

Kingdom of Eswatini - Demographic and Health Survey 2006-2007

Central Statistical Office (CSO)

Report generated on: July 18, 2018

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Sampling

Sampling Procedure

The 2006-07 SDHS was designed to provide estimates of health and demographic indicators at the national level, for urban-rural areas, and for the four regions of Manzini, Hhohho, Lubombo, and Shiselweni. Standard DHS sampling policy recommends a minimum of 1,000 to 1,200 women per major domain. To meet this criterion, the number of households selected in each of the various domains, particularly urban areas, was not proportional to the actual size of the population in the domain. As a result, the SDHS sample is not self-weighting at the national level, and weights must be applied to the data to obtain the national-level estimates.

The 2006-07 SDHS sample points (clusters) were selected from a list of enumeration areas (EAs) defined in the 1997 Swaziland Population and Housing Census. A total of 275 clusters were drawn from the census sample frame, 111 in the urban areas and 164 in the rural areas.

CSO staff conducted an exhaustive listing of households in each of the SDHS clusters in August and September 2005. From these lists, a systematic sample of households was drawn for a total of 5,500 households. All women and men age 15-49 identified in these households were eligible for individual interview. In addition, a sub-sample of half of these households (2,750 households) was selected randomly in which all boys and girls age 12-14 and persons age 50 and older were eligible for individual interview. In the SDHS households where youth and older adults were interviewed, all individuals age 6 months and older were eligible for anaemia testing and all individuals age 2 and older were eligible for HIV testing. In the SDHS households where only women and men age 15-49 were interviewed, children age 6 months to 5 years were eligible for the anaemia testing and women and men age 15-49 were eligible for anaemia and HIV testing.

During the household listing, field staff used Global Positioning System (GPS) receivers to establish and record the geographic coordinates of each of the SDHS clusters.

Response Rate

The response rates are important because they may affect the reliability of the results. Of a total of 5,500 households selected in the sample, 5,086 were occupied at the time of the fieldwork. This difference between the number of selected households and the number of occupied households is due to structures being vacated or destroyed. Successful interviews were conducted in 4,843 households, yielding a response rate of 95 percent.

In the households interviewed in the survey, a total of 5,301 eligible women age 15-49 were identified. Interviews were completed with 4,987 of these women, yielding a 94 percent response rate. In the same households, a total of 4,675 eligible men age 15-49 were identified and interviews were completed with 4,156 of these men, yielding a male response rate of 89 percent. The response rates are slightly lower in the urban sample than in the rural sample, and lower among men than women. The principal reasons for non-response among both eligible men and women were refusal and the failure to find individuals at home despite repeated visits to the households. Men have lower response rates than women due to higher refusal rates, and more frequent and longer absence from the households, principally due to employment and their lifestyle.

A total of 2,750 households were selected in the sample, of which 2,543 were occupied at the time of the fieldwork. This difference between the number of selected households and the number of occupied households is due to structures being vacated or destroyed. Successful interviews were conducted in 2,410 households, yielding a response rate of 95 percent.

In the households selected for the youth and older adult survey, a total of 477 eligible girls and 439 eligible boys age 12-14 were identified. Interviews were completed with 459 girls and 411 boys, yielding response rates of 96 percent and 94 percent, respectively. The response rates for girls are the same for urban and rural areas. For boys, the response rate is slightly lower in urban than in rural areas (89 percent compared with 94 percent).

A total of 693 eligible women age 50 and over were identified. Interviews were completed with 661 of these women, yielding a 95 percent response rate. In the same households, a total of 492 eligible men age 50 and over were identified and interviews were completed with 456 of these men, yielding a male response rate of 93 percent. The response rates are slightly lower in urban than in rural areas, and lower among men than women.

Questionnaires

Overview

Five types of questionnaires were used for the SDHS: a) the Household Questionnaire, b) the Woman's Questionnaire, c) the Man's Questionnaire, d) the Youth Questionnaire, and the e) Older Adult Questionnaire. The contents of the questionnaires were based on questionnaires developed for the MEASURE DHS programme. The Youth Questionnaire was adapted from the 2002 Nelson Mandela/HSRC Study of HIV/AIDS in South Africa. The SDHS questionnaires were developed in collaboration with a wide range of stakeholders. After the SDHS survey instruments were drafted, they were translated into and printed in the local language, Siswati, for pretesting.

a) The Household Questionnaire was used to list all the usual members and visitors in the selected households. Basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The Household Questionnaire was also used to identify persons eligible for the individual interview. In addition, information was collected about the dwelling, such as the source of water; type of toilet facilities; materials used to construct the house; ownership of various consumer goods; use of bed nets; and care and free external support received by chronically ill household members and orphans and vulnerable children. The results of anthropometric measurement and anaemia testing were recorded in the Household Questionnaire, as was the information on the consent of eligible household members for the HIV testing.

b) The Woman's Questionnaire was used to collect information from all women age 15-49 and covered the following topics:

- Background characteristics (age, education, religion, etc.)
- Birth history
- Knowledge and use of family planning methods
- Antenatal and delivery care
- Infant feeding practices including patterns of breastfeeding
- Vaccinations
- Childhood illnesses and treatment
- Marriage and sexual activity
- Fertility preferences
- Husband's background and woman's work status
- Adult (maternal) mortality
- HIV/AIDS-related knowledge, attitudes, and behaviour.

c) The Man's Questionnaire was shorter than the Woman's Questionnaire, but covered many of the same topics, excluding the reproductive history and sections dealing with maternal and child health.

d) The Older Adult Questionnaire obtained limited information on the background characteristics of the population age 50 and over and on HIV/AIDS knowledge, attitudes, and risk behaviour.

e) The Youth Questionnaire included questions on knowledge and attitudes about sex, and factors exposing youth to risk of abuse.

Data Collection

Data Collection Dates

Start	End	Cycle
2006-07	2007-03	N/A

Data Collection Mode

Face-to-face

DATA COLLECTION NOTES

PRETEST

Two pretests were conducted for the 2006-07 SDHS. The first was aimed at testing the flow of the questions and the translation from English to Siswati. Given the fact that this was the first SDHS to be conducted in the country, this pretest was also viewed as a pilot exercise for the survey organising committee. The first pretest was conducted in August-September 2005. Pretest activities started with a training of trainers. The trainers were drawn from the CSO, the MOHSW, NERCHA, and the Ministry of Agriculture. Macro staff assisted with the training of trainers and Macro and HSRC staff assisted with the pretest training.

Eight women and 16 men participated in the field staff training. All but five of the participants had worked in the SDHS as household listers. The SDHS trainers and several guest lecturers gave talks to introduce specific topics in the survey, such as sexual and reproductive health, water and sanitation, malaria, nutrition, and HIV/AIDS. The pretest was conducted in both urban and rural areas to help gauge how respondents' reception of the SDHS teams might vary in different localities. On average, the Household Questionnaire took one hour to complete, the Woman's Questionnaire took two hours, the Man's Questionnaire took one hour, the Youth Questionnaire took 20 minutes, and the Older Adult Questionnaire took 30 minutes.

The second pretest was carried out in April-May 2006 after the review of the HIV testing protocol was completed at CDC Atlanta. This pretest combined interviews and collection of blood samples for anaemia and HIV tests.

TRAINING

A total of 83 persons, 38 males and 45 females, were trained to be the 2006-07 SDHS fieldworkers. They were grouped in two classes. Many of the trainees had participated in both the first and second pretest. The training followed the standard DHS training procedures, including instructions on how to conduct interviews and how to fill in all five questionnaires, classroom demonstration and practice in administering the questionnaires, and tests. The participants also had a chance to practice interviewing in actual households and discuss their experience before the fieldwork began.

With respect to the biomarker data collection, the staff responsible for the anaemia and HIV testing received extensive classroom training plus additional field practice. As part of the training, they were given thorough training in informed consent procedures, how to take finger stick blood spot samples, and how to handle and package the dried blood spots. All staff received training in universal precautions and the disposal of hazardous waste. During the training, there were special lectures on the HIV/AIDS epidemic.

FIELDWORK

Fieldwork for the 2006-07 SDHS was carried out by 10 mobile interviewing teams, each consisting of one supervisor, one field editor, three to four female interviewers, and one or two male interviewers. Two or three of the interviewers on each team were assigned to take the blood samples for the anaemia and HIV testing. Fieldwork commenced in July 2006 and was completed in February 2007.

HIV TESTING

The SDHS HIV testing protocol involved the collection of at least three blood spots from a finger prick (generally the same prick used to obtain the blood drop for anaemia testing) on a special filter paper card. The HIV testing in the SDHS was anonymous, i.e., it was conducted in such fashion that the results could not be linked to individual respondents. A unique random identification number (bar-code) was assigned to each eligible respondent consenting to the testing, and labels containing that number were affixed to the filter paper card, the questionnaire, and a field tracking form at the time of the collection of the sample. No other identifiers were linked to the dried blood spot (DBS) samples from SDHS respondents during the HIV testing.

Because of the anonymous nature of the testing approach in the SDHS, it was not possible to provide information on the results from the HIV testing conducted during the SDHS. In lieu of providing the SDHS test results, written and verbal information was provided on counseling and testing (VCT) sites where free confidential counseling and HIV testing were available during the survey. In addition, any person (whether or not they participated in the SDHS) approaching an SDHS team with a request about VCT was provided with information on the sites, in an effort to increase VCT usage in Swaziland.

Data Collectors

Name	Abbreviation	Affiliation
Central Statistical Office	CSO	

Data Processing

Data Editing

All questionnaires for the SDHS were returned to CSO central office for data processing. The processing operation consisted of office editing, coding of open-ended questions, data entry, double-entry verification, and resolving inconsistencies found by computer programmes developed for the SDHS. The SDHS data entry and editing programmes used CPro, a computer software package specifically designed for processing survey data such as that produced by DHS surveys. Data processing commenced in August 2006 and was completed in April 2007.

The HIV testing was carried out at the NRL between August 2006 and June 2007.

Data Appraisal

Estimates of Sampling Error

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected in the 2006-07 SDHS 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 2006-07 SDHS 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 2006-07 SDHS 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.

The Jackknife repeated replication method derives estimates of complex rates from each of several replications of the parent sample, and calculates standard errors for these estimates using simple formulae. Each replication considers all but one cluster in the calculation of the estimates. Pseudo-independent replications are thus created. In the 2006-07 NDHS, there were 275 non-empty clusters. Hence, 275 replications were created.

In addition to the standard error, ISSA computes the design effect (DEFT) for each estimate, which is defined as the ratio between the standard error using the given sample design and the standard error that would result if a simple random sample had been used. A DEFT value of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. ISSA also computes the relative error and confidence limits for the estimates.

Sampling errors for the 2006-07 SDHS are calculated for selected variables considered to be of primary interest for woman's survey and for man's surveys, respectively. The results are presented in an appendix to the Final Report for the country as a whole, for urban and rural areas, and for each of the eleven regions. For each variable, the type of statistic (mean, proportion, or rate) and the base population are given in Table B.1 of the Final Report. Tables B.2 to B.8 present the value of the statistic (R), its standard error (SE), the number of unweighted (N-UNWE) and weighted (N-WEIG) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R2SE), for each variable. The DEFT is considered undefined when the standard error considering simple random sample is zero (when the estimate is close to 0 or 1). In the case of the total fertility rate, the number of unweighted cases is not relevant, as there is no known unweighted value for woman-years of exposure to child-bearing.

The confidence interval (e.g., as calculated for children ever born to women aged 40-49) can be interpreted as follows: the overall average from the national sample is 5.339 and its standard error is 0.118. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., 5.339 ± 0.118 . There is a high probability (95 percent) that the true average number of children ever born to all women aged 40 to 49 is between 5.103 and 5.575. Sampling errors are analyzed for two separate groups of estimates: (1) means and proportions, and (2) complex demographic rates. At the national level, mostly relative standard error values (SE/R) for the means and proportions are below 10 percent, however the highest relative standard error values are for indicators with very low values (i.e. less than 2 percent). So in general, the relative standard errors for most estimates for the country as a whole are small, except for indicators with very small values, i.e. for estimates which are rare in the population. For example, the relative standard error for the total fertility rate (TFR 0-3 years) is small (2.9 percent) since births are a fairly common event. However, for the mortality rates which are rarer events, the average relative standard error value is higher; for example, the relative standard error for the 0-4 year estimate of mortality rates is 9.4 percent. The relative standard error varies across sub-populations. For example, for the variable children ever born to women aged 40-49, the relative standard errors as a percent of the estimated mean for the whole country, for the urban areas and for the rural areas are 2.2 percent, 4.2 percent and 2.5 percent, respectively. For the total sample, the value of the design effect (DEFT), averaged over all selected variables, is 1.15 which means that, due to multi-stage clustering of the sample, the average standard error is increased by a factor of 1.15 over that in an equivalent simple random sample.

Other forms of Data Appraisal

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 2006-07 Swaziland Demographic and Health Survey (SDHS) to minimize this type of error, non-sampling errors are impossible to avoid and difficult to evaluate statistically.

Related Materials

Questionnaires

Swaziland Demographic and Health Survey 2006-07 - Household Questionnaire

Title	Swaziland Demographic and Health Survey 2006-07 - Household Questionnaire
Author(s)	Central Statistical Office (CSO)
Date	2006-07-01
Country	Swaziland
Language	English
Contributor(s)	Macro International Inc.
Description	The Household Questionnaire was used to list all the usual members and visitors in the selected households. Basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The Household Questionnaire was also used to identify persons eligible for the individual interview. In addition, information was collected about the dwelling, such as the source of water; type of toilet facilities; materials used to construct the house; ownership of various consumer goods; use of bed nets; and care and free external support received by chronically ill household members and orphans and vulnerable children. The results of anthropometric measurement and anaemia testing were recorded in the Household Questionnaire, as was the information on the consent of eligible household members for the HIV testing.
Filename	SWZ_DHS_2006_Questionnaire_Household_En.pdf

Swaziland Demographic and Health Survey 2006-07 - Women's Questionnaire

Title	Swaziland Demographic and Health Survey 2006-07 - Women's Questionnaire
Author(s)	Central Statistical Office (CSO)
Date	2006-07-01
Country	Swaziland
Language	English
Contributor(s)	Macro International Inc.
Description	The Household Questionnaire was used to list all the usual members and visitors in the selected households. Basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The Household Questionnaire was also used to identify persons eligible for the individual interview. In addition, information was collected about the dwelling, such as the source of water; type of toilet facilities; materials used to construct the house; ownership of various consumer goods; use of bed nets; and care and free external support received by chronically ill household members and orphans and vulnerable children. The results of anthropometric measurement and anaemia testing were recorded in the Household Questionnaire, as was the information on the consent of eligible household members for the HIV testing.
Filename	SWZ_DHS_2006_Questionnaire_Woman_En.pdf

Swaziland Demographic and Health Survey 2006-07 - Men's Questionnaire

Title	Swaziland Demographic and Health Survey 2006-07 - Men's Questionnaire
Author(s)	Central Statistical Office (CSO)
Date	2006-07-01
Country	Swaziland
Language	English
Contributor(s)	Macro International Inc.
Description	The Man's Questionnaire was shorter than the Woman's Questionnaire, but covered many of the same topics, excluding the reproductive history and sections dealing with maternal and child health.

Filename SWZ_DHS_2006_Questionnaire_Man_En.pdf

Swaziland Demographic and Health Survey 2006-07 - Questionnaire for Persons age 12-14

Title Swaziland Demographic and Health Survey 2006-07 - Questionnaire for Persons age 12-14
 Author(s) Central Statistical Office (CSO)
 Date 2006-07-01
 Country Swaziland
 Language English
 Contributor(s) Macro International Inc.
 Description The Youth Questionnaire included questions on knowledge and attitudes about sex, and factors exposing youth to risk of abuse.
 Filename SWZ_DHS_2006_Questionnaire_Persons_Age_12-14_En.pdf

Swaziland Demographic and Health Survey 2006-07 - Questionnaire for Persons age 50+

Title Swaziland Demographic and Health Survey 2006-07 - Questionnaire for Persons age 50+
 Author(s) Central Statistical Office (CSO)
 Date 2006-07-01
 Country Swaziland
 Language English
 Contributor(s) Macro International Inc.
 Description The Older Adult Questionnaire obtained limited information on the background characteristics of the population age 50 and over and on HIV/AIDS knowledge, attitudes, and risk behaviour.
 Filename SWZ_DHS_2006_Questionnaire_Persons_Age_over_50_En.pdf

Reports

Swaziland Demographic and Health Survey 2006-07 - Final report

Title Swaziland Demographic and Health Survey 2006-07 - Final report
 Author(s) Central Statistical Office (CSO)
 Date 2008-05-01
 Country Swaziland
 Language English
 Contributor(s) Macro International Inc.
 Description This report summarises the findings of the 2006-07 Swaziland Demographic and Health Survey (SDHS) carried out by the Swaziland Central Statistical Office (CSO). The SDHS is part of the worldwide MEASURE Demographic and Health Surveys (DHS) program, funded by the United States Agency for International Development (USAID).
 Filename <http://www.dhsprogram.com/pubs/pdf/FR202/FR202.pdf>

Swaziland Demographic and Health Survey 2006-07 - Key Findings

Title Swaziland Demographic and Health Survey 2006-07 - Key Findings
 Author(s) Central Statistical Office (CSO)
 Date 2008-05-01
 Country Swaziland
 Language English
 Contributor(s) Macro International Inc.

Description	This report summarises the findings both in english and swati of the 2006-07 Swaziland Demographic and Health Survey (SDHS) carried out by the Swaziland Central Statistical Office (CSO). The SDHS is part of the worldwide MEASURE Demographic and Health Surveys (DHS) program, funded by the United States Agency for International Development (USAID).
Filename	http://www.dhsprogram.com/pubs/pdf/SR138/SR138.pdf

Swaziland Demographic and Health Survey 2006-07 - HIV / Prevalence

Title	Swaziland Demographic and Health Survey 2006-07 - HIV / Prevalence
Author(s)	Central Statistical Office (CSO)
Date	2007-06-01
Country	Swaziland
Language	English
Contributor(s)	Macro International Inc.
Description	HIV fact sheets are published for most countries that include HIV prevalence testing in their DHS or AIS surveys. HIV fact sheets show, in brochure format, the major HIV prevalence indicators, including prevalence by residence, sex, age, and education. Data are shown in charts, and accompanying by explanatory text.
Filename	http://www.dhsprogram.com/pubs/pdf/HF21/Swaziland_HIV_Fact_Sheet_2006-07_English.pdf

Tinkhomba te HIV/AIDS letivetwa ngulolucwaningo lweTemphilo lwa 2006-07

Title	Tinkhomba te HIV/AIDS letivetwa ngulolucwaningo lweTemphilo lwa 2006-07
Author(s)	Central Statistical Office (CSO)
Date	2007-06-01
Country	Swaziland
Language	Swati
Contributor(s)	Macro International Inc.
Description	HIV fact sheets are published for most countries that include HIV prevalence testing in their DHS or AIS surveys. HIV fact sheets show, in brochure format, the major HIV prevalence indicators, including prevalence by residence, sex, age, and education. Data are shown in charts, and accompanying by explanatory text.
Filename	http://www.dhsprogram.com/pubs/pdf/HF21/Swaziland_HIV_Fact_Sheet_2006-07_Siswati.pdf

Swaziland Briefing Kit 2006-07

Title	Swaziland Briefing Kit 2006-07
Author(s)	Central Statistical Office (CSO)
Date	2008-08-01
Country	Swaziland
Language	English
Contributor(s)	Macro International Inc.
Description	Policy Briefs are short one- to two-page documents that highlight key findings from the survey and their implications for national policies. Geared towards decision makers, policy briefs are topic-specific, focusing on key health issues in the country, such as fertility and family planning, child and infant mortality, adult mortality, child health, and maternal health. Policy briefs are usually jointly developed by MEASURE DHS project staff and local content specialists.
Filename	http://www.dhsprogram.com/pubs/pdf/PB2/Swaziland_2006-07_Briefing_Kit_all7[PB2].pdf