

# **EVALUATION OF HEALTH EXTENSION PROGRAM**

**RURAL ETHIOPIA, 2010**

## EXECUTIVE SUMMARY

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In 2004, Ethiopia launched Health Extension Program (HEP), to expand the national health program to include community based health interventions as a primary component of the HSDP. HEP is “a package of basic and essential promotive, preventive and curative health services targeting households in a community, based on the principle of Primary Health Care (PHC) to improve the families’ health status with their full participation”. HEP became a core component of the broader health system, and it is one of the strategies adopted with a view to achieving universal coverage of primary health care to the rural population by 2009, in a context of limited resources. The overall goal of HEP is to create a healthy society and reduce maternal and child morbidity and mortality rates. To ensure effective function of the HEP program, expansion of primary health care units, strengthening the health system and procurement of drugs and supplies have been emphasized in the design and implementation of HEP.

The implementation of nation-wide HEP, which is considered the most important institutional framework for achieving the Millennium Development Goals (MDGs), should be accompanied by monitoring and evaluation studies to demonstrate that the goals and objectives are achieved and to document factors that affect the success of the program. The Center for National Health Development in Ethiopia, The Earth Institute at Columbia University along with UNICEF and WHO country offices in Ethiopia designed evaluation study to assess the implementation process and effect of HEP on health outcomes across the country.

The study population for the HEP evaluation comprised all people residing in rural areas of the country including pastoralist communities. The overall objectives of the HEP evaluation study were: 1) to assess the implementation process, and 2) to determine the effect of HEP on health outcome measures. The evaluation aimed to compare the implementation process and effect of HEP on health outcome measures between the different regional states and population types (rural vs. pastoral communities).

The assessment of HEP implementation processes included the assessment of the health post performance, the HEWs performance, the support and management system of HEP, and the demand and perception of the communities. The assessment of the effect of HEP on health outcomes was undertaken using cross-sectional household surveys. A multi-stage cluster sampling method with village as the cluster unit was used to select sample households. Over 7,000 households were surveyed from 312 kebeles across the country. About 293 health posts and 399 HEWs were included in the study. Moreover, 113 HEW-supervisors, 64 District Health Office heads, 66 District Administration chairs and 135 Health Centers from the sampled districts were included in the study.

Data collection was undertaken through personal interviews using structured questionnaires and in some cases through observations. All the questionnaires were translated into local languages. The data collection was undertaken in February 2010. A summary of findings is given below:

### **Safe water supply, sanitation and hygiene**

#### Access to safe or improved water supply

About 62% of the people reported to have access to safe or improved water supply sources with high coverage in Dire Dawa (89%) and Tigray (77%), low coverage in Harari (29%) and Afar

(42%) regions. Access to safe water supply in Amhara, Oromia and SNNP regions showed an improvement over time, where 47.9%, 53.7%, and 61.9% of people had access to safe water supply in 2005, 2007, and 2010, respectively.

Although majority (70%) of respondents were aware of water-borne diseases, the practice of safe water management at unprotected sources and at home was generally low, reported by about 15% and 37% of the respondents, respectively.

#### Access to sanitation

Overall, 66.4% of the people had access to improved toilet facilities. However, consistent utilization and hygienic utilization (but without hand washing facility) was observed in only 36.2% and 13.3% households, respectively. Model-family showed a significant impact on access to sanitation. Access to sanitation was significantly higher among model-family households (90%) than households who had not yet participated in model-family training (67%). Access to toilet facility in Amhara, Oromia, and SNNP regions a significant improvement over the last five years from 40.5% and 58.2% in 2005 and 2007, respectively, to 68% in 2010.

#### Personal hygiene practices

Hand washing practice, at least at three of the five critical times in a day, was reported by only 27.2% of households. The most frequently practiced critical hand washing times were before eating (76.6%) and before food preparation (61.6%). The least frequently practiced critical hand washing times were after defecation (16.5%) and after attending a defecating child (7.9%).

#### Housing and housekeeping practice

About half (52%) of the households surveyed had ventilating windows, while 54% and 44% of the households had separate place for animals and separate kitchen, respectively.

#### Conclusion and recommendations

Access to safe water supply is encouraging and has improved significantly over time. The increased access to safe water would create an enabling environment for the desired change in personal hygiene behavior such as adopting consistent hand washing at critical times in a day since it requires adequate access to adequate quantity of water. Safe water management practice at the source and home remains low and HEP should focus on creating knowledge and skill on safe water management practice through education and demonstration approaches.

Coverage of households with latrine facility has shown an improvement over time, and the finding that almost all model-family households have access to latrine facility indicates the effectiveness of HEP and specifically the model-family approach. Thus, the best approach to ensure universal coverage of households with improved latrine facility is to enroll step-by-step all households into model-family along with the scale up of community wide behavior change and open defecation free status. However, consistent and hygienic utilization of latrines has been low; thus, much effort is needed to change the behavior of households to consistently and hygienically use the latrines being constructed

Although there was encouraging practice of hand washing during some of the critical times in a day and the use of soap (or ash) when washing hands, it is necessary for HEP to have a target of enabling housemaid women and/or child caretaker(s) adopt a regular practice of hand washing after contact with faeces using soap or ash.

In conclusions, to ensure further improvement in access to WASH interventions coverage and safe hygiene practices among households, in the rural areas of Ethiopia, the need to design and effectively implement locally appropriate behavior change interventions remains evident.

## **Family Health**

### Family Planning

The majority of married women knew any contraceptive method (81.1%) and any modern contraceptive method (79.6%). From the modern methods, injections and pills were widely known (72.7% and 62.6%, respectively). About 45% of the married women have ever used any modern contraceptive method and the commonly used methods were injections followed by pills. More than a quarter (28.7%) of the married women was also currently using modern contraceptive methods, and injection was the main (24%) method being used. The current use of any contraceptive method among married women was higher among model-family households (44.3%) than non-model-family households (31%).

The current use of contraceptive methods has increased significantly over the last five years in Amhara, Oromia and SNNP regions. The weighted average of current use of any contraceptive method for the three regions increased to 31% in 2010 from 17% and 19% in 2005 and 2007, respectively.

The source of the mainly used modern contraceptives methods, injection and pills, were primarily health posts (49.2% for injection and 46.7% for pills). Condoms were also mainly found from health posts and health centers (43.2% and 31.6%, respectively). The main sources of information for women about family planning were health workers and health extension workers (36.4% and 28.8%, respectively).

### Antenatal Care

About half of the pregnant women in the past five years before the survey had at least one ANC. 25.3% had follow ups by health professionals and 22.5% had follow up by HEWs. Overall, ANC visit was higher among model-family household (70.2%) than non-model-family households (53%). The main reason for this was the ANC service provided by HEWs. The proportion of women who had ANC provision by HEWs was higher among model-family households (45.4%) than non-model-family households (28.1%).

ANC coverage has increased significantly over the last five years in Amhara, Oromia and SNNP regions. The weighted average of at least one ANC visit in the three regions was 35.2%, 42.8%, and 49.4% in 2005, 2007, and 2010, respectively. The ANC service provided by HEWs has increased dramatically over time. The weighted average of ANC by HEWs for the three regions increased to 25.6% in 2010 from 11.3% and 0% in 2005 and 2007 respectively.

### Delivery

Health professionals assisted only 6.8% of deliveries, while 2.2% of deliveries were assisted by HEWs. The majority of the deliveries were assisted by family members and traditional birth attendants (47.7% and 35.9% respectively).

There was no important difference in the percent of skilled personnel assisted deliveries by model-family training and graduation status. Moreover, there was no substantial improvement over the last 5 years on skilled deliveries.

### Postnatal Care

From all births in the past 5 years before the survey, 14.3% had PNC while from the last live births before the survey 13.2% had PNC. Among all last life births of the last five years before survey, 3.2% had PNC provided by health professionals whereas HEWs provided PNC for 4% and traditional birth attendants provided for 1.7% of the last live births.

The PNC coverage was similar between model-family and non-model-family households; however, there was an improvement over the last five years on the proportion of women who received ANC services.

### Child Care

For children < 4 months of age, 66.7% were exclusively breastfed and for the age group < 6 months, 61.2% were exclusively breastfed. Complementary feeding practice in 6-9 months of children was reported in 28.5% of the children and for children < six months of age, complementary feeding practice was reported in 14.6% of the children.

The prevalence of fever in the under five children was observed to be 9.8%. From the children who had fever, 21.4% took antibiotics. The prevalence of acute respiratory infections in the preceding two weeks before the survey was found to be 7%. The percentage of children with symptom of ARI who received antibiotics was 10.6%.

Among under five children, the prevalence of any form of diarrhea and bloody diarrhea in the past two weeks before the survey was 9.5% and 1.7%, respectively. Among the under five children who had diarrhea in the past two weeks, 56.4% had received any form of oral rehydration therapy (21.9% received ORS). About 15% of under five children who had any form of diarrhea received antibiotics and a similar proportion of children with bloody diarrhea (14%) received antibiotics. ORS received by under five children who had diarrhea has increased over the last five years in Amhara, Oromia and SNNP regions. The weighted average of diarrhea treatment with ORS for the three regions increased to 21.3% in 2010 from 7.8% and 15.4% in 2005 and 2007, respectively.

## **HIV/AIDS**

### Knowledge of HIV/AIDS: Ever heard, Transmission and Prevention

The majority of men and women in rural Ethiopia have heard about HIV/AIDS (>90%).

The majority of women and men knew that a person cannot be infected by sharing food with a person who has HIV and most believed that HIV cannot be transmitted by supernatural means. Men had fewer misconceptions about HIV than women in knowing that a healthy looking person can have HIV and HIV cannot be transmitted by mosquito bites.

Spontaneous response to ways of reducing HIV/AIDS transmission was found to be very low for both sexes in all regions. For women the highest percentage (32.9%) was knowledge about being faithful to one partner whereas for men the highest percentage of knowledge about HIV prevention was condom use (41.1%).

The knowledge of both women and men who believed that people can avoid getting HIV by using condoms and by abstaining from sexual intercourse has increased over the years when

compared with the surveys done in 2005 and 2007 in three regions: Amhara, Oromia and SNNP.

Knowledge on using condoms and abstaining to reduce HIV transmission was also higher among women and men sampled from model-family households than those sampled from households who have not yet participated in the model-family training.

#### Stigma and attitude associated with HIV/AIDS

Although the proportion of women and men who showed acceptable attitudes towards those living with HIV was generally low, it has improved over the years when compared with the surveys done in 2005 and 2007 in three regions: Amhara, Oromia and SNNP which is encouraging.

The acceptable attitude towards those living with HIV was also higher among women and men sampled from model-family households than those sampled from households who have not yet participated in model-family training.

#### HIV Testing

Awareness about VCT is encouraging, 53.6% of women and 64.7% of men had ever heard of VCT. From those who had ever heard of VCT, the majority knew the places where to get VCT services (87.4% for women and 90.3% for men).

About quarter of those who had ever heard of VCT have been tested for HIV in the past 12 months before the survey.

There has been a general increment when compared to the 2005 and 2007 surveys done in three regions – Amhara, Oromia and SNNP. The proportion of women and men who tested for HIV over 12 months prior to the survey increased from about 8% in 2005 to about 27% in 2010.

The proportion of women and men who tested for HIV over 12 months prior to the survey was also higher among women and men sampled from model-family households (52.2%) than those sampled from households who have not yet participated in model-family training (27.1%).

#### Conclusion

Knowledge on HIV/AIDS, its transmission and ways of prevention has improved over time, and model-family resulted in improved overall knowledge on ways of preventive methods. However, there is still gap on knowledge of the ways of preventive methods, which requires strengthening efforts on this area. Although stigma and discrimination towards people living with HIV/AIDS showed improvement over time and among model-family households, it is still low. Similarly, awareness about VCT and actually testing has also showed dramatic improvement over the last five years and in particular among model-family households. To further strengthen the achievements obtained so far, scaling-up the training of model-family households will be the best approach.

#### **Malaria**

##### Knowledge on malaria transmission and prevention

From the total interviewed 5019 households, 62.6% have articulated the correct mode of malaria transmission. Although it is not the best percentage, it shows that people started to correctly identify the exact mode of malaria transmission.

The overall proportion of respondents' knowledge about mosquito nets was 93.2 %, and respondents' perception that sleeping under mosquito nets protects from malaria was 86.7%. The perception of respondents on the effect of spraying houses with chemicals to prevent malaria was 80.7%.

#### Coverage with IRS

The overall proportion of houses reported to had been sprayed with chemicals 12 months preceding the survey was 41.1%. This is by any standard the highest coverage reported in a country with a population of about 80 million people. However, there is a need to consider regional variations in every year IRS application as some regions (Oromia & SNNP) had shown more than 100% IRS coverage increment while others (Amhara) shown no increment in IRS coverage.

#### Mosquito net ownership and utilization

Households ownership of at least one mosquito net was 46.8%, however, it does not indicate the current mosquito net ownership status of households as the survey was conducted before the recent nation-wide major redistribution of mosquito nets.

The comparison of mosquito net coverage of households for Amhara, Oromia and SNNP for the years 2005, 2007 and 2010 shows that mosquito nets coverage dropped by about 40% from 2007 to 2010. Even if the present study was done before the recent mosquito net distribution in the country was started, the redistribution should have to be done before such drastic reduction in mosquito net ownership was observed, since people might lose there immunity due to the use of ITN in the previous years and may become at higher risk.

The overall percentage of people who slept under a mosquito net the previous night before the survey for all regions and all age and sex categories was less than 21%.

#### Prevalence of fever/malaria and treatment

The overall proportion of households with children ill with fever or malaria 2 weeks preceding the survey was 8.8%. However, it should be noted that for most part of the regions the time of survey (February) was out of the pick malaria transmission season in the country (September to December).

Treatment was sought for about 83% of children who were ill with fever or malaria two weeks preceding the survey, but treatment was sought within 24 hours of the onset of fever/malaria for 34.4% of children and within 24 to 48 hours for 32.4% of children.

Among the children ill with fever or malaria, the proportion who received effective anti-malarial drugs (at home or outside home) was 72.1%, while the proportion who received effective ant-malarial drug the same day was 14% and next day was 28.6%. The proportion with prompt treatment, who received effective ant-malarial drug the same or next day, was 42.6% (28.3% with Coartem, 12% with Chloroquine, and 2.3% with Quinine). The highest proportion who received effective ant-malarial drug the same or next day was reported from Amhara (49.3%) and SNNP (49%).

## Conclusion

About two-third of respondents know the correct mode of malaria transmission, which is encouraging, but universal knowledge on correct mode of malaria transmission is required to ensure that all households practice appropriate preventive measures. Thus, much effort is needed to create awareness on the correct mode of malaria transmission in addition to provision of preventive measures such as ITNs and IRS.

Respondents' knowledge and perception on the use of ITNs and IRS to prevent malaria is satisfactory. Coverage of households with IRS is very high and should be maintained at least at this level. However, the coverage of households with ITNs and the rate of utilization have dropped significantly in 2010, which indicates replacement of mosquito nets should have been done prior to 2010 to prevent such a drastic reduction in mosquito net coverage.

The high treatment seeking behavior and treatment with effective anti-malarial drugs found in this study is encouraging, although we should aim for universal coverage for treatment of fever or malaria cases. The implementation of HEP in all rural kebeles of the country has brought the service closer to home and contributed significantly to increased treatment seeking behavior and prompt treatment with anti-malarial drugs. However, more can be achieved if all health posts are equipped with RDTs and effective anti-malarial drugs, and HEWs are proactively visiting houses to identify and manage fever cases.



# 1. BACKGROUND

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## 1.1. HEALTH EXTENSION PROGRAM

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Ethiopia established a Health Sector Development Program (HSDP), in 1997/8. Although, the overall performance of the health sector had improved under HSDP, in particular in urban areas, the success to reach essential services to the people at the grass roots level through HSDP had been quite limited. The major challenges of the health system included low access to health care services, widespread poverty, inadequate access to clean water and sanitation facilities, and low health service utilization. The higher cost associated with expansion of standard health services, and the long time lag between production and deployment of higher level health professionals such as doctors continued to be the main challenges to address the health problems of rural and marginalized communities with the existing socio-economic situation of the country. The challenges were overwhelming, and the standard health system through the HSDP model could not address the major challenges. As a result, overall levels of disease burden, and child and maternal mortality appeared hardly to have shifted significantly in the six years that followed. For this reason, maternal and child mortality as well as the incidence of the major killers such as HIV/AIDs and malaria continued to be one of the highest in the world.

In 2004, Ethiopia launched Health Extension Program (HEP), to expand the national health program to include community based health interventions as a primary component of the HSDP. HEP is “a package of basic and essential promotive, preventive and curative health services targeting households in a community, based on the principle of Primary Health Care (PHC) to improve the families’ health status with their full participation”.

### 1.1.1 Goals and Objectives of HEP

Rapid expansion of HEP services is a core component of the broader health system, and it is one of the strategies adopted with a view to achieving universal coverage of primary health care to the rural population by 2009, in a context of limited resources. The overall goal of HEP is to create a healthy society and reduce maternal and child morbidity and mortality rates. The specific objectives include:

- Reduce morbidity and mortality of children and mothers
- Reduce morbidity and mortality from HIV/AIDS, tuberculosis and malaria through development of community skills and knowledge
- Prevent diseases caused by malnutrition, poor personal hygiene and contaminated food
- Prevent accidents and emergency illnesses, and administer first-aid to the injured and sick
- Develop community awareness, knowledge and skills in rural Ethiopia to prevent contamination from common sources including human excreta, animal wastes and pesticides

### 1.1.2 HEP implementation strategies

The government of Ethiopia recognizes that HEP will not be sustainable if infrastructures and health systems including human resources, management and support needed are not

addressed. To ensure effective function of the HEP program, expansion of primary health care units, strengthening the health system and procurement of drugs and supplies have been emphasized in the design and implementation of HEP.

HEP services are organized along geographic lines (kebeles): construction of a comprehensive network of “primary health care units (PHCU)” throughout the country with one health post in every rural kebele of 5000 people linked to referral health center. The HC and five HP surrounding the HC make a PHCU thereby making the service package and referral system linked to each other.

A health post is a two room structure of most peripheral health care unit and the first level for the provision of healthcare for the community, emphasizing preventive and promotive care. They serve as the operational centre for HEP. A total of about 15,000 health posts are being built and equipped to cover all the rural villages in the country. To ensure ownership of the health program by the community, the construction of health posts is undertaken both by the community and the government.

HEP services are provided by two Health Extension Workers (HEWs) deployed in each Kebele and stationed at the health post. In a country that has more than 80 ethnic groups, languages and cultures, essential services need to be delivered with community participation in ways acceptable and appropriate to each community. To address this complex situation and ensure local ownership of the program, the community is involved in the recruitment of candidates for training. One of the distinctive strategies in the implementation of HEP is the recruitment of female high school graduates from their respective villages, where possible, and nearby villages. After recruitment from their respective villages, the female high school graduates receive one year intensive theoretical and practical training on 16 health service packages. A total of about 30,000 HEWs are being trained to be deployed in about 15,000 villages. The female Health Extension Workers become employee of the government with regular monthly salaries and other benefits.

Management and support is critical in the implementation of HEP to ensure interventions are well coordinated; technical support is provided; inputs are provided in a timely and cost-efficient manner; resources are appropriately managed; effective monitoring and progress reporting is carried out; and challenges are identified and addressed in a timely manner. Unlike many PHC programs which are run by NGOs, HEP is fully owned by the community and the government, and, thus, managed in accordance with the decentralized structures of the country. The management and support of HEP corresponds with the overall government decentralized policy. Thus, the DHO is primarily responsible for the implementation, supervision and management of HEP.

### **1.1.3 HEP services and implementation modalities**

The services provided under HEP include 16 essential health packages under four major program areas.

1. *Hygiene and environmental sanitation*: This area deal with seven of the sixteen packages. These are: a) proper and safe excreta disposal system; b) proper and safe solid and liquid waste management; c) water supply safety measures; d) food hygiene and safety measures; e) healthy home environment; f) arthropods and rodent control; and g) personal hygiene.

2. *Disease prevention and control*: This area deals with four of the sixteen packages. These are: a) HIV/AIDS prevention and control; b) TB prevention and control; c) Malaria prevention and control; and d) first aid.
3. *Family health services*: This area deal with five of the sixteen packages. These are: a) maternal and child health; b) family planning; c) immunization; d) adolescent reproductive health; and e) nutrition.
4. *Health Education and Communication*: Cross cutting

Upon deployment to their respective communities, HEWs divide their time between providing services at the health post and undertaking community promotion program at the household level (domiciliary care). At the health post, HEWs spent 25% of their time providing services which include immunizations, injectable contraception, and limited basic curative services such as provision of anti-malaria treatment, first aid, management of diarrheal diseases and intestinal parasites.

The community promotion program is centered on volunteer community promoters (VCPs), working under the supervision and guidance of the HEWs. During the domiciliary care, the HEWs and VCPs provide support to households for behavioral change and motivate to utilize primary health care services. Along with the volunteer community promoters, each HEW will select 50-60 households for frequent visiting for about 96 hours of training in 3 to 4 months. The training includes, basic health action, persuasion, motivation, negotiation, encouragement, demonstration, provision of health services and transforming households to clean and safe home environment and healthy life style. Household adopting and applying more than 75% of the 16 packages of the HEP get certificate of completion and this go on until all households graduate.

## **1.2. CHALLENGES**

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The success of HEP in achieving its set goals and objectives could be affected by a number of complex factors. The quality of HEP services depends on the human resource capacity; ownership, access to infrastructure, utilities and other services; availability of medical equipments, drugs, and other supplies; availability of client friendly health service infrastructure; and strength of health systems. Combined with community generated demand and utilization for the services provided, these are all critical factors that can affect the successful implementation of the program.

There is a perceived risk that Health Extension Workers (HEWs) may not be equipped with the necessary skills and competence to properly implement 16 health service packages with one year of training. Quality of training has been cited as a determining factor in the performance and effect of health programs. The multitasking of HEWs, as well as unbalanced allocation of time among the service packages may also lead to inefficiencies of HEP services. Although, salary level is an important determinant of morale and retention of health personnel in the field, HEWs' perception and satisfaction with their living and working environment, supportive environment such as recognition of skills, performance based promotion, and presence of functional infrastructure including referral systems are also important. Moreover, the assistance from stakeholders and voluntary community health workers and continuing education they receive are important factors that may affect the quality of HEP services. Hence there is a

potential concern that the delivery of poor-quality and inefficient services may in turn lead to bypassing of the services by users.

The impact of such a large number of new health professionals will be a challenge to the capacities of the already understaffed and under-budgeted health system. Although supervision and support is a key for success of a program, supervisors are often poorly resourced and lack supervision techniques leading to none systematic and supportive supervision, which may affect quality of services and job satisfaction. The consensual participation of supportive health staff at the management level as well as at health centers is critical for successful implementation of health programs. Assessment of the supportive environment, and the district health staff in terms of their capacity and level of support they provide to the health posts is necessary to identify problems in the implementation of the program.

HSDP implementation was decentralized to the regions. Regional variation in implementation capacity may lead to differences in achieving a fully functioning HEP. Based on anecdotal evidence, the implementation of HEP in pastoralist areas in Afar, Benishangul-Gumuz, Gambella and Somali has been less satisfactory comparing to HEP in the rest of Ethiopia. This is partially due to the fact that HEP started almost two year later in these regions compared to the larger regions, the overall health system is weaker and there are limited trained human resources. Also the HEP package was not adequately adapted to the pastoralist setting with its nomadic lifestyle. However, further research is needed to establish to further develop and refine HEP in pastoralist areas.

Community participation, which is critical for the success of program implementation, is recognized as the backbone in the implementation of HEP. Understanding the community in terms of perception on the program, degree of participation and utilization of services is an important step to improve implementation strategies and approaches in community based programs.

The policy-makers and health workers need scientific evidence to improve the implementation of HEP, and to determine the impact of the huge investment on the health of the people. Moreover, given the limited resources in the country, information on the effectiveness of the program is needed to guide resource allocation decisions. The implementation of nation-wide HEP, which is considered the most important institutional framework for achieving the Millennium Development Goals (MDGs), should be accompanied by monitoring and evaluation studies to demonstrate that the goals and objectives are achieved and to document factors that affect the success of the program. Thus, independent monitoring of all the activities at all levels of the health system and assessment of the impact of the program on the health of the people is central to the success of HEP.

### **1.3. PRIOR SURVEYS**

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To determine the baseline health outcome measures, a cross-sectional household survey was undertaken in 2005 in randomly selected sample households from seven regions of the country. The seven regions included Tigray, Afar, Amhara, Oromia, SNNP, Harare, and Dire-Dawa. The main objective of the survey was to assess the baseline health status and knowledge, attitude and practice of the rural population prior to the implementation of HEP. The baseline information was aimed to be used as reference data to future HEP studies to evaluate the effect of HEP on health outcome measures. It was also aimed to determine and identify priorities for the activities

of HEP. Somali, Gambella and Benshangul-Gumze were not part of the baseline survey due to the fact that the regions were not about to implement HEP.

Through multi-stage cluster sampling method 47 districts and 188 villages were selected from the seven regions. Through random-walk method, 4,700 households were selected from the 188 villages and baseline data was collected to determine the pre-intervention health outcome levels.

A quasi-experiment design imbedded within the pre- and post-intervention design was employed to compare the relative change in outcome measures among intervention and control villages. Thus, a follow-up household survey was undertaken at the end of 2007 in a sample of households selected from villages enrolled at baseline in three regions (Amhara, Oromia, and SNNP regions). The interval period of the 2007 survey from the baseline survey was made intentionally to be two years in order to capture the opportunity of finding villages that have not been covered by HEP. This design resulted in creation of intervention villages (villages that have been covered by HEP) and control villages (villages that have not yet been covered by HEP). The evaluation of the effect of HEP on health outcome was based on comparison between a sample of villages surveyed before HEP implementation in 2005 and re-surveyed after HEP implementation in 2007; with a matched control sample of villages surveyed in 2005 and 2007. To determine the effect of the program, data from the baseline was compared to data in the follow-up survey for each group; this intra-group difference was then compared across groups, to proxy the 'effect' of the treatment vis-avis the control group over the evaluation period. Along the 2007 household survey, the implementation process of HEP, which included health post's and health extension workers' performance surveys were also undertaken in the sample intervention villages within the three regions.

The result of the baseline and follow-up surveys for the three regions has been reported. The household surveys results indicated a significant improvement in majority of health outcome measures over two years period, mainly attributed to HEP. The finding from the health post and HEWs performance surveys showed that majority of health posts were not adequately equipped with the necessary medical equipments, drugs and supplies, and the technical skills of HEWs particularly in some key HEP services was not up to the standard. Moreover, some of the health posts were staffed with one HEW. These findings could be due to the fact that the follow-up survey was undertaken during the infancy stage of HEP and early implementation process of the program. The study provides a baseline assessment for prioritizing and deciding how to invest resources into the HEP.

## **2. EVALUATION METHODS AND DESIGN**

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### **2.1. PURPOSE OF THE EVALUATION**

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The study population for the HEP evaluation comprised all people residing in rural areas of the country including pastoralist communities. The regions include Tigray, Afar, Amhara, Oromia, SNNR, Harare, Dire Dawa, Somalia, Gambella and Benshangul. The overall objectives of the HEP evaluation study were: 1) to assess the implementation process and status of HEP in the different regional states, and 2) to determine the effect of HEP on health outcome measures.

This study would enable us to track the trend of change relative to the prior surveys undertaken. Most regions and districts have had adequate time to implement the HEP as per the standard, in particular to supply each health post with the basic medical equipments, drugs and other supplies. Most health posts would have been staffed as per the standard. District health offices would have put in place management and support systems to HEP. Furthermore, some of the villages have already implemented HEP for about four years, which is adequate intervention time to bring about significant and meaningful change on health outcome measures. More importantly, the series of household, health post, HEWs' and their supervisors' performance surveys would provide important information to FMOH and Regional Health Bureaus. In particular, information on pastoralist HEP implementation status, processes, and immediate effects on health outcomes of the people in the Developing Regional States (DRSs), which were not included in the previous HEP studies, would have paramount significance in the way forward and soliciting technical as well as logistical support to these regions.

### **2.2. OBJECTIVES OF THE HEP SURVEY**

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HEP has been rolled out to all rural villages. Although the duration of implementation of HEP may vary from village to village due to the phased implementation of HEP, given the speed of implementation of the program during the past four years, it was expected that all villages would have been covered by HEP by 2010. Through the comparison of outcome measures between the survey periods (2005, 2007, and 2010) the change in outcome measures that occurred since the implementation of HEP would be determined. The rate of relative change in outcome measures would be compared between regions that have baseline information on the outcome measures. Thus, the main objectives of the follow-up survey were:

- 1) To assess HEP implementation process and the change in implementation status in Amhara, Oromia, and SNNR relative to 2007 baseline levels,
- 2) To determine baseline HEP implementation process and status in pastoralist communities,
- 3) To assess the changes in health outcome measures as a result of HEP implementation over the last five years,
- 4) To establish baseline health outcome levels for the four DRSs, and
- 5) Identify specific health service areas that require further strengthening, and provide recommendations to stakeholders.

The specific objectives of the 2010 HEP survey are presented below by level of the health system.

(a) HEWs' performance survey

- To assess perception and satisfaction of HEWs in the living and working conditions;
- To assess the performance, skills and technical capacity of HEWs in the various HEP components, and determine the effectiveness of courses/training given;
- To determine baseline levels on HEWs' performance in the four DRS;

(b) HEW supervisors' performance survey

- To assess perception and satisfaction of supervisors' working conditions;
- To assess the performance, supervisory skills and technical capacity of HEW supervisors in the various HEP components;
- To assess the frequency and quality of supervisory visits by HEW supervisors;
- To estimate the time used to supervise HEWs;
- To determine baseline levels on HEW supervisors' performance in the DRSs;

(c) Health posts' performance

- To assess existing the institutional capacity of the health posts relative to baseline
- To assess improvement in the availability of the 16 HEP service packages
- To assess improvement in readiness of health posts to provide quality HEP services
- To determine baseline levels on health posts' performance in the DRSs.

(d) Health center

- To assess the involvement of health centers in technical support and supervision of HEWs
- To assess the involvement of health centers in provision of supplies to the health posts
- To assess the linkage of health centers with health posts in the management of referred patients

(e) Voluntary Health promoters (VHPs)

- To assess the perception of VHPs in the implementation of HEP
- To assess the level of engagement of VHPs in support of HEWs

(f) Management and support (District)

- To assess the human resource capacity of the district health office;
- To assess the performance management system of the district health office;
- To assess the organizational structure of the DHO in administration, coordination and support of HEP;
- To identify best practices in the implementation and management of HEP;
- To assess the health information management system of HEP;

(g) Household survey

- To determine the effect of HEP implementation on health outcome measures over four years;
- Assess the perception, demand, utilization and satisfaction of the community on the HEP services and determine the change from the baseline determined in 2007;
- Determine baseline levels of health outcomes in the DRSs;
- Assess the perception, demand, utilization and satisfaction of the community on the HEP services in the DRSs;
- Assess if there is a difference of demand, access and knowledge of HEP among non-model families and graduated model families;

## **2.3. EVALUATION METHODOLOGY**

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### **2.3.1. Study design**

By including all regions of the country in the study, the evaluation aims to compare the implementation process and effect of HEP on health outcome measures between the different regional states and population types (agrarian vs. pastoral communities). To achieve the overall objectives of the evaluation, the study was designed to have two components linked to each other by design: (1) program management, health facility and health provider surveys to assess the implementation process of HEP; and (2) household survey to estimate the effect of HEP on health outcome measures.

The assessment of the effect of HEP on health outcomes was undertaken through repeated cross-sectional surveys of sample respondents to determine the change in outcome measures over time. In repeated cross-sectional design, subjects are independently sampled at each survey period to represent the population for that time period. However, to ensure comparability of sample respondents during different survey periods, the new set of respondents were sampled from the same set of randomly selected districts and villages.

The assessment of HEP implementation processes included the assessment of the health post performance, the HEWs performance, the support and management system of HEP, and the demand and perception of the communities. The assessment of HEP implementation would enable us to compare the implementation process between the different regions as well as between the agrarian and pastoralist communities. Moreover, the information on the HEP implementation process would be used to determine the influence of the HEP implementation environment on the effect of HEP on health outcome measures. To determine the influence of HEP implementation environment on the effect of HEP, the two components of the study were linked to each other by design. Thus, the assessment of the HEP implementation process was undertaken at different levels of the health system serving the communities where sample households were selected for health outcome determination. Health posts located in the sample villages, HEWs working in these health posts, respective referral health centers, respective HEW supervisors and district health management responsible for the supervision and management of HEP were automatically sampled for the assessment of the implementation process.

### **2.3.2. Sample size and sampling design**

#### **Sample size**

The country level sample size was estimated to be **7128** households. In order to estimate most of the outcome measures (indicators that are less demanding in terms of sample size) in the big regions (Oromia, Amhara, SNNP and Tigray), the sample size estimated was considered the minimum sample size for these regions. Furthermore, we made adjustments for the population size of the regions in an effort to satisfy the requirement of additional indicators that are more demanding in terms of sample size. Based on the adjustment, the sample sizes were 1,800, 1,500, 1,200 and 700 households for Oromia, Amhara, SNNP and Tigray regions, respectively. Moreover, the sample size for Gambella region was adjusted to be 728 in order to be able to estimate majority of the indicators in the region representing the pastoralist communities. Although we have adjusted the sample size based on the population size of the regions, indicators that are most demanding in terms of sample size requirement (such as breastfeeding



assessment) will still be assessed reliably at national level only. For logistical reasons, the sample size for the smaller regions (Afar, Hareri, Dire-Dawa, Somali and Benshangul Gumuz) was not determined to enable estimation of outcome measures at regional level reliably. The households sampled from Afar, Hareri, Dire-Dawa, Somali and Benshangul Gumuz, which were 200, 100, 100, 400, and 400 households, respectively, were meant to contribute to the national estimates. After determining the overall sample size requirements in terms of number of households, we determined the number of clusters that needs to be sampled. Based on cluster sampling practice, it was decided that one cluster would contribute 25 households. By dividing the total number of sample households by 25, we determined the number of clusters by region. The exception was in Gambela region, where the number of clusters (kebeles) was determined by dividing the sample households by 13 in order to increase the number of kebeles by twofold (by increasing the number of kebeles, the sample health posts was increased). These procedures resulted in 312 kebeles. The number of districts to be sampled to contribute kebeles (clusters) was based on the assumption that the selection of four clusters from one district would result in fairly representative number of districts. The use of four kebeles per district resulted in 71 districts. The selection of more kebeles from a district would result in inclusion of few districts that might not represent the target districts. Similarly, selection of very few kebeles from a district would result in large number of districts that could be difficult to manage logistically. **Table 1** shows the number of sample households, number of kebeles, and number of districts by regional states.

**Table 2.1: Sample households, kebeles, and districts by region**

Region	Number of households	Number of kebeles	Number of districts
Tigray	700	28	7
Afar	200	8	2
Amhara	1500	60	15
Oromia	1800	72	18
SNNP	1200	48	12
Gambella	728	56	7
Benshangul-Gumuz	400	16	4
Harar	100	4	1
DireDawa	100	4	1
Somali	400	16	4
<b>Total</b>	<b>7128</b>	<b>312</b>	<b>71</b>

### Sampling design

A multi-stage cluster sampling method with kebele as the cluster unit was used to select sample households. The multi-stage sampling method involved three stages: (1) systematic-random selection of districts (first stage sampling units) from each region with probability-proportional-to-size (PPS); (2) random selection of kebeles (clusters) within each selected district. Selection of clusters (second stage sampling units) was based on equal probability with the assumption that they have similar population size (average of 5,000 people); and (3) random selection of a constant number of households from each cluster at the third stage.

Selection of districts: The use of probability-proportional-to-size (or PPS) requires that the sampling frame of districts be available with measures of size. We developed a measure of size (based on total number of kebeles which is likely to be highly correlated with the number of

target sub-population) in advance of sample selection. The following steps were used in the selection of random sample of districts:

1. List of all districts (first stage sampling units) with corresponding measure of size was prepared. In Gambela and Somali regions, this procedure was modified, and the list of districts did not include all districts in the regions. Districts with security problems were excluded from the list.
2. Starting at the top of the list, the cumulative measure of size was calculated.
3. Sampling interval (SI) was calculated by dividing the total cumulative measure of size by the planned number of districts to be selected.
4. A random number (random start or RS) between 1 and SI was selected. We compared this number with the cumulative measure of size column. The district within whose cumulative measure of size the number RS falls was the first sample district.
5. Subsequent units were chosen by adding the sampling interval (SI) to the number identified in step (4); that is  $RS + SI$ ,  $RS + SI * 2$ ,  $RS + SI * 3$ , etc.
6. This procedure was followed until the list has been exhausted.
7. Steps 1-6 were repeated for all regions.

Selection of sample Kebeles: A slightly different procedure was used to select kebeles within the selected districts. In this step, all kebeles were given the same chance or probability of selection (this was used because each kebele has roughly 5,000 people). In this step, the objective was to select 4 kebeles from each selected district. The exception is that there is only one rural district in each of two regions (Harare and Dire Dawa), and we selected 4 kebeles from each district. The kebeles sampled at baseline were intended to provide sample households for future cross-sectional surveys as well.

Selection of sample households: The random-walk method used in EPI (expanded program of immunization) cluster surveys was employed in the selection of sample households within each village. This method involved (1) randomly choosing a starting point and a direction of travel within a sample cluster, (2) conducting an interview in the nearest household, and (3) continuously choosing the next nearest household for an interview until 25 target households (13 in the case of Gambela) has been obtained.

The following procedures were used to select the starting point: (1) the central location in the Kebele (cluster) was identified with a local guide who knows the locality very well; (2) a starting direction was selected at random by spinning a bottle or pen, (3) by moving in a straight line in that direction (from the central location to the periphery of the kebele), a number was assigned to each house found in that direction. From these numbered houses, one household was selected randomly. This household constituted the first household to be visited for the interview.

After selecting the first household, the second household to be visited was the one, which was nearest to the first. The next nearest household was the one whose front door is closest to the front door of the household first selected. The subsequent households were selected by moving clockwise (towards the right hand) from one household to the next nearest household. This process continued within the cluster until 25 households were interviewed.

## **2.4. STUDY PROCEDURE**

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### **2.4.1. Survey tools and instruments**

Data collection was undertaken through personal interviews using structured questionnaires and in some cases through observation. Questionnaires that were used for the baseline surveys were employed. The household level data collection employed questionnaires that included: 1) Household module on household characteristics; 2) Hygiene and Environmental Sanitation Module; 3) Malaria Module; 4) Family Health Module; 5) HIV/AIDS Module; 6) community perception, demand and satisfaction of HEP services; and 7) Model household Module. At the health post level: 1) HEW perception and satisfaction module, 2) HEW competence module, and 3) Model Household Module were used to collect data from HEWs for the assessment of their performance. Furthermore, health facility performance module was used to collect information from the health posts to assess the institutional capacity and performance of health posts. HEW supervisors' and District Health Office questionnaires were used for the assessment of the management and support systems to HEP. In addition questionnaires were developed and used for the assessment of voluntary health promoters' performance and assessment of health centers in terms of their linkage and support to the health posts. All the questionnaires were translated into local languages.

### **2.4.2. Study questionnaires**

1. Household module
2. Water and environmental sanitation module
3. Malaria and tuberculosis module
4. HIV/AIDS module
5. Family health module
6. Community satisfaction and perception on HEP module
7. Model Family Module
8. Voluntary health promoter module
9. Health facility (Health Post) performance module
10. HEW perception, working environment and time use module
11. Health provider's (HEWs) competence module
12. HEW\_Model Family Implementation Module
13. Health center module
14. HEW supervisor performance module
15. Woreda Health Management module
16. Woreda Administration module

### **2.4.3. Selection and training of survey personnel**

#### **Recruitment of survey personnel**

The quality of the information obtained from a survey depends on the quality of the work done in the field. Good survey organization and thorough field work are vital. Survey teams included interviewers, supervisors and regional coordinator.

The interviewers and supervisors were selected for their ability and motivation to perform their tasks. Field workers who were willing to follow instructions precisely and accurately, polite and able to establish a good relationship with the respondents were selected. Interviewers and

supervisors with previous survey experience in well-conducted surveys, fluent in local language, and experience with community level work were given priority. Female interviewers were also given priority in the selection process, because women respondents may be reluctant to provide answers on sensitive issues such as pregnancy outcomes or breastfeeding to male interviewers or to interviewers who seem too young.

One interviewer per village and one supervisor per district to supervise four interviewers were recruited. Based on the number of districts and villages sampled in each region, the number of supervisors and interviewers who undertook the data collection is summarized in [Table 2](#) by region.

Regional coordinators were hired for two month to help during the recruitment and training of the interviewers and supervisors as well as to coordinate and support the data collection process. Due to the large geographic area and number of districts sampled from the bigger regions, Amhara and SNNP regions were divided into two geographic zones, while Oromia was divided into three zones. The recruitment and training of field workers as well as coordination of the field work was undertaken by geographic zones in these regions. Thus, for these three regions, regional coordinators were hired for each geographic zone, bringing the total number of regional coordinators to 14 ([Table 2](#)). Staffs of the Regional Health Bureaus were primarily recruited to coordinate the fieldwork. The advantage of using the staff of the Regional Health Bureaus was to increase ownership of the survey results and to create awareness about the content of the survey and its relationship to planning and implementation. It would also serve as a capacity building mechanism for the staff. In addition to the staff of CNHDE, consultants were hired to help in planning, logistics, and implementation of the survey.

**Table2.2: Number of field workers by region**

Region	No. of districts	No. of kebeles	No. of households	No. of interviewers	No. of supervisors	No. of coordinators	Total field workers
Tigray	7	28	700	28	7	1	36
Afar	2	8	200	8	2	1	11
Amhara	15	60	1500	60	15	2	77
Oromia	18	72	1800	72	18	3	93
SNNP	12	48	1200	48	12	2	62
Benshangul	4	16	400	16	4	1	21
Gambela	7	56	728	28	7	1	36
Harari	1	4	100	4	1	1	6
D.dawa	1	4	100	4	1	1	6
Somali	4	16	400	16	4	1	21
<b>Total</b>	<b>71</b>	<b>312</b>	<b>7128</b>	<b>284</b>	<b>71</b>	<b>14</b>	<b>369</b>

### Training of survey personnel

It is essential to have high-quality data. This would be possible only if we allow enough time to train the supervisors and interviewers thoroughly. In order to ensure quality training, the following steps were followed before training and during training: plan ahead and make survey instruments and guides ready; make sure adequate space was available for training; provide facilities for refreshments (a good working atmosphere during the training course can help to motivate interviewers to perform well in the field); use audiovisual aids, such as overhead projection, during the training; and identify typical field locations for practicing household selection and interviews.

A total of 369 persons including 14 regional coordinators, 71 supervisors and 284 interviewers participated in the training. A one-week training of regional coordinators was conducted centrally. During this training all CNHDE staff and partners who were involved in the survey have participated as trainers and facilitators. Each of the regional coordinators with the support of CNHDE, UNICEF and WHO facilitators undertook training of interviewers and field supervisors in each region. One-week training was given to all survey personnel and an additional day of training for supervisors. Survey personnel were acquainted with HEP, objectives of the survey, as well as the survey tools, instruments and methodology. During both phases of training, each participant completed two sets of questionnaires in non-sample households as part of the training. A verbatim type training manual was prepared and issued to all the supervisors and interviewers so that they could consult it for any problems they may face during field activities. Moreover, all personnel including data collectors and supervisors received training on non-coercion in study enrollment, the avoidance of prompting, and how to be attentive to subject's reactions to sensitive questions. There was presentation on Human Subjects.

The training course of field workers involved the following:

**Day 1:** Explain thoroughly the purpose of the survey.

During this session, the whole survey procedure was outlined. The importance of the data to be collected and what will be done with it was explained in order to motivate the field workers. Moreover, the administrative arrangements for the field work and specifically, the details of the working hours and pay, the survey schedule, transportation arrangements and everyday procedures was explained during this session.

**Days 2-4:** Discuss the survey procedures and questionnaire.

Question-by-question discussion of the questionnaire was conducted. Interviewing technique including how to gain the confidence of the respondent, how to avoid inducing answers, the importance of completing each assigned interview and of following standard procedures was discussed. Demonstration interview and recording data was done through role-playing interviews.

**Days 5-6:** Conduct a field exercise and have further discussion of interviewing; and Human subjects and non-coercion in study enrollment training.

Field practice was organized and each trainee completed at least 2 practice interviews in the field. Observation of interviewers' practice and onsite feedback was provided by trainers. Discussion of problem of the interviewer influencing the respondents' answers and other interviewer mistakes was undertaken.

**Days 7:** A one-day additional training course for supervisors

Household selection and quality control

#### **2.4.4. Fieldwork**

The data collection was undertaken in February 2010. Enumerators administered household level questionnaires, while supervisors administered health post level questionnaires in addition to supervising the work of enumerators. The regional coordinators also administered district

level questionnaires. A brief description of the activities undertaken by the field supervisors and interviewers is summarized as follows:

The *field supervisor's job* was to:

1. Identified the clusters to be surveyed
2. Supervised four interviewers as they perform the survey
3. Ensured that the interviewers follow instructions
4. Answered interviewers' questions as they arise
5. Control the data quality by checking for errors during the interviewing, by checking that forms are completed fully and correctly and by checking that all the respondents are answering the questions
6. Identified problems and retrained interviewers who are doing their job incorrectly
7. Undertook random check of sample households
8. Administer health post level questionnaires

The *interviewer's job* was to:

1. Identified the specific households to be surveyed
2. Gain the consent of respondents to be interviewed
3. Conducted interviews using the standard questionnaire
4. Maintained standard procedures in conducting the interviews and recording the answers.

## **2.5. CONSENT AND CONFIDENTIALITY OF STUDY DATA**

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Recruitment of study subjects was carried in person by approaching households selected for inclusion in the study. The purpose of the study and general procedures was explained to the household head, who would be asked if interested in participating. Household heads and individual survey subject were informed of the objectives of the study, the length of the interview, risks associated with the study, any discomfort and inconvenience associated with it, as described on the consent forms. Oral consent was then obtained from study subjects.

The information gathered in the interview is kept confidential and will not be shared with any persons or agencies not affiliated with this study. The answers of the respondents were combined with the answers of other households in such a way that it is not possible to associate particular responses with particular households. All households were assigned a code, and this code is stored separately from the responses to the survey. Individual responses are thereafter referred to by codes alone.

## **2.6. DATA PROCESSING**

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Upon completion of the data collection and editing, data entry clerks having competency and experience were hired. The data managers at CNHDE recruited and trained the data clerks. The survey data was entered in CSPro. To ensure quality of data, double data entry was done. Data was cleaned and analyzed with STATA. Additional data manager were hired for about 5 months to work with the existing data manager at the CNHDE. The data managers, a biostatistician and an epidemiologist were involved to undertake the statistical analysis. The analysis involved determination of pooled estimates of indicators and by region (for bigger regions). The statistical

analyses for estimation of pooled estimates involved appropriate weights to address the complex design of multi-stage sampling design. Four consultants were hired for five months to help with interpretation of results and report writing.

### **2.6.1. Key Indicators to be measured**

#### **(a) HEWs' performance survey**

##### HEWs' perception and satisfaction

- Percent of HEWs satisfied with living and working conditions
- Percent of HEWs who initiated model household package service
- Percent of HEWs who received re-fresher courses
- Percent of HEWs who received clean and safe delivery training
- Percent of HEWs supervised

##### Time use

- Percent of HEWs working per the standard number of days per week
- Percent of HEWs time spent at the health post

##### HEWs knowledge and skills

- HEWs who correctly describe signs and management of obstetric and neonatal problems
- HEWs who can correctly state schedules for vaccination
- HEWS who can correctly state and describe signs and treatment for malaria
- HEW who can correctly state and describe signs and management of children with fever
- HEWS who can correctly read expiry date on the drugs
- HEWs with a weekly or monthly schedule/plan to reach their monthly targets
- HEWs who observed can demonstrate how to correctly prepare a delivery bed and place a mother ready for delivery

#### **(b) HEW supervisors' performance survey**

- Percent of HEWs supervisors who are satisfied with working conditions
- Percent of HEWs supervisors who received supervisory training

#### **(c) Health Posts' Performance Survey**

##### Characteristics of health facilities

- Percent of health posts staffed as per the HEP standard
- Percent of HPs with access to water and sanitation facilities
- Percent of health posts with a clear timetable displayed on the outside of the HP where HEW indicate where they will spend the different days of the week and when the HP is open for visits

##### Readiness of health posts to provide HEP services

- Percent of HPs equipped with the minimum medical equipments
- Percent of health posts with basic drugs and supplies per the HEP standard
- Percent of HPs with no stock-outs of supplies in the 3 months preceding the survey

##### Productivity of health posts

- Number of clients who received services per HP in the year preceding the survey (average)

##### Quality of HEP service delivery and support systems

- Percent of HPs with correct cold chain management practice
- Percent of HPs supervised at least once in the 3 months preceding the survey

#### **(d) Health center**

- Percent of health centers that provide technical, logistic and administrative support to HEP
- Number of health personnel involved in technical support and supervision of HEWs
- Number of referred patients from health posts managed at health center

**(e) Voluntary health promoters**

- Percent of VHPs satisfied with the working conditions
- Percent of VHPs supervised by HEWs in the month preceding the survey
- Percent of VHPs practiced the different HEP activities in the month preceding the survey

**(f) Management and support**

- Percent of district health offices staffed as per the standard to support the HEP
- Percent of HEWs supervisors who received training on supervision techniques
- Percent of HEWs supervisors equipped with necessary skills and supplies for supervision
- Percent of HEWs supervisors who supervised the HEWs according to their plan

**(g) Household survey**

Nutrition and child health

- Exclusive breastfeeding (<6 months)
- Breastfeeding plus complementary food (6-9 mo.)
- Vitamin A supplementation coverage
- Number of ORS packets distributed
- Oral rehydration and continued feeding
- Prevalence of diarrhea

Maternal and Newborn Health

- Antenatal care (at least one visit)
- Antenatal care (4 or more visits)
- Births attended by skilled health personnel or Skilled attendant at delivery
- Birth attended by HEW
- Postnatal care for mothers
- Postnatal care for newborns
- Contraceptive prevalence rate

Malaria, and HIV/AIDS

- Prompt treatment of malaria cases
- Household possession of mosquito nets
- Mosquito nets utilization
- Condom use rate of the CPR
- Condom use at last higher-risk sex (15-24 years)
- Accepting attitudes toward those living with HIV
- Misconceptions about HIV/AIDS (15-24 years)
- Voluntary Counseling and Testing

Sanitation & environmental sustainability

- Access to improved drinking water source
- Access to improved sanitation facility
- Percent of population using proper waste management
- Hygiene and hand washing

Community perception and satisfaction on HEP

- Percent of people who use HEP services
- Percent of people who demand HEP services
- Percent of people satisfied with HEP services



### 3. HOUSEHOLD CHARACTERISTICS

#### 3.1. DEMOGRAPHIC AND HOUSEHOLD COMPOSITION

##### Population by age and sex

Age and sex are important demographic variables and are the primary basis of demographic classification. The distribution of the household population in the 2010 HEP survey is shown in Table 3-1 by five-year age groups, according to sex. About 50 percent of the population was female, and 50 percent was male. The sex ratio (the number of men per 100 women) was 98. The household population had a greater number of younger people than older people. Forty-eight percent of the total population was under 15 years of age while 2.2 percent was 65 or older. The proportion of the population in each age group declined as age increases.

Table 3-1: Percent distribution of the sample population by five-year age group and sex, rural Ethiopia 2010

Age group	Male	Female	Total
< 5	13.1	13.1	13.1
5 - 9	18.0	18.2	18.0
10-14	17.3	16.8	16.9
15 - 19	9.6	11.0	10.2
20 - 24	7.2	7.0	7.1
25 - 29	8.4	6.1	7.2
30 - 34	5.7	5.0	5.3
35 - 39	6.0	5.4	5.7
40 - 44	3.9	4.1	3.9
45 - 49	4.0	3.6	3.8
50 - 54	2.5	2.5	2.5
55 - 59	1.5	2.4	1.9
60 - 64	1.2	2.1	1.7
65 - 69	0.6	1.3	1.0
70 - 74	0.4	0.8	0.6
75 +	0.5	0.8	0.6
Not stated	0.1	0.1	0.6
<b>Number</b>	<b>17,710</b>	<b>18,005</b>	<b>35,715</b>

##### Household composition

Information on key aspects of the household composition, including the sex of the household head and the size of the household, is presented in Table 3-2. Female-headed households are usually poorer than male-headed households and economic resources are often more limited in larger households. Crowding in households with large household size can also lead to health problems. Households in rural Ethiopia were predominantly headed by men (81.6 percent). The result indicated that the average household size for rural households was 5.1 persons, which is slightly lower than the 2005 EDHS (5.2 persons). Single-person households in the rural areas comprised only 2 percent of the households, whereas 6.8 percent of the rural households had nine or more household members.

**Table 3-2: Percent distribution of households by household head's sex & household size, rural Ethiopia 2010**

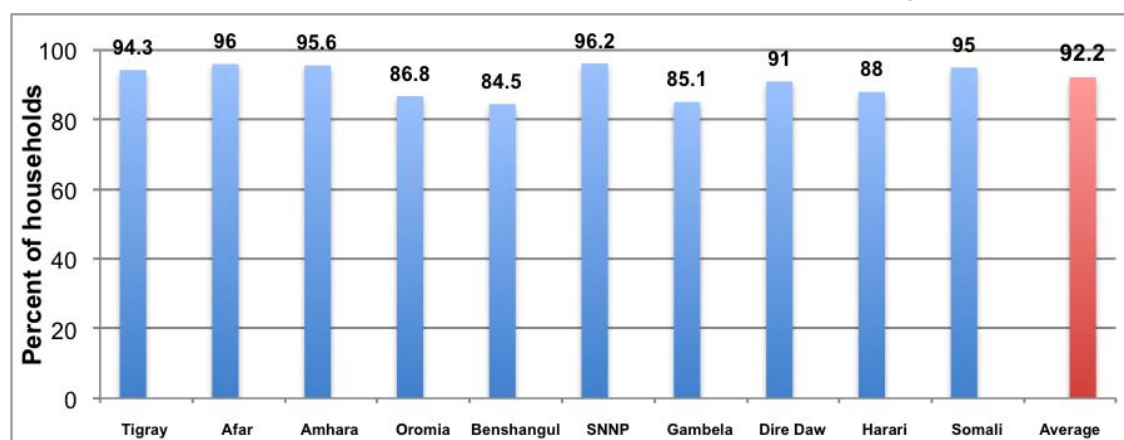
Region	Households headship			Number of usual members									Mean size	No. of households
	Female	Male	Not stated	1	2	3	4	5	6	7	8	9+		
Tigray	24.5	75.3	0.3	3.1	10.2	11.5	16.9	16.4	14.9	12.2	9.1	5.7	5.1	699
Afar	15.0	85.0	0.0	2.0	11.0	22.4	20.0	16.0	15.0	9.5	2.5	1.5	4.4	200
Amhara	16.5	82.9	0.6	1.5	8.9	17.2	21.6	19.0	14.0	10.1	4.6	3.0	4.7	1499
Oromia	15.8	83.3	0.9	2.4	9.2	14.4	17.2	16.7	14.7	9.7	8.5	7.4	5.1	1796
Benshangul	15.1	84.7	0.2	6.2	11.9	13.0	20.8	13.2	14.6	7.2	7.3	5.9	4.7	383
SNNP	14.1	85.1	0.8	1.8	5.1	13.2	13.1	17.6	16.7	12.5	9.2	10.8	5.8	1199
Gambela	26.0	72.9	1.2	1.8	5.4	15.5	18.2	23.5	16.5	10.4	6.0	2.7	5.0	725
Dire-Dawa	19.0	80.0	1.0	7.0	3.0	15.0	19.0	15.0	12.0	17.0	5.0	7.0	5.1	100
Harari	19.0	80.0	1.0	3.0	13.0	13.0	15.0	20.0	14.0	12.0	3.0	7.0	4.8	100
Somali	47.1	49.6	3.3	0.1	4.4	8.6	13.9	23.8	17.1	14.7	9.1	8.4	5.7	397
<b>All regions</b>	<b>17.6</b>	<b>81.6</b>	<b>0.8</b>	<b>2.0</b>	<b>8.1</b>	<b>14.6</b>	<b>17.4</b>	<b>17.8</b>	<b>15.1</b>	<b>10.8</b>	<b>7.5</b>	<b>6.8</b>	<b>5.1</b>	<b>7098</b>

### 3.2. CHARACTERISTICS OF HOUSEHOLDS

#### Physical access to health care service

Data was collected on the time (in minutes) taken to reach the nearest health facility. Households were asked to estimate the distance to the nearest health facility and school from their households (in minutes). On average, it took rural households about 30 minutes to reach the nearest health facility. A distance of five kilometers (one hour walking time) was used as a cut-off point to define physical access as a proxy for the availability of health care service. Based on this definition, about 92 percent of households were within one-hour (5Km) distance from a health facility. The physical access to health care service ranged from 84.5 percent in Benshangul Gumuz to 96.2 percent in SNNP region.

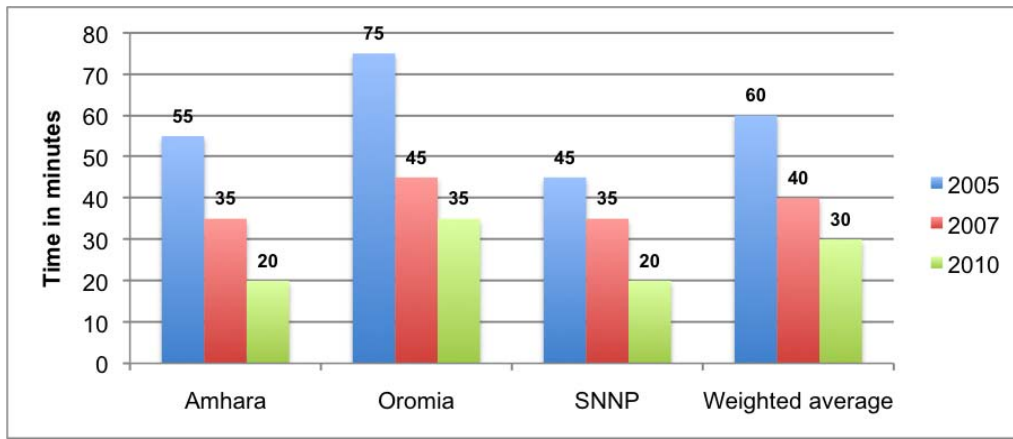
**Figure 3-1: Percent of households within one-hour (5 Km) distance of a health facility, rural Ethiopia 2010**



Data collected on existence of a facility within reasonable distance (5Km) from three regions (Amhara, Oromia and SNNP) in 2005, 2007 and 2010 was used to monitor the progress in physical access of the population to primary health care services over the last five years.

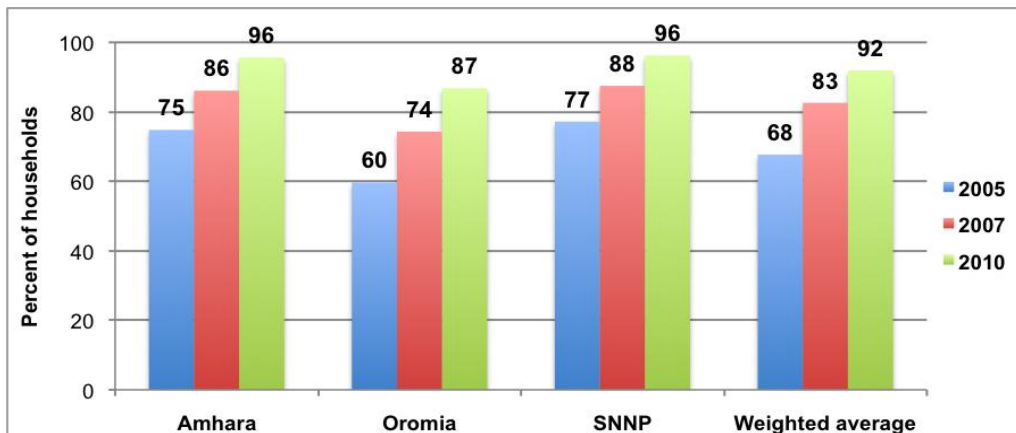
The overall walking time to the nearest health facility has improved over the last five years in the three regions. The weighted average time taken to reach the nearest health facility was sliced by half from 60 minutes, in 2005, to 30 minutes, in 2010, for the three regions. Although the trend was similar in all three regions, there was difference on the average time taken between the regions. The average time taken to reach the nearest health facility in 2010 was 20 minutes in Amhara and SNNP regions while it was 35 minutes in Oromia. The baseline (2005) average time taken to reach the nearest health facility was also higher for Oromia (75 minutes) compared to Amhara (55 minutes) and SNNP (45 minutes) regions.

**Figure 3-2: Average time taken in minutes to reach the nearest health facility, rural Amhara, Oromia and SNNP regions 2010**



Similarly, the percent of people with physical access to primary health care facility i.e. within a reasonable distance (5Km) to a health facility has shown a dramatic improvement over the last five years. The weighted average physical access to health facility was 68%, 83% and 92% in 2005, 2007 and 2010, respectively. The trend in improvement of physical access to health care services was similar in the three regions.

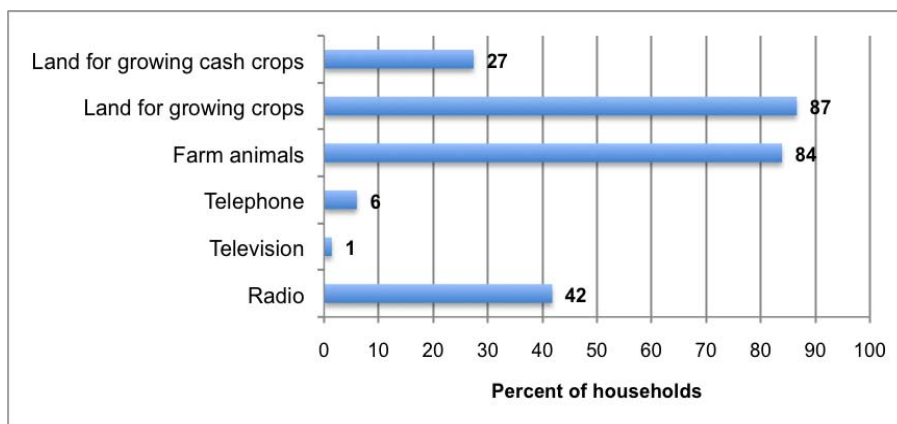
**Figure 3-3: Percent of households with physical access to a health facility by year, rural Amhara, Oromia, and SNNP regions 2010**



### Household possessions

Information on durable goods and other possessions such as ownership of radio, television, telephone, agricultural land (for growing crops and cash crops), and farm animals (cattle, camel, horse, mule, donkey, sheep and/or goats), which indicate a household's social and economic well-being, were collected from sample households. Majority of the rural households own farm animals (84 percent) and agricultural land (86.6 percent). Ownership of household effects including radio, television and telephone was relatively low. About 42 percent of households had a radio, 1.4 percent had a television, and 6 percent had telephone (mobile and/or fixed landline). According to the 2005 EDHS, 26 percent, 0.1 percent and 0.1 percent of rural households had owned a radio, a television and telephone, respectively, which showed a substantial improvement over five years.

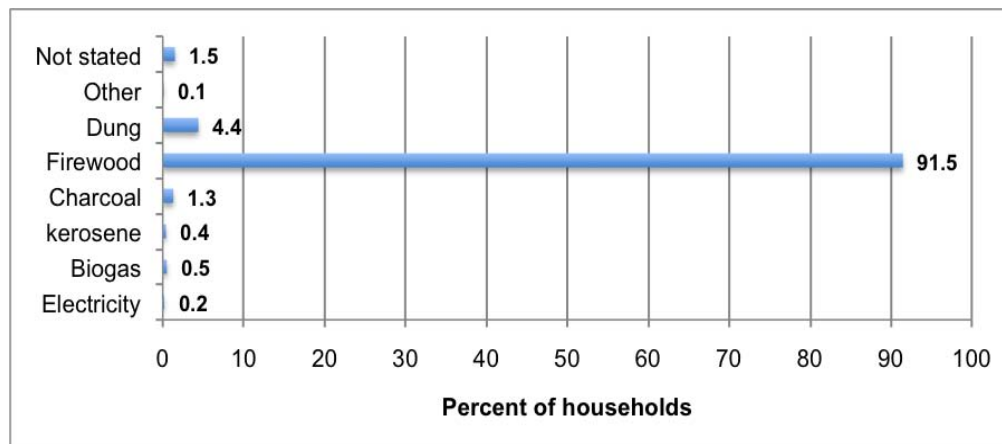
Figure 3-4: Percent of households who owned household effects, land and farm animals, rural Ethiopia 2010



### Main source of fuel for cooking

The main source of fuel for cooking among majority (91.5 percent) of households was firewood. The other sources of fuel in order of frequency were dung (4.4 percent), charcoal (1.3 percent), biogas (0.5 percent), and kerosene (0.4 percent). Electricity was reported as the main source of fuel by 0.2 percent of households.

Figure 3-5: Percent distribution of households by the main source of fuel for cooking, rural Ethiopia 2010



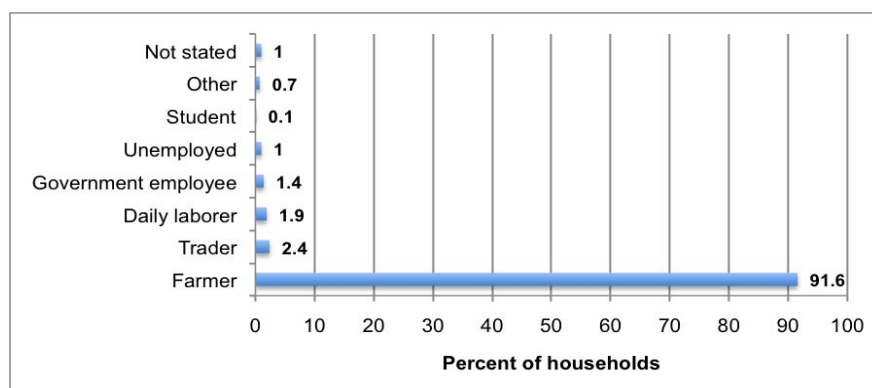
### 3.3. CHARACTERISTICS OF HOUSEHOLD HEADS

The religion of majority of the household heads was orthodox (40 percent) or Islam (37 percent). One in five household heads' religion was protestant. The occupation of majority (91.6%) of the household heads was farming. Other less frequently reported occupation of the household heads were trading 92.4 percent), daily laborer (1.9 percent), and government employee (1.4 percent). Unemployed household heads comprised 1 percent of the households.

**Table 3-3: Percent distribution of household heads' religion by region, 2010**

Region	Orthodox	Islam	Catholic	Protestant	Traditional	Other	Not stated	Number
Tigray	93.5	6.5	0.0	0.0	0.0	0.0	0.0	699
Afar	14.1	84.9	0.0	0.5	0.0	0.5	0.0	200
Amhara	80.1	19.9	0.0	0.0	0.0	0.0	0.0	1499
Oromia	24.4	57.7	3.1	13.1	0.8	0.4	0.4	1796
Benshangul	24.4	62.7	0.0	11.9	0.0	0.0	1.0	383
SNNP	16.0	14.4	3.2	62.0	2.5	1.4	0.5	1199
Gambela	16.6	4.0	7.1	63.6	6.7	1.4	0.6	725
Dire-Dawa	0.0	99.0	0.0	1.0	0.0	0.0	0.0	100
Harari	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100
Somali	0.6	99.2	0.2	0.0	0.0	0.0	0.0	397
<b>All regions</b>	<b>40.2</b>	<b>37.4</b>	<b>1.9</b>	<b>18.9</b>	<b>0.9</b>	<b>0.5</b>	<b>0.3</b>	<b>7098</b>

**Figure 3-6: Percent distribution of household heads' occupation, rural Ethiopia 2010**



**SAFE WATER SUPPLY, SANITATION AND HYGIENE  
REPORT**

**HEP EVALUATION**

**RURAL ETHIOPIA, 2010**

## Acronyms

BCC	Behavior Change Communication
HEP	Health Extension Program
HEWs	Health Extension Workers
IEC	Information, Education and Communication
MH	Model Household
POU	Point of Use
SNNPR	Southern Nation, Nationalities and Peoples Regional State
VHP	Volunteer Health Promoter
WASH	Water Sanitation and Hygiene

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## 4. SAFE WATER SUPPLY, SANITATION AND HYGIENE

### 4.1. SAFE OR IMPROVED WATER SUPPLY AND MANAGEMENT

#### 4.1.1 Access to safe or improved water supply

Across the regions, 61.6% of the people reported to have access to safe or improved water supply sources. There was variation in the percent of people with access to safe or improved water source among the regions – more people in Dire Dawa (89%) and Tigray (77%), while less people in Harari (29%) and Afar (42%) had access to safe or improved water source. Majority (91%) of households reported that it took them 30 minutes or less to travel to the water supply source. However, only 41.7% of households reported that they spent <10 minutes at the source collecting water i.e. time spent queuing and filling but not socializing and/or washing. The remaining households (58%) reported >10 minutes of queuing time at the source. At regional level, majority (81%) of households in Afar spent <10 minutes queuing at the source, while only 21% of households in Harari spent <10 minutes queuing at the source. The time they had to spend at source – queuing and filling containers, could limit the quantity of water they may collect, which may reduce the amount of water available for maintaining hygienic practices at home such as hand washing, body washing and dish washing.

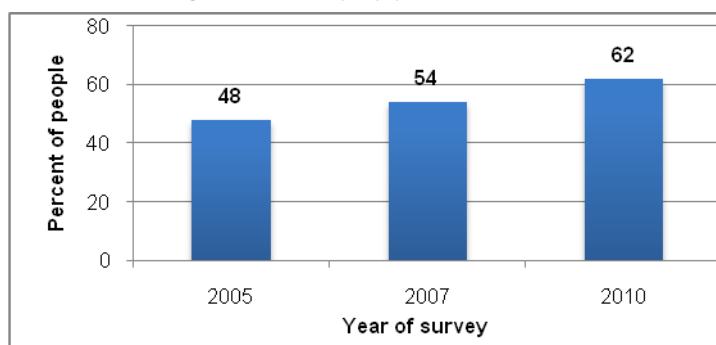
Table 4-1: Access to safe water supply sources of households by region, rural Ethiopia, 2010

Regions	% of people with access to safe water source	Total population	% of households within 30 minutes of sources	% of households who spent <10 minutes queuing at source	Total number households
Tigray	76.8	3557	87.3	23.8	700
Afar	42.2	885	98.5	80.9	200
Amhara	57.7	7060	93.8	51.2	1497
Oromiya	59.1	9105	90.6	42.2	1796
Benshangul	57.9	1810	95.2	44.5	398
SNNPR	70.4	6605	90.4	32.0	1198
Gambella	55.5	3398	95.6	61.2	720
Dire Dawa	88.9	508	89	25	100
Harari	29.1	484	89	21	100
Somali	44.5	2324	81.1	36.8	395
<b>Total</b>	<b>61.6</b>	<b>35736</b>	<b>90.9</b>	<b>41.7</b>	<b>7104</b>

#### 4.1.2 Trend of access to safe water supply

In three regions, namely Amhara, SNNPR and Oromiya, where data is available for the years 2005, 2007 and 2010, trend analysis in access to safe water supply was undertaken. Access to safe water supply in the three regions showed an improvement over time. The percent of people who had access to safe water supply was 47.9%, 53.7%, and 61.9% in 2005, 2007, and 2010, respectively.

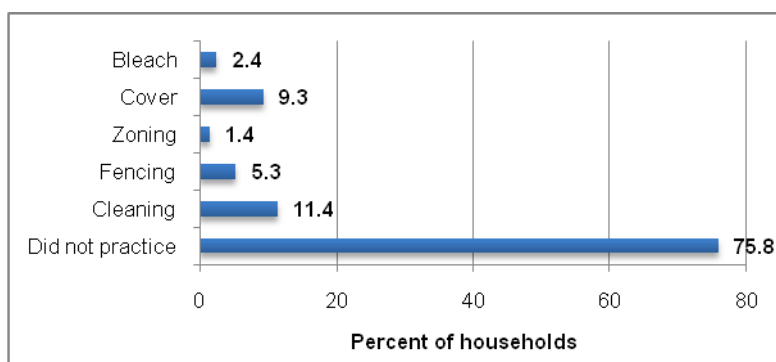
**Figure 4.1: Access to safe drinking water supply by year, rural Amhara, Oromia and SNNP, 2005-2010**



### 4.1.3 Safe water management at source

Among households who did not have access to safe or improved water source, 24.2% of households reported that they either treat the water using bleach at the source or protect the source by covering the source, zoning (water source for drinking, washing and animals), cleaning (the structure and/or the immediate surrounding area) or fencing the area to make it safer to drink. The practice of treating water with bleach was reported by 2.4% of households, and protection of the source by cleaning, covering, fencing, and zoning of the water source was reported to be practiced by 11.4%, 9.3%, 5.5%, and 1.4% of households, respectively.

**Figure 4.2: Drinking water handling practices at source among households who did not have access to safe water, rural Ethiopia 2010**



The practice of the various water management methods at the source varied among the regions. Cleaning the source was practiced by relatively higher percentage of households in Tigray (18.6%) and Harari (17.4%) than households in Gambela (4.2%) and Somali (6.5%) regions. Covering of the water source was practiced by relatively higher percentage of households in Gambela (25.4%) and Benshangul Gumuz (16%) than households in SNNP (7.4%) and Oromia (8%) regions. Bleaching to treat the water source was practiced by relatively higher percentage of people in Dire Dawa (9%) and Somali (8%) than households in Harari (0%) and Tigray (0.6%) regions.

**Table 4-2: Percent of households practicing water management at source, rural Ethiopia 2010**

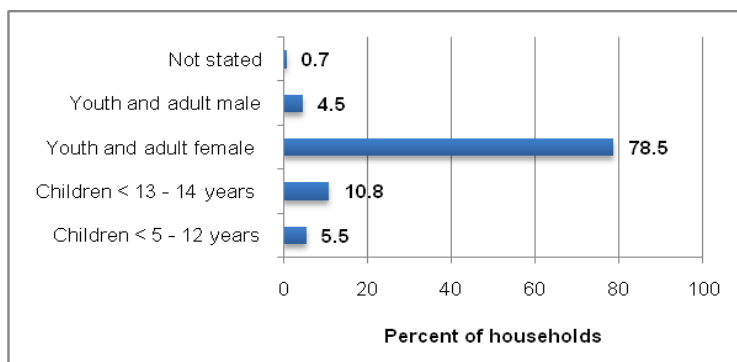
Regions	Methods of water management at the source				
	Cleaning	Covering	Fencing	Bleach	Zoning
Tigray	18.6	12.9	13.1	0.6	0
Afar	10.5	12.2	4.1	7.3	3.2
Amhara	7.7	10.9	5.4	2	0.8
Oromiya	13.1	8.1	3.6	1.5	1.9
Benshangul	10.9	16.1	3.9	7.7	1.3
SNNPR	14.2	7.4	6.1	2.1	1.2
Gambella	4.2	25.4	0	2.3	0.7
Dire Dawa	9.1	9.1	0	9.1	0
Harari	17.4	14.5	11.6	0	0
Somali	6.5	9	8.7	8.2	0.9
<b>TOTAL</b>	<b>11.4</b>	<b>9.3</b>	<b>5.3</b>	<b>2.4</b>	<b>1.4</b>

#### 4.1.4 Safe water management at home

##### Household members responsible to collect water from source

The households who reported that the main water supply source for their households was outside dwelling or compound (6,800 households) were asked for the household member who was usually responsible to collect drinking water. Majority (78.5%) of households reported that youth and adult female household member was usually responsible to collect water, and 4.5% reported youth and adult male household member was responsible to collect water. Overall, in 85% of households, youth and adults were responsible, which is a desirable safe practice. Majority (69.3%) of respondents also reported that they used narrow necked container with a tight cup to transport drinking water from the source.

**Figure 4.3: Percent distribution of households by people responsible to collect water, rural Ethiopia 2010**

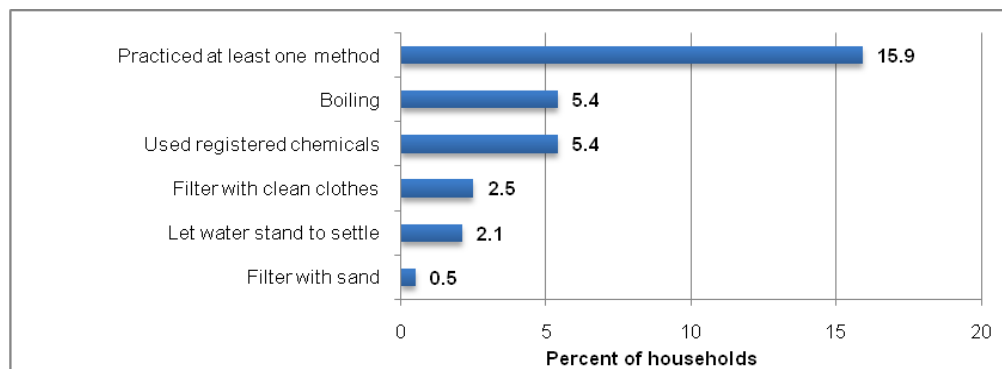


##### Treatment of water at home

The percent of households who reported that they practiced at least one water treatment method at home to make it safe to drink was 15.9%. The methods practiced to treat water at home by households in order of frequency were boiling (5.4%), using water treatment chemicals

such as Bishangari, Aquatab and Wuhagar (5.4%), filtering the water using clean clothe materials (2.5%), letting the water stand and settle - sedimentation (2.1%), and filtering the water using sand (0.5%).

**Figure 4.4: Percent of households who practiced water treatment methods at home, rural Ethiopia 2010**



At regional level, the practice of any water treatment methods at home was relatively higher in Afar (31%) and Tigray (29.5%) than the average. On the specific methods, boiling was more likely to be practiced by households from Somali (11.5%) and Gambela (8.2%), and chemicals were more likely to be practiced by households in Afar (19%), Harari (15%) and Dire Dawa (14%) than in the other regions. Filtering with clean clothes was more likely to be practiced by households in Afar (9%) and Gambela (7.2%), while letting the water to stand and settle was more likely to be practiced by households in Tigray (13%) than in the other regions.

**Table 4-3: Percent of households who practiced water treatment at home by method, rural Ethiopia 2010**

Regions	Used any method	Used Boiling	Used chemicals	Filtering with clothes	Let the water stand to settle	Used sand filter	Number of households
Tigray	29.5	7	5	2.1	12.9	0.5	700
Afar	31.1	1	19.2	8.9	1.5	3.5	200
Amhara	9.9	4.3	3.1	1.4	0.6	0.3	1497
Oromiya	16.8	7.1	5.7	2.8	2.5	0.2	1796
Benshangul	15.8	7.2	8.5	1.2	1.0	0.7	398
SNNPR	13.4	2.6	6.6	2.9	0.7	0.7	1198
Gambella	21.2	8.2	4.4	7.2	2.4	1.6	720
Dire Dawa	15	1	14	0	0	0	100
Harar	22	4	15	3	0	1	100
Somali	17.2	11.5	5.1	2.6	1.6	1.9	395
<b>TOTAL</b>	<b>15.9</b>	<b>5.4</b>	<b>5.4</b>	<b>2.5</b>	<b>2.1</b>	<b>0.5</b>	<b>7104</b>

### Handling of water at home

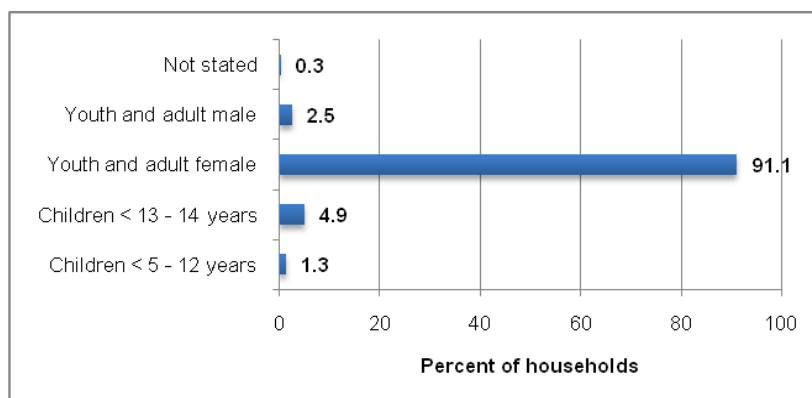
Respondents were asked to mention how they handle the drinking water after its arrival at home to make it safe to drink. Majority (57.7%) of households stated that they store the water in clean and covered container and about a third (34%) of respondents reported that they put the water

in a clean place. The other water handling approaches at home stated by households included handling the water with clean container (27.7%) and using separate container for drawing water (15.5%). Respondents were also asked to state the household member who was usually responsible for handling water at home. Majority (91%) of households reported that youth and adult females were responsible for water handling at home.

**Table 4-4: Household practice of handling water at home, rural Ethiopia 2010**

Region	Store with covered container	Put in clean place	Handle water with clean container	Separate container for drawing	Number of households
Tigray	70.5	38.9	49.6	14.9	700
Afar	39.3	55.9	13.5	32.3	200
Amhara	49.4	37.4	21.3	19.4	1497
Oromiya	66.8	23.3	32.0	9.0	1796
Benshangul	54.5	29.1	36.4	13.9	398
SNNPR	47.5	47.6	19.4	23.4	1198
Gambela	49.2	32.9	31.6	12.0	720
Dire Dawa	60	27.0	50.0	15.0	100
Harari	68	27.0	17.0	4.0	100
Somali	69.5	27.1	41.5	3.9	395
<b>Total</b>	<b>57.7</b>	<b>34.1</b>	<b>27.7</b>	<b>15.5</b>	<b>7104</b>

**Figure 4.5: Percent distribution of households by the household member responsible for water handling at home, rural Ethiopia 2010**



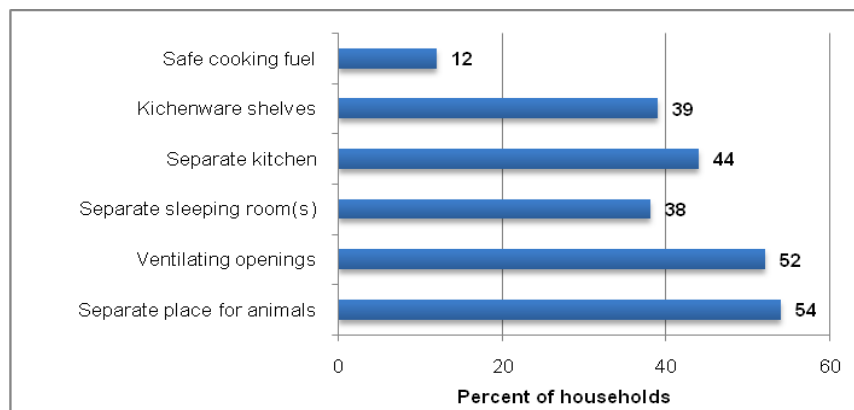
Across the regions, far higher proportion (>90%) of the households reported knowledge of at least one water-borne disease due to consumption of contaminated water than those reported the practice of safe water management in the home.

#### **4.2. HOUSING AND HOUSEKEEPING**

To assess the housing conditions of the sampled households, data was collected on the presence of separate sleeping rooms and separate place for animals, the presence of ventilating openings, availability of separate kitchen and kitchenware shelves, and type of cooking fuel used. Across the regions, about half or less percent of the households had proper

and safe housing conditions in all aspects of the housing condition indicators. The percent of households with separate place for animals was 54.2%, and the percent of households with ventilating openings in at least one of the rooms in the dwelling was 51.7%. Slightly more than a third (38.3%) of respondents reported that they had separate sleeping room(s), and the overall average number of sleeping rooms per household was 1.4 rooms. About 44% of respondents reported that they had a separate kitchen, and 39.4% had kitchenware, while only 11.6% of the households reported they used safe cooking fuel or cooking stove that produces less smoke.

**Figure 4.6: Improved housing and housekeeping practices observed across the regions, rural Ethiopia 2010**



There was a significant variation between the regions in all measures of the housing condition indicators. The percent of households with a kitchen separated from living rooms was 22% in rural woredas under Dire Dawa, while it was 80.0% in Tigray. The percent of households with a place for animals separated from living and sleeping rooms was 27.8% in Harari, while it was 83.3% in Tigray, followed by 80.4% in Afar regions. The percent of households with ventilating openings in at least on of the rooms of the dwelling was 22.4% in Benishangul Gumuz, while it was 58% in Tigray and SNNPR regions each.

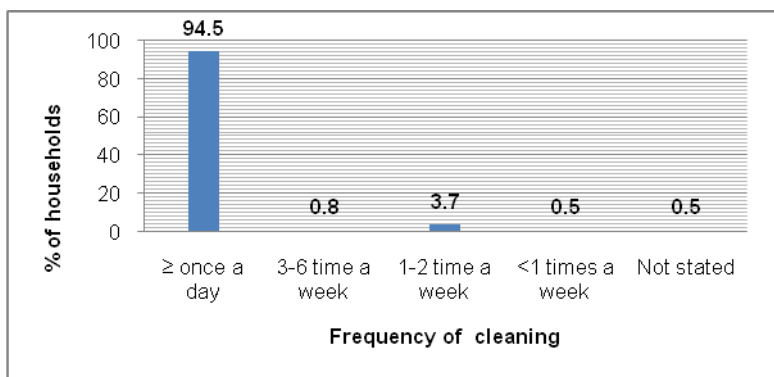
**Table 4-5: Improved housing and housekeeping practices observed by region, rural Ethiopia, 2010**

Regions	Av. # of sleeping rooms per HH	Separate sleeping room	Have ventilating openings	Separate place for animals	Separate kitchen	Have kitchen ware shelves	Uses safe cooking fuel	Number of households
Tigray	1.4	69.2	57.8	83.3	80.0	51	20.7	700
Afar	1.2	26.2	43.2	80.4	34.7	50.9	9.1	200
Amhara	1.2	42.2	55.1	66.7	53.8	53.8	23.2	1497
Oromiya	1.6	38.2	49	49.5	38.7	36.3	7.7	1796
Benshangul	1.5	29.5	22.4	62.3	33.7	43.2	4.8	398
SNNPR	1.3	28.2	57.8	32.9	29.0	29	3.0	1198
Gambella	1.8	41.0	39.9	61.7	41.4	28.4	2.3	720
Dire Dawa	1.1	13	33	41.4	22	22	2	100
Harari	1.1	16	37	27.8	73	14	1	100
Somali	1.5	31.0	29.7	74.7	63.4	11.9	8.0	395
<b>Total</b>	<b>1.4</b>	<b>38.31</b>	<b>51.73</b>	<b>54.21</b>	<b>44.1</b>	<b>39.35</b>	<b>11.55</b>	<b>7104</b>

Availability of kitchenware shelf was reported by 11.9% of the households in Somali, while it was reported by 53.8% in Amhara. Safe cooking fuel or cooking stove, which produces lesser smoke, was used by 1.0% of households in Harari, followed by about 2.0% in rural woredas under Dire Dawa and Gambella, while it was used by 3.0% in SNNPR.

Accros the regions, 94.5% households reported a room cleaning practice of at least once a day (Figure 6). Only 3.7% households were found to clean their household rooms once or twice a week. Households, that 3 – 6 times a week were as negligebile; i.e., < 1.0%, as those that reported room cleaning of not once in a week and no regular plan at all.

**Figure 4.7: Reported practice of ‘house floor cleaning’ across the regions, rural Ethiopia, 2010**



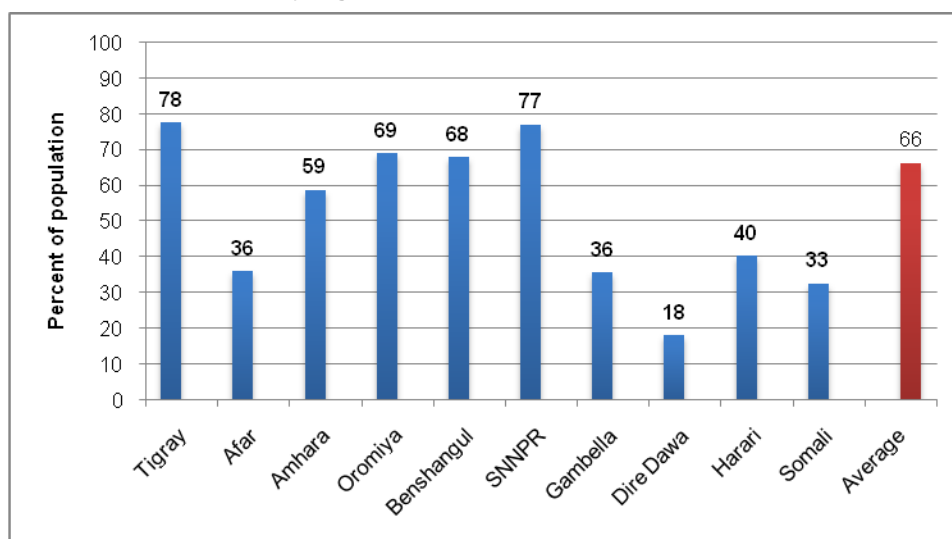
### 4.3. SANITATION AND HYGIENE

#### 4.3.1. Access to toilet facility

Respondents were asked for the kind of toilet facility their household members used to assess access to improved toilet facility. In this report, improved toilet facility was defined as using any toilet facility that at least provides containment of the feces so that it could not be washed down by surface run-offs and also deny open access to flies as in open field defecation. This included dry pit latrines such as traditional pit latrine, ventilated improved, and sanplat latrines, and pour-flushed latrines. Overall, two-thirds (66.4%) of the people have access to improved toilet facility. There was a significant variation between the regions in access to improved toilet facility ( $p=0.01$ ). Access to toilet facility was relatively higher among people in Tigray (77.6%) and SNNP (77.1%) regions than the other regions, while it was relatively lower among people in Dire Dawa (18%) and Somali (32.5%) regions.



**Figure 4.8: Access to toilet facilities by region, rural Ethiopia 2010.**

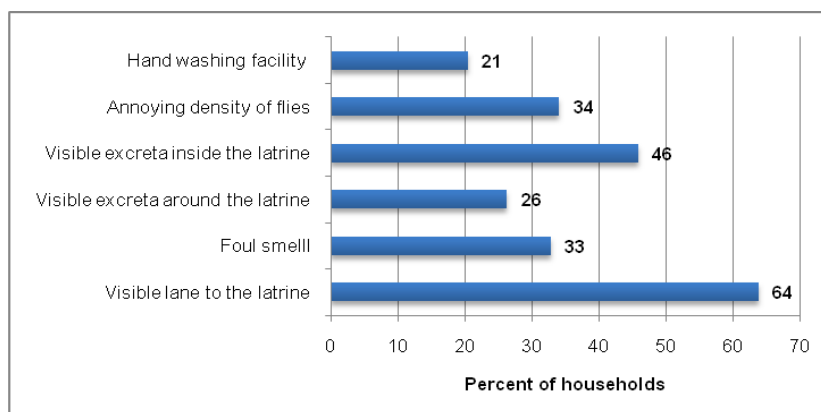


### 4.3.2. Hygienic utilization of toilet facility

To assess the hygienic utilization of the toilet facilities, the data collectors observed the toilet facility and documented the following information: 1) availability of visible foot lane to the latrine (which indicates consistent use by household members), 2) presence of hand washing facility for latrine users, 3) presence of annoying flies in/around the latrine, 4) presence of excreta inside, and around the latrine, and 5) presence of high foul smell in or around the latrine.

Among households who own a toilet facility, visible foot lane was observed in about 64% of households, which indicates that the household members in these households utilize the toilet facility consistently. High foul smell coming off the latrine, visible excreta around the toilet, and annoying density of flies swarming out of the latrine pit were observed in 32.8%, 26.3%, and 34.1% of households, respectively. Availability of hand washing facility for latrine users was observed only in 20.0% of households who own a toilet facility.

**Figure 4.9: Hygienic characteristics of latrine facility, rural Ethiopia 2010**



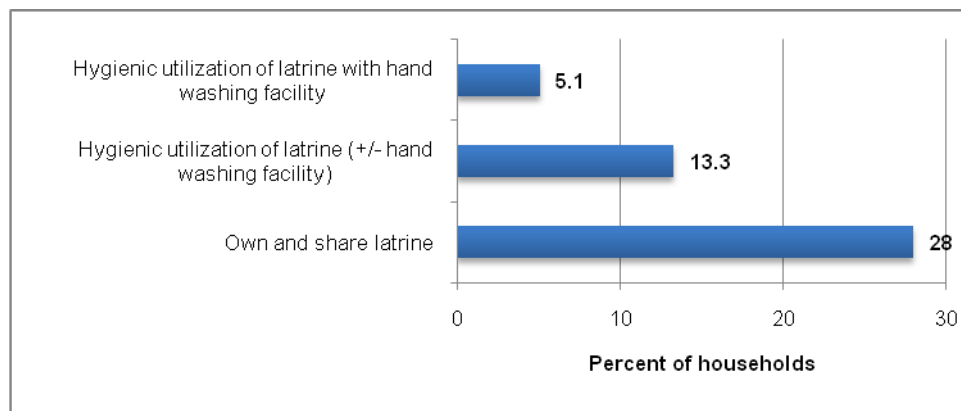
**Table 4-6: Hygienic characteristics of latrines among households that own latrine facility, rural Ethiopia 2010**

Regions	% with visible lane to the latrine	% with bad smell	% with visible excreta around it	% with visible excreta inside	% with annoying density of flies	% with hand washing facility
Tigray	79.8	24.3	18.7	46.6	19.6	33.8
Afar	61.6	56.5	31.2	37	34.1	5.9
Amhara	52.3	21.6	23.9	41.3	31	26.5
Oromiya	74.2	36.2	25.9	44.3	37.1	18
Benshangul	79.2	55.4	28.6	54	36.6	14.2
SNNPR	53.7	38.3	30.6	53.4	36	16.1
Gambella	45.8	39.9	37.6	32.7	43.2	27.5
Dire Dawa	76.5	23.1	23.1	33.3	30.8	31.3
Harari	86.5	40.5	40.5	63.9	47.2	21.6
Somali	58	30.3	30.9	35.1	32.4	20.2
<b>Total</b>	<b>63.8</b>	<b>32.8</b>	<b>26.3</b>	<b>45.9</b>	<b>34.1</b>	<b>20.5</b>

Using the data collected on characteristics of the toilet facilities, coverage of hygienic utilization was determined. Hygienic utilization, for the purpose of this assessment, was defined as latrine having the following features (1) emits no foul/bad smell, (2) absence of visible/littered excreta – feces and urine, both outside the toilet, as well as on the floor slab inside of the toilet super structure, (3) absence of annoying/swarming flies inside the toilet superstructure, and (4) presence of hand washing facility for latrine users.

About 46% of households who own toilet facility reported that all of their household members utilized the latrine to defecate. Hygienic utilization of the facilities, regardless of availability of hand washing facility for toilet users, was observed among only 13.3% of households with toilet facility. Hygienic utilization of the latrines coupled with availability of hand washing facilities for toilet users was observed in only 5.1% of them. Among households who reported that they had access to toilet facility, about 27% reported they shared the facility with households in the neighborhood.

**Figure 4.10: Hygienic utilization of toilet facilities among households who own latrine, rural Ethiopia 2010.**

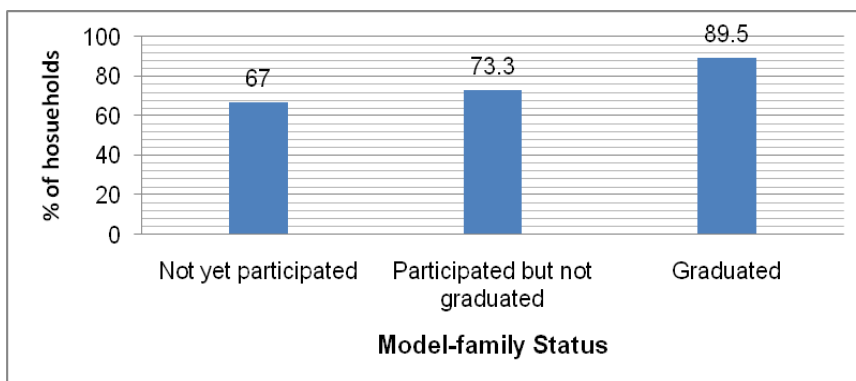


### 4.3.3. Access to toilet facility by population characteristics

#### Model-family training and graduation status

The percent of people with access to toilet facility was compared between people who graduated as model family, who were under model-family training, and who had not yet started model-family training among people who reside in kebeles where training of model-family had been started. In rural kebeles that were implementing model-family training, access to toilet facilities was 89.5%, 73.3%, and 67% among people who had graduated, were under training, and had not yet started training of model family, respectively. This was statistically significant difference.

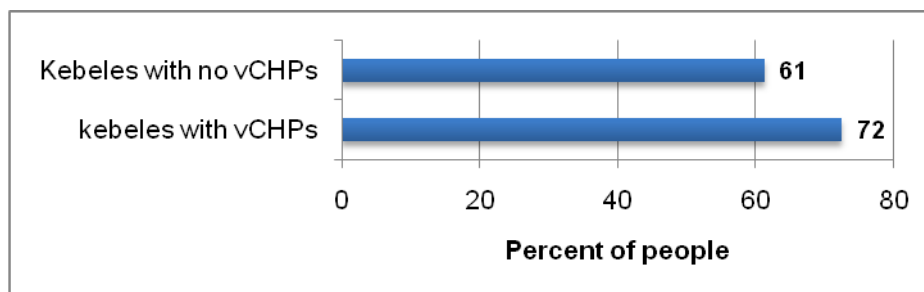
Figure 4.11: Access to toilet facility by training status of households as model-family, rural Ethiopia 2010.



#### Availability of vCHP in kebele

The percent of people with access to toilet facility was compared between people who reside in kebeles where there were functional vCHPs and people who reside in kebeles where there was no any functional vCHPs. The percent of people with access to toilet facility in kebeles where there were vCHPs (72.4%) was higher than that of kebeles without vCHPs (61.2%).

Figure 4.12: Access to toilet facility by availability of functional vCHPs in the kebele, rural Ethiopia 2010

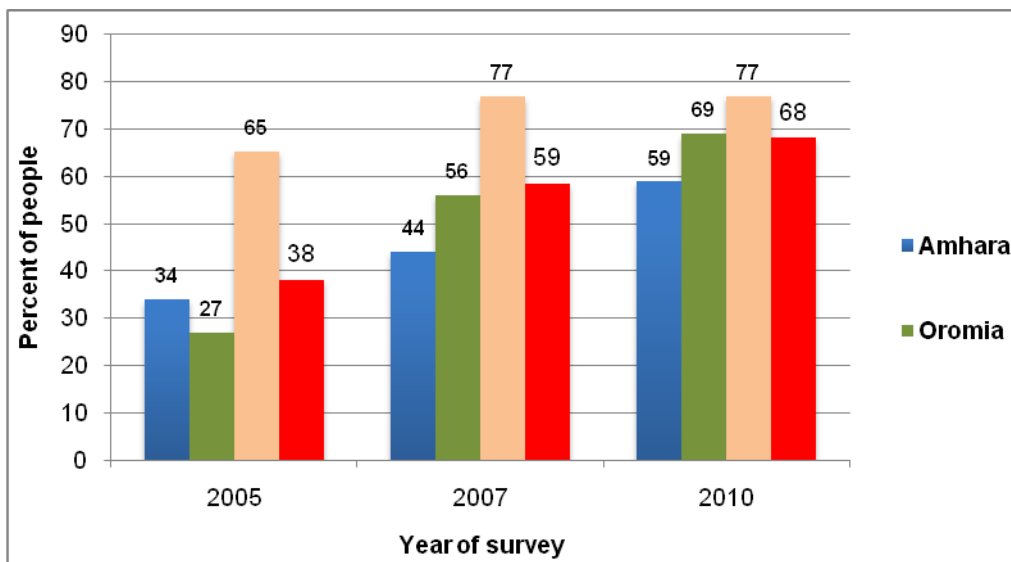


#### Trend in ownership/access to toilet facility

Trend analysis in access to toilet facility was undertaken in three regions (Amhara, Oromia and SNNP regions) where data was available for the years 2005, 2007 and 2010. Data from the

three regions showed a significant ( $P = 0.0002$ ) improvement in the coverage of the population with toilet facilities over time. The weighted average percent of the population in the three regions who owned toilet facility was 38%, 59%, and 68% in 2005, 2007, and 2010, respectively. The improvement was observed in all three regions.

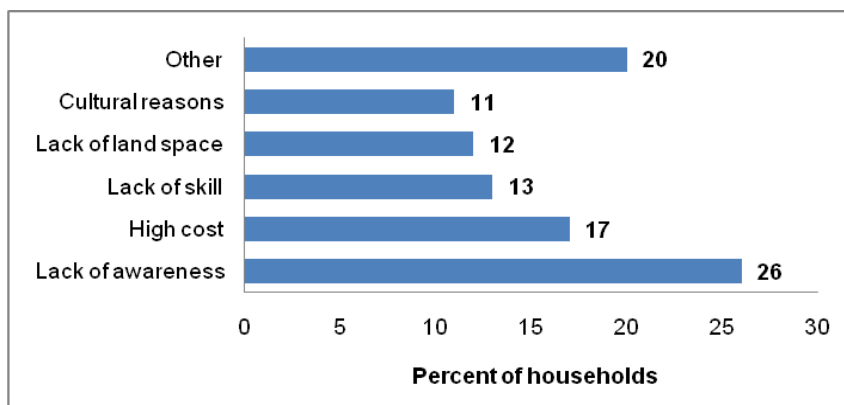
**Figure 4.13: Access to sanitation facilities by year and region, rural Amhara, Oromia and SNNPR regions, Ethiopia 2010.**



#### 4.3.4. Main reason for not owning toilet latrines

Households who did not own toilet facility were asked to state the main reasons for not owning toilet facility. About a quarter of the households said that they did not build a toilet facility due to lack of awareness of the importance of latrine use. The other reasons for not owning latrine, in order of frequency, were high cost, lack of skill to build latrine, lack of land space, and cultural reasons, which were reported by 16.9%, 12.9%, 12.3%, and 10.6% of households, respectively.

**Figure 4.14: Main reasons for not owning latrine, rural Ethiopia, 2010**



The relative importance of the main reasons (factors) for the non-ownership of toilet facility by households was similar in all regions. However, the primary reason for non-ownership of latrine in Tigray (23.8%), Dire Dawa (62.2%) and Somali (59%) regions was high cost rather than lack of awareness. Lack of land space for the construction of toilet facility was the secondary reason in Tigray (23.4%), Afar (19.7%) and Amhara (17.9%). Cultural issues were also one of the important reasons for non-ownership of toilet facility in Benshangul Gumuz (28.7%) and Gambela (21.5%).

**Table 4-7: Main reasons for not having latrine by region, rural Ethiopia, 2010**

<b>Regions</b>	<b>High cost</b>	<b>Lack of space</b>	<b>Lack of awareness</b>	<b>Lack of skill</b>	<b>Cultural reasons</b>	<b>Other</b>
Tigray	23.8	23.4	13.7	14.6	3.9	20.6
Afar	10.7	19.7	35.2	4.5	10.5	18.7
Amhara	11.3	17.9	22.9	15.8	14.3	17.0
Oromiya	11.9	9.0	25.3	14.6	12.0	24.4
Benshangul	7.0	3.0	46.7	10.0	28.7	3.4
SNNPR	15.3	9.4	34.1	7.1	2.8	30.1
Gambella	6.6	4.5	43.3	16.9	21.5	1.0
Dire Dawa	62.2	0.0	15.9	2.4	4.9	13.4
Harari	29.0	1.6	46.8	11.3	1.6	4.8
Somali	59.0	2.7	21.4	7.5	5.2	2.3
<b>Total</b>	<b>16.9</b>	<b>12.3</b>	<b>25.6</b>	<b>12.9</b>	<b>10.6</b>	<b>20.0</b>

#### **4.3.5. Solid and human waste management**

Among households with children who do not use toilet facility, 43% of households reported that the stools of babies and young children in their household were thrown into toilet. About 7% of households reported that they covered or buried the stools of babies and children in yard. More than a third (37%) of households stated that they thrown the stools anywhere, while 7.5% of households did not dispose or left the stools on the ground.

The use of sanitary and environmentally sound methods of disposing solid wastes (garbage, refuse and rubbish) was practiced by about one in five households. About 16% of households reported that they burn the solid wastes and 6% reported that they throw the solid wastes into pit with cover. The other households reported that they throw the solid waste to the farm, into open pit, or anywhere.

**Figure 4.15: Household behavior of disposing human and solid wastes, rural Ethiopia 2010**

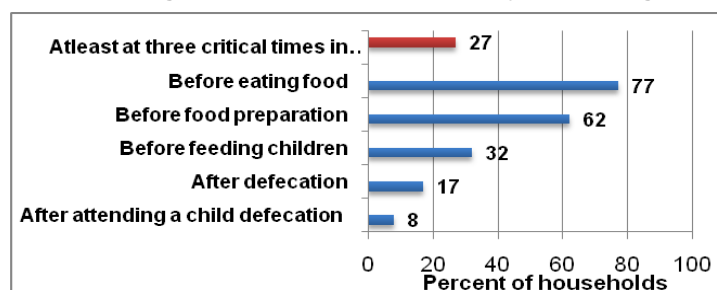


### 4.3.6. Personal and food hygiene

#### Hand washing

Respondents were asked if they usually wash their hand at the critical times in a day, which included (1) after contact with fecal matter – visiting toilet &/or attending a child defecation; (2) before food preparation; and (3) before eating &/or feeding a child. The specific times of hand washing reported in order of frequency were before eating food (76.6%), before food preparation (61.6%), before feeding children (32.4%), after defecation (16.5%), and after attending to a child who has defecated (7.9%). Hand washing at least during three of the five critical times in a day was reported by only 27.2% of respondents.

**Figure 4.16: Practice of hand washing at the critical times of the day, across regions, rural Ethiopia 2010**



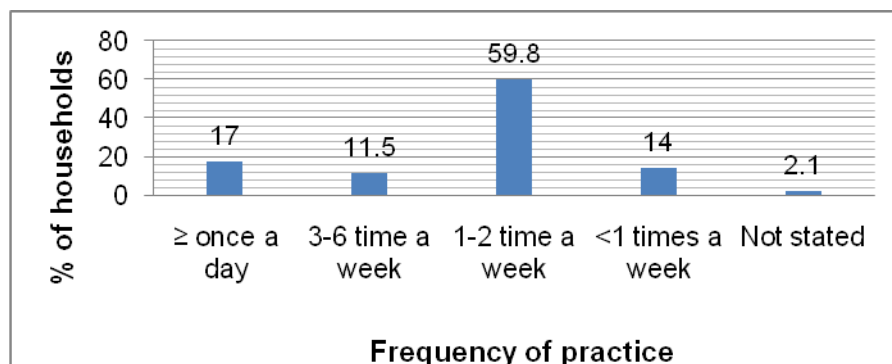
Hand washing with soap/ash (either warm or cold water) was practiced by 42.3% of households whenever they exercise the practice. Yet, only 6.7% of them reported availability of separate place and facility (water containers) and place for hand washing.

#### Body washing (showering and bathing children)

Majority (59.8%) of respondents reported that adult household members wash their body one to two times per week. Moreover, 17% and 11.5% of respondents reported that adults wash their

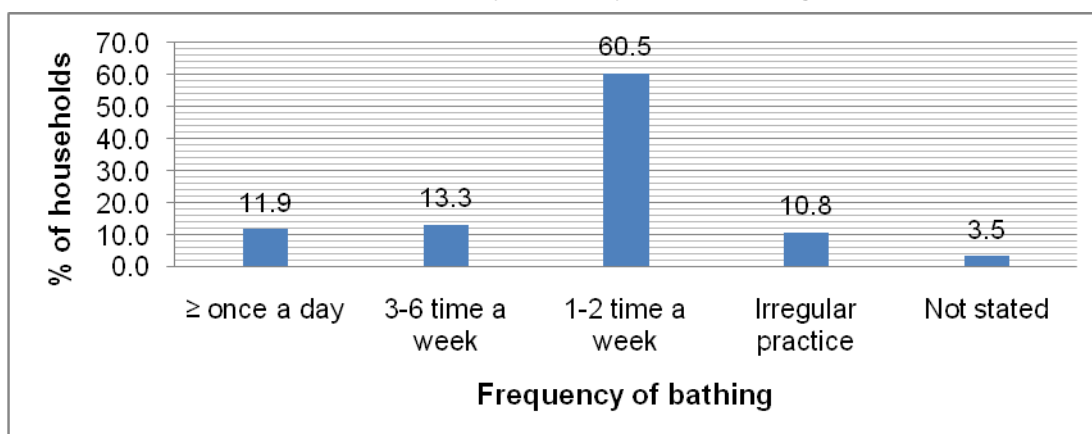
body at least once per day and three to six times per week, respectively. Only 14% of respondents reported that adults wash their body less than one time per week.

**Figure 4.17: Percent distribution of households by frequency of adult body washing, rural Ethiopia 2010**



The bathing frequency of children was similar to that of adults. Majority (60.5%) of respondents reported that they bath children one to two times per week. About 12.0% and 13.0% of respondents reported child bathing frequency of at least once a day and three to six times a week, respectively. On the other hand, about 11.0% of respondents said that they bath their children less frequently (< 1 time a week).

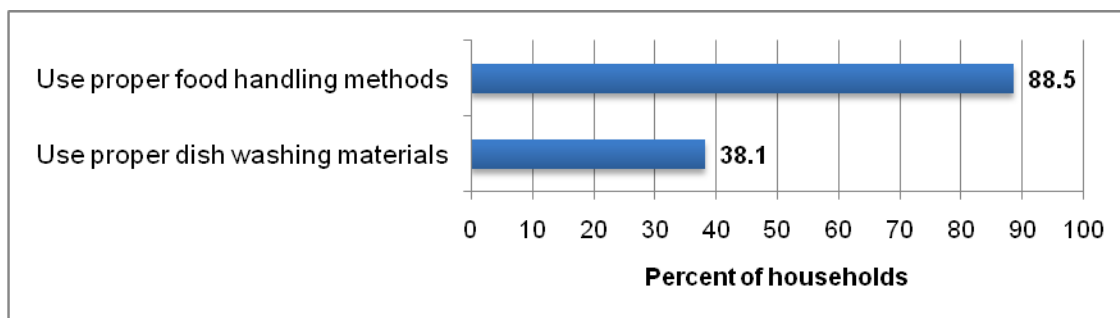
**Figure 4.18: Percent distribution of households by frequency of child bathing practice, rural Ethiopia 2010**



### Food hygiene

Majority (88.5%) of respondents reported that they practiced one or more methods to prevent food contamination. Some of the methods used by households to prevent food contamination included storage of food in clean place, keeping cooking places and utensils clean, washing hands before food preparation, cooking meat and boiling milk before consumption. More than a third of respondents reported that they usually use water (cold or warm) and soap/ash to wash dishes and cooking utensils.

Figure 4.19: Household reported practices of food hygiene across the regions, rural Ethiopia, 2010



#### 4.4. DISCUSSION

The HEP intervention under hygiene and environmental sanitation program component aims at improving water supply safety measures at household level. As part of safe water management practice of households, the practice of adults and youths as being responsible for collecting water is regarded as protective household behavior that reduces the likelihood of contamination of water. Considering the relatively high community awareness of water-borne disease due to the consumption of contaminated water, the practice of water treatment methods at home and source for water collected from unprotected source was very low. This could be properly addressed through consistent hygiene education and demonstration by HEWs.

HEP does not invest in provision of safe and improved water sources, thus, the assessment of access to safe water was not undertaken to evaluate the impact of HEP but to determine the overall coverage of the population with improved water supply sources. However, HEP could create increased demand for safe water supply sources leading to community derived spring and water well protection, which could contribute to increased access to improved and safe water sources. Moreover, the community could influence the implementation of such projects by presenting the demand as the 'felt need' of their community.

Access to improved latrine facility showed a dramatic improvement over the five years, and reached to about two-thirds of the population. Statistically significant higher access to toilet facilities was observed among people from households that had graduated as model-family (about 90%) compared to other households, which indicates the effectiveness of model-family approach on modifying the behavior of households in adopting safe hygiene practices.

However, consistent and hygienic utilization of toilet facilities was very low. Promoting the type of toilet facility whose design suits the local cultural practice of bottom cleansing i.e. *washing and/or wiping*, which minimizes or eliminates *bad smell* would be strategic. It could avoid the undesirable practice of defecating both on the slab or floor of the latrine or outside around the latrine. If these situations are not addressed properly, the chances are households even with access to proper toilet facilities could resort to *open field defecation* practices leave alone those without access.



Although majority of respondents practiced hand washing before eating food, before food preparation, the practice of hand washing after defecation and after attending to a child who has defecated was not encouraging. Moreover, hand washing at least during three of the five critical times in a day was practiced by only a quarter of respondents. However, respondents from households that graduated as model-family were more likely to practice hand washing than other households. Availability of a separate place for hand washing in a household could indicate consistent practice of hand washing. However, availability of a separate hand washing was reported by small proportion of respondents and thus consistent practice would be expected to be low.

#### **4.5. CONCLUSIONS AND RECOMMENDATIONS**

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##### **Conclusions**

- As compared to the findings of HEP assessment in 2005 and 2007, access to safe water supply is generally on the increase.
- Based on the findings of this assessment as well as of the other two previously conducted assessments, access to improved human excreta disposal facilities has increased significantly.
- Training as model-family is a significant safe hygiene practice motivator.
- Hand washing after inevitable contact with fecal matter as well as water treatment methods were not commonly practiced, which indicates a significantly higher proportion of children and their caretakers remain at high risk of diseases transmitted through the fecal-oral route.
- The behavior modification in improvement of household sanitation and hygiene situations observed among model-family households shows that training of model-family is an effective behavior modification approach.

##### **Recommendations**

- It would be strategic to enable the community to identify and promote locally appropriate options of improved toilet facilities as a method of safe human excreta disposal.
- There is a need to promote and ensure consistent and hygienic utilization of latrines in addition to promoting their construction.
- The need to conduct formative assessment to ensure a locally appropriate programmatic planning and implementation of water supply safety measures, sanitation and hygiene improvement at village level.
- Aggressively implementing model-family to change the behavior of households in maximizing the safe water management practices, utilization of the water supply schemes, and motivating households to construct and hygienically use latrine.