

Bangladesh - Demographic and Health Survey 2007

**Mitra and Associates/ National Institute for Population Research and Training
(NIPORT) - Ministry of Health and Family Welfare**

Report generated on: June 16, 2017

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Sampling

Sampling Procedure

The 2007 BDHS employs a nationally representative sample that covers the entire population residing in private dwelling units in Bangladesh. The survey used the sampling frame provided by the list of census enumeration areas (EAs) with population and household information from the 2001 Population Census. Bangladesh is divided into six administrative divisions: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. In turn, each division is divided into *zilas*, and each *zila* into *upazilas*. Rural areas in an *upazila* are divided into union parishads (UPs), and UPs are further divided into *mouzas*. Urban areas in an *upazila* are divided into wards, and wards are subdivided into *mahallas*. These divisions allow the country as a whole to be easily divided into rural and urban areas. EAs from the census were used as the Primary Sampling Units (PSUs) for the survey, because they could be easily located with correct geographical boundaries and sketch maps were available for each one. An EA, which consists of about 100 households, on average, is equivalent to a *mauza* in rural areas and to a *mohallah* in urban areas.

The survey is based on a two-stage stratified sample of households. At the first stage of sampling, 361 PSUs were selected. Figure 1.1 shows the geographical distribution of the 361 clusters visited in the 2007 BDHS. The selection of PSUs was done independently for each stratum and with probability proportional to PSU size, in terms of number of households. The distribution of the sample over different parts of the country was not proportional, because that would have allocated the two smallest divisions, Barisal and Sylhet, too small a sample for statistical precision. Because only a small proportion of Bangladesh's population lives in urban areas, urban areas also had to be over-sampled to achieve statistical precision comparable to that of rural areas. Therefore, it was necessary to divide the country into strata, with different probabilities of selection calculated for the various strata. Stratification of the sample was achieved by separating the sample into divisions and, within divisions, into urban and rural areas. The urban areas of each division were further subdivided into three strata: statistical metropolitan areas (SMAs), municipality areas, and other urban areas. In all, the sample consisted of 22 strata, because Barisal and Sylhet do not have SMAs.

The 361 PSUs selected in the first stage of sampling included 227 rural PSUs and 134 urban PSUs. A household listing operation was carried out in all selected PSUs from January to March 2007. The resulting lists of households were used as the sampling frame for the selection of households in the second stage of sampling. On average, 30 households were selected from each PSU, using an equal probability systematic sampling technique. In this way, 10,819 households were selected for the sample. However, some of the PSUs were large and contained more than 300 households. Large PSUs were segmented, and only one segment was selected for the survey, with probability proportional to segment size. Households in the selected segments were then listed prior to their selection. Thus, a 2007 BDHS sample cluster is either an EA or a segment of an EA.

The survey was designed to obtain 11,485 completed interviews with ever-married women age 10-49. According to the sample design, 4,360 interviews were allocated to urban areas and 7,125 to rural areas. All ever-married women age 10-49 in selected households were eligible respondents for the women's questionnaire. In addition, ever-married men age 15-54 in every second household were eligible to be interviewed.

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

Deviations from Sample Design

The 2007 BDHS sampled all ever-married women age 10-49. The number of eligible women age 10-49 was 11,234, of whom 11,051 were interviewed for a response rate of 98.4 percent. However, there were very few ever-married women age 10-14 (55 unweighted cases or less than one percent). These women have been removed from the data set and weights recalculated for the 15-49 age group. The tables in the survey report discuss only women age 15-49.

Response Rate

Of the 10,819 households selected for the survey, 10,461 were found to be occupied. Interviews were successfully completed in 10,400 households, or 99.4 percent of households. A total of 11,178 eligible women age 15-49 were identified in these households and 10,996 were interviewed, for a response rate of 98.4 percent.

Eligible men in every second household were selected to yield 4,074 potential male respondents, of whom 92.6 percent or 3,771 were successfully interviewed. The principal reason for non-response among eligible women and men was their absence from home despite repeated visits to the household. The household and eligible women's response rates were

similar to the response rates in the 2004 BDHS. However, the male response rate was lower than in the last survey.

Note: See summarized response rates by residence (urban/rural) in Table 1.1 of the survey report.

Questionnaires

Overview

The 2007 BDHS used five questionnaires: a Household Questionnaire, a Women's Questionnaire, a Men's Questionnaire, a Community Questionnaire, and a Facility Questionnaire. Their contents were based on the MEASURE DHS Model Questionnaires. These model questionnaires were adapted for use in Bangladesh during a series of meetings with a Technical Task Force (TTF) that included representatives from NIPORT, Mitra and Associates, ICDDR,B: Knowledge for Global Lifesaving Solutions, the Bangladesh Rural Advancement Committee (BRAC), USAID/Dhaka, and Macro International. Draft questionnaires were then circulated to other interested groups and reviewed by the BDHS Technical Review Committee. The questionnaires were developed in English and then translated and printed in Bangla.

The Household Questionnaire was used to list all the usual members of and visitors to 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 individual interviews. In addition, the questionnaire collected information about the dwelling unit, such as the source of water, type of toilet facilities, flooring and roofing materials, and ownership of various consumer goods. The Household Questionnaire was also used to record height and weight measurements of all women age 10-49 and all children below six years of age.

The Women's Questionnaire was used to collect information from ever-married women age 10-49. Women were asked questions on the following topics:

- Background characteristics, including age, residential history, education, religion, and media exposure,
- Reproductive history,
- Knowledge and use of family planning methods,
- Antenatal, delivery, postnatal, and newborn care,
- Breastfeeding and infant feeding practices,
- Vaccinations and childhood illnesses,
- Marriage,
- Fertility preferences,
- Husband's background and respondent's work,
- Awareness of AIDS and other sexually transmitted diseases,
- Knowledge of tuberculosis, and
- Domestic violence.

The Men's Questionnaire was used to collect information from ever-married men age 15-54. Men were asked questions on the following topics:

- Background characteristics, including respondent's work,
- Marriage,
- Fertility preferences,
- Participation in reproductive health care,
- Awareness of AIDS and other sexually transmitted diseases,
- Knowledge of tuberculosis, injuries, and tobacco consumption, and
- Domestic violence

Questions on domestic violence (which were included in both the Women's and Men's Questionnaires) were administered to only one eligible respondent per household, whether female or male. In households with two or more eligible respondents, special procedures were followed to ensure that the selection of the woman or man was random and that these questions were administered in private.

The Community and Facility Questionnaires were administered in each selected cluster during listing. These questionnaires collected information about the existence of development organizations in the community and the availability and accessibility of health services and other facilities. This information was also used to verify information gathered in the Women's and Men's Questionnaires on the type of facilities respondents accessed and the health service personnel they saw.

Data Collection

Data Collection Dates

Start	End	Cycle
2007-03	2007-08	N/A

Data Collection Mode

Face-to-face

DATA COLLECTION NOTES

Forty-two field staff were trained and organized into six teams to carry out the listing of households and delineation of EAs and to administer the Community and Facility Questionnaires. In addition, six supervisors were deployed to check and verify the work of the listing teams. Listers were also trained in the use of Global Positioning System (GPS) units so that they could obtain locational coordinates for each selected EA and for facilities located within each EA.

The Household, Women's, and Men's Questionnaires were pretested in February 2007. Fourteen interviewers were trained for the pretest. The questionnaires were pretested on 100 women and 100 men in two rural areas in Barisal district and two urban areas in Dhaka. Based on observations in the field and suggestions made by the pretest teams, revisions were made in the wording and translation of the questionnaires.

Training for the main survey was conducted for four weeks from February 25 to March 23, 2007.

A total of 128 field staff were recruited based on their educational level, prior experience with surveys, maturity, and willingness to spend up to five months on the project. Training included lectures on how to complete the questionnaires, mock interviews between participants, and field practice. Fieldwork for the BDHS was carried out by 12 interview teams, each consisting of one male supervisor, one female field editor, five female interviewers, two male interviewers, and one logistics staff member.

SUPERVISION

Four quality control teams ensured data quality; each team included one male and one female data quality control worker. In addition, NIPORT monitored fieldwork with another set of quality control teams. Data quality was also monitored through field check tables generated concurrently with data processing. This permitted the quality control teams to advise field teams about problems detected during data entry. Tables were specifically generated to check various data quality parameters. Fieldwork was also monitored through visits by representatives from USAID, Macro International, and NIPORT. Fieldwork was implemented in five phases and carried out from March 24 to August 11, 2007.

Data Processing

Data Editing

All questionnaires for the BDHS were periodically returned to Dhaka for data processing at Mitra and Associates. The processing of data collected in the field began shortly after fieldwork commenced. Data processing consisted of office editing, coding of open-ended questions, data entry, and editing inconsistencies found by the computer program. The data were processed by 10 data entry operators and two data entry supervisors working in double shifts using six microcomputers. Data processing commenced on April 16 and ended on August 31, 2007. Data processing was carried out using CPro, a joint software product of the U.S. Census Bureau, Macro International, and Serpro S.A.

Data Appraisal

Estimates of Sampling Error

The estimates from a sample survey are affected by two types of errors: nonsampling errors and 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 2007 Bangladesh Demographic and Health Survey (BDHS) 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 2007 BDHS 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 2007 BDHS 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 2007 BDHS is a Macro SAS procedure. 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 report which is presented in this documentation.

Related Materials

Questionnaires

2007 Demographic and Health Survey - Questionnaire

Title 2007 Demographic and Health Survey - Questionnaire
 Author(s) National Institute of Population Research and Training (NIPORT) Mitra and Associates Macro International
 Date 2007-01-01
 Country Bangladesh
 Language English
 Filename Bangladesh_DHS_2007_questionnaire.pdf

Reports

Bangladesh Demographic and Health Survey 2007 - Report

Title Bangladesh Demographic and Health Survey 2007 - Report
 Author(s) National Institute of Population Research and Training (NIPORT) Dhaka, Bangladesh Mitra and Associates, Dhaka, Bangladesh Macro International, Calverton, Maryland, USA
 Date 2009-03-01
 Country Bangladesh
 Language English
 Description This report summarizes the findings of 2007 Bangladesh Demographic and Health Surveys (2007 BDHS) conducted under the authority of the National Institute for Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare and implemented by Mitra and Associates of Dhaka. Macro International provided financial and technical assistance for the survey through USAID/Bangladesh.
 Filename [http://www.dhsprogram.com/pubs/pdf/FR207/FR207\[April-10-2009\].pdf](http://www.dhsprogram.com/pubs/pdf/FR207/FR207[April-10-2009].pdf)

2007 Demographic and Health Survey - Key Findings

Title 2007 Demographic and Health Survey - Key Findings
 Author(s) Measure DHS
 Date 2009-03-01
 Country Bangladesh
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/SR158/SR158.pdf>

2007 Bangladesh Demographic and Health Survey - Fact Sheet

Title 2007 Bangladesh Demographic and Health Survey - Fact Sheet
 Author(s) Measure DHS
 Date 2009-03-01
 Country Bangladesh
 Language English
 Filename <http://www.dhsprogram.com/pubs/pdf/GF13/GF13.pdf>
