

DHS+ Dimensions

A biannual newsletter of the Demographic and Health Surveys project

Under MEASURE, DHS+ will have an expanded focus on gender relations and how they impact demographic and health outcomes.



Corel



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DHS Broadens Scope of Research

Building upon more than 15 years of experience in demographic and health research, DHS is expanding its data collection and analysis efforts under the MEASURE mandate. MEASURE, or Monitoring and Evaluation to Assess and Use Results, consists of five projects funded by the United States Agency for International Development (USAID). The *DHS+* project features additional emphases on service provision, gender, education, and qualitative research. Data collected under these new areas of focus will enable *DHS+* to provide more effective inputs into health and family planning programs around the world.

Service Provision Assessments

DHS+ will conduct comprehensive facility-based surveys known as Service Provision Assessments (SPAs). While population-based Demographic and Health Surveys (DHS) collect information to indicate the demand for health services, SPAs provide details on the supply of these services.

Data on health service provision are intended to contribute to the monitoring and evaluation of health and family planning programs in a region or country. Program managers will immediately benefit from indicators that can be used to improve health service delivery. Findings from the SPAs will also be combined with population-based data from DHS surveys. This will help to determine whether health needs are being met and to measure the impact of services.

The strategy for the development of the SPA includes developing a core questionnaire and modules, addressing sampling issues, preparing an analysis and dissemination plan, and defining and implementing a research agenda. The first field test of the new approach is a national survey in Kenya where data are col-

continued on page 2

lected through community informants and visits to health facilities. 393 facilities are being visited, ranging from hospitals to dispensaries.

Results from the Kenya experience will be reviewed to further assess and modify the SPA for future use. In addition to assisting program managers, findings from the survey will also be used to mobilize and engage high-level policy makers.

Education

Substantial education data have been collected through demographic and health surveys for many years. Although education data has not been a primary objective of the DHS, the surveys have provided valuable population-based estimates of children's participation in schooling, adult educational attainment, and literacy. New education questions under MEASURE DHS+ will now allow the calculation of a number of standard education indicators. These include net and gross enrollment ratios, dropout rates, repetition rates, and survival rates to grade 5 (the estimated percentage of children starting grade 1 in a year that is expected to reach grade 5).

DHS+ will also provide more accurate and thorough information on literacy. In the new questionnaire, women age 15 to 49 who have not completed primary school are asked to demonstrate literacy by reading from a sentence provided to them. Women are also asked about their participation in literacy-fostering programs. This information can be used to gauge the level of women's participation in literacy-enhancing activities outside of the formal schooling system.

Over the next year, Macro International Inc. (Macro) and USAID will produce a series of regional education profiles. The profiles will use data from the first three phases of DHS to characterize children's participation in primary and secondary schooling, adults' schooling, and women's literacy. USAID is also considering further expanding data collection on education through the EdData program, which would be closely linked to MEASURE DHS+.

Under EdData, new questions on the schooling of children would be investigated including questions on school attendance, types of schools attended, household expenditures on schooling, and household decision-making about education. These questions would provide information useful for education policy and program planning, and for monitoring USAID basic education activities.

Qualitative Research

Under MEASURE, DHS+ will design and implement qualitative research studies that will link qualitative and quantitative techniques. DHS+ has a mandate to conduct a mix of qualitative studies generated by demand from the field or from a core re-

search agenda relating to the key areas DHS explores in its survey research.

Three themes have already been selected for qualitative exploration: how parents of young children recognize signs of illness and seek treatment, the attitudes of men toward having and raising children, and how women evaluate the quality of the care they receive at health centers. A variety of data collection techniques will be used in DHS+ qualitative studies. These include observation of events such as patient consultations with facility staff and individual and group interviews.

DHS has long been aware that certain research questions related to population and health, especially those involving explanations of behavior, are not well-suited to standard methods of survey research. Now with an increased emphasis on qualitative studies, DHS+ will be able to use additional research methodologies to complement the work for which DHS has been known for many years.

Gender

The MEASURE project also underscores the importance of providing programmatically useful data regarding gender relations and emphasizes the need to identify and develop meaningful indicators of women's empowerment. This emphasis is derived from a recognition of the gender underpinnings of demographic and health outcomes.

Significant progress has been made toward mainstreaming gender into MEASURE DHS+ activities. New questions on

attitudes toward gender roles and women's decision making have been integrated into DHS+ questionnaires for both men and women. As a result, comparable data on gender relations will now be available for all countries in which the surveys are implemented. The male questionnaire has also been revised to measure male involvement in reproductive health.

For countries interested in more in-depth data on women's empowerment, a separate module detailing women's status and gender relations has been developed. A domestic violence module of questions is also available to measure the extent of different forms of violence against women (*see related article on page 3*). Due to the sensitive nature of information on issues including domestic violence and female circumcision, guidelines are being developed to ensure the ethical implementation of modules and to increase their validity.

Changes have also been made to the tabulation plan for country reports to focus attention on the gender aspects of the data being presented. Lessons learned from implementing the domestic violence module in Nicaragua have been presented and discussed. Research on women's status and demographic and health outcomes is being undertaken and disseminated. The research agenda includes plans to conduct special studies to increase understanding of the gender dimensions of demographic and health outcomes.

With an increased emphasis on qualitative studies, DHS+ will be able to use additional research methodologies to complement the work for which DHS has been known for many years.

Nicaragua Data Reveal High Levels of Domestic Abuse

Worldwide activism in the area of violence against women, and domestic violence in particular, has produced a greater understanding of this public health and human rights problem. This includes recognition of the urgent need to measure the prevalence of violence and its relationship with maternal and child health outcomes.

Over the years, country-specific questions yielding national-level estimates of the prevalence of domestic violence have been included in the Demographic and Health Surveys in Colombia (1990 and 1995), Egypt (1995), South Africa (1998) and India (in the field). In Uganda and the Philippines, domestic violence questions were included in special studies. In addition, a comprehensive module on domestic violence was included in the 1998 Nicaragua DHS (ENDESA-98).

The domestic violence module in the Nicaragua DHS differs significantly from the earlier data collection in the area of violence under the DHS program. The Nicaragua module is based on the Conflict Tactics Scale (CTS) approach to measuring violence. The CTS approach allows respondent many opportunities to disclose violence while avoiding cultural bias. The module was designed with technical support from Macro and from the Center for Health and Gender Equity (CHANGE) and obtained information at the national

and provincial level about

- Women's access to material and financial resources and participation in household decision making

- Women's and men's opinions on equity in couples' relationships and the use of physical violence

- Prevalence of marital violence against women

- Physical and sexual abuse by persons other than husbands

- Socio-demographic characteristics of women suffering domestic violence, and its physical consequences

- Services used by abused women

- The relationship between marital violence and maternal and child health.

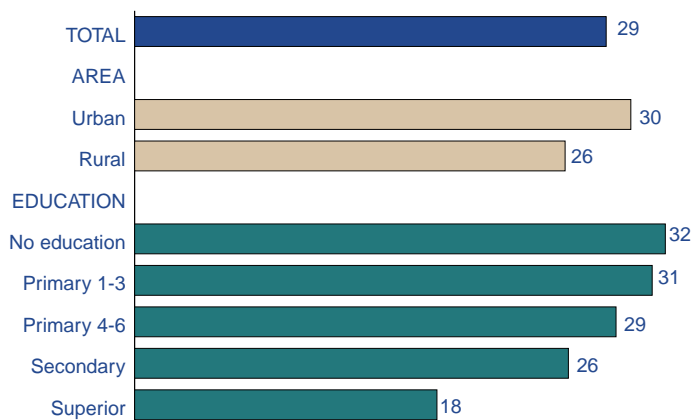
At the national level, the results of ENDESA-98 show that 29 percent of ever-married women in Nicaragua have experienced at least one episode of physical or sexual violence. Regarding the type of abuse, this study found that 10 percent of ever-married women have experienced at least one act of sexual violence.

With respect to physical violence, 28 percent of women have experienced at least one episode. Twelve percent of these women experienced violence during the last 12 months. Sixty-nine percent of those who experienced recent physical abuse were classified as having experienced severe violence.

In general, higher levels of domestic abuse are reported among women with less education. A greater level of abuse among women living in urban areas is also observed. Prevalence of domestic violence also tends to increase with the number of children a woman has.

The data also allow an analysis of the different acts of violence reported by abused women during the last 12 months

Percent of women ever physically or sexually abused, Nicaragua 1998



or before. Women reported that they were pushed or shoved (mentioned by 78 percent); hit with the fist or with something that could cause harm (68 percent); slapped or twisted by the arm (60 percent); and kicked or threatened with a machete, firearm, or other weapon (32 percent). Another 20 percent of abused women were physically forced, against their will, to have sexual intercourse, and 24 percent of the women declared that their husbands tried to strangle or burn them.

Overall, 77 percent of abused women suffered more than one type of violence, and one-third of them (32 percent) experienced five or more types. Eighty percent of the abused women had experienced violence more than once, while 52 percent reported five or more episodes.

Women were also asked about the circumstances under which they were abused; that is, if children were present or if the violence occurred during pregnancy. Fifty-seven percent of the women indicated that their children witnessed the violence. Abuse witnessed by children is more common in urban areas (59 percent), among women with lower levels of education (64 percent), and among women with higher numbers of children (66 percent for women with four or more children).

Perhaps one of the most striking findings of this study is the fact that 37 percent of abused women suffered acts of violence while pregnant. For 17 percent of the women, violence occurred during more than one of their pregnancies.



CEPS/Managua

More than half the women who are victims of domestic violence in Nicaragua report that their children witnessed the abuse.

DHS+ Core Questionnaire

The model core questionnaire for MEASURE DHS+ has undergone major revisions to reflect changing needs for program-relevant information in the population, health, and nutrition fields. The updated questionnaire contains over 100 new questions and measurements, a few of which are highlighted below.

■ Hemoglobin tests for anemia will be conducted using a portable, battery-operated instrument that produces a digital readout from a single drop of blood in less than 1 minute.

■ The questions on contraceptive knowledge and use have been expanded to include the female condom and emergency contraception.

■ New questions on postnatal care complement existing questions on prenatal and delivery care.

■ Height and weight will be measured for all women ages 15-49 and all young children in each household.

■ Environmental health questions address types of cooking fuel, use of bednets, and handwashing practices.

■ Salt samples will be tested for iodine.

■ An expanded education section includes new questions to measure school enrollment, gender equity, repetition, and retention/survival rates.

■ The child nutrition section closely examines breast milk substitutes and introduction of complementary foods.

■ New questions on immunization, vitamin A supplements, and decision-making about health care are included.

■ Questions on decision-making, the contribution of women's income, and attitudes toward domestic violence help to measure women's empowerment.

■ There are also expanded questions on AIDS and other STDs that address modes of transmission, knowledge of symptoms, the AIDS stigma, and the use of condoms.

Survey Software Improves Data Accessibility

New system will enhance capabilities of end users

DHS+ is teaming up with MEASURE partner U.S. Bureau of the Census (BUCEN) and SerPro Ltda to develop a software system for census and survey data processing that will fulfill the needs of data-producing organizations worldwide. The state-of-the-art software will combine the best technical features of current software with a more user-friendly package to enhance the ability of individuals and institutions to collect, analyze, and disseminate data.

DHS has long employed the Integrated System for Survey Analysis (ISSA) software that was developed by SerPro in the 1980s. The software was continually enhanced to meet the evolving data-processing needs of the Demographic and Health Surveys program and has been used to process nearly all DHS surveys. ISSA remains one of the most powerful and flexible applications available for survey data processing; however, evolving technology has resulted in a number of limitations that merit the development of a new software package.

First, the current software is not user-friendly and requires programming expertise to fully utilize its capabilities. Second, the application is DOS-based, which is gradually being rendered obsolete by Windows-based systems. The need for a Windows-based application is also related to the advent of computer-assisted personal interviewing (CAPI), using portable computers that allow for simple presentation of survey questions and easy entry of responses. The portable computers must be small enough to transport

easily and have sufficient power to work for an extended period without access to electricity. Newer palm-top computers provide the capabilities for CAPI, yet only support the Windows interface and cannot be used on older DOS-based applications.

While DHS has been using ISSA for the last decade, BUCEN has developed and promoted the Integrated Microcomputer Processing System (IMPS). IMPS is used for desktop census processing in national statistical offices (NSOs) and other organizations throughout the world. The software has been used to process the majority of the censuses conducted in the developing world over the past decade. However, users of DOS-based IMPS are now facing constraints similar to ISSA users.

The state-of-the-art software will combine the best technical features of current software with a user-friendly package to enhance the abilities of individuals and institutions to collect, analyze, and disseminate data.

A new software system that combines and expands upon the capabilities of both ISSA and IMPS will take advantage of the current power and flexibility of the programs but add the friendliness, ease-of-use and intuitive nature of Windows. The new system will emphasize the visual creation and manipulation of data and will limit the need for users to write programming statements. Instead, users will simply drag-and-drop and point-and-click to perform a variety of tasks including defining data structures, developing applications, entering and checking data, generating reports, producing tables, and calculating sampling errors. More advanced users, including computer programmers, will be able to access the ISSA language to perform complicated tasks. The system will also offer a number of new possibilities such as electronic data dissemination through the Internet and CD-ROM.

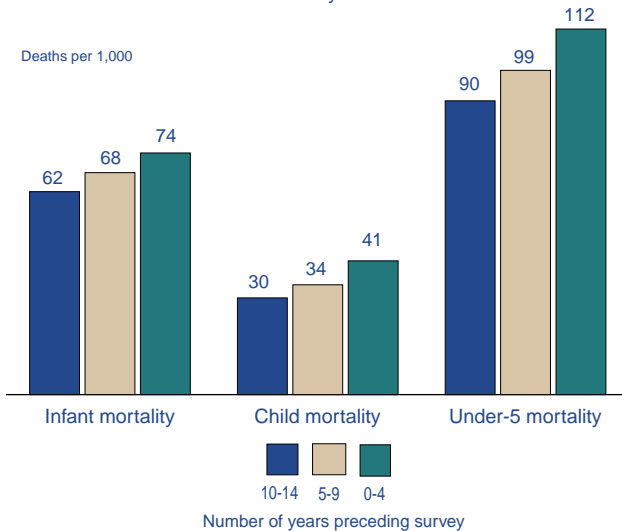
Survey organizations around the world will be able to use one system to accomplish all data-processing tasks associated with censuses, surveys and even administration. Furthermore, since the system will require less expertise in data processing and computer programming to successfully process a complex survey or census, it will develop greater capacity in individuals and institutions in developing countries to process data with less technical assistance.

Children of Kenya Face Serious Survival Challenges

Survey findings pointing to the worsening health situation for children in Kenya were emphasized during the National Dissemination Seminar for the 1998 Kenya Demographic and Health Survey (KDHS). The seminar, which was held in Nairobi on May 22, was attended by 140 policy makers, program managers and researchers. Generous media coverage surrounded the event, including a full 5-minute feature highlighting survey results that aired on the national television station.

The KDHS indicates that currently, one in nine Kenyan children does not live to his or her fifth birthday. Childhood mortality has worsened in the country during the 1990s after a period of steady improvement through the mid- to late 1980s. Under-five mortality stands at 112 deaths per 1,000 live births, which represents a 24 percent increase over the last decade. The rise in mortality is greater at ages 1 through 4 than during infancy.

Rates of early childhood mortality by 5-year periods preceding the 1998 Kenya DHS



Childhood mortality is especially high when associated with a short preceding birth interval and a low level of maternal education. In addition, a large rural/urban difference exists. Under-five mortality is 23 percent higher in rural areas than in urban areas. The risk of children dying also varies greatly across provinces, with the highest mortality in the Nyanza Province and the lowest in the Central Province.

A comparison between the results of the 1993 and 1998 KDHS surveys also indicates recent setbacks in the fight against vaccine-preventable diseases in Kenya. Full vaccination coverage includes the BCG and measles vaccine and at least three doses of both DPT and polio vaccines. The 1998 survey reveals that full vaccination coverage has fallen from 79 percent in 1993 to 65 percent in 1998. This decline reflects a drop in measles vaccine coverage and an increase in the dropout rate between the first and third doses of DPT and polio vaccines.

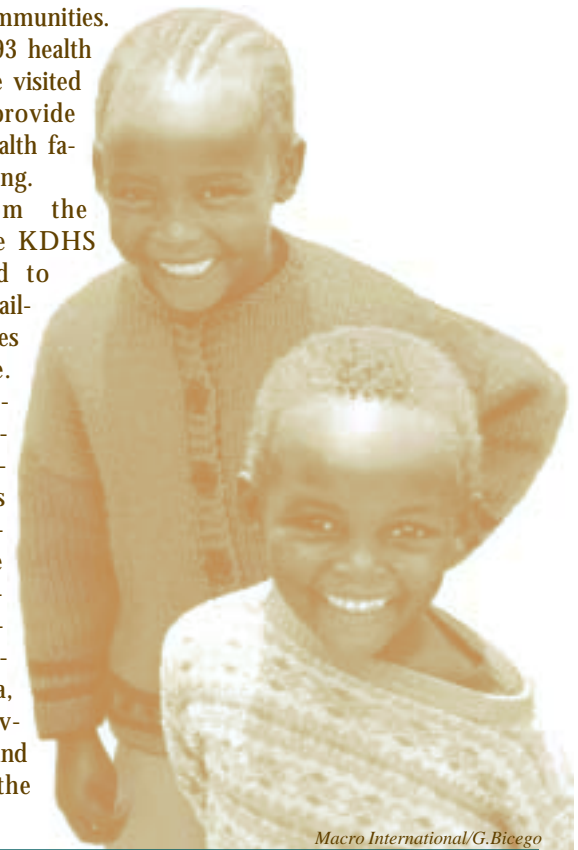
On a more positive note, Kenya continues to experience a fertility decline, with the total fertility rate falling from 8.1 children per woman in the mid-1970s to current levels of 4.7 children per woman. However, significant differences in fertility levels by regions still exist. Rural women are giving birth to two more children than urban women. Even larger differentials exist between women with no education, who bear an average of 5.8 children, and those with secondary education, who have an average of 3.5 children.

Knowledge and use of family planning has continued to rise in Kenya. Almost all married women and men are aware of at least one modern form of contraception. Overall, 39 percent of married women are using some method of contraception and all but two percent of these are using a modern method.

In addition to highlighting survey results, participants in the National Dissemination Seminar discussed the need for further dissemination of findings and further analysis projects. Regional workshops were suggested to target local and provincial decision makers. Planning is underway for further analysis studies in the areas of HIV/AIDS, family planning, demographic trends and mortality, and malaria treatment patterns.

Data collection is also currently underway for the Kenya Service Provision Assessment (KSPA). The survey team is revisiting 269, or half, of the KDHS clusters and collecting information on the types of health services available in communities. Additionally, 393 health facilities will be visited nationally to provide estimates of health facility functioning.

Data from the KSPA and the KDHS will be linked to evaluate the availability of services and their use. The information will be provided to program managers and policy makers to enable them to improve the delivery of health services in Kenya, thereby improving the health and well-being of the population.



Macro International/G. Bicego

MEASURE DHS+ assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Funded by the U.S. Agency for International Development (USAID), MEASURE DHS+ is implemented by Macro International Inc. in Calverton, Maryland with the Population Council and the East-West Center. *DHS+ Dimensions* is published twice a year by Macro to provide information about the program and the current status of DHS+ surveys. Send correspondence to: MEASURE DHS+, Macro International Inc., 11785 Beltsville Drive, Suite 300, Calverton, MD 20705, USA (Tel: 301-572-0200; Fax: 301-572-0999). Project Director: Martin Vaessen.

Summary of Demographic and Health Surveys

SURVEY COUNTRY

IMPLEMENTING ORGANIZATION

SURVEY COUNTRY

IMPLEMENTING ORGANIZATION

ASIA

Bangladesh 1999/00 1996/97 1993/94	Mitra & Associates/NIPORT Mitra & Associates/NIPORT Mitra & Associates/NIPORT
Cambodia 2000 1998 ¹	National Institute of Statistics
India 1999 1998/99*	SAWA Cam./Nat. Inst. of Public Health International Inst. for Population Sciences
Indonesia 1997 1994 1991 1987	Three survey organizations Central Bureau of Stat./NFPCB/MOH Central Bureau of Stat./NFPCB/MOH Central Bureau of Stat./NFPCB/MOH Central Bureau of Statistics/NFPCB
Kazakhstan 1999 1995	National Institute of Nutrition National Institute of Nutrition
Kyrgyz Republic 1997	Inst. of Obst. & Ped., MOH
Myanmar² 1996/97	Settlmt. and Land Rec. Dep., Min. of Agr.
Nepal 1996 (KAP-GAP) 1987	Ministry of Health/New ERA New ERA
Pakistan 1990/91	National Institute of Population Studies
Philippines 1998 1993	National Statistics Office National Statistics Office
Sri Lanka 1987	Dept. of Cen. & Stat., Min. of Plan Impl.
Thailand 1987	Inst. of Pop. Studies, Chulalongkorn U.
Uzbekistan 1996	Inst. of Obst. & Gynec., MOH
Viet Nam³ 1997	Nat. Comm. Pop. and Fam. Planning

LATIN AMERICA & CARIBBEAN (Continued)

Ecuador 1987	Cen. de Estud. de Pob. y Pater. Res.
El Salvador 1985	Asociación Demográfica Salvadoreña
Guatemala 1998/99 (In-Depth 1)* 1997 (In-Depth 2)* 1997 1995 1987	National Statistical Institute Instituto Nacional de Estadística Instituto Nacional de Estadística Instituto Nacional de Estadística Inst. de Nutrición de Cent.y Panamá
Haiti 2000 1994/95	Institut Haïtien de l'Enfance Institut Haïtien de l'Enfance
Mexico 1987	Dir. Gen. de Plan. Fam., Sec. de Salud
Nicaragua 1997/98	Inst. Nacional de Estadísticas y Censos
Paraguay 1990	Cen. Paraguayo de Estudios de Pob.
Peru 1996 1991/92 1986 (Exp.) 1986	Instituto Nacional de Estadística Instituto Nacional de Estadística Instituto Nacional de Estadística Instituto Nacional de Estadística
Trinidad & Tobago 1987	Family Plan. Assoc. of Trinidad/Tobago

NEAR EAST/NORTH AFRICA

Egypt 2000 (Interim) 1998 (Interim) 1997 (In-Depth)* 1996/97 1995/96 1992 1988/89	National Population Council El-Zanaty & Associates El-Zanaty & Associates National Population Council National Population Council National Population Council National Population Council
Jordan 1997 1990	Department of Statistics Dept. of Statistics, Min. of Planning
Morocco (Panel) 1995 1992 1987	Ministère de la Santé Publique Ministère de la Santé Publique Ministère de la Santé Publique
Tunisia 1988	Office Nat. de la Fam. et de la Pop.
Turkey 1998 1993	Hacettepe Inst. of Population Studies
Yemen 1997 1991/92	General Directorate of MCH/FP/MOH Central Statistical Organization Central Statistical Organization

LATIN AMERICA & CARIBBEAN

Bolivia 1998 1993/94 (Health) 1989 1989	Instituto Nacional de Estadística Instituto Nacional de Estadística Instituto Nacional de Estadística Instituto Nacional de Estadística
Brazil 1996 (NE) 1991 1986	Soc. Civil Bem-Estar Fam. no Brasil Soc. Civil Bem-Estar Fam. no Brasil Soc. Civil Bem-Estar Fam. no Brasil
Colombia 1995 1990 1986	PROFAMILIA PROFAMILIA Corp. Cen. Reg. de Prb./Min. de Salud
Dominican Republic 1996 1991 1986 (Exp.) 1986	Cen. Estud. Soc. y Dem./PROFAMILIA Assoc. Domin. Pro-Bienestar de la Fam. Consejo Nac. de Población y Familia Consejo Nac. de Población y Familia



CEPS/Managua



Macro International/P. Govindasamy

**SURVEY
COUNTRY**

**IMPLEMENTING
ORGANIZATION**

SUB-SAHARAN AFRICA

Benin 1996	Inst. National de la Statistique
Botswana 1988	Ministry of Health
Burkina Faso 1998/99 1992/93	Inst. Nat. de la Statistique et la Démo. Inst. Nat. de la Statistique et la Démo.
Burundi 1987	Dép. de la Pop., Min. de l'Intérieur
Cameroon 1998 1991	Bur. Cen. Recensements et Études de Prop. Min. du Plan et de l'Amén. du Terr.
Central African Rep. 1994/95	Dir. des Stat. Dém. et Sociales
Chad^{3,4} 1996/97	Bureau Central du Recensement
Comoros³ 1996	Centre Nat. de Doc. et de Rech. Sci.
Côte d'Ivoire 1998/99 1994	Inst. National de la Statistique Inst. National de la Statistique
Eritrea 1995/96	National Statistics Office
Ghana 1998/99 1993/94 1988	Central Statistical Service Ghana Statistical Service Ghana Statistical Service
Guinea/Conakry 1999	Direction Nat. de la Statistique
Kenya* 1999 1998 1993 1988/89	National Council for Population and Dev. ⁵ National Council for Population and Dev. National Council for Population and Dev. National Council for Population and Dev.
Liberia 1986	Min. of Planning & Economic Affairs
Madagascar⁴ 1997 1992	Dir. de la Dem. et de la Statis. Sociales Centre Nat. de Recherches sur l'Env.
Malawi (KAP) 1996 1992	National Statistical Office National Statistical Office
Mali⁶ 1995/96 1987	CPS/MSSPA et DNSI Inst. de Sahel: USED/CERPOD
Mozambique 1997	Instituto Nacional de Estadística
Namibia³ 1992	Min. of Health and Social Services
Niger 1998 1992	Care International Dir. de la Stat. et des Comptes Nat.
Nigeria 1990	Federal Office of Statistics
Ondo State, Nigeria 1986/87	Ministry of Health, Ondo State
Rwanda 1992	Office National de la Population
Senegal (Interim) 1997 1992/93 1986	Min. de l'Economie et des Finances Dir. de la Prévision et de la Stat. Min. de l'Economie et des Finances

**SURVEY
COUNTRY**

**IMPLEMENTING
ORGANIZATION**

SUB-SAHARAN AFRICA (Continued)

South Africa 1998	Dept. of Health/Med. Research Council
Sudan 1989/90	Dept. of Stat., Min. of Fin. & Econ. Plan.
Tanzania 1999 1996 (In-Depth)* 1995 (KAP) 1994 1991/92	National Bureau of Statistics Bureau of Statistics, Planning Comm. Bureau of Statistics, Planning Comm. Bureau of Statistics, Planning Comm. Bureau of Statistics, Planning Comm.
Togo 1998 1988	Direction de la Statistique Unité de Recherche Dém., U. du Benin
Uganda (In-Depth)* 1995/96 1995 1988/89	Inst. Stat. & Applied Econ., Makerere U. Dept. of Stat., Min. Fin & Econ. Plan. Ministry of Health
Zambia 1996/97 1992	Central Statistical Office University of Zambia
Zimbabwe 1999 1994 1988/89	Central Statistical Office Central Statistical Office Central Statistical Office

- 1 Funded by ADB and The World Bank
- 2 Funded by UNDP
- 3 Funded by The World Bank
- 4 Funded by UNFPA
- 5 Implemented in conjunction with Ministry of Health
- 6 Funded directly by USAID/Mali

- *Egypt:** Reasons for Nonuse in Upper Egypt
***Guatemala 1:** Health Expenditure Survey
***Guatemala 2:** Health Provider Survey
***Kenya:** Service Provision Assessment
***India:** Uttar Pradesh Benchmark Surveys
***Tanzania:** Estimation of Adult and Childhood Mortality in a High HIV/AIDS Population
***Uganda:** Negotiating Reproductive Outcomes



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Fertility Continues to Decline in Philippines

Over 130 representatives from population and health organizations and the legislature gathered to attend the National Dissemination Seminar of the 1998 National Demographic and Health Survey (NDHS) in Manila, Philippines, on February 10-11. A panel of presenters included members of the survey implementing organizations, the National Statistics Office (NSO), Department of Health (DOH) and the University of Philippines Population Institute (UPPI). Panelists highlighted key survey findings, addressed policy implications, and led discussions on further dissemination and analysis.

Of particular interest was the national decline in fertility, from 4.1 children per woman in 1990-1993 to 3.7 children per woman in 1995-1998. However, this rate is still considerably higher than those of neighboring Asian countries including Thailand, India, Vietnam, Indonesia, and Bangladesh. Furthermore, large differentials exist between urban and rural fertility levels and among regions.

The fertility decline in the Philippines has been accompanied by an increase in contraceptive use, although traditional methods still account for 40 percent of all

contraception used. Currently, the contraceptive prevalence rate, or percent of married women using any method, is at 47 percent. Female sterilization is the most common method, although its use is declining in favor of injectables and traditional methods like withdrawal and the rhythm method. A high level of contraceptive discontinuation exists with 40 percent of women stopping use of contraception within 12 months of starting. The discontinuation is largely due to contraceptive failure and resulting unplanned pregnancy.

Differentials in the current use of family planning in the 16 administrative regions of the country are large. Contraceptive use also varies considerably by level of education. Only 15 percent of married women with no formal education are using a method compared with half of women with at least some high school education.

Plans were made at the National Seminar for 15 dissemination workshops to be held at the regional level to present survey findings to local policymakers and health program administrators, as well as to elicit feedback on implications and possible solutions. These workshops have been held



POPCOM/Philippines

in the various regions of the country from June through August. In addition to coordinating the workshops, regional staff of the offices of the NSO and DOH developed and printed presentation materials to target regional decisionmakers.

Currently, a number of further analysis studies for the NDHS are underway on "Fertility Preferences and the Transition to the Two Child Norm" and "Contraceptive Use Dynamics 1993-1998." The studies are being implemented by the UPPI in collaboration with Macro.

Increased Birth Spacing Reduces Health Risks for Children

A multivariate cross-country analyses of the effect of birth intervals on mortality and health reveals that short birth spacing results in increased health risks for children. The analyses compare results from demographic and health surveys in 17 countries: Bangladesh, Bolivia, Egypt, Ghana, Guatemala, India, Indonesia, Côte d'Ivoire, Kenya, Morocco, Nepal, Nigeria, Peru, Philippines, Tanzania, Uganda, and Zambia.

In general, mothers in these countries are having too many births too soon after another, which poses substantial health and survival risks for their children. A short preceding birth interval results in increased risks for low birth size and birth weight, poor nutritional status, infant mortality, and under-five mortality.

Keeping birth intervals three years or longer can reduce these risks as compared to intervals of both 2 years and less than 2 years. For example, children that are born to a mother less than 2 years after her last birth are more than twice as likely to die before the age of 1 than children born after an interval of 3 years or more. Birth intervals of 36-47 months are preferable to those of 24-35 months in almost all cases.

A closer look at Egypt and India reveals that most birth intervals in these countries are too short. In both countries about 60 percent of intervals are under 36 months and over a quarter are shorter than 24 months.

In spite of current numbers, most Indian women would prefer longer gaps between births. In the country as a whole, 62 percent of women have birth intervals shorter than 36 months, but only 51 percent prefer an interval that length.

Birth intervals would be 4 months longer on average if women achieved their preferences and would result in substantial decreases in both infant and child mortality and fertility. In India, if no births occurred before 36 months of a preceding birth the

- Infant mortality rate would drop 29 percent
- Under-five mortality rate would drop 35 percent
- Deaths to children under five years of age would fall by 1,434,000 annually
- Fertility would drop 9 percent

In contrast to India, most women in Egypt have the birth intervals that they prefer. Sixty-two percent of Egyptian women have intervals shorter than 36 months and 60 percent prefer this length. Thus, although many mothers already desire longer birth intervals, others need to be informed of the advantages of increased birth spacing.

Bolivia Survey Reveals Disparities

Findings from the Bolivia Demographic and Health Survey, Encuesta Nacional de Demografía y Salud (ENDSA-98), indicate that in spite of important gains, large fertility and reproductive health disparities based on education level and geographic location persist in the country. Although there has been a substantial improvement in the overall education level of Bolivian women in the past 5 years, urban women are almost five times more likely to attend high school than rural women. In addition, major differences in education level exist between provinces.

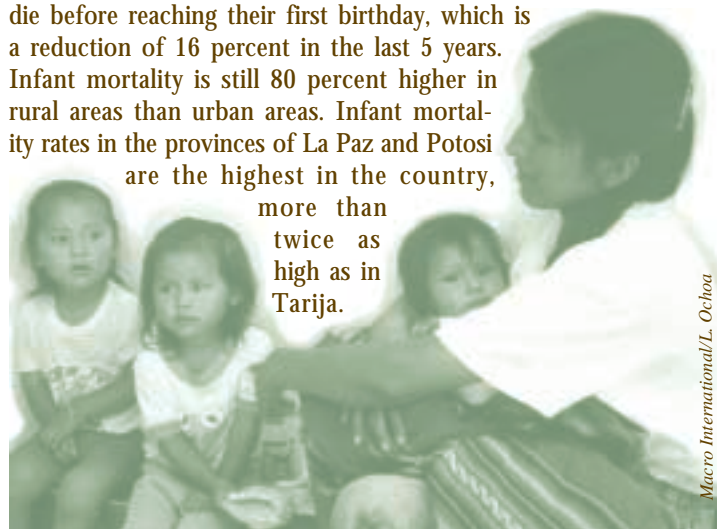
The survey indicates that the total fertility rate is currently at 4.2 children per woman, which represents an almost 20 percent decline over the past 10 years. However, women without education have more than three times the number of children than women with higher education. At current rates, rural women will have 6.3 children on average, 2.5 children more than their urban counterparts. The highest fertility rates are in the Chuquisaca, Potosi, and Beni/Pando provinces and the lowest are in El Alto and La Paz.

Almost 80 percent of women in union know of a modern method of contraception and 45 percent of them are using some form of family planning. A total of 25 percent of women in union are currently using a modern method of contraception, up from 12 percent reported in 1989. Women are increasingly adopting the intra-uterine device (IUD), which accounts for nearly half of modern method use. As expected, the highest levels of contraceptive use are among women with higher education and women in urban areas, such as Tarija and Santa Cruz, where rates are around 60 percent.

ENDSA-98 also reveals a notable increase in the number of women who receive assistance from a trained medical professional during delivery. The findings from 1998 indicate a 26 percent increase in delivery assistance as compared to the data collected in 1994. Nonetheless, 41 percent of the births in the 3 years before the survey were not attended by a trained medical professional. Women with higher education are five times more likely to be assisted by a doctor during delivery than women with no education.

Infant and child mortality rates remain among the highest in Latin America although both rates have dropped since 1994 survey findings. Sixty-seven of every 1,000 children born in Bolivia die before reaching their first birthday, which is a reduction of 16 percent in the last 5 years. Infant mortality is still 80 percent higher in rural areas than urban areas. Infant mortality rates in the provinces of La Paz and Potosi are the highest in the country,

more than
twice as
high as in
Tarija.



DHS+ Measures Anemia Prevalence

Anemia due to iron deficiency is recognized as a major public health problem throughout the world. According to the epidemiological data collected from multiple countries by the World Health Organization (WHO), more than one-third of women and two-fifths of young children in the world are affected by anemia. In developing countries, about half of women and young children are anemic.

The condition of anemia is characterized by reduction in red blood cell volume and a decrease in the concentration of hemoglobin in the blood. Commonly, anemia is the final outcome of nutritional deficiency of iron, folate, vitamin B₁₂ and some other nutrients although many other causes of anemia have been identified, such as hemorrhage, infection, genetic disorders, parasite infestation, or chronic disease.

Anemia has detrimental health implications, particularly for mothers and young children. Unfavorable pregnancy outcomes and complications during delivery are more common in anemic mothers, especially if significant hemorrhage occurs. This may be an underlying cause of maternal death and of prenatal and perinatal infant loss.

Iron deficiency anemia among children has been demonstrated to be associated with impaired cognitive performance, motor development, coordination, language development, and scholastic achievement. Anemic children are also at increased risk of infectious diseases because several immune mechanisms are weakened.

Hemoglobin measurement is a primary method for individual anemia screening in clinical settings as well as for study of anemia prevalence in populations and for monitoring of anemia prevalence. Its inclusion in MEASURE DHS+ surveys provides an opportunity to estimate the prevalence of anemia and the socioeconomic, residential, and demographic differentials of the anemia levels in the populations surveyed. Such information is useful in developing health intervention programs (such as iron fortification) to prevent iron-deficiency anemia among women and children.

Levels of anemia can be classified as severe, moderate, or mild based on the hemoglobin concentration in the blood. To measure hemoglobin concentration and levels of anemia, DHS+ employs the HemoCue system, which consists of a portable machine and one-step blood collection device. The system measures the level of hemoglobin within a minute, making it uniquely suited for rapid and conventional population-based surveys. The HemoCue system is a simple and relatively inexpensive technique that has proven to be efficient and accurate in clinical settings. DHS has collected data on anemia in Kazakhstan, Uzbekistan, Kyrgyz Republic, Madagascar, Peru, and most recently, Bolivia.

Anemia has detrimental health implications, particularly for women and young children. In developing countries, about half of women and young children are anemic.

Demographic and Health Survey Findings From Around the World

Two in three children in Madagascar, or 67 percent, suffer from some degree of anemia. Forty-two percent of their mothers are anemic.

Knowledge about using Oral Rehydration Therapy for treating diarrhea among mothers of children under 5 is almost universal in Indonesia (94 percent).

Virtually all children in the Kyrgyz Republic (96 percent) are delivered at health facilities, and 98 percent of births take place under the supervision of medically trained personnel.

At current fertility levels, a woman in Jordan will have an average of 4.4 children, which is three children less than 20 years ago.

About one in five mothers in Niger is chronically malnourished. 21 percent of children under 3 years of age suffer from acute malnutrition.

There has been a substantial increase in the vaccination rate for children under 2 years of age in Guatemala. Currently, 60 percent of children receive all recommended vaccines.

Among people who know about AIDS in Cameroon, 21 percent of women and 12 percent of men do not know of any way to avoid it.

Coming Soon to the Web

The *DHS+* web site is undergoing major changes to greatly expand the information available to users through new data, easier navigation, more comprehensive searches, and flexible creation of reports. The improved site will include many more indicator variables covering a number of topic areas including fertility, childhood mortality, family planning and fertility preferences, maternal care, child health, HIV/AIDS and STIs, mortality, female circumcision, and household characteristics. The powerful new search system will allow for complex data comparisons with numerous variable selection options. Finally, the new report system will make tabular and graphical displays of data possible. Look for the new system to be online this fall at www.macoint.com/dhs.

DHS+ Calendar of Events

JANUARY

■ **Médard Fotso** and **Paul Roger Libité** from Cameroon, **Kodjo Anipah** and **Afi Ouro-Gnao** from Togo, and **Vane Nyong'a** and **George Kichamu** from Kenya visited Macro International, Inc. headquarters in Calverton to draft and edit Final Reports.

■ **Lansana Cherif** and **Amadou Sow** from Guinea completed ISSA data processing training at Macro headquarters.

FEBRUARY

■ The 1998 Philippines DHS National Dissemination Seminar was held in Manila, Philippines, on Feb 10-11.

MARCH

■ **Pascale Ratovondrahona** from Madagascar visited Macro to work on the further dissemination for the 1997 Madagascar DHS.

APRIL

■ The National Seminar for the 1998 Cameroon DHS was held on April 8 in Yaunde, Cameroon.

■ The National Dissemination Seminar for the 1997 Jordan Population and Family Health Survey (JPFHS) was held in Amman, Jordan, on April 14.

■ The National Seminar for the 1998 Niger DHS was held from April 21-22 in Niamey, Niger.

■ The National Dissemination Seminar for the 1998 Nicaragua DHS took place in Managua, Nicaragua, on April 26-27. A three-day data users workshop was conducted from April 28-30.

■ The *DHS+* Data Processing Procedures workshop was held from April 26 to June 4 at Macro headquarters. Four of the participants were data processing specialists who will supervise data processing for *DHS+* surveys in Egypt (**Alyaa El-Sayed** and **Mohamed Abdou**), Kazakhstan (**Alexander Izmoukhambekov**) and Zimbabwe (**Batsirai Changa**). Three participants managed the data processing for DHS surveys in Cameroon (**Aboubakar Ghapoutsu**), Kenya (**Julius Majale**) and Turkey (**Turgay Unalan**).

MAY

■ **Idrissa Alichina Kourgueni** and **Sabine Attama** from Niger visited Macro headquarters to draft and edit the Regional Report.

■ **Nolwazi Mbananga**, **Jonathan Levin** and **Lusanda Mahlasela** visited Macro headquarters from South Africa to work on the Final Report.

■ The 1998 Kenya DHS National Dissemination Seminar was held in Nairobi, Kenya, on May 27.

JUNE

■ An auxiliary meeting on *DHS+* activities was held during the Global Health Council 1999 Conference on Global Health, Poverty and Development in Crystal City, Virginia, on June 20-22.

New Publications

Cameroon (*French*): Final, Summary Reports; Wallchart; Fact Sheet

Guatemala (*Spanish*): Preliminary, Final Reports

Indonesia (*English*): Final, Summary Reports

Jordan (*English*): Final, Summary Reports

Kenya (*English*): Final Report, Fact Sheet

Kyrgyz Republic (*English*): Final, Summary Reports

Madagascar (*French*): Final, Summary, Regional Reports.

Mozambique (*Portuguese*): Final, Summary Reports; Atlas

Nicaragua (*Spanish*): Final, Summary Reports; Wallchart; Fact Sheet

Niger (*French*): Final, Summary, Regional Reports; Wallchart

Philippines (*English*): Final, Summary Reports; Fact Sheet

Togo (*French*): Final, Summary Reports; Wallchart; Fact Sheet

Viet Nam (*English*): Final Report

Yemen (*English*): Final, Summary Reports

DHS Comparative Studies

No. 28 *Fertility Levels, Trends and Differentials* (Gora Mboup, Tulshi Saha. 1998)

No. 29 *Education* (Robert Gardner. 1998)

No. 30 *Breastfeeding and Complementary Infant Feeding, and the Postpartum Effects of Breastfeeding*. (Patricia Haggerty, Shea Rutstein. 1999)

DHS Analytical Reports

No. 9 *Change in the Desired Number of Children: A Cross Country Cohort Analysis of Levels and Correlates of Change* (Shea Rutstein. 1998)

No. 10 *Mass Media and Reproductive Behavior in Pakistan, India, and Bangladesh* (Charles Westoff, Akinrinola Bankole. 1999)

To receive a publications catalogue or *DHS+ Dimensions* write to: Demographic and Health Surveys, Attn: Publications Clerk, Macro International Inc., 11785 Beltsville Drive, Suite 300, Calverton, MD 20705-3119 USA (tel: 301-572-0958, fax: 301-572-0999, email: reports@macroint.com)



Macro International

Participants in the Kenya National Dissemination Seminar held in Nairobi this May listen to panel presentations on key findings from the 1998 Kenya DHS.

Selected Statistics from DHS Surveys

REGION/ SURVEY COUNTRY	VITAL RATES		USE OF CONTRACEPTION (Currently Married Women 15-49)		MATERNAL CARE (Births in Last 5 Yrs.)		CHILD HEALTH INDICATORS			
	Total Fertility Rate ^a	Total Wanted Fertility Rate ^a	IMR/ Under-5 Mortality ^b	% Currently Using Any Method ^c	% Currently Using Any Modern Method ^d	% Women Receiving Antenatal Care ^e	% Women Receiving Assistance at Delivery from Professional ^e	Median Duration (Months) of Breast- feeding ^f	% Children 0-35 Months Stunted ^g	% Children Fully Immunized ^h
ASIA										
Bangladesh 1996/97	3.3	2.5	82/116	49 ⁿ	42 ⁿ	26	8	33	55 ^m	54
Indonesia 1997	2.8	2.4	46/58	57	55	82	43	24	†	55
Kazakhstan 1995	2.5	2.3	40/46	59	46	93 ⁱ	100 ⁱ	14	†	†
Kyrgyz Republic 1997	3.4	3.7	61/72	43	35	97	98	17	25	82
Nepal 1996	4.6	2.9	79/118	29	26	39 ⁱ	10 ⁱ	31	48	43
Pakistan 1990/91	5.4 ^p	4.7 ^p	91/117 ^p	12	9	26	19	20	43	35
Philippines 1998	3.7	2.7	35/48	47	28	86	56	13	†	73
Sri Lanka 1987	2.7	2.2	25/35	62	41	97	87	20	27 ^k	65
Thailand 1987	2.2	1.8	35/45	66	64	77	66	15	22 ^k	37
Uzbekistan 1996	3.3	3.1	49/59	56	51	95 ⁱ	98 ⁱ	17	31	85
Viet Nam 1997	2.7 ^b	2.4	28/38	75	56	71	77	17	†	57
LATIN AMERICA/CARIBBEAN										
Bolivia 1998	4.2	2.5	67/92	48	25	65 ⁱ	57 ⁱ	18	26 ^k	26
Brazil 1996	2.5	1.8	39/49	77	70	81 ^q	78 ^q	7	11 ^m	73
Colombia 1995	3.0	2.2	28/36	72	59	83	85	11	13	66
Dominican Republic 1996	3.2	2.5	47/57	64	59	98	96	8	11 ^m	39
Ecuador 1987	4.2	2.8	58/82	44	36	70	61	14	†	†
El Salvador 1985	4.2	4.0	71/98	47	45	†	86	15 ^r	†	52
Guatemala 1998/99	5.0	4.1	45/59	38	31	60	41	20	42	60
Haiti 1994-95	4.8	3.0	74/131	18	13	68	46	18	27	30
Mexico 1987	4.0	2.8	47/61	53	45	71	70	8	†	21
Nicaragua 1997/98	3.9	2.8	40/50	41	39	82	65	12	25	73
Paraguay 1990	4.7	3.5	34/43	48	35	84	66	11	17	33
Peru 1996	3.5	2.2	43/59	64	41	66	55	20	26 ^m	63
Trinidad & Tobago 1987	3.1	2.2	26/30	53	44	98	98	6	5 ^k	†
NEAR EAST/NORTH AFRICA										
Egypt 1995/96	3.6	2.6	63/81	48	46	39	46	19	30	79
Jordan 1997	4.4	2.9	29/32	53	38	96	97	12	8	21
Morocco 1995	3.3	2.2	62/80	50	42	45	40	15	21 ^o	85
Tunisia 1988	4.2	2.9	50/65	50	40	58	69	15	18 ^k	78
Turkey 1998	2.6	1.9	43/52	64	38	68	81	†	†	46
Yemen 1997	6.5	4.5	90/121	21	10	34	22	18	52 ^m	28
SUB-SAHARAN AFRICA										
Benin 1996	6.3 ^b	5.0 ^b	94/167	16	3	80 ⁱ	64 ⁱ	23	25	56
Botswana 1988	4.9	3.9	37/53	33	32	92	77	18	†	81
Burkina Faso 1993	6.9	6.0	94/187	8	4	59	42	25	25	35
Burundi 1987	6.9	5.8	75/152	7	1	79	19	24	47 ^j	44
Cameroon 1998	5.2	4.6	77/151	19	7	79	58	18	29	36
Central African Rep. 1994/95	5.1	4.7	97/157	15	3	67 ⁱ	46 ⁱ	21	34	37
Chad 1996/97	6.6	6.3	103/194	4	1	32	24	21	40 ^o	11
Comoros 1996	5.1 ^b	3.7 ^b	77/104	21	11	85 ⁱ	52 ⁱ	20	34	55
Côte d'Ivoire 1998/99	5.2 ^b	††	112/181	15	7	84	47	††	††	51
Eritrea 1995	6.1	5.7	66/136	8	4	49 ⁱ	21 ⁱ	22	38	41
Ghana 1998	4.5 ^b	4.2 ^b	56/107	22	13	81	39	††	††	51
Kenya 1998	4.7	3.5	74/112	39	31	92	44	21	33	65
Liberia 1986	6.7	6.1	144/220	6	6	83	58	17	†	14
Madagascar 1997	6.0	5.2	96/159	19	10	78	47	21	48	36
Malawi 1992	6.7	5.7	134/234	22 ^j	14 ^j	90	55	21	41	74 ^j
Mali 1995/96	6.7	6.0	123/238	7	5	47 ⁱ	40 ⁱ	22	30	32
Mozambique 1997	5.6	5.9	135/201	6	5	71	44	22	36	47
Namibia 1992	5.4	4.8	57/83	29	26	87	68	17	29	58
Niger 1998	7.5	7.2	123/274	8	5	40	44	21	41	18
Nigeria 1990	6.0	5.0	87/192	6	4	57	31	20	37	30
Rwanda 1992	6.2	4.2	85/150	21	13	94	26	28	41	87
Senegal 1997	5.7	4.6	68/139	13	8	82	47	21	†	†
Sudan 1989/90	4.7	4.2	70/123	9	6	70	69	19	†	52
Tanzania 1996	5.8	5.5	88/137	18	13	89	47	22	52	71
Togo 1988	6.4	5.0	81/158	12	3	82	46	22	31 ^k	†
Uganda 1995	6.9	5.6	81/147	15	8	91 ^l	38 ^l	20	38	47
Zambia 1996	6.1	5.3	109/197	26	14	96	47	20	42 ^m	67
Zimbabwe 1994	4.3	3.5	53/77	48	42	93 ⁱ	69 ⁱ	19	21	80

† = Not available from survey data

†† = Not available until publication of final report

a Based on 3 years preceding survey (women 15-49)

b Based on 5 years preceding survey

c Excludes prolonged abstinence

d Excludes periodic/prolonged abstinence, withdrawal, "other."

e Care provided by medically trained personnel

f Children <3 years (any breastfeeding)

g Height-for-age z-score is below -2 SD based on the NCHS/CDC/WHO reference population

h Children 12-23 months (BCG, measles, 3 doses each DPT/polio)

i Based on births in the preceding 3 years

j From 1996 MKAPH

k Children 3-35 months

l Based on births in the preceding 4 years

m Children 0-59 months

n Currently married women 10-49

o From 1992 ENPS-II

p Based on 6 years preceding survey

q Care provided by doctor

r Last-born child only