

Ethiopia - Demographic and Health Survey 2005

Population and Housing Census Commissions Office (PHCCO)

Report generated on: June 16, 2017

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Sampling

Sampling Procedure

The 2005 EDHS sample was designed to provide estimates for the health and demographic variables of interest for the following domains: Ethiopia as a whole; urban and rural areas of Ethiopia (each as a separate domain); and 11 geographic areas (9 regions and 2 city administrations), namely: Tigray; Affar; Amhara; Oromiya; Somali; Benishangul-Gumuz; Southern Nations, Nationalities and Peoples (SNNP); Gambela; Harari; Addis Ababa and Dire Dawa. In general, a DHS sample is stratified, clustered and selected in two stages. In the 2005 EDHS a representative sample of approximately 14,500 households from 540 clusters was selected. The sample was selected in two stages. In the first stage, 540 clusters (145 urban and 395 rural) were selected from the list of enumeration areas (EA) from the 1994 Population and Housing Census sample frame.

In the census frame, each of the 11 administrative areas is subdivided into zones and each zone into weredas. In addition to these administrative units, each wereda was subdivided into convenient areas called census EAs. Each EA was either totally urban or rural and the EAs were grouped by administrative wereda. Demarcated cartographic maps as well as census household and population data were also available for each census EA. The 1994 Census provided an adequate frame for drawing the sample for the 2005 EDHS. As in the 2000 EDHS, the 2005 EDHS sampled three of seven zones in the Somali Region (namely, Jijiga, Shinile and Liben). In the Affar Region the incomplete frame used in 2000 was improved adding a list of villages not previously included, to improve the region's representativeness in the survey. However, despite efforts to cover the settled population, there may be some bias in the representativeness of the regional estimates for both the Somali and Affar regions, primarily because the census frame excluded some areas in these regions that had a predominantly nomadic population.

The 540 EAs selected for the EDHS are not distributed by region proportionally to the census population. Thus, the sample for the 2005 EDHS must be weighted to produce national estimates. As part of the second stage, a complete household listing was carried out in each selected cluster. The listing operation lasted for three months from November 2004 to January 2005. Between 24 and 32 households from each cluster were then systematically selected for participation in the survey.

Because of the way the sample was designed, the number of cases in some regions appear small since they are weighted to make the regional distribution nationally representative. Throughout this report, numbers in the tables reflect weighted numbers. To ensure statistical reliability, percentages based on 25 to 49 unweighted cases are shown in parentheses and percentages based on fewer than 25 unweighted cases are suppressed.

Note: See detailed sample implementation table in APPENDIX A of the survey report.

Response Rate

A total of 14,645 households were selected, of which 13,928 were occupied. The total number of households interviewed was 13,721, yielding a household response rate of 99 percent.

A total of 14,717 eligible women were identified in these households and interviews were completed for 14,070 women, yielding a response rate of 96 percent. One in two households were selected for the male survey and 6,778 eligible men were identified in this subsample of households, of whom 6,033 were successfully interviewed, yielding a response rate of 89 percent. The response rates are higher in rural areas than urban areas for both males and females.

Note: See summarized response rates by place of residence in Table 1.2 of the survey report.

Questionnaires

Overview

In order to adapt the standard DHS core questionnaires to the specific socio-cultural settings and needs in Ethiopia, its contents were revised through a technical committee composed of senior and experienced demographers of PHCCO. After the draft questionnaires were prepared in English, copies of the household, women's and men's questionnaires were distributed to relevant institutions and individual researchers for comments. A one-day workshop was organized on November 22, 2004 at the Ghion Hotel in Addis Ababa to discuss the contents of the questionnaire. Over 50 participants attended the national workshop and their comments and suggestions collected. Based on these comments, further revisions were made on the contents of the questionnaires. Some additional questions were included at the request of MOH, the Fistula Hospital, and USAID. The questionnaires were finalized in English and translated into the three main local languages: Amharic, Oromiffa and Tigrigna. In addition, the DHS core interviewer's manual for the Women's and Men's Questionnaires, the supervisor's and editor's manual, and the HIV and anaemia field manual were modified and translated into Amharic.

The Household Questionnaire was used to list all the usual members and visitors in the selected households. Some basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The main purpose of the Household Questionnaire was to identify women and men who were eligible for the individual interview. The Household Questionnaire also collected information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor and roof of the house, ownership of various durable goods, and ownership and use of mosquito nets. In addition, this questionnaire was used to record height and weight measurements of women age 15-49 and children under the age of five, households eligible for collection of blood samples, and the respondents' consent to voluntarily give blood samples.

The Women's Questionnaire was used to collect information from all women age 15-49 years and covered the following topics.

- Household and respondent characteristics
- Fertility levels and preferences
- Knowledge and use of family planning
- Childhood mortality
- Maternity care
- Childhood illness, treatment, and preventative actions
- Anaemia levels among women and children
- Breastfeeding practices
- Nutritional status of women and young children
- Malaria prevention and treatment
- Marriage and sexual activity
- Awareness and behaviour regarding AIDS and STIs
- Harmful traditional practices
- Maternal mortality

The Men's Questionnaire was administered to all men age 15-59 years living in every second household in the sample. The Men's Questionnaire collected similar information contained in the Women's Questionnaire, but was shorter because it did not contain questions on reproductive history, maternal and child health, nutrition and maternal mortality.

Data Collection

Data Collection Dates

Start	End	Cycle
2005-04	2005-08	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

LISTING

After the selection of the 540 clusters throughout the 11 administrative areas, a listing operation in the selected clusters starting from the month of October 2004 was conducted. For this purpose, training was conducted for 46 listers who had been recruited from all the regions to do the listing of households and delineation of EAs. A manual that described the listing procedure was prepared as a guideline and the training was conducted using classroom demonstrations and field practices. Instructions were given on the use of Global Positioning System (GPS) units to obtain locational coordinates for selected EAs. The listing was performed by organizing the listers into teams, with two listers per team. Seven field coordinators were also assigned from the head office to perform quality checks and handle all the administrative and financial issues of the listing staff. Supervision was carried out by the cartographic division of PHCCO to assess the quality of the field operation and the level of the accuracy of the GPS readings. Though the listing operation was aimed to be completed in three months, it was extended up to five months in some parts of the country, primarily because of a shortage of vehicles.

PRETEST

Prior to the start of the fieldwork, the questionnaires were pretested in all the three local languages, to make sure that the questions were clear and could be understood by the respondents. In order to conduct the pilot survey, 12 interviewers were recruited from the Amhara, Oromiya and Tigray regions. In addition to the new recruits, 14 senior staff members of PHCCO were trained for a period of three weeks to conduct the pilot fieldwork and serve as trainers for the main fieldwork. The pilot training which was conducted from January 24 to February 11, 2005, included training in blood sample collection for the anaemia and HIV testing. The pilot survey was conducted from 11-25 February 2005 in four selected sites. The areas selected for the pretest were urban Addis Ababa and both urban and rural parts of Mekele, Ambo and Debre Birhan areas. Based on the findings of the pretest, the household, the women's and men's questionnaires were further refined in all the three local languages.

TRAINING AND FIELDWORK

The recruitment of interviewers, editors and supervisors was conducted in the 9 regions and 2 city administrations taking into account language skills of the specific areas. Accommodation was arranged for the trainees as well as the trainers at a training site in Addis Ababa. The training of interviewers, editors and supervisors was conducted from March 14 to April 20, 2005. The Amharic questionnaires were used during the training, while the Tigrigna and Oromiffa versions were simultaneously checked against the Amharic questionnaires to ensure accurate translation. In addition to classroom training, trainees did several days of field practice to gain more experience on interviewing in the three local languages and fieldwork logistics.

A total of 271 trainees were trained in five classrooms. In each class the training was conducted by two senior staff members of PHCCO. The Family Guidance Association of Ethiopia conducted a session demonstrating and explaining the different family planning methods, while UNFPA and CDC conducted a session on HIV/AIDS. After the training on how to complete the household, women's and men's questionnaires was completed, an exam was given to all trainees. On the basis of the scores on the exam and overall performances in the classroom, 240 trainees were selected to participate in the main fieldwork. From the group 30 of the best male trainees were selected as supervisors and 30 of the best female interviewers were identified as field editors. The remaining 180 trainees were selected to be interviewers. The trainees not selected to participate in the fieldwork were kept as reserve.

After completing the interviewers' training, the field editors and supervisors were trained for an additional three days on how to supervise the fieldwork and edit questionnaires in the field to ensure data quality.

Thirty male interviewers and 30 female interviewers were selected to attend the biomarker training. In addition, the 30 field editors also attended the training, as a backup to the biomarker interviewers. Thirteen regional laboratory technicians who were recruited from Private Laboratory Consortium Unit (PLCU) to serve as regional coordinators for the HIV testing were

also trained, of whom 11 were eventually selected to supervise the blood collection. During the one-week biomarker training, six experienced experts from ORC Macro and EHNRI provided theoretical training followed by practical classroom demonstrations of the techniques for testing of haemoglobin and collection of dried blood spots from a finger prick for HIV testing. In addition to the classroom training, trainees did several days of field practice to gain more experience on blood collection.

A total of 30 data collection teams, each composed of four female interviewers, two male interviewers, one female editor, and a male team supervisor, were organized for the main fieldwork. Furthermore, the 30 field teams were organized into 11 regional groups, each headed by an experienced senior staff of PHCCO and accompanied by a regional coordinator from PLCU. The survey was fielded from April 27 to August 30, 2005. The fieldwork was closely monitored for data quality through regular field visits by senior staff from PHCCO, ORC Macro, and other member organizations of the Steering Committee. Data quality was also monitored through field check tables generated from completed clusters simultaneously data entered and produced during the fieldwork. Five senior experts from PHCCO were permanently assigned to monitor the fieldwork throughout the survey period by moving from one region to another. Continuous communication was maintained between the field staff and the headquarters through cell phones.

Fieldwork was successfully completed in 535 of the 540 clusters, with the 5 clusters not covered primarily due to reasons of inaccessibility. Two of these clusters were located in rural Oromiya, one in rural Somali, one in rural SNNP and one in urban Gambela. DBS samples were collected in 534 out of the 535 clusters and delivered to EHNRI for analysis. In one cluster in the Gambela Region, households refused to be finger-pricked for cultural and traditional reasons.

Data Processing

Data Editing

The processing of the 2005 EDHS results began soon after the start of fieldwork. Completed questionnaires were returned periodically from the field to the data processing department at the PHCCO headquarters. A total of 17 new recruits had been trained for office editing/coding and data entry of the questionnaires. Guidelines for the editing/coding procedures had been issued and questions, which needed coding, were identified and a list of codes prepared. After the actual entry of the data began, additional data entry operators were recruited and entry was performed in two shifts. A total of 22 data entry operators and 4 office editors carried out data entry and primary office editing activities. Each of the questionnaires was keyed twice by two separate entry clerks. Consistency checks were made and entry errors were manually checked by going back to the questionnaires. A secondary editing program was then run on the data to indicate questions that showed inconsistency and these were also corrected by secondary editors. The data entry for the 535 clusters that started on 9 May 2005 was completed on 24 September 2005.

Data Appraisal

Estimates of Sampling Error

The estimates from a sample survey are affected by two types of errors: (1) nonsampling errors, and (2) sampling errors. Nonsampling errors are the results of mistakes made in implementing data collection and data processing, such as failure to locate and interview the correct household, misunderstanding of the questions on the part of either the interviewer or the respondent, and data entry errors. Although numerous efforts were made during the implementation of the 2005 Ethiopia Demographic and Health Survey (EDHS) to minimize this type of error, nonsampling errors are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected in the 2005 EDHS is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

A sampling error is usually measured in terms of the standard error for a particular statistic (mean, percentage, etc.), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95 percent of all possible samples of identical size and design.

If the sample of respondents had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the 2005 EDHS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulae. The computer software used to calculate sampling errors for the 2005 EDHS is the ISSA Sampling Error Module. This module used the Taylor linearization method of variance estimation for survey estimates that are means or proportions. The Jackknife repeated replication method is used for variance estimation of more complex statistics such as fertility and mortality rates.

Note: See detailed estimate of sampling error calculation in APPENDIX B of the survey report.

Other forms of Data Appraisal

Data Quality Tables

- Household age distribution
- Age distribution of eligible and interviewed women
- Age distribution of eligible and interviewed men
- Completeness of reporting
- Births by calendar years
- Reporting of age at death in days
- Reporting of age at death in months

Note: See detailed tables in APPENDIX C of the survey report.

Related Materials

Questionnaires

2005 Demographic and Health Survey - Questionnaire

Title 2005 Demographic and Health Survey - Questionnaire
 Author(s) Population and Housing Census Commission Office (PHCCO), Ethiopia ORC Macro, Calverton, Maryland, USA
 Date 2005-01-01
 Country Ethiopia
 Language English
 Filename Ethiopia_2005_DHS_questionnaire.pdf

Reports

2005 Demographic and Health Survey - Report

Title 2005 Demographic and Health Survey - Report
 Author(s) Central Statistical Agency, Addis Ababa, Ethiopia ORC Macro, Calverton, Maryland, USA
 Date 2006-09-01
 Country Ethiopia
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/FR179/FR179.pdf>

2005 Demographic and Health Survey - Key Findings

Title 2005 Demographic and Health Survey - Key Findings
 Author(s) ORC Macro Calverton, Maryland, USA
 Date 2006-09-01
 Country Ethiopia
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/SR119/SR119.pdf>

2005 Demographic and Health Survey - HIV Prevalence

Title 2005 Demographic and Health Survey - HIV Prevalence
 Author(s) MEASURE DHS
 Date 2006-08-01
 Country Ethiopia
 Language English
 Description Summary analysis, key indicators, and charts of survey findings.
 Filename http://www.dhsprogram.com/pubs/pdf/HF13/Ethiopia_HIV_factsheet.pdf

Trends in Demographic and Reproductive Health Indicators in Ethiopia

Title Trends in Demographic and Reproductive Health Indicators in Ethiopia
 Author(s) Macro International Inc. Calverton, Maryland USA

Date 2007-01-01
Country Ethiopia
Language English
Filename <http://www.dhsprogram.com/pubs/pdf/TR4/TR4.pdf>

Children's Health and Nutritional Status

Title Children's Health and Nutritional Status
Author(s) MEASURE DHS
Date 2007-03-01
Country Ethiopia
Language English
Publisher(s) ORC Macro Calverton, Maryland USA
Filename http://www.dhsprogram.com/pubs/pdf/DM4/Ethiopia_2005_child_health.pdf

The Impact of Education on Health Outcomes

Title The Impact of Education on Health Outcomes
Author(s) MEASURE DHS
Date 2007-03-01
Country Ethiopia
Language English
Filename http://www.dhsprogram.com/pubs/pdf/DM5/Ethiopia_2005_education.pdf

Fertility and Family Planning in Ethiopia

Title Fertility and Family Planning in Ethiopia
Author(s) MEASURE DHS
Date 2007-03-01
Country Ethiopia
Language English
Filename http://www.dhsprogram.com/pubs/pdf/DM6/Ethiopia_2005_fertility.pdf
