

# Central Statistical Agency

2011 Ethiopian Demographic and Health  
Survey

## Technical Report

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## **1. Introduction**

The 2011 Ethiopia Demographic and Health Survey (EDHS) is the third of its kind to be conducted in the country. The 2011 EDHS was conducted by the CSA in close collaboration with the Ministry of Health, HAPPCO, ICF-MACRO and other UN agencies and development partners.

The Central Statistical Agency (CSA) was the implementing organization for the EDHS and has been responsible for the overall design, operations and preparation of the report. In its role, the CSA was collaborating closely with the MOH on all technical aspects including taking a lead role in the sample and questionnaire design phases and in the preparation of the survey reports. In addition, the CSA had been overseen the day-to-day operations for EDHS field activities including the recruitment, training, supervision, and payment of the field personnel involved in the listing, pretest and main survey and of the data processing personnel. The CSA was been responsible for ensuring that all elements are in place to ensure the timely and effective implementation of the fieldwork and data processing activities.

ICF International had provided technical assistance during all phases of the survey including hiring of two national consultants to provide day-to-day administrative, technical and logistical support to the CSA. Moreover, procuring all equipment, supplies and materials needed at each phase of the survey, prior to the survey, arranged transport (as appropriate) during the field phases of the survey, organizing all survey instruments-related printing including the production of training materials, questionnaires, and field forms.

## **2. Survey Objectives**

The main objective of the survey is to provide data on population, health and nutrition. Like the previous DHS surveys, the main objectives of the EDHS 2011 survey are to provide up-to-date information on fertility and childhood mortality levels; fertility preferences; awareness, approval and use of family planning methods; maternal and child health; knowledge and attitudes toward HIV/AIDS and other sexually transmitted infections (STI).

## **3. Organization of the 2011 Ethiopian DHS**

The 2011 EDHS was carried out under the aegis of the Ministry of Health and was implemented by the Central Statistical Agency (CSA). The testing of the blood samples for HIV status was handled by the Ethiopia Health and Nutrition Research Institute (EHNRI). ICF ICF International provided technical assistance through its MEASURE DHS project.

The survey was financed by the Government of Ethiopia, and various international donor organizations and governments, namely: the United States Agency for International Development (USAID), HIV/AIDS Prevention and Control Office (HAPCO), United Nations Population Fund (UNFPA), United Nations Children's Fund (UNICEF), the Department for International Development (DFID), and the Centres for Disease Control and Prevention (CDC). ICF ICF International provided technical assistance as well as funding to the project through the MEASURE DHS project, a USAID-funded project provided support and technical assistance in the implementation of population and health surveys in countries worldwide.

A steering committee composed of major stakeholders drawn from the government, international organizations and NGOs was formed. The steering committee was responsible for coordination, oversight, and advice and decision-making on all major aspects of the survey undertaking. Members of the steering committee include the Ministry of Health (MOH), CSA, EHNRI, HAPCO, the Population Affairs Coordinating Directorate, Ministry of Finance and Economic Development (NOP), the Consortium of Reproductive Health Associations (CORHA), USAID, UNFPA, UNICEF, UNAIDS, CDC and WHO. CSA had also formed a Technical Advisory Committee to provide ongoing input in the planning, implementation and analysis phases of the survey. A technical committee was also formed from among the steering committee institutions to oversee all technical issues related to the survey such as questionnaire designing, training, training, report writing, etc.

#### **4. Stakeholders Consultative workshop**

The DHS survey conducted in Ethiopia need close participation and involvement of various local and international organizations in order to review the content of the measure DHS questionnaire. Therefore, a one day stakeholder's consultative workshop was organized by CSA and ICF INTERNATIONAL to discuss on the questionnaire designed. The objective of the workshop was to review the content of the Measure DHS Core questionnaire and customize and made them suitable for the data demand of the country. In this workshop discussion was been held in detail on the adaptation of the core DHS model questionnaires to make it country specific, with a wide array of stakeholders to obtain input from the organizations that are expected to use the resulting data. In summary, from the workshop organized comments, suggestions and demands of additional new questions and determined sample size were obtained. After that the questionnaires were finalized by the Technical Advisory Committee and approved by members of the Steering Committee prior to its translation.

#### **5. Survey design and selection**

The Ethiopia Demographic and Health Survey 2011 (EDHS 2011) was the third DHS following those implemented in 2000 and 2005. A detailed sampling plan document has been prepared to lay out the target sample size and the sample selection procedures. In order to achieve the survey objectives, all women age 15-49 and all men age 15-59 who were either usual residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. Anaemia testing was performed in each household, among eligible women and men who consented to being tested. With the parent's or guardian's consent, children ages 6 to 59 months were also tested for anaemia in each household. Blood samples were collected for laboratory testing of HIV in each household, among eligible women and men who consented for the DHS.

The 2011 EDHS sample was selected using a stratified two stage cluster design. The first stage of the sample selection was Enumeration Areas (EAs). Thus 624 (187 in urban and 437 in rural) enumeration areas were drawn from the 2007 Population and Housing Census sampling frame. Households comprised the second stage of the sampling.

## **6. Listing activities**

A complete listing of households<sup>1</sup> was carried out in each of the 624 selected EAs from September 2010 through January 2011. Sketch maps were drawn for each of the clusters and all conventional households were listed. The listing excluded institutional living arrangements and collective quarters (e.g., army barracks, hospitals, police camps, and boarding schools).

A total of 22 teams, each consisting of two listers, had been recruited for the listing and updating, which is expected to take three months. CSA organized a one-week's training for the supervisors and listers prior to the start of the listing field work. Eleven regional coordinators were assigned for monitoring the activities of the listing teams. ICF International had rented 22 sturdy, 4-wheel drive vehicles for the fieldwork period—and 11 others were provided by CSA for supervision. A representative sample of 17,817 households was selected for the 2011 EDHS survey. Because the sample is not self-weighting at the national level, all data in this report have been weighted unless otherwise specified.

## **7. Preparation of data collection tools**

The 2011 EDHS used three questionnaires and different forms during the field work: (1) a household questionnaire (2) a questionnaire for individual women (3) a questionnaire for individual men. These questionnaires were adapted from model survey instruments developed for the MEASURE DHS project and the UNICEF Multiple Indicator Cluster Survey (MICS) to reflect the population and health issues relevant to Ethiopia. Issues were identified at a series of meetings with various stakeholders from government ministries and agencies, non-governmental organizations (NGOs), and international donors.

After preparation of the definitive questionnaires and other documents (different manuals) in English, they were translated into three main Ethiopian languages (Amharigna, Oromiffa, and Tigrigna). In addition to the questionnaires, other model technical documents from the DHS program were adapted and translated. These documents include: listing manual, Female interviewers manual, Men interviewers manual, Supervisors/Field editors manual, Interviewer and Supervisor Assignment Sheets, Anemia /HIV testing and Anthropometry manual, Data processing manuals.

## **8. Ethical Considerations**

Anemia and HIV testing protocol was developed and submitted to the Ethical Review Board. Therefore, ethical clearance for the survey was approved by EHNRI Review Board, the National Research Ethics Review Committee (NRERC) at the Ministry of Science and Technology, the Institutional Review Board of ICF International and the CDC Atlanta.

Repeating anemia and HIV testing in the 2011 EDHS provide an excellent opportunity to collect nationally representative data on both the prevalence of anemia and HIV/AIDS. The anemia component of the 2011 EDHS provides information for monitoring the levels of anemia in vulnerable groups and to more effectively plan interventions to reduce anemia prevalence. The HIV/AIDS component of the 2011

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<sup>1</sup> During the listing 10 EAs in the Somali region were not listed due to security concerns.

EDHS also provide information to address the program development and monitoring and evaluation needs of the government and nongovernmental organizations' HIV/AIDS data provide program managers and policy makers involved in these programs with the information that they need to effectively plan and implement future interventions.

## **9. Pretest**

As soon as the questionnaires are translated and finalized; CSA arranged a pretest for the 2010 Ethiopia DHS to detect any possible problems in the translation or flow of the questionnaire, as well as to gauge the length of time required for interviews. The CSA has recruited 22 quality control teams and 11 Biomarkers. In addition, 11 regional coordinators were selected from CSA branch offices for the pretest. Pretest training was conducted from October 5, 2010 – October 21, 2010 for interviewers, quality control team members, biomarkers, regional coordinators, and for senior and junior experts from the main office.

Pretest training includes a detailed presentation of procedures to follow in carrying out anemia and HIV testing in addition to the basic training on the questionnaire. Following the pretest training Household, Man's and women's questionnaires were administered in Desses, Dibrebirhan, Hossana, Tigray and Wolisso. This field exercise was held from October 21- November 2, 2010 in three languages.(i.e. Tigrigna, Oromiffa and Amharic).

After the field work, debriefing was held with the staff involved in the pretest and suggestions for modifications to the survey instruments were obtained. Based on these suggestions the questionnaires were revised and finalized for the main training and field work. Modifications made on the questionnaires include re-wording and re-phrasing of questions.

## **10. Logistics and supplies of biomarker equipment**

The Demographic and Health Survey normally required huge amount of materials. Accordingly, different types of materials were procured and distributed in order to conduct the survey successfully. These include anthropometry/anemia/HIV supplies, office and field equipments, transport vehicle rental, venue rental, printing, materials for field teams, different types of stationary materials, printing questionnaire, instruction manuals , different forms...etc.

The materials were procured and transported to all clusters where the survey teams work. All the supplies were distributed from the main office to the regional coordinators. In order to ensure smooth and efficient handling and distribution of materials across the country, the EDHS logistic team was formulated comprising of experts from ICF International and CSA. The logistic team had worked hard to ensure that materials reached all clusters on time. Therefore, a lot of effort has been put in identifying and quantifying the materials that are to be sent to all field teams as part of the logistic exercise.

## **11. Recruitment of field staff and main training**

Thirty five teams of field personnel have been recruited for the main survey. Each team was composed of a supervisor (team leader), a field editor, four female interviewers and two male interviewers out of which one male and two females were biomarkers who had medical background. All candidates for field staff positions were screened on the basis of educational level, knowledge of local languages and entrance exam. Additional field workers were also recruited for some attrition during the training and early days of field work.

Main training was conducted from Nov 22- Dec 24, 2010 at the Civil Service college for 230 interviewers, 75 supervisors, 75 editors and 20 main office staff members. The training was held in residential training site, which provided accommodation and meals. Trainers were from CSA, ICF international, EHNRI and guest lecturers from MOH and EFGA were included on specific topics.

The training topics includes:-

- Detailed description of the content of the questionnaire
- Classroom lecture how to complete the questionnaire, interviewing techniques
- Mock interview, tests, and 2 days of practice in the field (Urban and Rural areas)

Special one week training on procedures specific to anthropometry, anemia testing and DBS collection was conducted for Biomarkers who are selected to carryout height and weight measurements and anemia and HIV testing. Emphasis was placed on procedures to be employed in obtaining respondent's voluntary consent to anemia and HIV testing, blood collection and storage techniques and the use of the Hemocue machine for anemia testing. In addition to this, emphasis was given on the procedures for referring respondents needing follow-up care for anemia, as necessary, and for HIV counseling and testing, and the logistics involved in handing and storing the DBS samples until they up for transport to the laboratory.

Two days of additional training was conducted for *supervisors and field editors* on their duties related to observing interviewers and editing completed questionnaires in the field. During the training, details regarding supervision and communication with coordinators and central office of the CSA and financial procedures were discussed and also included in the editors and supervisors manual.

## **12. Preparation and Field work**

### ***12.1. Preparation activities prior to the field work***

***The following activities were done prior to field :-***

- Household selection for each enumeration area (EA) /cluster was done at the main office.
- Questionnaires in three languages, Anemia pamphlets, anemia referral paper, HIV pamphlets, HIV Vouchers and literacy card were printed.
- List of households and cartographic materials were prepared for all teams before the field work start

- Logistic arrangements were made for the beginning of the field work (i.e., 46 Long base vehicles, materials for team camping, stationary and all necessary supplies and equipments for anemia and HIV testing.)

December 25 and 26, 2012 all teams were deployed to their respective regions. Main field work began on Dec 27, 2010. During the field work very close communication has been maintained at all times between the ICF consultant and CSA survey director and EDHS teams. Occasionally the field coordinators have a meeting on the field work progress with the survey director and ICF International consultants.

## **12.2. Quality Control /Monitoring**

Quality control measures are extremely important throughout the EDHS data collection process and the quality of the data has been assured through supervision and monitoring of the teams field work. In doing so therefore, different quality control procedures were developed.

*At the team level* field work has been supervised by the team supervisor and editor. The supervisor and editor in each team worked on a daily basis with their teams, with the goal of reinforcing the training received and correcting all the errors on the data collected. In order to control the data quality and to closely monitor the “non\_ response” for the anemia testing, including both absence from the household and refusals team supervisors or field editors were re\_ interviewed about 5% of the households in each cluster.

*At regional level*, 11 regional coordinators were assigned in each region and they were controlling the work performed by the field teams, solve the problems and communicate every issues with the main office. In addition to the field coordinator, each region had two interviewers quality control personnel and one biomarker quality control experts. These personals monitor data quality by staying with a team for the duration of data collection in each cluster. They also checked the quality of the blood sample collection, spot check of the interview on site, and check and edit all questionnaires before they are sent to the main office.

*As further quality control measure*, CSA and ICF International consultants arranged and organized supervisory teams to visit field teams to assure that all activities were carried out as planned. The supervisory teams consisted of senior staff from CSA main office, ICF International, senior staff from EHNRI and other stakeholders. They visited all field teams to maintain morale and addressed concerns that arise in the field. After every field visit meetings have been held and identified problems and the observed errors were discussed and attempts were made to provide ongoing technical input and decisions made on these meetings in any issues or correction observed at the field to each team.

*Finally, at the data entry level*, a set of field check tables were run periodically by the CSA programmers to check on the quality of the data entered while the field work is in progress. The field check tables were given to the field coordinators, CSA senior staff who were engaged on the supervision, and the survey director. The supervision team review the errors made by each team member and during their visit they discussed with the appropriate teams on the problem or errors occurred during the data



collection. Any problems that appear from review of these tables were discussed with the appropriate teams and attempts were made to ensure that they do not persist. The field check tables included tabulation to monitor the “response rate” for anemia and HIV testing.

### **13. Anaemia, HIV Testing( Processing of DBS Samples) and Anthropometry**

In addition to the data collected through interviews with women and men, anemia and HIV testing were part of the 2011 Ethiopia DHS. Two females and one male biomarker technicians in each field team were specially trained to handle the anemia and HIV testing. These individuals were responsible for data collection activities, the collection of height and weight measures and, when applicable, the anemia and HIV testing. In addition to the general interviewing training, these individuals had received special training on all aspects of the anemia and HIV testing protocols. Prototype training materials for anemia and HIV testing from the MEASURE DHS program were adapted and used to train the staff.

#### **13.1 Anaemia Testing**

Blood specimens were collected for anemia testing from all children age 6-59 months (if the parent or guardian consents to the test), women age 15-49, and men age 15-59 who voluntarily consented to the testing.

For the anemia testing, blood drops were taken from each eligible woman, man and child by pricking the finger (or heel in the case of very young children). The blood drop was tested using the HemoCue system (photometer and microcuvette), which assesses the level of hemoglobin in the blood. Results were provided immediately following the anemia testing both verbally and in writing for each of the individuals who were tested. Parents of children with haemoglobin level under 7g/dl were instructed to take the child to a health facility for follow \_up care. Likewise, non \_pregnant women were referred to the nearest health center for follow \_up care if their haemoglobin level was below 7g/dl, and pregnant women and men were referred if their haemoglobin level was below 9 g/dl.

The result of the anemia test was recorded in the DHS questionnaire, allowing them to be linked with the results of the interviews. As an additional benefit, all households in which anemia testing was conducted received a brochure explain the causes and prevention of anemia.

#### **13.2 HIV Testing**

For HIV testing the fingerstick blood sample has been collected on filter paper for subsequent testing in a central laboratory. As part of the informed consent process, individuals who are eligible for the blood sample collection were advised that samples will be used to test for HIV and possibly for additional tests which have not yet been determined; individuals would also be assured of the anonymity of all test results. Because of the importance of providing respondents an opportunity to learn their HIV status, HIV counseling and testing referrals have been given for participants residing within 10 km of a fixed Voluntary Counseling and Testing (VCT) site . For participants residing farther 10 km from a fixed VCT, site, mobile VCT units were set up in or near survey areas following data collection. VCT has been provided free of charge to respondents who participated in the EDHS as well as any other members of the community who are interested in being tested.

Brochures on HIV/AIDS were provided for all households whether individuals consented to HIV testing or not, brochures were also given to the community residents who request them. The USAID and CDC partners provided the logistical services for the provisions of mobile VCT services.

For each barcoded blood sample , a duplicate label was attached to the Biomarker Data Collection Form. A third copy of the same barcode was affixed to the Blood Sample Transmittal Form to track the blood samples from the field to the laboratory. Blood sample were dried overnight and packaged for storage the following morning.

All the DBS samples and DBS field forms (blood sample transmittal sheets) with the completed questionnaires for each cluster were collected periodically in the field and transported to CSA at Addis Ababa and they were logged in and checked. CSA had assigned dedicated personnel to receive the blood sample from the field coordinators at the main office. Samples have been transferred to the EHNRI only after any discrepancies between the DHS questionnaire, the DBS field forms and DBS samples have been resolved. Any discrepancies between the number of samples received at the EHNRI and records maintained by the CSA were reconciled.

EHNRI had conducted the DBS testing according to the agreed \_upon protocol. Any problems with the quality of the DBS samples received from the field were reported to CSA during the technical advisory meetings and CSA immediately communicate with the coordinators and resolve the problem. EHNRI used the standard spreadsheet provided by the CSA and ICF International to record the outcome of the testing of the DBS samples.

### **13.3. Anthropometry**

Height and weight measurements were carried out on women age 15-49, men age 15-59 and children under age 5 in all selected households. Weight measurements were obtained using lightweight SECA mother \_ infant scales with a digital screen. Height measurements were carried out using a measuring board. Children younger than 24 months were measured for height while lying down, and older children, while standing.

## **14. Data processing**

At this stage, handling of questionnaire from the field, appropriate storage facilities, editing and coding specifications, data entry programs, tabulation and report writing were largely carried out based on the procedures laid out. Thus after editing and correction in the field the questionnaires from each team were sent to the CSA main office and submitted to CSA's documentation department.

The questionnaires were then managed by one questionnaire administrator. When the questionnaires were received in the office, they were registered, verified and those questions not pre\_ coded were coded before data entry; this verification and coding exercise has been carried out by a team of 4 office editors who had participated on EDHS main training and had work experience in CSA editing section.

Two days training was given to 32 data entry personnel to familiarize themselves with the questionnaires and briefing on the software. Data entry and verification (double entry) of all questionnaires were carried out by 32 data entry personnel working in two\_ eight hours basis shifts, that has been supervised by four senior computer programmers from the population directorate. Data processing activities and cleaning activities were headed by programmers. This entire group of personnel makes up the data processing team which has been working in collaboration with ICF International staff members. The data processing personnels had provided a few days of training by ICF International programmer in order to familiarize them with the EDHS data processing procedures and to understand the internal logic of the program being used for data processing.

The software package, CSPro (a Windows-based integrated Census and Survey Processing package that combines and replaces the ISSA and IMPS packages) developed by the MEASURE *DHS+* project in collaboration with the U.S. Census Bureau, had been used for entry, editing and tabulation of the DHS data. ICF International had provided the data entry, editing, and tabulation programs using this package and provided assistance in setting up the entire data processing operation at the CSA.

CSA provided sufficiently large space to set up 18 computers, store questionnaires, including shelves to store all questionnaires, and allow work space. In addition, 2 computers were provided to ICF staffs hired to provide day-to-day administrative, technical and logistical support for the survey.

Data entry application utilized an intelligent data entry program that controls data ranges and skip patterns, and includes limited consistency checking. Data editing has been conducted during the data entry process which included the checking of range, structure and a selected set of checks for internal consistency. All errors detected during the editing procedure were corrected. Once all the data cleaning is complete, imputation of missing data have been performed. Finally, raising factor weights were calculated and added to the data file and all tabulations needed for the preliminary and final reports were produced and reviewed. This set of tables were based on the model DHS tabulation plan as modified to reflect input from the CSA, Ministry of Health, USAID , EDHS Steering and Technical committee members and other data users as appropriate.

After the tabulation process and data cleaning was completed personal identifiers, such as names and /or numbers for clusters, households or respondents in all EDHS questionnaires were dropped from the data set.

## **15. Publication of the survey results**

After the data processing is completed and agreed on the tabulation plan the draft preliminary report on the main survey results were prepared and submitted to the Technical Advisory and Steering Committee for approval. The preliminary report was published about one and a half month after the end of the field work. This report have about 36 pages, and the tables were been drawn by the CSA in collaboration with ICF International.

The Key findings, fact sheets and wall charts were prepared and published. The Key finding report had about 15 pages and presents the main results of the survey.

## **16. Report writing**

ICF International and CSA organized Report Writing Workshop at Debre Ziet. The Workshop has been held from November 23 to December 2, 2012. The following are the main objectives for the 2011 EDHS Report Writing Workshop:

- to build knowledge on definitions and calculation of key indicators in the DHS report,
- introduce DHS web tools and build in\_ country capacity to use these tools,
- build in capacity reading complex tables and interpreting results ,
- discuss the DHS writing style and basics of report writing ,
- submit a complete draft of the assigned chapters (s) for the 2011 EDHS final report ,
- review the chapters with peers and finalize the chapters for printing by the end of the workshop

The participants were producers of each chapters of the final report. By the end of the workshop all chapters of the final report draft were completed and reviewed by peers and approved by TAC and SC members.

## **16. Dissemination of the EDHS results and the data**

The CSA and MOH with ICF international and other partners organized a one day National Dissemination Workshop on April 5, 2012 and presented the results of the survey to potential users. More than 250 participants from different government and nongovernment organizations and UN organization were invited and participated on this workshop. The workshop was officially opened by his Excellency Dr. Keseteberhan Admasu state Minister of Ministry of Health. Short remarks have been delivered by representatives from development partners. On the occasion, the findings of the EDHS were presented by experts from CSA, MOH, EHNRI, UNICEF, MoFED and HAPCO. The printed copies of the Key findings, fact sheets, wall charts and CD containing the final report was distributed to all participants. In addition to this, the final report has been loaded on the CSA web site ([www.csa.gov.et](http://www.csa.gov.et)) on the same date. To enhance data utilization, a half day training workshop was held for journalist from different media on how to interpret and prepare story and news out of the EDHS reports. Final report was printed and currently distribution is on going for different organizations.