Malawi - Malaria Indicator Survey 2014

National Malaria Control Programme (NMCP) - Ministry of Health, Government of Malawi

Report generated on: June 5, 2017

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Sampling

Sampling Procedure

Sample Design
The 2014 MIS sample was designed to produce most of the key indicators for the country as a whole, for urban and rural areas separately, and for each of the three regions.

The survey utilised a two-stage sample design. The first stage involved selecting 140 clusters with probability proportional to size from the list of approximately 12,474 EAs covered in the 2008 National Population and Housing Census. The EA size was the number of residential households in the EA recorded in the census. Among the 140 clusters selected, 50 were in urban areas and 90 were in rural areas. Urban areas were over-sampled within regions in order to produce robust estimates for that domain. Therefore, the MIS sample was not proportional to the population for urbanrural residence and required a final weighting adjustment to provide valid estimates for every domain of the survey. In the second stage, in each of the selected EAs, 25 households were selected, using systematic sampling, from a list of households in the EA.

All women age 15-49 who were either permanent residents of the selected households or visitors present in the household on the night before the survey were eligible to be interviewed. In addition, all children age 6-59 months who were listed in the household were eligible for anaemia and malaria testing.

Note: The sample design is described in details in Appendix A.

Response Rate

Of the 3,501 households selected for the sample, 3,415 were occupied at the time of fieldwork. Eighty-six dwellings were abandoned and, therefore, were not included in the response rate. Among the occupied households, 3,405 were successfully interviewed, yielding a total household response rate above 99 percent. In the interviewed households, 2,927 eligible women were identified as eligible for the individual interview and 2,897 were successfully interviewed, yielding a response rate of 99 percent.

Questionnaires

Overview

Three questionnaires were used in the 2014 Malawi MIS: a Household Questionnaire, a Biomarker Questionnaire, and a Woman's Questionnaire. The Household and Woman's questionnaires were based on the model MIS questionnaires developed by the RBM and DHS programmes, as well as the 2010 and 2012 MIS. The model questionnaires were modified to reflect relevant issues of malaria in Malawi in consultation with the Steering Committee, the NMCP, and staff from ICF International. The questionnaires were translated into the two main local languages of Malawi—Chichewa and Tumbuka.

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, and relationship to the head of the household. The main purpose of the Household Questionnaire was to identify women who were eligible for the individual interview and children age 6-59 months who were eligible for anaemia and malaria testing. 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, roof, and walls of the house, ownership of various durable goods, and ownership and use of mosquito nets.

The Biomarker Questionnaire was used to record haemoglobin measurements for children age 6-59 months and results of malaria testing for children under age 5 years. The questionnaire was filled in by the health technician and transcribed into the tablet computer by the team supervisor.

The Woman's Questionnaire was used to collect information from all women age 15-49 years and covered the following topics:
• Background characteristics (age, residential history, education, literacy, religion, dialect)
• Reproductive history and child mortality for births in the last six years
• Prenatal care and preventive malaria treatment for most recent birth
• Prevalence and treatment of fever among children under 5 years
• Knowledge about malaria (symptoms, causes, and ways to prevent it) and messages on malaria
• Cost incurred for the treatment of fever in children under 5 years

No formal field pre-test was done for the survey questionnaires because most of the 2014 MIS questions were included in previous surveys in Malawi and the field staff were experienced in anaemia and malaria testing in the field and in the use of PDAs for data collection.

Data Collection

Data Collection Dates

Start	End	Cycle
2014-05-02	2014-06-10	N/A

Data Collection Mode

Face-to-face [f2f]

DATA COLLECTION NOTES

Training
The NMCP in collaboration with the DHOs identified 22 interviewers 22 laboratory technicians and 11 field team supervisors. In addition, 7 national supervisors from the NMCP, the Public Health Laboratory, and other stakeholders were identified for overall supervision.

The participants attended a three-week interviewer and supervisor training which took place 14-28 April 2014 at Riverside Hotel in Lilongwe. All the field staff participated in a one-week joint training session, focusing on how to fill out the Household and Woman's Questionnaires, mock interviews, and interviewing techniques, as well as on how to locate selected households. Two quizzes were administered to assess how well the participants absorbed the training materials.

During the second week of training, two parallel sessions were held, one for the interviewers and field supervisors and one for the laboratory technicians. The training of interviewers and field supervisors focused on the use of computer tablets for data collection, assigning of households to interviewers using computer tablets, sharing of data among interviewers and supervisors, and submission of data to the central data processing centre at NMCP.

The training of laboratory technicians was facilitated by an ICFI consultant. It focused on preparation of blood samples and testing for anaemia using the HemoCue equipment and malaria testing using SD Bioline RDT. The training involved presentations, discussions, and actual testing for anaemia and malaria. The technicians were trained in identifying children eligible for testing, administering informed consent, conducting the anaemia and malaria rapid testing, and making a proper thick blood smear. They were also trained in storing the blood slides, recording test results on the Biomarker Questionnaire, and providing the results to the parent/guardians of the children tested. The laboratory technicians also received training on how to record children's anaemia and malaria results on the respective brochures and how to fill in the referral slip for any child who was found to be severely anaemic. They were given specific instructions on how to calculate the correct dose of antimalarial medications for children who tested positive for malaria, using the portable scales to determine the child's weight. The laboratory technicians received a lecture on the epidemiology of malaria in Malawi and the correct treatment protocols.

At the completion of classroom practise and instructions, the laboratory technicians visited the under-5 children's clinic at Kawale Health Centre and Area 18 Health Centre hospitals, where they performed anaemia and malaria testing and collected thick blood smears from children between the ages of 6 and 71 months.

All participants took part in a field practise exercise in households located close to the training site before being dispatched to their respective area of assignment.

Fieldwork
Eleven teams were organised for field data collection. Each team consisted of one field supervisor, two community health nurses as interviewers, two laboratory technicians, and one driver. The national supervisors were paired; one to focus on the interviewing and the other to perform laboratory procedures.

The NMCP arranged for printing the questionnaires, manuals, consent forms, and other field forms. It was also in charge of fieldwork logistics such as backpacks, identification cards, umbrellas, and other field supplies.

Field data collection for the 2014 Malawi MIS began on 2 May 2014. To allow for maximum supervision, all 11 teams were visited by the national supervisors at least once in the first two weeks. Fieldwork was completed by 10 June 2014.

Data Processing

Data Editing

Data for the 2014 Malawi MIS were collected through questionnaires programmed onto computer tablets. ICFI data processing specialists loaded the Household, Biomarker, and Woman's Questionnaires in English and the two main local languages, Chichewa and Tumbuka, in the computer tablets and installed data entry and processing programmes. The tablets were Bluetooth-enabled to facilitate electronic transfer of files, e.g., data from the Household Questionnaires transferred among survey team members and transfer of completed questionnaires to the team supervisor's tablet. The field supervisors transferred data on a daily basis to the central data processing unit using the Internet. To facilitate communication and monitoring, each field worker was assigned a unique identification number.

The Census Survey Processing Software (CSPro) was used for data editing, weighting, cleaning, and tabulation. In the NMCP central office, data received from the supervisors' tablets were registered and checked against any inconsistencies and outliers. Data editing and cleaning included range checks and structure and internal consistency checks. Any anomalies were communicated to the respective team through their team supervisor. The corrected results were resent to the central processing unit.

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 2014 Malawi Malaria Indicator Survey (Malawi MIS) to minimise 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 2014 Malawi MIS 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 among all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

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 2014 Malawi MIS sample is the result of a multi-stage stratified design, and, consequently, it was necessary to use more complex formulas. Sampling errors are computed in either ISSA or SAS, using programs developed by ICF International. These programs use the Taylor linearisation method of variance estimation for survey estimates that are means, proportions, or ratios like the ones in the Malawi MIS survey.

The Taylor linearisation method treats any percentage or average as a ratio estimate, $r = y / x$, where y represents the total sample value for variable y, and x represents the total number of cases in the group or subgroup under consideration.

Note: A more detailed description of estimate of sampling error is presented 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
- Completeness of reporting

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

Related Materials

Questionnaires

2014 Malawi Malaria Indicator Survey, Household Questionnaire

Title	2014 Malawi Malaria Indicator Survey, Household Questionnaire
Author(s)	The DHS Program
Date	2014-04-18
Country	Malawi
Language	English
Filename	MWI_2014_MIS_hh_questionnaire.pdf

2014 Malawi Malaria Indicator Survey, Biomarker Questionnaire

Title	2014 Malawi Malaria Indicator Survey, Biomarker Questionnaire
Author(s)	The DHS Program
Date	2014-02-03
Country	Malawi
Language	English
Filename	MWI_2014_MIS_biomarker_questionnaire.pdf

2014 Malawi Malaria Indicator Survey, Woman's Questionnaire

Title	2014 Malawi Malaria Indicator Survey, Woman's Questionnaire
Author(s)	The DHS Program
Date	2014-04-24
Country	Malawi
Language	English
Filename	MWI_2014_MIS_woman_questionnaire.pdf

Reports

Survey Presentations

Title	Survey Presentations
Author(s)	The DHS Program
Date	2015-02-01
Country	Malawi
Language	English
Filename	http://www.dhsprogram.com/pubs/pdf/PPT39/PPT39.zip

Malaria Indicator Survey

Title	Malaria Indicator Survey
Author(s)	Ministry of Health, National Malaria Control Programme, Lilongwe, Malawi The DHS Program, ICF International, Rockville, Maryland, U.S.A.
Date	2015-02-01

Country	Malawi
Language	English
Description	This report presents the findings of the 2014 Malawi Malaria Indicator Survey (2014 MMIS) conducted by the National Malaria Control Programme (NMCP) of the Ministry of Health from 2 May through 10 June 2014.

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Filename   http://www.dhsprogram.com/pubs/pdf/MIS18/MIS18.pdf