

**Ghana
Demographic
and Health
Survey
2008**

**Preliminary
Report**

**Ghana Statistical Service
Ghana Health Service
Accra, Ghana**

**MEASURE DHS
Macro International Inc.
Calverton, Maryland, USA**

This report summarises the findings of the 2008 Ghana Demographic and Health Survey (GDHS) carried out by the Ghana Statistical Service and the Ghana Health Service. Macro International Inc. provided financial and technical assistance for the survey through the USAID-funded MEASURE DHS programme, which is designed to assist developing countries to collect data on fertility, family planning, and maternal and child health. Local costs for the survey were partially funded by: Ministry of Health (MOH), The Ghana Statistical Service (GSS), The Ghana AIDS Commission (GAC), UNICEF, UNFPA and DANIDA. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of USAID.

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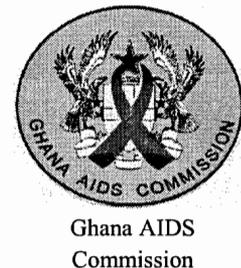
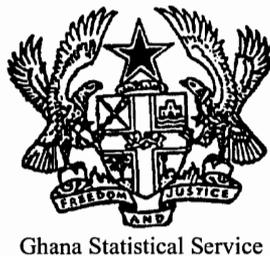
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PRELIMINARY REPORT

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Macro International Inc.
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I. INTRODUCTION

The 2008 GDHS is designed to provide data to monitor the population and health situation in Ghana. Specifically, the 2008 GDHS collected information on fertility levels, marriage, sexual activity, fertility preferences, awareness and use of family planning methods, breastfeeding practices, nutritional status of women and young children, childhood mortality, maternal and child health, domestic violence, and awareness and behaviour regarding AIDS and other sexually transmitted infections. The information collected in the 2008 GDHS will provide updated estimates of basic demographic and health indicators covered in the 1988, 1993, 1998 and 2003 surveys.

The 2008 Ghana Demographic and Health Survey (GDHS) was carried out by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS) from September to December 2008 on a nationally representative sample of more than 12,000 households.¹ Each of these households was visited to obtain information about the household, using the Household Questionnaire. The Household Questionnaire was also used to identify deaths of children under age 5 years occurring in the household since January 2005. Based on this information, a Verbal Autopsy Questionnaire was administered in each household with identified deaths. Data on causes of child mortality based on verbal autopsy are not included to this report and will be presented later as a separate publication.

In half of selected households, all women age 15-49 and all men age 15-59 were eligible to be individually interviewed. In addition, in these households all women age 15-49 and all children under age 5 were also measured for height and weight, and tested for anaemia.

This preliminary report presents selected results of the 2008 GDHS. Wherever possible the results from this survey are compared with results from previous surveys. A comprehensive analysis of the data will be published later in the year. While considered provisional, the results presented here are not expected to differ significantly from those to be presented in the final report.

¹ The GDHS 2008 sample was designed to be large enough to provide a sampling frame to conduct case-specific child mortality surveillance for children under five years of age using a Verbal Autopsy Questionnaire.

II. SURVEY IMPLEMENTATION

A. Sample Design

The 2008 Ghana Demographic and Health Survey (GDHS) was implemented in a representative probability sample of more than 12,000 households. This sample was selected in such a manner as to allow for separate estimates for key indicators for each of the 10 regions in Ghana, as well as for urban and rural areas separately.

The 2008 GDHS utilised a two-stage sample design. The first stage involved selecting sample points or clusters from an updated master sampling frame constructed from the 2000 Ghana Population and Housing Census. A total of 412 clusters were selected from the master sampling frame. The clusters were selected using systematic sampling with probability proportional to size. A complete household listing operation was conducted from June to July 2008 in all the selected clusters to provide a sampling frame for the second stage selection of households.

The second stage of selection involved the systematic sampling of 30 of the households listed in each cluster. The primary objectives of the second stage of selection were to ensure adequate numbers of completed individual interviews to provide estimates for important key indicators with acceptable precision, and to provide a sample large enough to identify adequate numbers of under-five deaths to provide data on causes of death.

Data collection was not conducted for security reasons in one of the selected clusters, resulting in a final sample of 12,323 selected households. Weights were calculated taking into consideration cluster, household and individual non-responses, so the representations were not distorted.

Each household selected for the GDHS was eligible for interview with the Household Questionnaire. In half of the households selected for the survey, all women age 15-49 and all men age 15-59 were eligible to be interviewed if they were either usual residents of the households or visitors present in the household on the night before the survey. Height and weight measurements of female respondents and children under the age of five years were done only in the households selected for the individual interview. Eligible women and children age 6 to 59 months in the households selected for individual interview were also tested for anaemia.

B. Questionnaires

Three questionnaires were used for the 2008 GDHS: the Household Questionnaire, the Women's Questionnaire and the Men's Questionnaire. The contents of these questionnaires were based on model questionnaires developed by the MEASURE DHS programme and the 2003 GDHS Questionnaires.

A questionnaire design workshop organized by GSS was held in Accra to obtain input from the Ministry of Health and other stakeholders on the design of the 2008 GDHS Questionnaires. Based on the questionnaires used for the 2003 GDHS, the workshop and several other informal meetings with various local and international organizations, the DHS model questionnaires were modified to reflect relevant issues in population, family planning, domestic violence, HIV/AIDS, malaria and other health issues in Ghana. These questionnaires were translated from English into three major local languages, namely Akan, Ga and Ewe. The questionnaires were pretested in July 2008. The lessons learnt from the pretest were used to finalise the survey instruments and logistical arrangements.

The Household Questionnaire was used to list all the usual members and visitors in the selected households. Some basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The main purpose of the Household Questionnaire was to identify women and men who were eligible for the individual interview. The Household Questionnaire collected information on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor and roof of the house, ownership of various durable goods, and ownership and use of mosquito nets. The Household Questionnaire was also used to record height and weight measurements, consent for, and the results of, haemoglobin measurements for women 15-49 years old and children under age 5. The haemoglobin testing procedure is described in detail in the next section.

The Household Questionnaire was also used to record all deaths of household members that occurred since January 2003. Based on this information, in each household that reported the death of a child under age five years since January 2005,² field editors administered a Verbal Autopsy Questionnaire. Data on child mortality based on the verbal autopsy will be presented in a separate publication.

The Women's Questionnaire was used to collect information from all women age 15-49 in half of selected households. These women were asked questions on the following topics:

- background characteristics (education, residential history, media exposure, etc.);
- reproductive history;
- knowledge and use of family planning methods;
- fertility preferences;
- antenatal and delivery care;
- breastfeeding and infant feeding practices;
- vaccinations and childhood illnesses;
- marriage and sexual activity;
- woman's work and husband's background characteristics;
- infant and child feeding practices;
- childhood mortality;
- awareness and behaviour about AIDS and other sexually transmitted infections (STIs);
- other health issues; and
- domestic violence

The Women's Questionnaire also included a series of questions to obtain information on women's exposure to malaria during their most recent pregnancy in the five years before the survey and the treatment for malaria. In addition, women were also asked if any of their children born in the five years before the survey had fever, whether these children were treated for malaria and the type of treatment they received.

The Men's Questionnaire was administered to all men age 15-59 living in half of the selected households in the GDHS sample. The Men's Questionnaire collected much of the same information found in the Women's Questionnaire, but was shorter because it did not contain a reproductive history or questions on maternal and child health or nutrition.

² Data were collected on all members of the household who had died in the five years preceding the survey (January 2003-November 2008). However, the verbal autopsy questionnaire was only administered for children under age five at the time of death, who died in the three years preceding the survey (between January 2005-November 2008)

C. Haemoglobin Testing

In half of households selected for the 2008 GDHS survey, consenting women age 15-49 and children age 6 to 59 months were tested for anaemia. The protocol for haemoglobin testing was approved by the Macro International Inc. Institutional Review Board (IRB) in Calverton, Maryland USA and the Ghana Health Service Ethical Review Committee in Accra, Ghana.

Haemoglobin testing is the primary method of anaemia diagnosis. Testing was done using the HemoCue system. A consent statement was read to the eligible respondent or to the parent or responsible adult of young children and women age 15-17. This statement explained the purpose of the test, indicated that the results would be made available as soon as the test was completed, and requested permission for the test to be carried out. In the case of persons whose haemoglobin level was lower than the cut-off point, a referral form was provided to the respondent to be taken to the doctor or a health facility.

Before the blood was taken, the finger was wiped with an alcohol prep swab and allowed to air-dry. Then, the palm side of the end of a finger (in the case of adults and children six months of age and older) was pricked with a sterile, non-reusable, self-retractable lancet and a drop of blood collected on a HemoCue microcuvette, which serves as a measuring device, and placed in a HemoCue photometer which displays the result. For children under six months of age (or for children under one year of age who were particularly undernourished and bony) a heel puncture was made to draw a drop of blood. The results were recorded in the Household Questionnaire, as well as on a brochure, which was given to each woman, parent, or responsible adult, that explained what the results meant. For each person whose haemoglobin level was lower than the cut-off point and who agreed to have their condition reported, a referral form was given to be taken to local health personnel.

D. Training

Fieldwork training began on 11 August 2008 at Winneba Sports College, located about 35 miles west of Accra. Three weeks of training on the GDHS were followed by three days of training on the Verbal Autopsy Questionnaire for deaths of children under five years. A total of 160 persons were trained on the GDHS at one training location. This resulted in the formation of 23 teams composed of one supervisor, one editor, two female interviewers, and two male interviewers; 22 people remained as alternates. The first week of training also included 10 data entry personnel. Most of the trainees had prior experience as interviewers for the GDHS (the 2008 GDHS is the fifth DHS survey conducted in the country). The trainees were also recruited on the basis of language skills. Interviewer training was conducted mostly in English by senior staff from GSS, with technical input from Macro International Inc. In addition, resource persons from other agencies made presentations on family planning, Ghana's programme on integrated management of childhood illnesses, nutrition and anthropometric measurements, and malaria. All participants were trained on interviewing techniques and the contents of the GDHS questionnaires. The training was conducted following the standard DHS training procedures, including class presentations, mock interviews, and written tests. All of the participants were trained on how to complete the Household Questionnaire, the Women's Questionnaire and the Men's Questionnaire, and how to collect anthropometric measurements. In addition to interviewer training, all female interviewers were also trained in anaemia testing and in informed consent procedures. Training also included four days of field practice, three days implementing the Household and Individual Questionnaires, and one day implementing the Verbal Autopsy Questionnaires. Trainees also practiced interviewing in the local languages. During training, it was emphasized that only female interviewers should interview respondents for the Women's Questionnaire and male interviewers for the Men's Questionnaire, except under special circumstances.

Trainees selected as supervisors and field editors were given an additional two days of training on how to supervise fieldwork and edit questionnaires, followed by three days of training on the Verbal Autopsy Questionnaire for deaths of children under five years.

E. Fieldwork

Twenty-three teams were constituted for the fieldwork. Each team was made up of a supervisor, an editor, two female interviewers, two male interviewers and a driver. Interviewers were selected on the basis of in-class participation, field practice, fluency in the Ghanaian languages, and an assessment test. The most experienced trainees, those who had participated in the pretest and those who did extremely well, were selected to be supervisors and editors.

Senior staff from GSS coordinated and supervised fieldwork activities. Macro International Inc. participated in field supervision of interviews, weight and height measurements, and blood sample collection. Data collection took place over a two and half-month period, from early September to late November 2008.³

F. Data Processing

The processing of the GDHS results began shortly after the fieldwork commenced. Completed questionnaires were returned periodically from the field to the GSS office in Accra, where they were entered and edited by data processing personnel who were specially trained for this task. Data were entered using CSPro, a programme specially developed for use in DHS surveys. All data were entered twice (100 percent verification). The concurrent processing of the data was a distinct advantage for data quality, since GSS had the opportunity to advise field teams of problems detected during the data entry. The data entry and editing phase of the survey was completed in February 2009.

³ Several weeks before the start of training, GSS decided to increase the number of field teams from the originally planned 15 to a total of 23. The increase in field teams was done in order to conclude all data collection prior to national elections held on 7 December 2008. The increase in the number of field teams reduced the period of data collection from 120 days to 75 days.

III. RESULTS OF THE SURVEY INTERVIEWS

A. Response Rates

Table 1 shows response rates for the 2008 GDHS. A total of 12,323 households were selected in the sample, of which 11,913 were occupied at the time of the fieldwork. This difference between selected and occupied households occurred mainly because some of the selected structures were found to be vacant or destroyed. The number of occupied households successfully interviewed was 11,778, yielding a household response rate of 99 percent.

In the households selected for individual interview in the survey (50 percent of the total GDHS 2008 sample), a total of 5,096 eligible women were identified; interviews were completed with 4,916 of these women, yielding a response rate of 97 percent. In the same households, a total of 4,769 eligible men were identified and interviews were completed with 4,568 of these men, yielding a response rate of 96 percent. The response rates are slightly lower among men than women.

Table 1 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence, Ghana 2008

Selected Indicator	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	5,458	6,865	12,323
Households occupied	5,252	6,661	11,913
Households interviewed	5,175	6,603	11,778
Household response rate	98.5	99.1	98.9
Individual interviews: women			
Number of eligible women	2,239	2,857	5,096
Number of eligible women interviewed	2,162	2,754	4,916
Eligible woman response rate	96.6	96.4	96.5
Individual interviews: men			
Number of eligible men	2,014	2,755	4,769
Number of eligible men interviewed	1,914	2,654	4,568
Eligible man response rate	95.0	96.3	95.8

The principal reason for non-response among both eligible women and men was the failure to find individuals at home despite repeated visits to the household. The lower response rate for men reflects the more frequent and longer absences of men from the household.

B. Characteristics of Respondents

The distribution of women age 15-49 and men age 15-59 by background characteristics is shown in Table 2. The proportions of both women and men decline with increasing age, reflecting the relatively young age structure of the Ghanaian population.

Fifty-nine percent of women are married or living in an informal union with a man, compared with 53 percent of men in similar arrangements. Because men marry later in life than women, two-fifths of the surveyed men (43 percent) have never married, compared with almost one-third (32 percent) of the women. On the other hand, women are more likely than men to be widowed, divorced or separated (9 and 5 percent, respectively).

Over half of women (52 percent) and men (54 percent) live in rural areas. By region, the largest proportions of women and men are from the Ashanti Region (21 and 19 percent, respectively), and the smallest proportions are from the Upper West Region (3 percent each).

Table 2 Background characteristics of respondents

Percent distribution of women and men by background characteristics, Ghana 2008

Background characteristic	Weighted percentage of women	Number of women		Weighted Percentage of men	Number of men	
		Weighted number	Unweighted number		Weighted number	Unweighted number
Age						
15-19	20.8	1,025	1,037	19.9	911	942
20-24	17.9	878	869	15.4	704	706
25-29	16.9	832	817	13.7	624	608
30-34	13.1	644	636	11.7	533	524
35-39	13.0	638	637	11.6	528	511
40-44	9.6	470	485	8.6	394	393
45-49	8.7	429	435	8.0	364	366
50-54	na	na	na	6.5	297	313
55-59	na	na	na	4.7	213	205
Marital status						
Never married	32.4	1,593	1,546	42.5	1,942	1,940
Married	45.4	2,232	2,361	47.4	2,163	2,204
Living together	13.1	644	589	5.3	241	220
Divorced/separated	7.0	345	316	4.3	195	175
Widowed	2.1	101	104	0.6	26	29
Residence						
Urban	48.5	2,383	2,162	46.5	2,125	1,914
Rural	51.5	2,533	2,754	53.5	2,443	2,654
Region						
Western	9.1	447	438	10.5	479	443
Central	8.6	424	334	8.2	376	288
Greater Accra	17.3	853	692	16.1	735	600
Volta	8.8	431	433	9.2	419	416
Eastern	9.8	483	479	10.3	470	456
Ashanti	20.6	1,011	815	18.8	857	680
Brong Ahafo	8.7	425	403	8.4	385	360
Northern	9.5	467	497	10.4	477	524
Upper East	5.1	253	373	5.5	249	356
Upper West	2.5	122	452	2.6	120	445
Education						
No education	21.2	1,042	1,243	14.0	639	792
Primary	20.1	988	999	14.5	661	723
Middle/JSS	41.5	2,039	1,893	42.6	1,947	1,839
Secondary +	17.2	844	777	28.6	1,308	1,203
Missing	0.1	4	4	0.3	12	11
Religion						
Catholic	12.4	610	733	13.5	615	689
Anglican	0.9	45	46	1.4	62	56
Methodist	8.0	391	330	7.4	340	276
Presbyterian	8.0	393	347	8.8	403	363
Pentecostal/Charismatic	37.2	1,827	1,696	27.9	1,273	1,175
Other Christian	11.1	544	478	13.4	612	539
Moslem	15.0	738	832	16.6	758	861
Traditional/spiritualist	4.2	205	266	5.5	254	347
No religion	3.1	153	178	5.2	238	245
Other	0.1	7	7	0.3	15	16
Missing	0.0	2	3	0.0	1	1
Ethnic group						
Akan	50.7	2,493	2,136	47.3	2,163	1,833
Ga/Dangme	7.0	343	309	6.5	298	265
Ewe	12.9	633	637	14.7	672	653
Guan	2.5	122	117	2.5	113	117
Mole-Dagbani	16.2	795	1,071	16.6	760	1,097
Grussi	2.4	118	226	2.6	117	148
Cruma	3.7	184	202	4.9	222	246
Mande	0.6	29	28	0.4	21	20
Other	4.0	197	188	4.3	198	185
Missing	0.0	1	2	0.1	3	4
Total	100.0	4,916	4,916	100.0	4,568	4,568

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
na = Not applicable

In general, most men and women have some formal education; nevertheless, 21 percent of women and 14 percent of men have never attended school. Men tend to be more educated than women: 29 percent of men have secondary or higher education, compared with 17 percent of women.

Around 37 percent of women and 28 percent of men are Pentecostal/Charismatic Christian, 28 percent of women and 31 percent of men are Anglican, Methodist, Presbyterian or other Christian, and about 12 percent of women and 14 percent of men are Catholic. Fifteen percent of women and 17 percent of men are Moslem. As expected, the Akan is the largest ethnic group, with about half of respondents belonging to this group, followed by the Mole-Dagbani which accounts for 16 percent of women and 17 percent of men, and the Ewe, which accounts for 13 percent of women and 15 percent of men.

C. Fertility

Fertility data were collected in the 2008 GDHS by asking each of the women interviewed for a history of her births. The information obtained on each of the woman's births included the month and year of the birth. These data are used to calculate two of the most widely used measures of current fertility, the total fertility rate (TFR) and its component age-specific fertility rates.

According to the 2008 GDHS results, the total fertility rate is 4.0 (Table 3). This means that a Ghanaian woman who is at the beginning of her childbearing years will give birth to an average of 4.0 children by the end of her reproductive period if fertility levels remain constant at the level observed in the three-year period before the 2008 GDHS.

The TFR for rural areas (4.9 births) is considerably higher than the rate for urban areas (3.1 births). Table 3 shows that urban-rural differences in childbearing rates are evident for all age groups. The absolute difference is especially large in the 20-24 and 25-29 age groups.

Compared with other sub-Saharan countries, the fertility rate in Ghana is relatively low, as shown in Figure 1.

Table 3 Current fertility

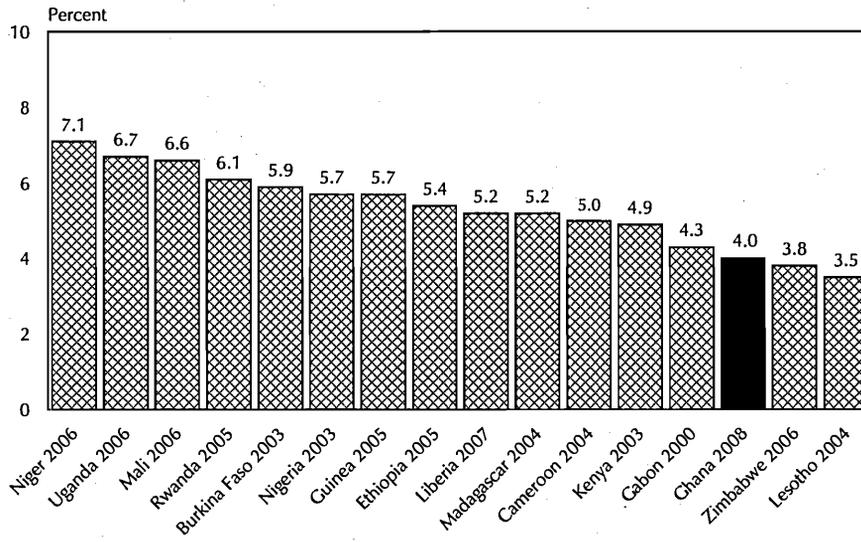
Age-specific and total fertility rates (TFR), and the crude birth rate (CBR) for the three years preceding the survey, by urban-rural residence, Ghana 2008

Age group	Residence		Total
	Urban	Rural	
15-19	49	82	66
20-24	114	243	176
25-29	173	236	206
30-34	157	189	173
35-39	89	140	118
40-44	37	77	59
45-49	3	13	8
TFR	3.1	4.9	4.0
CBR	27.1	33.6	30.8

Note: Rates for age group 45-49 may be slightly biased due to truncation.

TFR: Total fertility rate for ages 15-49, expressed per woman
 CBR: Crude birth rate, expressed per 1,000 population

Figure 1 Total Fertility Rates, Selected Sub-Saharan Countries

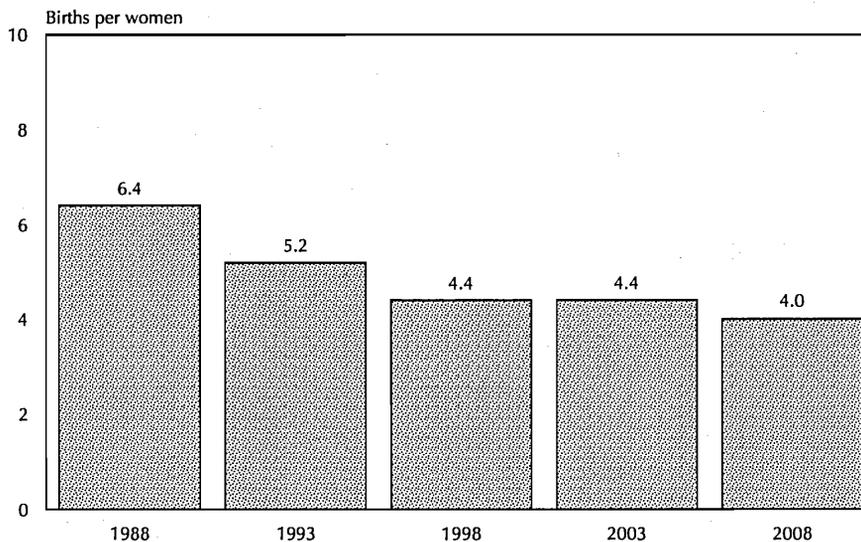


Note: Rates are per 1,000 women and refer to the three -year period preceding the survey, except for Niger, Burkina Faso and Gabon, where rates refer to the five-year period preceding the survey.

The 2008 GDHS results indicate that there has been a slight decline in Ghana’s fertility over the past five years. This is in contrast to the marked decline in fertility—a nearly 2-child decline—experienced between the mid-1980s and the 1990s.

Figure 2 shows the decline in the TFR from a high of 6.4 births per woman in the 1988 GDHS, to 5.2 births in the 1993 GDHS, 4.4 in the 1998 and 2003 GDHSs, and 4.0 in the 2008 GDHS.

Figure 2 Total Fertility Rates, Ghana 1988-2008



Note: Rates are per 1,000 women and refer to the three-year period preceding the survey.

D. Family Planning

Information about knowledge and use of contraceptive methods was collected from female respondents by asking them to mention any ways or methods by which a couple can delay or avoid a pregnancy. For each method known, the respondent was asked if she had ever used it. Respondents who had ever used a family planning method were asked whether they or their partner were using a method at the time of the GDHS survey. Table 4 shows the level and key differentials in the current use of contraceptive methods as reported by currently married women.

About one in four currently married women (24 percent) is currently using some method of contraception. Modern methods are more commonly used than are traditional methods; 17 percent of married women use modern methods, while about 7 percent use traditional methods. Of the modern methods, pill (5 percent), and injectables (6 percent) are most widely used. Periodic abstinence is the most popular traditional method and is used by 5 percent of married women.

Table 4 also shows differentials in use of contraceptive methods by selected background characteristics. Age is related to use levels; prevalence peaks among married women in the 40-44 age group and is lowest for women age 15-19. A higher percentage of urban married women (27 percent) uses contraceptives, compared with rural married women (21 percent). In terms of region, married women in the Greater Accra (33 percent), Volta and Brong Ahafo regions (29 percent, each) have the highest prevalence rates, while the lowest levels of contraceptive use are recorded for the Northern (6 percent) and Upper East (15 percent) regions.

The use of contraceptive methods increases with increasing level of education. For example, 30 percent of married women with secondary or higher levels of education are using a method of contraception compared with 14 percent of married women with no education. Use also increases with the number of living children from 17 percent among married women with no children to 27 percent among married women with 3-4 children.

Overall, the use of contraception has remained steady over the past five years at 24 percent of married women in 2008 (25 percent of those in 2003). There is a slight decrease in the use of modern methods; for example, 19 percent of married women in 2003 reported use of a modern method compared with 17 percent of those in 2008.

Table 4 Current use of contraception

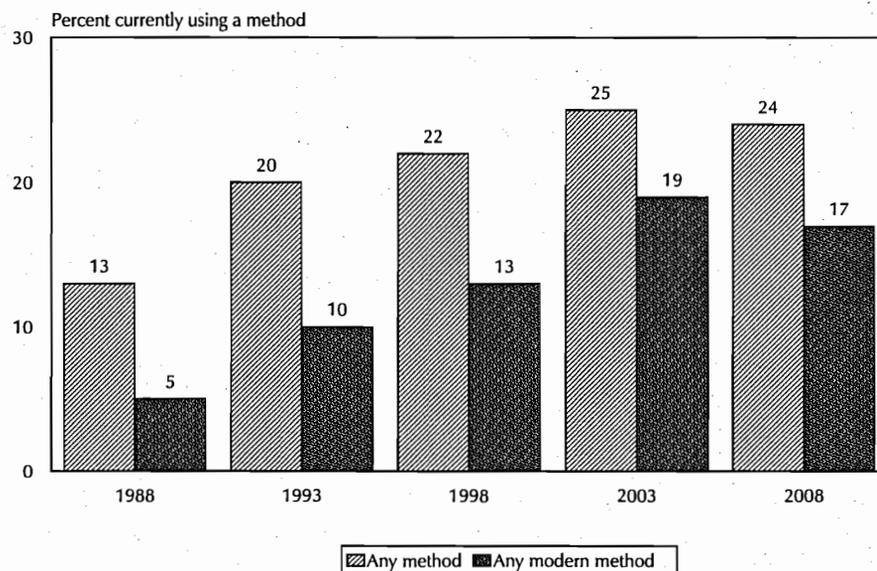
Percent distribution of currently married women by contraceptive method currently used, according to background characteristics, Ghana 2008

Background characteristic	Modern method											Any traditional method	Traditional method			Not currently using	Total	Number of women
	Any method	Any modern method	Female sterilization	Pill	IUD	Injectables	Implants	Male condom	Female condom	Dia-phragm	Foam/jelly		Periodic abstinence	With-drawal	Folk method			
Age																		
15-19	13.6	7.6	0.0	2.4	0.0	2.1	0.0	1.3	0.0	0.0	1.8	6.0	4.4	1.6	0.0	86.4	100.0	85
20-24	22.4	17.3	0.0	5.7	0.0	7.9	0.3	3.0	0.0	0.0	0.4	5.1	3.1	1.7	0.3	77.6	100.0	414
25-29	23.0	14.2	0.2	4.5	0.0	5.3	0.5	3.4	0.0	0.0	0.2	8.8	5.6	1.5	1.7	77.0	100.0	612
30-34	23.3	17.3	1.3	4.1	0.3	7.1	0.9	3.2	0.0	0.3	0.2	6.0	4.1	1.3	0.7	76.7	100.0	539
35-39	25.9	18.8	0.8	5.9	0.3	8.2	1.5	1.8	0.3	0.0	0.0	7.1	4.2	2.0	0.9	74.1	100.0	527
40-44	27.6	19.0	4.8	5.3	0.3	5.7	1.2	1.5	0.0	0.0	0.3	8.6	7.0	0.6	0.9	72.4	100.0	380
45-49	20.2	14.8	5.4	3.3	0.6	2.9	1.6	0.9	0.0	0.0	0.0	5.4	4.1	1.4	0.0	79.8	100.0	319
Residence																		
Urban	27.1	18.6	1.7	4.8	0.4	6.2	0.6	4.1	0.1	0.1	0.4	8.5	6.5	1.1	1.0	72.9	100.0	1,216
Rural	20.9	15.1	1.6	4.7	0.1	6.3	1.2	1.2	0.0	0.0	0.1	5.8	3.4	1.7	0.7	79.1	100.0	1,660
Region																		
Western	19.1	13.2	1.1	6.5	0.0	3.6	0.6	1.3	0.0	0.0	0.0	5.9	4.7	1.2	0.0	80.9	100.0	261
Central	22.9	17.0	3.0	3.6	0.0	7.7	1.8	0.8	0.0	0.0	0.0	5.9	3.3	2.6	0.0	77.1	100.0	254
Greater Accra	32.6	22.2	1.1	6.0	0.9	6.0	0.7	6.1	0.4	0.0	1.1	10.4	9.3	1.1	0.0	67.4	100.0	422
Volta	28.6	20.5	2.9	6.1	0.3	7.1	0.9	3.3	0.0	0.0	0.0	8.1	5.3	1.4	1.5	71.4	100.0	290
Eastern	24.2	17.0	2.6	3.7	0.4	5.8	0.7	3.8	0.0	0.0	0.0	7.2	4.4	2.5	0.3	75.8	100.0	252
Ashanti	27.0	15.7	3.0	4.9	0.0	5.9	1.0	0.7	0.0	0.0	0.2	11.3	5.4	2.6	3.4	73.0	100.0	542
Brong Ahafo	29.0	21.6	0.0	7.1	0.0	6.9	1.5	5.1	0.0	0.6	0.5	7.4	6.5	0.9	0.0	71.0	100.0	267
Northern	5.9	5.7	0.0	1.8	0.0	2.9	0.4	0.5	0.0	0.0	0.0	0.2	0.2	0.0	0.0	94.1	100.0	338
Upper East	14.7	14.3	0.4	2.5	0.0	10.4	1.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0	85.3	100.0	168
Upper West	21.7	20.5	0.3	2.7	0.4	15.3	1.1	0.7	0.0	0.0	0.0	1.2	0.8	0.0	0.4	78.3	100.0	82
Education																		
No education	13.6	10.8	1.0	2.6	0.1	5.4	1.4	0.3	0.0	0.0	0.0	2.7	1.4	0.9	0.5	86.4	100.0	853
Primary	26.6	18.0	1.1	5.3	0.4	7.3	0.9	2.2	0.3	0.0	0.5	8.7	4.5	3.0	1.1	73.4	100.0	638
Middle/JSS	27.4	19.6	2.7	5.9	0.1	7.0	0.7	3.1	0.0	0.0	0.2	7.8	5.8	1.0	1.0	72.6	100.0	1,058
Secondary +	30.4	18.5	1.1	5.2	0.4	4.1	0.6	6.2	0.0	0.5	0.4	11.8	9.9	1.3	0.7	69.6	100.0	325
Living Children																		
0	17.1	11.1	0.0	4.0	0.0	0.6	0.0	5.9	0.0	0.0	0.7	6.0	5.4	0.6	0.0	82.9	100.0	240
1-2	20.3	13.5	0.2	3.4	0.0	6.7	0.2	2.7	0.0	0.0	0.3	6.8	4.5	1.3	1.0	79.7	100.0	1,079
3-4	27.3	20.1	2.1	6.4	0.4	7.2	1.3	2.3	0.2	0.0	0.3	7.2	5.2	1.3	0.7	72.7	100.0	915
5+	25.9	18.8	3.9	4.9	0.4	6.4	2.0	0.9	0.0	0.2	0.0	7.2	3.9	2.3	1.0	74.1	100.0	641
Total	23.5	16.6	1.6	4.7	0.2	6.2	0.9	2.4	0.1	0.1	0.2	6.9	4.7	1.4	0.8	76.5	100.0	2,876

Note: If more than one method is used, only the most effective method is considered in this tabulation. Total includes women with information missing on education who are not shown separately

As seen in Figure 3, overall contraceptive use among married women has increased steadily, and has nearly doubled over the past 20 years, from 13 percent in 1988, peaking at 25 percent in 2003 and remaining at 24 percent in 2008. Similarly, the use of modern methods nearly doubled, from 10 percent in 1993 to 19 percent in 2003, before it slightly declined to 17 percent in 2008.

**Figure 3 Contraceptive Use among Currently Married Women
Ghana 1988-2008**



Source of Modern Contraceptive Methods

Information on sources of modern contraceptive methods is important to family planning programme management. In Ghana, both public and private sectors are strategically important in the provision of family planning services. Non-clinical short-term methods such as the pills and condoms are widely distributed by the private sector. Ghana has a vibrant social marketing programme that networks with pharmacies and chemical sellers, private clinics and maternity homes as well as major NGOs, such as the PPAG, which provide both clinical and non-clinical methods. The public sector provides the full range of clinical and non-clinical methods mainly through health facilities and also supports major partners such as Planned Parenthood Association of Ghana (PPAG).

In the 2008 GDHS, all current users of modern contraceptive methods were asked the most recent source of their methods. Interviewers were instructed to record the name of the source or facility, because respondents may not always be able to accurately categorize a source as public or private. Supervisors and editors then verified this information. This procedure helped in improving the accuracy of the information.

The results shown in Table 5 indicate that in Ghana both the public and private medical sectors are important sources of supply for users of modern methods (39 and 51 percent, respectively). The most common public sector sources are government hospitals and polyclinics, which provide most of the services (20 percent), while government health centers, government health posts/CHPS, and family planning clinics provide 14, 2 and 2 percent, respectively. In the private sector, pharmacies, chemists, and drug stores are the largest source, supplying 46 percent of all current users. Four percent of users also mentioned private hospitals or clinics, and 2 percent mentioned maternity homes and PPAG clinics. Other sources such as family, relatives, and shops are the least common (3 percent).

Table 5 Source of modern contraception methods					
Percent distribution of users of modern contraceptive methods age 15-49 by most recent source of the method, according to method, Ghana 2008					
Most recent source of method	Pill	Injectables	Implants	Male condom	Total
Public sector	12.7	86.9	(79.2)	2.7	39.4
Government hospital/polyclinic	3.7	45.2	(41.7)	1.7	19.5
Government health center	6.5	29.6	(33.6)	0.0	14.4
Government health post/CHPS	1.2	5.8	(0.0)	0.0	2.3
Family planning clinic	0.5	5.0	(3.8)	0.0	2.3
Mobile clinic	0.4	0.0	(0.0)	0.0	0.1
Fieldworker/outreach/peer educator	0.5	1.3	(0.0)	1.0	0.9
Private medical sector	84.3	11.0	(17.8)	70.9	51.1
Private hospital/clinic	1.2	7.1	(11.6)	0.0	3.5
Pharmacy	8.4	0.0	(0.0)	16.6	7.6
Chemical/drug store	74.7	0.2	(0.0)	54.0	37.9
FP/PPAG clinic	0.0	0.4	(6.2)	0.0	0.9
Maternity home	0.0	3.3	(0.0)	0.3	1.2
Other source	1.4	2.0	(0.0)	6.5	3.0
Shop/market	0.6	0.0	(0.0)	1.1	0.5
Church	0.0	0.6	(0.0)	0.0	0.2
Community volunteer	0.0	0.6	(0.0)	0.0	0.2
Friend/relative	0.8	0.8	(0.0)	5.4	2.0
Other	0.0	0.0	(0.0)	3.6	1.0
Don't know	0.7	0.0	(0.0)	16.3	5.1
Missing	0.9	0.1	(3.0)	0.0	0.4
Total	100.0	100.0	100.0	100.0	100.0
Number of women	178	207	33	175	612

Note: Figures in parentheses are based on 25 to 49 unweighted cases.
¹ Total includes weighted cases of 8 users of IUD, 2 user of female condom, 1 user of diaphragm, 8 users of foam/jelly and other modern methods

There are differences by method among the sectors. Pills and male condoms are commonly obtained from private sources (84 and 71 percent, respectively), while clinic-based methods such as injectables and implants are provided predominantly by public facilities.

Use of Social Marketing Brands

It is important for programme purposes to get a sense of whether the social marketing of contraceptives is successful. Questions on social marketing in Ghana were restricted to the use of the pill and condom, since they are the most commonly marketed methods of contraception. Pill and condom users were asked for the brand name and the cost.

Secure is by far the most popular brand of pill used in Ghana. Forty-seven percent of pill users use *Secure*. Eight percent use *N/M tablets*, while *Microgynon* is used by 3 percent of pill users. Even smaller fractions of pill users use *Lo-femenal*, *Hot* and *Duofem* (2 percent each). Twenty-nine percent of pill users were not able to identify a brand name (data not shown separately).

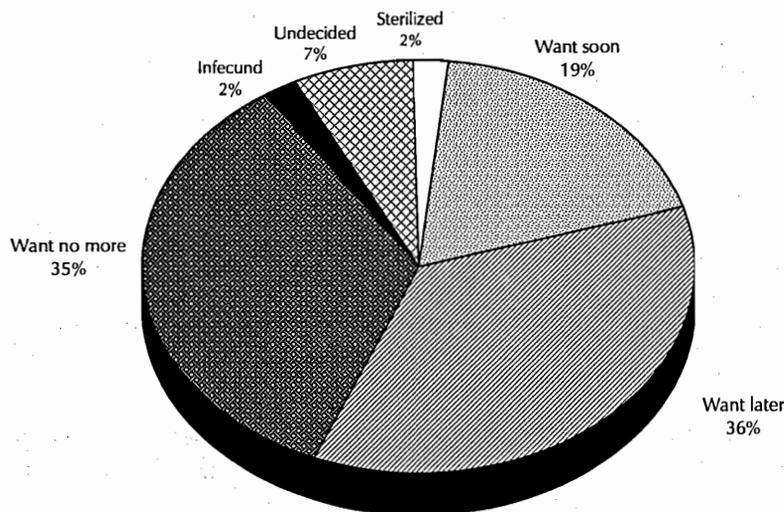
The most popular male condom, *Champion*, is used by 18 percent of all women who report using male condoms. About 6 percent of condom users reported use of *Gold circle*, 3 percent reported using *Panther*, and *Bazooka* was reported by 2 percent. Over two-thirds of women who report using condoms (67 percent) were not able to provide a name for the brand (data not shown).

E. Fertility Preferences

The survey included several questions on women's fertility preferences: whether the respondent wanted another child and, if so, when she would like to have the next child. The answers to these questions allow an estimation of the potential demand for family planning services either to limit or space births.

Figure 4 shows that there is considerable desire among Ghanaian women to control the timing and number of births. Among all currently married women, 36 percent would like to wait for two years or more for the next birth, and 37 percent do not want to have another or are sterilised. About a fifth (19 percent) of married women would like to have a child soon (within two years). The remaining women are uncertain about their fertility desires or say they are unable to get pregnant (infecund).

Figure 4 Fertility Preferences among Currently Married Women



GDHS 2008

Table 6 shows that fertility preferences are closely related to the number of children a woman has. The vast majority (74 percent) of currently married women without a child would like to have one soon. Women show greater interest in controlling the pace of childbearing once they have a child; 60 percent of women with one child want to delay their next birth. Interest in controlling the number of births grows rapidly as the number of children increases; the proportion of married women wanting no more children or who are sterilized rises from 2 percent among women with one child to 77 percent of women with six children or more.

Table 6 Fertility preferences among currently married women

Percent distribution of currently married women by desire for children, according to number of living children, and according to current use of family planning, and intention to use a method in the future, Ghana 2008

Desire for children	Number of living children ¹							Currently using a method	Not using a method		Total
	0	1	2	3	4	5	6+		Intending to use in the future	Not intending to use in the future	
Have another soon ²	73.7	30.1	21.7	15.5	8.3	6.4	5.2	13.1	16.5	27.8	19.3
Have another later ³	12.8	59.9	53.6	38.7	26.7	16.1	7.8	33.4	45.5	28.7	35.7
Have another, undecided when	10.8	4.7	2.5	1.4	0.7	0.3	0.7	2.4	2.5	2.4	2.4
Undecided	1.8	2.1	2.5	6.6	4.7	6.1	5.9	3.2	3.4	4.8	4.3
Want no more	0.0	1.7	17.3	34.0	55.6	66.0	73.5	40.7	32.1	36.3	34.8
Sterilized ⁴	0.0	0.0	0.4	2.2	1.9	4.5	3.2	7.0	0.0	0.0	1.6
Declare infecund	0.8	1.5	1.8	1.3	1.9	0.2	3.0	0.1	0.0	0.0	1.6
Missing	0.0	0.0	0.2	0.3	0.0	0.4	0.6	0.0	0.0	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	167	476	608	523	438	297	368	676	1,044	961	2,876

Note: Total includes some women who are not sure of their intention to use family planning in future

¹ Includes current pregnancy. For pregnant woman the desire for children refers to a subsequent child, not the child currently being expected.

² Wants next birth within 2 years

³ Wants to delay next birth for 2 or more years

⁴ Includes both male and female sterilization

Table 6 also shows desire for children among currently married women not using a method. Nearly half (46 percent) of married women intending to use a method in the future, and 29 percent of those not intending to use a method, want to delay the birth of their next child for two or more years. Nearly one-third of married women who intend to use a method in the future, and 36 percent of those who do not intend to use a method, have no desire to have children. A large majority of currently married women in Ghana are potentially in need of contraception, for the purpose of either timing or limiting their family size or spacing births.

F. Maternity Care

Proper care during pregnancy and delivery are important for the health of both the mother and the baby. In the 2008 GDHS, women who had given birth in the five years preceding the survey were asked a number of questions about maternal and child health care. For the last live birth in that period, the mothers were asked whether they had obtained antenatal care during the pregnancy and whether they had received tetanus toxoid injections or iron supplements while pregnant. For each birth in the same period, the mothers were also asked what type of assistance they received at the time of delivery. Table 7 presents the information on these key maternity care indicators.

Antenatal Care

More than nine in ten mothers reported seeing a health professional at least once for antenatal care for the most recent birth in the five-year period before the survey. Although high, coverage is slightly lower among mothers whose age at birth is 35 or older, and in rural areas (94 percent each). Across regions, the proportion of mothers who reported receiving antenatal care from a health professional varies little, with the lowest percentage among mothers residing in the Volta Region (91 percent) and the highest percentage among mothers in the Upper West and Ashanti regions (98 percent and 97 percent, respectively). As mother's educational level rises, so does the likelihood that she will see a health professional for care during pregnancy; the percentage rises from 94 percent among mothers who have never been to school to 99 percent among mothers with secondary or higher education.

Table 7 Maternal care indicators

Percentage of women who had a live birth in the five years preceding the survey who received antenatal care from a health professional for the last live birth and whose last live birth was protected against neonatal tetanus, and among all live births in the five years before the survey, percentage delivered by a health professional and percentage delivered in a health facility, by background characteristics, Ghana 2008

Background characteristic	Percentage with antenatal care from a health professional ¹	Percentage whose last live birth was protected against neonatal tetanus ²	Number of women	Percentage delivered by a health professional ¹	Percentage delivered in a health facility	Number of births
Mother's age at birth						
<20	97.3	66.9	214	52.2	50.9	333
20-34	95.5	72.3	1,475	60.6	58.9	2,079
35+	94.3	69.7	410	54.9	53.8	497
Residence						
Urban	97.8	75.0	844	84.3	82.4	1,104
Rural	93.9	68.8	1,255	43.0	41.7	1,806
Region						
Western	95.7	63.3	189	61.7	58.3	271
Central	92.4	70.4	200	54.0	51.7	292
Greater Accra	95.7	76.2	262	84.3	83.7	346
Volta	91.1	79.5	181	53.7	53.7	244
Eastern	96.0	72.9	185	60.8	59.0	254
Ashanti	97.3	77.4	396	72.6	70.0	545
Brong Ahafo	96.4	72.5	218	65.5	64.7	272
Northern	95.6	61.1	291	27.2	26.3	456
Upper East	95.7	68.7	119	46.7	46.1	148
Upper West	97.6	57.9	58	46.1	45.3	82
Mother's education						
No education	93.5	63.6	647	36.3	34.6	952
Primary	93.5	71.2	511	54.6	53.3	722
Middle/JSS	97.6	75.0	738	74.4	72.8	970
Secondary +	98.9	82.3	201	92.4	90.9	263
Total	95.4	71.3	2,099	58.7	57.1	2,909

Note: Total includes women with information missing on education and births with information missing on maternal education (not shown separately).

¹ Doctor, nurse, midwife, auxiliary midwife, or community health officer/nurse

² Includes mothers with two injections during the pregnancy of the last live birth, or two or more injections (the last within 3 years of the last live birth), or three or more injections (the last within 5 years of the last live birth), or four or more injections (the last within ten years of the last live birth), or five or more injections prior to the last live birth

Tetanus Toxoid

Tetanus toxoid injections are given during pregnancy to prevent neonatal tetanus, an important cause of infant deaths. The last live birth was considered to be protected against neonatal tetanus if a mother received two injections during the pregnancy of the last live birth, or two or more injections (the last within 3 years of the last live birth), or three or more injections (the last within 5 years of the last live birth), or four or more injections (the last within ten years of the last live birth), or five or more injections prior to the last live birth.

Table 7 indicates that tetanus toxoid coverage is widespread, although not universal among pregnant women in Ghana; 71 percent of recent births were protected against tetanus. There are some differences

by age; coverage is highest among mothers whose age at birth is 20-34 (72 percent) and the lowest among the youngest mothers (67 percent). Urban births (75 percent) are more likely than rural births (69 percent) to be protected against tetanus. Differences by region are notable, with the lowest being in the Upper West and Northern regions, where 58 and 61 percent of births, respectively, are protected, compared with 63-80 percent of births in other regions. The likelihood that a birth is protected against tetanus increases with mother's level of education.

Delivery Care

Proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that can cause the death or serious illness of the mother and/or the baby. Table 7 shows that slightly over half (59 percent) of births in Ghana are delivered by a health professional; a similar proportion (57 percent) of deliveries takes place in health facilities.

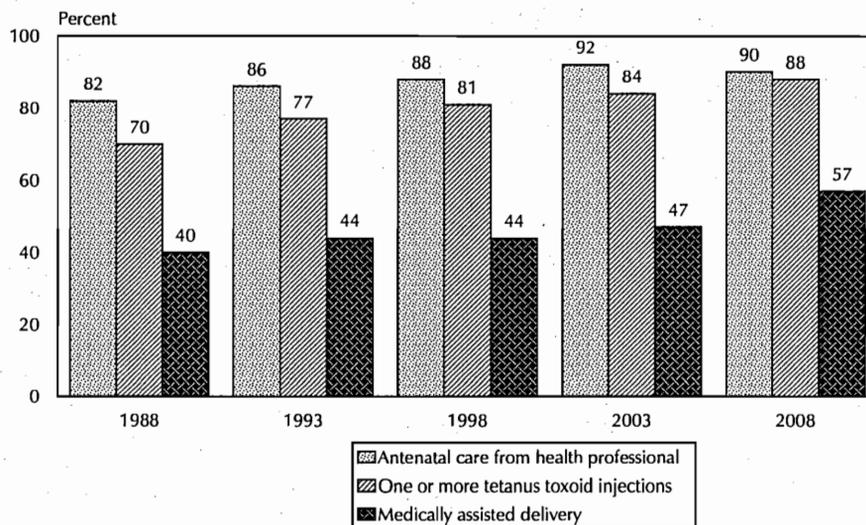
The patterns of differentials in delivery care by background characteristics of the mother are similar to those for antenatal care but are more pronounced. Births to women age 20-34 are more likely to receive medical assistance at delivery and to be delivered in a health facility, compared with births to women age 35 or older or age 20 or younger. Births to rural women and poorly educated women are much less likely than others to receive medical assistance from a health professional at delivery and to be delivered in a health facility. For example, urban births (82 percent) are almost twice as likely as rural births (42 percent) to be delivered at a health facility, or to be assisted by a trained provider (84 and 43 percent, respectively for urban and rural births). The likelihood of a medically assisted delivery also increases substantially with the mother's educational level, from 36 percent of births among mothers with no education to 92 percent among mothers with secondary education or higher. Differences by region are also marked; births in Greater Accra are most likely to receive medical assistance at delivery and to be delivered in health facilities (84 percent each) in contrast to 27 percent of medically assisted deliveries and 26 percent of deliveries in a health facility in the Northern Region.

Trends in Maternity Care Indicators

Analysis of trends in maternity care indicators is complicated by the fact that previous GDHS surveys asked questions on antenatal care and tetanus injections for all births whereas the 2003 GDHS and 2008 GDHS confined these questions to only the most recent birth. In addition, the questions on maternity care and children's health referred to varying periods (sometimes five and sometimes three years) preceding the survey. While it is possible to adjust for some of these inconsistencies, it is not possible to correct them all. Additionally, the 2008 GDHS definition of a health professional includes doctor, nurse, midwife, auxiliary midwife, and community health officer. The 2003 DHS definition of health professional excludes community health officer/nurse. To make 2008 data comparable with earlier estimates, maternal care indicators on ANC and attended deliveries have been re-calculated using the 2003 GDHS definition of health professional.

Adjusting for some of these differences, Figure 5 shows the trends in key maternity care indicators between the five DHS surveys. There was a small but steady increase in the coverage of professional antenatal care services over the past twenty years, from 82 percent in 1988 to 90 percent in 2008. During the same period, GDHS data show that there has been an improvement in receipt of tetanus toxoid injections from 70 percent of births receiving one or more tetanus toxoid injections in 1988 to 88 percent in 2008. There was a modest rise in the percentage of medically assisted deliveries during the periods between the surveys, from 40 percent of births in the 1988 GDHS to 57 percent of births in the 2008 survey.

**Figure 5 Trends in Maternity Care Indicators
Ghana 1988-2008**



Note: Data for 1988, 1993, and 1998 are with reference to births, whereas data for antenatal care and tetanus toxoid for 2003 and 2008 are with reference to women who had a live birth. The reference period is five years preceding the survey except for 1993, which refers to the three years preceding the survey

Number and Timing of Antenatal Care Visits

Antenatal care can be more effective in preventing adverse pregnancy outcomes when it is sought early in the pregnancy and continued through to delivery. Obstetricians generally recommend that expectant mothers should begin antenatal attendance as early as possible in the first trimester. Monthly antenatal visits are recommended up to the seventh month of pregnancy, after which visits every two weeks are recommended up to the eighth month, when the visits should be weekly until delivery. If the first antenatal visit is made at the third month of pregnancy, this optimum schedule translates to a total of at least 12-13 visits during the duration of the pregnancy. The World Health Organization (WHO) recommends a minimum of four visits per pregnancy. Early detection of problems in pregnancy leads to more timely referrals in case of complications and this is of particular importance in some remote regions of Ghana, where basic health services are few and present a challenge to the health care delivery system. Women who do not receive antenatal care during pregnancy are at a higher risk of obstetric emergencies and adverse outcomes. In an effort to bridge the gap and provide health care as close to the family as possible, the District Health Management Teams have trained traditional birth attendants to recognize the danger signs during pregnancy and refer women early to health centres. This may explain the high percentage receiving antenatal care through facility-based health professionals. Table 8 provides the percentage distribution of women who had a live birth in the five years preceding the survey by the number of antenatal care (ANC) visits for the most recent birth, and by the timing of the first visit, according to residence.

Most women (78 percent) have made at least four ANC visits for their most recent birth in the five years preceding the survey. Eighty-eight percent of urban Ghanaians and 72 percent of rural Ghanaians report visiting antenatal clinics at least four times during their pregnancy. The median number of months pregnant at first visit among women who received antenatal care is 3.7 among urban residents and 3.9 among rural residents. Nearly two-thirds of the women in urban areas and half of women in rural areas make their first antenatal visit before their fourth month of pregnancy, while 30 percent of urban women and 33 percent of rural women make their first visit between the fourth and fifth month of pregnancy.

G. Child Health and Nutrition

Vaccination of Children

According to the World Health Organization, a child is considered fully vaccinated if he or she has received a BCG vaccination against tuberculosis; three doses of DPT vaccine to prevent diphtheria, pertussis, and tetanus; three doses of polio vaccine; and one dose of measles vaccine. These vaccinations should be received during the first year of life. The 2008 GDHS collected information on the coverage for these vaccinations among all children born in the five years preceding the survey.

The information on vaccination coverage was obtained in two ways—from health cards and from mother’s verbal reports. All mothers were asked to show the interviewer the health cards on which the child’s immunisation was recorded. If the card was available, the interviewer copied the dates on which each vaccination was received. If a vaccination was not recorded on the card as being given, the mother was asked to recall whether that particular vaccination had been given. If the mother was not able to present a card for a child, she was asked to recall whether the child had received BCG, polio, DPT and measles. If she indicated that the child had received the polio or DPT vaccines, she was asked about the number of doses that the child received.

Table 9 presents information on vaccination coverage for children 12-23 months, who should be fully vaccinated against the six preventable childhood illnesses. The results are based both on the health card record and the information provided by the mother. The table shows that health cards were available for more than four in five children (86 percent).

Table 8 Number of antenatal care visits and timing of first visit

Percent distribution of women who had a live birth in the five years preceding the survey by number of antenatal care (ANC) visits for the most recent birth, and by the timing of first ANC visit, according to residence, Ghana 2008

Number and timing of ANC visits	Residence		Total
	Urban	Rural	
Number of ANC visits			
None	1.4	4.8	3.5
1	1.2	3.8	2.8
2-3	6.8	17.7	13.3
4+	88.1	71.5	78.2
Don't know/missing	2.5	2.2	2.3
Total	100.0	100.0	100.0
Number of months pregnant at time of first ANC visit			
No antenatal care	1.4	4.8	3.5
<4	61.3	50.8	55.0
4-5	30.0	33.2	31.9
6-7	5.8	9.4	8.0
8+	0.8	1.2	1.1
Don't know/missing	0.6	0.5	0.6
Total	100.0	100.0	100.0
Number of women	844	1,255	2,099
Median months pregnant at first visit (for those with ANC)	3.7	3.9	3.8
Number of women with ANC	830	1,194	2,024

Table 9 Vaccinations by background characteristics

Percentage of children age 12-23 months who received specific vaccines at any time before the survey (according to a vaccination card or the mother's report), and percentage with a vaccination card seen, by background characteristics, and percentage of children age 12-23 months vaccinated by 12 months of age, Ghana 2008

Background characteristic	BCG	DPT			Polio ¹				Measles	All ²	Yellow fever	No vaccinations	Percentage with a vaccination card seen	Number of children
		1	2	3	0	1	2	3						
Sex														
Male	96.7	97.9	95.9	88.8	65.3	95.9	94.1	86.1	88.5	79.7	87.3	0.9	85.8	264
Female	95.0	98.2	95.2	88.8	71.0	98.4	94.5	86.7	91.7	78.4	90.7	1.0	85.9	287
Residence														
Urban	97.3	97.5	93.8	87.2	82.2	95.5	91.0	83.9	93.4	78.3	92.6	0.7	81.0	214
Rural	94.8	98.3	96.6	89.8	59.4	98.3	96.4	88.0	88.1	79.4	86.8	1.1	89.0	338
Region														
Western	98.9	97.1	97.1	96.0	65.0	99.2	99.2	89.9	89.7	82.1	87.2	0.0	88.0	50
Central	(100.0)	(100.0)	(96.4)	(81.0)	(50.6)	(95.6)	(90.8)	(84.5)	(87.3)	(73.2)	(84.3)	(0.0)	(83.5)	56
Greater Accra	(100.0)	(98.3)	(98.3)	(88.6)	(87.7)	(97.5)	(97.5)	(83.1)	(92.4)	(79.9)	(92.4)	(0.0)	(77.7)	61
Volta	(96.5)	(100.0)	(95.0)	(89.5)	(61.8)	(100.0)	(95.0)	(81.4)	(92.0)	(79.3)	(92.0)	(0.0)	(81.7)	44
Eastern	98.5	97.7	96.3	91.5	68.9	95.8	95.8	87.4	86.8	76.3	88.7	0.0	85.2	55
Ashanti	95.4	97.2	95.7	91.4	77.8	97.2	92.9	90.9	93.0	84.6	90.7	2.8	86.3	114
Brong Ahafo	(98.2)	(98.3)	(97.0)	(95.7)	(79.7)	(98.3)	(98.3)	(95.7)	(95.7)	(93.9)	(95.7)	(0.0)	(96.3)	49
Northern	84.3	96.7	88.3	75.1	48.1	94.4	86.8	73.4	80.5	58.5	78.2	2.5	82.1	76
Upper East	(97.0)	(100.0)	(100.0)	(95.8)	(72.2)	(100.0)	(100.0)	(92.6)	(96.5)	(87.8)	(96.6)	(0.0)	(98.6)	28
Upper West	92.1	96.7	96.7	94.8	66.0	98.1	94.8	94.8	96.7	88.8	96.7	1.9	93.1	18
Maternal education														
No education	91.0	97.2	93.8	84.5	51.9	97.0	92.3	83.3	86.2	73.0	84.4	2.3	86.7	170
Primary	98.2	97.3	95.8	90.1	72.5	96.7	94.2	88.0	89.5	82.0	88.7	0.0	90.9	140
Middle/JSS	98.3	98.7	97.1	91.8	74.1	99.0	97.2	89.0	93.2	83.5	92.3	0.8	84.6	194
Secondary +	95.7	100.0	94.6	88.1	89.9	92.3	90.2	82.0	93.9	73.5	93.6	0.0	73.5	48
Total	95.8	98.0	95.5	88.8	68.2	97.2	94.3	86.4	90.2	79.0	89.1	1.0	85.9	552
Total vaccinated by 12 months	95.6	97.6	95.2	87.7	68.2	96.8	93.7	84.7	79.9	69.8	77.8	1.6	85.9	552

Note: Figures in parentheses are based on 25 to 49 unweighted cases.

¹ Polio 0 is the polio vaccination given at birth.

² BCG, measles and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth)

Overall, 79 percent of children 12-23 months are fully vaccinated (70 percent were fully vaccinated by 12 months of age). Only 1 percent of children have not received any vaccines. Looking at coverage for specific vaccines received at any time before the survey, 96 percent of children have received the BCG vaccination, 98 percent the first DPT dose and 97 percent the first polio dose (polio 1). Coverage declines for subsequent doses, with 89 percent of children receiving the recommended three doses of DPT and 86 percent receiving all three doses of polio. These figures reflect dropout rates of 9 percent for DPT and 11 percent for polio; the dropout rate represents the proportion of children who receive the first dose of a vaccine but do not go on to get the third dose. The proportion of children vaccinated against measles and yellow fever is 90 percent and 89 percent, respectively.

Differentials in coverage levels are also presented in Table 9. There is little difference in the proportions of children fully vaccinated by sex of the child or by urban/rural residence. Boys and rural children (80 percent and 79 percent, respectively) are slightly more likely to be fully vaccinated compared with girls and urban children (78 percent each). Coverage falls to below 60 percent for children residing in the Northern Region. Children whose mothers attended only primary or middle/JSS school are more likely to be fully vaccinated,

than children whose mothers have no education. Surprisingly, children born to mothers who attended secondary school or higher are among the least likely to be fully vaccinated, similarly to those born to mothers with no education (74 and 73 percent, respectively).

The data indicate that there has been a marked increase in vaccination coverage since 2003, from 69 percent fully immunized at any time before the survey in 2003 to 79 percent in 2008. The coverage levels for various vaccines have also improved, with the proportion not receiving any of the vaccines dropping from 5 percent to 1 percent over the past five years.

Treatment of Childhood Illnesses

Acute respiratory illness, malaria, and dehydration from severe diarrhoea are major causes of childhood mortality in Ghana. Prompt medical attention for children experiencing the symptoms of these illnesses is, therefore, crucial in reducing child deaths. To obtain information on how childhood illnesses are treated, mothers were asked (for each child under five years) whether in the two weeks before the survey the child had experienced cough with short, rapid breathing (symptoms of an acute respiratory infection), fever, and diarrhoea.

Among all children under five years of age, 6 percent were reported to have had a cough with short rapid breathing in the two weeks before the survey, and one-fifth (20 percent) were reported to have had a fever (data not shown). Table 10 shows that treatment was sought from a health provider only for half of these children. Further discussion on differentials of treatment-seeking behaviour by background characteristics is limited to fever, as the number of ARI cases is too few to be statistically reliable. Children between the ages of 12-23 months are more likely than younger or older children to be taken to a health facility or provider for treatment of symptoms of fever. Girls are somewhat more likely to be taken to a provider than boys (53 percent versus 49 percent). Not surprisingly, urban children are more likely to be taken for treatment (60 percent) than rural children (46 percent). Regional differentials in the treatment of ARI, fever and diarrhoea are not included because of the small number of cases.

According to the mother's report, 20 percent of children under five had diarrhoea at some time in the two-week period before the GDHS survey (data not shown). Table 10 looks at the treatment of diarrhoeal illness. Only one in four children who were ill with diarrhoea was taken to a health provider. Children 6-23 months are most likely to receive treatment from a medical provider. Differences in treatment-seeking behaviour by gender or urban/rural residence are small.

Oral rehydration therapy (ORT), which involves a prompt increase in the child's intake of fluids and electrolytes, is a simple and effective response to diarrhoeal illness. Mothers reported that slightly over half of the children with diarrhoea were treated with some form of oral rehydration therapy (ORT), and 45 percent were given a solution prepared from a packet of oral rehydration salts (ORS). Overall, some form of ORT is most likely to be given to children age 12-23 months, girls, and children in urban areas. Additionally, the likelihood that a child will receive ORT increases with the mother's level of education.

Table 10 Treatment for acute respiratory infection, fever, and diarrhoea

Among children under five years who were sick with a cough accompanied by short, rapid breathing or with difficulty breathing due to chest congestion (symptoms of acute respiratory infection—ARI) or with fever in the two weeks preceding the survey, percentage for whom treatment was sought from a health facility or provider, and among children under five years who were sick with diarrhoea during the two weeks preceding the survey, percentage for whom treatment was sought from a health facility or provider, percentage given a solution made from oral rehydration salt (ORS) packets or given prepackaged ORS liquids, and percentage given any oral rehydration therapy (ORT) by background characteristics, Ghana 2008

Background characteristic	Children with symptoms of ARI		Children with fever		Children with diarrhoea			
	Percentage for whom treatment was sought from a health facility/provider ¹	Number with ARI	Percentage for whom treatment was sought from a health facility/provider ¹	Number with fever	Percentage for whom treatment was sought from a health facility/provider ¹	Percentage given solution from ORS packet ²	Percentage given any ORT ³	Number with diarrhoea
Age in months								
<6	*	10	*	17	(35.2)	(33.4)	(35.2)	31
6-11	*	15	48.2	57	44.3	34.6	41.1	82
12-23	(55.3)	41	56.2	144	48.6	53.8	62.6	180
24-35	(56.2)	29	50.7	120	37.5	45.4	51.2	110
36-47	(48.7)	31	45.3	118	34.5	45.3	55.7	74
48-59	*	25	51.3	88	31.9	34.2	40.8	65
Sex								
Male	49.6	73	48.8	294	40.1	44.5	50.8	274
Female	51.8	77	52.9	249	41.9	44.5	53.0	268
Residence								
Urban	(52.5)	53	59.6	197	37.5	49.2	55.5	181
Rural	49.7	97	45.7	347	42.8	42.2	50.1	361
Mother's education								
No education	40.6	42	45.8	173	41.3	42.7	47.3	212
Primary	(44.1)	43	44.9	152	36.8	44.2	52.5	132
Middle/JSS	(61.0)	52	55.4	169	42.2	45.5	55.6	175
Secondary +	*	13	69.6	50	*	*	*	23
Total	50.7	150	50.7	544	41.0	44.5	51.9	542

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25 to 49 unweighted cases.

¹ Excludes pharmacy, shop, and traditional practitioner

² Includes ORS from packets and prepackaged ORS liquids

³ Includes ORS from packets, prepackaged ORS liquids, and recommended home fluid

Ownership and Use of Insecticide-Treated Mosquito Nets

One of the strongest weapons in the fight against malaria is the use of insecticide-treated mosquito nets (ITNs) while sleeping. Research has shown that malaria incidence rates fall dramatically with the use of ITNs. In the 2008 GDHS, data were collected on whether or not households owned mosquito nets and if so, how many. Respondents were also asked a number of questions about each net they owned, including whether it had been treated with insecticide and if so, how many months ago it was most recently treated. Finally, household respondents were asked to report the specific people in the household who had slept under each net the night prior to the survey.

Less than half (45 percent) of households report owning a mosquito net (Table 11); about one-third (33 percent) of households have an insecticide-treated net. This is a marked increase from 3 percent of households with an ITN reported in the 2003 GDHS. Although 41 percent of children under five and 32 percent of pregnant women were reported to have slept under a mosquito net the night preceding the survey, only 28 percent of children and 20 percent of pregnant women slept under a treated bednet.

Pregnant women who carry the malaria parasite may be at risk of serious problems that can jeopardize their own health, and that of the foetus, and that increase the likelihood of pregnancy complications that may result in stillbirth, spontaneous abortion, and low birth weight. As a protective measure, the World Health Organization recommends that pregnant women receive intermittent preventive treatment (IPT) using two doses of sulfadoxine-pyrimethamine (SP/Fansidar) during the second and early in the third trimester of pregnancy. Appropriate treatment of malaria is the use of recommended drugs including Artemisinin Combination Therapy (ACT): Artesunate with Amodiaquine combination, or Artemether-Lumefantrine combination.

Table 11 Malaria indicators

Possession and use of mosquito nets, preventive malaria treatment during pregnancy, and treatment of children with fever using antimalarial drugs, by urban-rural residence, Ghana 2008

Malaria indicators	Urban		Rural		Total	
	Percentage	Number	Percentage	Number	Percentage	Number
Mosquito nets						
Percentage of households with at least one mosquito net (treated or untreated)	37.2	5,627	53.0	6,150	45.4	11,777
Percentage of households with at least one insecticide-treated net (ITN) ¹	27.2	5,627	37.5	6,150	32.6	11,777
Percentage of children under five who slept under a mosquito net (treated or untreated) the night before the survey	34.2	2,229	45.4	3,561	41.1	5,790
Percentage of children under five who slept under an insecticide-treated net (ITN) the night before the interview ¹	24.2	2,229	30.7	3,561	28.2	5,790
Percentage of pregnant women age 15-49 who slept under a mosquito net (treated or untreated) the night before the interview	18.9	145	40.6	208	31.7	353
Percentage of pregnant women age 15-49 who slept under an insecticide-treated net (ITN) the night before the interview ¹	12.6	145	24.9	208	19.9	353
Preventive malaria treatment during pregnancy						
Percentage of last births in the five years preceding the survey for which the mother took antimalarial drugs for prevention during the pregnancy	80.4	844	69.3	1,255	73.8	2,099
Percentage of last births in the five years preceding the survey for which the mother got intermittent preventive treatment (IPT) during an antenatal visit ²	42.8	844	39.6	1,255	40.9	2,099
Treatment of fever						
Among children under five with fever in the two weeks preceding the survey, percentage who took antimalarial drugs	52.6	197	37.5	347	43.0	544
Among children under five with fever in the two weeks preceding the survey, percentage who took antimalarial drugs the same day/next day after developing fever	27.5	197	22.0	347	24.0	544
Among children under five with fever in the two weeks preceding the survey, percentage who took ACT drugs the same day/next day after developing fever ³	17.1	197	9.3	347	12.1	544

¹ An insecticide-treated net (ITN) is a permanent net that does not require any treatment, a pretreated net obtained within the past 12 months or a net that has been soaked with insecticide within the past 12 months.

² Intermittent preventive treatment (IPT) is preventive treatment with at least two doses of SP/Fansidar during antenatal visits.

³ Artemisinin Combination Therapy (ACT) = Artesunate with Amodiaquine combination, or Artemether-Lumefantrine combination

Table 11 also shows that in the five years preceding the survey, women took antimalarial medicine during the pregnancy for the most recent birth for 74 percent of births; although in the case of only 41 percent of births did they take SP (Fansidar), the drug recommended for preventive treatment during pregnancy.

Four in ten children who had a fever in the two weeks before the survey were reported to have taken an antimalarial medicine. Rural children who had fever are slightly less likely than urban children to receive antimalarial medicine (38 and 53 percent, respectively). Similarly, rural children are less likely than urban children to start medication on the same day after developing fever (22 and 28 percent, respectively) and even less were given ACT (9 percent rural and 17 percent urban).

Breastfeeding and Supplementation

Breastfeeding practices and the introduction of supplemental foods are important determinants of the nutritional status of children, particularly for those under the age of two years. With improved nutritional status, the risk of mortality among children under five can be reduced and their development enhanced. Breast milk is uncontaminated and contains all the nutrients needed by children in the first four to six months of life. Supplementing breast milk before four months of age is unnecessary and is discouraged, since the likelihood of contamination and the resulting risk of diarrhoeal disease are high. Table 12 shows the breastfeeding practices of mothers of children under three years of age.

Table 12 Breastfeeding status by age

Among youngest children under three years living with their mother, percent distribution by breastfeeding status and the percentage currently breastfeeding, and among all children under three years, percentage using a bottle with a nipple, according to age in months, Ghana 2008

Age in months	Percent distribution of youngest children under three living with their mother by breastfeeding status							Percentage currently breastfeeding	Number of youngest children under three years	Percentage using a bottle with a nipple ¹	Number of all children under three years
	Not breast-feeding	Exclusively breastfed	Breastfeeding and consuming:				Total				
			Plain water only	Non-milk liquids/juice	Other milk	Complementary food					
0-1	0.0	84.3	9.4	0.0	2.9	3.4	100.0	100.0	82	5.4	85
2-3	0.0	60.3	22.5	0.4	3.7	13.0	100.0	100.0	117	13.9	122
4-5	1.2	49.4	15.8	1.3	1.1	31.1	100.0	98.8	109	10.8	111
6-8	2.2	5.3	18.8	0.0	0.9	72.8	100.0	97.8	147	21.1	150
9-11	4.0	0.9	8.3	0.8	0.5	85.6	100.0	96.0	150	12.0	152
12-17	7.0	1.2	1.4	0.6	0.4	89.4	100.0	93.0	305	9.3	312
18-23	46.6	0.0	1.8	0.0	0.7	50.9	100.0	53.4	224	8.7	239
24-35	89.8	0.0	0.0	0.0	0.0	10.2	100.0	10.2	358	3.9	496
0-3	0.0	70.2	17.1	0.2	3.4	9.1	100.0	100.0	198	10.4	206
0-5	0.4	62.8	16.7	0.6	2.6	16.9	100.0	99.6	308	10.5	317
6-9	2.9	4.1	15.9	0.7	1.1	75.3	100.0	97.1	188	20.3	191
12-15	5.5	1.5	2.3	0.0	0.7	90.0	100.0	94.5	191	11.9	194
12-23	23.8	0.7	1.6	0.3	0.5	73.1	100.0	76.2	530	9.1	552
20-23	56.1	0.0	0.9	0.0	0.0	42.9	100.0	43.9	138	11.3	152

Note: Breastfeeding status refers to a 24-hour period (yesterday and the past night). Children who are classified as *breastfeeding and consuming plain water only* consumed no liquid or solid supplements. The categories of not breastfeeding, exclusively breastfed, breastfeeding and consuming plain water, non-milk liquids/juice, other milk, and complementary foods (solids and semi-solids) are hierarchical and mutually exclusive, and their percentages add to 100 percent. Any children who get complementary food are classified in that category as long as they are breastfeeding as well. A breastfeeding child who receives other milk but not complementary foods is classified in the Other Milk category. Children who receive breast milk and non-milk liquids and who do not receive other milk and who do not receive complementary foods are classified in the non-milk liquid category even though they may also get plain water.

¹ Based on all children under three years

The duration of breastfeeding in Ghana is long; at age 9-11 months, 96 percent of children are still being breastfed, and at 20-23 months, nearly half (44 percent) are still breastfed. By 24-35 months, only 10 percent are being breastfed, most children having been weaned.

Among children under 6 months of age, 100 percent are being breastfed. However, only about two-thirds (63 percent) are exclusively breastfed, as recommended. In addition to breast milk, 3 percent are given non-breast milk, 17 percent are given water or other liquids, and 17 percent are given solid or mushy food. Although the majority of Ghanaian children continue to breastfeed through seventeen months of age, almost all receive supplements in addition to breast milk.

Bottle-feeding is not widespread in Ghana; about 5 percent of babies under 2 months are fed with a bottle with a teat. This proportion climbs to 14 percent for children age 2-3 months, peaking at 21 percent at age 6-8 months, before beginning to decline.

There is an apparent increase in exclusive breastfeeding among children less than six months of age from 53 percent in 2003 GDHS to 63 percent in 2008.

Nutritional Status of Children

Malnutrition places children at increased risk of morbidity and mortality and has also been shown to be related to impaired mental development. Anthropometry provides one of the most important indicators of children's nutritional status.

The height and weight data are used to compute three summary indices of nutritional status: height-for-age; weight-for-height; and weight-for-age. These three indices are expressed as standardized scores (z-scores) or standard deviation units from the median for the international reference population that was recently developed by the World Health Organization (WHO, 2006). Children who fall more than two standard deviations below the reference median are regarded as undernourished, while those who fall more than three standard deviations below the reference median are considered severely undernourished.

Table 13 shows the nutritional status among children under five years of age by selected background characteristics. Children whose height-for-age is below minus two standard deviations from the median of the reference population are considered stunted or short for their age. Stunting is the outcome of failure to receive adequate nutrition over an extended period and is also affected by recurrent or chronic illness. According to the 2008 GDHS findings, 28 percent of Ghanaian children are stunted, with 10 percent being severely stunted. Stunting becomes more widespread among older children; one in four children age 12-17 months is stunted, and stunting peaks at 40 percent among children age 18-23 months. Stunting levels are slightly higher for boys than girls and markedly higher for rural children (32 percent) than for urban children (21 percent). The prevalence of stunting varies by region from 14 percent in Greater Accra to 38 and 36 percent in the Eastern and Upper East regions, respectively. Children of mothers with at least some secondary education are considerably less likely to be stunted than children whose mothers achieved only the primary level or never attended school.

Children whose weight-for-height is below minus two standard deviations from the median of the reference population are considered wasted (or thin). Wasting represents the failure to receive adequate nutrition in the period immediately before the survey and typically is the result of recent illness episodes, especially diarrhoea, or of a rapid deterioration in food supplies. Table 13 shows that 9 percent of Ghanaian children are wasted, with 2 percent severely wasted. Wasting levels are highest at ages 6-11 months which is unusual since it is before the time the child is being weaned and thus more vulnerable to illness. Wasting is more common in the Upper West Region than elsewhere.

Table 13 Nutritional status of children

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, by background characteristics, Ghana 2008

Background characteristic	Height-for-age		Weight-for-height			Weight-for-age		Number of children
	Percentage below -3 SD	Percentage below -2 SD ¹	Percentage below -3 SD	Percentage below -2 SD ¹	Percentage above +2 SD	Percentage below -3 SD	Percentage below -2 SD ¹	
Age in months								
<6	2.2	4.3	6.0	16.1	5.8	3.7	7.8	200
6-8	5.1	10.3	5.8	28.9	5.6	4.8	16.0	123
9-11	6.3	16.7	5.5	20.8	7.2	7.7	17.8	146
12-17	6.4	22.5	4.2	12.8	6.2	3.4	14.9	282
18-23	12.8	39.9	2.5	9.6	3.5	6.7	19.0	223
24-35	12.6	32.6	0.7	3.8	5.4	2.3	13.6	487
36-47	13.8	33.4	0.6	4.1	6.2	2.2	15.1	511
48-59	8.9	32.3	0.7	3.4	3.8	1.4	11.2	553
Sex								
Male	11.0	29.6	2.2	9.2	5.0	3.7	15.4	1,282
Female	8.6	26.2	2.2	7.7	5.5	2.6	12.4	1,243
Residence								
Urban	6.8	21.1	1.5	7.6	6.7	1.6	10.6	975
Rural	11.7	32.3	2.6	9.1	4.3	4.1	16.0	1,550
Region								
Western	10.8	27.0	2.2	5.6	5.9	2.5	10.3	236
Central	14.1	33.7	1.7	12.0	9.7	5.4	17.2	246
Greater Accra	2.5	14.2	0.5	5.9	4.9	0.5	6.5	277
Volta	8.1	26.8	2.2	5.2	7.9	3.6	13.6	228
Eastern	12.3	37.9	3.7	6.4	12.0	2.0	8.7	216
Ashanti	7.4	26.5	2.6	9.2	3.7	4.2	12.1	507
Brong Ahafo	8.0	25.2	0.0	5.4	2.8	1.4	13.5	274
Northern	15.4	32.4	3.4	12.9	2.0	3.4	21.8	360
Upper East	13.8	36.0	2.9	10.8	1.3	5.5	27.0	116
Upper West	7.9	24.6	3.9	13.9	3.0	3.3	13.1	66
Maternal education²								
No education	12.2	30.0	3.6	11.5	4.6	3.8	17.3	753
Primary	10.2	31.6	2.1	7.6	5.0	3.4	13.5	553
Middle/JSS	7.3	24.8	1.6	8.4	5.4	2.7	12.4	795
Secondary +	5.7	18.0	1.2	5.0	8.0	0.6	6.6	200
Mother's status								
Interviewed	9.3	27.5	2.3	8.9	5.3	3.1	13.7	2,265
Not interviewed, but in household	14.8	30.3	3.8	8.9	4.0	3.5	15.6	42
Not interviewed, not in household ³	13.9	33.0	0.5	4.4	5.3	4.0	15.6	216
Total	9.8	28.0	2.2	8.5	5.3	3.1	13.9	2,525

Note: Table is based on children who slept in the household the night before the interview. Each of the indices is expressed in standard deviation units (SD) from the median of the WHO Child Growth Standards adopted in 2006. The indices in this table are NOT comparable to those based on the previously used NCHS/CDC/WHO standards. Total includes children with information missing on maternal education and maternal status who are not shown separately. Table is based on children with valid dates of birth (month and year) and valid measurement of both height and weight.

¹ Includes children who are below -3 standard deviations (SD) from the International Reference Population median

² For women who are not interviewed, information is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire

³ Includes children whose mothers are deceased

Table 13 highlights another problem among young children in Ghana: 5 percent are overweight. This proportion is quite uniform across age groups. Looking at regional patterns, the prevalence of overweight children ranges from 1 percent in the Upper East Region to 12 percent in the Eastern Region. The likelihood of childhood obesity also increases with the mother's educational level.

Children whose weight-for-age is below minus two standard deviations (-2 SD) from the median of the reference population are considered underweight. The measure reflects the effects of both acute and chronic malnutrition. Fourteen percent of Ghanaian children are underweight, with 3 percent classified as severely underweight. Peak levels of low weight-for-age are found among children aged 18-23 months. Children living in rural areas are more likely to be underweight than urban children (16 percent and 11 percent, respectively). The proportion of underweight children ranges from 7 percent each in Greater Accra to 27 percent in the Upper East Region. Children born to mothers with the lowest level of education are substantially more likely to be underweight. For example, the proportion of underweight children born to women with no education is 17 percent compared with 7 percent of underweight children born to women with more than secondary education.

Anaemia

Anaemia is a major problem in Ghana, especially among young children and pregnant women. Causes of anaemia are malaria—which is endemic in the country—as well as dietary deficiencies and parasitic infections. The 2008 GDHS included anaemia testing of children 6-59 months old in every second household selected for the 2008 GDHS sample. Anaemia levels were determined by measuring the level of haemoglobin in the blood, with a decreased concentration characterizing anaemia. For haemoglobin measurements, a drop of capillary blood was taken with a finger prick (using sterile, disposable instruments). Haemoglobin concentration was measured using the HemoCue photometer system. Trained personnel on each of the 2008 GDHS interviewing team performed the testing procedures on eligible, consenting respondents.

Table 14 presents anaemia prevalence for children age 6-59 months. The results are based on tests of 2,313 children who were present at the time of testing, whose parents consented to their being tested, and whose haemoglobin results represented plausible data. In Table 14, children are classified into three groups according to the level of haemoglobin in their blood:⁴

- Mild: haemoglobin concentration 10.0-10.9 g/dl
- Moderate: haemoglobin concentration 7.0-9.9 g/dl
- Severe: haemoglobin concentration less than 7.0 g/dl

Overall, 78 percent of children age 6-59 months in Ghana have some level of anaemia, including 23 percent of children who are mildly anaemic, 48 percent who are moderately anaemic, and 7 percent of children with severe anaemia. Children living in rural areas (84 percent) are more likely than urban children (68 percent) to be anaemic. Looking at regional patterns, children in the Upper East and Upper West regions (89 percent and 88 percent, respectively) are the most likely to have any anaemia. Moderate anaemia is more prevalent among children from the Upper West Region (64 percent), while children in the Northern and Western regions have the highest rates of severe anaemia (12 percent and 11 percent, respectively).

⁴ The classification is based on criteria developed by WHO (DeMaeyer et al., 1989). Because haemoglobin levels vary by altitude, each child's result was adjusted based on altitude measurements taken in the sample cluster in which the test was carried out.

Table 14 Anaemia among children and women

Percentage of children age 6-59 months classified as having anaemia, by background characteristics, Ghana 2008

Background characteristic	Any anaemia	Percentage with anaemia			Number
		Mild anaemia	Moderate anaemia	Severe anaemia	
Residence					
Urban	67.9	24.8	37.7	5.4	887
Rural	84.1	21.7	53.8	8.7	1,426
Region					
Western	80.4	16.7	52.5	11.2	218
Central	84.5	22.8	56.8	4.9	219
Greater Accra	62.1	31.7	26.2	4.2	267
Volta	78.7	20.1	53.3	5.3	198
Eastern	73.1	26.1	45.3	1.8	211
Ashanti	77.9	23.3	44.8	9.8	453
Brong Ahafo	78.3	25.0	47.1	6.2	249
Northern	81.4	16.0	53.5	11.9	326
Upper East	88.5	31.4	51.4	5.7	109
Upper West	88.2	13.7	64.2	10.3	62
Total	77.9	22.9	47.6	7.4	2,313

Note: Table is based on children who stayed in the household the night before the interview. Prevalence is adjusted for altitude using CDC formulas (CDC, 1998). Children with <7.0 g/dl of hemoglobin have severe anaemia, children with 7.0-9.9 g/dl have moderate anaemia, and children with 10.0-10.9 g/dl have mild anaemia.

The World Health Organization considers the level of anaemia observed among young children in Ghana to be a major-level public health concern.⁵ Compared with estimates from recent Demographic and Health Surveys conducted in the region, the prevalence of any anaemia among children in Ghana (78 percent) is similar to Sierra Leone (76 percent in 2008) and Guinea (76 percent in 2005), but lower than the prevalence in Mali (81 percent in 2006) or Senegal (83 percent in 2005) (CPS/MS, DNSI/MEIC [Mali] and Macro International Inc., 2007; DNS [Guinée] and ORC Macro, 2006; Ndiaye et al., 2006; CRDH [Sénégal] and ORC Macro, 2005; GSS, NMIMR [Ghana], and ORC Macro, 2004).

Over the past five years, the prevalence of anaemia among children age 6-59 months has remained steady at 78 percent (76 percent in 2003).

H. Infant and Child Mortality

Information on infant and child mortality is useful in identifying segments of the population that are at high risk so that programmes can be designed to reduce it. Childhood mortality rates are also basic indicators of a country's socio-economic level and quality of life. Caution should be taken in interpreting the mortality information presented in this report because it uses information from the birth history in the Women's Questionnaire to construct the rates. It is known that in some communities, women are reluctant to discuss their dead children, which could lead to underestimation of the childhood mortality rates.

⁵ WHO considers anaemia prevalence of over 40 percent in a population as a major public health problem, from 20-40 percent as a medium-level public health problem, and 5-20 percent as a mild public health problem (World Health Organization, 2001).

Table 15 presents infant and under-five mortality rates from the 2008 GDHS and from the earlier GDHS surveys. The level of under-five mortality is 80 deaths per 1,000 births during the five-year period before the 2008 GDHS, implying that 1 in every 13 children born in Ghana dies before reaching their fifth birthday. The infant mortality rate recorded in the 2008 GDHS was 50 deaths per 1,000 live births.

Comparison of the 2008 GDHS mortality rates with the earlier GDHS results shows a decrease in both infant and under-five mortality rates over the past five years. A more detailed analysis of mortality data, its quality, and differentials will be presented in the final report.

Table 15 Trends in early childhood mortality rates
Infant and under-five mortality, Ghana, 1983-2008

Survey year	Approximate calendar period	Infant mortality (${}_1q_0$)	Under-five mortality (${}_5q_0$)
1988	1983-1987	77	155
1993	1989-1993	66	119
1998	1994-1998	57	108
2003	1999-2003	64	111
2008	2004-2008	50	80

I. HIV/AIDS

Acquired immune deficiency syndrome (AIDS) is one of the most serious public health challenges facing Africa today. The 2008 GDHS included a series of questions that addressed respondents' knowledge about AIDS and their awareness of modes of transmission of the human immunodeficiency virus (HIV) that causes AIDS and of behaviours that can prevent the spread of HIV.

HIV/AIDS Awareness

Table 16 shows that general awareness of AIDS is nearly universal among women and men of reproductive age in Ghana, with little difference by background characteristics.

Table 16 Knowledge of AIDS

Percentage of women and men who have heard of AIDS, by background characteristics, Ghana 2008

Background characteristic	Women		Men	
	Has heard of AIDS	Number of women	Has heard of AIDS	Number of men
Age				
15-24	98.2	1,902	98.8	1,615
15-19	97.6	1,025	98.2	911
20-24	98.9	878	99.5	704
25-29	99.1	832	99.3	624
30-39	97.5	1,283	99.7	1,061
40-49	98.7	899	99.7	758
Marital status				
Never married	98.7	1,593	98.9	1,936
Ever had sex	99.3	819	99.7	984
Never had sex	97.9	774	98.0	952
Married or living together	98.0	2,876	99.6	1,950
Divorced/separated/widowed	98.5	446	100.0	172
Residence				
Urban	99.5	2,383	99.8	1,866
Rural	97.0	2,533	98.8	2,191
Region				
Western	97.1	447	99.5	403
Central	98.3	424	100.0	326
Greater Accra	99.2	853	99.9	649
Volta	99.4	431	99.5	373
Eastern	100.0	483	99.8	411
Ashanti	99.6	1,011	99.7	785
Brong Ahafo	99.4	425	99.5	347
Northern	91.4	467	95.5	435
Upper East	99.5	253	99.6	219
Upper West	93.1	122	99.2	108
Education				
No education	94.3	1,042	97.0	540
Primary	98.0	988	98.9	619
Middle/JSS	99.6	2,039	99.6	1,721
Secondary +	100.0	844	99.9	1,167
Total 15-49	98.2	4,916	99.2	4,058
Men 50-59	na	na	99.0	510
Total 15-59	na	na	99.2	4,568

Note: Total includes respondents with information missing on education who are not shown separately
na = Not applicable

Table 17 shows that 76 percent of women and 82 percent of men know that consistent use of condoms is a means of preventing the spread of HIV. About nine in ten women and men know that limiting sexual intercourse to one faithful and uninfected partner can reduce the chances of contracting HIV.

Table 17 Knowledge of HIV prevention methods

Percentage of women and men age 15-49 who, in response to prompted questions, say that people can reduce the risk of getting the AIDS virus by using condoms every time they have sexual intercourse, by having one uninfected sex partner who has no other partners, and by abstaining from sexual intercourse, by background characteristics, Ghana 2008

Background characteristic	Percentage of women who think that HIV can be prevented by:					Percentage of men who think that HIV can be prevented by:				
	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms, and limiting sexual intercourse to one uninfected partner ^{1,2}	Abstaining from sexual intercourse	Number of women	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms, and limiting sexual intercourse to one uninfected partner ^{1,2}	Abstaining from sexual intercourse	Number of men
Age										
15-24	74.9	82.3	65.9	79.8	1,902	82.5	87.3	76.1	80.4	1,615
15-19	73.8	80.6	63.9	78.7	1,025	82.4	85.9	75.4	80.5	911
20-24	76.1	84.4	68.3	81.0	878	82.5	89.1	77.1	80.4	704
25-29	80.2	88.4	73.7	80.4	832	82.4	89.3	77.9	82.0	624
30-39	76.0	85.9	69.7	79.3	1,283	83.7	88.9	78.6	81.9	1,061
40-49	73.8	87.1	67.9	81.6	899	80.4	89.3	74.9	81.3	758
Marital status										
Never married	75.3	83.2	66.3	80.0	1,593	83.3	88.0	77.5	81.5	1,936
Ever had sex	78.6	86.8	71.7	80.3	819	85.7	91.1	81.4	83.6	984
Never had sex	71.8	79.4	60.6	79.6	774	80.9	84.9	73.4	79.4	952
Married or living together	75.7	85.9	69.4	79.9	2,876	81.8	89.1	76.7	81.2	1,950
Divorced/separated/widowed	78.8	87.4	71.6	81.6	446	79.0	84.4	71.6	78.4	172
Residence										
Urban	79.3	88.1	72.8	82.4	2,383	82.8	89.6	77.5	82.2	1,866
Rural	72.6	82.4	64.6	78.0	2,533	82.1	87.4	76.2	80.4	2,191
Region										
Western	84.1	75.0	65.2	82.1	447	80.4	92.1	75.5	71.8	403
Central	84.2	90.7	79.7	86.2	424	92.2	95.3	88.2	92.7	326
Greater Accra	75.8	88.3	71.1	84.3	853	85.0	88.6	79.3	86.9	649
Volta	80.2	92.5	76.4	80.6	431	91.5	95.4	88.3	88.3	373
Eastern	78.5	83.0	69.0	78.8	483	73.9	76.6	61.1	69.0	411
Ashanti	76.6	84.1	67.9	75.2	1,011	84.1	91.4	80.1	83.7	785
Brong Ahafo	78.4	86.4	70.6	84.4	425	86.2	93.6	82.9	84.3	347
Northern	58.2	78.7	54.2	74.7	467	61.6	73.2	53.6	66.6	435
Upper East	68.3	92.6	65.9	83.1	253	90.4	90.5	86.1	90.1	219
Upper West	59.7	76.8	54.6	66.5	122	89.1	91.7	83.5	82.8	108
Education										
No education	64.7	80.1	58.8	74.8	1,042	71.0	81.1	64.8	76.1	540
Primary	77.3	83.9	68.7	78.1	988	84.4	86.3	78.0	84.4	619
Middle/JSS	79.2	86.5	71.5	82.0	2,039	83.1	88.8	76.8	80.0	1,721
Secondary +	79.7	89.5	73.5	84.4	844	85.7	92.2	81.9	83.7	1,167
Total 15-49	75.9	85.2	68.6	80.1	4,916	82.4	88.4	76.8	81.2	4,058
Men 50-59	na	na	na	na	na	82.0	92.3	79.2	82.3	510
Total 15-59	na	na	na	na	na	82.4	88.8	77.1	81.4	4,568

Note: Total includes respondents with information missing on education who are not shown separately

na = Not applicable

¹ Using condoms every time they have sexual intercourse

² Partner who has no other partners

A large majority of women and men age 15-49 know that abstinence is a way of reducing the chances of getting HIV. However, lower proportions of respondents (69 percent of women and 77 percent of men) said that people can reduce the chances of getting the AIDS virus by using condoms and limiting sex to one uninfected partner.

Younger women, those women who have never had sex, women from rural areas, and women living in the Northern and Upper West regions are less likely than other women to know ways to avoid getting the AIDS virus. There is a strong positive relationship between respondent's education and her knowledge of ways to prevent HIV. For example, 59 percent of women with no education say that the risk of getting the AIDS virus can be reduced by using condoms and limiting sex to one uninfected partner, compared with 74 percent of women with secondary school or higher.

Men are more aware than women of ways to avoid AIDS. As is the pattern among women, the least educated men are less likely than other men to know ways to avoid getting the AIDS virus. There are noticeable variations by residence. As with women, men from the Northern Region are less likely to be aware of safe sexual practices than men from other regions. However, differences by urban-rural residence or age are small.

Higher-Risk Sexual Intercourse

Respondents were also asked some detailed questions about their sexual behaviour, including the number of partners they had had in the 12 months preceding the survey and whether they had sex with someone who was not a spouse or cohabiting partner (higher-risk sex). Women and men were also asked about condom use. Results are shown in Table 18.1 for women and Table 18.2 for men.

Results show that only 2 percent of women who had sex in the 12 months before the survey report having more than one sexual partner in that time period. This is considerably lower than the level of 17 percent among men age 15-49. Similarly, only 23 percent of women, compared with 42 percent of men, report that they had sex in the previous 12 months with someone who was not a spouse or marital partner.

Table 18.1 Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Women

Among women age 15-49 who had sexual intercourse in the past 12 months, the percentage who had intercourse with more than one partner and the percentage who had higher-risk sexual intercourse in the past 12 months, and among those having higher-risk intercourse in the past 12 months, percentage reporting that a condom was used at last higher-risk intercourse, by background characteristics, Ghana 2008

Background characteristic	Among women who had sexual intercourse in the past 12 months:			Among women who had higher-risk intercourse in the past 12 months:	
	Percentage who had 2+ partners in the past 12 months	Percentage who had higher-risk intercourse in the past 12 months ¹	Number of women	Percentage who reported using a condom at last higher-risk intercourse ¹	Number of women
Age					
15-24	2.8	52.3	946	28.2	495
15-19	4.1	73.6	297	24.4	218
20-24	2.2	42.5	649	31.1	276
25-29	2.1	20.9	675	31.3	141
30-39	0.6	9.0	1,060	11.0	95
40-49	0.3	6.6	666	(6.3)	44
Marital status					
Never married	5.6	99.4	598	29.6	595
Married/living together	0.4	1.7	2,559	(10.7)	45
Divorced/separated/widowed	2.5	71.1	191	11.7	135
Residence					
Urban	1.8	28.5	1,538	30.4	439
Rural	1.1	18.5	1,809	18.9	336
Region					
Western	1.3	17.6	301	14.4	53
Central	0.7	22.8	309	28.9	71
Greater Accra	1.2	29.6	559	41.4	165
Volta	0.7	14.8	307	(13.3)	45
Eastern	3.4	31.1	338	32.3	105
Ashanti	1.7	30.1	719	15.3	216
Brong Ahafo	1.0	16.9	314	(16.6)	53
Northern	0.9	10.4	271	(20.6)	28
Upper East	1.8	14.5	157	(34.9)	23
Upper West	2.5	20.1	73	30.6	15
Education					
No education	0.3	6.5	756	12.4	49
Primary	1.6	19.1	716	11.8	137
Middle/JSS	1.6	27.3	1,360	22.4	371
Secondary +	2.7	42.4	512	41.8	217
Total	1.5	23.1	3,348	25.4	775

Note: Figures in parentheses are based on 25 to 49 unweighted cases. Total includes women with information missing on education who are not shown separately

¹ Sexual intercourse with a non-marital, non-cohabiting partner

Table 18.2 Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Men

Among men age 15-49 who had sexual intercourse in the past 12 months, the percentage who had intercourse with more than one partner and the percentage who had higher-risk sexual intercourse in the past 12 months, and among those having higher-risk intercourse in the past 12 months, percentage reporting that a condom was used at last higher-risk intercourse, by background characteristics, Ghana 2008

Background characteristic	Among men who had sexual intercourse in the past 12 months:			Among men who had higher-risk intercourse in the past 12 months:	
	Percentage who had 2+ partners in the past 12 months	Percentage who had higher-risk intercourse in the past 12 months ¹	Number of men	Percentage who reported using a condom at last higher-risk intercourse ¹	Number of men
Age					
15-24	17.2	86.4	556	45.9	481
15-19	19.4	96.2	144	39.7	139
20-24	16.5	83.0	412	48.4	342
25-29	20.4	56.0	510	48.1	286
30-39	17.4	28.1	947	44.2	266
40-49	13.8	14.6	688	26.4	101
Marital status					
Never married	20.4	99.1	743	48.5	737
Married/living together	15.7	15.5	1,830	40.9	283
Divorced/separated/widowed	15.4	88.4	128	25.8	114
Residence					
Urban	19.4	48.4	1,245	51.3	603
Rural	15.0	36.4	1,457	36.5	531
Region					
Western	16.9	34.8	276	35.5	96
Central	10.6	46.2	220	46.3	102
Greater Accra	21.2	49.9	460	57.8	230
Volta	17.6	37.5	230	49.4	86
Eastern	16.8	43.8	286	44.9	125
Ashanti	21.5	44.2	550	35.5	243
Brong Ahafo	11.2	45.7	257	35.9	118
Northern	12.5	28.1	230	30.5	65
Upper East	15.1	37.4	133	62.7	50
Upper West	12.4	32.6	58	52.8	19
Education					
No education	10.8	20.3	393	21.8	80
Primary	19.2	44.4	359	31.3	160
Middle/JSS	17.7	40.4	1,137	37.2	459
Secondary +	18.2	53.3	805	60.9	429
Total 15-49	17.0	42.0	2,702	44.3	1,133
Men 50-59	14.9	12.5	427	(37.1)	53
Total 15-59	16.7	37.9	3,129	44.0	1,187

Note: Note: Figures in parentheses are based on 25 to 49 unweighted cases. Total includes men with information missing on education who are not shown separately

¹ Sexual intercourse with a non-marital, non-cohabiting partner

As expected, higher-risk sex is more common among women and men who are young and who have never married, as well as among urban respondents, those in Greater Accra, and those with more education. Sixteen percent of currently married men had sex with someone other than their wife or partner.

Condom Use During the Last Higher-Risk Sexual Intercourse

Condom use is one aspect of AIDS prevention initiatives. The correct and consistent use of latex condoms during sexual intercourse—vaginal, anal, or oral—can greatly reduce a person's risk of acquiring or transmitting most sexually transmitted infections (STIs), including HIV infection. Tables 18.1 and 18.2 present information on condom use among women and men during the last higher-risk intercourse with someone who was not a spouse or cohabiting partner. The data are based on respondents who were sexually active during the year preceding the survey and who had higher-risk sexual intercourse. Overall, 25 percent of women and 44 percent of men reported that a condom was used during their last higher-risk sexual intercourse, indicating that men are almost twice as likely to practice safe sex as women.

The results indicate that condom use was higher among respondents age 20-29, those living in urban areas, those in the Greater Accra, and those who attended secondary school. For example, only 22 percent of men with no education used a condom during their last higher-risk sexual intercourse, compared with 61 percent of men with more than secondary education; the comparable figures for women are 12 and 42 percent, respectively.

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