

Kenya - Kenya National Micronutrient Survey 2011, First Round

Kenya National Bureau of Statistics (KNBS), Division of Nutrition, Ministry of Public Health and Sanitation (MOPHS), Kenya Medical Research Institute (KEMRI)

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Overview

Identification

ID NUMBER

KEN-KNBS-KNMS-2011-v1.0

Version

VERSION DESCRIPTION

Version 1.0 (May 2014)

PRODUCTION DATE

2013

NOTES

Version 1.0 (The information available is that there has been no other Micronutrient survey done.)

This survey was carried out in 2011 but the report was written in 2013

Overview

ABSTRACT

Purpose :The purpose of this procedure is to ensure quality of HIV testing and interpretation of results in the laboratory and the community.

Objectives In HIV testing it is extremely important that "the correct results go to the right client". The identification of client and labelling of test devices should therefore be done properly.

KIND OF DATA

Sample survey data [ssd]

UNITS OF ANALYSIS

HouseHold questionnaire level Level

Women Questionnaire level

School Age children Questionnaire

Pre school Age children Questionnaire

Men Questionnaire

Scope

NOTES

The survey covered household members (usual residents),

Womens questinnaire(aged 15-49 years) resident in the household,

Children(aged 0-6-49months),

School age children (aged 5-14 years) resident in the household

Men questionnaire (aged 15-54 year).

TOPICS

Topic	Vocabulary	URI
ANAEMIA, IRON DEFICIENCY AND IRON DEFICIENCY ANAEMIA		
VITAMIN A DEFICIENCY		
ANAEMIA, IRON DEFICIENCY AND IRON DEFICIENCY ANAEMIA		
VITAMIN A DEFICIENCY		
FOLATE DEFICIENCY IN PREGNANT AND NON-PREGNANT WOMEN		
NUTRITION AND DIETARY PRACTICES AND PATTERNS		

Coverage

GEOGRAPHIC COVERAGE

National

UNIVERSE

The survey covered household members (usual residents), women's questionnaire (aged 15-49 years) resident in the household, children (aged 0-6-49 months), School age children (aged 5-14 years) resident in the household and Men questionnaire (aged 15-54 year).

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Kenya National Bureau of Statistics (KNBS)	Ministry of Devolution and Planning (MODP)
Division of Nutrition, Ministry of Public Health and Sanitation (MOPHS)	Ministry of Health
Kenya Medical Research Institute (KEMRI)	Ministry of Health

OTHER PRODUCER(S)

Name	Affiliation	Role
Division of Nutrition, Ministry of Public Health and Sanitation	Ministry of Health	Technical Advice
Kenya Medical Research Institute	Ministry of Health	Technical Advice

FUNDING

Name	Abbreviation	Role
United Nations Children's Fund	(UNICEF)	Funding
Micronutrient Initiative	Micronutrient Initiative (MI)	Funding
World Health Organization	(WHO)	Funding
Global Alliance for Improved Nutrition	(GAIN)	Funding
World Food Programme	WFP	Funding

OTHER ACKNOWLEDGEMENTS

Name	Affiliation	Role
Provincial Administrators	Local Administration	Administration
District Commissioners	Local Administration	Administration
District Officers	Local Administration	Administration
Chiefs	Local Administration	Administration
Assistant Chiefs	Local Administration	Administration
Village Elders	Local Administration	Administration

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Kenya National Bureau of Statistics	KNBS	Ministry of Planning and Devolution	Documentation of the Study

DATE OF METADATA PRODUCTION
2014-05-16

DDI DOCUMENT VERSION
Version 1.0 (May 2014)

DDI DOCUMENT ID
DDI-KEN-KNBS-KMNS-2011-v1.0

Sampling

Sampling Procedure

Sample size estimation

The sample size required for each stratum was based on the estimated prevalence for each nutritional indicator, the desired precision for each indicator, an assumed design effect of 2.0, and a non-response of 10% (including refusals) at the household level and 10% at the individual levels for children 6-59 months of age and non-pregnant women. An additional non-response rate of 10% (for a total 30% non-response rate) was assumed for the men and SAC 5-14 years old. The sample size was determined based on the parameters that required the highest sample size (Zinc, Iodine, Anaemia) for each target group (Appendix 2). The design effect was estimated at 2.0 to compensate for the fact that cluster sampling method was adopted and to adjust for cluster variability. Fisher's formula for estimating the minimum sample size for prevalence descriptive studies was used as follows: $n = \frac{Z^2 P(1-P)}{d^2 DEFF}$ where Z = Standard errors from mean corresponding to the 95% confidence level P = the target prevalence d = the allowable error DEFF = Design Effect RR = Response Rate (%)

$n = \frac{Z^2 P(1-P)}{d^2 DEFF}$

2 Details of sample size calculations for specific indicators are outlined in Appendix 2

2.3 Sampling design

In 2010, Kenya ratified a new constitution which established 47 county governments. This change has highlighted the need for national surveys to collect information beyond the provincial level, and move towards collection of county-level estimates. However, obtaining county-level estimates with adequate precision were not considered feasible in KNMS due to limitations in sample size and resources. Therefore KNMS consisted of the three domains as defined earlier.

The sampling frame for the 2010 KNMS was based on the National Sample Survey and Evaluation Programme (NASSEP IV) master sampling frame maintained by the Kenya National Bureau of Statistics (KNBS). Administratively, Kenya is divided into 8 provinces. In turn, each province is subdivided into districts, each district into divisions, each division into locations and each location into sub-locations. In addition to these administrative units, during the last 1999 population census, each sub-location was subdivided into census Enumeration Areas (EAs) i.e. small geographic units with clearly defined boundaries. As defined in the 1999 census, Kenya has eight provinces, 69 districts, and approximately 62,000 EAs. The list of EAs is grouped by administrative units and includes information on the number of households and population. This information was used in 2002 to design a master sample with about 1,800 selected EAs. The cartographic material for each EA in the master sample was updated in the field. The resulting master sampling frame was NASSEP IV which is still currently used by KNBS. The NASSEP IV master frame is a two-stage stratified cluster sample format. The first stage is a selection of Primary Sampling Units (PSUs), which are the EAs using probability proportional to measure of size (PPMOS) method. The second stage involves the selection of households for various surveys. EAs are selected with a basis of one Measure of Size (MOS) defined as the ultimate cluster with an average of 100 households and constitute one (or more) EAs. Although consideration was given to development of a new master frame for KNMS, time and other resource constraints dictated that the sample frame of this survey was NASSEP IV. The KNMS sample was selected using a stratified two-stage cluster design consisting of 296 clusters, 123 in the urban and 173 in the rural areas. From each cluster a total of 10 households were selected using systematic simple random sampling. For the KNMS survey, an urban area was defined as "an area with an increased density of human-created structures in comparison to the areas surrounding it and has a population of 2,000 people and above". Using this definition, urban areas included Cities, Municipalities, Town Councils, Urban Councils and all District Headquarters. A rural area was defined as an isolated large area of an open country in reference to open fields with peoples whose main economic activity was farming. Every attempt was made to conduct interviews in the 10 selected households, and one additional visit was made to ascertain this compliance in cases of absence of household members to minimize potential bias. Non responding households were not replaced.

Response Rate

Population group Age Group Minimum sample size Attained sample size Response rate (%)

Anaemia status

Preschool Children 6-59 months 1227 1023 83

School age Children 5-14 years 775 973 125

Non-Pregnant Women 15-49 years 1367 650 48

Pregnant Women 15-49 years 215 117 54

Men 15-54 years 425 264 62

Iron status

Preschool Children 6-59 months 913 927 101
 School age Children 5-14 years 658 964 146
 Non-Pregnant Women 15-49 years 1427 647 45
 Pregnant Women 15-49 years 215 111 52
 Men 15-54 years 535 250 47
 Sickle cell status
 Preschool Children 6-59 months 1073 884 82
 Non-Pregnant Women 15-49 years 747 619 83
 Thalassaemia status
 Preschool Children 6-59 months 1073 843 79
 Non-Pregnant Women 15-49 years 747 596 80
 Malaria status
 Preschool Children 6-59 months 1200 856 71
 Non-Pregnant Women 15-49 years 1127 622 55
 HIV status
 Preschool Children 6-59 months 260 912 351
 Non-Pregnant Women 15-49 years 580 678 117
 Nutritional status
 Preschool Children: Stunting 6-59 months 1167 1130 97
 Preschool Children: Wasting 6-59 months 1287 1130 88
 Non-Pregnant Women 15-49 years 1320 695 53

Weighting

Weights were computed for household questionnaire and other indicators which included anemia, iron deficiency, thalassaemia, sickle cell, malaria and HIV. The computed weights were a product of design weights (sampling weights) and post-stratification weights (non-response and residence - rural/urban). The weights were then normalized for the weights to sum to the achieved sample total.

This is the variable used for weights-Normalized household weight

Questionnaires

Overview

A careful sampling strategy was followed considering the degree of precision assumed and the day-to-day variation in nutrient intake by the respondents to ensure the representativeness of the samples at the population level. The data collection was to ensure equal representation of consumption during all days of the week. The line of questioning for the 24 hr. recall was open-ended rather than rigidly structured. A set procedure rather than a rigid routine was used in this part of the interview. The open-ended questionnaires demanded a continuous flow of questions and answers which become self-generating. Each successive round of questions served to sharpen the focus on one aspect of the food eaten: how often it was eaten, how it was prepared, how much was eaten. Primary assessment of household characteristics was determined upon cluster household mapping as detailed for the overall survey. Two households were selected for the recall with increased priority to the first four households, conditional upon the availability of children between ages 6-59 months. This was to increase the probability of correlating with complete sets of data collected from the households using all modules. Data was collected from a mother-child pair from each household upon availability of a child between ages 6 to 59 months. In some instances it was not possible to pair up mother/caretaker if the caretakers were aged above 49 years. The youngest was selected if more than one child was found. The two recall-households, therefore, were selected only from the households among the 10 KNMS samples that essentially had children between ages 6-59 months and a woman of reproductive age.

Data Collection

Data Collection Dates

Start	End	Cycle
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Data Collection Mode

Face-to-face [f2f]

Data Collection Notes

The training did include sessions on data collection skills include: establishing a pattern of questioning; stimulating memory; fixing the time frame; how to focus on the details required; using probing techniques and avoiding biased probing; Avoid quick assumptions and conclusions; Handling delicate situations during the interview and Maintain confidentiality. In order to both understand the relationships in micronutrient deficiencies the 24 hour recall component was felt necessary as an additional dietary recall component

Questionnaires

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Data Collectors

Name	Abbreviation	Affiliation
Kenya National Bureau of Statistics	KNBS	MINISTRY OF DEVOLUTION AND PLANNING

Supervision

The training identified seventeen research assistants, 14 were selected for the survey, while the other three were trained on data entry under the supervision of a data manager specifically trained for the 24 hour recall. All interviewers /trainees selected were fluent in English in addition to their local languages. Three-week training provided the interviewers with both in-house and field experiences using various training methods including, lectures, group activities, role plays, use of visual aids, cases studies and field activities. The first week training included the supervisory staff from the KNMS whose role in the National survey included overseeing 24-hr recall data collection. Experts from the Micronutrient Initiative and KEMRI conducted the training following a standard training manual. The finalized version of the questionnaire was prepared based on the feedback from the field application during the training period. The questionnaire was also translated into Swahili language. The training standardized measurement of food using standard measuring cylinders and beakers. A food album was also developed and pretested by the trainers. During the training, training manuals, food albums, questionnaires and

measuring equipment (measuring cylinders and beakers,) spoons cups, plates, bowls, rice and water were used.

Data Processing

Data Editing

Each team was assigned one data editor whose specific duties were to monitor data questionnaires and forms with the aim of improving and maintaining the quality of data collected. Editing of completed interviews was essential to ensure accurate and complete data collection. This was especially important during the initial phases of fieldwork, when opportunities to eliminate interviewer error patterns were high before they became habits. Editors were expected to review and edit Household Questionnaires, Individual Questionnaires, and the Laboratory/Anthropometry form for completeness, legibility, and consistency throughout the fieldwork. This had to be done in real time to enable rectification by the enumerator before leaving the respondent and/or cluster. The data editor also ensured the safe handover of the data collection form to the team leader daily for review; addressed on a daily basis any discrepancies in the questionnaires with the team before leaving the cluster; and handed over complete bound questionnaires with cluster name and number to the team leader once a cluster is complete for review and transportation to Nairobi. Weekly site reports were sent to the study coordinator with information on Time per cluster

- Enrollment rate per team per cluster
- Participant refusal rates (HH and individual level, as well as individual tests)
- Participant referral
- Time of procedures for enumerators, nurse/phlebotomy, cluster lab
- Sample collection times (time from collection, delivery to cluster lab, processing times)

Other Processing

Data management

The field questionnaires bearing household characteristics, individual population characteristics, and anthropometrics measurements were double entered into a computer database designed using MS-Access application. Regular file back-up was done using flash disks and external hard disk to avoid any loss or tampering. Data comparison was done using Epi-info version 7.0. Data cleaning and validation was performed to achieve clean datasets. The datasets were exported into a Statistical Package format (IBM® SPSS® Statistics version 20.0). The laboratory results were entered in excel format and later exported into a Statistical Package format (IBM® SPSS® Statistics version 20.0). Data merging exercise was systematically conducted using the four datasets i.e. household characteristics, individual population characteristics, anthropometrics measurements, and laboratory results. Each of the five populations namely; Pre-school children (PSC), School aged children (SAC), Pregnant women (PW), Non-pregnant women (NPW), and Men were separately merged. Data merging was conducted as follows: STEP1: The 'laboratory results' file was first merged to the 'anthropometrics' file using 'LABEL NUMBER' as the unique identifier. STEP2: The merged 'laboratory + anthropometrics' file was merged to individual population characteristics file using a merging variable constructed by concatenating 'CLUSTER NUMBER + HOUSEHOLD NUMBER + LINE NUMBER' as the unique identifier. STEP3: The merged 'laboratory + anthropometrics + individual population characteristics' file was merged to the 'household characteristics' file using a merging variable constructed by concatenating 'CLUSTER NUMBER + HOUSEHOLD NUMBER + LINE NUMBER' as the unique identifier. Five master-files were backed-up for safe keeping and a copy was shared with the statisticians for analysis. All the questionnaires and laboratory forms were filed and stored in lockable drawers for confidentiality.

2.18.2 Data analysis

The validated data was exported to SPSS Version 20 for analysis.

Data Appraisal

Estimates of Sampling Error

The sample size required for each stratum was based on the estimated prevalence for each nutritional indicator, the desired precision for each indicator, an assumed design effect of 2.0, and a non-response of 10% (including refusals) at the household level and 10% at the individual levels for children 6-59 months of age and non-pregnant women. An additional non-response rate of 10% (for a total 30% non-response rate) was assumed for the men and SAC 5-14 years old. The sample size was determined based on the parameters that required the highest sample size (Zinc, Iodine, Anaemia) for each target group (Appendix 2). The design effect was estimated at 2.0 to compensate for the fact that cluster sampling method was adopted and to adjust for cluster variability. Fisher's formula for estimating the minimum sample size for prevalence descriptive studies was used as follows: $n = \frac{Z^2 P(1-P)}{d^2}$ where; Z = Standard errors from mean corresponding to the 95% confidence level P = the target prevalence d = the allowable error DEFF = Design Effect RR = Response Rate (%)

Other forms of Data Appraisal

Other forms of data i.e cluster lab , field lab documents and food sample forms were used and are in the reports