and child health, prevention of communicable diseases and chronic non-communicable diseases by directorates and agencies under FMOH.

I would like to thank all participating agencies and directorates for their efforts and contributions in these articles and look forward to having articles of high quality and impact for many years to come.

I am also grateful to PPD staff, contributors and external reviewers for the extraordinary efforts made to realize the publication of this special bulletin.

Noah Elias
MPH, Director, Policy and Planning Directorate

The Challenge of Monitoring Health Inequalities Using Available Data in a Low-income Country: The Experience of Ethiopia

Kesete-Birhan Admasu

Minister of Health,
Democratic Republic of Ethiopia

Summary

Background: Ethiopia is making substantial progress in improving the health of its population; however, these gains are unevenly distributed, and aggregate indicators hide striking inequalities in health across population groups. It is necessary to address the current limitations of health equity metrics and develop methods for monitoring health inequalities, which are applicable in the Ethiopian context.

Methods: Different methods for equity monitoring have been developed in Ethiopia, including simple methods (such as difference and ratio between two subgroups) and complex methods for multiple subgroups (concentration curve for ordered groups and population attributable risk for non-ordered groups). Data are derived from available sources and applicable at all levels of the health system, therefore ensuring sustainability.

Findings: Through monitoring inequalities, it is possible to gain insight into how health is distributed in the population, looking beyond what is indicated by national averages. In general, interventions (such as preventive services) that can be routinely scheduled and provided at community level have higher coverage and lower gaps between urban and rural areas and across socio-economic groups than those that rely on functional health systems and clinical services with 24 hour availability (such as skilled care at birth). Corrective actions have been implemented to address inequalities while improving the health of the overall population.

Interpretation: Ethiopia's experience, based on sustainable data collection systems and simple methods applicable at all levels, shows that it is possible to meet the challenge of monitoring health inequalities using data available in a low-income country.

Funding No funding

Introduction

There has been a remarkable improvement in health status in developing countries over the past two decades (1). However, despite the progress achieved so far, there is the unfinished Millennium Development Goals (MDG) agenda around mortality reduction, particularly maternal and newborn mortality; and challenges are still to be addressed in improving the health of the population across the life course and in addressing health inequalities. Furthermore, the MDGs and their focus on aggregated measures of progress masked the inequalities in health outcomes that existed between and within countries and among subgroups in a given population (2). Learning from the MDG experience, the 2030 agenda for sustainable development has been firmly anchored in the principle of Universal Health Coverage (UHC)(3), with a strong commitment to equity(4). In this context, the implementation of Sustainable Development Goals (SDG) requires metrics to measure inclusion and exclusion of specific population groups (2).

Ethiopia is making substantial progress in improving the health of the population, achieving most of the health-related MDGs (5) which is a challenging task because the country, despite rapid double-digit economic growth over the past two decades, is one of the least developed countries in

the world (6) with 22% of the people living below the income poverty line (7). Ethiopia is considered an example that low-income countries can attain good health at low cost, if there is a sustained political will and commitment to provide innovative policies, strategies and programmes(8). However, analyzing improvements through an equity lens reveals that the impressive gains in health experienced in recent years are unevenly distributed, and aggregate indicators hide striking inequalities across population groups.

It is for this reason that the focus of the Health Sector Transformation Plan (HSTP) 2015/16-2019/20 is on improving health and addressing inequalities (9). Since geographic stratifiers (i.e. urban/rural and regional disparities) are major contributors to the overall inequalities in the country, at the beginning of HSTP. The Federal Ministry of Health (FMOH) of Ethiopia gave priority to addressing inter- and intra-regional inequalities, with a focus on areas with nomadic population. In order to translate the high-level aspirations of the HSTP to bring equitable health outcomes into concrete actions, detailed strategic plan was developed and its implementation is under way (10). While focusing on geographic stratifiers, other dimensions of inequalities have also been considered.

In the perspective of achieving UHC, it is clear that inequalities must be measured if they have to be addressed and equity monitoring is of paramount importance, with policy-makers increasingly looking at quantitative evidence to inform decision-making processes. However, the current M&E system is mainly focusing on one-dimension quantitative indicators of coverage and utilization, and it is high time to address the current limitations of health equity metrics and develop methods for monitoring inequalities, which are applicable in the Ethiopia's context.

This article aims at describing the approach used in Ethiopia for monitoring equity using already available data, therefore providing a foundation for informing evidence-based and equity-oriented policies, programmes and practices and assessing their results in terms of reducing inequalities.

Examples are provided using data currently collected from different sources and, since maternal and child health (MCH) is a priority in HSTP, MCH indicators are presented for demonstration purposes. It is worth noting that the focus on MCH helps to target those in poverty: in fact not only are death rates higher among the poor compared with the rich, but also the highest poor-rich mortality ratio is observed for complications of pregnancy and infectious diseases in childhood (11). Therefore, targeting these vulnerable groups not only allows a decrease in morbidity and mortality burden, but also helps to address health inequalities.

Methods

Equity is a complex and elusive concept that can be measured using a variety of methods and statistical techniques to provide a quantitative estimate of health inequality in a population. In this context, health inequalities refer to objective differences in health, while health inequities can be defined as health differences that are unfair or unjust. Therefore, while health inequity is a normative concept, and thus cannot be precisely measured, health inequality can be measured, and serves as an indirect means of evaluating health inequity: therefore, health inequality is the metric by which health inequity can be assessed (12). With regard to monitoring health inequalities, the first step is to develop descriptive analysis of indicators by demographic (i.e., age and sex), geographic (i.e., urban/rural and regional differences) and socio-economic (i.e., wealth) stratifiers according to the criteria of time, place and person.

The second is to use simple measures of inequality, such as difference and ratio, that are best suited for comparisons of equity stratifiers that consist of two subgroups (i.e., urban/rural). For a given health indicator, the difference is an expression of the absolute inequality, while the ratio is an expression of the relative inequality reflecting proportional differences between two subgroups (12). Other measures in use in Ethiopia are difference and ratio between the median in the bottom 10% districts and the national median (i.e. for immunization coverage).

For equity stratifiers that consist of more than two subgroups with natural ordering (i.e., wealth quintiles), complex measures are used to determine inequality across all subgroups: for example, the concentration index (visualized through the concentration curve) is a measure of relative inequality, expressing the distribution of services (i.e. skilled birth attendance - SBA) among wealth quintiles. The concentration curve can be represented by plotting the cumulative fraction of births ranked by wealth quintile on the horizontal axis, while the cumulative fraction of births attended by skilled health personnel is plotted on the vertical axis. The line of equality is the 45° diagonal from the bottom left corner to the top right one showing that services are evenly distributed across wealth quintiles. When there is no inequality, the concentration curve lies on the line of equality, while, if there is inequality to the detriment of lower wealth quintiles, the concentration curve lies below the line of equality (13). The concentration index is calculated as twice the area between the line of equality and the concentration curve (14).

For equity stratifiers that consist of more than two non-ordered subgroups (i.e., regions), other complex measures are used, such as the population attributable risk. That is the difference between the national coverage gap and the gap in the best performing region, showing the improvement possible if inequality was eliminated and all regions had the same level of performance as the best performing one. Furthermore, population attributable risk percentage can be used to express relative inequality. It is calculated by dividing the population attributable risk by the national coverage gap, therefore estimating the proportional improvement possible by eliminating inequality between regions (12).

Data are derived mainly from the different rounds of the Ethiopia Demographic and Health Survey (EDHS) carried out in 2000, in 2005, in 2011, and in 2014(15-18) with two indicators for preventive services (contraceptive prevalence rate - CPR) and clinical services (Skilled Birth Attendant-SBA)being taken as examples for demonstration purposes. Two MCH indicators (antenatal Care Coverage – ANC – and Postnatal Care Coverage – PNC) are added for summary representation of the MCH services performance, while immunization coverage, derived from the Health Management Information System (HMIS),(9) is used as a measure of performance of the bottom 10% districts in reaching the national median.

Moreover, a financial indicator, the percentage of out-of-pocket payments derived from the two last rounds of the Ethiopia's National Health Accounts 2007/08 and 2010/11,(20,21) is used as a measure of financial protection toward reaching UHC.

The same analysis can be applied to all key indicators measuring performance in other priority areas of HSTP (disease control, nutrition program etc.) and at all levels of the health system with different data sources being more suitable for various levels: for example, national surveys data can be suitable for monitoring inequalities at national and regional levels, while HMIS and surveillance data can be more useful at lower administrative levels, as they provide a higher level of details (12). In this way, equity metrics can be incorporated in the routine system and monitoring health inequalities can be implemented in a sustainable way.

Results

The descriptive analysis according to the criteria of time and place shows that, while an increase in coverage in both preventive service (CPR) (Figure 1A), and clinical service (SBA) (Figure 2A) was increment was observed over time). Wide differences were observed according to the socio-economic stratifiers, with consistent improvements across wealth quintiles for CPR (wealth quintiles gradients were not estimated in EDHS 2000) (Figure 1B), whereas, for SBA, a steep increase was observed for the top wealth quintile only, with other wealth quintiles showing a slow increase (Figure 2B).

Concerning geographic disparities, while a relatively homogeneous increase was observed in most regions for CPR, the increase was mainly observed for SBA in urban areas (Addis Ababa, Harari and Dire Dawa) and in Tigray (Figures 3A and 3B).

Figure 1: Trend of average contraceptive prevalence rate (1a) and contraceptive prevalence rate disaggregated by wealth quintile (1b)* (EDHS 2000, 2005, 2011 and 2014)

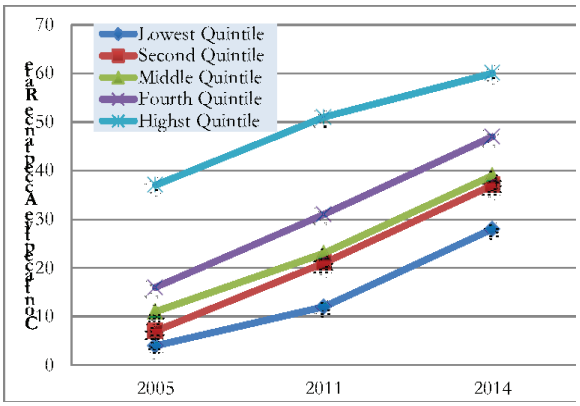
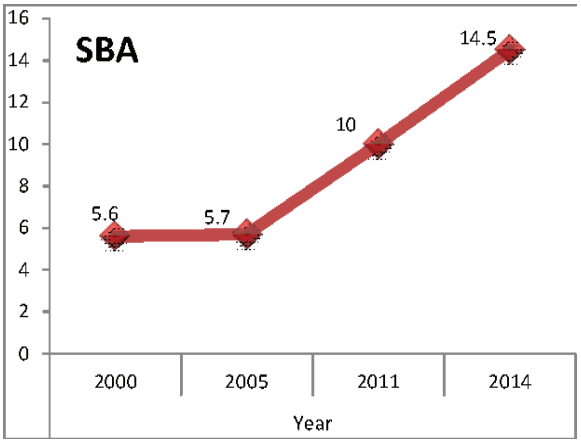


Figure 2: Trend of average percentage of skilled birth attendance (2a) and percentage of skilled birth attendance disaggregated by wealth quintile (2b)* (EDHS 2000, 2005, 2011 and 2014)



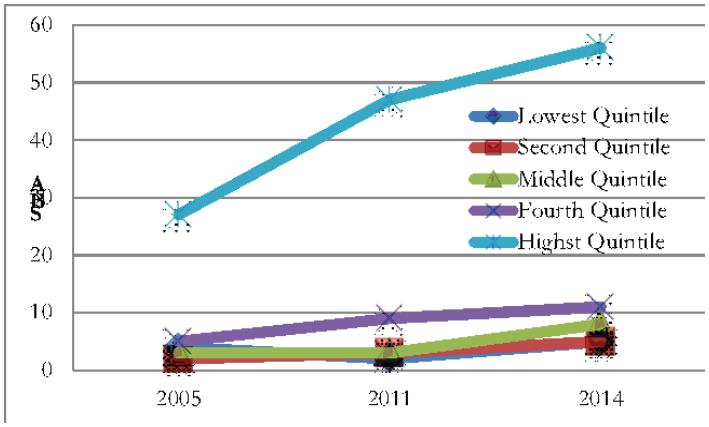
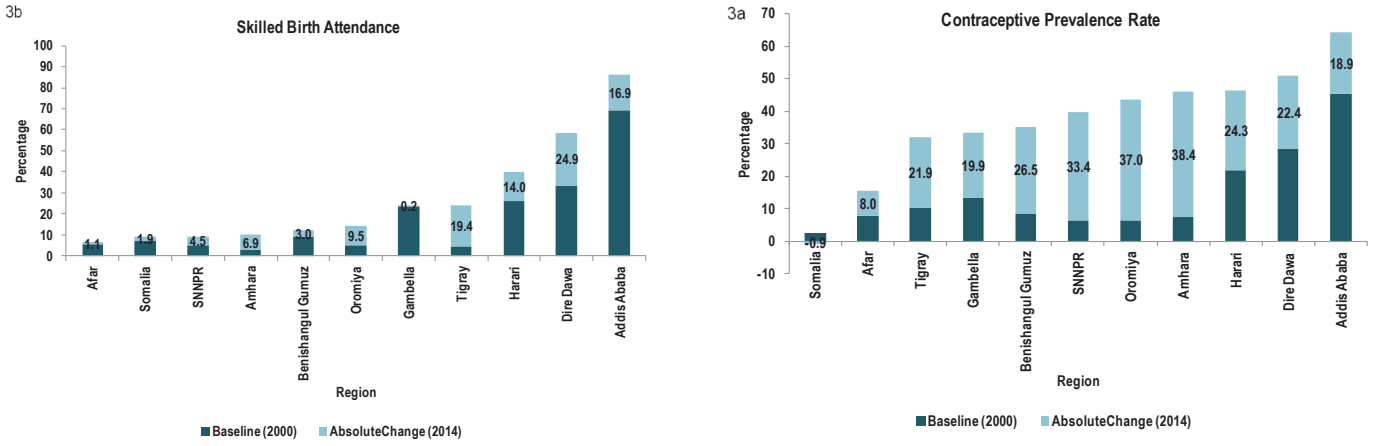
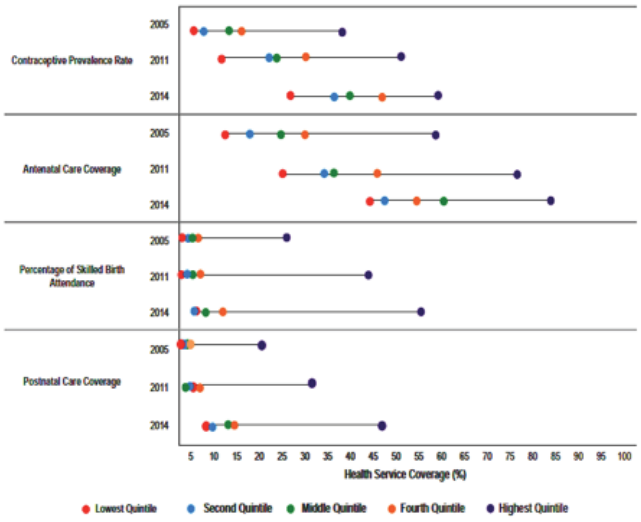


Figure 3: Patterns of contraceptive prevalence rate (3a) and percentage of skilled birth attendance (3b) by region in 2000 and 2014 (EDHS 2000 and EDHS 2014).



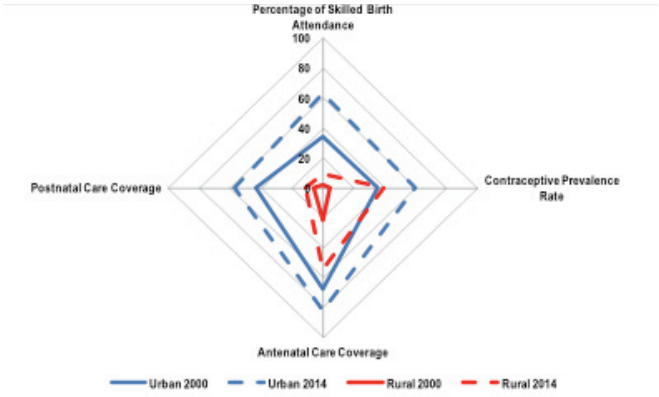
Furthermore, it is important to provide a summary representation of the coverage of preventive and clinical MCH services across wealth quintiles (Figure 4). The comparison of CPR and antenatal care coverage (ANC) (first visit) with percentage of SBA and postnatal care coverage (PNC) in the 2005-2014 period shows different patterns: in fact, while stable or even decreasing patterns in wealth-based inequality were observed for the first two indicators, an increase in wealth-based inequality was observed for the last two indicators.

Figure 4: Trend of contraceptive prevalence rate, antenatal care coverage (first visit), percentage of skilled birth attendance and postnatal.



Another way to provide a summary representation by area of residence is through spider diagram, showing an overall increase in coverage for all (preventive and clinical) indicators in urban areas between 2000 and 2014, while the increase in rural areas was observed mainly for CPR and ANC, with only slight increase for SBA and PNC (Figure 5). Difference and ratio are used to measure inequality between two groups (i.e., urban/rural), and may be also used to measure inequality between the two extreme groups (i.e. top and bottom wealth quintiles) in a population, providing an overall indication of the geographic and wealth-based inequality.

Figure 5. Comparison of contraceptive prevalence rate, antenatal care coverage (first visit), percentage of skilled birth attendance and postnatal care coverage in urban and rural areas (EDHS 2000 and EDHS 2014)



For example, the analysis of the trend of disparities between urban and rural areas as well as between top and bottom wealth quintiles highlights that, while an overall average improvement was observed for both indicators, CPR showed a decreasing gap between urban and rural areas (from 31 ·3% in 2000 to 20 ·6% in 2014) and a quite stable pattern by wealth quintile (around 33%) (Figures 6A and 6B), whereas a widening gap in both stratifiers was observed for SBA (from 32 ·2% in 2000 to 53 ·8% in 2014 and from 25 ·9% to 49 ·7% between 2005 and 2014, respectively) (Figures 7A and 7B).

Figure 6. Trend of percentage of contraceptive prevalence rate by geographical area (6a) and by wealth quintile (6b)* (EDHS 2000, 2005, 2011 and 2014)

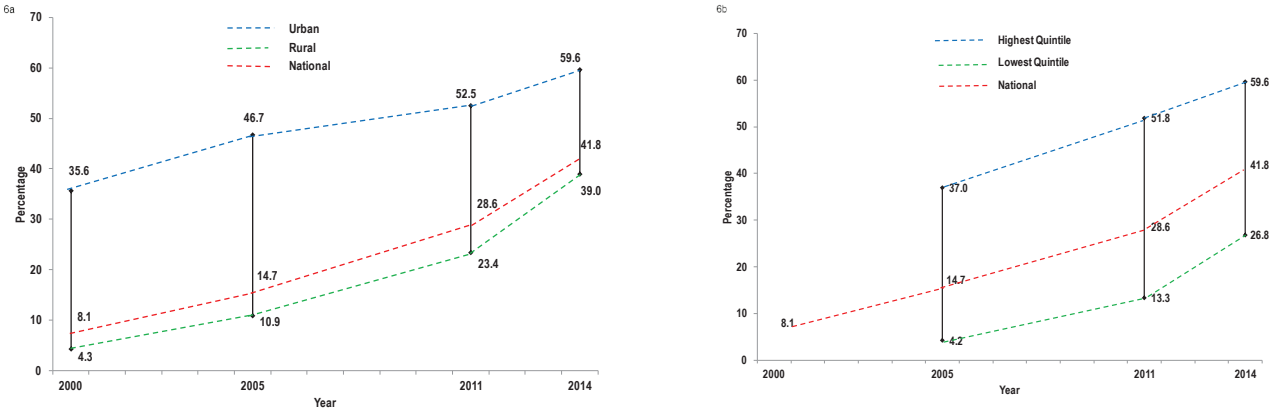
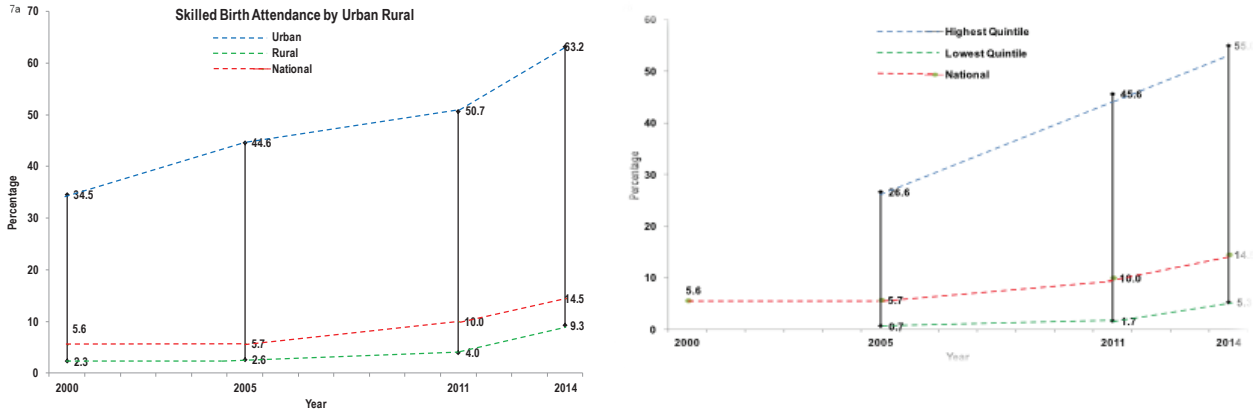
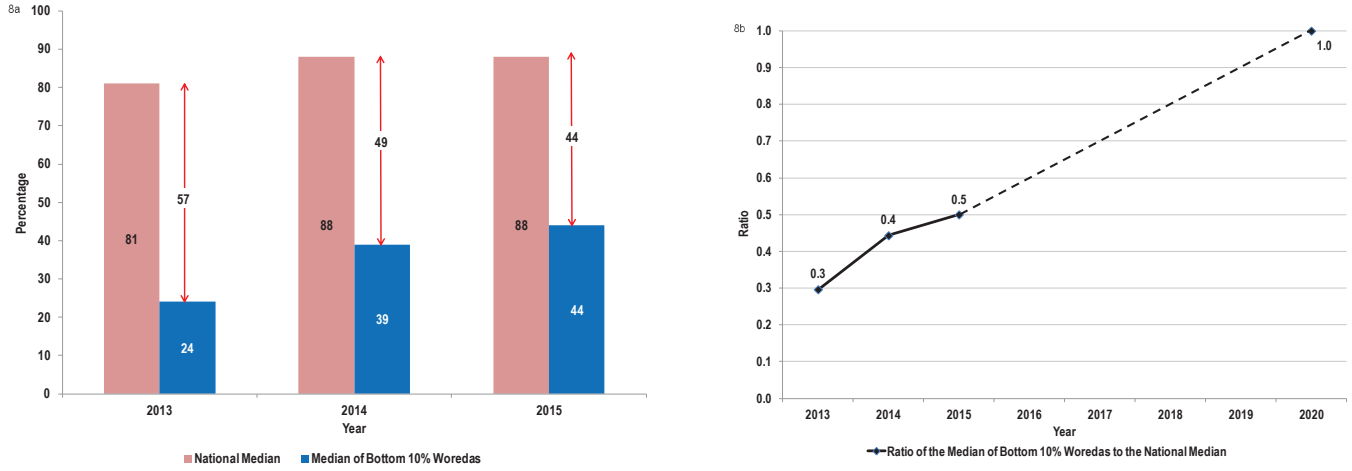


Figure 7. Trend of percentage of skilled birth attendance by geographical area (7a) and by wealth quintile (7b)* (EDHS 2000, 2005, 2011 and 2014)



The comparison of the national median with the median in the bottom 10% districts is useful to monitor the progress of the least performing districts towards reaching the national level of performance (the median is used because it is not affected by outliers). The immunization coverage for Pentavalent 3 vaccine may be taken as an example, with an increase for both medians in the period 2013-2015; however, the increase in the bottom 10% districts was much steeper, with subsequent reduction of the gap between the two medians from 57% to 44% (Figure 8A) and increase of the ratio between the two medians from 0 ·3 to 0 ·5 (Figure 8B), in line with the target of 1 (no difference between the two medians) set by 2020.

Figure 8. Difference (8a) and ratio (8b) between the median in the bottom 10% districts and the national median for pentavalent 3 vaccine coverage (2013-2015).

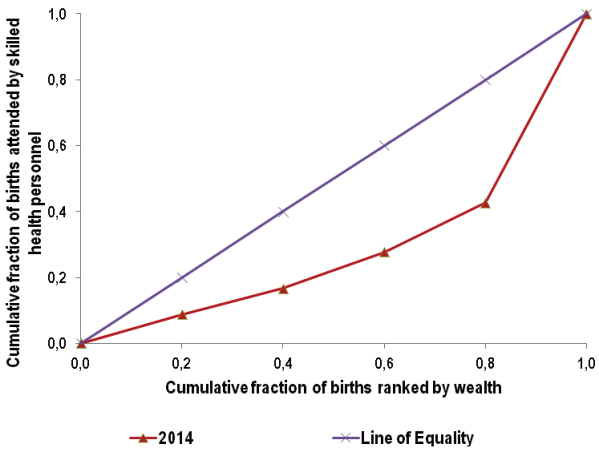


A complex measure used in Ethiopia to summarize health inequality is the concentration index, that is visualized through the concentration curve. The curve is based on the calculation of the cumulative fraction of births by wealth quintile (plotted on the horizontal axis) and the cumulative fraction of SBA (represented on the vertical axis) (Table 1), indicating the extent to which the health indicator is concentrated among the disadvantaged or the advantaged groups (Figure 9) (12). The concentration curve lies below the line of equality, with the top wealth quintile accounting for a disproportionately larger fraction of SBA services, therefore providing a visual picture of inequality. These results are consistent with those previously shown through simple measures.

Table 1. Table for calculation of the cumulative fraction of births by wealth quintile and the cumulative fraction of births attended by skilled health personnel (EDHS 2014)

Year	Household wealth quintile	Number of births (weighted)	Proportion of births	Cumulative fraction of births (X-axis)	Number of births attended by skilled health personnel (weighted)	Proportion of births attended by skilled health personnel	Cumulative fraction of births attended by skilled health personnel (Y-axis)
EDHS 2014	Lowest	1,288	0·240	0·240	68	0·087	0·087
	Second	1,210	0·225	0·465	62	0·079	0·167
	Middle	1,083	0·202	0·667	86	0·110	0·277
	Fourth	976	0·182	0·849	117	0·150	0·427
	Highest	813	0·151	1·000	447	0·573	1·000

Figure 9. Distribution of the concentration curve by wealth quintile (EDHS 2014)



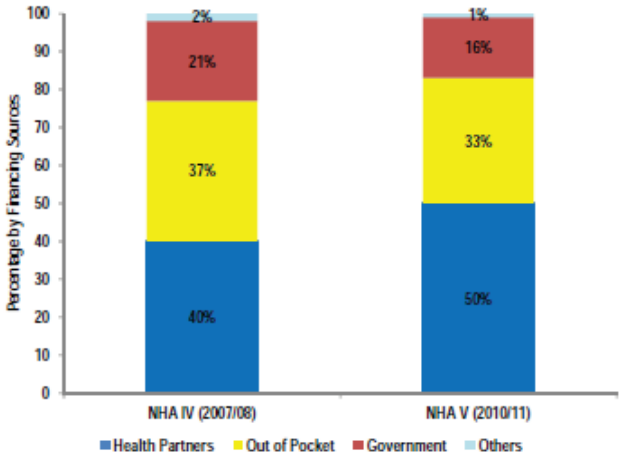
For equity stratifiers that consist of more than two non-ordered subgroups (i.e. regions), the population attributable risk and the population attributable risk percentage are used to explain the contribution of within-country inequality to a country's progress towards UHC. CPR had a population attributable risk of 22 ·3% and a population attributable risk percentage of 38 ·3%, while they were 71 ·5% and 83 ·6%, respectively, for SBA (Table 2). This shows that population attributable risk and population attributable risk percentage are summary measures of within-country inequality, with SBA being more far away from achieving UHC than CPR.

The share of out-of-pocket payments in Ethiopia exceeded the WHO standard of 15-20% of total health expenditure, 22 ranging between 37% in NHA IV (FMOH, 2010) and 33% in NHA V (Figure 10)(22).

Table 2. Population Attributable risk and population attributable risk percentage for contraceptive prevalence rate and percentage of births attended by skilled health personnel (EDHS 2014).

Indicator	National coverage gap (A) (100%- National coverage)	Coverage gap in best performing region (B) (100%-coverage in the Best performing region)	Population attributable risk (% points) (C) (A-B)	Population attributable risk % (D) (C*100/A)
Contraceptive prevalence rate	58 ·2%	35 ·9%	22 ·3%	38 ·3%
Percentage of births attended by skilled health personnel	85 ·5%	14 ·0%	71 ·5%	83 ·6%

Figure 10. Distribution of health expenditure by financial sources (NHA IV and NHA V).



Discussion

The descriphe experience in Ethiopia highlights that it is possible to use currently available data for equity monitoring purposes, showing patterns and trends of disparities across population groups and geographic areas and therefore informing evidence-based and equity-oriented policies, programmes and practices. The challenge is to extract the relevant information from the large amount of data already collected but often not used, analyze them with an equity lens, and ensure the use of information for decision making at all levels. This helps also to ensure not only local ownership, but also sustainability of the system.

Furthermore, Ethiopia's experience shows that different patterns of indicators are observed over time and across stratifiers, highlighting that health inequalities are dynamic and driven by the interplay of biology, social organization and health systems, and their scale and structure vary over time. The fact that inequalities are not fixed and immutable calls for action to address them as well as for reformulation of measurements and targets more in terms of reduction of within-country inequalities, and not just in terms of average levels for the country as a whole.

Therefore, both performance measurements and targets should be framed not only as national averages, but also disaggregated by equity stratifiers if progress towards UHC has to be measured. This principle has been incorporated in both national strategic plan of the health sector and the specific Plan of Action for reducing geographic inequalities (9, 10). In this way, monitoring health inequalities is crucial to guide interventions aimed at improving health outcomes in subgroups that are disadvantaged while, at the same time, improving the overall health status of the population.
Then, it is possible to gain insight into how health is distributed in the population, looking beyond what is indicated by national averages as shown in our analysis, if only national averages of health indicators are monitored, they may provide an incomplete and even misleading picture of performance, for example by showing improved national averages of health indicators while hiding an increase in within-country inequality.

In general, interventions (such as preventive services) that can be routinely scheduled and provided at community level through health extension workers (HEW) have higher coverage and lower gaps between urban and rural areas and across wealth quintiles than those that rely on functional health systems and clinical services with 24 hour availability (such as skilled care at birth). These patterns are also consistent with the findings from other low-income countries, where SBA had the most wealth-based inequality of any indicator, being an outlier of extreme inequality (12,13).

Another finding from the Ethiopia's experience is that monitoring in itself is insufficient; it must support evidence-based decision-making and translate into implementation, as part of the process of continuously improving health and addressing inequalities. For example, based on the evidence of wide disparities in coverage of SBA across geographic areas and population groups, FMOH has developed and implemented a strategy to address the three delays hampering access to safe motherhood services in: (i) seeking care, (ii) reaching an appropriate Emergency Obstetric and Neonatal Care (EmONC) facility, and (iii) receiving adequate care at EmONC facility. As a result, in the last couple of years, as documented in the annual performance report based on HMIS data, a steep increase was observed in SBA coverage reaching 40·9% in 2014 and 60·7% in 2015 after a decade of slow upward fluctuations (19).
Central to Ethiopia's health performance is the country's strategy to deliver more and better health care to women and children with development of the referral system from the community to EmONC facilities. To this end, FMOH has been successful in putting in place the Health Extension Program, with over 34,000 HEWs being deployed in health posts. HEWs are the first point of contact of the community with the health system, delivering integrated preventive, promotive and basic curative health services. The aim is to ensure continuity of care throughout the lifecycle and also between places of care giving, with full participation of the communities.

Another example is provided by the high percentage of out-of-pocket costs for health care, which is the main source of regressivity in financing and the main way of shifting burden to the sick (22). Evidence suggests that out-of-pocket payments have to represent less than 15% to 20% of total health expenditure (13) while in Ethiopia they accounted for about one third of the total. To address this issue, several initiatives have been devised, including the provision of free maternal and ambulance services and the implementation of community-based insurance schemes to ensure financial protection and achieve UHC (19).

In conclusion, health information is much more that collecting figures. Data have no value in themselves; value and relevance come when they are analyzed, transformed into meaningful information and used. Ethiopia's experience, based on sustainable data collection systems and simple methods applicable at all levels, shows that it is possible to meet the challenge of monitoring health inequalities using data available in a low-income country. It is not because countries are poor that they cannot afford good health information; it is because they are poor that they cannot afford to be without it (24).

References

1. UN. The Millennium Development Goals Report 2015. New York: United Nations 2015.

2. Tangcharoensathien V, Kanchanachitra C, Thomas R, Pfitzer JH, Whitney P. Addressing the health of vulnerable populations: a call for papers. Bull. World Health Organ. 2016; 94: 235.

3. Tangcharoensathien V, Mills A, Palu T. Accelerating health equity: the key role of universal health coverage in the Sustainable Development Goals. BMC Med 2015; 13:101.

4. Evans DB, Hsu J, Boerma, T. Universal health coverage and universal access. Bull. World Health Organ. 2013; 91: 546.

5. UNECA, AU, ADB, UNDP. MDG Report 2014. Assessing progress in Africa toward the Millennium Development Goals. Addis Ababa: United Nations Economic Commission for Africa, Africa Union, African Development Bank and United Nations Development Programme 2014.

6. UNDP. Human Development Report. Sustainability and equity: a better future for all. New York: United Nations Development Programme 2015.

7. World Bank. Data. Ethiopia. http://data.worldbank.org/country/ethiopia. (2015) (accessed June 21, 2016).

8. Balabanova D, Mckee M, Mills A. Good health at low cost - 25 years on. What makes a successful health system? London: London School of Hygiene and Tropical Medicine 2011.

9. FMOH. Health Sector Transformation Plan 2015/16-2019-20. Addis Ababa: Federal Ministry of Health 2015.

10. FMOH. Transforming health status and health systems in the developing regional states and selected zones with suboptimal performance. Equitable health services for all. Addis Ababa: Federal Ministry of Health 2016.

11. Gwatkin DR. Poverty and inequalities in health within developing countries: filling the information gap. In: Leon D, Walt G, editors. Poverty, inequality and health: an international perspective. Oxford: Oxford University Press 2001.

12. WHO. Health inequality monitoring with a special focus on low- and middle-income countries. Geneva: World Health Organization 2013.

13. WHO, The World Bank. Monitoring progress towards universal health coverage at country and global levels: a framework. Joint World Health Organization /World Bank Group discussion paper. http://www.who.int/healthinfo/country_monitoring_evaluation/UHC_WBG_DiscussionPaper_Dec2013.pdf (2013) (accessed June 21, 2016).

14. O'Donnell O, van Doorslaer E, Wagstaff A, Lindelow M. Analyzing health equity using household survey data: a guide to techniques and their implementation. Washington, D.C.: World Bank 2008.

15. CSA. Ethiopia Demographic and Health Survey 2000. Addis Ababa: Central Statistical Agency, and Calverton: ORC Macro 2001.

16. CSA. Ethiopia Demographic and Health Survey 2005. Addis Ababa: Central Statistical Agency, and Calverton: ORC Macro 2006.

17. CSA. Ethiopia Demographic and Health Survey 2011. Addis Ababa: Central Statistical Agency, and Calverton: ORC Macro 2011.

18. CSA. Ethiopia Mini Demographic and Health Survey 2014. Addis Ababa: Central Statistical Agency, and Calverton: ORC Macro 2014.

19. FMOH. Annual Performance Report of HSDP IV. EFY 2007(2014/15). Addis Ababa: Federal Ministry of Health 2015.

20. FMOH. Ethiopia's Fourth National Health Accounts 2007/08. Addis Ababa: Federal Ministry of Health 2010.

21. FMOH. Ethiopia's Fifth National Health Accounts 2010/11. Addis Ababa: Federal Ministry of Health 2014.

22. WHO. Making fair choices on the path to universal health coverage. Final report of the WHO consultative group on equity and universal health coverage. Geneva: World Health Organization 2014.

23. Houweling TA, Ronsmans C, Campbell OM, Kunst AE. Huge poor-rich inequalities in maternity care: an international comparative study of maternity and child care in developing countries. Bull. World Health Organ. 2007; 85:745–54.

24. AbouZahr C, Boerma T. Health information systems: the foundations of public health. Bull. World Health Organ. 2005; 83: 578–583.

An Agenda for Developing Compassionate, Respectful, and Caring Health Care Professionals

Serkalem Girma1, Dr Getachew Tollera1, Dr Geremew Tsegaye1, Selahadin Seid1 & Kedir Seid1

Abstract

Background: Providing Compassionate and Respectful Health Care (CRC) has become a high priority agenda item in the current Health Sector Transformation Plan of Ethiopia. A number of initiatives, including the need for developing standardized training packages, have been designed to address the gaps in the provision of CRC in the health care system. The National CRC Technical Working Group has developed training packages based on a Rapid Training Needs Assessment (TNA) which was aimed at preparing high quality and context based training materials. The overriding theme was to identify existing degrees of knowledge, skills, and the attitudinal characteristics of health care providers on CRC practices.

Methods: The design for the assessment integrated both compassionate and respectful care constructs in the form of a questionnaire. The questionnaire included a separate question in which patients/clients were asked to share their perspective on the care delivered. Five hospitals and one health centre were finally settled upon as the most appropriate sources for the variety of perspectives required. A total of 132 health care providers comprising of nurses (54%), general practitioners (15%) and other health professionals were interviewed. The questionnaires were administered in the form of structured interviews on an individual basis between the months of May and June 2016. Respondents were asked to evaluate how 'unimportant' or 'important' components of CRC were to the success of the health care they provide. Response categories were reverse coded: (1) unimportant to (5) very important. Patients / clients were also asked to evaluate the institution's practice of CRC with response categories of (1) 'poor' to (3) 'good'.

Results: Findings from the assessment demonstrate a general consensus among health care providers on the critical importance of CRC for the wellbeing of patients. Ninety four percent of the respondents among the health care providers alluded to the necessity of care for improved services to patients. Additionally, the awareness of health care providers on compassionate care was found to be high in that 85% of them displayed adequate knowledge of a compassionate way of caring.

Nevertheless, the results of the assessment also demonstrate poor translation of this knowledge into practice. The majority of the respondents did not have confidence in their ability to demonstrate both components of care to patients at all times. In fact, 71% of them admitted to failing to deliver compassionate care services for every patient encounter. Similarly, 77% of the respondents acknowledged they did not deliver such care (respectful) for every patient encounter. The evidence gathered from patients corroborated this result. One out of five patients rated the type of care they were provided with as 'poor'. By way of recommendations, nearly a quarter of the health care providers were keen about in-service trainings on CRC. Conversely, a significant number of them proposed the integration of CRC in institutional philosophy and upgrading the staffing level to bring much needed change in patient care.

Keywords: Agenda, CRC, Health Care

1. Directorate of Human Resources Development and Administration Ministry of Health

Conclusion & Recommendation: All in all, the results of the training needs assessment into Compassionate and Respectful Health Care practices revealed the reluctance to prioritize technical knowledge in the area despite acknowledging the critical role of such care in the wellbeing of patients. In effect, this discovery has brought to light the need for tailored training aimed at improving the attitudes and skills of health care providers in relation to CRC. Key sets of competencies were identified from the assessment for training packages based on the perceived and actual needs of health care providers. These competencies included but are not limited to communication skills, how to reach an agreement with patients on goals of care, informed and shared decision making, respecting patient's rights, compassion as a component of leadership and the ethics of health professionals.

As a result, the national CRC in-service training material development TWG has developed national training packages as an urgent response to the learning needs of health care providers and other target groups. The TWG is hopeful that the designing of a training roll out program would, in collaboration with regional health bureaus, start from October 2016.

Acknowledgement: We are very grateful to the National CRC In-service training material development TWG members. was about 25 times higher than the poorest (45.6% vs 1.7). Policy makers and program managers should use the disaggregated information in prioritizing resources and planning health services to reach the poorest and most affected population sub groups. Positive discrimination may be needed to provide outreach and other innovative schemes to make it easier for people to use services in low utilization areas such as among the poor and those residing in rural areas.

Assessment of Health Equity in Ethiopia: Focus on Coverage of Reproductive, Maternal, Newborn and Child health Interventions

T. Mekonnen[1], F. Giovanny[2], G. Theodros[1], A. Kassahun[1], T. Habtamu[1], G. Terefe, D. Atkure[1], K. Hilena[1], R. Jenny[3], Aluisio J. D. Barros[2], D.Tsegaye[1], K. Dejene[4], B. Abebe[1], A. Yibeltal[1], K. Amha[1]

Corresponding author: Mekonnen Tadesse (mekonnta@gmail.com). The corresponding author declared that authors contributed equally to this work.

Abstract

Background: Equity in health implies that ideally everyone should have a fair opportunity to attain his or her full health potential and, that no one should be disadvantaged from achieving this potential, if it can be avoided. Health differentials exist between male and female, urban and rural, between social groups with different levels of education, between races and between poor and non-poor. Ethiopia has shown a substantial progress in improving the coverage of high impact health interventions and the corresponding health outcomes during the last decade. However, the pervasive inequity among its population, particularly between the poorest and the richest, remains the major health sector challenge. This paper is aimed to provide evidence on levels and nature of inequity in health care.

Methods: The country team reviewed relevant documents and analyzed quantitative and qualitative information on policy development and strategic planning, health system and health programming, and financing intersect with the scaling-up of key life-saving interventions to improve child survival. The Ethiopian Demographic Health Survey (EDHS) data was the main source of information for equity analyses.

Findings and Interpretation: For the key interventions, the equity gap in coverage between poorest and richest population groups was larger in Ethiopia. The variability is more pronounced for few interventions like SBA (skilled birth attendance), contraceptive use and access to safe water. For instance the coverage for skilled delivery care among the wealthiest quintile was about 25 times higher than the poorest (45.6% vs 1.7). Policy makers and program managers should use the disaggregated information in prioritizing resources and planning health services to reach the poorest and most affected population sub groups. Positive discrimination may be needed to provide outreach and other innovative schemes to make it easier for people to use services in low utilization areas such as among the poor and those residing in rural areas.

Key Words: Health, intervention, child survival, equity.

Background

The paper highlights the level of inequity in health among different sub groups of the population in Ethiopia with a particular focus on reproductive, maternal, newborn and child health care (RMNCH). In order quantify the magnitude of systematic differences in health and health care, the data from Ethiopia Demographic and Health Survey (EDHS) was rigorously analyzed and various measures of equity have been employed. Although not the primary aim of the paper, it is worth to briefly describe the concepts and underlying principles of equity in health care. Review of papers on health equity illustrated that an enormous literature give similar construct which is ultimately built on the premise of ensuring social justice in health care across different population segments.

1. Ethiopian Public Health Institute, Health System Research Directorate, Ethiopia.
2. International Center for Equity in Health Federal University of Pelotas.
3. Global Countdown to 2015: Maternal, Newborn and Child survival.
4. Addis Ababa University, School of Computing and Natural Sciences, Department of Statistics

The right to the highest attainable level of health is enshrined in the Constitution of the World Health Organization and numerous international treaties[1]. A recent framework for monitoring global progress towards universal health coverage produced by the World Health Organization (WHO) and World Bank stated that the overall target was to be "By 2030, all populations, independent of household income, expenditure or wealth, place of residence or gender, have at least 80 % essential health services coverage." The framework also declares that "all measures should be disaggregated by socioeconomic and demographic strata in order to allow assessment of the equitable distribution of service and financial protection coverage" [2]. The concept of universalism in health care coverage is often used to indicate impartiality in the provision of services and allocation of resources, and suggests that "equal" treatment of different population groups will result in increased equity [3, 4].

According to the interim statement by the Commission on Social Determinants of Health, equity in health is central to the development of society, rich or poor, which can be judged by the quality of its population's health, how fairly health is distributed across the social spectrum, and the degree of protection provided from disadvantage as a result of ill-health [5]. Health equity is the principle underlying a commitment to reduce - and, ultimately, eliminate-disparities in health and its determinants, including social determinants. Pursuing health equity means striving for the highest possible standard of health for all people and giving special attention to the needs of those at greatest risk of poor health, based on social conditions [6].

Population health is influenced by a number of key social determinants that include household living conditions, conditions in communities and workplaces, and health care, along with policies and programs affecting any of these factors. Many of these differences or variations are potentially avoidable and therefore, the fact that they occur implies a degree of unfairness, or inequity. Such health inequities occur as a consequence of unjustifiable differences in opportunity; which result in unequal access to health services, nutritious food, adequate housing, safe transport and so on[7, 8]. Inequity is the presence of systematic and potentially remediable differences among population groups defined socially, economically, or geographically[9, 10].

The World Health Organization's (WHO) World Health Report for the year 2000 made a welcome argument for the importance of assessing health not only by average levels but also by examining its distribution. Thus, it is important to compare the health of wealthier people with the health of poorer ones, the health of people in different geographic locations with each other, or health care for urban and rural residents [11, 12]. Ethiopian has shown a substantial progress in improving the coverage of high impact health interventions and the corresponding health outcomes during the last decade. However, the pervasive inequity among its population, particularly between the poorest and the richest, remains the major health sector challenge. Generating data on equity in the distribution of health care programs and health outcome has vital importance particularly in developing countries such as Ethiopia. The purpose of this paper is, therefore, to provide evidence based information for better understanding of the levels and nature of inequity in health care interventions.

Methods

The in-depth Ethiopia's Countdown case study employed a mixed methods design which involve review and synthesis of relevant documents, analyses of qualitative and quantitative information helpful for understanding how policy development and strategic planning, health system and health programming, and financing intersect with the scaling-up of key life-saving interventions to improve child survival.

The analysis of health inequity is one component of Ethiopia's countdown case study primarily designed to elucidate the nature and levels of inequity in coverage of RMNCH services in Ethiopia. The EDHS data was the main source of information for equity analyses. In order to quantify the magnitude and explore the patterns of equity various measures were used: the co-coverage, the composite coverage index and the concentration or slope index of inequality. The major differences in health profile addressed was a systematic disparities across different population sub-groups on the basis of socio economic position (wealth quintiles), place of residence (urban-rural) and geographical location (regional variations). Equity analysis was performed by categorizing households into five wealth quintiles ranging from the poorest 20% to the richest 20%. Concentration Index of Inequality was examined by observing the concentration curve graphs for the linearity of the data points and equity line as well as considering the CII for both the relative and absolute values.

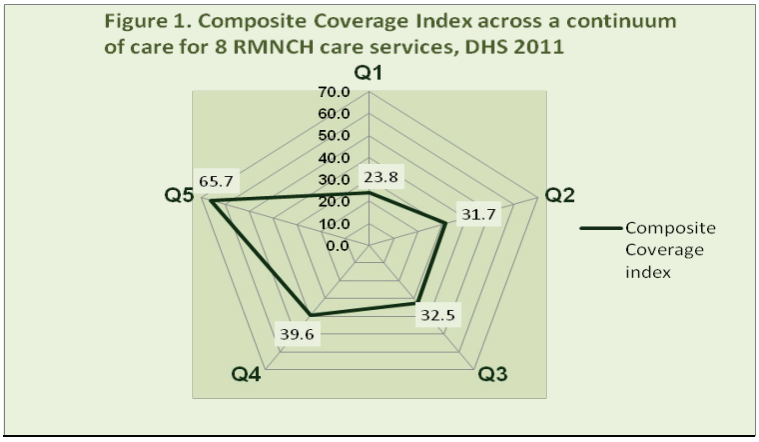
Results and Discussions

Inequity across Wealth Quintile

Wealth index is a measure of household socio economic status. It allows differential in utilization and access to health services on the basis of which social groups they belong; the poorest or the wealthiest. In this paper households were categorized into five wealth quintiles ranging from the poorest 20% to the richest 20%. The findings underscored that the level of inequity in coverage for key interventions across the continuumum of care pressists between more and less advantaged social groups of the population. Based on the calculated composite index of eight life-saving interventions, the wealthiest had a three-fold higher coverage than the poorest population subgroups (Figure 1).

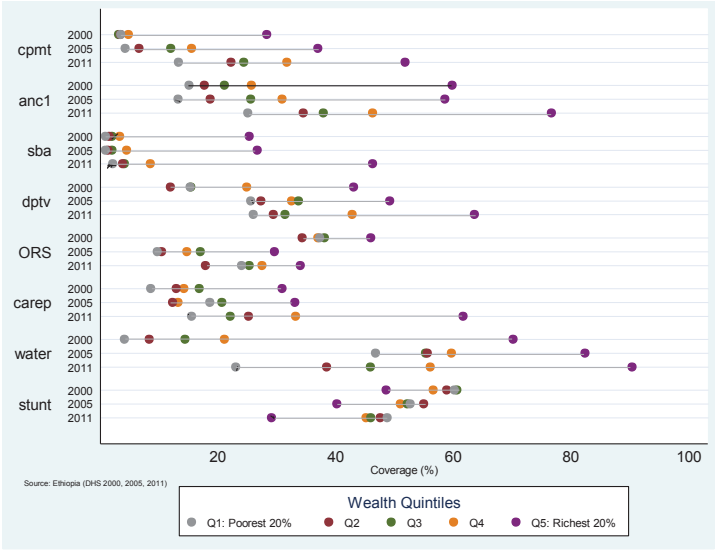
Similarly, the analyses of EDHS 2011data for key RMNCH coverage indicators showed that significantly increased gap for the poorest and richest. For instance, utilization of modern contraceptive and antenatal care services among women in the wealthiest quintile (51.8% and 75.0%) was almost four times higher than that of the poorest (13.3% and 17%), respectively. While the coverage for skilled delivery care among the wealthiest quintile was about 25 times higher than the poorest counterparts (45.6% versus1.7%).

Figure 1: Composite Coverage Index across a continuum of care for 8 RMNCH care services, DHS ,2011.



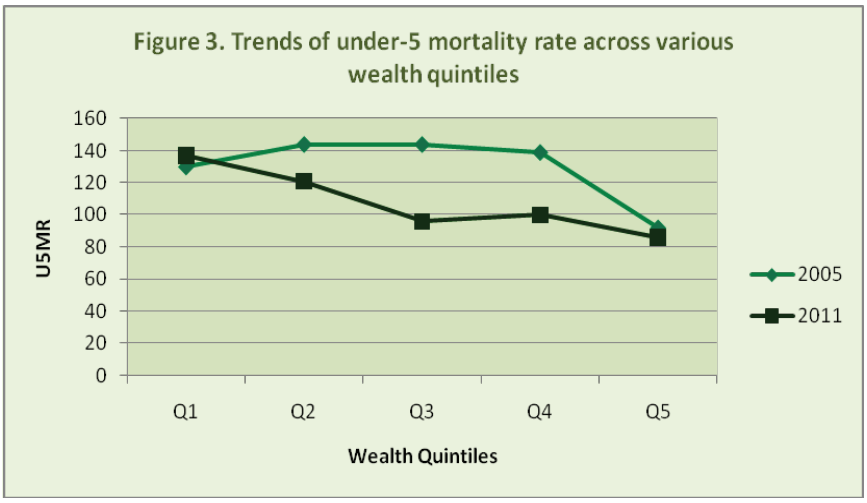
Apart from the poorest and the richest, the findings tried to shed light on the patterns of inequity across all wealth quintiles and the trends in level of disparities over the years 2000, 2005 and 2011. As shown in figure 2 the lowest four quintiles cluster together at the bottom while the top 20% have a large advantage and have more improvement in coverage of key services and reduction in stunting over time. The level of inequity is most pronounced in skilled birth attendant, care seeking for pneumonia and access to improved water and sanitation. Another group of indicators such as modern contraceptive use, skilled birth attendance and care seeking for pneumonia had barely any change in coverage over the years for the poorest quintiles, which are hovering below 15%.igure 32. Trends in coverage of selected key RMNCH indors across wealth quintiles (-Q5), DHS, 2011

Figure 2. Trends in coverage of selected key RMNCH indicators across wealth quintiles (Q1 -Q5), DHS, 2000 - 2011.



The trend in disparity continues for the under-five mortality across the various wealth quintiles and provides a clue to the overall picture of socioeconomic inequality in child health status in the country. While the overall level of under-five mortality has dropped for the middle quintiles (Q2–Q4), the poorest and the wealthiest have remained the same (Figure 3). The greatest reductions in under-five mortality between 2005 and 2011 have been for quintiles 3 and 4.

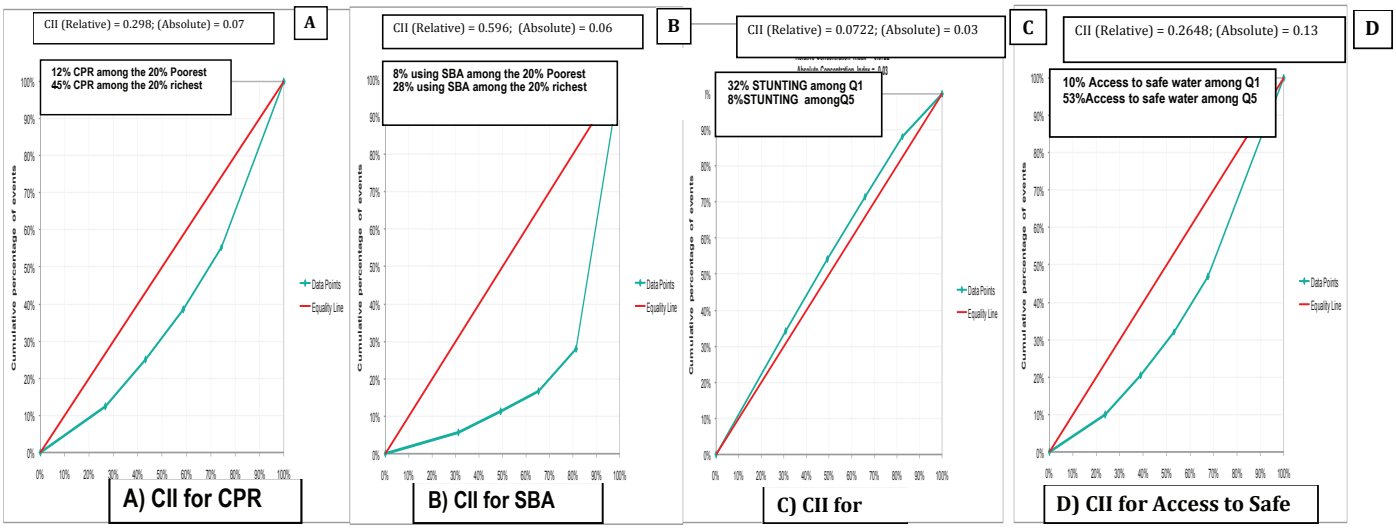
Figure 3: Trends of Under 5 mortality rate across various wealth quintiles



Concentration Index of Inequality: Another method for measuring the level of disparity in health care is the Concentration Index of Inequality (CII). The further the data points are away from the equity line or the more the curve is tilted in or outward and has a high CII value, the more the disparity across the wealth strata. For instance, in Figure 4-B below, the data points of the concentration curve of SBA are highly curved downwards with a concentration index of 0.5959 (59.6%). This shows that there is a big disparity between the poorest and the richest in the coverage of SBA services in the country.

On the other hand, as seen in Figure 4-C, the data points of the concentration curve for stunting is very close to the fitted equity line and has CII of -0.07. Here, the CII having a negative value implies that, it is a pro-poor indicator and closeness to the fitted CII line implies that disparity between the poorest and the richest is small. In the same figure, it is seen that 35% of the 20% poorest (Q1) children are stunted and as high as 13% of the richest are, as well. The absolute disparity between this two is 35% - 13% = 22%, which is a much smaller number than the absolute variation between skilled birth attendance (72% - 8% = 64%). The relative disparity for skilled birth attendance between the 20% poorest and 20% richest is nine (72/8 = 9) while it is less than 3 (35/13 = 2.7) for stunting.

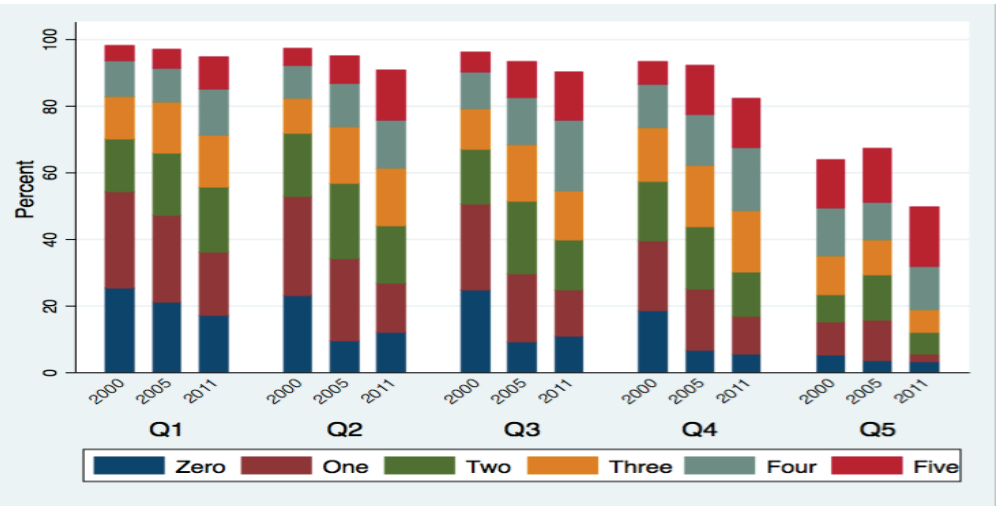
Figure 4. Concentration Curves for CPR, SBA, EPI and CAREP services among the poorest (Q1) and the richest (Q5) 20% of the population, EDHS 2011.



Co-Coverage: Even if the coverage for the number of interventions received across wealth quintiles has improved over time, the disparity in the number of interventions received (co-coverage) remains the same or with little improvement between 2000 and 2011. Figure 5 shows the variation across the different wealth quintiles (Q1-Q5) for the number of interventions received, from zero to eight. For more visual clarity the figure displays the top five interventions and the space adding up to 100% is left for interventions 6-8, which is minimal except for the top 20%.

In 2011, the proportion of families from the (Q1) that did not receive any interventions was as high as 18%, while very few (2%) of the richest 20% (Q5) did not receive any of these eight key RMNCH interventions. Similarly, the proportion of the poorest 20% (Q1) who received a maximum of three or five interventions out of the eight computed is 73% and 95%, respectively, while the percentage is not more than18% and 50% for the richest 20%.

Figure 5. Proportion of families (mothers and children) who received at most five out of eight interventions by wealth quintiles.

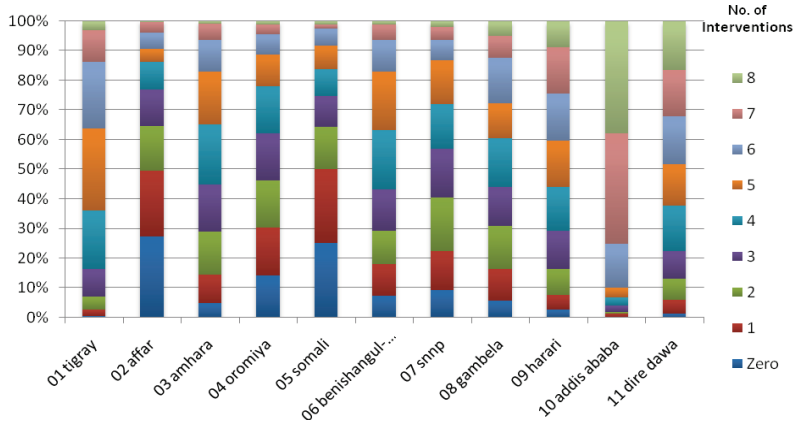


Health Inequity across regions and by areas of residence

Regional and residential disparities in key RMNCH indicators were also examined. Co-coverage was used to measure levels of intervention coverage across regions. Thus, the number of key RMNCH services the child received out of the total eight was analyzed using 2011 DHS data (Figure 6).

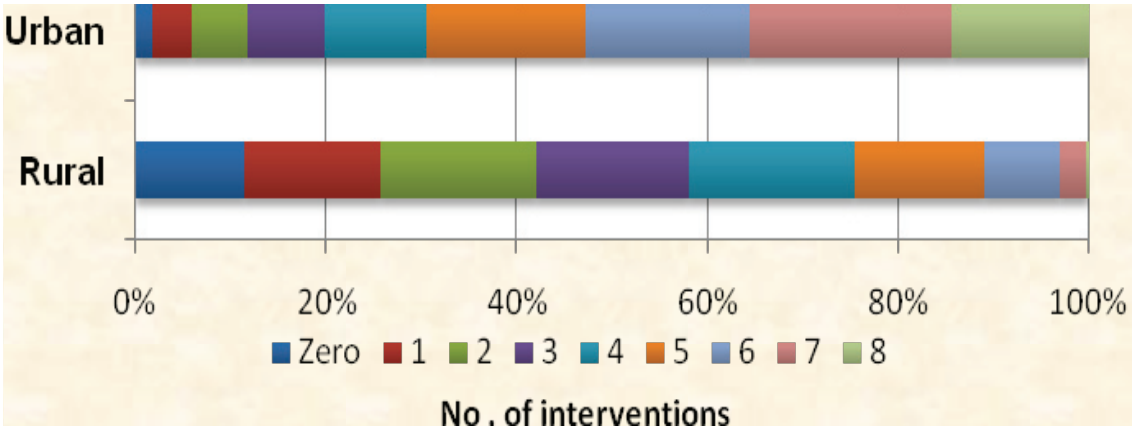
The regional contrast in intervention co-coverage intersects with the rural urban divide. In Addis Ababa, at least 40% and 78% of the eligible population groups received either all eight or seven of eight key RMNCH care services. On the other hand, not more than 5% of the same population received all the services in the four major regions (Benishangul Gumuz, Amhara, SNNPR and Oromia). On the extreme side, two emerging (mainly pastoralist) regions, Somali and Afar, had a significant proportion of their target population completely left out of any of the eight essential RMNCH services (25% - 30%). Other regions like Harari, Dire Dawa and Tigray demonstrated good co-coverage of key RMNCH services, following Addis Ababa.

Figure 6. Proportion of eligible population segments across regions and city administrations with respect to key RMNCH interventions received.



The level of disparities also remain visible between residents of urban and rural areas (Figure 7). In 2011, the proportion of the eligible urban population who received all eight key RMNCH services reached close to 20%, and conversely fewer than 3% received no interventions. In contrast, across rural Ethiopia, the proportion of the eligible population that received all eight essential services was less than 1% and the proportion that did not receive any intervention was five times higher than in the urban population (15% vs. 3%).

Figure 7. Proportion of eligible population in rural vs. urban residential areas receiving none to all selected key RMNCH interventions.



The levels of inequality in under-five mortality rates across all regions in the country over three time periods (2000, 2005 and 2011) were examined. The steepest reduction in under-five mortality occurred between 2000 and 2005 for most regions except Amhara, where the greatest change in mortality was between 2005-2011. Although some of the relative positions of regions in under-five mortality changed, the regions with the highest mortality rates (Gambela, Afar, and Benishangul Gumuz) and lowest (Addis Ababa, Dire Dawa and Tigray) remained the same. Therefore the levels of under-five morality in Addis Ababa, Tigray, Harari and Dire Dawa are still lower than the other regions. In the same way, the U5M of the four emerging regions (Benishangul Gumuz, Afar, Gambella and Somali) is higher than any of the other regions. Oromia, Amhara and SNNP had relatively similar and nationally comparable, but still much higher under-five mortality rates.

Discussion

The findings demonstrated that positive trends were noted for national average of major RMNCH indicators such as use of modern contraception, child vaccination, skilled birth attendance and antenatal care. This is also consistent with the overall improvements in health outcomes particularly, rapid decline in under-five mortality rates. However, these aggregate figures tend to obscure gross inequities within and between different segments of the population and across sub-national levels. Empirical evidences suggest that national averages are often misleading and do not capture social disparities, since they often result in an under- or an over estimation of certain health outcomes in some groups [13].

Despite remarkable progress in health, gross inequities in access and utilization of essential services continue to be a challenge in the country. Many of Ethiopia's poorest children, and those living in rural areas and emerging regions, are still left behind. Other studies have also reported huge socioeconomic and health-related disparities in developing countries. [14-16]. The equity gap between the poorest and richest is growing for almost all interventions coverage; while it is more pronounced for few interventions like SBA, contraceptive use and access to safe water sources. The findings indicated that 8% using SBA among the 20% Poorest and 28% using skilled birth attendance among the 20% richest. This findings agreed with a findings of few studies where woman in the poorest 20 % from the very lower social group is eight times less likely to deliver with a skilled birth attendant than her counterpart in the wealthiest 20 % (Q5:Q1= 8.0) [4]. However; the poorest have reached the 80 % coverage target in some other countries like Dominican Republic, Jordan, Armenia and Colombia [4].

Conclusion and Recommendations

Most of the coverage indicators in this analysis to reflect magnitude of health inequity showed a marked variations between the poorest and the richest. The difference is also notable across regions in Ethiopia and urban-rural residence. To reduce these huge disparities between the poorest and richest as well as differences by region and urban rural setting concerted efforts needs be in place to promote equitable access and utilization of health care services. Policy maker and program managers should use the disaggregated information in prioritizing resources and planning health services to reach the poorest and most affected population sub-groups. Based on the present findings we recommend further study should be conducted to have an in-depth insight on the magnitude, pattern and the root cause of health inequity in the country.

Ethical considerations

The data was generated through the Ethiopian Demographic and Health Survey of 2011. The survey was conducted by Central Statistical Agency of Ethiopia in collaboration with Ethiopian Federal Ministry Health and ICF International. The EDHS 2011was ethically approved by Ethiopian Science and Technology Ministry National review board, CSA, the Institutional Review Board of Macro International and the USAID. At the time of survey implementation the consent was obtained from all participants. For this particular further analysis, the team requested CSA and ICF international through online registration and submission of the protocol on the Measure DHS website upon which the data is freely accessible for further research and permission was granted to use the data set.

Competing Interests

The authors declare that they have no competing interests.

Authors' contribution: MT responsible for the conception and design of the study, data analysis, manuscript writing. GF, GT, HT, TG, AB, TD, AD, and DK contributed to study design, extraction of the relevant data, data analysis and review of the manuscript. HK, JR, AB, YA and AK coordinated the overall conduct of the study and review of the manuscript.

Acknowledgment

The research team would like to extend its sincere gratitude to organizations and individuals who contributed much of their time and energy in realizing the country case study report. The Institute would like to thank the organizations for generous financial and logistics support to the case study. The Institute would also acknowledge the on-going technical support obtained from in-country partners who are working in the areas of RMNCH; the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the UNFP, the World Bank (WB), USAID, Save the children, IFHP, L10K country offices and the Abt. Associates.

References

1. UN: General Comment 14: The right to the highest attainable standard of health Geneva, Office of the United Nations High Commissioner for Human Rights. Geneva; 2000.
2. World Health Organization (WHO), World Bank (WB) Group. Monitoring progress towards universal health coverage at country and global levels: framework, measures and targets. Geneva; 2014.
3. Carey G, Crammond B: A glossary of policy frameworks: the many forms of 'universalism'and policy 'targeting. J Epidemiol Community Health 2014, Jech-2014-204311.
4. Neal S, Channon AA, Carter S, Falkingham J: Universal health care and equity: Evidence of maternal health based on an analysis of demographic and household survey data. International Journal for Equity in Health 2015, 14:56:pp 1-12.
5. WHO: Achieving health equity : from root causes to fair outcomes : Commission on Social Determinants of Health, interim statement. pp. 2-3. Geneva; 2007:2-3.
6. Braveman P: Nursing in 3D: Diversity, Disparities, and Social Determinants in Health. Public Health Reports/2014 Supplement 2 2014, 129:6.
7. Hetzel D, Page A, Glover J, S T: In Inequality in South Australia: Key determinants of wellbeing. Volume 1. Adelaide: DH (SA): the South Australian Department of Health; 2004: 9
8. Preston C: Social inequality, prejudice and discrimination. In Culture scope 1999, 61.
9. Making Policy a Health equity building process. In 6th International conference; Cartagena, Colombia. International Society for Equity in Health; 2011
10. Venkatapuram S, Bell R, Marmot M: THE RIGHT TO SUTURES: Social epidemiology, human rights, and social justice. Europe PMC Funders Group Author Manuscript Health Hum Right 2010.
11. Braveman P, Gruskin S: Theory and Methods: Defining equity in health. J Epidemiol Community Health 2003.
12. WHO: World Health report 2000-Health Systems: Improving Performance. 2000.
13. Khan MMH, Krämer A, Khandoker A, Prüfer-Krämer L, Islam A: Trends in sociodemographic and health-related indicators in Bangladesh, 1993–2007:will inequities persist? Bulletin of the World Health Organization 2011.
14. Jankovic J, Simic S, Marinkovic J: Inequalities that hurt: demographic, socio-economic and health status inequalities in the utilization of health services in Serbia. Eur J Public Health 2009, 20:389–396.
15. MOHANTY SK, PATHAK PK: RICH–POOR GAP IN UTILIZATION OF REPRODUCTIVE AND CHILD HEALTH SERVICES IN INDIA, 1992–2005. Journal of Biosocial Science 2008, 41:381-398.
16. Victora C, Matijasevich A, Silveira M, Santos I, Barros A, Barros F: Socio-economic and ethnic group inequities in antenatal care quality in the public and private sector in Brazil. Health Policy and Planning 2010, 25:253–61.

Audit and Feedback Cycle for Improvement in Quality of Selected Health Services among Lead Hospitals Using Ethiopian Hospital Alliance for Quality Platform

Ayele Teshom[1], Daniel G/Mikael[1], Eyob Gebrehawariat[1]

Abstract

The Ethiopian Hospital alliance for Quality is the FMOH initiative aimed at improving the quality of care in Ethiopian hospitals and has been used as a golden opportunity for cascading and implementing strategic initiatives of high impact interventions to improve the Quality of health service delivery.

Basically EHAQ serves as a national platform to lead hospitals to be clustered with their catchments hospitals where they will coordinate and support a cluster of 5 – 7 member hospitals, with an ultimate goal of identifying early adopters of the change or innovation so as to diffuse the change to the other cluster hospitals. FMOH and RHBs will catalyze the partnership through SOP development, regional and national review meetings.

Source of information on Quality Gap: Quality gap with respect to the stated standers and criteria for the selected maternal and child health services were observed during the first site supportive supervision by the joint team on November 2014.

Objectives

This study is aimed at measuring improvement on quality of selected health services for maternal, neonatal and child health care through the use of SOP, Supportive Supervision, cluster meetings, review meetings and partnership for quality using the EHAQ platform among purposive sample of 20 lead hospitals in Ethiopia.

Methods

A quality of maternal, neonatal and child health services audit tool was initially developed by FMOH which was meant to be used as SOP tool to improve the on quality of in maternal, neonatal and child health service areas of lead hospitals. A broad range of on quality of services standards were incorporated in the assessment tool worth mentioning of:

- Availability of all the necessary infrastructure, supplies and references to ensure the quality services
- Staff knowledge and skill to provide quality MNCH services
- Adherence to the on quality of services practice standards

An initial orientation was given on the content and use of the tool and shared to the hospitals so that they use it as an internal assessment and improvement tool. Each quarter, all hospitals evaluate their performance against the standard and developed an action plan for each of the gaps identified through the self-assessment. The audit tool used different kinds of techniques including direct observation, interviews and document reviews.

Quarterly, Cluster hospitals conducted cluster meeting to evaluate their performance, share resources and benchmark best practices and innovations among member hospitals.

Besides, a team of experts from the FMOH and RHBs provided supportive supervision quarterly and performance evaluation and experience sharing were made during review meetings at regional and national level (quarterly at regional level and twice a year nationally).

1. Federal Ministry of Health of Ethiopia, Health Services Quality Directorate

Ranges of indicators and types services included for laboratory service, Maternal Death Surveillance and Response, IPPS, Pediatric Care, Emergence Obstetrics Care, Cesarean Section, Infrastructure and Availability of Essential Physical Resource, PPH and Eclampsia Management were included in the assessment. Score for each services area was determined based on the SOP. The quality score value is varying from service to services it is based on the components of the services.

Results

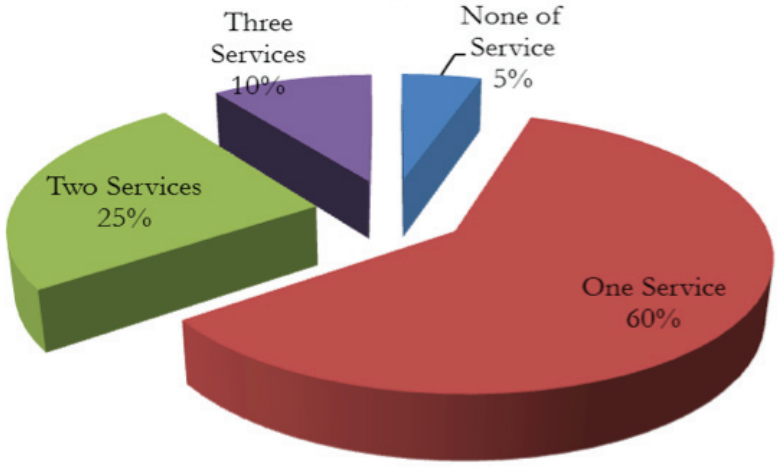
All the assessed 20 lead hospitals were improved in the scoring of pediatrics care services quality compared to first site supportive supervision by the joint team on November 2014. High percentage of deterioration on quality and least improvement was observed on maternal and neonatal death auditing and response. The improvement and deterioration percentage was 60% and 25% respectively for maternal and neonatal death auditing and response. On laboratory, service for MNCH services 20% of the leading hospitals were had made no change from their baseline. Only 6% of the lead hospitals were had no made change the score on quality PPH and Eclampsia Management.

Table 1 The status of assessed lead hospitals on quality score on selected MNCH related services compared to baseline value.

S.No	Type of Service	Proportion of Quality Status Compared to the Baseline		
		Improved %	Maintain Quality (%)	Deteriorated from their Baseline Quality(%)
1	Laboratory Services	70	20	10
2	Maternal Death Surveillance and Response	60	15	25
3	IPPS	75	15	10
4	Pediatric Care	100		
5	Emergence Obstetrics Care	85		15
6	Cesarean Section	80		20
7	Infrastructure and Availability of Essential Physical Resource	70	15	15
8	PPH and Eclampsia Management	72	6	22

Out of the 20 lead hospitals 2 of the hospitals were fully implmented 3 services among the eight MNCH services included in this assessment. Both of the hospital score the full point on laboratory, IPPS and Pediatrics care. More than 95% of the hospital during validation assessment were scored full point at least by one services.

Figure 1 Proportion of hospitlas scored full point by type of health services.

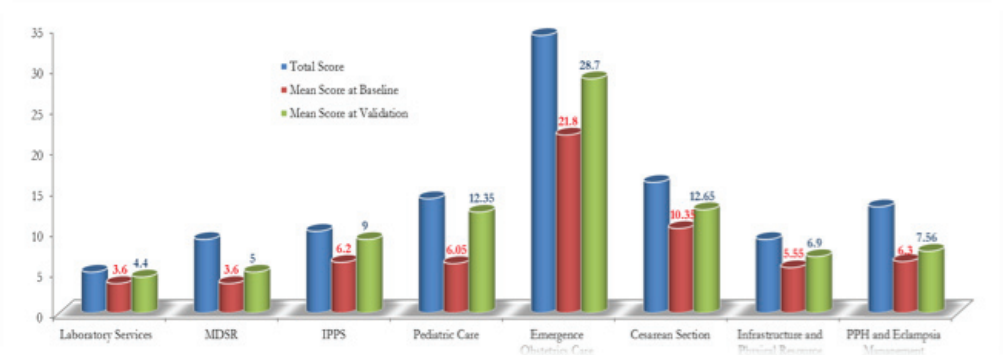


The mean score of the lead hospital by laboratory services was 4.4(SD+0.8) out of 5 total score. Based on this the average number was 88% near to the maximum number. The mean value (5) was highly dispersed compared to the targeted score point (9) on maternal and neonatal death auditing and response. with mode values. Only 55% the total score was achieved by the facilities on death audit and response. Among the hospitals, large range (19.8 points) of score was observed by ensuring the quality of emergence Obstetrics care.

Table 2. Score of lead hospitals qulity indictors for selected MNCH related health services.

S.No	Type of Service	Total	Average	Standard	Range
1	Laboratory Services	5	4.4	0.8	2.5
2	Maternal Death Surveillance and Response	9	5	1.7	6
3	IPPS	10	9	1.4	4
4	Pediatric Care	14	12.35	2.0	9
5	Emergence Obstetrics Care	34	28.7	4.9	19.8
6	Cesarean Section	16	12.65	2.1	7.7
7	Infrastructure and Availability of Essential Physical Resource	9	6.9	1.2	4
8	PPH and Eclampsia Management	13	7.56	1.5	6.4

The hospitals were shows improvement on quality by all the assessed health services compared to baseline value. Significant improvement was observed on pediatric care and emergence obstetrics care services. By none of the health services the mean of the hospital was not equal to the total score.



Conclusion

A series of Supportive supervision and supplemented with clusters network and best experience sharing review meeting followed by change idea and interventions forwarded as feedback could bring improvement in the quality of service in larger proportion of lead hospitals. However with the misconception of qualitative data for quality of care could mask the change overtime unless and otherwise we set measures of scale or rating for quality.

Recommendation

Audit and feedback on periodic base be it quarterly or biannual base through different cost effective approach through building the capacity of RHB staffs on the skill on how to conduct audit and feedback and validation as compared to EHAQ platform, which incur higher operational cost.

Availability and Readiness of Services for Cancer Care at Health Facilities in Ethiopia: Implication for Action

*Terefe Gelibo[1],*Theodros Getachew[1], Abebe Bekele[1], Atkure Defar[1], Kassahun Amenu[1] , Mekonnen Taddesse[1], Habtamu Teklie[1], Yibeltal Assefa[1], Amha Kebede[1]*

Abstract

Background: Non-communicable diseases (NCDs) are the leading causes of death globally. Available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. Of these deaths, an estimated 1.5 million, or 4% were due to cancer. In Ethiopia, data on the preparedness of health facilities to cope with the rising epidemic of cancer are insufficient. Therefore, this survey was aimed to assess service availability and readiness for cancer health care in Ethiopia.

Methods: The data used in this study is part of the 2014 Ethiopian service provision assessment survey which was conducted from 10 March to 25 July, 2014. There were a total of 873 health facilities included in this particular study. The facility inventory questionnaire collected information on whether the providers in the facility manage patients with cancer. Information about the readiness of facilities to provide good-quality client services on cancer, including the availability of guidelines and trained staff were also collected.

Results: Among all health facilities, 23% of health facilities offer services for cancer. Of the facilities that offer service for cancer, 8 % of them had guidelines for diagnosis and management of cancer at the service site during the survey and only 4 % of the facilities had staff reported that he/she or someone else in the facility had received in-service training in cancer diseases during the 24 months preceding the survey.

Conclusions and recommendation: The findings indicate that there is a wide gap in service provision for cancer care and must be filled if basic standards are to be met for cancer care by the health care system. The health system strengthening including provision of evidence-based national guidelines, protocols or standards for managing cancer, training of providers and availing essential medicines are urgently needed for cancer service provision in Ethiopia.

Introduction

Economic development and aging populations worldwide have led to a surge in non-communicable diseases, posing a shared, grave threat to health system sustainability (Bloom D, Cafiero E et al. 2011). Non-communicable diseases (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined. Available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. Changes in the population structure and lifestyle result in the growing burden of chronic non communicable diseases like cancer, which characterize the epidemiological transition. The transition takes place at different paces in different parts of the world. The developed world has taken over a century to complete the transition, while the rapidly developing countries of Asia and Latin America are undergoing a swift transition. In contrast, many sub-Saharan African countries are said to be experiencing a delayed transition(Tesfaye 2008). Cancer is the second largest contributor to the non-communicable disease burden and its impact continues to rise (Bloom D, Cafiero E et al. 2011). The burden of chronic diseases is increasing in low- and middle-income countries, while it remains stable in high-income countries. Almost 50 % of the adult disease burden in low- and middle income countries is now attributable to chronic diseases, and about 30 % of all deaths in these countries occur at

1. 1 Ethiopian Public Health Institute (EPHI), Addis Ababa Ethiopia

ages 15 to 59, compared with 15 % in high-income countries(Mathers CD, Lopez AD et al.).An analysis by the Harvard School of Public Health and the World Economic Forum estimated that there were 13.3 million new cases of cancer in 2010, with the number projected to rise to 21.5 million in 2030(Bloom D, Cafiero E et al. 2011).For the prevention and control of non-communicable disease including cancer, the 2010 global non-communicable diseases capacity assessment survey report indicated that primary prevention and health promotion, detection of risk factor and disease management were most prevalent activities in the health care systems in the Western Pacific Region, South-East Asia Region and European Region as well as the Region of the Americas, with over 80% of countries providing each in their primary care system. Countries in the African Region and Eastern Mediterranean Region generally reported the lowest prevalence for all components and the global capacity assessment survey conducted in 2013, 85% of countries reported offering risk-factor and disease management in their primary healthcare systems (World Health Organization 2012; World Health Organization 2014). The term cancer is used generically for more than 100 different diseases including malignant tumours of different sites (such as breast, cervix, prostate, stomach, colon/rectum, lung, mouth, leukaemia, sarcoma of bone, Hodgkin disease, and non-Hodgkin lymphoma). Common to all forms of the disease is the failure of the mechanisms that regulate normal cell growth, proliferation and cell death. Ultimately, there is progression of the resulting tumour from mild to severe abnormality, with invasion of neighbouring tissues and, eventually, spread to other areas of the body. Cancer is and will be an increasingly important factor in the global burden of disease in the decades to come. The estimated number of new cases each year is expected to rise from 10 million in 2000 to 15 million by 2020. Some 60% of all these new cases will occur in the less developed parts of the world (WHO 2002). Improved cancer control will, to a substantial degree, relate to prevention strategies and early detection programmes, including information campaigns and population-based screening programmes. Success of the early detection programmes will rely on effective and optimal use of treatment possibilities (WHO 2002).

Cancer diagnosis is the first step to cancer management. This calls for a combination of careful clinical assessment and diagnostic investigations including endoscopy, imaging, histopathology, cytology and laboratory studies. Once a diagnosis is confirmed, it is necessary to ascertain cancer staging, where the main goals are to aid in the choice of therapy, prognostication, and to standardize the design of research treatment protocols. The primary objectives of cancer treatment are cure, prolongation of life, and improvement of the quality of life. A national cancer control programme should therefore establish guidelines for integrating treatment resources with programmes for early detection, and provide therapeutic standards for the most important cancers in the country. Care of cancer patients typically starts with recognition of an abnormality, followed by consultation at a health care facility with appropriate services for diagnosis and treatment. Treatment may involve surgery, radiation therapy, chemotherapy, hormonal therapy, or some combination of these. An initial priority, especially in developing countries, should be the development of national diagnostic and treatment guidelines to establish a minimum standard of care, and promote the rational use of existing resources and greater equity in access to treatment services. Optimal treatment of people diagnosed with certain types of cancer detected early, for example, cancers of the uterine cervix and corpus, breast, testis, and melanoma, will result in 5-year survival rates of 75% or more. By contrast, survival rates in patients with cancer of the pancreas, liver, stomach, and lung are generally less than 15%. Some treatments require sophisticated technology that is available only in locations with substantial resources. Since the cost of establishing and maintaining such facilities is high, it is desirable that they should initially be concentrated in relatively few places in a country to avoid draining resources that could be devoted to other aspects of the national cancer control programme. Facilities can be expanded when additional resources are available. The majority of cancer patients in developing countries are diagnosed at advanced stages of the disease, because of the lack of awareness of the need for rapid action if a cancer symptom or sign is detected, the lack of early detection programmes, and the limited resources for diagnosis and treatment (WHO 2002).

Cancer care is now responsible for 5–7 % of healthcare costs in high-income countries, reaching approximately $290 billion per year in 20102 worldwide spending on cancer is equivalent to the GDP of Hong Kong, the 35th largest economy in the world. For many health economies, cancer is one of the three largest areas of medical spending(Appleby J et al. 2011; Cohen. S 2014).Today there is an expectation in many health economies that the costs of cancer will rise dramatically. Much of the success in slowing the number of predicted cancer deaths in the developed world has resulted from prevention and screening efforts over the last 30 years. Smoking cessation and tobacco control, breast cancer screening, and colorectal cancer screening have all saved lives. In the US, it is estimated that over one million cancer deaths were averted, through a combination of prevention (thought to be entirely responsible for the decline in lung cancer death rates), early detection, and improvements in treatment, as deaths increased less quickly in the 1990s(Siegel R, Naishadham D et al. 2013).

Methods

Study setting

In Ethiopia, the health sector has recently introduced a three-tier health care delivery system: level 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(FMoH 2010). A total of 23,144 functional and formal sector health facilities are available in Ethiopia which included: 214 hospitals, 3,317 health centres, 15, 525 health posts, and 4,088 private clinics. Information on cancer service was collected from a representative sample of higher level health facilities (hospitals, health centres and private clinics) across the country.

Data Sources

The data used in this study were part of the 2014 Ethiopian service provision assessment Survey (SPA). The sample for the survey was a stratified random sample designed to provide representative results for Ethiopia, for different facility types and different management authorities, and for each of the 11 administrative 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 are nationally and sub-nationally representative and internationally comparable. As described in table 1, there were a total of 873 health facilities included in this analysis.

Measurement

Data were collected using a facility inventory questionnaire (ICF 2013; WHO Document Production Services 2013) which was used to obtain information on how the facilities are prepared to provide services for cancer. Cancer services were deemed to be available when the providers in the facility diagnose, prescribe treatment for, or manage patients with cancer. The facility inventory questionnaire collected information on the availability of specific items, components of logistics support systems, and facility infrastructure, including the service delivery environment. After obtaining consent from the authorities of each health facility, the most knowledgeable provider of services to cancer was interviewed by the data collectors. The two key areas related to the provision of cancer services at the assessed health facilities comprised of the following: Availability of services and service readiness which addresses the readiness of facilities to provide good-quality client services for cancer, including the availability of guidelines, trained staff, equipment, and essential medicines.

Data management and Analysis

The process of inspecting, cleaning, and exporting data was done using CSPro software package. Descriptive analysis was performed using CSPro tabulation. The analyses considered only those items readily available and observed by the interviewers themselves during the survey.

Results

General overview of the surveyed facilities

Table 1 presents the percent distribution by background characteristics of the facilities that assessed provision of cancer services. The result included findings on cancer for a total of 873 health facilities (214 Hospitals, randomly selected 292 health centres, and 367 clinics) all over the country. Over half (51%) of all the health facilities in this analyses were public, and 45 % were private for-profit health facilities. More than six in ten (61.6%) of facilities visited were from urban area. Hospitals constituted 24.6%, health centres making the largest proportion at 33.4% of all facilities, lower clinics 20.4% while medium clinics 15.1% of the total health facilities visited (Table1).

Availability of services for cancer

Services were deemed to be available when the providers in the facility diagnose, prescribe treatment for, or manage patients with cancer. Among all health facilities that offer services for non-communicable diseases, 23 % of the facilities reported that providers in the facility diagnose, prescribe treatment for, or manage patients with cancer diseases. Of them 20 % of the facilities reported that providers in the facility only diagnose patients with cancer diseases. Treatment services for cancer is non-existent (0%) throughout all the facility types except primary hospitals in which 2% of facilities reported to give treatment services for cancer. The services for cancer were more likely available in hospitals and higher clinics (ranging from 60 % to 69 %) than other facility types (in lower clinics only 3%).

Readiness to provide quality cancer diseases services

In order to better detect and diagnose non-communicable diseases at the level of primary health care centres, there should be enough capacity in terms of resources. Among the facilities that offer service for cancer, 7 % of them had guidelines for diagnosis and management of cancer at the service site during the survey. This proportion ranges from 18% for referral hospital to 0 % for lower clinics (Table 2). Among all facilities that offer services for cancer, only 4 % of had staff reported that he/she or someone else in the facility had received in-service training in cancer diseases during the 24 months preceding the survey. However, in primary hospitals and lower clinics none of the staff had received in-service training in cancer diseases during the 24 months preceding the survey (Table 2).

Discussion and conclusion

According to WHO(WORLD HEALTH ORGANIZATION 2003), cancer diagnosis and treatment service is fundamental to the optimum management of cancer patients, and provision of these services is central to national cancer control strategies. Although it requires long term planning and appropriate assessment of health care resources, without recourse to sophisticated technologies, effective treatment services for many cancers can be comprehensively provided at moderate cost. Studies indicated that around 85% of the world's population lives in developing countries, but is served by only approximately 30% of the world's treatment facilities for cancer care. Conversely, the developed countries, with 15% of the world's population, have 70% of these facilities. Approximately 30 countries (15 countries in Africa as well as several in Asia) do not have even one radiation therapy machine(NTERNATIONAL ATOMIC ENERGY AGENCY 2003). However, availability alone does not determine access to the service. Geographical or spatial accessibility and affordability by patients and their families to cover the direct and indirect cost of the treatments are also barriers to access. Another component of access is awareness not only the patients must be aware of the existence of treatment and its benefits, but their treating physicians must be aware of the availability and indications for cancer care(MACKILLOP 2007). Despite the high burden of mortality and morbidity from cancer in Ethiopia, the responses to the disease in Ethiopia have not been comprehensive enough as it should be. The results presented in this study indicates insufficient availabilities of cancer services, guidelines for diagnosis and management of cancer and trained staff. However, as compared to other countries, the findings indicated that those facilities offering cancer diagnosis and/or management services in Ethiopia were higher than reports from surveys of other African countries, i.e. 8% in Tanzania where cervical cancer screening is available in only 8% of facilities (National Institute for Medical Research (NIMR) Tanzania 2011). But it is much more lower than facilities in Zambia where half (53%) of facilities offered breast cancer screening services (Zambia Minister of Health 2010). In conclusion, the finding depicts a wide gap and must be filled if basic standards are to be met for cancer care by the health care system. As we have seen, many health systems will struggle to provide quality cancer care if the dynamics we have described continue to put more demand on a system which is already strained. Failing to address cancer care demand could lead to a variety of undesirable system-level poor outcomes. The health system strengthening including provision of evidence-based national guidelines, protocols or standards for managing cancer, training of providers and availing essential medicines are urgently needed for cancer service provision in Ethiopia.

Acknowledgment

We would like to express our sincere gratitude and special thanks to the administration offices of health sectors at all level for providing necessary support. Our special thanks go to field coordinators, supervisors and data collectors. Finally, we would like to thank all study participants for providing the necessary information. Therefore, we would like to thank the organizations for generous financial, logistics and technical support for the success of this survey.

Statement of authors' contributions to manuscript

All authors contributed equal to this work.

Financial Support

The survey was funded by the United States Agency for International Development (USAID), World Bank, Irish Aid, WHO and UNICEF. ICF International provided technical assistance on collection and analysis of data.

Competing Interest

Authors declare that they have no competing interest.

References

Appleby J et al. (2011). Explaining variations in primary care trusts' spending on cancer services. The King's Fund. London.

Bloom D, Cafiero E, et al. (2011). The global economic burden of noncommunicable diseases. . . W. E. F. a. H. S. o. P. Health. Switzerland, 2011, World Economic Forum and Harvard School of Public Health.

Cohen. S (2014). "The concentration of health care expenditures and related expenses for costly medical conditions. Rockville (MD): Agency for Healthcare Research and Quality, 2014. ." Agency for Healthcare Research and Quality,.

FMoH (2010). Health Sector Development Plan IV (HSDP IV) 2010/11 - 2014/15. Addis Ababa, Ethiopia, Federal Democratic of Ethiopia, Minister of Health.

ICF (2013). Measure DHS Project, Service Provision Assesment tool. I. International.

MACKILLOP, W. J. (2007). "Health Service Research in Radiation Oncology: Toward Achieving the Achievable for Patients with Cancer." Scientific Foundations of Radiation Oncology (GUNDERSON, L.L., Ed.): 215-232.

Mathers CD, Lopez AD, et al. The burden of disease and mortality by condition: data, methods and results for 2001. Globalburden of disease and risk factors. New York: Oxford University Press, 2006: 45–240,.

National Institute for Medical Research (NIMR) Tanzania (2011). Tanzania District Health Assessment 2008–2009 Summary Report. Tanzania, National Institute for Medical Research (NIMR) Tanzania,.

NTERNATIONAL ATOMIC ENERGY AGENCY (2003). Millions of cancer victims in developing countries lack access to lifesaving radiotherapy,http://www.iaea.org/NewsCenter/PressReleases/2003/ prn200311.html . http://www.iaea.org/NewsCenter/PressReleases/2003/ prn200311.html . Vienna (2003)

Siegel R, Naishadham D, et al. (2013). "Cancer statistics, 2013." Journal for Clinicians 63(1): 11-30.

Tesfaye, F. (2008). Epidemiology of Cardiovascular Disease Risk Factors in Ethiopia: The rural-urban gradient.

WHO (2002). National Cancer Control Programmes:Policies and managerial guidelines 2nd Edition. W. H. O. Office of Publications. Geneva, Switzerland,, World Health Organization.

WHO Document Production Services (2013). Service Provision and Readiness Assesment tool. W. H. Organization. Geneve, World Health Organization.

World Health Organization (2012). ASSESSING NATIONAL CAPACITY FOR THE PREVENTION AND CONTROL OF NONC OM M U N IC A BL E DI SE ASE S: REPORT OF THE 2010 GLOBAL SURVEY. G. WHO Document Production Services, Switzerland,. WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). WHO Press, .

World Health Organization (2014). ASSESSING NATIONAL CAPACITY FOR THE PREVENTION AND CONTROL OF NONC OM M U N IC A BL E DI SE ASE S: REPORT OF THE 2013 GLOBAL SURVEY. G. WHO Document Production Services, Switzerland,. WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). WHO Press, .

WORLD HEALTH ORGANIZATION, . (2003). World Cancer Report. Geneva (2003), World Health Organization.

Zambia Minister of Health (2010). Zambia Service Availability and Readiness Assessment 2010 Summary Report. Minister of Health. Zambia, Minister of Health.

Tables

Table 1: Total number of health facilities assessed by type of facilities

Facility type	Weighed	Unweighed	%	Managing Authority			
				Public	Other governmental	Private for profit	NGO
Referral hospital	2	32	0	31	0	0	1
General hospital	7	130	1	71	1	51	7
Primary hospital	3	52	0	44	1	4	3
Health center	182	292	16	290	0	0	2
Higher clinic	13	57	1	0	0	55	2
Medium clinic	37	132	3	0	4	121	7
Lower clinic	119	178	10	1	3	165	9
National	363	873	100.0	437	9	396	31

Table 2. Among all facilities, the percentages offering services for cancer diseases and, among the facilities offering services for cancer diseases, the percentages having guidelines, at least one staff member recently trained on cancer diseases, by background characteristics, Ethiopia SPA 2014.

Background characteristics	%Percentage of facilities offering services for cancer diseases1	% of facilities offering only diagnostic services for cancer diseases	% of facilities offering only treatment services for cancer diseases	N of facilities surveyed	% had Guidelines	% had Trained2	Number of offering services for cancer
Facility type							
Referral Hospital	69	44	0	2	18	14	1
General Hospital	66	40	0	7	12	13	5
Primary Hospital	65	54	2	3	12	0	2
Health Centre	28	26	0	182	5	3	51
Higher Clinic	60	48	0	13	11	6	8
Medium Clinic	32	29	0	37	11	5	12
Lower Clinic	3	3	0	119	0	0	4
Managing authority							
Government	29	26	1	190	6	3	55
Private for profit	15	13	0	163	10	6	25
NGO	19	16	0	8	8	0	1
Region							
Tigray	25	20	0	22	15	11	5
Afar	4	4	0	5	33	0	0
Amhara	24	22	0	87	12	0	21
Oromia	17	16	0	116	2	7	20
Somali	30	22	0	8	0	0	2
Benishangul Gumuz	14	9	0	4	0	11	0
SNNP	23	21	1	80	3	3	19
Gambella	2	2	0	6	0	0	0
Hararı	63	51	0	2	5	5	1
Addis Ababa	36	29	1	31	11	4	11
Dire Dawa	62	56	0	3	10	0	2
Urban/rural							
Urban	28	23	0	149	10	3	41
Rural	19	18	0	214	4	5	41
Total	23	20	0	363	7	4	82

Note: The indicators presented in this table comprise the staff and training and equipment domains for assessing readiness to provide services for cancer diseases within the health facility assessment methodology proposed by WHO and USAID (2012).

[1] Providers in the facility diagnose, prescribe treatment for, or manage patients with cancer diseases.

[2] The respondent reported that he/she or someone else in the facility had received in service training in cancer diseases during the 24 months preceding the survey. The training must have involved structured sessions; it does not include individual instruction that a provider might have received during routine supervision.

Child Stunting and Community Based Nutrition in Ethiopia: Current Evidence and Policy Implications

Nutrition Thematic Group, National Research Advisory Council of RMNCAH-N, June 2016

Introduction

Stunting is defined as the percentage of children aged 0 to 59 months whose height-for-age (HAZ) is below minus two standard deviations from the median of the 2006 WHO Child Growth Standards (1). It reflects a failure to receive adequate nutrition over a long period of time which ultimately leads to chronic restriction of linear growth. Stunting does not vary appreciably according to recent dietary intake and is the most widely prevalent form of malnutrition among under-five children in developing countries. According to the recent report of the UNICEF/ WHO/ World Bank Joint Child Malnutrition Report, globally there are 159 million children under five who are stunted (2). More than a third of African children are stunted in their growth and must face a range of physical and cognitive challenges not faced by their better-fed peers (3). The severe irreversible physical and neurocognitive damage that accompanies stunted growth poses a major threat to human development.

Stunting has continued to be a serious public health problem in Ethiopian children. According to the National Nutrition Surveys conducted in 1983, 1992 and 1998, the national prevalence of stunting in under five children was 59.8%, 64.2% and 52%, respectively (4 - 7). The recent Ethiopian Demographic and Health Surveys (EDHS) still highlighted that child stunting is still a significant burden on Ethiopian children. According to the 2000, 2005, 2010 and 2014 EDHSs, the national prevalence of stunting was 58%, 51%, 44% and 40%, respectively (8 – 11). A study that analyzed the complete anthropometric data of 9,611 children aged 0 to 59 months from the 2011 EDHS dataset indicated that 42.3%, and 20.4% of the children were stunted and severely stunted, respectively (12). The evidences from various pocket studies conducted all over the country reveal that stunting is still widely distributed in children under five in Ethiopia.

Stunting is considered a better overall predictor of under nutrition in children because it affects large numbers of children globally (13) and has severe short- and long-term health consequences including poor cognition and educational performance, low adult wages, lost productivity and, when accompanied by excessive weight gain later in childhood, increased risk of nutrition-related chronic diseases (14 - 18). The economic burden, or annual cost, of early childhood growth faltering is substantial. Early-life growth faltering in developing countries caused a total loss of 69.4 million years of educational attainment per birth cohort and a total economic cost of $616.5 billion at purchasing power parity. At the regional level, the economic costs were $34.2 billion for sub Saharan Africa (19) and 55.6 billion ETB for Ethiopia (20).

This policy brief on child stunting is informed by the findings from various studies on child stunting in Ethiopia. Most of these studies indicated that household economic status; water, sanitation and hygiene (WASH); childhood illnesses; child age; maternal education, and maternal nutrition were the main drivers or predictors of child stunting in Ethiopia.

Result and discussion

A window of opportunity to prevent long-lasting consequences of stunting exists in the first 1,000 days of a child's life (the first two years of a child's life, and the nine months of life in their mother's womb). The multiple causes of

stunting are well known, effective interventions are available, and vast knowledge has been generated on effective interventions from programs that have successfully reduced stunting. For example, Asia showed a substantial decrease in stunting between 1990 and 2010, nearly halving the number of stunted children– from 190 million to 100 million, which corresponds to an overall reduction in stunting of 20.7% between 1990 and 2010, i.e. a 43% relative reduction in 20 years, or 2.8% per year. In Brazil, the prevalence of stunting in children under five decreased from 34% in 1986 to 6% in 2006 (i.e. a 28% absolute reduction of stunting, or an average relative reduction of 8.7% per year in 20 years), mainly due to increased purchasing power of low-income families, improved educational levels of mothers, expanded public water supplies and sewage systems, and virtually universal basic health care, including prenatal care (21). Similarly, in Mexico, stunting decreased from 27% to 16% over the period 1988–2006 (i.e. an 11% absolute reduction or an average relative reduction of 2.9% per year in 18 years) due to better targeting and enhanced coverage of a conditional cash-transfer program and increased access to health care facilities (21). In areas of Bangladesh where the integrated management of childhood illness (IMCI) approach was implemented, stunting rates in children aged 24–59 months dropped from 63.1% to 50.4% between 2000 and 2007 (i.e. a 13% absolute reduction, or an average relative reduction of 3.2% per year in 7 years) (21). However, Africa shows rising numbers of stunted children due to population increase and an almost stagnant prevalence of stunting over the past two decades except for a few countries with modest reductions in stunting. For example, Mauritania reduced the stunting rate from 55% in 1990 to 22% in 2012 (i.e. 33% absolute reduction in 22 years) (21).

Ethiopia has long introduced the Health Extension Program (HEP) in 2003 which is used as a vehicle to implement the Community Based Nutrition (CBN) program to improve the nutritional status of children, adolescents and mothers. As a result, there has been a significant decline in extreme forms of protein energy malnutrition (classical kwashiorkor and extreme forms of marasmus) over the past few decades, but the decline has been only modest for stunting, from 58% in 2000 to 40% in 2014, i.e. 18% absolute reduction in 15 years (8, 11). A recent situation analysis of the nutrition sector in Ethiopia revealed that child stunting improved at an average of 1.2-1.5 percentage points per year (ppts/yr) from 2000-2014 (1.5ppts/yr from 2000-2011) (22). An impact evaluation study conducted in Ethiopia suggested that the stunting change rates in some areas implementing CBN were significantly higher, at -4.3 and -5.3 percentage points per year, compared to the long term without program stunting trend of -1.3ppts/ year (22). Moreover, age-appropriate child-feeding messages and counseling to mothers/caregivers of young children at the community level, which is one of the components of CBN, decreased stunting by 3.6 percentage points among all children 0-59.9 months, and by 4.4 percentage points among children 24-59.9 months (from 55.9% to 51.5%) or 7.9 percent decrease between 2010 and 2014 (23).

These studies indicated that CBN had a modest contribution to child stunting as measured by linear growth, and hence effective implementation of CBN is able to reduce child stunting in Ethiopia. However, the current annual rate of stunting reduction (1.2-1.5 percentage points per year (ppts/ yr) might be insufficient to reach the World Health Assembly target of a 40% reduction in the number of children under fiive who are stunted by 2025 (24), and Ethiopia's targets of reducing the prevalence of stunting in under 5 children to 26% by 2020 (25). Thus, program modification or inclusion of high impact interventions to the existing seven essential nutrition actions (ENA) interventions embedded within CBN looks timely and critical to bring an accelerated reduction of child stunting in Ethiopia. The proposed alternative, or course of action, will eventually help Ethiopia meet the global targets of 40% stunting reduction by 2025 (24) and its own targets of reducing the prevalence of stunting in under five children to 26% by 2020 (25).

This narrative review is informed by the findings from studies on child stunting and community based nutrition conducted in Ethiopia. We were able to extract information from most of the published studies from Ethiopia using stunting as an outcome. The results of the published studies revealed that household economic status; water, sanitation and hygiene (WASH) and childhood illnesses; child age; maternal education; and maternal nutrition were the main drivers or predictors of child stunting in Ethiopia.

Household income

Increased household income had a significant impact on the child stunting in Ethiopian children (26 -36). According to the recent Situation Analysis of the Nutrition Sector in Ethiopia (SITAN) study, household income has accounted for much of the rapid improvement in child nutritional status over 2000-2011 (22). Hence, reinforcement of the current policies that increase household income is essential to increase the production and access to diverse, safe, and nutrient dense foods.

Water, sanitation and hygiene (WASH)

Poor water, sanitation and hygiene (WASH) services were also identified as one of the main risk factors for child stunting in Ethiopia. Household access to improved WASH was associated with improved linear growth in children. Conversely, children of households without access to improved WASH were stunted (22, 26, 33, 34, 37 - 41). Preventing environmental enteric dysfunction through improved water, sanitation and hygiene is being realized to be an opportunity for stunting reduction in developing countries (42). The unhygienic environments in which infants and young children live and grow are believed to contribute to the environmental enteric dysfunction and thereby exacerbating child stunting (42, 43). In a recent evaluation conducted in the four big regions (Amhara, Oromia, SNNPR and Tigray), one-third of children observed were in contact with animal faeces, and 90% were in close proximity to fecal matter (44). Similarly, childhood illnesses and a heavy burden of multiple infections have been recognized as

important risk factors negatively affecting linear growth in Ethiopian children (26, 33, 40, 41, 45). The available evidence reviewed suggests that poor WASH conditions have a significant detrimental effect on child growth and development, resulting from repeated exposure to enteric pathogens. Thus, WASH interventions that interrupt the specific pathways that lead to repeated exposure to enteric pathogens, and hence environmental enteric dysfunction, may be central to stunting reduction efforts of the country.

Maternal education

The various studies in Ethiopia have shown that maternal education had a significant influence on child stunting. The various studies reported that the proportion of children with stunting fell as maternal education increased (12, 22, 27, 37, 40, 46 – 49). Children from educated mothers had improved nutritional status. The impact of maternal education is not only through its effect on nutrition, but might also be through additional income and the mother's ability to make better decisions for herself and her children. Moreover, maternal educational attainment can be linked to the ability of mothers to make choices in caring practices. Closer look at the various reviews from developing countries illustrate that improving maternal education would be an important driver of improving child linear growth in developing countries including Ethiopia (12, 22, 27, 37, 39, 46 – 49).

Child age

The proportion of children being stunted increased with age, suggesting that older Ethiopian children are more stunted than their younger peers (27, 31, 34, 50 – 55). Timely and age appropriate Infant and Young Child Feeding (IYCF) practices are recognized as important for improvement in child stunting and are positively associated with HAZ and a reduced risk of stunting (56, 57). Studies in nine countries in Africa, Asia and the Caribbean have reported similar findings, indicating that poor linear growth and stunting is set very early in a child's life (58). Thus, promoting timely and age appropriate IYCF practices would provide a major opportunity for enhancing child growth and reducing child stunting in Ethiopia, focusing on:

- Early initiation of exclusive breastfeeding for newborns
- Exclusive breastfeeding from 0-6 months
- Timely introduction of solid and semi-solid foods at 6 months
- Meal frequency for children for children 6-14 months
- Dietary diversity for children 14 – 20 months

Maternal nutrition

The pre-conception and during conception nutritional status of woman has been identified as a predictor of child stunting. Significant associations between prenatal maternal nutritional status and child stunting were reported by the pocket studies from Ethiopia (12, 31, 40, 51, 52, 59 - 61). Global evidence from longitudinal data from five countries revealed that younger maternal age ≤19 years) was associated with a significantly higher risk of low birth weight (OR 1.18; 95% CI 1.02–1.36) and 2-year stunting (OR 1.46; 95% CI 1.25–1.70) in the offspring, compared with mothers aged 20–24 years (62). Moreover, analysis of data from 54 low-income and middle-income countries has shown that maternal height was inversely associated with stunting in infancy and childhood (63). A sharp decline in stunting with an increase in mother's height was also reported from Egypt. Among mothers < 150 cm tall, 30.89% of the children were stunted, and the percentage of child stunting decreased to 13.61% in children with mothers > 160 cm tall (64). The studies from Ethiopia and elsewhere proved that it will be difficult to achieve rapid and significant progress in reducing childhood stunting without addressing the underlying socioeconomic causes that adversely influence nutrition of women in the country. But, maternal nutrition has improved very little (0.2 ppts/yr) over the past 15 years (2000-2014) in Ethiopia (22). Considering the inter-generational transmission of under nutrition and impact of maternal nutrition on child stunting, women nutrition during adolescence, pre-conception and pregnancy stage needs stronger emphasis to accelerate stunting reductions in Ethiopia. A range of programmatic platforms dealing with health, education and empowerment of women could be strategically used for effectively reaching women prior to and during pregnancy to accelerate reductions in stunting rates in Ethiopia.

Policy implication/conclusion

Child stunting remain a major unresolved public health issue in Ethiopia. In the last fifteen years, child stunting has improved at an average of 1.2 - 1.5 percentage points per year (ppts/yr) from 2000-2014 (1.5 ppts/yr from 2000-2011) and maternal nutrition has improved very little (0.2 ppts/yr) over the past 15 years (2000-2014). Thus, there are compelling reasons to ensure that children attain their optimal growth potential, facilitated via the reinforced and modified implementation of the existing community based nutrition program (CBN). Specifically, this review indicates that the country needs to modify the CBN program in such a way that it reinforces the focus given to improved household income, access to WASH services, timely and age specific infant and young child practices, maternal education, and improved maternal nutrition during adolescence, pre-conception and during pregnancy.

Recommendation

Based on the reviews of the available evidence, the following recommendations are made:

- Revisit existing agricultural interventions, micro and small scale interventions and womens empowerment programs to make them nutrition sensitive, with a clear results framework to improve household income.
- Revisit the water, sanitation and hygiene (WASH) activities in the existing CBN program, with a focus to improve behaviors associated with WASH practices.
- Reinforce time and age appropriate infant and young feeding practices in the existing CBN program.
- Reinforce the interventions for improving maternal nutrition through the targeting of adolescent girls, pre-conception and during pregnancy in the existing CBN program.

Key messages

- Two in five (40%) Ethiopian children under five are stunted because of persistent nutritional deprivation.
- Child stunting is a serious health problem that has early beginnings and far-reaching consequences in Ethiopia.
- Five important drivers of child stunting in Ethiopia are;
    - Low household income,
    - Poor WASH practices,
    - Low maternal education,
    - Poor time and age appropriate IYCF practices,
    - Poor nutrition of women before and during pregnancy.
- The existing community based nutrition program (CBN) has led to a modest reduction of child stunting in Ethiopia.
- In the last fifteen years, child stunting has improved at an average of 1.2 - 1.5 percentage points per year (ppts/ yr) from 2000-2014 (1.5 ppts/yr from 2000-2011) and maternal nutrition has improved very little (0.2 ppts/yr) over the past 15 years (2000-2014) in Ethiopia.
- A growing body of evidence suggests that WASH interventions are important determinants of childhood stunting.
- Entry of women into pregnancy with optimum nutritional status is critical to reduce child stunting in Ethiopia.
- Intensification of nutrition sensitive measures for women, such as promoting womens education, and improving socio-economic status, would significantly reduce child stunting in Ethiopia.
- Time and age appropriate Infant and Young Child Feeding practices are likely to have a greater impact on child growth in Ethiopia.
- Reduction of child stunting is the main focus of many initiatives and thus measuring length/height – not just weight –should be standard practice when assessing child growth in Ethiopia.

Sample references

1. Goudet SM, Griffiths PL, Bogin BA, Madise NJ. Nutritional interventions for preventing stunting in children (0 to 5 years) living in urban slums (Protocol). Cochrane Database of Systematic Reviews 2015, Issue 5. Art. No.: CD011695. DOI:10.1002/14651858.CD011695. www.cochranelibrary. com
2. 2UNICEF/ WHO/ World Bank Joint Child Malnutrition Report (2015).
3. 3Todd Benson. Africa's Food and Nutrition Security Situation. Where Are We and How Did We Get Here? International Food Policy Research Institute, Washington, DC, 2004.
4. Central Statistical Authority (CSA). Analytical report on child nutritional status through anthropometric measurements, Rural Nutrition Survey 1983. Second Round. Addis Ababa, July 1992, Statistical Bulletin 102.
5. Central Statistical Authority (CSA). Report on the National Rural Nutrition Survey, Core module, March 1992: National Nutritional Surveillance system. Addis Ababa, 1993.
6. Central Statistical Authority (CSA). Report on the 1998 Health and Nutrition Survey. Addis Ababa, October 1999.
7. Zewditu Getahun, Kelbessa Urga, Timotewos Ganebo, Ayele Nigatu. Review of the status of malnutrition and trends in Ethiopia. Ethiop. J. Health Dev. 2001;15(2):55-74).
8. Central Statistical Authority. Ethiopia Demographic and Health Survey 2000. Central Statistical Authority, Addis Ababa, Ethiopia and ORC Macro Calverton, Maryland, USA.
9. Central Statistical Authority. Ethiopia Demographic and Health Survey 2005. Central Statistical Authority, Addis Ababa, Ethiopia and ORC Macro Calverton, Maryland, USA.
10. 1Central Statistical Authority. Ethiopia Demographic and Health Survey 2010. Central Statistical Authority, Addis Ababa, Ethiopia and ORC Macro Calverton, Maryland, USA.
11. Central Statistical Authority. Ethiopia Mini Demographic and Health Survey 2014. Central Statistical Authority, Addis Ababa, Ethiopia and ORC Macro Calverton, Maryland, USA.
12. Berihun Megabiaw and Azizur Rahman. Prevalence and Determinants of Chronic Malnutrition Among Under-5 Children in Ethiopia. International Journal of Child Health and Nutrition, 2013, 2, 230-236.
13. United Nations Children's Fund, World Health Organization & The World Bank 2012.
14. Black RE, Allen LH, Bhutta Z, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lance 2008;371(9608):243–60.

CLTSH Evaluation of Ethiopia's Sanitation and Hygiene Improvement Program in Regions supported by Global Sanitation Fund

School of Public Health, College of Health Sciences, Addis Ababa University in collaboration with Federal Ministry of Health, Ethiopia

Executive Summary

Background: Improving access to and use of sanitation, safe drinking water sources, and hand washing facility are among the key targets of the Federal Ministry of Health of Ethiopia (FMoH). Achieving related objectives will continue to be a concern of the Sustainable Development Goal (SDG) of the country. The Ethiopia - Sanitation and Hygiene Improvement Program (E-SHIP) is a Program funded by the Global Sanitation Fund (GSF) to enhance sanitation and hygiene performance through capacity building and filling gaps in logistics needs for three years (July 2012 – June 2015). The E-SHIP is operational in forty woredas of four larger regional states in the country: Amhara, Oromia, Tigray, and Southern Nations, Nationalities and People's Region (SNNPR).

Objective: The objective of this evaluation was to assess the performance of the E-SHIP supported program against the outcomes stipulated in the program proposal, and assess the overall added values and contributions of the program to sanitation and hygiene efforts at national level.

Methods: A mixed method study design was used to collect data. A total of 2110 households were involved in the household survey. For the qualitative data participants were selected using purposive sampling technique . , 94 Indepth interviews key informants, Eight FGDs, 20 health posts, 10 health centers and 17 schools were considered for the study The relevance, equity, effectiveness, efficiency, affordability, sustainability and partnership about the program were assessed using in-depth interviews and focus group discussions (FDGs). In addition, structured questionnaires were used to assess knowledge, attitude and practice of households. Observations and record reviews were also employed. For the qualitative themes or opinions that emerge regarding the topic area were identified; and analyzed in the final write up.. Quantitative data were entered into and cleaned using Epi Info version 3.5.3 and exported to SPSS version 20 for analysis. Finally, both the quantitative and qualitative findings were triangulated.

Results: The study indicated that E-SHIP activities were well aligned with the national and regional WaSH priorities. This is believed to impact the resource and technical capacity of the health workers at grass-roots with a focus on Health Extension Workers (HEWs). HEWs were the predominant sources of information on health/hygiene promotion accounting 48 (73.8%), 248 (80.3%), 311 (91.7%) and 412 (93.6%) of the respondents in Tigray, Amhara, Oromia and SNNP regions, respectively. Respondents were found to be knowledgeable and have had positive attitude towards the . Sanitation and Hygiene Improvement Program .It was identified that the most frequently reported knowledge of critical times for hand washing from all regions was before and after eating. However, knowledge on the importance of hand washing during critical times such as before breast feeding/feeding a child, after handling children's faeces, after taking care of sick family members, after visiting toilet and after cleaning children's bottom were also reported from all regions.

Subsequently, they were also asked for why a person needs to wash hand with soap. In response, the majority 600 (97%), 191 (88.4%), 538 (84.2%) 494

(78.8%) of respondent from Oromia, Tigray, SNNPR and Amhara regions, respectively, underlined they wash their hand with soap to remove dirt or make it clean. While only 8 (3.3%), 46 (7.2%) and 49 (7.9%) of the respondents from Tigray, SNNPR and Amhara regions, respectively, reported that they wash their hand with soap to remove microbes.

Access to improved water sources was 73% among surveyed households, largely supplied by protected wells and public taps, with regional variations (57% in Oromia, 78.4% in SNNPR, 80.6% in Amhara and 83% in Tigray). Safe water storage was found to be very high (93.4%), ranging from 75% in Tigray to 98% in SNNPR. About 21% of the households practiced drinking water treatment using chemicals. About 82% of the households had access to latrine facilities, while access to improved sanitation was 67% (57% in SNNPR, 60% in Oromia, 81% in Amhara and 83% in Tigray). Traditional pit latrine with earthen floor was the most common type of latrine identified.

The study revealed that latrine use was about 73%. Latrine utilization was 89% defined by any one of the three markers (presence of foot path, fresh excreta on the latrine hole/ inside the pit, or flies observed around the latrine floor) and 54% defined by any two of the three markers. Open defecation practice (no latrine) was about 14% (8% in Amhara, 12% in Oromia, 16% in SNNPR and 34% in Tigray). There exists regional variability in access to sanitation facilities.

Access to hand washing facilities was 31% among households with latrines in contrast to 25% in the total surveyed households. Hand washing after latrine use was reported among 62% of the surveyed households. However, hand washing after latrine use was only 10% considering availability of both latrine and hand washing facility with water and soap or substitute such as ash. Access to improved water supply was relatively better as compared to sanitation and hand washing facilities. Sanitation addressing equity was weak and didn't address special needs of people with disability. Lack of water treatment chemicals and latrine construction materials such as slabs were the main barriers identified in the evaluation of the E-SHIP. The FMoH should explore further ways of improving the availability of these materials at community level.

Conclusion and Recommendation

The E-SHIP implemented using the existing healthcare system was highly effective and generally accepted by the community, beneficiaries and stakeholders. The use of Woreda and zonal health offices as well as the HEP and HDAs both at community and household levels was identified as the main opportunity for the implementation of the E-SHIP program. The use of local stakeholders such as schools, microenterprises, HEWs and the local community at large were identified as effective in partnering with the E-SHIP program to improve the livelihood of beneficiaries through improved WaSH program. The WaSH stakeholders have generally agreed that improvement in WaSH at community level was enhanced by the E-SHIP support. The FGD participants identified hygiene promotion, latrine constriction, use of safe water, and hand washing as the main focus of the WaSH program. The program was commended to be relevant, effective, efficient and strengthened partnership among the WaSH stakeholders. The findings show better achievement for many of the key WaSH outcome indicators.

Overall, the findings of this outcome evaluation call for strong and sustainable interventions by the FMoH and its partners to improve the WaSH services. Access to WaSH facilities in the long run requires improvement in the quality particularly in terms of physical strength, privacy, ease of cleaning, and use by all household members. The involvement of micro-enterprises in increasing the supply of slabs for latrine construction and hand washing facilities is an important endeavor to mitigate the practice of open defecation and enhance the practice of hand washing at critical times. Ways of empowering and involving the local community particularly microenterprises to supply the latrine construction materials should be further explored and strengthened. There is also need of disseminating relevant information on WaSH services to influence the attitudes and behaviors of local people towards its effective utilization and future studies to assessing utilization of WaSH services are recommended as it needs need be explored further.

Health Data Quality Review For Selected Indicators In Ethiopia

Theodros Getachew[1] , Abebe Bekele[1], Atkure Defar[1], Kassahun Amenu[1], Terefe Gelibo[1], Tsega Hailu[2], Abebech Asmamaw[1], Girum Taye[1], Tefera Tadele[1], Habtamu Teklie[1], Misrak Getinet[1], Geremew Gonfa[1], Yibeltal Assefa[1], Amha Kebede[1], Sofonias Getachew[3]

Background

Globally, there is increasing interest in the measurement of indicators to capture key information about health services and programs. A well-functioning health system relies on the availability of timely, accurate and dependable information for decision-making.As high quality of Health Information Quality Improvement Plan (HIQIP)data is a prerequisite for better information, better decision-making and better community health ,the Federal Ministry Health Of Ethiopia (FMOH) have done much work to improve data quality since the reformed HMIS. Through those efforts the data quality constructs have improved over time moreover the FMOH has established data from any source are subject to a number of limitations related to quality; such as, missing values, biases in data collection and reporting, measurement error, and human errors in data entry and computation. Data quality assessment is needed to understand how much confidence can be put in the health data presented. In particular, it is important to know the reliability of national coverage estimates and other estimates derived from the HMIS data that are used for annual monitoring and health sector reviews. .

This survey was conducted in 2015 to assess the quality of the HMIS data in Ethiopia for the period of July to September 2015. We reviewed the HMIS data quality at the Regional Health Bureau (RHB), Zonal Health Department (ZHD), Woreda/District Health Office (WrHO) and the operational health facility levels. Data for seven core health service indicators were examined for data quality. At the same time, we also reviewed the data management and reporting system that directly influences data quality.

Methods: The 2016 Ethiopia data verification and system assessment was a cross-sectional study. We used the World Health Organization's (WHO) Data Quality Review tool[1]. This tool is arranged into two thematic areas for the assessment of data quality, i.e., (1) qualitative assessment of the data management and reporting system, in terms of M&E structure and functions, indicator definitions, reporting guidelines, data quality monitoring and supervision, and data storage and confidentiality; and, (2) Data verification, which enables a quantitative comparison of recounted to reported data, and a review of the timeliness and completeness of reports on selected indicators. A total of 544 health facilities, 289 woreda/districts, 66 zones and 11 regional health bureaus were included in the survey. The majority of facilities in the country are health centres (30 %). Private clinics (31%) percent) and Hospitals (38 percent). The health centers and hospitals were selected though a random sampling method. All woredas, zones and regions where the sampled health facilities are located were included in the survey. The indicators for which data quality were assessed are: Antenatal Care first visit, Institutional deliveries, Pentavalent/DTP third dose in children under one year, PMTCT coverage, TB cases, Confirmed malaria cases, and Contraceptive accepters. Data of these indicators reported during July to September 2015 were assessed. The survey was carried out with a broader health facility survey, the Service Availability and Readiness Assessment (SARA). The information entered in the PC-tablets by each interviewer was sent regularly to Ethiopian Public Health Institutue (EPHI\)central server by the team supervisor, preferably, when data collection was completed in a health facility, woreda health office, zonal health department or regional health bureau. All data entry and editing programs were written using CSPro software application. The data analysis was done using the Stata statistical software package and presented using descriptive statistical methods.

1. Ethiopian Public Health Institute, Addis Ababa Ethiopia
2. Ministry of Health
3. World Health Organization (WHO)

4. http://who.int/entity/healthinfo/DQA_tool.zip?.ua=1

Results

(1) Qualitative assessment of data management and reporting system

Based on the findings of the systems assessment, the Zonal Health Departments (ZHDs) have by far the best data management and reporting system. About three forth (74%) of zones have all their staff responsible for data collection and compilation of reports with appropriate training on HMIS; and 93% of the ZHDs had copies of the past 12 months submitted reports. In contrast, the lowest score in data management and reporting system was observed at the health facility level. For instance, only 17 percent of facilities have all the staff responsible for data collection and compilation of reports received the appropriate training. . Regarding data maintenance, 82 percent WorHOs, 93 percent ZHDs, and 91 percent RHBs had copies of past 12 months submitted reports available); but this was much lower (46 percent) at health facility level (Table 1).

Table 1 : Health System assessment indicators by level of health service administration (regional level, Zonal level, District level and health facility level), Ethiopia DV- SA 2016.

Health system assessment indicators	Level of Health Administration			
	Health facility level	Woreda Health office	Zonal Health Department	Regional Health Bureau
Staff trained on data collection and compilation1	17	70	74	55
Have a written guideline on reporting2	37	67	82	91
Have routine process for checking quality of reports3	38	61	71	73
Submitted reports for past 12 months available4	46	82	93	91
Number surveyed	540	290	66	11

[1] Have all staff responsible for data collection and compilation of reports received the appropriate training and assesses the functional area on M&E structure and function.
[2] Have written guidelines available at the facility on reporting protocols for the program/HMIS which assesses functional area on indicator definitions and reporting guidelines
[3] Have a routine and systematic process for checking the quality of compiled reports data quality and supervision which assesses functional area on data maintenance and confidentiality
[4] Have copies of submitted reports available for the past 12 months, which assesses functional area on data maintenance and confidentiality.

(2) Data Verification and Review of Timeliness and Completeness

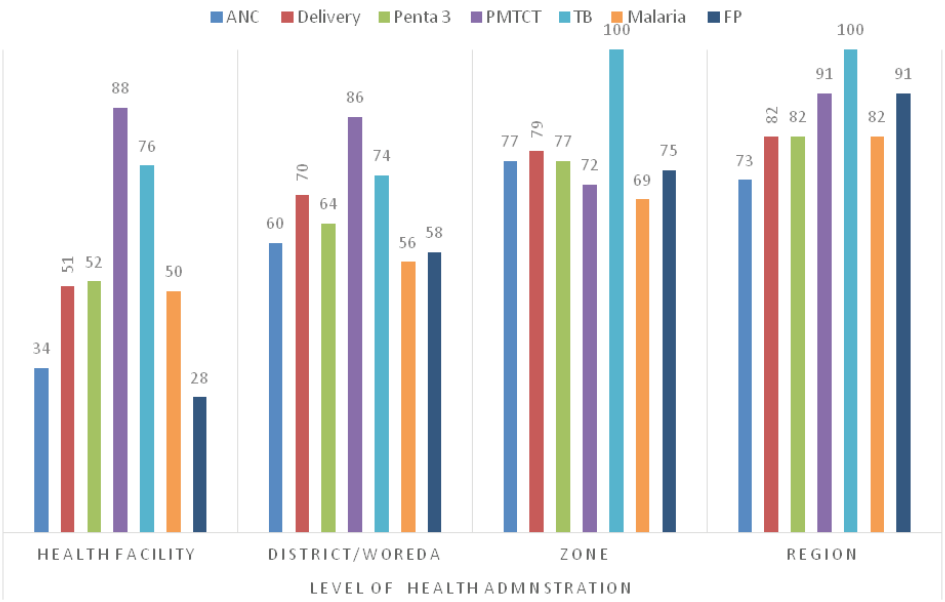
The verification factor* for most of the indicators at health facility level was less than 1 which indicates that the figures in the source documents were lower than the figures reported to the next administrative level, suggesting over-reporting. Conversely, the verification factor for all of the indicators at regional level ranged from 0.999 to 1.001 suggesting consistent data at regional level. At all levels, the verification factor for "TB indicator" ranged from 0.9707 to 1.056 suggesting relatively consistent data as compared with other indicators (Table 2).

Table 2: Summary of Data Verification factor* by health administration level of reporting, by indicators, Ethiopia DV-SA 2016.

Indicators	Health Facility level	Woreda Health office level	Zonal Health Department level	Regional Health Bureau Level
ANC	0.9197	0.964	1.001	0.999
Delivery	1.0086	0.966	1.017	1.000
Penta 3	0.9576	0.951	1.017	1.000
PMTCT	0.9476	0.974	0.934	1.000
TB	0.9707	1.056	1.000	1.000
Malaria	0.9209	0.919	0.995	1.001
FP	0.8022	0.972	1.004	1.000

*The further this value is from 1, the larger the disparity between the recounted and reported numbers. A VF > 1 implies that there is an underreporting of events in the HMIS for the verification period. If the VF < 1, this would imply that there was an over reporting of events in the HMIS for the period chosen for the analyses.

Fig 1: Exact match of indicators by level of health administration (from health service delivery point to Regional Health Bureau level), Ethiopia DV-SA 2016.



Conclusions and Recomendations

These findings identify important challenges that must be addressed in order to improve health information system's data quality assurance mechanisms. The findings indicate that corrective efforts must be focused at lower levels (health facilities and woreda/ district level) to improve the quality and consistency of the data generated by the health information system which is a relatively low-cost and already existing health services monitoring system within Ethiopia. Providing appropriate training of the health staff responsible for data compilation, reporting and storage of the reports at health facility and woreda levels should be considered as an important step towards improving data quality.

Implementation of Auditable Pharmaceutical Transaction and Services in Ethiopia: Assessment Report

Teferi Gedif Fenta[1], Dawit Teshome[1], Fitsum Sebesibie[1], Tamrat Assefa[1], Bethlehem Gulelat[2], Gebremedhin Beedmariam[1], Sufyan Abdulber[3], Regassa Bayissa[3], Ayalew Adinew[4], Hailu Tadeg[4]

Introduction

Pharmaceuticals are crucial high value input for the health care systems that often make a difference in the health outcomes for the individual and the population (1). Access to essential medicines was outlined by World Health Organization (WHO) as one of the eight essential components of primary health care (2). Hence, access to medicines is the fundamental right of every person. However, WHO pointed out that approximately 67% of the population lack access to essential medicines (3). Conversely, more than 50% of all medicines worldwide are prescribed, dispensed, or sold inappropriately and 50% of patients fail to take them correctly (4). Thus, it is extremely serious that, even among those medicines that are made available to use, so much of it is wasted due to irrational practices of prescribing, dispensing and use.

In Ethiopia a double burden of diseases are already emerging with a mix of persistent infectious diseases and increasing non-communicable diseases and injuries (5). Communicable diseases such as pneumonia, diarrhea and malaria remain to be the major causes of morbidity and mortality. Cardiovascular diseases, Diabetes Mellitus, and Cancer are contributing to overall mortality (6). Most of these health challenges could have easily been prevented or treated by ensuring the continuous availability and proper use of few essential medicines selected on the basis of disease prevalence, evidence on efficacy, safety and comparative cost-effectiveness. However, these essential medicines are not adequately available at all public health facilities on continuous basis due to multiple reasons (7).

The poor governance of the pharmaceutical sector in the country is believed to have contributed significantly for most of the challenges related to pharmaceuticals management at different levels (8). Proven tools and techniques resulting in frequent stock outs and expiry of life saving medicines did not guide the selection and prioritization of medicines. Moreover, the provision of pharmaceutical services was not systematized to ensure proper workflow and adequate medication use counseling during dispensing process, compromising the overall treatment outcome and patient satisfaction. Documentation of services was very minimal and was not standardized. As a result, relevant reports were neither generated nor shared to relevant body to guide the decision-making processes.

Recognizing the problems, the FMOH has taken several measures to improve quality of overall pharmaceutical services in the country. A notable example of these efforts was the development and implementation of Ethiopian Hospital Reform Implementation Guidelines (EHRIG). Pharmacy Chapter is one of the 13 chapters in this guideline. Auditable Pharmaceutical Transactions and Services (APTS) is an innovative package of interventions designed to advance the full implementation of the Pharmacy Chapter of EHRIG. This assessment presents the key outcomes of implementing APTS in Ethiopia.

Objective of the Assessment: The objective of this assessment was to generate evidence on the outcomes of APTS implementation at health facilities, factors contributing to its success and possible challenges for scale up and sustainability.

Methods: The assessment was designed as quasi-experimental for some of the indicators and non-experimental for others. Both qualitative and quantitative

1. Addis Ababa University, School of Pharmacy
2. ALERT Hospital, Federal Ministry of Health
3. Federal Ministry of Health
4. Management Sciences for Health, USAID/ SIAPS Program

data collection techniques were used. Key informant interviews, interviewer and self-administered questionnaires, observation check list and document reviews were employed to gather information from RHBs, Health facilities and Partners. APTS is being implemented in three administrative states (Tigray, Amhara and SNNP), two city administration (Diredawa and Addis Ababa) and in five federal hospitals. To select the facilities in each region/city, APTS implementing hospitals were categorized based on year of initiation of APTS and then random sampling proportionate to size was applied. A total of 16 (11 with baseline and 5 without baseline) hospitals were included. Five controls were also selected from hospitals that did not implement APTS and matched in terms of level and patient load with that of the five hospitals without the baseline.

Results: Availability of adequate and motivated human resources, appropriate tools and premises based on APTS system design assumptions are among critical enablers of APTS implementation. While the average availability of human resources for APTS at dispensaries was 70.9%. Of this only 38.4% were found trained on APTS. Out of the 16 pharmacy heads in APTS sites interviewed, 15 (93.8%) were believed that , attrition was a problem in their respective hospitals and inadequate salary, workload and lack of incentive system ranked as first major reasons by 37.5%, 25% and 25% of the respondents respectively. The overall structural changes made as part of meeting the requirements for APTS were 82.3%. However, 25% of the facilities lacked appropriate windows with convenient counter for patient counseling and dispensing process. In order to meet the desired objectives of APTS, the implementation has to be supported by a well-designed system and tools. The present assessment revealed that New Models (22 and 19), Cash sales tickets, dispensing registers and calculators were found in all APTS sites. But, in aggregate, the tools required for APTS implementation were fulfilled in 86.4% of APTS sites.

The assessment tried to document the extent in which APTS recommendations are being performed by APTS sites. Accordingly, 15 process indicators were chosen; of which more than 90% of APTS sites were found producing monthly service and financial reports. The overall performances of APTS process ranged from 37.5% to 93.8% and the least performed process was regular supervision from Regional Health Bureaus (37.5%). Some of the critical functions such as ABC/VEN and workload analysis were performed by less than 75% of the APTS sites.

The assessment revealed that the overall budget utilization efficiency had shown an increment by 16% from 2003 to 2008 EFY. It was also evident that sales revenues showed an average growth of 42.5% from 2005 to 2007 EFY. It was also reported that 25% of hospitals did financial auditing of pharmaceutical transactions, while random product auditing was reportedly practiced by more than 2/3rd of the APTS sites. One of the unique findings of this assessment was the dramatic reduction in wastage at APTS sites. In those APTS sites who have information on wastage, the average wastage rate was 1.1%, which is much lower than the target set in the HSTP. In terms of producing information for decision making, 93.8% of the APTS sites were found generating monthly financial and service reports. Accuracy of recording, as measured by percent agreement between records and actual product physical count, was 65%. The number of facilities with full accurate records of products had increased as compared to the baseline.

Generally appropriate labelling practice was found to be low in both sites. However, APTS sites performed better than non-APTS sites (3.9 vs 0.7). A slight difference was recorded in Patients' Knowledge of prescribed medicines' dose schedules between APTS and non-APTS sites (85.4 vs 84.7). Except cost related variable, in across the eight domains, patients were found significantly more satisfied with services provided at APTS sites than non-APTS sites (overall mean satisfaction: 3.49±0.85 Vs 3.11±0.91; p-value<0.001). Similarly, higher satisfaction was recorded in APTS sites as compared to their own baseline.

Availability of key tracer medicines was higher in APTS sites than Non APTS sites (90% vs 70%). And percent availability showed significant increase in APTS sites as compared to the baseline (65.8% to 85.5%). Stock out duration was also less in APTS sites as compared to non-APTS sites (43.3 vs 61.1 days). On average in APTS sites each pharmacy professional served 35 patients per day, a figure lower than a standard set in APTS guidelines. However, significant portion of the pharmacy personnel still believed that APTS increased workload and attrition rates among pharmacy professionals. The overall mean job satisfaction of pharmacy personnel in APTS sites was 2.36±1.42 which showed moderate dissatisfaction.

The evaluation using the qualitative inquiries gathered by in-depth interview of regional health bureaus, CEOs, chief pharmacists, finance heads and auditors of APTS implementing hospitals showed that APTS was considered to be an important intervention in improving pharmaceutical services. They outlined the following achievements and challenges of APTS:

Achievements:

- Developed and ratified regulation and/or legislation to support APTS
- Clear consensus on importance of APTS by practitioners, the management and policy makers
- The number and mix of human resources for APTS increased and new cadre has been added to pharmacy workforce (pharmacy accountants)
- APTS resulted in high level of patient satisfaction as a result of improved workflow, reduced waiting time, improved convenience and product availability
- APTS increased budget utilization efficiency, improved revenue, reduced wastage and enabled physical inventory taking a routine activity.
- APTS increased access to information and facilitated auditing practices thereby improving transparency/accountability and informed decision making
- APTS is included in GTPII and HSTP as quality improvement tool ensuring sustainability

Challenges:

- Delay in implementation of indemnity policy and lack of performance management and incentive system resulting in job dissatisfaction
- Attrition of experienced professionals
- Budget limitations restricted facilities to fully implement structural and processes requirements of APTS, affecting some result areas.
- Management of some of the APTS sites is reluctant to allocate budget for APTS implementation.
- Poor documentation of activities and transactions is still a problem at some sites

Lessons Learned:

- Delay in implementation of indemnity policy and lack of performance management and incentive system resulting in job dissatisfaction
- Attrition of experienced professionals
- Budget limitations restricted facilities to fully implement structural and processes requirements of APTS, affecting some result areas.
- Management of some of the APTS sites is reluctant to allocate budget for APTS implementation.
- Poor documentation of activities and transactions is still a problem at some sites

Conclusion and Recommendation: The present assessment revealed notable achievements and benefits of implementing APTS. APTS contributed to improving quality of services/patient satisfaction, improving medicines availability, reducing wastage and optimizing use of medicines budget. Non-compliance to APTS SOP, high staff turnover rates, limited training for new staff and low satisfaction level of professionals might have, however, contributed to low level of achievements in some areas. Stakeholders including FMOH, RHBs, HFs and Partners should consider re-invigorating compliance to SOP and system design and processes assumptions. It is also important to analyze the sufficiency of current staff levels and implementing performance based incentives to reduce staff turnover. Strengthened supportive supervision and revising some of the standards such as workload would further improve performances of APTS. Developing and implementing indemnity policy and allocating sufficient resources needed for fulfilling minimum requirements for APTS should be planned before APTS is scaled up to other facilities.

References:

1. Fidler, A. & Msisha, W. 2008. Governance in the pharmaceutical sector. Eurohealth-London, 14, 25.
2. WHO, 1978. Deceleration of Almata 1978 [Online]. http://www.who.int/hpr/NPH/docs/deceration [Accessed].
3. WHO 2004. World Health Situation Genvea:: WHO Press.
4. World Health Organization Promoting rational use of medicines: core components. WHO Policy Perspectives on Medicines no. 5. Document WHO/EDM/2002.3. Geneva, WHO, 2002. Available at URL: http://www.who.int/medicinedocs/pdf/h3011e/h3011e.pdf
5. EPHA 2012. Emerging Public Health Problems in Ethiopia: Chronic Non-Communicable Diseases. Addis Addis Ababa: EPHA
6. FMOH 2008. Health and Health Related Indicators. Addis Ababa.
7. WHO. 2005. Access indicators [Online]. Available: http://www.un.org/esa/policy/mdggap/appendix.pdf. [Accessed].
8. Tadeg, H., Ejigu, E., Geremew, E. & Adinew, A. 2014. Auditable Pharmaceutical Transactions and Services (APTS): Findings of the Baseline Assessment at Federal, Addis Ababa, and Teaching Hospitals. Arlington, VA: Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program.

Impoverishment Associated with Expenditures for Pneumonia and Diarrhea Treatment in Ethiopia

Solomon Tessema Memirie[1]

Abstract

Equity in access to health care services and in health outcome, and safeguarding households from catastrophic and impoverishing medical expenditures are key health systems objectives. We conducted a study on household out-of-pocket (OOP) expenses associated with health care visits for cases of pneumonia and diarrhea in children under five years of age. The mean total medical expenditures [in Ethiopian Birr (ETB)] per outpatient visit were 148 ETB for pneumonia and 116 ETB for diarrhea while per inpatient care were 1182 ETB for severe pneumonia and 1470 ETB for severe diarrhea. The mean associated direct non-medical expenses (mainly transport costs) were (ETB) 31, 30, 242, and 378 respectively. 7% and 6% of the households with a case of severe pneumonia and severe diarrhea respectively were pushed below the extreme poverty threshold of PPP $1.25 a day. Households in Ethiopia incur considerable costs for the treatment of childhood diarrhea and pneumonia with catastrophic consequences and impoverishment.

Background

Illnesses can impose a huge economic burden on individuals and families. Direct payments for health care can have catastrophic consequences for families, which may include pushing families into poverty or further into deeper poverty. User fees exacerbate inequity as poor people are more likely to reduce service utilization and be impoverished by the effects of large health expenditures (Lagarde and Palmer, 2008; Ponsar et al, 2011). Close to 50% of the total child health care expenditure in Ethiopia was financed by household OOP spending in 2010/11 (Ethiopia's Fifth National Health Accounts). Such high OOP payment is likely to lead to "catastrophic" health expenditures-expenditures exceeding a certain fraction of household income-and can be a substantial hurdle to the attainment of universal access to basic health interventions (Stanton and Clemens, 1989; Ponsar et al, 2011).

In Ethiopia, as well as in other low- and middle-income countries, diarrhea and respiratory infections are the most common causes of childhood illnesses, health care visits, and hospital admission in children and are also the leading causes of death (FMoH, 2012/2013; Walker et al, 2013 and Gill et al, 2013). A study conducted in 35 health facilities across Ethiopia has assessed OOP health care costs (direct medical costs and direct non-medical costs) and time losses for inpatient and outpatient care of childhood diarrhea and all-cause pneumonia by level of care including their effect on medical impoverishment (Memirie et al., 2016). Direct medical costs include expenses made for registration, diagnostic work-up, medications, and hospital bed while direct non-medical costs include all costs not directly related to medical services such as transportation. In primary health care facilities, we used the "integrated management of childhood illnesses (IMCI)" algorithm for case identification and management of pneumonia and diarrhea cases (Figure 1). We present summary of the study findings below.

Result: *Cost to households*

The average direct medical costs in ETB in 2013 per outpatient visit for pneumonia was 117, for diarrhea 86, for inpatient care for severe pneumonia 940, and for severe diarrhea 1092. Medication costs accounted for the major

1. Department of Global Public Health and Primary Care, University of Bergen. Email: tess_soul@yahoo.com

share (60%) of direct medical expenses. The average associated direct non-medical expenses (mainly transport costs) for pneumonia, diarrhea, severe pneumonia and severe diarrhea were 31, 30, 242, and 378 ETB, respectively (Table 1). Primary care takers on average spent 8, 6, 96 and 77 hours in relation to facility visits for pneumonia, diarrhea, severe pneumonia and severe diarrhea treatment, respectively.

Table 1. Average medical expenditure in Ethiopian Birr (ETB) per episode by cost type and disease category.

Cost type	*Diagnosis*			
	Pneumonia	*Diarrhea*	*Severe pneumonia with inpatient care*	*Severe diarrhea with inpatient care*
Direct medical expenditure[#]	117	86	940	1092
Direct non-medical expenditure[#]	31	30	242	378
Total medical expenditure[¥]	148	116	1182	1470

[#]Direct medical expenditure includes: registration fee, medicines, laboratory and diagnostics, bed charges while direct non-medical expenditure includes: transport, lodging, traditional healer, etc. [¥]Total medical expenditure is the sum of direct medical expenditures and direct non-medical expenditures.

Household OOP payments were much higher (3 to 8 times) in private than public health facilities (Table 2). Child health care services were not entirely free of charge at public primary health care facilities. At health posts (HPs), though consultation fees were not paid, parents were obliged to buy medication from private outlets because of drug stock out at HPs. In most of the health centers parents paid fees for consultation and medications.

Table 2. Average total medical expenditure per disease episode in Ethiopian birr by type of health facility visited.

Type of health facility	*Mean cost (ETB)*			
	Pneumonia	Diarrhea	Severe Pneumonia with inpatient care	Severe Diarrhea with inpatient care
Health Post	22	11	-----	-----
Health Center	77	74	226	290
Government Hospital	237	120	905	871
Private clinic/Hospital	638	551	2628	3364

There was marked variation in household costs of treatment by wealth quintile and place of residence. Urban households and wealthier quintiles were more likely to visit private facilities or public hospitals than primary health care facilities consequently incurring higher medical expenses. Medical impoverishment is presented as the expected number of households who fell below the poverty threshold of $1.25 due to OOP spending for health care. Among all study participants, nearly 1% of households were pushed into poverty due to OOP payments for the treatment of either childhood pneumonia or diarrhea (Table 3 shows the details by disease category). We estimated that almost 80,000 households will be identified as poor as a result of OOP payments at the poverty threshold of PPP $1.25 a day.

Table 3. Annual estimates of impoverished households due to OOP payments for the treatment of childhood pneumonia or diarrhea in Ethiopia.

	Population, 0-4 years in 2013 (millions) (UNPD, 2013)	Annual disease incidence*	Health service utilization rate (EDHS 2011)	Percent of households pushed into poverty	# households pushed into poverty
Pneumonia	14.2	0.29	27%	0%	---
Diarrhea	14.2	3.3	32%	0.32%	48,549
Severe pneumonia	14.2	0.033	27%	7.1%	9,165
Severe diarrhea	14.2	0.066	32%	6.3%	18,691

*Walker et al 2013

Conclusions

OOP payments at the point of service delivery are associated with decreased health care service utilization more so for the marginalized segments of the population that include women, children and the poor. On the other hand, abolition of user fees resulted in increased service utilization in all population groups (Ridde and Morestin, 2011). User fees could hamper the Ethiopian governments endeavor to make essential priority services universally accessible (Admassu et al, 2014). The OOP expenditures were markedly higher in private than public health facilities. Ethiopia is making preparations to launch a national health insurance system in the country. Given the increasing role of the private health sector in health care service delivery in Ethiopia, their involvement along with the public health sector requires further deliberations.

Households incur considerable costs for the treatment of childhood diarrhea and pneumonia with catastrophic consequences and impoverishment especially for the poor and rural residents in Ethiopia. This calls for revisiting the existing health financing strategy for high priority services that places a substantial burden of payment on households at the point of service delivery.

Acknowledgements

The work was supported by the Priorities 2020 and the Disease Control Priorities– Ethiopia project. I would like to thank Kjell Arne Johansson, Ole Frithjof Norheim and Stéphane Verguet for their invaluable support.

References

1. Lagarde M, Palmer N. The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence? Bulletin of the World Health Organization. 2008;86:839–848.
2. Ponsar F, Tayler-Smith K, Philips M, et al. No cash, no care: how user fees endanger health—lessons learnt regarding financial barriers to healthcare services in Burundi, Sierra Leone, Democratic Republic of Congo, Chad, Haiti and Mali. International Health. 2011;3: 91–100.
3. Ethiopia's Fifth National Health Accounts, 2010/2011. Federal Democratic Republic of Ethiopia Ministry of health, April 2014.
4. Stanton B, Clemens J. User fees for health care in developing countries: a case study of Bangladesh. Soc Sci Med 1989; 29:1199–205.
5. Federal Ministry of Health (Ethiopia). October 2014. Health and Health related indicators 2005 E.C (2012/2013).
6.
7. Walker CF, Rudan I, Liu L, et al. Global burden of childhood pneumonia and diarrhea. Lancet 2013; 381:1405-16.
8. Gill CJ, Young M, Schroder K, et al. Bottlenecks, barriers, and solutions: results from multicountry consultations focused on reduction of childhood pneumonia and diarrhoea deaths. Lancet 2013; 381: 1487–98.
9. Memirie ST, Metaferia ZS, Levin CE, et al. Catastrophic health expenditure and impoverishment associated with pneumonia and diarrhea treatment seeking in Ethiopia. 2016. Tropical Medicine & International Health (under review).
10. Ridde V, Morestin F. A scoping review of the literature on the abolition of user fees in health care services in Africa. Health Policy Plan 2011; 26:1–11.
11. Admasu K, Tamire A, Tsegaye S. Envisioning the future of the health sector: an update. Federal Democratic Republic of Ethiopia Ministry of health Quarterly health bulletin. 2014; 6:1: 3-12.

MDSR: National Maternal death Review to inform MNCH quality improvement pla

Background

There is substantial evidence that maternal mortality reviews/audits provide evidence for quality improvement and local decision-making towards making pregnancy safer[1].

Ethiopia adopted maternal death surveillance and response (MDSR) as a best alternative approaches for accurate measurement of maternal mortality as well as quality improvement tool in 2013 and integrated it into the pre-existing Public Health Emergency Management (PHEM) structures by including maternal death as one of the 14 immediately reportable events. The objective of MDSR is to identify, review and respond to every maternal death in Ethiopia irrespective of place of the death. Currently almost all regions are sending reports of suspected and confirmed maternal deaths integrated with the Integrated Disease Surveillance and Response (IDSR) reporting channel and schedule. At national level review of the aggregated maternal death report is done periodically to identify gaps in the health care system and in the community that contributed to maternal deaths and actions for improvement.

The purpose of this paper is to describe major findings and recommendations of the first national review of MDSR data undertaken in March 2008 E.C.

Objectives of the review:

The aim of the review was to interpret the key findings of MDSR data analysis and to identify recommendations for the relevant directorates and agencies of World Health Organization (WHO) and key partners for planning interventions/initiatives to improve the quality of maternal care.

Methods and material

Ministry of health in collaboration with MOH Ethiopia organized a two days national review workshop from March 26 to 27, 2016 to review MDSR data analysis findings from January 2014 to December 2015 covering 537 maternal deaths obtained from national MDSR data base located at Ethiopian Public Health Institute(EPHI). The data base is based on Case based reports completed at health centers after reviewing the case by summarizing qualitative interviews completed at community levels through verbal autopsy. A Review guide was prepared to facilitate the review process.

It consists of five steps (MDSR result mapping, selection of relevant initiatives/interventions or programs, discussion of results, and conclusion and recommendation). The reviewers were experts from various directorates and agencies of the FMOH (the National blood bank agency, EPHI/PHEM, Health extension Program directorate, plan and policy directorate, MCH directorate) as well as IFHP, Addis Ababa University (AAU), and World Health Organization(WHO)country office. Four groups have undertaken following the steps identified in the review guide.

Key findings

There were 539 maternal deaths reported through case based reporting after reviewed at health facilities (health centers and hospitals) from January 2014 to December 2015) which is 5% of the expected number of maternal death nationally. This discrepancy might be due to only a small proportion arrive

at facilities. Majority of deceased women were married and illiterate who are from rural (90%, 69%, and 99% respectively). In respect to place where they died, among the 537 reported cases 54% of them died at health facilities followed by home (25%) and on transit (19%). Direct obstetric causes account for 87 % of maternal deaths. Hemorrhage is the leading cause of death (54%) followed by hypertensive disease in pregnancy (HDP (12%), obstructed labor (9%) and sepsis (9%) in order of their magnitude and 60% of them died during postpartum period. Regarding the contributing factors to maternal death (Figure 1).

Factors related with delay one are the top ones contributing for 72% of the cases, followed by factors on the second and third delays Delay in 37% and 35% respectively (Figure 2).Among delay three factors, lack of blood is the leading (45%) followed by lack of ICU service (18%). Majority of deaths were due to hemorrhage (77%) , HDP (57%) occurred in the postpartum period. The deaths were preventable in 82 % of the cases. Moreover highest number of maternal deaths were reported from Somali region (Figure 3)

Figure 1: Direct Causes of Maternal Deaths Reviewed, E.C 2008 (N=537).

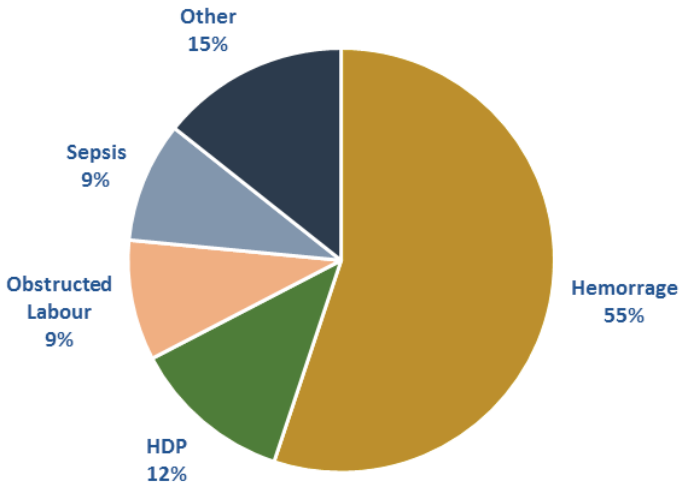
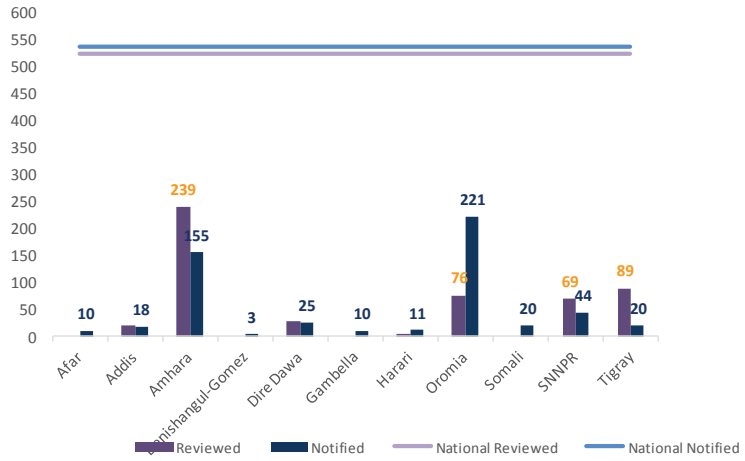


Figure 2 : The Three Delays In Maternal Deaths Reviewed, National, 2008 E.C.(N=537)

The three delays

1. **The Delay To Seek Care=72%**
2. **Delay to reach proper medical services=37%**
3. **Delay to access quality of health care=35%**

Figure 2 : The Three Delays In Maternal Deaths Reviewed, National, 2008 E.C.(N=537)



In conclusion, the results show that there are still significant barriers to utilization of maternal health care at community level. The problems of transportation, timely referral and quality of care at health facilities are also areas where actions are needed in the health system. Finally relevant quality improvement recommendations were indentified on key aspects of health system, which have been disseminated through dissemination workshop conducted in April 2016 as well as through policy briefs[2].

Key Recommendation for action

A. To Address Delay **One** – The Delay To Seek Care

- Addressing fears about seeking facility care including providing information about risks and benefits of care seeking through
  - Community engagement, addressing family/spousal objections to seeking skilled care,
  - Improving provider behavior and practice,
  - Making facilities customer friendly.
  - Strengthening involvement of Health Extension Workers(HEWs) in promoting institutional delivery

B. To Address Delay **Two** – The delay to reach proper medical services

- Strengthening Community participation and engagement through
  - Use of maternity waiting homes should be promoted and HEWs should particularly target high parity women to use them.
  - HEWs should focus on identifying women at particular risk of hemorrhage and advising them their individual risk and the need for preventive action.

C. To Adress Delay **Three** – The delay in accessing quality care at a health care

(1) Improving Quality of care in MNH service

- Regular multidisciplinary training on management of emergency obstetrics, particularly hemorrhage and pre-eclampsia/eclampsia should be institutionalized.
- Internal quality assurance through conducting QOC assessment for all MNC and particularly hemorrhage and preeclampsia/eclampsia should be done at least quarterly followed by quality planning and improvement.
- Pre-service and in-service trainings on EMONC should target the major drivers of maternal mortality such as PPH and HDP.
- The use of the Safe Childbirth Checklist and Partograph should be expanded and monitored to overcome human error and mismanagement and ensure patient safety.
- Blood transfusion committees should be established at hospitals to assure quality of transfusion services.
- All labor and delivery units should have an emergency drug box/cabinet with IV fluids, Oxytocin, Misoprostol, Hydralazine and Magnesium Sulphate
- Procedures for emergency obstetric referral between catchment health facilities put in place in all zones.
- All tertiary/referral hospitals should have ICU care or HDU for obstetric complications to significantly reduce deaths from HDP and hemorrhage.
- All facilities should assess the timeliness of management of admitted obstetric patients and take action accordingly.
- There should be early engagement of senior staff in the management

(2) Appropriate clinical Use of blood and blood products

- Comprehensive emergency obstetric care (CEmONC) should have reliable access to safe blood products 24 hours a day, 7 days a week.
- All CEmONC facilities should establish a mini blood bank equipped as per the minimum standards of the NBB functioning 24 hours a day, 7 days a week.
- All CEmONC facilities should assign a focal person for the mini blood banks who has a qualification in laboratory technology and is responsible for the blood bank.
- Strengthening the capacity of blood bank agency in blood collection, storage, cold chain transport, quality blood and blood component production and utilization is of paramount importance in averting maternal deaths.
- All CEmONC facilities should be in a position to practice appropriate clinical use of blood; appropriate training on use of blood and blood products should be emphasized in pre-service and CME trainings, including in-service BEmONC and CEmONC

- Equal focus should be given to prevention of obstetric hemorrhage and clinical management practices to stop bleeding besides improving the availability of blood.
- Monitoring and reporting of hem vigilance issues through HMIS needs to be strengthened to generate reliable evidence on blood safety.

References

1. FMOH, Ethiopia, Maternal Death Surveillance and Response (MDSR) Technical Guideline
2. Ethiopian Public Health Institute: www.ephi.gov.et or email, abyotbekelephem@gmail.com.

Neglected Tropical Diseases (NTD) Service Availability at Health Facilities in Ethiopia

Kassahun Amenu[1], Theodros Getachew[1], Abebe Bekele[1], Atkure Defar[1], Mekonnen Taddesse[1], Habtamu Teklie[1], Terefe Gelibo[1], Yibeltal Assefa[1], Amha Kebede[1]

Corrosponding Author:
Kassahun Amenu, kassishg2@yahoo.com

Abstract

Background: Neglected Tropical Diseases (NTDs) are a group of infections and other related conditions which are especially endemic in low-income populations in developing regions of Africa, Asia, and the Americas. In sub-Saharan Africa, the impact of these diseases is comparable to malaria and tuberculosis. World Health Organization (WHO) identified seventeen diseases as NTD. Most of these diseases are either preventable through mass drug administration (MDA) and proper hygiene and sanitation, or treatable through intensified case management. In Ethiopia eight NTD are prioritized by the Ministry of Health and included in a multiyear master plan. Nonetheless, how the services for these diseases are integrated with the health system is not clearly understood.

Objective: The objectives of this study is to assess health facilities for the availability of services for NTD management.

Methods: Data from the 2014 Ethiopian Service Provision Assessment Plus (ESPA+) Survey was used to assess health facilities for the availability of services for NTD management. SPA+ is a health facility assessment survey that provides a comprehensive overview of a country's health service delivery. Availability of different facility-based health services and their readiness to provide those services are the main scopes of the SPA+. A total of 873 health facilities were assessed for the analysis. All hospitals, selected health centers, and private clinics were assessed for availability of NTD services.

Results: More than half of all health facilities offer services for both soil transmitted helminthes (64%), and services for trachoma (60%). Over all, about four of every ten (40%) health facilities offer services for schistosomiasis. The availability of services for onchocerciasis, leishmaniasis, , and lymphatic filariasis are 27%, 25%, and 24% respectively.

Conclusions and recommendation: The study showed that the availability of services in the health facilities is the availability of service for neglected tropical disease in health facilities is relatively good in general, there should be equitable distribution of neglected tropical disease service provision between regions. And private facilities should give emphasis for the provision of these services.

Key words: Service Availability, NTDs, SPA+, Ethiop.

1. Ethiopian Public Health Institute (EPHI), Addis Ababa Ethiopia

Background

The Neglected Tropical Diseases (NTDs) are a group of infections and related conditions which are especially endemic in low-income populations in developing regions of Africa, Asia, and the Americas. Different organizations define the set of diseases differently. In sub-Saharan Africa, the impact of these diseases as a group is comparable to malaria and tuberculosis(1). The diseases recognized as NTDs by the World Health Organization (WHO) are: Chagas disease, Cysticercosis and taeniasis, Dengue fever, Dracunculiasis, Echinococcosis, Human African trypanosomiasis, Leishmaniasis, Leprosy, Lymphatic filariasis, Onchocerciasis, Rabies, Schistosomiasis, Soil-transmitted helminthiasis, Trachoma, and Yaws(2). In Ethiopia, most of the NTDs in the WHO list are present, except for probably Chagas disease and yaws namely; dracunculiasis, onchocerciasis, lymphatic filariasis, leishmaniasis, schistosomiasis, soil transmitted helminths, trachoma, and podoconiosis(3,4).

Ethiopia stands out for having the largest number of NTD cases following Nigeria and the Democratic Republic of Congo. Ethiopia is estimated to have the highest burden of trachoma, podoconiosis and cutaneous leishmaniasis in sub-Saharan Africa (SSA), the second highest burden in terms of ascariasis, leprosy and visceral leishmaniasis, and the third highest burden of hookworm. Infections such as schistosomiasis, trichuriasis, lymphatic filariasis and rabies are also common. A third of Ethiopians are infected with ascariasis, one quarter is infected with trichuriasis and one in eight Ethiopians lives with hookworm or is infected with trachoma(5).

In order to mitigate the burden of Neglected Tropical Diseases in Ethiopia, a National Symposium on NTDs was held in Addis Ababa in the period 12-14 June 2013, under the theme: "End the neglect, integrate, scale up and sustain", with the participation of over 400 representatives of relevant line ministries and government agencies, RHBs, research institutions, nongovernmental organizations, and development partners. During the symposium, a platform was established for knowledge sharing and documentation of best practices in Neglected Tropical Diseases, and the National NTD Master Plan was launched(3). Therefore; this survey was aimed to assess health facilities for the availability of services for NTD management.

Method

Study Setting

The Ethiopian health sector has introduced a three-tier health care delivery system: level 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 (6). A total of 23,144 functional and formal sector health facilities are available in Ethiopia which included: 214 hospitals, 3,317 health centres, 15, 525 health posts, and 4,088 private clinics (categorized under higher, medium and lower clinics). Information on NTDs was collected from a representative sample of health facilities (hospitals, health centres and private clinics) managed by the government, non-governmental organizations (NGOs), and private for-profit organizations across the country. This study was approved by the scientific and ethical review office of the Ethiopian Public Health Institute (EPHI). The survey was conducted from 10 March to 25 July 2014. Copies of letter of approval by Scientific and Ethical Review Offices (SERO) of EPHI was presented to regional health bureaus.

Study Design

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) tools was carried out .

Data Sources

The data used in this study came from the 2014 Ethiopian service provision assessment Plus Survey (SPA+). The sample for the survey was a 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 are nationally and sub-nationally representative and internationally comparable. There were a total of 873 health facilities included in this analysis.

Data Collection Instrument

To achieve the objectives of the assessment and to capture information from the different categories, a facility inventory questionnaire was used to obtain information on service availability of the priority NTD services.

Data Collection Approaches

After preparation of definitive questionnaires in English, the questionnaire was translated into Amharic. English and Amharic translation of the inventory questionnaire was loaded onto tablet computers, which were used during interviews to ask questions and also record responses (computer assisted personal interviewing–CAPI) designed using CSpro.

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 management 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.

Results

Availability of services for neglected tropical diseases

The result included findings on NTD for a total of 873 health facilities (214 Hospitals, 292 health centres, and 367 clinics) all over the country. Over half (51%) of the health facilities in this analyses were public, and 45 % were private for-profit health facilities as described in table 1.Services were deemed to be available when the providers in the facility diagnose, prescribe treatment for, or manage patients with NTD. In general, about more than half of all health facilities offer services for both soil transmitted helminthes (64 %), and services for trachoma (60 %). Among all hospitals, nearly about nine of every ten (90 %) facilities have services for soil transmitted helminthes, and trachoma (Table 2). Over all, about four of every ten(40%) health facilities offer services for schistosomiasis, The availability of services for onchocerciasis, leishmaniasis, and lymphatic filariasis are 27%, 25%, and 24% respectively. Services of dracunculiasis , and podoconiosis were the least frequent available with only 16%, and 12% respectively.. Over all, services for all NTDs are more likely to be available in hospitals compared with other facility types.Government facilities are more likely to provide these services compared with other managing authorities (Table 2).

Discussion and conclusion

This service availability survey demonstrated that considerable proportion of health facilities in Ethiopia provide NTD services. Nonetheless the services availability differ by disease and type of health facility.

NTD are significant public health problems in Ethiopia. Ethiopia stands out for having the largest number of neglected tropical disease cases following Nigeria and the Democratic Republic of Congo. Ethiopia is estimated to have the highest burden of trachoma, podoconiosis and cutaneous leishmaniasis in sub-Saharan Africa (SSA), the second highest burden in terms of ascariasis, leprosy and visceral leishmaniasis, and the third highest burden of hookworm(5). In order to mitigate the burden of Neglected Tropical Diseases in Ethiopia, a National Symposium on NTDs was held in Addis Ababa in the period 12-14 June 2013, under the theme: "End the neglect, integrate, scale up and sustain", with the participation of over 400 representatives of relevant line ministries and government agencies, RHBs, research institutions, nongovernmental organizations, and development partners. During the symposium, a platform was established for knowledge sharing and documentation of best practices in Neglected Tropical Diseases, and the National NTD Master Plan was launched(3). The goals of a health system are to improve health and health equity in ways that are responsive, financially fair and that make the best, or most efficient, use of available resources(7). Services were deemed to be available when the providers in the facility diagnose, prescribe treatment, or manage patients with each specific neglected tropical disease (NTDs). The study examined the availability of neglected tropical disease (NTDs) service in Ethiopia. At national level, In general about more than half of all health facilities offer services for both soil transmitted helminthes (64 percent), and services for trachoma (60 percent). Over all, Government facilities are more likely to provide these services compared with other managing authorities. There is also regional discrepancy in neglected tropical disease service availability. In Gambella and Afar regions, the availability of services for neglected tropical disease is less likely available than other regions. However, the demand for neglected tropical disease service is higher in Gambella region because of its high neglected tropical disease burden, the availability of neglected tropical disease service is lesser (less than 8 percent for all neglected tropical disease) in this region compared with other all regions.

In conclusion, even though the availability of service for neglected tropical disease in health facilities is relatively good in general, there should be equitable distribution of neglected tropical disease service provision between regions. And private facilities should give emphasis for the provision of these services.

Acknowledgements

We would like to express our sincere gratitude and special thanks to the administration offices of health sectors at all level for providing necessary support. Our special thanks go to field coordinators, supervisors and data collectors. Finally, we would like to thank all study participants for providing the necessary information. The survey was funded by the United States Agency for International Development (USAID), World Bank, Irish Aid, WHO and UNICEF. ICF International provided technical assistance. Therefore, we would like to thank the organizations for generous financial, logistics and technical support for the success of this survey.

Conflict of Interests

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

References

1. Hotez PJ, A K. Neglected tropical diseases in sub-saharan Africa: review of their prevalence, distribution, and disease burden. PLoS Negl Trop Dis 2009; Aug 25;3(8):e412. doi: 10.1371.
2. Reddy M1, Gill SS, Kalkar SR, Wu W, Anderson PJ, PA. R. Oral drug therapy for multiple neglected tropical diseases: a systematic review. JAMA. 2007;Oct 24;298(16):1911-24.
3. FMOH. Health Sector Development Programme IV Annual Performance Report. FMOH. 2013.
4. WHO. First WHO report on neglected tropical diseases. World Health Organization. 2010.
5. Kebede D, Kadu M, Teshome G, et'al. The burden of neglected tropical diseases in Ethiopia, and opportunities for integrated control and elimination. 2012.
6. FMOH. Health Sector Development Plan IV (HSDP IV) 2010/11 - 2014/15. Addis Ababa, Ethiopia:. Federal Democratic Republic of Ethiopia, Minister of Health. 2010.
7. WHO. The World Health Report 2000 - Health systems: improving performance. World Health Organization, . 2000;Geneva (2000).

Tables

Table 1: Total number of health facilities assessed by type of facilities.

Facility type	Weighed	Unweighed	%	Managing Authority			
				Public	Other governmental	Private for profit	NGO
Referral hospital	2	32	0	31	0	0	1
General hospital	7	130	1	71	1	51	7
Primary hospital	3	52	0	44	1	4	3
Health center	182	292	16	290	0	0	2
Higher clinic	13	57	1	0	0	55	2
Medium clinic	37	132	3	0	4	121	7
Lower clinic	119	178	10	1	3	165	9
National	363	873	100.0	437	9	396	31

Table 1: Total number of health facilities assessed by type of facilities.

Background characteristics				Soil					Number of facilities
Facility type									
Referral Hospital		72		91	84	53	53	81	2
General Hospital		61		88	79	44	44	68	7
Primary Hospital		54		92	88	40	40	60	3
Health Center		29		75	74	22	14	31	182
Higher Clinic		39		75	69	28	20	44	13
Medium Clinic		34		78	72	17	16	26	37
Lower Clinic	8	9		39	32	3	2	9	119
Managing authority									
Government/ public		31		76	75	23	16	33	190
Other governmental (military, prison, federal police)	8	6		50	94	6	6	6	2
Private for profit		18		51	43	9	8	16	163
NGO (mission/ faith-based, nonprofit)		24		70	58	15	4	35	8
Region									
Tigray		31		68	66	22	20	35	22
Afar	8	6		52	24	2	2	5	5
Amhara		18		72	71	11	10	30	87
Oromia		31		59	58	22	12	25	116
Somali		16		51	48	25	10	31	8
Benishangul Gumuz		46		57	60	37	39	43	4
SNNP		18		66	54	9	7	16	80
Gambella	5	3	3	8	6	6	0	2	6
Hararı		49		89	77	40	29	57	2
Addis Ababa		29		70	63	19	17	27	31
Dire Dawa		68		80	82	56	38	64	3
Urban/rural									
Urban		27		67	59	17	13	26	149
Rural		23		62	61	16	11	24	214
Total		24		64	60	16	12	25	363

[1] Providers in the facility diagnose, prescribe treatment for, or manage patients with onchocerciasis.

[2] Providers in the facility diagnose, prescribe treatment for, or manage patients with lymphatic filariasis.

[3] Providers in the facility diagnose, prescribe treatment for, or manage patients with schistosomiasis.

[4] Providers in the facility diagnose, prescribe treatment for, or manage patients with soil transmitted helminthes.

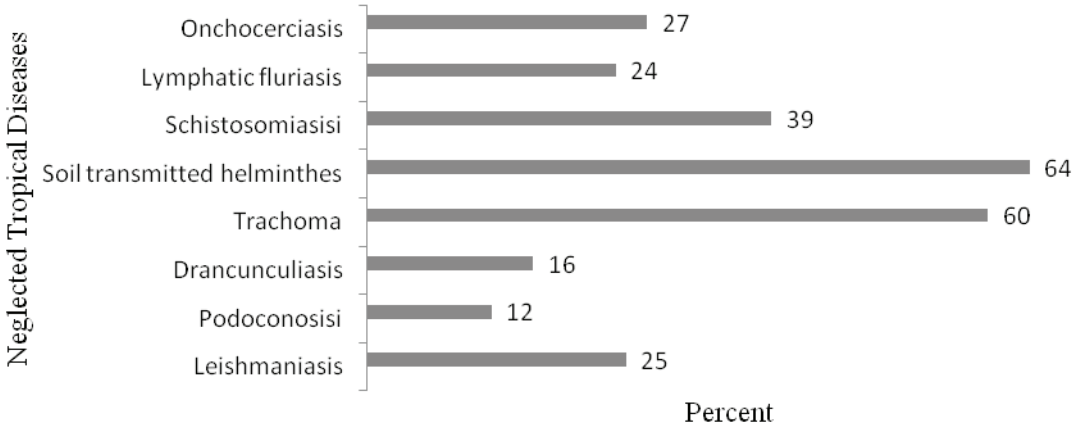
[5] Providers in the facility diagnose, prescribe treatment for, or manage patients with trachoma.

[6] Providers in the facility diagnose, prescribe treatment for, or manage patients with dracunculiasis.

[7] Providers in the facility diagnose, prescribe treatment for, or manage patients with podoconiosis.

[8] Providers in the facility diagnose, prescribe treatment for, or manage patients with leishmaniasis.

Figure 1. Availability of services for Neglected tropical diseases among facilities excluding health posts, ESPA+ 2014.



Perinatal and Neonatal Mortality in Ethiopia: Analysis based on Systematic Review of local evidence

National Research Advisory Council of RMNCAH-N July, 2016

Background

Between 1990 and 2015 Ethiopia reduced the under-five child mortality by 71% from 205/1,000 live births in 1990 to 59/1,000 live births in 2015 meeting the MDG 4 goal for the country in 2012, three years ahead of the deadline. However, the change in neonatal mortality (of which three-fourths of deaths occur during early neonatal period) was very little [1-5].

The leading causes of neonatal deaths are prematurity, neonatal sepsis and birth asphyxia, which contribute to more than 80% of neonatal deaths in the world, as well in Ethiopia [1, 6-9]. With an estimated neonatal mortality rate of 28 per

1,000 live births and 87,414 neonatal deaths in a year in 2015, Ethiopia stands as one of the countries with highest neonatal death in the world [1, 5].

Low socio-economic status, poor cultural practices, and low obstetrics and perinatal care services use are commonly cited contributors to high neonatal mortality[7, 9]. In the Ethiopian context, through the health extension program, an intensive effort has been made to avail the health extension packages including FP, ANC, PNC, iCCM/CBNC service at the door step of every person [10, 11].

Although available global evidence suggests that those listed above may be common barriers to service utilization and contribute to high neonatal, we lack documented country level evidence of the major contributors to high perinatal and neonatal mortality. Hence, generating information based on available published and unpublished data would help to identify the key contributors of the burden of perinatal and neonatal deaths in Ethiopia. To this end, a systematic review based on available information was done to fill the knowledge gap in this aspect.

Methods

Data sources and search strategy

Published articles from relevant electronic databases: (PubMed, MEDLINE, HINARI, WHO websites, AAU library database) and unpublished student/staff research reports from five national universities with graduate training for at least 5 years (Addis Ababa University, University of Gondar, Jimma University, Mekele University, and Haramaya University) were screened using a combination of key words such as early neonatal mortality, neonatal mortality rate, neonatal mortality, perinatal mortality rate, perinatal mortality, causes of early neonatal mortality, cause of neonatal mortality, cause of perinatal mortality relevant to the research question with the help of the Boolean logic (AND, OR and NOT). Eligibility criteria for selecting articles retrieved through the systematic search was developed based on standard systematic review methods.

Data extraction and analysis

Data was extracted from the selected published and unpublished articles using a data extraction form that includes items that capture the types of the study, objectives, methodologies used, sites of study, perinatal/neonatal mortality rate, contributors to perinatal/neonatal deaths, limitations of the study, and

recommendations. After the extraction of the data,summaries of the key findings weresynthesized. The predictability, presence of bias, methodological rigor, and appropriateness of the selected studies was qualitatively ratedby the newborn health thematic group of the RAC during the analysis of the studies following standard techniques.

Different levels of factors contributing to perinatal/neonatal mortality were taken into account. A simple analytical framework was developed to systematically analyze the selected studies retrieved from literature search. The framework used adaptation of the three-delay model for maternal mortality: first level, second level and third level factors contributing to perinatal/neonatal deaths in Ethiopia. The first level factors refer to factors related to the home environment, traditional and cultural practices,

and decision-making pathways to seek and receive care for pregnant women and newborns. The second level factors refer to factors associated with reaching a health service delivery point (transportation of the delivering women and sick neonate to health facility and back home) to receive care. The third level factors refer to factors associated with receiving respectful and quality delivery service and neonatal health care once the delivering women and neonate reaches the health facility. The selected studies were categorized into these three categories and analyzed to identify the major factors contributing to high early neonatal mortality.

Studies that did automatically fit into any of the three categories were reviewed further to identify their main research question and were classified in the categories where their main research questions belong or new category was created.

Results

Using inclusion and exclusion criteria 18 studies were included in the analysis. Most of the studies reviewed were cross-sectional studies in nature and applied community based design. The studies represent different regions in the country and some of them represent more than one region.

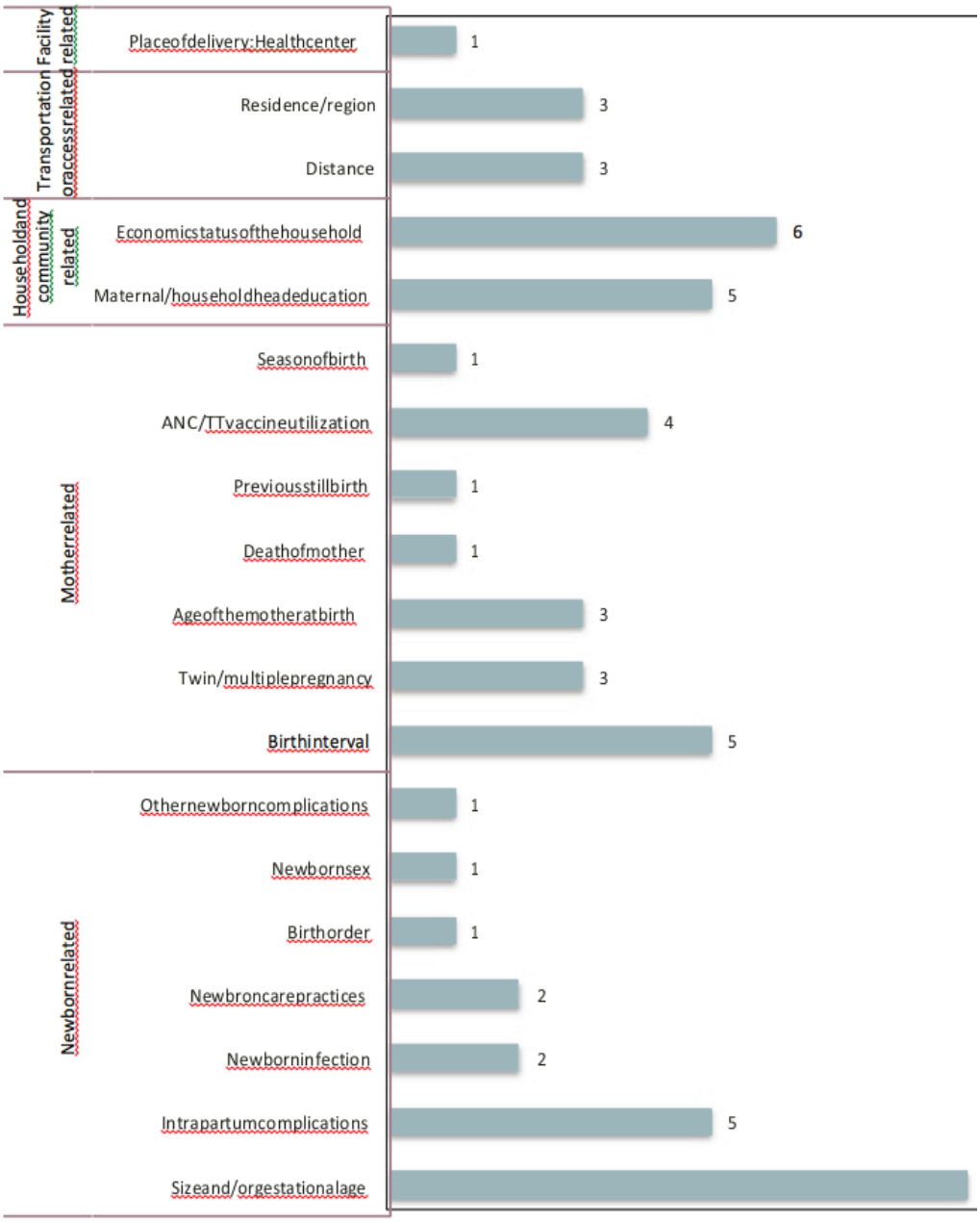
Contributors to neonatal and perinatal mortality

We used the three-delay model for maternal mortality to analyze the extracted data and present the contributors to neonatal and perinatal mortality in Ethiopia. During analysis we realized that evidence on the second and third level contributors wasscant. On the other hand neonatal and maternal health related factors emerged as a separate theme which we presented along with the three level contributors (Figure 1).

Levels	Contributors
Household or community level contributors	*Perinatal/neonatal mortality was found to be higher among neonates* • Whose mothers were **illiterate or had low literacy** [12-15]. • In households headed by **illiterate**[16]. • **From households with poor economic status of the households** measured by various types of indicators or index of wealth or income [16-19]. • Of **unemployed** mother or father [13]. • Whose mothers did not run **own business** [12].
Transportation or access related contributors	*Perinatal/neonatal mortality was found to be higher among neonates* • Who had poor access to maternal and newborn health services measured by **distance** to the nearest health facility, CEmONC center or road [16, 20, 21] • Who resided in **rural** areas compared to those who lived in urban settings [13, 17]. • Born in Amhara, Benishangul Gumuz and Tigray **regions** as compared to a neonate born in Addis Ababa [15].
Facility related contributors	Perinatal/neonatal mortality was found to be higher among neonates • Who were delivered at home compared to those delivered at health centers [7]. However, there was no significant difference in risk of neonatal mortality for babies born at home compared to those born at hospitals.

Levels	Contributors
Newborn and mother related contributors	*Newborn related factors: There was higher risk of perinatal/neonatal deaths among neonates* • Who had **small size and/or gestational age** at birth [7, 14, 19, 20, 22-26]. • Who had i**ntrapartum complications** that were assessed using a range of variables including birth asphyxia, meconium aspiration, premature rapture of membrane, malpresentation, and cord prolapse [7, 20, 22, 23, 25]. • Delivered vaginally as compared to neonates delivered by cesarean section [25]. • Who had neonatal sepsis, meningitis, and general neonatal illnesses [14, 22]. • Who were not exclusively fed on breast milk and did not receive comprehensive neonatal care [20][7]. • With 1st and 5th or above birth order and male sex of neonates [7, 15]. • Who had neonatal complications such as seizure, Hyaline Membrane Diseases, congenital anomaly and hemorrhagic disease were associated with high risk of death among neonates [22]. *Mother related factors: There was higher risk of perinatal/neonatal deaths among neonates* • With **short birth interval** from last birth [12-16]. • Who were **twin and multiple births** [7, 12, 13]. • Who were born from **young mothers**[13, 15, 19]. • From households with **maternal death** [16] and whose mothers had **illnesses** [14]. • Whose mothers had **previous stillbirth** [12]. • Whose mothers did not attend ANC care or attended less than four times compared to neonates of mothers who did attended ANC or attended four or more times [7, 25] and did not receive **tetanus toxoid vaccine**[12, 15]. • Born in winter compared to those born in spring [15].

Figure 1: Number of studies that report contributors to neonatal and perinatal mortality in Ethiopia..



Policy implications/Recommendations

Two important messages can be drawn from the results of this systematic review. The first is that there are limited studies specific to Ethiopia that assessed the contributors to perinatal and neonatal deaths; most of them were community-based studies. The few studies that were identified and included in this systematic review were challenged by several methodological limitations. This calls for conducting more research to understand the contributors to neonatal deaths at different levels. Future research need to be large-scale studies that envision identification of contributors to early neonatal, neonatal, and perinatal mortalities at different levels and should address the limitations documented in our review. Furthermore, the researcheneeds to focus on determining the impact of implementation of programs that factor in the modifiable contributors to perinatal/neonatal mortality identified through the systematic review which may include use of panel data and implementation researches.

Second, consistent with evidence elsewhere neonatal and maternal health related factors were identified as major and immediate contributors to perinatal/neonatal deaths in Ethiopia. In addition, household/community, access/ transportation, and health facility related factors were also identified as important intermediate and distant contributors to perinatal/neonatal deaths. However, since most of the studies identified in Ethiopia were community based the impact of availability and quality of maternal and neonatal care on perinatal/neonatal care has not been studied.
The high impact maternal and neonatal interventions outlined in the National Newborn and Child Survival strategy should be optimally implemented to address the maternal and newborn related contributors to perinatal/neonatal mortality in Ethiopia. The result from our systematic review also indicated that both maternal and neonatal related factors contribute to perinatal/neonatal deaths underlining the need to improve quality of maternal and newborn health care and strengthen integration of maternal and neonatal care.

Addressing the household/community, access/transportation, and health facility related contributors to perinatal/neonatal deaths requires a pro-poor multisectoral approach to improve the socio-economic status of communities disproportionately affected by the contributors. In addition, the health system has to be strengthened to make it more accessible and responsive to the needs of the mothers and newborns.`

References

1. UNICEF: Levels & Trends in Child Mortality: Report 2014 Estimates Developed by the UN Inter-agency
2. Group for Child Mortality Estimation. In.: UNICEF, World Health Organization, The World Bank and United Nations; 2014.
3. Central Statistics Agency, ICF International: Ethiopian Demographic and Health Survey 2011. In. Addis Ababa, Ethiopia and Calverton, Maryland, USA; 2012.
4. Central Statistics Agency (Ethiopia) and, ORC Macro:
5. Ethiopia Demographic and Health Survey 2005. In. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistics Agency and ORC Marco; 2006.
6. Central Statistics Agency (Ethiopia) and, ORC Macro:
7. Ethiopia Demographic and Health Survey 2000. In. Addis Ababa Ethiopia and Calverton, Maryland, USA: Central Statistics Agency and ORC Macro; 2001.
8. UNICEF: Levels & Trends in Child Mortality: Report 2015 Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. In. Newyork: UNICEF, World Health Organization, The World Bank and United Nations; 2015.
9. Million Death Study C, Bassani DG, Kumar R, Awasthi
10. S, Morris SK, Paul VK, Shet A, Ram U, Gaffey MF, Black RE et al: Causes of neonatal and child mortality in India: a nationally representative mortality survey. Lancet 2010, 376(9755):1853-1860.
11. Debelew GT, Afework MF, Yalew AW: Determinants and causes of neonatal mortality in Jimma Zone, Southwest Ethiopia: a multilevel analysis of prospective follow up study. PLoS One 2014, 9(9):e107184.
12. WHO, UNICEF: Every Newborn: an action plan to end preventable deaths: Executive summary. In. Geneva, Switzerland: World Health Organization; 2014.
13. Lawn JE, Blencowe H, Oza S, You D, Lee AC, Waiswa
14. P, Lalli M, Bhutta Z, Barros AJ, Christian P et al: Every Newborn: progress, priorities, and potential beyond survival. Lancet 2014, 384(9938):189-205.
15. FMOH: Health and Health related indicator. In. Addis Ababa: Planning and Programming Department Federal Ministry of Health; 2007.
16. FMoH: Health Extension Program in Ethiopia: Profi le. In. Edited by Center HeaE. Addis Ababa: Federal Ministry of Health (ET); 2007.
17. Andargie G, Berhane Y, Worku A, Kebede Y: Predictors of perinatal mortality in rural population of Northwest Ethiopia: a prospective longitudinal study. BMC Public Health 2013, 13:168.
18. Hibstu DT, Ayele TA, Mengesha ZB: Determinants of survival in rural Eastern Ethiopia. In.; 2009. Neonatal Mortality in Ethiopia: A Case Control Study, 2013. Open Access Library Journal 2014, 1(6).
19. Kebede B, Gebeyehu A, Sharma HR, Yifru S: Prevalence and associated factors of neonatal mortality in North Gondar Zone, Northwest Ethiopia. Ethiopian Journal of Health Development 2012, 26(2):66-71.
20. Mekonnen Y, Tensou B, Telake DS, Degefie T, Bekele A:
21. Neonatal mortality in Ethiopia: trends and determinants. BMC Public Health 2013, 13:483.
22. Yaya Y, Eide KT, Norheim OF, Lindtjorn B: Maternal and neonatal mortality in south-west Ethiopia: estimates and socio-economic inequality. PLoS One 2014, 9(4):e96294.
23. Ayalew Y: Assessment of factors associated with adverse neonatal outcomes in hospitals of Mekelle city, Tigray Ethiopia. Mekelle University; 2015.
24. Gizaw M, Molla M, Mekonnen W: Trends and risk factors for neonatal mortality in Butajira District, South Central Ethiopia, (1987-2008): a prospective cohort study. BMC Pregnancy Childbirth 2014, 14:64.
25. Yakob T, Mitike G, Berhane Y: Assessment of Pregnancy Outcome with Emphasis on Pefinatal and Neonatal Mortality in Dire Dawa Town, Ethiopia. Addis Ababa University; 2003.
26. Gebrekirstos H, Desta A, Terefe W, Hailu T: Survival and Predictors of Neonatal Mortality inTigray Region, Northern Ethiopia: Prospective Cohort Study. Mekelle University; 2014.
27. McKinnon B, Harper S, Kaufman JS, Abdullah M: Distance to emergency obstetric services and early neonatal mortality in Ethiopia. Trop Med Int Health 2014, 19(7):780-790.
28. Kokeb M, Desta T: Institution Based Prospective CrossSectional Study on Patterns of Neonatal Morbidity at Gondar University Hospital Neonatal Unit, North-West Ethiopia. Ethiop J Health Sci 2016, 26(1):73-79.
29. Araya T, Tilahun W, Molla M: Risk Factors of Neonatal Death after Resuscitation among Asphyxiated neonates in Ayder Referral Hospital, Mekelle City, Tigray, Ethiopia: a retrospective case control study.: Mekelle University; 2014.
30. W/giorgis YM, Lemma S, Demie M: Perinatal Death and Risk Factors Associated With the Death in Bishoftu Hospital. University of Gondar; 2012.
31. Birara M, Girma B, Yigzaw T: A case control study on determinants of perinatal death in Ghandi Memorial Hospital. University of Gondar; 2009.
32. Assefa N, Berhane Y, Worku A, Chan G, Fawzi W: Chest circumference at birth significantly predicts neonatal

Post Meningitis Campaign Vaccination Coverage Survey Phase-III, Eastern Ethiopia, 2015

Kassahun Amenu[1], Mekonnen Taddesse[1], Theodros Getachew[1], Atkure Defar[1], Habtamu Teklie[1], Abebe Bekele[1],Terefe Gelibo[1], Tefera Tadele[1], Yabets Girma[1], Abebech Asmamaw[1], Girum Taye[1], Liya Wondowossen[2], Tesfaye Tsigudejene[2], Yibeltal Assefa[1], Amha Kebede[1]

Background: Meningococcal meningitis is a bacterial form of meningitis, a serious infection of the meninges (brain membrane). It can cause severe brain damage and is fatal in 50 % of cases if untreated. Neisseria meningitides is a Gram-negative diplococcic bacterium with 8 serotypes. Men AfriVac is a new conjugate vaccine against Neisseria meningitides sero group A developed for the African "meningitis belt". However, the impact of the vaccine is not yet described.

Objectives: This study was aimed at to assess the coverage and major barriers of Men-A mass immunization for the third phase in low risk for meningococcal disease of twenty-seven zones from the six regions and a city administration during 2015 in Ethiopia.

Methodology: Descriptive cross sectional study design was conducted using a two stage cluster sample technique in the selected zones of six regional states and one city administration. The study was conducted in Eastern part of the country where there was a relatively low risk of meningitis outbreak immediately after the mass campaign activities. In this campaigns individuals between one year and 29 years were considered. The study population was further divided into two sub groups as children aged 1-14 years and adult population in 15-29 age groups. All the eligible residents in the household were listed and one among them was systematically selected for the interview.

Result: Overall Men-A vaccination coverage for Eastern parts of the country targeted for the campaign was found to be 92.9% with a 95% CI of [92%, 93.8%], where the coverage reported by history and documented by card were 24.2% and 68.5%, respectively. The survey revealed that there was a low card retention rate in all regions; being 68.5% with a 95% confidence interval of [66.9%, 70.1%]. Among those vaccinated, the major reason reported for no vaccination card were loss/misplacement of the card after received. Based on reported data, health workers (including health extension workers), Public crier and school/students were found to be the main source of information about the meningitis vaccination campaign with percentages 31.4%, 23.3% and 15.5% among vaccinated individuals, respectively. The respondents reported that service in availability when they visited (22.8%) and didn't know about the campaign (15.8%) and too busy during the time of campaign (15.8%)as the main reasons for non-vaccination.

Conclusion: The overall meningitis vaccination coverage in the Eastern part of the country targeted for the campaign was relatively high (92.9%). There was a low card retention rate in all regions; being 68.5%. Apart other reasons given for no vaccination card, the major reason reported for no vaccination card was loss/misplacement of the card after received. Health workers (including health extension workers), Public crier and school/students were found to be the main source of information about the meningitis vaccination campaign with percentages 31.4%, 23.3% and 15.5% among vaccinated individuals, respectively. Based on the findings from the survey, the following issues need to be considered to improve the future similar campaigns: continuous and timely supply of vaccines based on woreda micro planning, allocate sufficient time for community mobilization /advocacy and use appropriate modes communication for different population segments.

1. Ethiopian Public Health Institute,
2. Ministry of Health, Addis Ababa Ethiopia.

Progress towards Family Planning 2020 Goals: Efforts of Ethiopia

Berhane A.[1], Melaku G.[2], Tenaye K.[1]

Introduction

Family planning 2020 is a global partnership that supports the rights of women and girls to decide, freely and for themselves, whether, when, and how many children they want to have. FP2020 works with government sectors, civil society, multi-lateral organizations, donors, the private sectors, and the research and development community to enable 120 million more women and girls to use contraceptive by 2020. FP2020 is an outcome of the 2012 London summit on family planning where more than 20 governments including Ethiopia made commitments to address the policy, financing, delivery and socio-cultural barriers to women accessing contraceptive information, services and supplies. Donors also pledged an additional US$ 2.6 billion in funding.

Framework for monitoring country's progress towards FP2020 goals was developed. Modern contraceptive prevalence and the percentage of women with an unmet need for modern contraception are two of the key FP2020 indicators. Since the sources for these values tend to be large population-based surveys, which are conducted only every few years, a methodology was needed that allowed for the projection of annual estimates for these indicators. In order to address this need for annual estimates, the Family Planning Estimation Tool (FPET) was produced by the Track20 Project, in collaboration with the United Nations Population Division (UNPD) and the National University of Singapore.

FPET is based on an estimation approach used by the UNPD that draws on data for 194 countries and areas worldwide. FPET is adapted to work with a single country at a time and to accept service statistics as well as survey data to establish trends. FPET is a Bayesian, hierarchical model that fits logistic growth curves to historical data in order to determine the long-term trend, and adds a time series model with autocorrelation to capture the deviations around the long-term trend.

Thus, conducting this assessment using FPET will provide Ethiopia's progress information on the key performance indicators. And based on the assessment findings, appropriate corrective actions will be developed and implemented to meet the set goals for 2020.

Technical Approach

All available data are used to get current year estimates and future year estimates on FP2020 key indicators. The four rounds of DHS (2000, 2005, 2011 and 2014) and two rounds of PMA2020 surveys (2014 and 2015) were used to inform the estimates. The FPET doesn't allow entering of two or more values obtained from different sources for same key indicators for a recent year. Thereby, routine service statistics data were not used help FPET project the estimates since the country had survey, PMA2020, conducted in 2015.

Data management was conducted using FPET data preparation tool, which has four rounds of DHS and two rounds of PMA 2020 surveys already pre-loaded in it. All the values entered in the FPET data preparation tool were checked for being correct and the information/estimates from past population-based surveys were exported in suitable file format. Estimates for key indicators were projected using FPET, based on the exported data file.

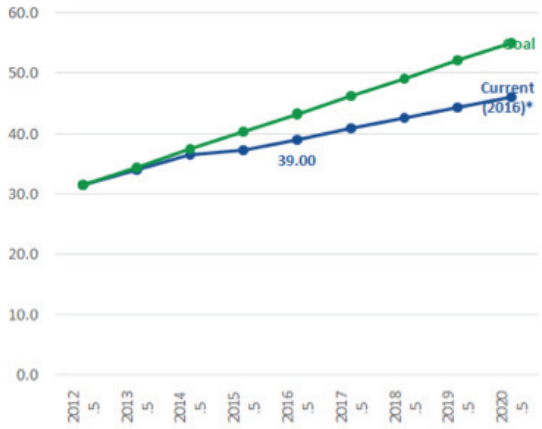
1. Maternal and child health directorate
2. Policy and planning directorate, MOH

Assessment findings

Comparing country goal and current progress: what growth is possible?

Ethiopia has set a goal of reaching a married women CPR of 55% by 2020. It is estimated that the 2016 married women CPR is 39.0%. The graph on the left shows the current CPR trajectory compared to 2020 goal, and the graph on the right shows average annual CPR Growth. While higher rates of growth at this mCPR level are possible, achieving 4% per year seems less likely.

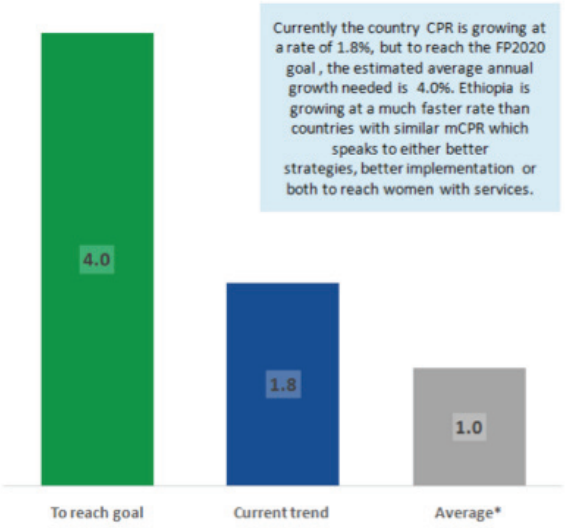
Current Progress on CPR (Married women): 2012-2020



We estimate that in 2016, all methods CPR for married women is 39.0% while our HSTP goal requires a CPR of 43.25 for married women. If Ethiopia continues at the current trend we would expect CPR in 2020 to reach 46.1% which is well below the goal of 55% by 2020, as shown in the graph.834

**Current is based on 2016 FPET run*

Average Annual Growth in CPR (Married women)

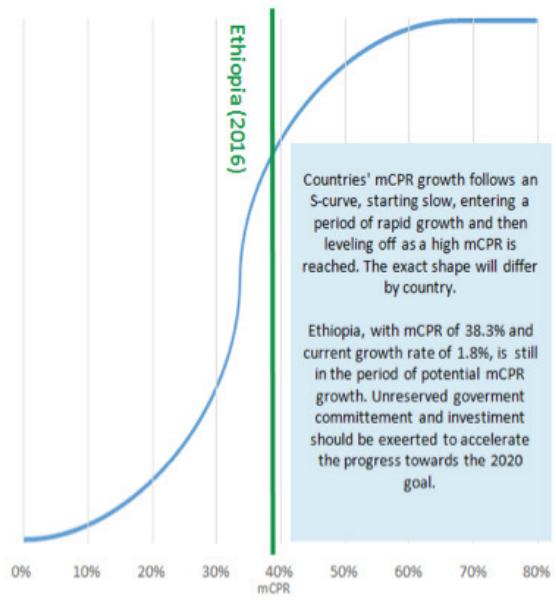


Currently the country CPR is growing at a rate of 1.8%, but to reach the FP2020 goal , the estimated average annual growth needed is 4.0%. Ethiopia is growing at a much faster rate than countries with similar mCPR which speaks to either better strategies, better implementation or both to reach women with services.

***Average for countries at a similar mCPR*

Putting our mCPR into context

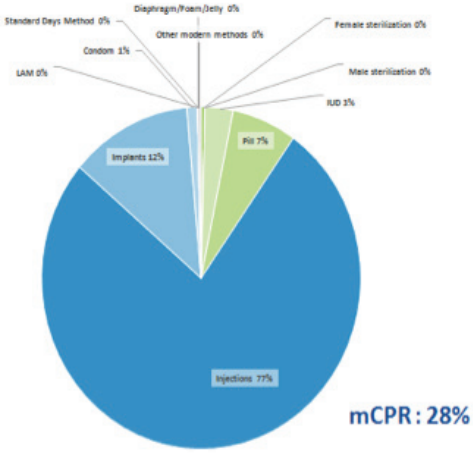
Putting our mCPR (MW) onto the S-Curve



Countries' mCPR growth follows an S-curve, starting slow, entering a period of rapid growth and then leveling off as a high mCPR is reached. The exact shape will differ by country.

Ethiopia, with mCPR of 38.3% and current growth rate of 1.8%, is still in the period of potential mCPR growth. Unreserved goverment committement and investiment should be exeerted to accelerate the progress towards the 2020 goal.

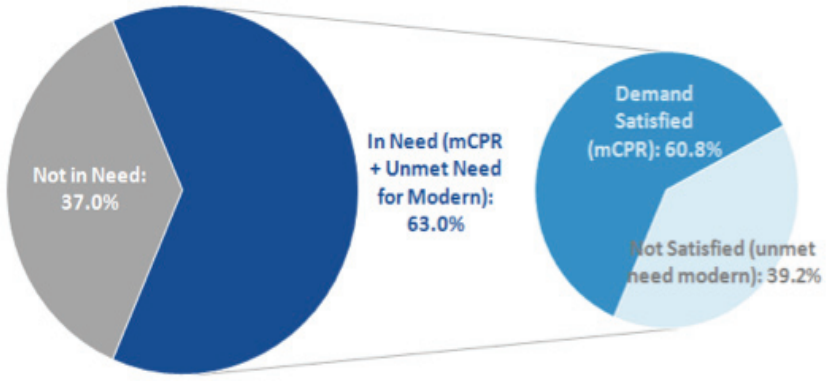
mCPR Method Mix



Ethiopia's method mix continues to be dominated by a single method, injectables. The share of injectables has even grown since 2011 along with IUDs while the share of pills has declined slightly and share of implant showed almost no improvement. Female sterilization has declined substantially as well. The growing dominance of a single method will require further analysis to understand if it is being driven by supply or demand factors but notheless represents an opposite direction from one typically expected with increasing use.

Based on mCPR : 28% 2014 (All women women)

Are We Meeting Demand for Modern Contraceptives?



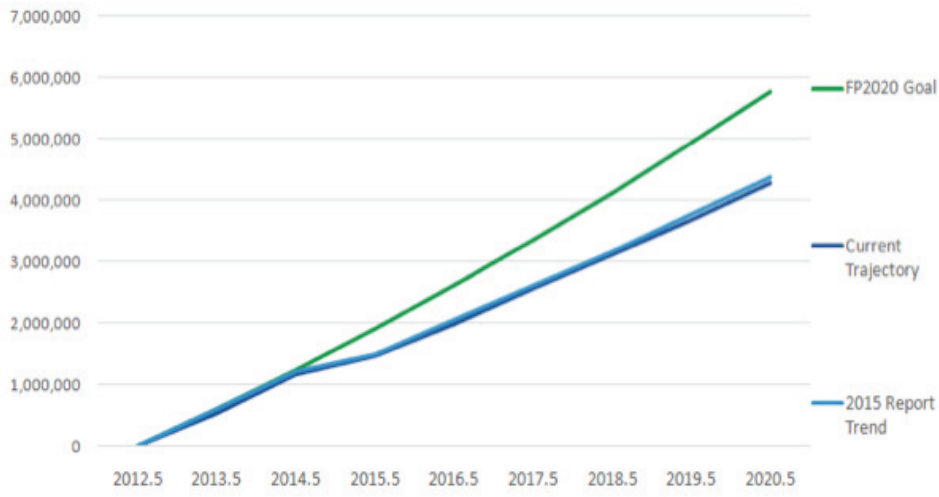
In 2016, it is estimated that 63% of married women had demand for modern contraception methods. Of these, about 61 percent had their demand for modern contraceptives satisfied and slightly more than a third had unsatified demand for modern methods. Investment in increasing access to family planning will support growth in mCPR by providing those women whose need is not currently satisfied with the opportunity to use a modern method

Putting our mCPR into context: Additional Users

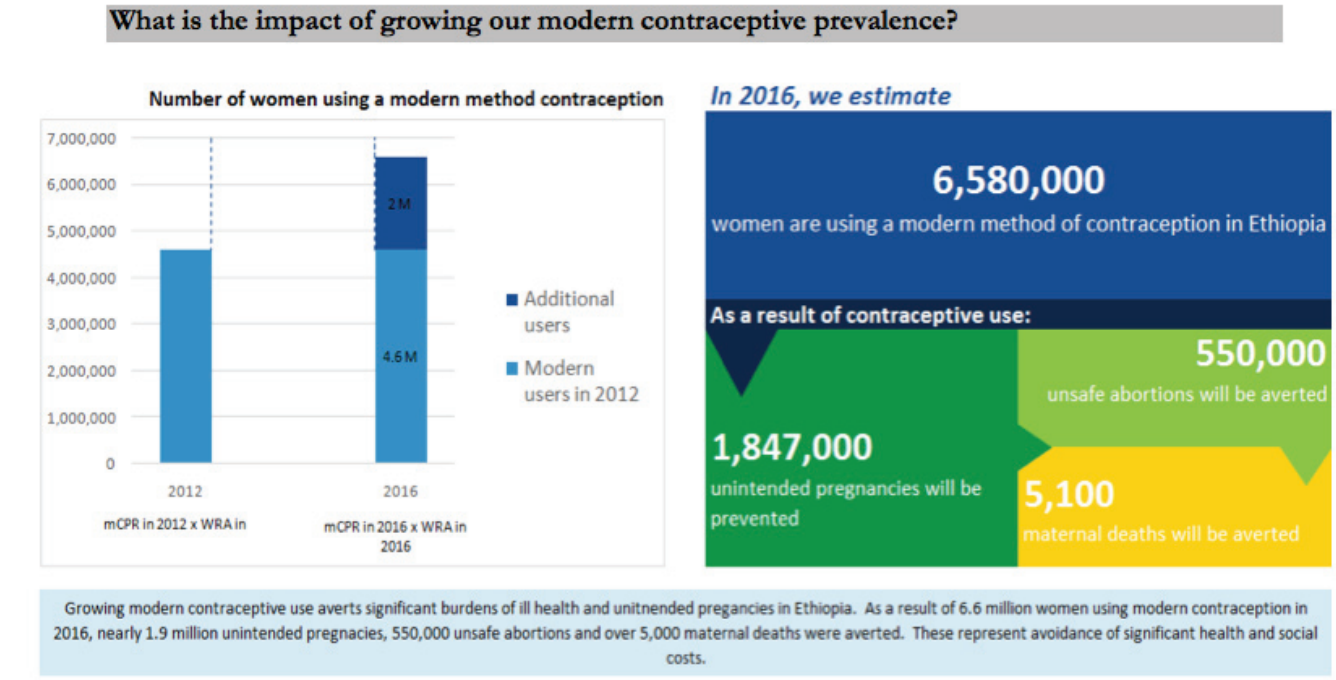
Additional users per each % point increase in mCPR (all women)

In Ethiopia, a 1% point increase in 2016 equates to **249,507** additional modern FP users

Current Progress on Additional Users: 2012-2020



This graph shows Ethiopia's trajectory of additional users compared with its FP2020 goal for additional users. In 2016, we estimate that Ethiopia had 2.6 million additional users compared with 2.6 million additional users needed in 2016 to achieve the 2020 goal. At current trends, Ethiopia will have 4.3 million additional users in 2020 compared with the 5.8 million additional users needed to reach 55% CPR by 2020. Additional users are based on modern CPR for **all women**, which FP2020 adopted to highlight that monitoring access for unmarried women is important.



Recommendation

Ethiopia's CPR is 4.3% points short of the 2016 target, 43.3%. Hence, the following are recommended to be implemented to register improvement and reach its 2020 goal.

- Unreserved government commitment and investment should be exerted to accelerate the progress towards the FP 2020 goal.
- At the current ideal number of children, there is latent demand. So, Ethiopia's CPR can grow more with improvements in supply environment but demand interventions should be reviewed for select regions

Risk factors for chronic non-communicable diseases and prevalence of selected NCDs in Ethiopia

Abebe Bekele[1], Kassahun Amenu[1], Theodros Getachew[1], Atkure Defar[1],Habtamu Teklie[1],Terefe Gelibo[1],Mekonnen Tadesse[1], Alemayehu Bekele[2],Yeweyenharg Feleke[3], Asmamaw Bezabeh[4,] Mussie G/Michael[4], Feyissa Challa[1],Tefera Tadele[1],Abebech Asmamaw[1], Yabestse Girma[1],Tsehay Assefa[1],Mulugeta Guta[1], Yewondwossen Tadesse[3], Dejuma Yadeta[3], Tedla Kebede[3], Yoseph Mamo[5], Solomon Teferra[3],Yibeltal Assefa[1], and Amha Kebede[1]

Introduction

As the leading cause of death globally, non-communicable diseases (NCDs) particularly cardiovascular diseases (CVDs), diabetes, chronic respiratory diseases and cancer were responsible for 38 million (68%) of the World's 56 million deaths in 2012. Almost three quarters of all NCD deaths (28 million), and the majority of premature deaths (82%) occur in low-and middle-income countries (LMIC). It is estimated that the cumulative economic losses in LMIC between 2011 and 2025 will be US$7 trillion. This figure exceeds the annual US$ 11.2 billion cost of implementing a set of high-impact interventions to reduce NCD burden. Non -communicable diseases have been a neglected area in many low–income countries, due to the heavy burden of communicable diseases, and other competing priorities. There is scarcity of published studies describing the burden of major non-communicable disease in sub –Saharan Africa. Likewise, except very few studies in some pocket areas, there was no representative NCD risk factor survey undertaken in Ethiopia. As the trend of NCD burden is increasing in the health facilities of the country, the need to conduct a comprehensive survey has been given priority by FMOH. The Ethiopia NCD STEPS survey provides baseline data of risk factors for non-communicable diseases (NCDs). The survey was conducted with the objectives of assessing behavioural and biological risk factors for major chronic non-communicable diseases (NCDs) and prevalence of selected NCDs to establish baseline information for policy and program development.

Methods

A community based cross sectional study was conducted in accordance to the WHO a step-wise approach to the surveillance of NCD risk factors. The survey was carried out between April and June 2015. The data collection processes included three steps Step 1:This step comprised a questionnaire to gather demographic and behavioural characteristics of the study population, Step 2: Physical measurement was done to build on the core data in step 1 and to determine proportion of the study population with raised blood pressure, overweight and obesity, and Step 3: Biochemical measurements were undertaken to build on the core data in step 1 and step 2 to measure proportion of the study population with diabetes, raised blood glucose and abnormal lipid level. In addition to core and expanded modules, some optional modules were included in each of the three steps. Data were collected digitally using personal digital assistants (PDAs) from which data were transferred to central server using internet file streaming system (IFSS) and exported to Microsoft Excel on personal computers. Data was cleaned using SPSS and Stata and analysed using Epi Info version 3.5.4. Descriptive weighted analysis was done along with complex sample analysis, and bivariate and multivariate analysis was conducted for diabetes and hypertension.

Results

Totally, 9,801 study participants age 15 -69 years were involved in the survey and the response rate was 95.5%. Of the total 9,801 respondents of STEPs survey, about six in ten were women. Regarding education level by age, the younger group was more likely educated compared with respondents in the older age group. Of all the respondents 49.4 % had no formal education, while 28.8 % attended formal education with less than primary level. Majority

1. Ethiopian Public Health Institute, Addis Ababa Ethiopia.
2. Ethiopian Public Health Association, Addis Ababa Ethiopia.
3. Addis Ababa Universities, Addis Ababa, Ethiopia
4. Federal Ministry of Health, Addis Ababa, Ethiopia
5. Jimma University, Jimma, Ethiopia

of the respondents (67.3 %) were currently married; nearly 10% were employed; 71% of study participants reported their annual income less than 12,000 Birr. The data collected on behavioural characteristics showed that about 4.2% of the survey participants were current smokers (men 7.3%, women 0.4%). Among all current smokers of both sexes, 82.8% of them smoked tobacco daily. Ten percent were exposed to second-hand smoke at home whereas 13% in the workplace. With regard to alcohol consumption, nearly 41% had consumed alcohol during the past 30 days prior to the survey. The proportion of men who consumed alcohol (46.6%), was higher than that of women (33.5%).The average number of days per week on which fruit and vegetable consumed was 0.9 and 1.5, respectively. More than ninety-eight percent of the population consumed fewer than five servings of fruit and vegetables daily. About six percent of the study population did not meet WHO recommendations on physical activity for health. Individuals in rural areas were found to be more exposed to physical activity than urban residents. About 16% of respondents were current khat chewers. Regarding injury, about 3% of respondents involved in a road traffic crash as a passenger, driver, or pedestrian during the past 12 months preceding the survey. Prevalence of raised blood pressure (SBP > 140 and/or DBP > 90 mmHg) among Ethiopian adult population was 15.6%, with no difference by sex. Six percent of study participants had raised blood glucose and diabetes. Mean body mass index (BMI) was 20.4 (20.1 for men and 20.7 for women). Few individuals (6.3%) were overweight or obese, with a higher prevalence of overweight in urban residents. The percentage of women respondents' age 30–49 years that had ever undergone screening for cervical cancer was 2.65%.

Most of the behavioural risk factors, such as tobacco use, alcohol consumption, khat consumption, were more prevalent among men compared to women. Conversely, the biological risk factors, such as obesity, impaired fasting glycaemia, and raised total cholesterol were more prevalent among women than men. The demographic and behavioural risk factors such as ; sex of respondent, age group, area of residence, not engaged in vigorous physical activity, alcohol consumption , not doing vigorous recreational activities, and adding salt to food had significant association with raised blood pressure. In addition, the demographic and behavioural factors (age group, area of residence, alcohol consumption , adding salt to food, not engaged in vigorous physical activity, chewing chat) and biological risk factors (raised BP or currently on medication) were significantly associated ($p<0.001$) with raised blood glucose. In this survey, 95% of the study population were found with 1-2 NCD risk factors and a forecast of the disease burden prevailing in urban population.

Recommendations

Modifying lifestyle such as avoiding consumption of alcohol, limiting salt intake, and avoiding chewing khat are highly recommended to decrease the risk of developing raised blood pressure and blood glucose level. In order to promote interventions for prevention and control of NCDs and thereby reduce the risks associated with it, a comprehensive approach is needed which will involve all sectors including Ministries of Health, Education, Agriculture, Trade, Youth Women and Children Affair, Sport Commission, Mass Media, among others. The attention of other health development partners is also required in the fight against NCDs in Ethiopia. Strengthening the capacity of health facilities is also recommended to offer the service related to NCDs and ensures that the health system adequately monitors compliance with national standards. Furthermore, strategies of surveillance system for risk factors need to be established to monitor and measure changes in NCDs burden over time.

Risky Sexual Behaviors among Adolescents and Youths in Ethiopia: Evidences for Policy

National Research Advisory Council of RMNCAH-N July, 2016

Summary

In Ethiopia, young people of 10-25 years constituted about 35% of the population during the last census. Estimates suggest that while representing 25% of the sexually experienced population, 15–24 year olds acquire nearly one-half of all new STIs. Even though there were different studies on young people sexual behavior in Ethiopia, there was no systematic review which can inform policy decisions. The policy brief was conducted based on the synthesis of studies in Ethiopia in the last 10 years and published in peer-reviewed journals. Considerable proportion of young people are engaged in risky sexual behavior: sexual initiation report was ranged from 19% to 64.8% (mean age at initiation: 15.3 to 17.7 years); Multiple sexual partnership status among sexually active young people ranged from 21.3 to 54.6%; Consistent condom use was reported only by about 10% to 43.2% of young people and condom use during last sexual intercourse was ranged from 31.9% to 69.2 %. Risky sexual behavior.

was more common among young people who: have low education attendance or low college aspiration, used alcohol/ khat; watched pornographic films; lived away from family home; didn't discuss about sexual issues with their parents; whose parents were with lower educational status and whose family connectedness was low. Thus, implementing measures which help to delay sexual initiation and reduce risky sexual behaviors of young people's by addressing young people themselves, parents and school is of paramount importance using standardized minimum packages of intervention.

Key words: Adolescents, youth, Risky sexual behavior, Policy implication, Ethiopia

Introduction

In Ethiopia, young people of 10-25 years constituted about 35% of the population in last census [1]. The age of onset of sexual intercourse has been declining in both industrialized and developing countries and it is common to begin having intimate relationships and become sexually active during adolescence. Sexually active adolescents are at higher risk for acquiring STIs than are adults for behavioral, biological, and cultural reasons. Estimates suggest that while representing 25% of the sexually experienced population, 15–24 year olds acquire nearly one-half of all new STIs [2-4]. Some studies in Ethiopia revealed that sexual debut during adolescence is associated with the risk of being HIV positive at later ages and that secondary school adolescents have the highest HIV positive proportion among the youth age groups [5, 6].

Even though there were different pocket studies on young people's risky sexual behavior in Ethiopia, there is limited systematic review on the issue. This policy brief summarizes the status of sexual risky behaviors of young people in Ethiopia based on systematic review of relevant studies. It is intended to inform policy makers, young people sexual health service providers in their effort to design and implement feasible and effective sexual risky behavior reduction interventions for adolescents and youths in Ethiopia.

Approaches and Results

The selection and screening of articles for review was guided by the PRISMA checklist, designed to improve the reporting of systematic reviews in health [7]. We included studies conducted in Ethiopia in the last 10 years and published in peer-reviewed journals during the period. At the beginning, studies were searched by predetermined terms like risky sexual behavior, adolescents, and young people in Ethiopia. Then after, methodological and analysis quality were assessed based on: required sample size (at least 384 for single population and twice for double population), conducting adjusted analysis and manual check of correctness of Crude analysis for selected predictors were employed to decide articles to be included into the final review.

Sexual experience: Studies have assessed sexual experiences of young people from high school to college or university levels students and out of school youths. The sexual experience reported for high school students ranged from 13 to 44.6% [8-16]; for College/ University students ranged from 28 to 78% [17-19]. The reported sexual experience for studies involving out of school or both in and out of school ranged from 23 to 78.6% with only one of five studies reporting less than 50% [20-24].

Risky sexual behavior: Risky sexual behavior was defined consisting one or more of the following: sex with non-regular partner/ sex worker, having multiple sexual partnership, inconsistent condom use, sexual debut before 18 years, and nonconsensual sex. The proportion of sexual initiation report ranged from 19% to 64.8% with mean age at sexual initiation, ranged from 15.3 to 17.7 years [15, 16, 20, 24] and in one of the study, 27% of out of school females from urban areas initiated sex before 15 years [23]. Multiple sexual partnership status among sexually active young people ranged from 21.3 to 54.6 % [8, 10, 18, 19, 21, 22]. Thirty three percent and 5.5% of sexually active young people had sex with sex workers or non-regular partners [10, 20]. Consistent condom use status ranged from about 10% to 43.2% with only three studies reporting consistent use of above 30% [8, 10, 16, 17, 19, 20, 25]. Condom use during last sexual intercourse was ranged from 31.9% to 69.19 %, [19, 21, 22].

Predictors of Risky Sexual Behavior: In studies, which involved both male and female, male were from 1.13 to 4.1 times more likely to have risky sexual behavior [17, 20, 24, 26]; while in other studies females were from 2.9 to 17.17 times more likely to have risky sexual behavior compared to males [9, 18, 27]. Higher age was associated with increased risky sexual behavior 1.8 to 3.5 times more [19, 22, 26] and in other studies lower ages with increased risky sexual behavior 1.7 to 2.82 times more [24, 27]. Lower educational attendance or low college aspiration was associated with increased risky sexual behavior 2.35 to 4.2 times more [20, 24, and 27]. Likewise female domestic workers and who were socially excluded were about 2 times more likely to suffer from early nonconsensual sexual initiation [23].

Alcohol drinking status was strongly and consistently associated with risky sexual behavior 2.02 to 9.1 times more [8, 10, 18-20, 22, 24-26]. Khat chewing status was also consistently associated with risky sexual behavior 1.33 to 4.98 times more [8, 20-22, 25]. Watching pornographic films and/ or attending nightclubs were associated 2.5 to 7.63 times more [17, 18, 22]; and when watching is done below 18 years ages, risky sexual behavior was 24.13 times more [24].

Living away from family home increased risky sexual behavior 1.6 to 3.22 times more [8, 9, and 27]. Young people of an illiterate and read/write educational status of parents were more likely to have risky sexual behavior 4.1 to 14 times more [8, 27]; and not discussing with parents about sexual issues increased risky sexual behavior from about 2 to 2.5 times more [24, 25]. Similarly, high family connectedness was associated with decreased risky sexual behavior with 6% to 28% less [8, 21].

Conclusions

Adolescents and youths in Ethiopia were engaged in a considerable risky sexual behavior: early sexual initiation (mean at initiation 15.3 to 17.7 years with initiation also reported below 15 years); multiple sexual partnership (21.3 to 54.6%) and unprotected sex (consistent condom use: 10 to 43.2% and condom use during last sexual intercourse: 31.9% to 69.2%). Risky sexual behavior was more common among young people who: have lower educational attendance or lower college aspiration; used alcohol/khat; watched pornographic films; lived away from family home; didn't discuss about sexual issues with their parents; whose parents were with lower educational status and whose family connectedness was low. Female domestic workers were at heightened risk of early nonconsensual sex; however, lower age and female gender were associated with both increased and decreased other risky sexual behaviors in different studies.

Policy implications and recommendations

- Considerable proportions of young people initiate sexual activity early with mean age at initiation being less than 18 years of age. However, most of the studies didn't differentiate whether the sexual initiation occurred premarital or within marital union, and whether the initiation was consensual or forced or in exchange for favor or gift. Furthermore, the characteristic of first sexual partner was not reported in all of the studies; whether the first sexual partner is spouse, friend, stranger, relative and etc. It is obvious that age at sexual initiation is of public health importance as early initiation while young people are physically and emotionally growing is likely to be nonconsensual, less protected against unintended pregnancy and infection and associated with large number of lifetime sexual partners. Thus, implementing measures which help to delay sexual initiation, and further investigation to explore about the circumstances of sexual imitation and characteristics of first sexual partner is crucial.
- Risky sexual behavior of young people was influenced by both individual and parental factors. This is a verification that there is a need to address young people's sexual health through an ecological approach by addressing young peoples, parents and the broader societal level factors. It is obvious that young people are naturally a very healthy segments of any population; but they suffer from avoidable health problems mainly due to lifestyle choices of which risky sexual behavior is the major one. Thus, to ensure sexually healthy adolescents and young people: providing developmentally appropriate information and skills for young people; enhancing the parent's parenting skills and ensuring safe and supportive environment for them is indispensable. One of the key issues in creating safe and supportive environment for young people of these days is, addressing the media model of sexual behavior among others. Media, models sexual issues as a means of gratification and some by victimizing females most of the time. So, there is a need to address this as well, regulating the media model of sexual issues to enable it positively contribute to young people's sexual health as one key component of the ecological approach to healthy adolescent and youth sexual development.
- Education attendance may inevitably partially or totally move some young people away from their family home. Moving away from family home was one of the factor which increases risky sexual behavior, while education attendance have some protective effect from risky sexual behavior. School based sexual health intervention for young people offers a readily available opportunity as large numbers of them can easily be reached by their teachers or even by health professionals. Furthermore, as most of today's parents of young people are traditional ones, strengthening school-based sexual health interventions could be a best alternative even to reach these parents themselves. Thus, school-based sexual health intervention seems to be the best entry strategy not only for today's young people sexual health but also to invest into the health of future generations. Therefore, both ministry of health and ministry of education should work together to systematically address the sexual health of large number of young people in the school using standardized minimum packages of intervention.
- Finally, the hard to reach young people like female domestic workers, street youth and out of school youth need specially designed sexual health intervention. And also there is a need to repeat similar review or nationally representative primary survey to explore the status of unintended pregnancy, sexually transmitted infection including HIV and etc. among young people.

Acknowledgements

We are grateful to Federal Ministry of Health in general and Maternal and Child Health Directorate in particular for taking the leading role by initiating the need of synthesizing available information from Ethiopia to inform policy decisions. Furthermore, we are grateful to all authors of the included studies for doing research and publishing.

References

1. Federal Democratic Republic of Ethiopia Population Census Comission, Summary and Statistical Report of the 2007 Population and Housing Census. Population Size by Age and Sex. 2008.
2. MacKay AP, F.L., Duran CR,, Adolescent Health Chartbook. Health,United States, 2000. Hyattsville, Maryland: National Center for Health Statistics, 2000.
3. Martinez G, C.C., Abma JC,, Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010 National Survey of Family Growth. National Center for Health Statistics. Vital Health Stat 23(31). 2011.
4. WHO Regional Office for Europe, Sexual health: why pay attention to this issue during adolescence? Fact sheet. 2012.
5. Central Statistical Agency [Ethiopia] and ICF International, Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA:. Central Statistical Agency and ICF International., 2012.
6. Andargie, G., et al., Low prevalence of HIV infection, and knowledge, attitude and practice on HIV/AIDS among high school students in Gondar, Northwest Ethiopia. Ethiop,J.Health Dev., 2007. 21(2): p. 179 - 182.
7. Moher D. et al., Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009. 6(7).
8. Fentahun N and Mamo A, RISKY SEXUAL BEHAVIORS AND ASSOCIATED FACTORS AMONG MALE AND FEMALE STUDENTS IN JIMMA ZONE PREPARATORY SCHOOLS, SOUTH WEST ETHIOPIA: COMPARATIVE STUDY. Ethiop J Health Sci., 2014. 24(1).
9. Fekadu and Gebrethadkan, Risky sexual behavior and associated factors among grade 9-12 students in Humera secondary school, western zone of Tigray, NW Ethiopia, 2014. Science Journal of Public Health, 2014. 2(5)
10. Mulatu Agajie et al, Risky Sexual Behavior and Associated Factors Among High School Youth in Pawe Woreda Benishangul Gumuz Region. Science Journal of Clinical Medicine, 2015. 4(4).
11. Seme A and Wirtu D., Premarital Sexual Practice among School Adolescents in Nekemte Town, East Wollega. Ethiop,J.Health Dev., 2008. 22(2): p. 167 - 173
12. Oljira et al, Pre-marital sexual debut and its associated factors among in-school adolescents in eastern Ethiopia. BMC Public Health, 2012. 12(375).
13. Mulugeta and Berhane, Factors associated with pre-marital sexual debut among unmarried high school female students in bahir Dar town, Ethiopia: cross-sectional study. Reproductive Health, 2014. 11(40)
14. Gebre Yesus and Fantahun., Assessing communication on sexual and reproductive health issues among high school students with their parents, Bullen Woreda, Benishangul Gumuz Region, North West Ethiopia. Ethiop. J. Health Dev., 2010. 24(2).
15. Ayalew et al., Adolescent - parent communication on sexual and reproductive health issues among high school students in Dire Dawa, Eastern Ethiopia: a cross sectional study. Reproductive Health, 2014. 11(77).
16. Bogale and Seme, Premarital sexual practices and its predictors among in-school youths of shendi town, west Gojjam zone, North Western Ethiopia. Reproductive Health, 2014. 11(49).
17. Tariku Dingeta et al, Patterns of sexual risk behavior among undergraduate university students in Ethiopia: a cross-sectional study Pan African Medical Journal, 2012. 12(33).
18. Samuel and Angamo, SUBSTANCE USE AND SEXUAL RISK BEHAVIOR AND FACTORS ASSOCIATED WITH HIV TRANSMISSION IN SOUTHERN ETHIOPIA international Journal of Pharmacetucal sciences and research, 2012. 3(4).
19. Shiferaw et al., Perception of risk of HIV and sexual risk behaviors among University students: implication for planning interventions. BMC Research Notes, 2014. 7(162).
20. Alemu H et al., Factors Predisposing Out-of-School Youths to HIV/AIDS-related Risky Sexual Behaviour in Northwest Ethiopia Journal of Health, Population and Nutrition 2007. 25(3).
21. Yadeta Dessie et al, High parental monitoring prevents adolescents from engaging in risky sexual practices in Harar, Ethiopia. Global Health Action, 2014. 7(25754).
22. Tadesse G and Yakob B, Risky Sexual Behaviors among Female Youth in Tiss Abay, a Semi-Urban Area of the Amhara Region, Ethiopia. PLoS ONE, 2015. 10(3).
23. Erulkar A and Ferede A., Social Exclusion and Early or Unwanted Sexual Initiation among Poor Urban Females in Ethiopia International Perspectives on Sexual and Reproductive Health 2009. 35(4).
24. Mazengia F and Worku A., Age at sexual initiation and factors associated with it among youths in North East Ethiopia. Ethiop. J. Health Dev., 2009. 23(2): p. 154 - 162
25. Soboka and Kejela, Assessment of Risky Sexual Behaviors among Arba Minch University Students, Arba Minch Town, Snnpr, Ethiopia. Journal of Child & Adolescent Behavior, 2015. 3(2).
26. Kebede et al, Khat and alcohol use and risky sex behaviour among in-school and out-of-school youth in Ethiopia. BMC Public Health, 2005. 5(109).
27. Cherie A and Berhane Y, Oral and anal sex practices among high school youth in Addis Ababa, Ethiopia. BMC Public Health, 2012. 12(5).

Senior Midwife Mentoring: Assessing Its Effectiveness In Ethiopia

MCH Directorate

Introduction

The Ethiopian Ministry of Health (MOH) in its program entitled "Improving Maternal and Newborn Health Care in Ethiopia" collaborates with the Children's Investment Fund Foundation (CIFF) to support 100 woredas in Amhara, Tigray, SNNP and Oromia regions. The primary goal of the program is to tackle high rates of maternal and newborn morbidity and mortality in the selected regions, identified based on their overall low performance in maternal and child health (MCH), their remote geographic location, and lack of support from partner organizations working in MCH.The core of the facility-based actions is to ensure that:

- Each facility has well-trained and well-supervised health care providers;
- Quality of services is improved, standard procedures followed; and
- Service provision is supported by consistent and efficient utilization of relevant checklists.

The Mentorship Approach

Since March 2014, MOH piloted the midwife mentorship program in 25 of the selected 100 woredas. Experienced and qualified senior midwives were recruited by the MOH, with one midwife mentor assigned to each woreda. Each woreda has 3 to 11 health centers covering a population of up to 100,000 or more.

Evaluation Of The Program

One year into the placement of the the Senior Midwife Mentors (SMMs) in March 2015, the effectiveness of the model in fulfilling its objectives was studied. A sample of eight woredas from the 25 implementation woredas was selected and compared with four non-implementation woredas with comparable geographic locations. The effectiveness was evaluated using quantitative and qualitative approaches. JaRco Consulting led the evaluation.

Findings From The Evaluation

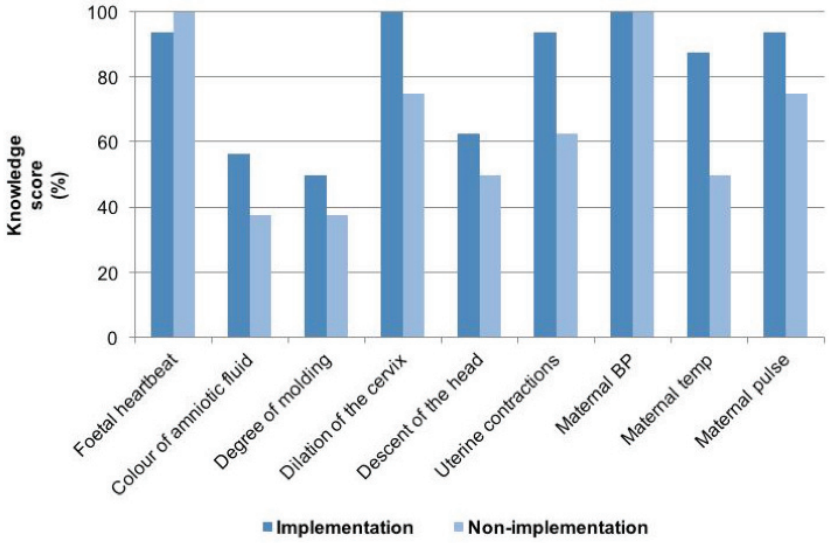
Health Care Providers' Knowledge:

Knowledge assessment in core aspects of maternal and **child health** including antenatal care (ANC), labour and delivery (L&D), postnatal care (PNC) and child health showed health care providers from the implementation woredas were superior compared to those in non-implementation woredas. Out of the 35 knowledge areas assessed, implementation woredas scored higher by a sizable margin in 21 of them. One of the mentees in a labor and delivery unit in Boricha, SNNPR explained the knowledge gained as follows.

"Before the placement of the Senior Midwife Mentor, I was hesitant to implement all the concepts I got from the BEmONC training, but after the placement, I started to implement all the concepts with the support of the Mentor."

The findings of the study show that the Senior Midwives Mentorship (SMM) model appears to have been effective in building the capacity of health workers to provide MNH services, improving the quality of service provision, and the continuum of care. A zonal health representative in Amahara region explained the benefits of the mentorship program as follows. "Before the mentoring, some of our health centres did not give delivery services. But now the health centers are the more preferred choice for the community than hospitals. The Midwife Mentor contribution towards home-free delivery is high."

The results are encouraging given that the implementing health centers have less experienced staff, fewer degree holders and fewer people who had been in their current position for over 24 months compared to the non-implementation woredas



L&D knowledge: Health providers' knowledge on what to observe in a labouring woman (based on 80 assessments in 16 implementation health centres and 40 assessments in 8 non-implementation health centres)

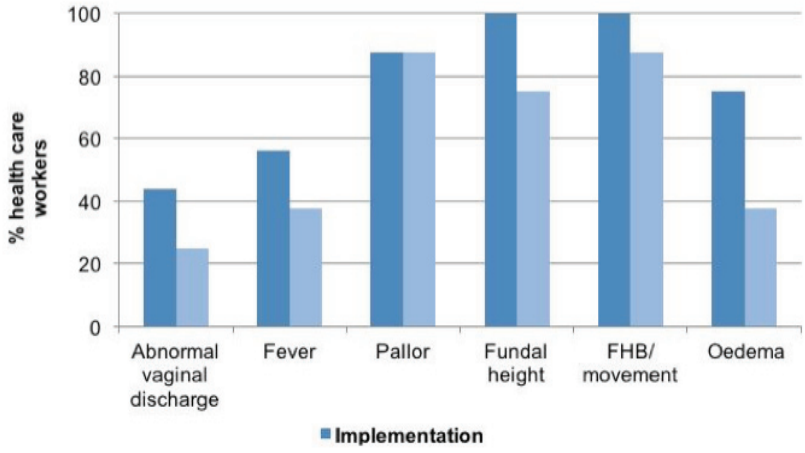
Use Of Partograph

Proper use of partograph to follow a labouring woman's progress is believed to contribute positively to the quality of care she receives. In this study, 67% of health care providers in the implementation woredas were observed to vbe using the partograph consistently and accurately compared to only 37% in the non-implementation woredas.

Provision Of Newborn Care

Quality postnatal care is important to decrease the high rate of newborn morbidity and mortality in the immediate postnatal period. The evaluation found that 64% and 71% of healthcare providers in the implementation woredas checked for signs of umbilical infection and weighed the newborn, as opposed to 50% and 63% in the non-implementation woredas.

ANC practise: Percentage of health providers who checked/ asked about key signs and symptoms during ANC (based on 80 assessments in 16 implementation health centres and 40 assessments in 8 non-implementation health centres)



Challenges Identified

As a pilot program, it is instrumental to accurately identify the challenges faced so that appropriate measures are in place for the scale up to the remaining 75 woredas and beyond.

Transportation

Each woreda consists of 3-11 health centers and the senior midwife is responsible for covering all the health centers in her assigned woreda. Due to distance between the health centers, some of the mentors were faced with the challenge of finding vehicles to reach their health centers. It is suggested that the woreda health office make the necessary accommodation to ease the transportation challenges faced by the mentors.

Availability Of Checklists

The mentors voiced challenges accessing forms due to lack of printers and copy machines in their respective woreda . Making an adequate number of the necessary forms available will be helpful in assuring they are consistently used.

High Workload

The senior midwives deployed at woredas with the highest number of health centers stated having challenges of high workload, potentially compromising the quality of mentorship. It is suggested that those with highest patient population have more than one mentor assigned to help improve the quality of mentorship provided.

Communication With Woreda Heads

The mentors voiced lack of clarity on whom to report at the woreda level, creating a gap in communication with woreda administration. Written guidance on the reporting line will help avert such challenges in the scale up.

The Future Of The Mentorship Program...

Lessons from the pilot woredas have informed changes to the SMM program, now being rolled out to the remaining 75 project woredas and evaluated. A clinical mentorship guide was prepared to support a consistent approach to the mentoring and supportive supervision process. The MOH plans to further roll out this mentorship program throughout the country, with a special focus on areas where maternal and newborn health outcomes are below the national average.

Building on these lessons, the MOH is also introducing the catchment*-based mentorship approach, where senior health care providers (preferably midwives with strong exposure and experience on the management of obstetric and newborn complications) from hospitals or selected high load/best performing health centres will provide clinical mentorship to health centres within their catchment.

Catchment-based mentorship is fully integrated within the FMOH sector planning, coordination and management at all levels of the health structure. This approach is expected to sustain the outcomes and goals achieved in target woredas through health care provider capacity building, and effective and sustainable referral linkage.

Service Availability and Readiness for Diabetes at Health Facilities in Ethiopia

Abebe Bekele[1], Theodros Getachew[1*], Kassahun Amenu[1*], Atkure Defar[1], Mekonnen Taddesse[1], Habtamu Teklie[1], Terefe Gelibo[1*], Yabetse Girma[1], Yibeltal Assefa[1], Amha Kebede[1]*

Summary

Background: Non-communicable diseases (NCDs) are the leading causes of death globally in 2012, killing more people each year than all other causes combined and available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. Of these deaths, an estimated 1.5 million, or 4% were due to diabetes. The annual number of deaths due to infectious disease is projected to decline while the total number of NCD deaths is projected to increase to 52 million by 2030. NCD-related deaths could be averted through well-understood, cost-effective and feasible interventions. No set of indicators is available for measuring constraints associated with diabetes service. Without consistent and accurate information on the availability of services, it is difficult for programmers or decision makers to evaluate the performance of health facilities that may guide them to take corrective action. Data on the preparedness of health facilities to cope with the rising epidemic of diadetes are insufficient. Therefore, this survey was aimed to assess service availability and readiness for diabetes in Ethiopia.

Methods: The data used in this study came from the 2014 Ethiopian service provision assessment survey which was conducted from 10 March to 25 July, 2014. There were a total of 873 health facilities included in this particular study. The facility inventory questionnaire collected information on whether the providers in the facility diagnose, prescribe treatment for, or manage patients with diabetes. Information about the readiness of facilities to provide good-quality client services on diabetes, including the availability of guidelines, trained staff, basic medical equipment, and essential medicines were also collected. 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 and descriptive analysis was performed using CSPro tabulation.

Findings and interpretation: Despite the high burden of mortality and morbidity from diabetes the responses in Ethiopia have not been comprehensive enough to address the existing problem. The findings suggest that availability of treatment services, guidelines for diagnosis and management, trained staff and medicines for diabetes were found to be inadequate. But the availability of the basic medical equipment necessary for the diagnosis and management of diabetes appears to be adequate in Ethiopia. However, in order to strengthen health system: provision of evidence-based national guidelines, protocols or standards for managing diabetes, training of providers and availing essential medicines are urgently needed.28.8 % attended formal education with less than primary level.

* These authors contributed equally to this work AB: abebe1277belay@gmail.comJimma University, Jimma, Ethiopia

1. Ethiopian Public Health Institute, Addis Ababa Ethiopia

Introduction

Non-communicable diseases (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined. Contrary to popular opinion, available data demonstrate that nearly 80% of NCD deaths occur in low- and middle-income countries. Changes in the population structure and lifestyle result in the growing burden of chronic non communicable diseases like diabetes, which characterize the epidemiological transition. The transition takes place at different paces in different parts of the world. The developed world has taken over a century to complete the transition, while the rapidly developing countries of Asia and Latin America are undergoing a swift transition. In contrast, many sub-Saharan African countries are said to be experiencing a delayed transition(1).

The burden of chronic diseases is increasing in low- and middle-income countries, while it remains stable in high-income countries. Almost 50 % of the adult disease burden in low- and middle income countries is now attributable to chronic diseases, and about 30 % of all deaths in these countries occur at ages 15 to 59, compared with 15 % in high-income countries(2).

In a recent facility based study done in Ethiopia, of all the patients who were attending outpatient referral clinics of Addis Ababa Hospitals, 20% were patients with diabetes (3). The current high rates of premature diabetes death are unacceptable because very cost-effective interventions are available to prevent it. The target to reduce diabetes aims to improve the coverage of drug treatment and counselling to prevent diabetes in people with raised diabetes risk and established disease. It is an affordable intervention that can be delivered through a primary health-care approach, even in resource-constrained settings. The intervention to prevent diabetes needs to be part of the basic benefits package for moving towards universal health coverage (5-9).

For the prevention and control of non-communicable disease including diabetes, the 2010 global non-communicable diseases capacity assessment survey report indicated that primary prevention and health promotion, detection of risk factor and disease management were most prevalent activities in the health care systems in the Western Pacific Region, South-East Asia Region and European Region as well as the Region of the Americas, with over 80% of countries providing each in their primary care system. Countries in the African Region and Eastern Mediterranean Region generally reported the lowest prevalence for all components and the global capacity assessment survey conducted in 2013, 85% of countries reported offering risk-factor and disease management in their primary healthcare systems (10, 11).

Low-income countries were less likely to have these services at the primary care level. The availability of tests and staff was low in low-income countries.Different studies reveal significant gaps in the provision of interventions to prevent diabetes, even in high-income countries. Despite their rapid growth and inequitable distribution, much of the human and social impact caused each year by NCD-related deaths could be averted through well-understood, cost-effective and feasible interventions(1).

Poor access to basic services in primary care, lack of affordability of laboratory tests and medicines, inappropriate patterns of clinical practice, and poor adherence to treatment were some of the main reasons for the treatment gaps. In low- and middle-income countries, the primary care level of the health system, which has to play a critical role in delivering these interventions, is often the weakest. An evaluation of the capacity of primary care facilities to implement interventions to prevent NCD complications in eight low- and middle-income countries showed major deficits in health financing, service delivery, access to basic technologies and medicines, medical information systems, and the health workforce (5) .Overall, in most low- and middle-income countries, coverage of this essential individual intervention for prevention diabetes is low.

To date, there is no robust, standardized set of surveys to measure the availability of services for diabetes in Ethiopia. In fact, no set of indicators is available for measuring constraints associated with service. Without consistent and accurate information on the availability of services, it is difficult for programmers or decision makers to evaluate the performance of health facilities that may guide them to take corrective action. Therefore, this survey was aimed to assess service availability and readiness for diabetes in health facilties of Ethiopia.

Methods

Study setting: 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: level 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(12). A total of 23,144 functional and formal sector health facilities are available in Ethiopia which included: 214 hospitals, 3,317 health centres, 15, 525 health posts, and 4,088 private clinics (categorized under higher, medium and lower clinics). Information on diabetes service was collected from a representative sample of higher level health facilities (hospitals, health centres and private clinics) managed by the government, non-governmental organizations (NGOs), and private for-profit organizations across the country. This study was approved by the scientific and ethical review office of the Ethiopian public health institute. 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 Survey (SPA). The sample for the survey was a 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 are nationally and sub-nationally representative and internationally comparable. The numerators used in the analysis were percent distribution of health facilities assessed. There were a total of 873 health facilities included in this analysis. Data were collected by senior health officicers and nurses.

Measurement: To achieve the objectives of the assessment and to capture information from the different categories, data were collected using a facility inventory questionnaire (13, 14,)which was used to obtain information on how the facilities are prepared to provide services for diabetes. Diabetes services were deemed to be available when the providers in the facility diagnose, prescribe treatment for, or manage patients with diabetes. The facility inventory questionnaire collected information on the availability of specific items (including their location and functional status), components of support systems (e.g., logistics, maintenance, and management), and facility infrastructure, including the service delivery environment. After obtaining consent from the authorities of each health facility, the most knowledgeable person about the organization of the facility and/or the most knowledgeable provider of services to diabetes was interviewed by the data collectors. If another provider was needed to give some specific information, that provider was invited and questioned about that information. The two key areas related to the provision of diabetes services at the assessed health facilities comprise the following: Availability of services (examines whether the providers in the facility diagnose, prescribe treatment for, or manage patients with diabetes) while service readiness addresses the readiness of facilities to provide good-quality client services for diabetes, including the availability of guidelines, trained staff, equipment, and essential medicines.

Data management 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. Unless otherwise indicated, the analyses considered only those items readily available and observed by the interviewers themselves during the survey.

Results

General overview of the surveyed facilities: Table 1 presents the percent distribution by background characteristics of the facilities that were successfully assessed in the present survey. Majority of the facilities in the country (using adjusted/weighted proportions to reflect actual facility distribution in Ethiopia) were health posts (69 %) and health centres (16 %). Private clinics (14 %) and Hospitals (1 %) were the fewest in number. The majority (85 %) of facilities were managed by the government. Facilities managed by private for profit (14 %) and NGO (mission/faith-based, non-profit) (1 %) are by far small in proportion. The majority (85 %) of health facilities were located in rural area of the country.

Table 1: Total number of health facilities assessed by type of facilities

Facility type	Weighed	Unweighed	Percent	Managing Authority			
				Public	Other Governmental	Private for Profit	NGO
Referral hospital	2	32	0	31	0	0	1
General hospital	7	130	1	71	1	51	7
Primary hospital	3	52	0	44	1	4	3
Health center	182	292	16	290	0	0	2
Health Post	802	292	69	292	0	0	0
Higher clinic	13	57	1	0	0	55	2
Medium clinic	37	132	3	0	4	121	7
Lower clinic	119	178	10	1	3	165	9
National	**1,165**	**1,165**	**100.0**	**729**	**9**	**396**	**31**

This result included findings on diabetes for a total of 873 health facilities (214 Hospitals, randomly selected 292 health centers, and 367 clinics) all over the country. Over half (51%) of all the health facilities in this analyses were public, and 45 % were private for-profit health facilities. More than six in ten (61.6%) of facilities visited were from urban area. Hospitals constituted 24.6%, Health Centers making the largest proportion at 33.4% of all facilities, lower clinics 20.4% while medium clinics 15.1% of the total health facilities visited (Table 1). The section on service availability and readiness for non-communicable diseases was not applicable to health posts. Therefore, the reports presented below are applicable to hospitals, health centres and clinics.

Availability of services for diabetes: Services were deemed to be available when the providers in the facility diagnose, prescribe treatment for, or manage patients with diabetes. Among all health facilities that offer services for non-communicable diseases, 59 % of health facilities offer services for diabetes. The services for diabetes were widely available across all facility type (ranging from 63 % to 98 %) except in lower clinics (34%). Nearly all hospitals offer the services, and about a third of the lower clinics offer the service.

Diagnostic capacity: In general, among all facilities, 40 percent of them have diagnostic capacity for blood glucose while 56 percent has capacity for urine protein test and 52 percent has urine glucose test ability during the data collection time. The availability of these tests varies by facility type (ranging from 98 percent in hospitals to only 5 percents in lower clinics) (Table 2).

Essential medicines: Among all facilities that offer services for diabetes the availability of glibenclamide, injectable glucose solution, metformin, and injectable insulin are 28 percent, 15 percent, 11 percent, and 9 percent, respectively at the time of data collection. Availability of medicines for diabetes varies by facility type, and is higher in hospitals when compared with other facility types (ranging from 90 percent in hospitals to 0 percent in clinics). Table 2 also provides details on the diagnostic capacity, availability of essential medicines and additional information by type of facility, managing authority and residential area.

Table 2 Diagnostic capacity and essential medicines for diabetes Among facilities offering services for diabetes, the percentages having indicated diagnostic capacity and essential medicines observed at the service site on the day of the survey, by background characteristics, Ethiopia SPA 2014.

Background Characteristics	Diagnostic capacity			Medicines				# of facilities offering services for diabetes
	Blood Glucose[1]	Urine Protein[2]	Urine Glucose[3]	Metformin	Glibenclamide	Injectable insulin	Injectable glucose solution	
Facility type								
Referral Hospital	87	97	97	87	90	90	29	2
General Hospital	90	94	94	83	87	80	23	7
Primary Hospital	76	98	96	63	73	65	22	3
Health Center	29	58	52	10	42	7	15	114
Higher Clinic	85	91	91	10	10	12	6	12
Medium Clinic	80	83	79	1	2	1	15	36
Lower Clinic	6	5	5	0	0	0	14	40
Managing authority								
Government/ Public	33	60	55	15	45	12	16	122
Other Governmental (Military, Prison, Federal Police)	75	75	75	19	6	6	14	2
Private for profit	47	51	49	4	4	4	14	84
NGO (Mission/Faith-based, nonprofit)	55	36	36	16	27	16	17	6
Urban/rural								
Urban	59	69	67	17	32	14	15	108
Rural	20	43	37	4	24	3	15	105
Total	**40**	**56**	**52**	**11**	**28**	**9**	**15**	**214**

Readiness of facilities for diabetes

Guidelines and Trained staff: Among the facilities that offer service for diabetes, 12 % of them had guidelines for diagnosis and management of diabetes at the service site during the survey. This proportion ranges from 42% for referral hospital to 9 % for health centers. Other governmental (military, prison, federal police) were less likely to have diabetes guidelines (only 3 %) compared with other managing authorities (14 %, and 11 % for private for profit, and government organizations, respectively) (Table 3). Among all facilities that offer services of diabetes, only 6 % of them had at least one interviewed provider of services received in-service training on diabetes during the 24 months preceding the survey. Referal hospitals (42 %) were more likely to have trained staff than others. However, lower clinics, health center and medium clinics (1%, 3% and 4%, respectively) were the least likely to have trained staff compared with other facility types (Table 3).

Equipment: With the exception of a few items, facilities that offer diabetes services were likely to have equipment that supports and enhances the provision of such services. For example, 93 % of facilities that offer diabetes services had a blood pressure apparatus. Seventy-six percent of facilities had adult weghing scale and nearly half of the facility had height board or stadiometer during the time of data collection (Table 3).

Table 3: Among all facilities offering services for diabetes: the percentages having guidelines, at least one staff member recently trained on diabetes, and the indicated equipment observed to be available at the service site on the day of the survey, by background characteristics, Ethiopia SPA 2014

Background characteristics	% of facilities offering services	# of facilities	% of facilities offering services for diabetes that have:		Equipment			# of facilities offering services
			Guidelines	Trained staff[2]	Blood pressure apparatus[3]	Adult weighing scale	Height Board or Stadiometer	
Facility type								
Referral Hospital	97	2	42	42	97	77	58	2
General Hospital	97	7	25	38	92	76	58	7
Primary Hospital	98	3	27	12	96	76	47	3
Health Center	63	182	9	3	88	71	51	114
Higher Clinic	89	13	14	22	96	87	69	12
Medium Clinic	96	37	16	4	100	89	50	36
Lower Clinic	34	119	10	1	100	77	35	40
Managing authority								
Government/ public	64	190	11	5	88	71	51	122
Other governmental (Military, Prison, Police)	100	2	3	0	100	97	91	2
Private for profit	51	163	14	7	99	82	46	84
NGO (mission/faith-based, nonprofit)	77	8	10	1	100	92	45	6
Urban/rural								
Urban	72	149	17	9	96	81	56	108
Rural	49	214	7	2	90	72	42	105
Total	**59**		**12**	**6**	**93**	**76**	**49**	**214**

Discussion

More than six in ten (61.6%) of facilities visited for this particular study were from urban area. The main reason could be due to the exclusion of health posts that serve in the rural area which are not supposed to give services for non-communicable diseases in Ethiopia. The other reason could also be most of the surveyed facilities for diabetes were private facilities and hospitals which were highly populated in urban areas than rural areas.

The delivery of health services relies on the availability of appropriate infrastructure, basic medical equipment and medicines at facility level. Despite the high burden of mortality and morbidity from diabetes, the responses in Ethiopia have not been comprehensive enough as it should be. The results presented in this study indicates insufficient availabilities of diabetes treatment services,guidelines for diagnosis and management of diabetes, trained staff and medicines. However, as compared to other countries, the findings indicated that those facilities offering diabetes diagnosis and/or management services in Ethiopia were higher than reports from surveys of other African countries, i.e 34% in Uganda(15), 32% in Zambia (16) and 12 % in both Tanzania and Sierra leone(17,18).

In the Ethiopian survey, diabetes diagnosis and management was more likely to be found at government facilities than private for profit facilities. This finding was in contrast with Tanzanian surveys where private-for-profit facilities were more likely to provide diagnostic and /or management services for diabetes (17). This difference may be due to the Ethiopian government's massive effort on the health sector reforms. The health sector development programs and the health extension programs could be considered as the centerpieces for these achievements. In addition, changes in health care governance and health system management have been introduced. Decentralization in health care governance and management has been adopted. Furthermore, continuous efforts have been made in expanding health facilities, human resource development and health care financing in Ethiopia.
In Ethiopia, among the facilities that offer service for diabetes, 12 % of them had guidelines for diagnosis and management of diabetes at the service site during the survey which is similar to reports from Sierra Leone(18) and to the 2010 global non communicable diseases capacity assessment survey report where the percentage of countries with fully implemented guidelines for diabetes and risk factors ranges from 10–15%(10).

The availability of guidelines for diagnosis and management of diabetes are crucially impotatant in facilities where most services are provided by non-medical doctor clinicians and nurses (19). The availability of guidelines in Uganda survey was higher (83%) (15) than the Ethiopian report. The 2010 global non communicable diseases capacity assessment survey report indicated that majority of assessed countries reported having evidence-based guidelines, protocols or standards available for the management of diabetes, but less than a third of countries have a guideline that is currently fully implemented. A very low percentage of countries have government-approved evidence-based national guidelines, protocols or standards for managing diabetes (11). Without guidelines being available, early diagnosis and management of diabetes can be severely hampered.

Studies have demonstrated that the lack of proper training of health professionals on diabetes accounts for the high non-compliance rates, serious complications (20). In this study, providers who received in-service training for diabetes is very low in the surveyed fa-

cilities; among all facilities that offer services for diabetes, only 6 % of them had at least one interviewed provider received in-service training of during 24 months preceding the survey. This finding is lower than findings from Uganda survey where about 31% facilities had staff trained on diabetes diagnosis and treatment (15).

The availability of basic medical equipment necessary for the diagnosis and management of diabetes appears to be adequate in Ethiopia. Facilities that offer diabetes services are more likely to have equipment that supports and enhances the provision of such services. For example, 93 % of facilities have blood pressure apparatus. About nine of every ten facilities have blood pressure apparatus. And more than seven of every ten facilities have adult weighing scale during the survey. However, the availability of basic medicines required for the treatment of diabetes in Ethiopia is very low. Results of survey depicted that among all facilities that offer diabetes services, only 11 % of them had Metformin, 28 % of them had Glibenclamide, and 9% of them had Injectible insulin, and only 15 % of them had Injectable glucose solution on the day of the visit.

Hospitals were more likely to have the drugs for diabetes treatment than other facility types, with a range of proportion ranging from 90 % in referral hospital to 4% private-for-profit facilities. According to the 2010 global non- communicable diseases capacity assessment survey report, essential medicines for the management of diabetes were generally available in the vast majority of countries, with markedly low availability in low-income countries (7%) and in the South-East Asian Region (9%)(10). The Ethiopian survey findings are similar to Tanzanian survey findings where the availability of essential medicines for diabetes was more prevalent in Hospitals than other facility types.

In conclusion, health system strengthening including provision of evidence-based national guidelines, protocols or standards for managing diabetes, training of providers and availing essential medicines are urgently needed. The finding depicts a wide gap and must be filled if basic standards are to be met by the health care system.

Acknowledgment

We would like to express our sincere gratitude and special thanks to the administration offices of health sectors at all level for providing necessary support. Our special thanks go to field coordinators, supervisors and data collectors. Finally, we would like to thank all study participants for providing the necessary information. The survey was funded by the United States Agency for International Development (USAID), World Bank, Irish Aid, WHO and UNICEF. ICF International provided technical assistance. Therefore, we would like to thank theorganizations for generous financial, logistics and technical support for the success of this survey.

References

1. WORld Health Organization. Global status report on noncommunicable diseases. In: WHO Press, editor. Italy: WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int),; 2011.
2. Mathers CD, Lopez AD, T. MC. The burden of disease and mortality by condition: data, methods and results for 2001. Globalburden of disease and risk factors New York: Oxford University Press, 2006: 45–240,.
3. Bekele A, Teklie H, Tadesse M, Defar A, Getachew T, Amenu K, et al. Pattern and Trend of Medical Admissions of Patients of Chronic Non-Communicable Diseases in Selected Hospitals in Addis Ababa, Ethiopia. American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS). 2015;13(1):34-48.
4. world Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013−2020,. In: world Health Organization, editor. Geneva (http://apps.who. int/iris/bitstream/10665/94384/1/9789241506236_ eng. pdf?ua=1, accessed 18 June 2015): World Health Organization,; 2014.
5. World Health Organization. Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings. . In: world Health Organization, editor. Geneva (http://whqlibdoc.who.int/publications/2010/9789241598996_eng.pdf, accessed 18 June 2015). World Health Organization; 2010.
6. World Health Organization. Prevention and control of noncommunicable diseases: guidelines for primary health care in low-resource settings. . In: World Health Organization, editor. Geneva (accessed 18 June 2015): World Health Organization,; 2012.
7. World Health Organization. Implementation tools: package of essential noncommunicable (WHO-PEN) disease interventions for primary health care in low-resource settings In: World Health Organization, editor. Geneva (http://www.who.int/cardiovascu-lar_diseases/publications/ implementation_tools_WHO_PEN/en/, accessed 18 June 2015). World Health Organization; 2013.
8. world Health Organization. Scaling up action against noncommunicable diseases:how much will it cost? World Health Organization; 2011. In: world Health Organization, editor. Geneva (http://whqlibdoc.who.int/ publ ications/2011/9789241502313_eng.pdf, accessed 18 June 2015): World Health Organization; 2011.
9. world Health Organization. NCD global monitoring framework indicator definitions and specifi cations. In: world Health Organization, editor. Geneve (accessed 18 June 2014): World Health Organization; 2014.
10. World Health Organization. ASSESSING NATIONAL CAPACITY FOR THE PREVENTION AND CONTROL OF NONC OM M U N IC A BL E DI SE ASE S: REPORT OF THE 2010 GLOBAL SURVEY. In: WHO Document Production Services G, Switzerland,, editor. WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). WHO Press, ; 2012.
11. World Health Organization. ASSESSING NATIONAL CAPACITY FOR THE PREVENTION AND CONTROL OF NONC OM M U N IC A BL E DI SE ASE S: REPORT OF THE 2013 GLOBAL SURVEY. In: WHO Document Production Services G, Switzerland,, editor. WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). WHO Press, ; 2014.
12. FMoH. Health Sector Development Plan IV (HSDP IV) 2010/11 - 2014/15. Addis Ababa, Ethiopia: Federal Democratic of Ethiopia, Minister of Health; 2010.
13. ICF. Measure DHS Project, Service Provision Assesment tool. In: International I, editor. 2013.
14. WHO Document Production Services. Service Provision and Readiness Assesment tool. In: Organization WH, editor. Geneve: World Health Organization; 2013.
15. Uganda Minstry of Health. Service Availability and Readiness Assessment, 2013. In: Minstry of Health, editor.: WHO; 2013.
16. Zambia Service Availability and Readiness Assessment, 2010. In: Republic of Zambia Ministry of Health
17. TANZANIAN MINISTER OF HEALTH AN AND SOCIAL WELFARE. TANZANIA SERVICE AVAILABILITY AND READINESS ASSESSMENT (SARA) 2012 In: MINISTER OF HEALTH AN AND SOCIAL WELFARE, editor.: WHO;
18. Government of Sierra Leone Minstry of Health and Sanitation. Service Availability and Readiness Assessment, 2012. In: Ministry of Health and Sanitation, editor.: WHO; 2012.
19. Mamo Y, Seid E, Adams S, Gardiner A, Parry E. A primary healthcare approach to the management of chronic disease in Ethiopia: an example for other countries. Clin Med. 2007;7:228-231.
20. Gning SB, Thiam M, Fall F, Ba-Fall K, Mbaye PS, Fourcade L. Diabetes mellitus in sub-Saharan Africa: Epidemiological aspects and management issues. Med Trop (Mars) 2007;67:607–11.

The Burden of Child Injuries in Ethiopia: A Review of Evidence and Policy Implications

Olakunle Alonge[1], Qingfeng Li[1], Collene Lawhorn[2], Adnan Hyder[1]

Summary

Injury is a leading cause of death worldwide – with children living in low and middle income countries at greatest risk for mortality. To understand the burden of child injuries and the policy response to this burden in Ethiopia, we conducted a systematic review of current data sources, peer-reviewed literature and relevant policy documents. All sources indicated that child injuries impose a tremendous health burden in Ethiopia. World Health Organization (WHO) Global Health Estimates (GHE) showed that about 32% of all 68,948 injury deaths in Ethiopia occurred among children less than 14 years in 2012. Injuries now account for more deaths than vaccine preventable childhood-cluster diseases (including pertussis, diphtheria, measles and tetanus) among under-five children in Ethiopia.

Longitudinal studies conducted by the Ethiopia Socioeconomic Survey and the Ethiopian Rural Socioeconomic Survey– (ESS and ERSS respectively) showed that the incidence rate of child injuries increased during 2011-2013 and also in 2013-2014, and that rural children were at greater risk of injury than their urban peers. Based on population estimates derived from UN World Population Prospect (WPP) 2015 and a conservatively assumed incidence rate of injuries based on ESS 2013-2014, we predict that without urgent and effective interventions, the health burden of injuries will increase dramatically in the coming decades. The review did not yield any specific policy document addressing child injuries in Ethiopia. In this brief, we provide interventions and policy suggestions to confront this challenge.

Introduction

According to the World Health Organization (WHO) Global Health Estimates (GHE) injuries caused 5.14 million deaths globally in 2012 (1). Among the deaths, 7.2% was in children under 5 years of age, and another 7.4% was in children aged 5-14 years. The year of life lost was 3,654 per 100,000 populations, which equates to 259 million years of life lost each year due to injury deaths. The proportion of global deaths due to injuries has also risen steadily over the last decades, from 8.8% in 1990 to 9.6% in 2010.

These high proportionate mortality rates and significant years of life lost impose a tremendous health, economic, and social burden, particularly in low-and middle income country settings (LMIC)(2). While a global estimate of the economic cost of injuries is scarce, the global cost of fatal and serious road traffic injuries, which cause up to 23% of the total deaths due to injuries, is estimated to be as high as 5% of the Gross National Product (GNP) in some LMIC (3).

Despite this heavy and increasing burden, injury prevention has received less attention than other public health issues from government agencies, donors, and other organizations. This is particularly true for child injuries in LMICs where children face an elevated risk of injuries than their peers in developed countries.

In Ethiopia, the age-standardized mortality rate for injuries was 94 per 100,000 population, and the years of life lost due to injury deaths were 4,697 years of life lost per 100,000 population in 2012. These model-based estimates of the

1. Johns Hopkins International Injury Research Unit, Department of International Health, Johns Hopkins Bloomberg School of Public Health
2. Bureau for Global Health, Office of Health Infectious Disease and Nutrition, United States Agency for International Development

overall rate of injury are greater than the global average suggesting Ethiopia is one of the countries driving the high global burden of injuries. In addition, a large proportion of injury deaths in Ethiopia occur among children about 32% of all 68,948 injury deaths occur among children less than 14 years in 2012. It is estimated that among the 68,948 total injury deaths in 2012, 13,002 were children under five years of age and 9,267 between 5 to 14 years of age (3). Injuries now account for more deaths than vaccine preventable childhood-cluster diseases (including pertussis, diphtheria, measles and tetanus) among child under five years of age in Ethiopia (13,002 deaths compared with 10,000 deaths) due in part to concerted efforts around child immunization in recent decades.

Methods

Data Sources and Methods: An extensive literature review was conducted to identify studies, data sets, government reports and policy documents that address injuries in children 0- 14 years of age in Ethiopia. The leading causes of injuries (based on global estimates) - road traffic crashes, poisoning, falls, fire, heat and hot substance, drowning, exposure to forces of nature, and violence were used as key words to search databases for publications between 2000 and 2015. Following the literature search, we counted deaths and injuries that required medical treatment or caused respondents to be absent from regular activities. Model-based data on major causes of child injuries in Ethiopia were pooled from the Global Burden of Diseases (GBD) 2013 and WHO GHE 2014 datasets and population estimates were obtained from United Nations' most recent population projection (UNDP WPP 2015 version) to estimate injury rates. Injury rates were also estimated using population based data from the Ethiopian Rural Socioeconomic Survey (ERSS), jointly conducted by Central Statistics Agency of Ethiopia (CSA) and the World Bank Living Standards Measurement Study (LSMS) as part of the Integrated Surveys on Agriculture (ISA) project between Sep 2011 and March 2012 (wave 1); and The Ethiopia Socioeconomic Survey (ESS), implemented between Sep 2013 and April 2014 by the same agencies (wave 2).

Result

Cause of Injuries: According to WHO GHE 2014 data for children in Ethiopia, the greatest percentage of child unintentional injuries were due to burns injuries due to fire, heat and hot substances. In 2000, burns accounted for 15% of global injuries, but in Ethiopia, burns accounted for 26% and increased to 31% in 2012. Road traffic injuries accounted for 10% of deaths in 2000 but increased to 13% in 2012. The proportion of injuries due to drowning increased from 12% in 2000 to 13% in 2012.

Survey-Based Estimates- Rural Vs Urban Disparity: The ERSS and ESS provide important and unique insights into the burden of child injuries in Ethiopia. Between wave 1 and wave 2, the annual incidence rate of child injuries increased by more than 30% (from 1,920 to 2,640 per 100,000 person-years) for children under five years old in rural area and small towns (wave 2 covered large towns, but wave 1 did not).

A disparity in annual incidence rate of injuries between children living rural, small town, and large town households was also observed. The incidence rate of child injuries was more than 80% higher among under-five children and 40% higher among those 0 – 14 years living in rural areas and small towns compared to large towns. These data suggest that rural children carry a heavier burden of injuries in Ethiopia.

The nationally representative ESS data showed that the incidence rate of injuries that required medical treatment or caused absence from regular activities is comparable among children of different age groups - 0-4, 5-9, and 10-14 year olds. The estimated number of deaths due to injuries derived from these rates was also comparable to results obtained from the WHO GHE data(1).

Survey-Based Estimates- Incidence Projection: We also developed hypothetical model estimates that show injuries increasing over time. We estimated that there will be 910,318; 956,547 and 1,044,529 cases of injury in children from 0-14 in 2015, 2020 and 2030 respectively (data reported elsewhere). This model suggests that a sustained or substantial increase will impose tremendous burden in Ethiopia and that greater prevention efforts are necessary by local, national and international agencies.

Other Risk Factors: Few published studies have investigated the possible risk factors to child injury in Ethiopia. Child injuries are found to disproportionally affect people from low socioeconomic status (4). Traumatic injury other than car crashes accounted for most incidences of injury (82.38%). Burn was common among children aged 5-9 years (5). Caregiver depression and maternal depression are also linked to child injuries, particularly intentional physical injuries (6,7)

Gender Differences: There is a substantial gender difference in the risk of injury based mortality. For all causes of injury, male children have about 1.5 times greater risk than female children. The ratio for drowning is slightly over 1.5 for children aged 0-9 years, and about 2 for 10-14 year olds. There is a gender disparity for injuries caused by fire, burn, and hot substance with girls slightly higher than boys. For road injuries, the ratio increased from 1.8 in 1990 to 2.0 in 2013 among children under five years old, and has been stable at around 1.7 for 5-9-year olds. A large increase was observed for 10-14-year olds, from 1.6 to 1.9 during the period.

Intentional Injuries: While the available data for Ethiopia align with global patterns that show a preponderance of unintentional, injuries there were still a number of published studies focused on child abuse. One study suggested the prevalence of child sexual abuse was high (68.7%), among which verbal harassment accounted for the greatest proportion (51.4%), followed by sexual intercourse

(18%), and unwelcomed kissing (17.1%)(8). Most victims were under fifteen and experienced a host of psychological problems as a result including suicide, a low degree of positive self-worth and sexual dysfunction. 8-12 Studies also reported a delay in reporting the assault/abuse, and hospitals tended to focus on physical healing over psychological needs (9). Child marriage was another source of child sexual abuse. However, a study that showed the psychological consequences of child sexual abuse showed that trauma was more severe in those who survived rape or prostitution compared to those who were married early (13).

Current Policies and Policy Implications: There is a lack of policy response and interventions to address child injuries at both national and regional levels in Ethiopia. While there are general policies published on injury issues – such as those on roads and transport, no policy documents explicitly target child injuries in Ethiopia. The National Strategy for Child Survival in Ethiopia issued by the Family Health Department in the Federal Ministry of Health in 2005 (14) addresses a plethora of important considerations around communicable diseases and other health concerns, but there is no specific strategy to address the high burden of injuries in children in this document. The Manual on Convention of the rights of Children issued by the Ministry of Labor and Social Affairs (15) described child injuries as an important issue and identified lack of coordination among various agents, as well as inadequate resources and institutional facilities as a major barrier to addressing this issue.

The National Strategy for Newborn and Child Survival in Ethiopia (2015 – 2020) also identified child injuries as one of the top 6 causes of child deaths in the country (16). However, no explicit strategy has been outlined to address this health problem in the document (16). The impact and cost projections for improving child survival were mostly driven by strategies focused on newborn health (16).

The lack of a national strategy or policy addressing child injuries unfortunately would impact the ability of key stakeholders in Ethiopia to translate injury prevention research findings into life-saving action (17). A first step to developing a policy response to child injuries in Ethiopia would be to adequately characterize the burden and risk factors specific to the Ethiopian context (18). Adequate attention should be given to epidemiologic studies, establishing data collection, and vital registration systems that allow for detailed analyses that can inform intervention design.

The inclusion of an injury module (developed with support from the Johns Hopkins International Injury Research Unit, JH-IIRU) into the Demographic Health Surveillance (DHS) surveys represent a step in the right direction for generating the much needed information on the burden and risk factors for injuries in Ethiopia. Based on studies from other countries, there are common risk factors that may underlie different mechanisms of injury among under-five children (19). Such risk factors include lack of adequate child supervision and exposure to injury hazards within the home environment (19). Evidence-supported interventions such as home injury risk assessments with provision of safety equipment, community based daycares could form the main interventions in policies targeting primary prevention of unintentional injuries among under-five children (20).

Primary prevention of child injuries among school age children (5 – 14 years) would require evidence-supported interventions that target the child's behavior and factors within both the home and school environments. While studies have suggested specific interventions that address specific injury mechanisms e.g. traffic calming measures around schools and separation of pedestrian and vehicles for road traffic injuries and fencing for drowning (20), design of such interventions would have to incorporate knowledge of the settings in Ethiopia.

Most policies on child abuse from other countries have focused mainly on secondary and tertiary prevention including identification of victims and provision of rehabilitative and social support. Primary prevention has however been limited to parental education and health visitation (21). Implementation research (22) studies to generate evidence for the planned interventions and implementation activities in the Ethiopian context are critical considerations for future engagement in injury prevention work in Ethiopia. Such studies will help in understanding needs and developing comprehensive approaches for child injury prevention, and would serve as useful learning agenda for other low and middle-income countries. Our review also point to social inequities and regional disparities in the burden of child injuries that need further attention. Solutions to this and other issues could be informed by implementation studies focused on key vulnerable populations. Formulating any policy or action plan for child injuries would require more than just planning interventions. It would require multi-sectoral coordination and involvement of key stakeholders in the policy development process (17). The World Health Organization guideline for policy-makers and planners identified 3 key phases and 10 steps for developing a policy response to injury and violence(17). These steps include raising awareness, developing a framework for targeted actions, and securing key state and governmental endorsement (17).

The Ethiopian Ministry of Health have also taken a positive step in this direction by leading a stakeholders conference on child injury prevention slated for September 6, 2016 with support from the United States Agency for International Development (USAID) and the Johns Hopkins International Injury Research Unit (JH-IIRU). It is hoped that this effort will continue and build onto national programs on child injury prevention in Ethiopia.

References:

1. World Health Organization. Global Health Estimates 2014. Geneva
2. World Health Organization. World Health Statistics 2015. Geneva
3. Peden M et al. World report on road traffic injury prevention 2004. WHO Geneva
4. Abebe GM, Minas WS, Gutema J. Patterns of accidents among children visiting Jimma University Hospital, south west of Ethiopia. Ethiop Med J 2006; 44(4): 339-45.
5. Howe LD, Huttly SR, Abramsky T. Risk factors for injuries in young children in four developing countries: the Young Lives Study. Tropical Medicine & International Health 2006; 11(10): 1557-66.
6. Deyessa N, Berhane Y, Emmelin M, Ellsberg MC, Kullgren G, Hogberg U. Joint effect of maternal depression and intimate partner violence on increased risk of child death in rural Ethiopia. Archives of Disease in Childhood 2010; 95(10): 771-5.
7. Liu L, Johnson HL, Cousens S, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet 2012; 379(9832): 2151-61.
8. Lakew Z. Alleged cases of sexual assault reported to two Addis Ababa hospitals. East Afr Med J 2001; 78(2): 80-3.
9. Jemal J. The child sexual abuse epidemic in Addis Ababa: some reflections on reported incidents, psychosocial consequences and implications. Ethiop J Health Sci 2012; 22(1): 59-66.
10. Wondie Y, Zemene W, Reschke K, Schroder H. Early marriage, rape, child prostitution, and related factors determining the psychosocial effects severity of child sexual abuse in Ethiopia. Journal of Child Sexual Abuse 2011; 20(3): 305-21.
11. Wondie Y, Zemene W, Tafesse B, Reschke K, Schroder H. The psychosocial consequences of child sexual abuse in Ethiopia: a case-control comparative analysis. Journal of Interpersonal Violence 2011; 26(10): 2025-41.
12. Garoma S, Fantahun M, Worku A. Maternal intimate partner violence victimization and under-five children mortality in Western Ethiopia: a case-control study. Journal of Tropical Pediatrics 2012; 58(6): 467-74.
13. Morrow V, Barnett I, Vujcich D. Understanding the causes and consequences of injuries to adolescents growing up in poverty in Ethiopia, Andhra Pradesh (India), Vietnam and Peru: a mixed method study. Health Policy and Planning 2014; 29(1): 67-75.
14. Ministry of Health, Ethiopia. National Strategy for Child Survival in Ethiopia (2005 – 2010), 2005 Addis Ababa
15. Ministry of Labour and Social Affair, Ethiopia. Ethiopia's National Plan of Action for Children (2003-2010 and beyond), 2004, Addis Ababa
16. Ministry of Health, Ethiopia. National Strategy for Newborn and Child Survival in Ethiopia (2015 – 2020). 2015, Addis Ababa
17. Schopper D, Lormand JD, Waxweiler R (eds). Developing policies to prevent injuries and violence: guidelines for policy-makers and planners. Geneva, World Health Organization, 2006
18. Li Q, Alonge O, Lawhorn C, Ambaw Y, Kumar S & Hyder A. Child injuries in Ethiopia: a review of current situation with projections. Forthcoming
19. Alonge O, Hyder A. Reducing the global burden of childhood unintentional injuries. Archives of disease in childhood, 2014, 99(1): 62-69
20. Peden M et al. World Report on Child Injury Prevention, 2008. WHO Geneva
21. Nikesh Parekh, Francesco Mitis & Dinesh Sethi (2015) Progress in preventing injuries: a content analysis of national policies in Europe, International Journal of Injury Control and Safety Promotion, 2015 22:3, 232-242
22. Peters DH, Adam T, Alonge O, Agyepong I, Nhan T. Implementation research: what it is and how to do it? BMJ 2013;347:f6753

Willingness To Pay for Social Health Insurance and Associated Factors For The Social Health Insurance Scheme Among Health Sector Employees In Addis Ababa, Ethiopia

Atkure Defar[1], Arega Seyum[2], Terefe Gelibo[1], Theodros Getachew[1], Ibrahim Kedir[1]

Abstract

Background: Knowing employees capacity and interest to pay for their health care is vital for the successful implementation of the Social Health Insurance (SHI) system.. The main purpose of this study was to assess the willingness to pay and the associated factors for the Social health insurance scheme among Health Sector employees in Ethiopia.

Method: An exploratory cross-sectional study design using Contingent Valuation Method (CVM) was used. Respondents were asked to state their maximum willingness to pay (WTP) for basic health services. A Self administered structured questionnaire was designed and distributed. The study was conducted from March 15 to April 18 ,2015 in 4 randomly selected \ service delivering organizations under the Ministry of Health, viz., ALERT center, St. Peter hospital, St. Paul Hospital, and Amanuel Hospital. Data were entered and analyzed using SPSS version 20. Descriptive and analytical statistics were performed to generate results. Binary and Multivariate Logistic Regression was carried out to identify factors which affect the willingness to pay for social health insurance.

Findings: Though 172 (74.1%) of the respondents were willing to join the Social Health Insurance (SHI) system, on an average, the heath workers were willing to pay substantial amounts for SHI; 61% were willing to deduct 1% from their salary, and 25.5% were willing to have 3% of more deduction from their salaries for SHI. Female,more educated, and young respondents showed greater interest to join SHI. From the list of health related variables, having a known illness has a significant association with WTP. Being full time, front line worker, having 6 to 10 years work experience, heard about SHI and believed the importance of SHI were significantly association with WTP.

Conclusion: These results suggest that among the public health care workers there is high willingness to pay for SHI with lower percentage of deduction from their salary. Government should make necessary efforts to raise awareness on SHI among the formal sectors employees. Further study on willingness to join and pay across other workforce is mandatory before the launching of the program.

Key words: Social Health Insurance, Willingness to pay, Health Workers.

1. Health System Research Directorate, Ethiopian Public Health Institute
2. School of Business and Accounting, Jimma University
3. Addis Ababa Institute of Technology

Background

Health Insurance System of the Country

It is know that health care financing has been a major challenge for the developing countries including Ethiopia. Like many of the developing countries, health care financing in Ethiopia mainly relies on public resources. However, the absolute total expenditure on health from the public resources is only a small fraction of the total amount needed for purchasing a minimum essential health services package. Inadequate health care financing remains a major challenge for the health system of Ethiopia. It leaves households vulnerable to impoverishment from catastrophic health expenditures, and slows progress towards health improvements such as the Sustainable Development Goals (SDG) by limiting access to essential health services among the poor. Important barriers to improved health care financing include: low government spending on the health sector; strong reliance on out of pocket expenditure; inefficient and inequitable utilization of resources; and, poorly harmonized and unpredictable donor funding (1).

Nevertheless, the health sector of Ethiopia is financed from a number of sources, mainly government revenues, aid from donors mainly from foreign organizations, and external loans. In addition, user's fees are also a source, even though its contribution to supporting the health care system is very minimal. On the other hand, health insurance payments and other local contributions are not significant sources of financing (2). To address this gap, the government of Ethiopia has recently adopted health care financing strategy and initiated the implementation of its specific components. The strategy is designed to serve as an alternative to the total dependence on the public financing of health care, and includes improving the effective allocation and utilization of public resources, increasing the engagement of private sectors, and encouraging the development of risk sharing mechanisms (2).

Revenue retention by health facilities, systematizing the fee waiver, standardizing cost free services, outsourcing of nonclinical services, setting user fee, revision and initiation of compulsory and risk sharing health insurances (community-based health insurance and social health insurance), establishment of a private wing, off working time services in public hospitals, and providing autonomy to health facilities were the main components of the health care financing reform in Ethiopia (3). The Social Health Insurance (SHI) scheme is an essential ingredient of this strategy. The objective of the SHI is to provide quality and sustainable universal health care coverage to the beneficiaries through pooling of risks and reducing financial barriers at the point of service delivery. It has the following sources of finance: members' (i.e., employees) contributions, employers' contributions, investment income, and other related sources (4). The SHI, according to the Ethiopian Health Insurance Agency, was initiated in 2016 GC for the government employee in all the sectors. This scheme considers the deduction of 3 percent from employee's monthly income. The deduction rate was set based on the payment capacity of the employees. However, the willingness to pay for the health insurance and the health services was not considered in that calculation (4).

Willingness to Pay

Willingness to pay is the price or the amount of money that someone is willing to give up or pay to acquire a good or service. Willingness to pay is the source of the demand price of a good. However, unlike demand price, in which buyers are at the point of actually giving up the payment, willingness to pay does not require an actual payment. This concept is important to for benefit-cost analysis, welfare economics, and efficiency criteria, especially Kaldor-Hicks efficiency (5).

Determining the demand or willingness-to-pay for health insurance is crucial in ascertaining the feasibility of such schemes, establishing prices, and setting potential subsidy levels (6). In the absence of real world experience, economists gauge the willingness to pay (WTP) for health insurance in low income countries by means contingent valuation (CV) methods which elicit directly what individuals would be willing to pay for a hypothetical insurance package (6).

Accordingly, the study done on Sodo town teachers' concerning willingness to pay for social health insurance, about 55% of the teachers had never heard of any type of health insurance scheme. However, 74.4% of them were willing to pay for the suggested insurance scheme. This proportion (74.4%) of respondents who were willing to pay was used for calculating the sample size for the current study. About 47% of those who were willing to pay agreed to contribute greater than or equal to 4% of their monthly salaries (7). Similarly a household study done in Bench Maji town among 845 sampled households revealed that about 78% of the respondents were willing to join the scheme(8). In contrary, another study in Nigeria found that most (57.25 percent) of the respondents have had awareness about insurance. (9).

A study done in India to find out that the awareness of health insurance in an urban population was found to be 64.0 per cent. (10) and only half of the participants (51.5%) wanted to have health insurance. In contrary a Community based study done in Fogera zone, North West, Ethiopia revealed that, 80% of respondents expressed willingness to enroll in the community-based health insurance system. The average amount of money willing to pay for the scheme was 187.4Birr per household per annual (13).

The results indicated that more than 63.1% of the respondents were willing to join and contribute an average of 114.38 USD per month per household towards VCHI. (14). In Cameron, less than 40% of the respondents were willing to pay for CBHI membership for themselves or other household members. The proportions of people who were willing to pay were much lower in the rural communities, at less than 7% (15).

Factors Affect the Willingness of Individuals to Pay for Health Care Insurance

Various factor determine or influence or people's enrolment into or the willingness to pay for the Health Insurance. Age, sex, distance to the nearest health facility and household income have variable influence (19).Community based studies in Ethiopia show that being male, large household size, schooling experience, farmer household, merchant household and richer household – all were significantly associated with willingness to pay (6,11,15). Studies in other countries like Malaysia, India and Cameroon have similar findings regarding the factors influencing WTP2(19-21).Moreover, presence of chronic illness in the family was found to be the predictor of the willingness to take part in health insurance(12,21)

Determining the demand or willingness to pay for health insurance is crucial in ascertaining the feasibility of such schemes, establishing prices, and setting potential subsidy level (22). Therefore; this study tried to see the willingness, amount in percentage deducted from salary and factors affecting the willingness to pay social health insurance in the formal health sector workers in Addis Ababa working under Federal Ministry of Health.

Objective

The general purpose of this study was to assess the government health sector employees' willingness to pay for social health insurance and the associated factors.

Methodology

Study location and population

The study was carried out from March 15 to April 18 ,2015 among the employees of the Federal Ministry of Health hospitals in Addis Ababa.

Four referral hospitals/services providing facilities among the ten subordinate hospitals/centers of the ministry of health were selected; these were:

- All Africa Leprosy Tuberculosis and Rehabilitation Training Center (ALERT center)
- St. Peter's TB Specialized Hospital
- St. Paul's Millennium Medical College
- St. Amanuel Mental Specialized Hospital

Study design

An exploratory cross-sectional study design using contingent valuation method was used. Contingent valuation is a method, often employing questionnaires, to help discover a person's maximum willingness to pay for a particular environmental good or service (7). One approach to valuing a non marketing good is to conduct a survey ad ask people directly that they would pay for the good, hypothetically assuming (cotangent upon) the existence of a market for the good.

Study population and Sampling techniques and size

Selected health work forces working under the Ministry of Health facilities were the study population.

To estimate the sample size, single proportion population formula was used;

Where: $$n = \frac{Z_{\alpha/2}^{2}\, P(1-P)}{d^2}$$

n= number health workers, **Z=** 95 % confidence interval, **p=** 74.4% (from Sodo town teachers' willingness to pay for health care insurance study) **(10), q=** the proportion of individuals who were not willing to pay for health care insurance (1 - 0.744) =0.25.6=25.6%, **d=** Absolute precision 5%

Using the above formula the required sample size was calculated as:

n= (1.96*1.96*(0.744*0.256)/ (0.05*0.05) = **293 ≈ 293**

=292.8

Considering 5 percent addition for non responses then the final sample size was 312 health sectors employee.

Study participant/Sample selection

Equal numbers (i.e., 78) of respondents were selected from each of the four hospitals centers. The employees were selected randomly from the staff roster. . Self-administered questionnaire were distributed among the selected health care workers through the quality department of the health facilities.

Data collection instruments

Primary data were collected from each study participants using pretested self administered questionnaire. The questionnaire had both open ended and close ended questions. The data collection lasted for about one month from March 15 to April 18 ,2015.

Data Analysis Techniques

The data were entered and analyzed using SPSS version 20. Descriptive statistics (frequencies) and inferential statistics (c2 and logistic regression) was done to see the association of independent variables (predictors) with the depended variable. Bivariate and Multivariable Logistic regression were also done. Descriptive results were presented using tables and graphs. The association of independent variable was analyzed with the dependent variable to see the effect of predictors' variables on willingness to join and pay for SHI.

Ethical consideration

This research received ethical clearance from Jimma University ethical review boards and also from the ethical committee of respective research sites.

Result

Socio-demographic and Economic characteristics of the study participants

The response rate was 83.7%; and as such, 262 of the 313 health providers were included for analysis. Respondents had a mean age of 30.4 years and on average 6.1 years of service in public sectors. Fifty three per cent of them were male; 154 (60.2 %) of the respondents were single and 90 (35.2%) were married; 96 (37.5%) of the respondents have a child in their household, and 158 (61.2%) respondents were living with their families.

Education wise, 176 (67.6%) had bachelor and above degree. Nursing profession by far was the most common (47.2%) profession among the respondents. Two hounded forty eight (96.9%) were permanent employee of their organization. Most 184 (81.4%) of respondents were employed and 250 (96.9%) were full time workers in their organization. Among the respondents the mean work service year is 6.1 years with the maximum 34 years and minimum less than one year work experience (Table 1 and fig-3).

Table 1: Socio-demographic and Socio-economic characteristics among health care workers under federal Hospitals, Addis Ababa, Ethiopia, 2015 the respondents, 2015 (N=262)

Characteristics	Category	Frequency	Percentage
Sex	Male	140	(53.4)
	Female	122	(46.6)
Marital status (256)	Single	154	(60.2)
	Married	90	(35.2)
	Divorced	4	(1.6)
	Living together	8	(3.1)
Educational level (258)	Diploma or certificate	82	(31.8)
	Undergraduate degree	106	(40.5)
	Postgraduate degree and above	70	(27.1)
Occupation /Profession (254)	Medical Doctors including specialists	22	(8.7)
	Health officer	18	(7.1)
	Nurse and Midwife professionals	120	(47.2)
	Public Health professionals	6	(2.4)
	Pharmacy Professional	14	(5.5)
	Med Lab Professional	32	(12.6)
	Other Paramedics	4	(1.6)
Additional source of income (252)	Yes	44	(17.5)
	No	208	(82.5)
Number of children dependent, who are under 18 years old (114)	No child	42	(36.8)
	>1 child	72	(63.2)

Employees' Awareness on SHI and willingness to pay

One hounded seventy two (74.1%) were willing to pay for social health insurance for themselves (Fig-5). Regarding awareness, in this study 164 (64.6%) of respondents have had heard about SHI. The two main sources of this information were the current organization and television. Seventy four (44 %) of the respondents heard SHI related information from the current employer and 64 (38.1%) from television. (Figure 1 and Table 2).

Table 2: Awareness of health care workers under federal Hospitals on SHI, Addis Ababa, Ethiopia, 20152015.

Variables	Category	Frequency (%)
Heard of social health insurance(254)	Yes	164(64.6)
	No	90(35.4)
Source of information (168)	Current organization	74(44)
	Newspaper	18(10.7)
	Magazines	2(1.2)
	Televisions	64(38.1)
	Other	10(6)
Awareness on how much percent of salary	Yes	68(26)
	No	182(69.5)
will be contributed for SHI (250)		
Premium paid system (116)	Progressive basis	68(26)
	Based on risk status	34(13)
	Chosen	14(5.3)

In this study, more than 54% of respondents have free medical checkup. Most of the respondents' 182 (69.5%) did not know about the amount that the government proposed to deduct from their salary for social health insurance. Twenty six percent respondents preferred to pay the premium in a progressive approach. One hundred fourteen (46%) of the Respondents were asked to categorize their opinion of the living conditions of the public servant; 114 (46.5%) of the respondent categorized it as poor (Table -3).

Table 3: Health Condition of Respondents Working Under Federal Hospitals , Addis Ababa, Ethiopia.

Variable	Category	Frequency (%)
Medical problem that enforces to go to health facility within 12 months(254)	Yes	82(32.3)
	No	172(67.7)
Free medical check-up (254)	Yes	138(54.3)
	No	116(45.7)
Level of health problem faced (254)	Sever	80(31.5)
	Moderate	172(67.7)
	Lower	2(0.8)
Type of Illness	Acute	104(58.4)
	Chronic	36(20.2)
	Injury	12(6.7)
	Other	26(14.6)
Presence of known illness(es) (250)	Yes	64(25.6)
	No	186(74.4)
Taking any medications (110)	Yes	46(41.8)
	No	64(58.2)
Medical service seeking place (190)	Private clinic	80(42.1)
	Governmental Health Facility	110(57.9)

Figures 1: Proportion of Respondents Willingness to Pay for their Social Health Insurance, 2015 (N=232).

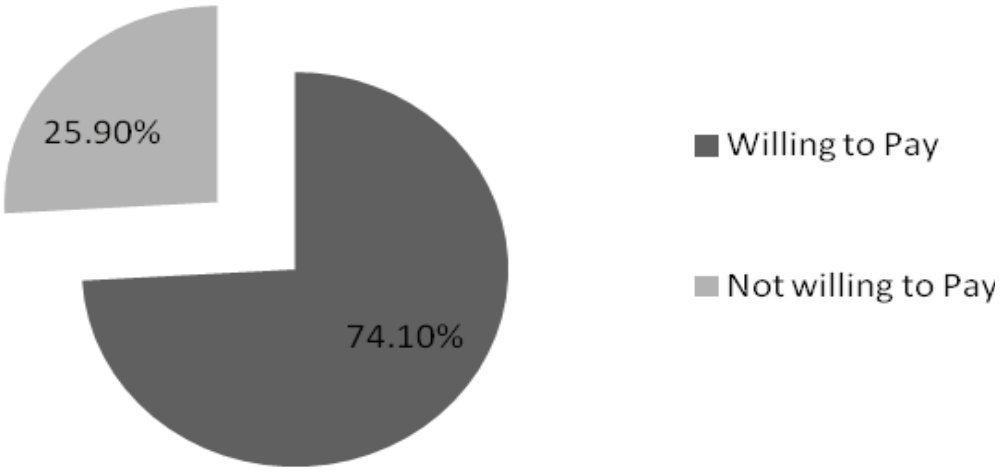
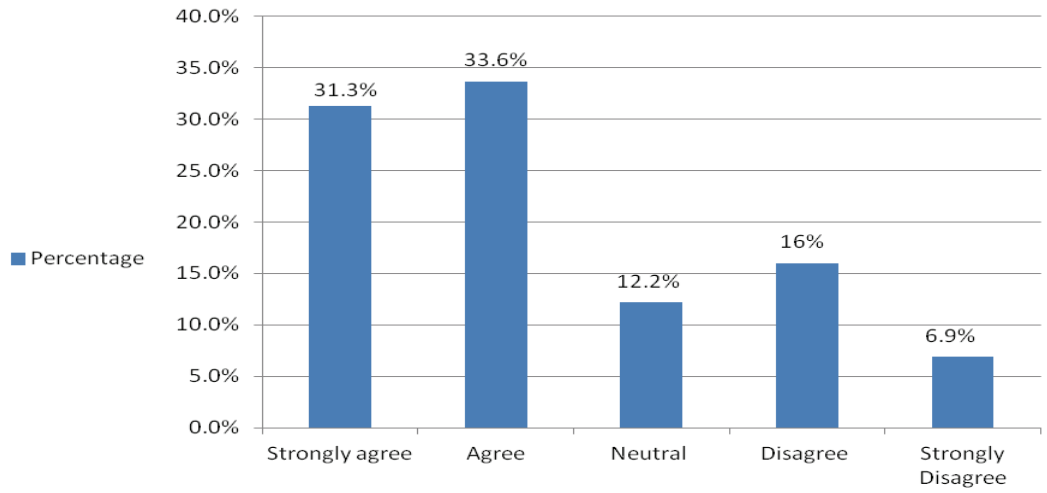


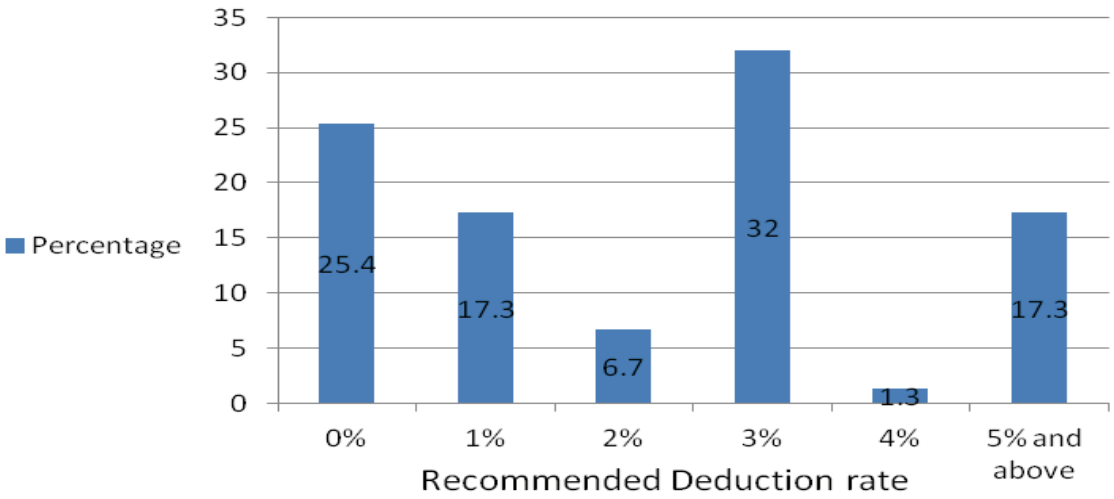
Figure 2: Percentage of Respondents that agree the importance of social health insurance scheme, 2015(N=232).



Respondents were asked to state their agreement, in LIKERT's scale, with the importance of social health insurance as a social device to reduce or eliminate risk to health and life. Thus, Ninety (64.9%) of the respondents agreed that it can contribute to disposable income, which affect their life (Figure- 2). Regarding the payment system, 68 (58.6%) respondents were preferred the progressive based paying system, 34 (29.3%) preferred payment based on the risk status, and 14 (12%) preferred to payment based on the member choice (Table-2).

Ninety (36.6%) respondents agreed that it is worthy to contribute to the social health insurance. One hundred forty four (61%) respondents recommended 1% deduction from their salary for social health insurance; whereas, 38 (25.3%) were not ready to pay for SHI every month. On the other hand, 28 (18.6%) were willing to pay greater than or equal to 4% of their salary. (Fig-3).

Figure 3: Percentage Respondents with the percentage that they recommended to be deducted from their salary(N=232).



Health related characteristics and way of getting health care services

Eighty two (32.3 %) respondents faced a medical problem that forced them to visit health facility. Sixty four (25.6%) respondents have had known illness. Forty six (41.8 %) respondents were taking medication for known illness. Regarding health service seeking, most respondents i.e., 110 (57.9%)) visited government health facilities when they needed medical service (Table 3).

Factors Associated With Willingness to Pay for Social Health Insurance

Based on the model sex, employment scheme, years of service (having 6 to 10 years experience), having known illness, and awareness on the benefit of SHI were the independent factors used to predict the willingness of respondents to pay for their social health insurance Those who are female were 12.49 (AOR=12.49, 95% CI (3.276-47.62) more likely willing to pay for their social health

insurance; employment scheme were significantly associated with WTP (X2 = 2.788, P-Value = 0.006). Respondents having service year between 6 to 10 years were (AOR=123.67, 95% CI 1.12-12.03) more likely willing to pay for their social health insurance, and those who worked more than 10 years were less likely willing to pay for their social health insurance (AOR= 0.158, 95% CI 0.032-0.777). Those who had known illness were 15.95 time more likely to pay for their social health insurance (95% CI, 4.21-60.39). Knowing the benefit of social health insurance has independently significant association with the willingness of respondents to pay for their social health insurance with AOR =10.35, 95% CI, 3.42-31.37(Table 4).

Table 4: : Independent Predictors of WTP for the proposed SHI among health care workers under federal Hospitals, Addis Ababa, Ethiopia, 2015.

Characteristics	Category	WTP		COR (95% CI)	AOR (95% CI)
		Yes	**No**		
Sex	Male *	78	48	1	1
	Female	94	12	**4.82(2.39- 9.70)***	**12.49(3.276-47.62)****
Employment scheme (226)	Employed by Assigned to Seconded to	$X^2 = 2.788$ P – Value = 0.006**			
Service year	< 5 years	92	24	1	
	6 to 10 years	28	18	**2.46 (1.172- 5.18)****	**3.67(1.12-12.03)****
	>10 years	18	6	1.27 (0.457- 3.57)	**0.158 (0.032-0.777)****
Known illness	Yes	52	6	**3.86(1.56-9.59)****	**15.95(4.21-60.39)****
	No	112	50	1	1
Benefit of social health insurance	Yes	108	14	**6.7(3.33-13.50)****	**10.35(3.42-31.37)****
	No	46	40	1	1

Discussion

The proportion of respondents willing to buy health insurance in this study were 74.1% which is almost similar to a study done among Sodo town teachers and among sampled households of Bench Maji town which was 74.4% and 78% respectively. This could be due to the awareness and demographic and cultural similarities among respondents of the current study and the other studies conducted in Ethiopia while it is more higher than a CBHI study done in Cameron(40%). This difference could be due to gaps in awareness ,religious values and beliefs in the later study. Moreover the proportion respondents who were aware of about SHI in this study were 64.6% which is similar with the study done India (64%). This consistency could be due to impact of the media which played an important role in the dissemination of information in both studies(12, 16, 21,).

In this study Females are more likely to pay than males with COR 4.82 (95% CI (2.39- 9.70). This could be females may be more concerned about the issues and feel responsibility. Full time workers are less likely willing to pay with COR 0.10(95% CI (0.02-0.55). The odds of willingness to pay for their SHI among front line management workers were 3.65(95% CI (1.10-12.14) more than top line and middle line management level workers. This could be due to the health security and out of pocket payment capacity of lower level mangers.

Respondents having work experience between 6 to 10 years were more likely 2.46 (95% CI (1.172- 5.18) than respondents having less than 6 years experience and more than 11 years work experience. Respondents with Known illness had 3.86(95 CI (1.56-9.59) fold of willingness to pay for their social health insurance. This is definitely those who have known illness and not getting medical serve need service.

Similarly, a study done in Jimma town community depicts that, Sex and educational status of the head of the household, expenses for treatment, and presence of chronic illnesses in the household were among the independent predictors of demand for health insurance (12). Major reasons for not being willing to participate in health insurance were religious values and beliefs, ability to pay for their health-care cost, and feeling of being unable to pay the premium because of low income.
Those who have heard about SHI were 1.885 (95% CI (1.030-3.44) more odds of willingness to pay for their SHI than who did have, we know that having information is a factor which able us to decide the for our benefit. those who believe the benefit of SHI 6.7(95% CI (3.33-13.50) times more likely willing to pay for their social health insurance. The information we have that is positive for the concern we have is the major factor that make us to decide to do.

Even if most (64.4%) of the health workers interviewed respondents were heard about the very basics of health insurance significant amount were not aware. However, three fourth of those WTP for the proposed Social Health Insurance scheme, WTP was found to be predicted by sex, service year, having known illness and knowing the benefit of social health insurance

Concluding and Recommendations

In conclusion, this study has demonstrated that high number of respondents were willing to pay for their SHI. Females, more educated, and young, respondents show more interest in the special health insurance scheme and more likely to involve in the SHI scheme . working condition, employment scheme, service year, working hour condition, work level were associated with respondent's willingness to pay for their social health insurance. Most of the respondents with bad health status such as respondents who had known illness, took medications were more willing to pay, and also who have heard about SHI and those who believe the importance of SHI was willing to pay for SHI. WTP was found to be predicted by sex, service year, having known illness and knowing the benefit of social health insurance.

Willingness to participate is very high , as it is identified in this study, therefore starting the system and creating a way to improve should be the way out for this social health insurance. The already seating percentage should be again studied to be reprogramming the scheme since the study finds most of the respondents were willing to pay lesser. Thus, it is recommended that health policy/ program makers should engage key stakeholders such as health care workers at various levels in awareness creation and raising activities, and should promote the scheme so that every employee will be aware in it for successful implementation of the social health system in Ethiopia.

Competing interests

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

Authors' contributions

All authors contributed equally during the process of proposal development and report write of the research.

Acknowledgments

Authors would like to thank my Mr. Chalchis Amentie for his very useful feedback on these research activities. I also like to extend my gratitude for Dr. Million Molla and Mr. Getahun Hibdaye for supporting in data collation activity.

Thanks for the kind and smooth cooperation of all selected Health facilities under FMoH. Health facilities quality department plays curtail role in the coordination of data collection. Lastly, but not least, our heartfelt gratitude goes to professionals at various levels of the health care service who gave us their time to go through in filling the questionnaire.

Reference

1. Jesdapipat S. 'Willingness to Pay '. In: University CfEEC, editor. Bangkok, Thailand: Asian Climate Training (ACT).
2. Ali EE. Health Care Financing in Ethiopia: Implications on Access to Essential Medicines. Value in Health Regional Issues. 2014;4c:37–40.
3. EPHI. IMPROVING HEALTH CARE FINANCING IN ETHIOPIA. Addis Ababa, Ethiopia: Ethiopian Public Health Instituite; 2014. p. 11.
4. Abay Asfaw ,Emily GustafssonWright ,Jacques van der Gaag. Willingness to Pay for Health Insurance: An Analysis of the Potential Market for New Low Cost Health Insurance Products in Namibia AIID. 2004;RS 801/2
5. Federal Negarit Gazeta Proclamation No. 690/2010 (2010).
6. Alaro T, Woldie M, Ololo S. Willingness to Join and Pay for the Newly Proposed Social Health Insurance among Teachers in Wolaita Sodo Town, South Ethiopia. Ethiopian Jornal of Health Science 2014;24(3):195-202. Epub Jul 2014.
7. ML C, KI G, SN K, VR S, NR M, SB Y. Awareness Of Health Insurance And Its Related Issues In Rural Areas of Jamnagar District. Natl Jouranl of Community Medcine. 2013;4 (2):267-71.
8. Reshmi B, Nair NS, Sabu KM, Unnikrishnan B. Awarenessof Healthinsurance in a South Indian Population – Acommunity-Basedstudy. Health and Population Perspective 2007;30 (3):177-88.
9. Esther F Adebayo, John E Ataguba, Olalekan A Uthman, Charles I Okwundu, Kim T Lamont, Wiysonge CS. Factors that affect the uptake of community-based health insurance in low-income and middle-income countries: a systematic protocol. BMJ. 2014;4 (4). Epub December 3, 2014.
10. Molla A, Fentahun N. Predictors of willingness to participate in health insurance services among the community of jimma town, southwest ethiopia. Health Sysytem Insights. 2014 23(7):31-7.
11. Kebede A, Gebreslassie M, Yitayal M. Willingness to pay for community based health insurance among households in the rural community of Fogera District, North West Ethiopia. International Journal of Economics, Finance and Management Sciences. 2014;2(4):263-9.
12. Shafie A, Hassali M. 'Willingness to pay for voluntary community-based health insurance: findings from an exploratory study in the state of Penang, Malaysia'. PubMed Social Science Medcine. (2013);96(6):272-6. Epub 2014 Marc 14.
13. Onwujekwe O, Okereke E, Onoka C, Uzochukwu B, Kirigia J, Petu A. Health Policy and Planning 2. 2009;25:155–61. Epub 26, Oct,2009.
14. DONG H, KOUYATE B, CAIRNS J, SAUERBORN R. Differential willingness of household heads to pay community-based health insurance premia for themselves and other household
15. Drora DM, Radermacherb R, Koren R. Willingness to pay for health insurance among rural and poor persons: Field evidence from seven micro health insurance units in India. HealthPolicy. 2006;doi:10.1016//j.healthpol.2006.07.011.
16. Adebayo EF, Ataguba JE, Uthman OA, Okwundu CI, Lamont KT, Wiysonge CS. Factors that affect the uptake of community-based health insurance in low-income and middle-income countries: a systematic protocol. BMJOpen. 2014;4.
17. Marion Danis M, Francis Lovett, PhD, Lindsay Sabik, BA, Katherin Adikes, BA, Glen Cheng, BA, and Tom Aomo, BA. Low-Income Employees' Choices Regarding Employment Benefits Aimed at Improving the Socioeconomic Determinants of Health. American Journal of Public Health. 2007;Vol 97(No. 9):7. Epub September 2007.
18. Haile M, Ololo S, Megersa B. 'Willingness to join community-based health insurance among rural households of Debub Bench District, Bench Maji Zone, Southwest Ethiopia'. BMC Jornal of Public Health 2014. Epub 11 June 2014.
19. Preker AS, Carrin G, Dror D, Jakab M, Hsiao W, Arhin-Tenkorang D. Effectivenessofcommunityhealthfinancinginmeeting thecostofillness*. Bulletin of the World Health Organization. 2002;80:143-50.
20. Donfouet HPp, Makaudze E, Mahieu P-A, Malin E. The determinants of the willingness-to-pay for community-based prepayment scheme in rural Cameroon. Int J Health Care Finance Econ. 2011;11(3):209-20. Epub 2011 Aug 28.
21. Hailemariam D. Exploring alternatives for financing health care in Ethiopia: An introductory Review Article. [Ethiop J Health Dev. 2001;15(3):153-63