

Maldives - Demographic and Health Survey 2009

Ministry of Health and Family (MoHF)

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Sampling

Sampling Procedure

SAMPLE DESIGN

The population of the republic of Maldives is distributed on 195 inhabited islands among a total of 202 inhabited islands; seven islands have no residents (MPND, 2008). Each inhabited island is an administrative unit with an island office that handles island-based affairs. The islands are regrouped to form atolls, a higher-level administrative unit with an atoll office and an atoll chief. There are 20 atolls in total in the republic. The capital city of Mal and the two surrounding islands, Villingili and Hulhumale, form a special atoll. The 21 atolls are regrouped to form six geographic regions according to their location. Mal atoll alone forms a region. In Maldives, there is no urban/rural designation for residential households within an atoll. All residential households in the 20 atolls outside of Mal are considered rural; all residential households in Mal are considered urban.

The 2009 Maldives DHS is based on a probability sample of 7,515 households. The sample was designed to produce representative data on households, women, and children for the country as a whole, for urban and rural areas, for the six geographical regions, and for each of the atolls of the country. The male and youth surveys were designed to produce representative results for the country as a whole, for urban and rural areas, and for each of the six geographical regions.

The 2006 Maldives Population and Housing Census provided the sampling frame for the 2009 MDHS. The MDHS sample was a stratified multistage sample selected in two stages from the census frame. In the first stage, 270 census blocks were selected using a systematic selection, with probability proportional to the number of residential households residing in the block. Stratification was achieved by treating each of the 21 atolls as a sampling stratum. Samples were selected independently in each stratum according to an appropriate allocation.

In the second stage of sampling, residential households were selected in each of the selected census blocks. Household selection involved an equal probability systematic selection of a fixed number of households: 28 households per block. Households were selected from the household listings created in the census, but to allow all households an opportunity to be included in the sample, listings were sent to island offices for updating prior to making household selections for the MDHS.

All ever-married women age 15-49 in the total sample of MDHS households, who were either usual residents of the household or visitors present in the household on the night before the survey, were eligible to be interviewed. In half of the households selected for the ever-married sample of women, all ever-married men age 15-64, who were either usual residents of the household or visitors present in the household on the night before the survey, were eligible to be interviewed. In the same half of households selected for the ever-married sample of men, never-married women and never-married men age 15-24, who were either usual residents of the household or visitors present in the household on the night before the survey, were also eligible to be interviewed. The MDHS was for the most part limited to Maldivian citizens; non-Maldivians were included in the survey only if they were the spouse, son, or daughter of a Maldivian.

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

Response Rate

A total of 7,515 households were selected in the sample, of which 7,137 were found to be occupied at the time of data collection. The difference between the number of households selected and the number occupied usually occurs because some structures are found to be vacant or non-existent. The number of occupied households successfully interviewed was 6,443, yielding a household response rate of 90 percent.

In the households interviewed in the survey, a total of 8,362 ever-married women were identified as eligible for the individual interview; interviews were completed with 7,131 women, yielding a female response rate of 85 percent. In the one-half sub-sample of MDHS households, a total of 3,224 ever-married men age 15-64 were identified as eligible for the individual interview; interviews were completed with 1,727 men, yielding a male response rate of 54 percent. In the same sub-sample of households, a total of 3,205 never-married women and men age 15-24 (youth) were identified as eligible for individual interview; interviews were completed with 2,240 youth, yielding a youth response rate of 70 percent. The response rate was higher for female youth (80 percent) than male youth (61 percent).

The urban household response rate of 83 percent is lower than the 92 percent response rate among rural households. The same is true for individual interviews with ever-married respondents; response rates are somewhat lower among urban

women (79 percent) and men (47 percent) than among their rural counterparts (87 percent and 55 percent, respectively). The difference in response rates between urban and rural youth is negligible.

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

Questionnaires

Overview

Four questionnaires were used for the 2009 MDHS: the Household Questionnaire, the Women's Questionnaire, the Men's Questionnaire, and the Youth Questionnaire. The contents of the Household, Women's, and Men's questionnaires were based on model questionnaires developed by the MEASURE DHS programme. The DHS model questionnaires were modified to reflect concerns pertinent to the Maldives in the areas of population, women and children's health, family planning, and others. Questionnaires were translated from English into Dhivehi.

The Household Questionnaire was used to list all the usual members and visitors in the selected households and to identify women and men who were eligible for the individual interview. Basic information was collected on the characteristics of each person listed, including their age, sex, education, and relationship to the head of the household. The Household Questionnaire was also designed to collect information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, water shortage, materials used for the floor and roof of the house, and ownership of various durable goods. In addition, height and weight measurements of ever-married women age 15-49 and children age 6-59 months were recorded in the Household Questionnaire to assess their nutritional status.

Topics added to the Household Questionnaire to reflect issues relevant in the Maldives include physical disability among those age 5 and older, developmental disability among young children, support for early learning, children at work, the tsunami of 2004, health expenditures, and care and support for physical activities of adults age 65 and older.

The Women's Questionnaire was used to collect information from ever-married women age 15-49. These women were asked questions on the following topics:

- Background characteristics (education, media exposure, etc.)
- Reproductive history
- Knowledge and use of family planning methods
- Fertility preferences
- Antenatal and delivery care
- Breastfeeding and infant feeding practices
- Vaccinations and childhood illnesses
- Marriage and sexual activity
- Woman's work and husband's background characteristics
- Infant and child feeding practices
- Childhood mortality
- Awareness and behaviour about AIDS and other sexually transmitted infections (STIs)
- Knowledge of blood pressure, diabetes, heart attack, and stroke

The Men's Questionnaire was administered to all ever-married men age 15-64 living in every second household in the MDHS sample. The Men's Questionnaire collected much of the same information as the Women's Questionnaire, but it was shorter because it did not contain questions on reproduction, maternal and child health, and nutrition.

The Youth Questionnaire was administered to all never-married women and men age 15-24 living in every second household in the MDHS sample (the same one-half selected for the Men's survey). The Youth Questionnaire focuses on priorities of the MOHF that pertain to young adults: reproductive health, knowledge and attitudes about HIV/AIDS, sexual activity, and tobacco, alcohol, and drug use.

Data Collection

Data Collection Dates

Start	End	Cycle
2009-01	2009-10	N/A

Data Collection Mode

Face-to-face

DATA COLLECTION NOTES

PRE-TEST

A pre-test was conducted in April-May 2008. The training team consisted of two consultants from ICF Macro and eight staff from the MOHF. The pre-test provided the opportunity to review questionnaire content and language, logistics, equipment needs, and general protocols for the survey. Lessons learned from the pre-test were used to finalize the survey instruments and logistical arrangements. The pre-test also served as training for the upcoming main survey. Pre-test fieldwork for the MDHS took place in Mal and Thinadhoo Islands.

TRAINING

The first training course for field staff was conducted for four weeks in December 2008. The training team consisted of one consultant from ICF Macro and staff from the MOHF. A total of 58 trainees participated. Trainees were recruited on the basis of their education, prior experience as interviewers or supervisors in other surveys, interest and ability to travel to other islands, other related experience, and performance during the selection interview. The majority of trainees were graduates of 'O' level education (completed grade 10). Other staff members are community health workers who were recruited as supervisors. Two additional trainings of three weeks each were conducted in response to field staff dropouts occurring during data collection. An additional 21 recruits were trained in February 2009, and another 20 recruits were trained in April 2009. Each training was held for three weeks. In all, a total of 91 persons were trained for the survey.

All participants were trained on interviewing techniques and the contents of the MDHS questionnaires. Participants were also trained to conduct anthropometric measurements. The training was conducted following the standard DHS training procedures, including class presentations, mock interviews, written tests, and field practice.

At the start of the field work, six field teams were formed. The team of Mal region started data collection in the first week of January, and the atoll teams started fieldwork during the third week of January.

FIELDWORK

Based on the experience from previous surveys, fieldwork was planned to be completed in four months. However, the 2009 MDHS is the first survey to cover a large number of islands. Furthermore, the high turnover of field staff lengthened the duration of fieldwork because two training sessions had to be conducted to replace staff dropouts. The main reason for the dropouts was the start of the school year when many of the interviewers returned to school.

Fieldwork started with all six teams deployed in Mal on January 8, 2009, with the intent of familiarizing team members with fieldwork procedures and practices. Because of administrative constraints, other teams did not start data collection until January 21, 2009. Teams in atolls outside Mal completed fieldwork in 5 to 6 months. The team in North Central region was the first to complete fieldwork on June 7, 2009. In Mal, fieldwork was slower and had to be suspended for one month to observe fasting (August 22-September 19, 2009). All teams underwent a change of team members. In all, data collection took place over a period of 10 months, from January 2009 to October 2009. All interviews were conducted in Dhivehi.

Field teams usually consisted of 8 members: 4 female interviewers, 2 male interviewers, 1 field editor, and 1 team supervisor. Team composition varied somewhat over time, but each team maintained having one supervisor, one field editor, and at least 2 female interviewers and 1 male interviewer at all times. Fieldwork launched with six teams being disbursed to six regions of the survey. Over time, one team was dismantled and dispersed among other teams that suffered staffing shortfalls.

Data Processing

Other Processing

Following completion of all fieldwork, completed questionnaires were sent to the MOHF central office by various means. All programs for processing the MDHS data were prepared using the Census and Survey Processing System (CSPRO). Data entry was conducted at the Ministry of Health and Family in Mal. About nine data entry operators worked at any one time to enter and check the data; a total of 20 different data entry operators worked on data entry and processing through the data entry period.

Additional data processing was performed to aggregate all data, complete secondary data editing and date imputation, compute sampling weights, and prepare the data files for analysis. This phase of the survey was completed in November 2009.

Data Appraisal

Estimates of Sampling Error

The estimates from a sample survey are affected by two types of errors: non-sampling errors and sampling errors. Non-sampling 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 Maldives Demographic and Health Survey 2009 (2009 MDHS) to minimize this type of error, non-sampling 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 2009 MDHS 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 2009 MDHS sample is the result of a multistage stratified design, and, consequently, it was necessary to use more complex formulae. The computer software used to calculate sampling errors for the 2009 MDHS is a Macro SAS procedure. This procedure 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

CAUTION FOR MEN'S DATA FILES: The response rate to the male interview was inordinately low (interviews were completed with 54 percent of the men who were eligible for interview); therefore, any user of the men's data should be aware that the data may not accurately represent the wider Maldivian male population.

The Youth data (MVOD50*.ZIP) are within the Individual Recode Data (MVIR50*.ZIP).

Related Materials

Questionnaires

Demographic and Health Survey 2009 - Questionnaire

Title Demographic and Health Survey 2009 - Questionnaire
Author(s) Ministry of Health and Family, Malé, Maldives ICF Macro, Calverton, Maryland, USA
Date 2009-01-01
Country Maldives
Language English
Filename MDV_2009_DHS_questionnaire.pdf

Reports

Demographic and Health Survey 2009 - Report

Title Demographic and Health Survey 2009 - Report
Author(s) Ministry of Health and Family, Malé, Maldives ICF Macro, Calverton, Maryland, USA
Date 2010-10-01
Country Maldives
Language English
Filename <http://www.dhsprogram.com/pubs/pdf/FR237/FR237.pdf>
