Ghana Maternal Health Survey 2007

Ghana
Maternal Health Survey
2007

Ghana Statistical Service
Accra, Ghana

Ghana Health Service
Accra, Ghana

Macro International Inc.
Calverton, Maryland, U.S.A.

May 2009

Ghana Statistical Service

Cover photos (clockwise, from top left): © 2008 Erberto Zani, Courtesy of Photoshare; © 2003 Melissa May, Courtesy of Photoshare; © 2003 Melissa May, Courtesy of Photoshare; © 2004 Helen Nowak, Courtesy of Photoshare

Information about the Ghana Maternal Health Survey 2007 may be obtained from ICF Macro (formerly Macro International Inc.), Suite 300, 11785 Beltsville Drive, Calverton, MD 20705, U.S.A. (Telephone: 301-572-0200; Fax: 301-572-0999). Additional information may be obtained from the Ghana Statistical Service, P.O. Box 1098, Accra, Ghana (Telephone: (233-21) 671-732/664-319/682-656; Fax: (233-21) 671-731/664-304). The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the Government of Ghana or donor organizations.

Suggested citation:

Ghana Statistical Service (GSS), Ghana Health Service (GHS), and Macro International. 2009. *Ghana Maternal Health Survey 2007.* Calverton, Maryland, USA: GSS, GHS, and Macro International.

CONTENTS

TABLES AND FIGURES vii
CONTRIBUTORS xiii
FOREWORD xv
SUMMARY OF FINDINGS xvii

1 • INTRODUCTION

1.1 Introduction 1

1.2 Causes of Maternal Mortality 1

1.3 Health Policy and Structure of the Health Care System 2
1.3.1 Structure 2
1.3.2 Financing 2
1.3.3 Health Sector Strategies and Programs 3
1.3.4 Abortion Policy 4

1.4 Safe Motherhood and Reproductive Health Programs in Ghana 4
1.4.1 History 4
1.4.2 Current and Planned Safe Motherhood Policies and Activities 4
1.4.3 Reducing Maternal Morbidity and Mortality Program 7

1.5 Organization of the 2007 GMHS 7
1.5.1 Survey Objectives and Implementing Organizations 7
1.5.2 Survey Design 8
1.5.3 Questionnaires 9
1.5.4 Training and Fieldwork 10
1.5.5 Data Processing 12
1.5.6 Response Rates 12

2 • CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

2.1 Household Population 13
2.1.1 Demographic Characteristics of Households 13
2.1.2 Household Composition 15

2.2 Housing Characteristics 16
2.2.1 Household Possessions 21

2.3 Characteristics of Survey Respondents 22
2.3.1 Background Characteristics 22
2.3.2 Educational Level of Survey Respondents 24
2.3.3 Exposure to Mass Media 26

3 • MATERNAL MORTALITY IN GHANA

3.1 Introduction 31

3.2 Estimates of Pregnancy-Related Mortality from the Sibling History 32

3.3 Estimates of Maternal Mortality from the Phase I Survey 36

3.4 Discussion and Conclusions 39

4 • MATERNITY CARE

4.1 Antenatal Care 41
- 4.1.1 Antenatal Care Coverage 41
- 4.1.2 Number and Timing of Antenatal Care Visits 44
- 4.1.3 Reasons for Seeking or Not Seeking Antenatal Care 47
- 4.1.4 Quality of Antenatal Care 48
- 4.1.5 Tetanus Toxoid Coverage 50
- 4.1.6 Trends in Antenatal Care 52

4.2 Delivery Care 54
- 4.2.1 Place of Delivery 54
- 4.2.2 Assistance at Delivery 56
- 4.2.3 Trends in Delivery Care 58
- 4.2.4 Reasons for Not Delivering at a Health Facility 59
- 4.2.5 Medical Procedures Performed during Delivery 61

4.3 Postnatal Care 63
- 4.3.1 Timing of Postnatal Care 63
- 4.3.2 Postnatal Care Provider 65

4.4 Maternity Complications 67

4.5 Consistent Use of Antenatal Care, Delivery Care, and Postnatal Care 69

5 • ABORTION AND MISCARRIAGE

5.1 Pregnancy Outcomes 73
- 5.1.1 Lifetime Experience with Induced Abortion 75
- 5.1.2 Recent Experience with Abortion or Miscarriage 78
- 5.1.3 Rates of Induced Abortion 79

5.2 Characteristics of Induced Abortion 80
- 5.2.1 Reasons for Induced Abortion and Partner's Attitude 80
- 5.2.2 Actions Taken to End Pregnancy, and Use of Antibiotics, Pain Relief, and Anesthesia for Abortion 83
- 5.2.3 Problems Experienced with Abortion and Treatment Received 85

5.2.4 Characteristics of Abortion among Women Who Took Multiple Actions to End Pregnancy 86
5.2.5 Contraceptive Use and Abortion 88

5.3 Knowledge of Abortion 90
5.3.1 Access to Abortion 92
5.3.2 Knowledge of Laws Regarding Abortion 93

5.4 Miscarriage 95
5.4.1 Causes of Miscarriage 95
5.4.2 Care Received for Miscarriage 97
5.4.3 Problems Following Miscarriage and Treatment Received 97
5.4.4 Contraceptive Use and Miscarriage 99

6 • FERTILITY, CONTRACEPTIVE USE AND CHILDHOOD MORTALITY

6.1 Fertility 101
6.1.1 Introduction 101
6.1.2 Current Fertility 101
6.1.3 Fertility Differentials 102
6.1.4 Fertility Trends 105
6.1.5 Birth Intervals 106
6.1.6 Age of Mothers at First Birth 107
6.1.7 Adolescent Fertility and Motherhood 108

6.2 Contraceptive Use 109

6.3 Childhood Mortality 112
6.3.1 Early Childhood Mortality Rates: Levels and Trends 113
6.3.2 Socioeconomic and Demographic Differentials in Childhood Mortality 114

6.4 Perinatal Mortality 117

6.5 High-risk Childbearing 118

REFERENCES 121

APPENDIX A • Estimates of Overall Adult Mortality 125

APPENDIX B • Sample Implementation 131

APPENDIX C • Data Quality Tables 133

APPENDIX D • Sampling Errors 141

APPENDIX E • Personnel Involved in GMHS 2007 157

APPENDIX F • Questionnaires 161

TABLES AND FIGURES

1 • INTRODUCTION

Table 1.1 Sample allocation 9
Table 1.2 Results of the household and individual interviews (Second phase) 12

2 • CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

Table 2.1 Household population by age, sex, and residence 14
Table 2.2 Household composition 15
Table 2.3 Household characteristics 17
Table 2.4 Background characteristics of respondents 23
Table 2.5 Educational attainment 24
Table 2.6 Exposure to mass media 27

Figure 2.1 Population Pyramid 14
Figure 2.2 Household Headship 16
Figure 2.3 Household Access to Electricity 18
Figure 2.4 Source of Drinking Water 18
Figure 2.5 Type of Toilet Facility 19
Figure 2.6 Flooring Materials 19
Figure 2.7 Rooms for Sleeping 20
Figure 2.8 Cooking Fuel 20
Figure 2.9 Household Possessions 21
Figure 2.10 Means of Transport 21
Figure 2.11 Wealth Quintile by Residence and Region 22
Figure 2.12 Educational Attainment among Women Age 15-49 25
Figure 2.13 Completed Secondary Education or Higher among Women Age 15, by Region 26
Figure 2.14 Media Exposure among Women Age 15-49 28
Figure 2.15 Media Exposure (All Three Media) among Women Age 15-49, by Level of Education 28
Figure 2.16 Media Exposure (All Three Media) among Women Age 15-49, by Region 29

3 • MATERNAL MORTALITY IN GHANA

Table 3.1 Direct estimates of pregnancy-related mortality rates for the past five years 32
Table 3.2 Trends in direct estimates of pregnancy-related mortality rates 33
Table 3.3 Direct estimates of pregnancy-related mortality by age and timing of death 34
Table 3.4 Direct estimates of pregnancy-related mortality by background characteristics 35
Table 3.5 Maternal mortality rates and ratios 37
Table 3.6 Causes of maternal deaths 38

Figure 3.1 Timing of Pregnancy-related Deaths in the Ten Years Preceding the Survey 35
Figure 3.2 Causes of Maternal Deaths in the Ten Years Preceding the Survey 39

4 • MATERNITY CARE

Table 4.1 Antenatal care 42
Table 4.2 Number of antenatal care visits and timing of first visit 44
Table 4.3 Number of antenatal care visits by background characteristics 46
Table 4.4 Components of antenatal care 49
Table 4.5 Tetanus toxoid injections 51
Table 4.6 Place of delivery 55
Table 4.7 Assistance during delivery 57
Table 4.8 Reasons for not delivering in a health facility 60
Table 4.9 Procedures performed during delivery 62
Table 4.10 Timing of first postnatal checkup 64
Table 4.11 Postnatal care provider 66
Table 4.12 Antenatal, delivery, and postnatal care received from medically trained persons 70

Figure 4.1 Antenatal Care by Provider 43
Figure 4.2 Antenatal Care by Region 43
Figure 4.3 Number of Antenatal Care Visits 44
Figure 4.4 Number of Months Pregnant at First Antenatal Care Visit 45
Figure 4.5 Median Number of Antenatal Care Visits by Residence 47
Figure 4.6 Reasons for Seeking Antenatal Care 47
Figure 4.7 Reasons for Not Seeking Antenatal Care 48
Figure 4.8 Components of Antenatal Care 50
Figure 4.9 Tetanus Toxoid Immunization 52
Figure 4.10 Trends in Antenatal Care from a Skilled Provider 53
Figure 4.11 Trends in Frequency and Timing of Antenatal Care Visits 53
Figure 4.12 Trends in Quality of Care and Protection Against Tetanus 54
Figure 4.13 Place of Delivery 56
Figure 4.14 Quality of Delivery Care by Number of Antenatal Care Visits 56
Figure 4.15 Delivery Care by Provider 58
Figure 4.16 Trends in Delivery Care 59
Figure 4.17 Main Reasons for Not Delivering in a Health Facility 61
Figure 4.18 Medical Procedures During Delivery 63
Figure 4.19 Timing of First Postnatal Care 65
Figure 4.20 Postnatal Care Provider 67
Figure 4.21 Postnatal Care from Skilled Provider by Number of ANC Visits and Delivery Characteristics 67
Figure 4.22 Maternity Complications 68
Figure 4.23 Treatment for Complications 68
Figure 4.24 Maternity Care from Skilled Provider 69
Figure 4.25 Completeness of Maternity Care in Ghana 71
Figure 4.26 Maternity Care Coverage by Background Characteristics 71
Figure 4.27 Maternity Care Coverage by Residence and Region 72

5 • ABORTION AND MISCARRIAGE

Table 5.1 Pregnancy outcomes by background characteristics 74
Table 5.2 Lifetime experience with induced abortion 76
Table 5.3 Recent experience with abortion or miscarriage 78
Table 5.4 Induced abortion rates 79
Table 5.5 Induced abortion rates by background characteristics 80
Table 5.6 Main reason for the most recent abortion in the past five years 81
Table 5.7 Experience of problems related to abortion 86
Table 5.8 First and last action taken to end pregnancy 87
Table 5.9 Experience of problems during first action to end pregnancy 88
Table 5.10 Knowledge of abortion 91
Table 5.11 Perceived access to abortion 92
Table 5.12 Knowledge of places to go to get an abortion 93
Table 5.13 Knowledge that abortion is legal in Ghana 94
Table 5.14 Main cause of most recent miscarriage in the past five years 96
Table 5.15 Experience of problems in the first month after miscarriage 98

Figure 5.1 Pregnancy Outcomes 75
Figure 5.2 Ever Had an Abortion by Residence and Region 77
Figure 5.3 Ever Had an Abortion by Background Characteristics 77
Figure 5.4 Main Reasons for Abortion 82
Figure 5.5 Partner's Attitude Toward the Abortion 83
Figure 5.6 Last/Only Action Taken to End Pregnancy 84
Figure 5.7 Person Who Performed Last/Only Action Taken to End Pregnancy 84
Figure 5.8 Place Where Last/Only Action Taken to End Pregnancy 85
Figure 5.9 Pain Management for Abortion 85
Figure 5.10 Treatment for Health Problems Due to Abortion 86
Figure 5.11 Problems Associated with First and Last Action Taken to End Pregnancy 88
Figure 5.12 Contraceptive Method Used at the Time of the Pregnancy 89
Figure 5.13 Contraceptive Counseling by Health Professional Following Abortion 90
Figure 5.14 Knowledge of Circumstances Under Which Abortion is Legal 95
Figure 5.15 Treatment During Procedure to Clean Uterus After Miscarriage 97
Figure 5.16 Treatment for Health Problems Following Last Miscarriage 98
Figure 5.17 Contraceptive Counseling by Health Professional Following Last Miscarriage 99

6 • FERTILITY, CONTRACEPTIVE USE AND CHILDHOOD MORTALITY

Table 6.1 Current fertility 102
Table 6.2 Trends in length of birth interval 107
Table 6.3 Teenage pregnancy and motherhood 108
Table 6.4 Current use of contraception by background characteristics 110
Table 6.5 Trends in early childhood mortality rates 113
Table 6.6 Early childhood mortality rates by socioeconomic characteristics 115
Table 6.7 Perinatal mortality 117
Table 6.8 High-risk fertility behavior 118

Figure 6.1 Age-specific Fertility Rates 102
Figure 6.2 Fertility by Residence and Region 103
Figure 6.3 Fertility by Level of Education and Wealth Quintile 103
Figure 6.4 Currently Pregnant Women by Residence and Region 104
Figure 6.5 Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB) by Residence and Region 105
Figure 6.6 Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB) by Level of Education and Wealth Quintile 105
Figure 6.7 Trends in Total Fertility Rate 1988-2007 106
Figure 6.8 Age-specific Fertility Rates 1988-2007 106
Figure 6.9 Median Age at First Birth 107
Figure 6.10 Trends in Median Age at First Birth 1993-2007 108
Figure 6.11 Trends in Teenage Pregnancy and Motherhood 1993-2007 109
Figure 6.12 Contraceptive Prevalence 111
Figure 6.13 Trends in Contraceptive Prevalence 1988-2007 111
Figure 6.14 Contraceptive Use by Residence and Region 112
Figure 6.15 Trends in Early Childhood Mortality Rates 114
Figure 6.16 Under-five Mortality Rates by Demographic Characteristics 116
Figure 6.17 Under-five Mortality Rates by Background Characteristics 116
Figure 6.18 Under-five Mortality Rates by Region 117

APPENDIX A • Estimates of Overall Adult Mortality

Table A.1 Female life table, GMHS 2007 125
Table A.2 Mortality rates from sibling histories 127
Table A.3 All cause-specific mortality 128
Table A.4 Age-specific mortality rates for women age 15-49 (per 1,000 woman-years of exposure) in the five years preceding the survey by cause of death 129

Figure A.1 Age-Specific Mortality Rates by Sex from Sibling Histories and Phase I Survey 126
Figure A.2 All Cause-specific Mortality 127

APPENDIX B • Sample Implementation

Table B.1 Sample implementation 131

APPENDIX C • Data Quality Tables

Table C.1 Household age distribution 133
Table C.2 Age distribution of eligible and interviewed women 134
Table C.3 Completeness of reporting 134
Table C.4 Births by calendar years 135
Table C.5 Reporting of age at death in days 136
Table C.6 Reporting of age at death in months 137
Table C.7 Data on siblings 137
Table C.8 Indicators of data quality 138

Table C.9 Sibship size and sex ratio of siblings 138
Table C.10 Additional data on siblings 138
Table C.11 Imputation of data on living female siblings by age group 139

APPENDIX D • Sampling Errors

Table D.1 List of selected variables for sampling errors 141
Table D.2 Sampling errors for National sample 142
Table D.3 Sampling errors for Urban sample 143
Table D.4 Sampling errors for Rural sample 144
Table D.5 Sampling errors for Western region sample 145
Table D.6 Sampling errors for Central region sample 146
Table D.7 Sampling errors for Greater Accra region sample 147
Table D.8 Sampling errors for Volta region sample 148
Table D.9 Sampling errors for Eastern region sample 149
Table D.10 Sampling errors for Ashanti region sample 150
Table D.11 Sampling errors for Brong Ahafo region sample 151
Table D.12 Sampling errors for Northern region sample 152
Table D.13 Sampling errors for Upper East region sample 153
Table D.14 Sampling errors for Upper West region sample 154
Table D.15 Sampling errors for R3M regions sample 155
Table D.16 Sampling errors for Non-R3M regions sample 156

CONTRIBUTORS

This report was authored by the following persons:

Dr. Pav Govindasamy, Macro International Inc.
Ms. Joy Fishel, Macro International Inc.
Ms. Zhuzhi Moore, Macro International Inc.
Mr. Datla Vishnu Raju, Macro International Inc.
Dr. Kenneth Hill, Harvard University Center for Population and Development Studies
Ms. Livia Montana, Harvard University School of Public Health
Dr. Michael Levin, Harvard University Center for Population and Development Studies
Dr. Henrietta Odoi-Agyarko, Ghana Health Service (*retired*)
Dr. Grace Bediako, Ghana Statistical Service
Dr. Patrick K. Aboagye, Ghana Health Service
Dr. John E. Williams, Ghana Health Service

FOREWORD

This report presents the findings of the 2007 Ghana Maternal Health Survey (GMHS). The GMHS is the first nationally representative survey to collect comprehensive information on maternal morbidity and mortality in the country. The survey gathered information on maternal health in two phases. Phase I was fielded in some 240,000 households to obtain information on deaths in the households and more specifically female deaths. Phase II followed with a verbal autopsy on the causes of deaths for 4,203 women age 12-49 identified in Phase I. In addition, a woman's questionnaire fielded in Phase II in a sub-sample of households collected information from 10,370 women age 15-49 on a wide range of maternal health-related issues pertaining to pregnancies, live births, abortions and miscarriages, and utilization of health services in relation to these events. Also included in this questionnaire was a sibling history that allowed for the calculation of maternal mortality in Ghana. The GMHS was conducted to serve as a source of baseline information for the Reducing Maternal Morbidity and Mortality (R3M) program initiated in 2006 in three regions in Ghana: Greater Accra, Ashanti, and Eastern regions. The primary aim of the R3M program was to increase the contraceptive prevalence rate (CPR) by making contraceptive methods and comprehensive abortion care services more available and more highly utilized at all levels of the public and private sectors of the health care system, and to reduce morbidity and mortality due to unsafe abortions.

The GMHS survey was jointly implemented by the Ghana Statistical Service and the Ghana Health Service of the Ministry of Health, with technical assistance from Macro International, a U.S.-based company.

The GMHS results show that maternal mortality in Ghana is relatively high, and is the second largest cause of female deaths in the country, with hemorrhage the largest single cause of maternal deaths. Induced abortion accounts for more than one in ten maternal deaths and the obstetric risk from induced abortion is highest among young women age 15-24. Although almost all women seek antenatal care from a health professional, only one in two women deliver in a health facility, and three in four women seek postnatal care. Despite the emphasis on continuity of care, less than one in two women receive all three maternity care components (antenatal care, delivery care, and postnatal care) from a skilled provider. Clearly, Ghana has a long way to go towards achieving the MDG-5 target.

I would like to acknowledge the efforts of the organizations that contributed to the success of this huge undertaking. The close cooperation between the Ghana Statistical Service and the Ghana Health Service was critical to the successful completion of the survey, and special thanks go to the staff of these two institutions. I am grateful to the technical support from Macro International in all phases of the survey. Most of all I thank the generosity of the anonymous donor who provided the funds to support the survey.

Last but not least, I am grateful to the field staff whose support and dedication were paramount to the successful completion of this survey.

Dr. Elias K. Sory
Director of Health
Ghana Health Service
Ministry of Health

SUMMARY OF FINDINGS

The 2007 Ghana Maternal Health Survey is the first nationally representative population-based survey to collect information on maternal health and mortality in Ghana through a combination of data collection at the household level, individual woman's level and a follow-on verbal autopsy into the specific causes of female deaths, particularly maternal deaths. The GMHS was carried out in two phases. A short household questionnaire was administered in Phase I in some 240,000 households to identify deaths to females age 12-49. A total of 5,931 female deaths were identified in Phase I and verbal autopsies were completed for 4,203 deaths in Phase II. A household questionnaire and woman's questionnaire were administered in a subsample of households in Phase II to collect information on key demographic and health indicators including antenatal, maternity, and emergency obstetric care in the event of a birth, abortion, or miscarriage. In addition, a sibling history in Phase II provides direct estimates of maternal mortality. Phase II surveyed 10,858 households, and 10,370 women age 15-49. The GMHS was implemented by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS) with technical assistance from Macro International Inc. The 2007 GMHS is intended to serve as a source of baseline information for the Reducing Maternal Morbidity and Mortality (R3M) program initiated in 2006. The primary objectives of the program are to provide the commitment and financial and technical resources to assist the Government of Ghana (GoG) to: increase its contraceptive prevalence rate (CPR) by making contraceptives and comprehensive abortion care more available and more highly utilized at all levels of the public and private sectors of the health care system, and; reduce morbidity and mortality due to unsafe abortion in three regions to support progress towards MDG-5. Areas covered by the program include Greater Accra, Ashanti, and Eastern regions.

Maternal Mortality

The GMHS provides two sources of estimates of maternal (or pregnancy-related) mortality, the sibling history in Phase II and the household deaths with verbal autopsy in Phase I. The pregnancy-related mortality ratio (PRMR) for the 7-year period preceding the survey, calculated from the sibling history data, is 451 deaths per 100,000 live births and for the 5-year period preceding the survey is 378 deaths per 100,000 live births. The PRMRs for the 10 years preceding the survey indicate that the risk of death per birth is higher for younger women (age 15-19) and older women (age 35-44), compared with women age 20-34. The highest number of deaths was reported during pregnancy, followed by delivery, and the postpartum period, though the differences are not large. The maternal mortality ratio, calculated from maternal deaths identified among the 240,000 households sampled in Phase I for the 5 years preceding the survey, is estimated at 580 per 100,000 live births.

Infectious diseases account for about 40 percent of deaths to women age 12-49. Maternal mortality is the second largest cause of female deaths, at 14 percent. Hemorrhage is the largest single cause of maternal death (22 percent) followed by other miscellaneous and other deaths not classified elsewhere (approximately 14 percent each). Induced abortion accounts for 12 percent of maternal deaths. Obstetric risk from induced abortion is highest among women in the younger and older age groups, but there do not appear to be large differences in abortion deaths—as a percentage of all maternal deaths—between the R3M regions; indeed, the proportion of maternal deaths due to induced abortion is somewhat below average in Greater Accra.

Maternity Care

The majority (96 percent) of pregnant women in Ghana received antenatal care from a trained provider—that is, a doctor, nurse/midwife or auxiliary midwife—for births that occurred in the five years preceding the survey. Antenatal care from a health professional is only slightly higher in the R3M regions than in the non-R3M regions, but women residing in the former regions are more than twice as likely to

receive care from a doctor as women who reside in the latter regions (29 percent versus 12 percent). More than three in four women (77 percent) made four or more antenatal visits during pregnancy, however, only about one in two (53 percent) sought initial care during the first trimester.

Nationally, 54 percent of births are delivered in health facilities, with four times as many births delivered in public health facilities as in private health facilities. Just over one in two births (55 percent) are delivered by a skilled provider. Among the nearly one in two women who did not deliver in a health facility, a third mentioned that they did not think it was necessary to deliver in a health facility (32 percent), and about one in five women cited lack of money (19 percent) as a reason for not delivering in a health facility.

Three in four women (76 percent) reported having a postnatal checkup for themselves following their most recent birth in the five years preceding the survey. Three-fifths of women (60 percent) reported receiving a postnatal checkup within the first two days of delivery with the majority of them (44 percent) receiving care within four hours of delivery. Thirteen percent of mothers received postnatal care from a doctor, and 42 percent received care from a nurse/ midwife or auxiliary midwife.

Continuity of maternity care from a skilled provider is especially important in ensuring that the unavoidable risks associated with a pregnancy are minimized. Only one in two women (48 percent) accesses all three maternity care components (ANC, DC, and PNC) from a skilled provider.

Abortion and Miscarriage

More than four in five pregnancies in Ghana result in a live birth (82 percent). The majority of pregnancy losses are due to miscarriage (9 percent of pregnancies), followed by induced abortion (7 percent) and stillbirths (less than 2 percent). Fifteen percent of women report that they have had at least one induced abortion in their lifetime. One in three of these women have had more than one abortion. The mean number of abortions among women who have had an abortion is 1.5. Overall, 5 percent of women reported having an abortion during the five years preceding the survey, while 6 percent reported having a miscarriage during this period.

Abortion is most common among women age 20-24, one in eleven of whom report having had an abortion in the five years preceding the survey. The patterns for miscarriage are different from those for abortion. Women age 25-39 are more likely than other women to have had a miscarriage in the five years preceding the survey.

One in five women who had an abortion in the five years before the survey reported that the main reason for the abortion was that there was no money to take care of a baby. About one in ten women who had an abortion in the past five years took more than one action to end their most recent pregnancy because the first action was not effective in terminating the pregnancy. The most common action taken to end a pregnancy is dilation and curettage (D&C) (40 percent). The majority of women went to a doctor (57 percent) to end their pregnancy. Private hospitals and polyclinics are the most common places where abortions occur (Figure 5.8). For most recent abortions in the past five years, about four in ten (38 percent) took place in a private hospital or clinic.

Knowledge of abortion is high in Ghana, with nine in ten women knowing about the procedure (15 percent having had an abortion and 76 percent having heard of abortion). Among women who have heard of abortion but never had an abortion, 12 percent said they could get an abortion if they wanted to. At the same time however only 4 percent of women think that abortion is legal in Ghana and among these women 17 percent say they do not know under what circumstances abortion is legal.

Fertility, Contraceptive Use and Childhood Mortality

The GMHS data on fertility collected from the pregnancy history show that the total fertility rate for the three years preceding the survey is 4.6 children per woman age 15-49. The age-specific rates indicate that the prime reproductive years among Ghanaian women are the twenties and early thirties. Rural women have

on average two children more than urban women (5.5 versus 3.4 children per woman). Fertility is lowest in Greater Accra (3.0) and highest in the Northern region (6.8), a nearly four-child difference. Women living in the R3M program regions have on average one child less than women in the other regions.

Data from the 2007 GMHS confirm that birth intervals are generally long in Ghana. However, childbearing begins relatively early, with most women becoming mothers by age 20. The median age at first birth is 21.2 years for the youngest cohort for which a median could be computed (age 25-29) and is around 20 for the older cohorts, indicating a substantial rise in the median age at first birth during the most recent period. About one in five (18 percent) adolescent women in Ghana reported having ever been pregnant, with 12 percent having already had a live birth and 3 percent pregnant with their first child at the time of the survey. The proportion of teenagers who have ever been pregnant rises rapidly with age, from less than 2 percent of women age 15 to 38 percent of women age 19.

One in five women age 15-49 (21 percent) is currently using a method of family planning. Modern methods are twice as likely to be used as traditional methods (14 percent versus 7 percent). Injectables, the pill, and the male condom continue to be the more popular modern methods of contraception, used by about 3-4 percent of women.

Data from the 2007 GMHS show that in the five years preceding the survey, one in every twelve Ghanaian children died before reaching age five (82 deaths per 1,000 live births). Three-fifths of these deaths occur in the first year of life—infant mortality is 50 deaths per 1,000 live births and child mortality is 34 deaths per 1,000 children surviving to age one. Neonatal mortality is 29 deaths per 1,000 live births while postneonatal mortality is 21 deaths per 1,000 live births. Neonatal deaths account for nearly three out of five infant deaths. The perinatal mortality rate for Ghana is estimated at 45 deaths per 1,000 pregnancies of 7 or more months duration, and has changed little in the past five years (46 deaths per 1000 pregnancies in 2003).

1 • INTRODUCTION

1.1 INTRODUCTION

Maternal mortality is one of the most sensitive indicators of the health disparity between richer and poorer nations. The lifetime risk of dying due to maternal causes is about one in six in the poorest countries, compared with about one in 30,000 in Northern Europe (Ronsmans and Graham, 2006). Selection of the maternal mortality ratio (MMR) as the primary indicator for Millennium Development Goal number 5 (MDG-5) on improving maternal health has increased interest in programs to improve maternal health and in having reliable sources of data on maternal mortality rates.

The burden of maternal mortality is traditionally measured in terms of the MMR, which is defined as the number of maternal deaths per 100,000 live births. MDG-5 calls for a 75 percent reduction in the MMR between 1990 and 2015 (UNDP, 2003). Estimates of the MMR in Ghana vary widely. Data from the 1993 Ghana Demographic and Health Survey indicate the MMR to be 214/100,000 based on the direct sisterhood method, whereas regression model estimates from the WHO/UNICEF/UNFPA study place the MMR at 560/100,000 (WHO et al., 2007).

1.2 CAUSES OF MATERNAL MORTALITY

The most prevalent direct medical causes of maternal mortality are thought to be severe bleeding, hypertensive diseases, and infections (Ronsmans and Graham, 2006). However, indirect causes of maternal mortality must also be addressed. The "Three Delays Model" (Thaddeus and Maine, 1994) identifies delays in seeking, reaching, and receiving care as the key factors contributing to maternal death. The delay in seeking care is related to having the knowledge to recognize a life-threatening problem and making the decision to go for care. The delay in reaching care results from inaccessibility of health services due to distance, poor infrastructure, lack of money, or other barriers to access. The delay in receiving care refers to problems in content and quality of maternal health care services.

Most maternal deaths occur during labor, delivery, or the first 24 hours after delivery, and most complications cannot be prevented or predicted (Campbell and Graham, 2006). Skilled care during pregnancy, childbirth, and the immediate postpartum period, by health care professionals with appropriate skills has been recognized as the key intervention to reduce maternal mortality (WHO, 2004a). Family planning and safe abortion services also play key roles in reducing maternal deaths (Campbell and Graham, 2006). Family planning can prevent pregnancies that contribute to a disproportionate amount of mortality, specifically, high parity births, births to very young or older women, and unwanted pregnancies. Prevention of unwanted pregnancies can reduce the risk of dying posed by unsafe abortion. The exact contribution of abortion to maternal mortality is unclear. The World Health Organization (WHO) estimates that in western Africa unsafe abortion could contribute to as many as 90 deaths per 100,000 live births (WHO, 2004b).

Several health indicators in Ghana help us better understand the factors contributing to high rates of maternal mortality. Data from the 2003 Ghana Demographic and Health Survey (GDHS) show that the contraceptive prevalence rate is low; only one-quarter of currently married women are using a method of contraception (GSS et al., 2004). As a result, 34 percent of currently married women have unmet need for family planning, and 40 percent of all pregnancies are unwanted or mistimed. The 2003 GDHS also shows that 47

percent of births are attended by a health care professional. The Ghana Health Service 2007 Annual Report states that the proportion of deliveries attended by a health care professional was 35 percent in 2007, which it notes is a substantial decrease from 45 percent in 2006 (GHS, 2007b). In 2006, the institutional MMR was 244/100,000 live births, which represents an increase over 2005 when the MMR was 197/100,000 (MOH, 2008a). Although abortion is legal in Ghana under certain conditions, unsafe abortion is still thought to make a significant contribution to the burden of maternal morbidity and mortality, especially among adolescents (Aboagye et al., 2007; Mayhew, 2004).

1.3 Health Policy and Structure of the Health Care System

1.3.1 Structure

Before discussing Ghana's maternal health programs, it is first important to present some background on the structure of the health care system. Policy issues, including how services are financed, and programmatic issues such as how health service delivery is carried out, have implications for the quality and utilization of health services.

Ghana began initiating health sector reforms in the 1980s. These reforms were guided by five principles: integration, decentralization, partnerships, ownership, and common financing (Population Council et al., 2006). During the process of decentralization, decisionmaking authority and management of health care services was transferred from the national level to the regional and district levels.

In 1997, the Ghana Health Service (GHS) was established and given responsibility for managing service delivery. As part of the decentralization efforts, the Ministry of Health (MOH) had the primary responsibility to make policy and determine priorities for the health sector, while the GHS was responsible for developing implementation guidelines for the 10 regions and 138 districts. The regions were responsible for providing coordination and assistance to the districts as they develop and carry out district implementation plans. At the district level, District Health Management Teams (DHMTs) have been created to plan and implement health care service delivery. DHMTs also have the authority to mobilize additional funds from donors. Financial management at the district level is handled by Budget Management Centers (Population Council et al., 2006).

In 1997, Ghana adopted a sector-wide approach (SWAp) to delivery of health services. This approach provides a vehicle to coordinate the activities of all partners in the health sector. Under SWAp, the government and all partners (including donors, faith-based health service providers, and NGOs) agreed to a common program of work, and finances from all sources were pooled through the Ministry of Health (Population Council et al., 2006). The work programs run for five years, and Ghana is currently in its third round (2007-2011). Some donors, including USAID and UNFPA, continue to disburse their funds through separate channels (Mayhew, 2004).

1.3.2 Financing

In 1983 the Government of Ghana (GoG) introduced user fees into the public health system (Population Council et al., 2006). As applied to maternal health services, the policy instituted user fees for all services except tetanus toxoid immunization for pregnant women. To reduce the financial barriers to services, while maintaining the user fee financing scheme, a series of exemptions was later instituted along with the user fees. Antenatal care, delivery services, family planning, and immunizations were among the services receiving fee exemptions (Population Council et al., 2006).

Starting in 1997, free antenatal services were offered throughout the country. Fee exemptions for delivery services began in 2003 in four regions and expanded to the remaining six regions by 2005. The delivery fee exemption policy (DFEP) was funded though the Highly Indebted Poor Country (HIPC) debt relief funds (Witter et al., 2007). Under DFEP, facilities were reimbursed on a per-delivery basis. Different fixed rates were established for normal and caesarean deliveries. Private and public facilities had different reimbursement rates.

In 2004, Ghana launched the National Health Insurance Scheme (NHIS) (IRIN, 2004). The NHIS supersedes the user fee and exemption system of health service financing. Individuals must enroll in the NHIS and pay a premium to participate. The proportion of the national population covered by the NHIS (holders of a valid membership card) increased from 25 percent in 2006 to 42 percent in 2007 (MOH, 2008a). Maternity services covered under the NHIS include antenatal care, delivery, caesarean section, management of emergency obstetric conditions, and postnatal care (Population Council et al., 2006).

In 2007, funding to reimburse health facilities for delivery fee exemptions under the DFEP ran out, and pregnant women who were not enrolled in the NHIS had to pay fees for delivery services. According to the MOH, anecdotal evidence indicates that ending the exemption for delivery fees may have contributed to the decrease in supervised deliveries observed between 2006 and 2007 (MOH, 2008a). To reverse this trend, the President of Ghana declared on July 1, 2008 that pregnant women were exempt from paying NHIS premiums (MOH, 2008b).

1.3.3 Health Sector Strategies and Programs

Several initiatives within the health sector are utilized to provide health care services and other assistance to pregnant women. These include the Regenerative Lifestyle and Nutrition Program (RLNP), High Impact Rapid Delivery (HIRD), and Community-based Health Planning and Services (CHPS). RLNP focuses on noncommunicable diseases such as obesity and hypertension, and maternal and child health. It identifies, trains, and supports change agents at the community level to communicate healthy lifestyle messages to promote services and health-seeking behavior.

The HIRD program promotes high-priority, cost-effective interventions to improve maternal and child health at the district level. This program provides specific funding for service delivery with an aim to increase focus on and funding for reproductive and child health services by DHMTs (MOH, 2008a).

CHPS is a strategy that aims to increase access to maternal and child health services. CHPS refers to a specific process for moving health services into underserved areas through community mobilization. It began as a research project in Kassena-Nakana district in 1994 and was scaled up to a national-level initiative in 1999 (Nyonator et al., 2005). The first step to adopting CHPS in a district is to achieve buy-in by traditional community leaders and begin the planning process. Communities must support and actively participate in the initiative. Community leaders and volunteers cooperate to mobilize resources and labor to construct a simple health facility known as a Community Health Compound (CHC), consisting of space for a clinic and living quarters for a health care provider. CHCs are staffed by Community Health Officers (CHOs), who are nurses trained specifically for this role. Once the CHC is ready, a CHO is posted to the community. CHO responsibilities include clinical sessions at the CHC, household visits for family planning services, health education and ambulatory care, and outreach services for immunization. Community support for the CHC is organized in the form of a community health committee and community health aides who work with the CHO on a volunteer basis.

1.3.4 Abortion Policy

Since 1985, Ghanaian law has permitted abortion for pregnancies that result from rape, incest, or "defilement of the female idiot," where there is high risk that the child would suffer from a serious deformity, or if the pregnancy threatens the woman's physical or mental health (MOH, 2008a). From a policy perspective, however, Ghana did not integrate safe abortion into national reproductive health policy until 2003 (Ipas, 2008). In 2006, the Ghana Health Service released new standards and protocols for safe abortion services that include direction for interpreting Ghana's abortion law. These standards were developed in collaboration with Ipas, WHO, and other stakeholders (Aboagye et al., 2007).

However, in many cases the law still tends to be interpreted as prohibiting abortion, and availability of abortion is limited in the public sector. A recent survey of health care facilities in 10 districts found that fewer than 1 in 7 public health facilities reported offering legal abortion services; only 21 percent of providers knew all the legal indications for abortion; 23 percent of providers incorrectly reported that the abortion law requires written consent from the woman's partner; and around half of providers reported having concerns about providing abortion services because of their religious beliefs (Aboagye et al., 2007).

1.4 Safe Motherhood and Reproductive Health Programs in Ghana

1.4.1 History

In 1969, Ghana became just the third country in Africa to institute a national population policy (Benjamin, 2007). The policy focused on high-level goals such as increasing the per capita GDP and lacked clear directions to ministries on how to implement it. The 1994 International Conference on Population and Development (ICPD) in Cairo sparked important changes in Ghana's reproductive health policy. Following ICPD, the GoG undertook a comprehensive revision of reproductive health policy, and finalized the new Reproductive Health Policy and Standards in 2003 (Mayhew, 2004). Based on the approach of offering a comprehensive package of reproductive health services recommended by the ICPD, the new standards laid out how reproductive health services should be implemented at each level of care. In addition, in 2002, Ghana began a health facility-based program of maternal death audits to investigate causes of maternal deaths during institutional deliveries and to provide data for making decisions to improve service quality (Mayhew, 2004).

Ghana currently exhibits strong political support to improve maternal health and survival. At Ghana's annual Health Summit in April 2008, the Minister of Health declared maternal mortality to be a "national emergency" (MOH, 2008c). The Minister also announced a need to place higher priority on reproductive health services and to establish a task force that will address the issue of reducing maternal mortality in an effort to achieve MDG-5.

1.4.2 Current and Planned Safe Motherhood Policies and Activities

The Ghana Reproductive Health Strategic Plan (2007-2011) includes six high-level objectives under its Safe Motherhood Policy, the first of which is to "reduce maternal morbidity and mortality" (GHS, 2007a). Included under this high-level objective are five intermediate objectives:

- Improve access to comprehensive and basic essential obstetric care
- Improve the capacity of family and community members in home-based, life-saving skills
- Increase the proportion of deliveries conducted by skilled attendants

- Increase antenatal care and postnatal care coverage, content, and quality of services
- Ensure the availability of comprehensive abortion care services as permitted by law

The overarching strategy to achieve lower maternal mortality is to promote skilled attendance at birth. According to the Ghana Health Service 2007 Annual Report, "Proper management of labor is critical in the efforts to reduce maternal mortality…The specific objective of skilled attendance during labor is to ensure proper management of labor, early identification and proper management of complications" (GHS, 2007b: 31). The specific activities included in the GHS 5-year strategic plan can be grouped into activities to reduce the three delays: (1) community initiatives to expand knowledge of danger signs and promote delivery with a skilled attendant, (2) initiatives to expand availability of and access to maternal health care services, and (3) initiatives to improve quality of care and effective management of complications at health facilities.

Community education and mobilization for maternal health and survival

The strategic plan calls for behavior change communication activities to increase awareness of comprehensive abortion services and to promote utilization of antenatal, delivery, and postpartum care services. Messages regarding antenatal care are to "go early, go often." The goals are to increase the proportion of women seeking antenatal care during the first trimester, and to increase the proportion of women attending at least four antenatal care visits. The strategic plan also calls for training of community health officers and volunteers in the CHPS zones in home-based, lifesaving skills and for CHOs to provide outreach education on the importance of delivering with a skilled attendant. There are also plans to use mass media campaigns to promote delivery with a skilled attendant.

Expand availability of and access to services

A major barrier to access to care is the cost of services. As mentioned above, in 2007, the GoG had to cease fee-free delivery at public health facilities. The exemption was to be replaced by health insurance, but many pregnant women have not registered. Some districts began to target pregnant women for enrollment in NHIS (MOH, 2008a), and others decided to use their HIRD funds to enroll pregnant women in the NHIS to reduce financial barriers to care (GHS, 2007b).

Another barrier to access to care is the availability of health care services. The GHS plans to expand or change the hours when maternal health care services are offered in an effort to better serve the needs of clients (GHS, 2007a). The Ghana health care system is heavily affected by emigration of health care professionals to other countries. In addition, the percentage of midwives within Ghana who are currently practicing in a clinical setting is also decreasing (GHS, 2007b).

To address this problem, the GHS aims to expand the number of health professionals with midwifery skills through two strategies (1) increasing the number of midwives in the health care system and (2) expanding the cadres of providers who have midwifery skills (GHS, 2007a). A goal of the 5-year strategic plan is to increase the number of places in pre-service midwifery schools. However, there have been problems in recruiting people to fill these places (MOH, 2008a). Another goal is to equip CHOs deployed in the CHPS zones with basic midwifery skills by strengthening the midwifery training included in the CHO pre-service and in-service curriculum (GHS, 2007b).

Another effort to increase availability of services and decrease access problems has been for midwives to conduct home deliveries. There is evidence that domiciliary midwifery programs may help to increase coverage of

deliveries with a skilled attendant. Some districts in Northern, Upper East and Upper West regions provided facilities and incentives for midwives and CHOs to conduct home deliveries, and these three regions showed marginal improvement in the proportion of deliveries conducted by skilled personnel from 2006 to 2007 while deliveries by skilled personnel in the rest of the regions declined (GHS, 2007b).

In another effort to expand service availability, the MOH is exploring the possibility of upgrading CHPS compounds in remote locations to community maternity homes. District Assemblies have been allocating funds to make improvements in health care facilities in some districts, and could serve as a source of funding to upgrade CHPS compounds as well (MOH, 2008a).

Another key element to increasing access to services is a transportation and communication system. With ambulances and trained emergency medical technicians, the National Ambulance Service (NAS) can greatly reduce the delay between deciding to seek care and reaching care for women with obstetric emergencies. As of 2006, coverage of the NAS was limited to 13 districts; the target for 2007 was to expand coverage to 25 districts (MOH, 2008a). The GHS 5-year strategic plan includes a focus on developing community emergency referral and transport plans to link communities with subdistrict-, district-, and regional-level health facilities (GHS, 2007a). In addition, the MOH review of the Health Sector Program of Work for 2007 includes a recommendation to encourage CHPS staff and community volunteers to mobilize communities to make emergency transport available for maternal care (MOH, 2008a).

Improve quality of care

Policies for provision of antenatal care call for individualized care with interventions of known effectiveness: iron-folate supplementation, intermittent preventive treatment of malaria during pregnancy, insecticide-treated bednet promotion, tetanus toxoid immunization, and nutrition education, among others. Findings from the 2002 Service Provision Assessment Survey (SPA) showed that: only half of all facilities offering antenatal care services had all the essential supplies for basic antenatal care; there was an obvious lack of medicines for managing common complications during pregnancy in most facilities; advice on risk symptoms was not a routine component of antenatal care counseling; assessment of first-visit antenatal care clients did not uniformly include all the items defined as important; although delivery services were available in 83 percent of facilities, services for caesarean section were only available in 11 percent of facilities; and infection prevention items were available in only one in three delivery service areas (GSS et al., 2003). Despite some improvement over the years, patient education about birth planning and the need to deliver with a skilled attendant has been found to be weak and in need of improvement (MOH, 2008a). Adolescents are a population of special interest for antenatal care services. Although in high need of services, they are often underserved. In 2007, women under the age of 20 comprised 12 percent of all antenatal care registrants. Health facilities have been urged to make their antenatal care services more adolescent friendly (GHS, 2007b).

Basic Essential Obstetric Care (BEOC) is the minimum package of services meant to be provided at the health center level to manage complications during pregnancy, labor and delivery, and post delivery. This package of services includes intravenous or intramuscular injections for antibiotics, anticonvulsants, assisted vaginal delivery, manual vacuum aspiration, and removal of retained placenta, but does not require an operating theater. The package of services available at the district hospital level and higher, Comprehensive Essential Obstetric Care (CEOC), includes all of the above services and adds facilities for caesarean section and blood transfusion (GHS, 2007b).

Lack of equipment in health facilities has been a barrier to quality of care. In 2007, the MOH completed a mapping of essential equipment requirements in facilities nationwide and submitted a proposal for procurement (MOH, 2008a).

The maternal death audit system is designed to provide information on causes of facility-based maternal deaths. This information can be valuable for addressing problems in service delivery and improving the quality and effectiveness of maternal health care. The proportion of facility-based maternal deaths that were audited increased from 58 percent in 2006 to 67 percent in 2007; however, the findings of the audit system are not optimally used to address the causes of deaths within facilities (MOH, 2008a).

1.4.3 Reducing Maternal Morbidity and Mortality Program

The Reducing Maternal Morbidity and Mortality (R3M) program was launched in 2006 by a consortium of organizations led by the Population Council.[1] Other participating organizations included EngenderHealth, Ipas, Marie Stopes International, WHO/HRP, and Willows Foundation. The objectives of the program are to provide the commitment and financial and technical resources to assist the GoG to: (1) increase its contraceptive prevalence rate (CPR) by making both contraceptive methods and comprehensive abortion care more available and more utilized at all levels of the public and private sectors of the health care system, and (2) reduce morbidity and mortality due to unsafe abortion in three regions, to support progress towards MDG-5 (Population Council, 2008). Areas covered by the program include Greater Accra, Ashanti, and Eastern regions.

1.5 Organization of the 2007 GMHS

1.5.1 Survey Objectives and Implementing Organizations

The 2007 Ghana Maternal Health Survey (GMHS) is intended to serve as a source of data on maternal health and maternal death for policymakers and the research community involved in the R3M program. Specifically, the data collected in the GMHS is intended to help the GoG and the consortium of organizations participating in the R3M program to launch a series of collaborative efforts to significantly expand women's access to modern family planning services and comprehensive abortion care (CAC), reduce unwanted fertility, and reduce severe complications and deaths resulting from unsafe abortion.

The GMHS collected data from a nationally representative sample of households and women of reproductive age (15-49). The data were collected in two phases. The primary objectives of the 2007 GMHS were:

- To collect data at the national level that will allow an assessment of the level of maternal mortality in Ghana for the country as a whole, for the R3M program regions (Greater Accra, Ashanti and Eastern Regions), and for the non-program regions;
- To identify specific causes of maternal and non-maternal deaths, and specifically to be able to identify deaths due to abortion-related causes, among adult women;

[1] The UNFPA carried out an in-depth review of maternal mortality in 2004. Two medium-term recommendations from the review were (1) to conduct a national population-based maternal mortality survey, and (2) to conduct a sociocultural analysis of factors influencing the use of delivery care in Ghana and design region-specific interventions to reduce maternal mortality appropriately.

- To collect data on women's perceptions and experience with antenatal, maternity, and emergency obstetrical care, especially with regard to care received before, during, and after the termination or abortion of a pregnancy;
- To measure indicators of the utilization of maternal health services and especially post-abortion care services in Ghana; and
- To provide baseline data for the R3M program and for follow-on studies and surveys that will be used to observe possible reductions in maternal mortality as well as reductions in abortion-related mortality.

The Ghana Statistical Service (GSS) was the primary implementing organization for the survey, with assistance from the Ghana Health Service (GHS). The GoG, as the primary beneficiary of the data, played a key role in the development of the questionnaire. The MEASURE DHS project at Macro International (Macro) provided technical assistance for the survey and administered funding for the project. The Guttmacher Institute provided assistance in the questionnaire design, especially with regard to the design of questions on abortion-related causes of death and service utilization. So that the data collected would be of maximum utility to program managers and policymakers in the health field, the implementing organizations collaborated with other organizations involved in reproductive health and family planning in Ghana.

1.5.2 Survey Design

To achieve the above-mentioned objectives and to obtain an accurate measure of the causes of maternal mortality at the national level, and for the R3M regions (Greater Accra, Ashanti and Eastern regions) and other regions (Western, Central, Volta, Brong Ahafo, Northern, Upper East and Upper West), 1600 primary sampling units were selected (half from the R3M regions and half from the other regions) within the 10 administrative regions of the country, across urban and rural areas. The primary sampling units consisted of wards or subwards drawn from the 2001 Population Census (Table 1.1). This sample size was estimated from information in the 2003 Ghana DHS survey; it was expected that each primary sampling unit would yield, on average, 150 households. GSS and GHS enumerators carried out a complete mapping and listing of the 1600 selected clusters. This first phase of data collection yielded a total of 227,715 households. A short household questionnaire was administered to identify deaths that occurred in the five years preceding the survey to women age 12-49 in each household listed in the selected cluster. In the second phase of data collection a verbal autopsy questionnaire was administered in all households identified in the first phase as having experienced the death of a woman age 12-49. This yielded a total of 4,203 completed verbal autopsy questionnaires.

Table 1.1 Sample allocation

Number of primary sampling units (clusters) included in the first and second phases of fieldwork, by region, GMHS 2007

	Phase I: clusters selected for verbal autopsy			Phase II: clusters selected for individual interviews		
Regions	Urban	Rural	Total	Urban	Rural	Total
R3M regions						
Greater Accra	238	32	270	60	8	68
Ashanti	144	126	270	36	31	67
Eastern	99	161	260	25	40	65
Total	**481**	**319**	**800**	**121**	**79**	**200**
Other regions						
Northern	29	71	100	7	18	25
Upper East	14	66	80	4	16	20
Upper West	3	57	60	4	11	15
Brong Ahafo	57	83	140	14	21	35
Central	54	86	140	13	22	35
Volta	41	99	140	10	25	35
Western	55	85	140	13	22	35
Total	**253**	**547**	**800**	**65**	**135**	**200**
Ghana	**734**	**866**	**1,600**	**186**	**214**	**400**

In the second phase of fieldwork, 400 clusters were randomly selected from the 1600 clusters identified in the first phase. Households with women age 15-49 were selected from these 400 clusters (half from the R3M regions and half from the other regions) and were stratified by region and urban-rural residence to yield 10,858 completed household interviews and 10,370 individual women's interviews. These households were selected randomly and independently from the households identified in the first phase as having experienced a female death.

Institutional populations (those in hospitals, army barracks, etc.) and households residing in refugee camps were excluded from the GMHS sample.

1.5.3 Questionnaires

The GMHS involved four questionnaires: (1) a Phase I short household questionnaire administered at the time of listing; (2) a Phase II verbal autopsy questionnaire administered in households identified at listing as having experienced the death of a female household member age 12-49; (3) a Phase II long-form household questionnaire administered in independently selected households chosen for the individual woman's interview, and (4) a Phase II questionnaire for individual women age 15-49 in the same phase two selected households. The primary purpose of the short household questionnaire administered at the time of listing during Phase I was to identify deaths to women age 12-49, for administering the verbal autopsy questionnaire on the causes of female deaths, particularly maternal deaths and abortion-related deaths. Unique identifiers for households in phase one and households in phase two were not maintained; therefore households cannot be matched across both phases of the survey.

During the first phase of the survey, all households in each selected cluster were listed and administered the short household questionnaire. This questionnaire was administered to identify households that experienced the death of a female [regular] household member in the five years preceding the survey. The verbal autopsy questionnaire (VAQ) was administered during the second phase of fieldwork in those households in which the

female who died was age 12-49. The VAQ was designed to collect as much information as possible on the causes of all female deaths, to inform the subsequent categorization of maternal deaths, and facilitate specific identification of abortion-related deaths. During the second phase of fieldwork, a longer household questionnaire was administered in the independent subsample of households, to identify eligible women age 15-49 for the individual woman's questionnaire and to obtain some background information on the socioeconomic status of these women. The individual questionnaire included the maternal mortality module, which allows for the calculation of direct estimates of pregnancy-related mortality rates and ratios based on the sibling history. The individual questionnaire also gathered information on abortions and miscarriages, the utilization of maternal health services and post-abortion care, women's knowledge of the legality of abortion in Ghana, the services they have utilized for abortion and if not, the reasons they have not been able to access professional health care for abortions, the places that offer abortion-related care, the persons offering such services, and other related questions.

During the design of these questionnaires, input was sought from a variety of organizations that are expected to use the resulting data. After preparation of the questionnaires in English, they were translated into three languages: Akan, Ga, and Ewe. Back translations into English were carried out by people other than the initial translators to verify the accuracy of the translations in the three languages to be used. All problems arising during the translations were resolved before the pretest.

The translated questionnaires were pretested to detect any problems in the translations or the flow of the questionnaire, as well as to gauge the length of time required for interviews. GSS and GHS engaged 20 interviewers for approximately two weeks for the pretest (with proficiency in each of the local languages used in the survey). All the pretest interviewers were trained for two weeks. The pretest interviewing took about one week to complete, during which approximately 30 women were interviewed in each of the local languages. The pretest results were used to modify the survey instruments as necessary. All changes in the questionnaire after the pretest were agreed to by GSS, GHS, and Macro. GSS and GHS were responsible for producing a sufficient number of the various questionnaires for the main fieldwork.

During the pretest and main survey training, experts in the areas of health and family planning were identified by GSS and GHS to provide guidance in the presentation of topics in their fields, as they relate to the GMHS questionnaires.

Other technical documents that were finalized include:

- Household listing manual, listing forms and cartographic materials;
- Interviewer's manual;
- Supervisor's manual;
- Interviewer and Supervisor's assignment sheets.

1.5.4 Training and Fieldwork

Listing and data collection during the first phase was carried out by 15 teams (each with 5 listers and 5 mappers) and 10 experienced staff supervising the operation. Data collection for the second phase of the survey was carried out by 20 interviewing teams. Each interviewing team consisted of a supervisor, a female editor, and four female interviewers. GSS and GHS were responsible for the recruitment and training of all team members. The implementing organizations recruited and trained a number of staff in excess of the number needed for the 20 interviewing teams, to allow for some attrition during the training period and the early phase of fieldwork.

Personnel trained for field positions were well educated, with prior field experience, and the ability to speak one or two of the local languages. They were recruited on the basis of maturity, friendliness, language skills, and willingness to work away from home during the three months of fieldwork.

The implementing organizations were also responsible for conducting the training of team supervisors, editors, and interviewers. The training course lasted two weeks and included a question-by-question explanation of the content of the questionnaires, instructions on how to fill out each question in the questionnaires, instructions on interviewing procedures, and field procedures to be followed during the survey. Training consisted of classroom lectures, mock interviews in the classroom, and practice interviewing in an area close to the training site. Each interviewer completed at least three practice interviews during the training period. These practice interviews were carefully edited to catch interviewing errors and were used in the selection of interviewers for the fieldwork. As part of the training program, participants were given a thorough understanding of their duties and responsibilities. Following the completion of the main training, field staff selected to be **s**upervisors and editors underwent an additional day's training on field logistics and editing procedures. Supervisors and editors received special training on administering the verbal autopsy questionnaires. During recruitment, special emphasis was given to the selection of field staff with strong health backgrounds to become supervisors and editors.

During the main survey work, close communication was maintained at all times between the GMHS survey office at the GSS headquarters and the interviewing teams in the field. The procedure for supervision and communication between headquarters and the field staff during data collection was specified in the Listing Manual and the Interviewer's and Supervisor's Manuals and discussed during training for the survey. The implementing organizations—with the help of an accounting firm hired to monitor and disburse project funds—were responsible for ensuring that sufficient funds were transferred in a timely manner to team supervisors, to cover the costs of operating vehicles, communications, and per diem payments to all team members. GSS and GHS were responsible for ensuring that field staff had their materials (maps and lists of households to be interviewed) and supplies (questionnaires).

Listing and identification of households with female deaths spanned four months from April to July 2007. Data collection in the second phase of the survey covered a period of four months from September 2007 to January 2008.

Quality control was assured through supervision and monitoring of teams during fieldwork. Team supervisors and editors were responsible for the performance of their teams. Work sessions were held frequently within each team (on a daily basis during fieldwork), with the goal of reinforcing the training received and correcting data collection errors. In addition to the internal supervision of each field team (by the team supervisor and editor), the GSS and GHS Field Coordinators maintained close contact with the teams under their responsibility. Several Macro staff also travelled to Ghana over the course of the fieldwork to observe the progress and to monitor the quality of data collection. In addition, a set of field control tables (data quality tables) were run at GSS every two weeks on the questionnaires that had been entered into the computers as of that time. These tables were specially designed to detect systematic errors made by individual interviewers and specific interviewing teams. Data collection errors detected during fieldwork were discussed with the appropriate interviewers and interviewing teams to ensure that the problems did not persist.

1.5.5 Data Processing

All questionnaires for the GMHS were returned to Accra for data processing at GSS. Data processing, including training of data entry personnel, began in October 2007 and was completed by the end of January 2008. Additional data entry of the first phase household questionnaires was completed in September 2008. The processing operation consisted of office editing, coding of open-ended questions, data entry, and resolving inconsistencies found by the computer edit programs. The data were processed on microcomputers using CSPro.

Three physicians selected to review the verbal autopsy questionnaires to assign the causes of death were trained for a week in the International Classification of Diseases (ICD)-10 (WHO, 2004c) coding procedure by a consultant hired by Macro. Coding on the cause of death was completed between mid-February 2008 and August 2008. Each death was coded independently by two physicians and issued with a death certificate identifying the underlying cause of death. All discordant cases were reviewed a second time by the same two physicians and assigned a final (third) death certificate jointly. Discordant causes of death not resolved by the third review were deemed as indeterminate.

1.5.6 Response Rates

Table 1.2 shows response rates for the second phase of the survey. A total of 11,579 households were selected for the sample, of which 10,994 were occupied at the time of the survey and 10,858 (or 99 percent) were successfully interviewed. The difference is primarily due to dwellings being vacant or the inhabitants being gone for an extended period at the time of the survey. In the interviewed households, 10,627 women were identified as eligible for the individual interview (women age 15-49), and interviews were completed for 10,370, or 98 percent. The principal reason for nonresponse among eligible women was the failure to find them at home, despite repeated visits to the household. The refusal rate was low in both urban and rural areas.

Table 1.2 Results of the household and individual interviews (Second phase)

Number of households, number of interviews, and response rates, according to residence (unweighted), GMHS 2007

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	5,357	6,222	11,579
Households occupied	5,093	5,901	10,994
Households interviewed	5,024	5,834	10,858
Household response rate[1]	98.6	98.9	98.8
Interviews with women age 15-49			
Number of eligible women	5,082	5,545	10,627
Number of eligible women interviewed	4,960	5,410	10,370
Eligible women response rate[2]	97.6	97.6	97.6

[1] Households interviewed/households occupied
[2] Women interviewed/eligible respondents

2 • CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

This chapter focuses on some of the socioeconomic characteristics of the household population and individual survey respondents age 15-49, such as age, sex, and educational status, collected from the subsample of women interviewed in the second phase of the Ghana Maternal Health Survey (GMHS) fieldwork. It also examines the condition of the households in which the survey population lives, including the availability of electricity, source of drinking water, sanitation facilities, flooring materials, possession of household durable goods and means of transport. Information collected on the characteristics of the households and respondents is important in understanding and interpreting the findings of the survey and also provides an indication of the representativeness of the survey.

Whenever possible, the GMHS data are compared with the data from the five Ghana Demographic and Health Surveys (GDHS) conducted at five-year intervals between 1988 and 2003 to examine trends in key indicators. The GMHS collected information from all usual residents of the selected households (the de jure population) and persons who stayed in the selected households the night before the interview (the de facto population). Because the difference between these two populations is very small, all tables in this report refer to the de facto population unless otherwise specified.

Throughout this report, discussions of data refer to weighted numbers. In most cases, percentages in tables based on 25 to 49 unweighted cases are shown in parentheses, and percentages based on fewer than 25 unweighted cases are suppressed and replaced with an asterisk. This serves to caution readers interpreting the data that a percentage may not be statistically reliable.[1]

2.1 HOUSEHOLD POPULATION

The GMHS long Household Questionnaire administered in the second phase of fieldwork, was used to collect data on the demographic and social characteristics of all usual residents of the sampled households and visitors who spent the night before the interview in the household.

2.1.1 Demographic Characteristics of Households

Age and sex are two important components of demographic analysis and form the primary basis of demographic classification in vital statistics, censuses, and surveys. They are also important variables in the study of mortality, fertility, and marriage. The effect of variations in the sex composition of population groups should be taken into account when comparing data on mortality. Cross-classification with sex is also useful for the effective analysis of the data obtained in surveys.

[1] For mortality rates, parentheses are used if based on 250 to 499 children exposed to the risk of mortality in any of the component rates, and the figures are suppressed if based on fewer than 250 children exposed to the risk of mortality in any of the component rates.

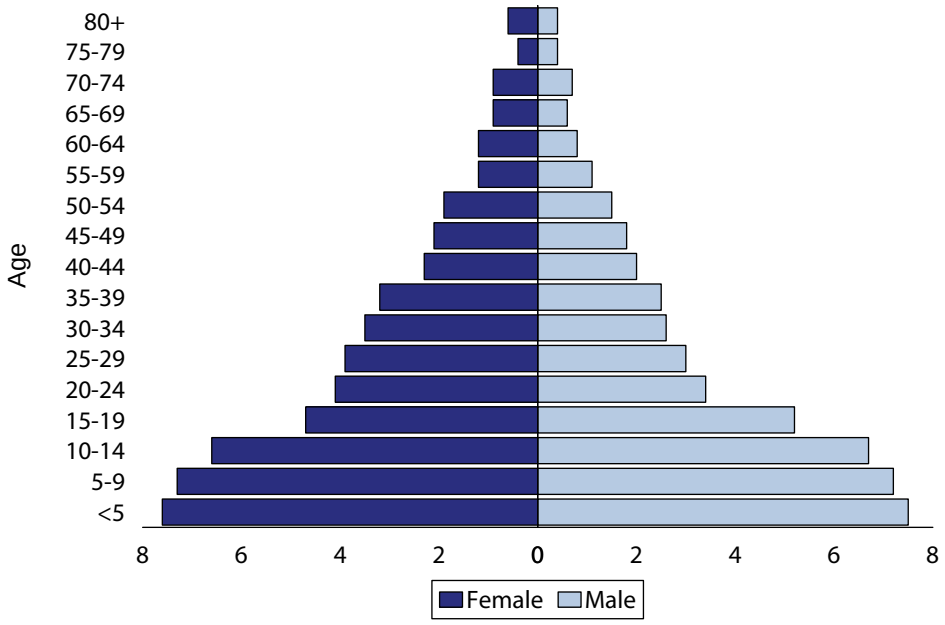
The GMHS sampled a population of 44,945 persons of which 21,369 or 48 percent are males and 23,584 or 52 percent are females (Table 2.1 and Figure 2.1). Two-fifths (38 percent) of the population reside in urban areas and 62 percent live in rural areas. There are more persons in the younger age groups than in the older age groups for both sexes primarily because of relatively high levels of fertility in the past, as well as the effects of mortality.

Table 2.1 Household population by age, sex, and residence

Percent distribution of the de facto household population by five-year age groups, according to sex and residence, GMHS 2007

	Urban			Rural			Total		
Age	Male	Female	Total	Male	Female	Total	Male	Female	Total
<5	13.7	12.1	12.8	17.1	16.0	16.5	15.9	14.5	15.1
5-9	13.0	12.0	12.5	16.6	15.2	15.9	15.2	14.0	14.6
10-14	13.0	12.2	12.6	14.7	12.7	13.7	14.0	12.5	13.2
15-19	11.6	9.9	10.7	10.6	8.4	9.5	10.9	9.0	9.9
20-24	9.1	9.3	9.2	6.0	6.7	6.4	7.1	7.7	7.5
25-29	7.6	8.3	8.0	5.4	6.7	6.1	6.2	7.3	6.8
30-34	6.4	7.1	6.8	4.8	6.4	5.6	5.4	6.7	6.1
35-39	5.6	6.5	6.1	5.0	5.8	5.4	5.3	6.1	5.7
40-44	4.3	4.5	4.4	4.0	4.3	4.2	4.1	4.4	4.3
45-49	3.8	3.9	3.9	3.9	4.1	4.0	3.9	4.0	4.0
50-54	3.7	4.0	3.8	2.9	3.4	3.2	3.2	3.6	3.4
55-59	2.3	2.3	2.3	2.2	2.4	2.3	2.3	2.4	2.3
60-64	1.8	2.4	2.1	1.8	2.2	2.0	1.8	2.3	2.1
65-69	1.2	1.5	1.4	1.4	1.7	1.6	1.4	1.6	1.5
70-74	1.4	1.6	1.5	1.5	1.8	1.7	1.5	1.8	1.6
75-79	0.8	0.9	0.8	1.0	0.8	0.9	0.9	0.8	0.9
80+	0.6	1.1	0.9	1.0	1.1	1.1	0.8	1.1	1.0
Don't know/missing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	7,923	9,221	17,144	13,436	14,364	27,801	21,359	23,584	44,945

***Figure 2.1* Population Pyramid**



2.1.2 Household Composition

Table 2.2 shows the distribution of the households in the survey by the sex of the head of the household and the mean household size by urban and rural areas. These characteristics are important because they are often associated with differences in household socioeconomic levels. For example, female-headed households are frequently poorer than households headed by males. In addition, the size and composition of the household affects the allocation of financial and other resources among household members, which in turn influences the overall well-being of these individuals. Household size is also associated with crowding in the dwelling, which can lead to unfavorable health conditions.

Table 2.2 Household composition

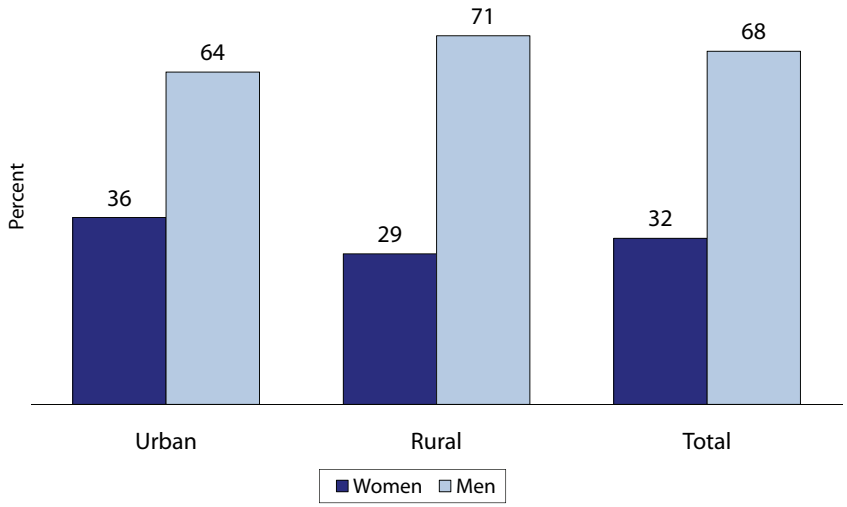
Percent distribution of households by sex of head of household and by household size; and mean size of households, according to residence, GMHS 2007

Characteristic	Residence		Total
	Urban	Rural	
Household headship			
Male	63.8	70.8	67.9
Female	36.2	29.2	32.1
Total	100.0	100.0	100.0
Number of usual members			
0	0.2	0.2	0.2
1	19.2	14.8	16.7
2	15.4	12.1	13.5
3	15.3	14.5	14.8
4	16.6	14.6	15.5
5	12.8	13.3	13.1
6	9.2	11.8	10.7
7	5.1	6.5	5.9
8	2.7	4.3	3.6
9+	3.5	8.1	6.1
Total	100.0	100.0	100.0
Mean size of households	3.8	4.5	4.2
Number of households	4,586	6,272	10,858

Note: Table is based on de jure household members, i.e., usual residents.

Nearly one in three households in Ghana is headed by women (32 percent), with 68 percent headed by men (Figure 2.2). The average household is made up of 4.2 persons, with urban households relatively smaller (3.8 persons) than rural households (4.5 persons).

***Figure 2.2* Household Headship**
(Percentage of households)



2.2 Housing Characteristics

The physical characteristics associated with households are important in assessing the general socioeconomic condition of the population. Respondents to the Household Questionnaire were asked about access to electricity, source of drinking water, type of toilet facility, number of rooms used for sleeping, types of cooking fuel used in the household, and the main material of the floor. These attributes are shown in Table 2.3.

Just over half (52 percent) of households in Ghana have electricity, but this varies widely by residence (Figure 2.3). Urban households are nearly three times as likely as rural households to have access to electricity (80 percent versus 31 percent). Figure 2.4 shows that more than two-thirds of households have access to an improved source of drinking water (68 percent), primarily from piped water (39 percent) and water from covered wells or boreholes (27 percent). As expected, urban households are much more likely to have access to an improved source of water with the majority using water from a piped source (68 percent). In contrast, most rural households with access to improved water get it from a covered well or borehole (40 percent).

Table 2.3 Household characteristics

Percent distribution of households by housing characteristics. according to residence, GMHS 2007

Housing characteristic	Households		
	Urban	Rural	Total
Electricity			
Yes	80.0	30.6	51.5
No	20.0	69.4	48.5
Total	100.0	100.0	100.0
Source of drinking water			
Improved source	**79.3**	**59.9**	**68.1**
Piped water	68.3	18.4	39.4
Water from covered well or borehole	9.7	39.8	27.1
Protected spring	0.3	0.8	0.6
Rainwater	1.0	0.9	0.9
Non-improved source	**8.6**	**38.9**	**26.1**
Water from open well or borehole	5.6	18.7	13.2
Unprotected spring	0.1	2.2	1.3
Tanker truck	1.4	0.2	0.7
Surface water	1.5	17.8	10.9
Bottled/sachet water	12.1	1.2	5.8
Total	100.0	100.0	100.0
Type of toilet			
Improved, not shared facility			
Flush/pour flush to piped sewer system	12.0	0.8	5.5
Ventilated improved pit (VIP) latrine	2.1	1.5	1.8
Pit latrine with slab	1.5	2.9	2.3
Non-improved facility			
Any facility shared with other households	65.4	47.1	54.9
Pit latrine without slab/open pit	10.4	19.9	15.9
Bucket	2.1	0.2	1.0
No facility/bush/field	5.5	26.9	17.9
Other	0.2	0.0	0.1
Missing	0.8	0.8	0.8
Total	100.0	100.0	100.0
Flooring material			
Earth/sand/mud	0.9	9.3	5.7
Mud mixed with dung	0.1	1.3	0.8
Wood planks	0.1	0.0	0.1
Parquet or polished wood	0.4	0.1	0.2
Linoleum	34.9	15.2	23.5
Ceramic tiles	3.1	0.2	1.4
Cement	39.8	68.7	56.5
Carpet	18.3	5.1	10.7
Terrazzo	2.4	0.0	1.0
Missing	0.2	0.1	0.2
Total	100.0	100.0	100.0
Rooms used for sleeping			
One	60.8	53.4	56.5
Two	23.8	27.3	25.9
Three or more	15.2	19.0	17.4
Missing	0.1	0.2	0.2
Total	100.0	100.0	100.0
Cooking fuel			
Electricity	0.3	0.1	0.2
LPG/natural gas	19.6	1.3	9.0
Kerosene	0.8	0.1	0.4
Charcoal	55.3	15.3	32.2
Wood	18.6	81.0	54.7
Straw/shrubs/grass	0.1	0.3	0.2
No food cooked in household	5.1	1.8	3.2
Total	100.0	100.0	100.0
Percentage using solid fuel for cooking[1]	74.1	96.6	87.1
Number of households	4,586	6,272	10,858

LPG = Liquid petroleum gas

[1] Includes coal/lignite, charcoal, wood and straw/shrubs/grass

***Figure 2.3* Household Access to Electricity**
(Percentage of households)

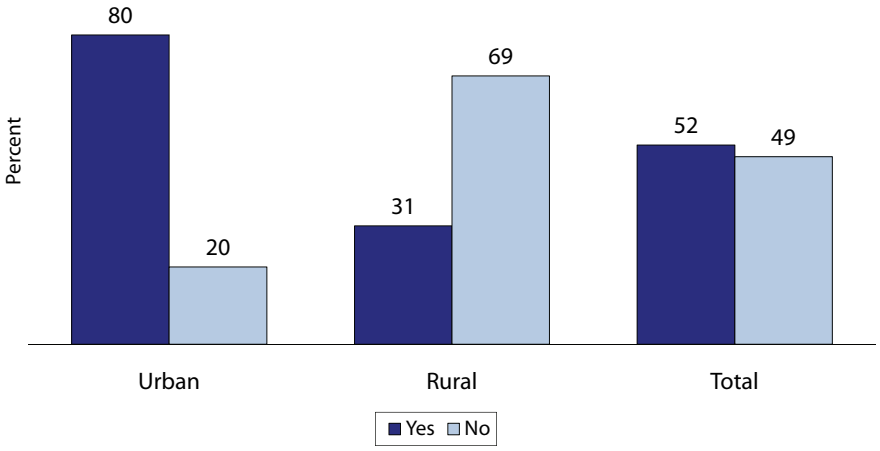
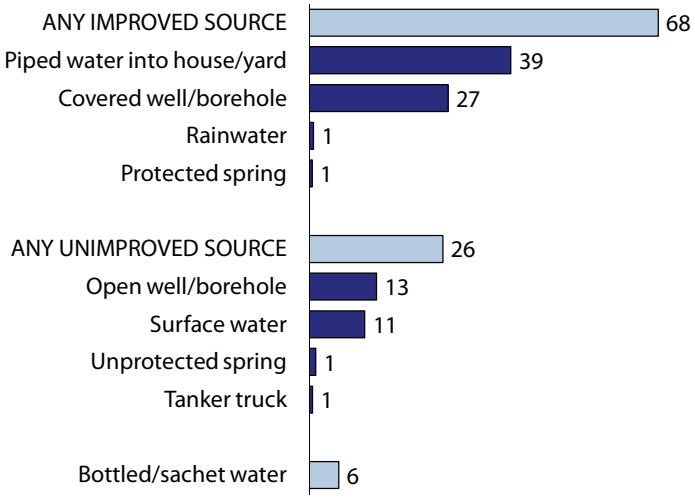


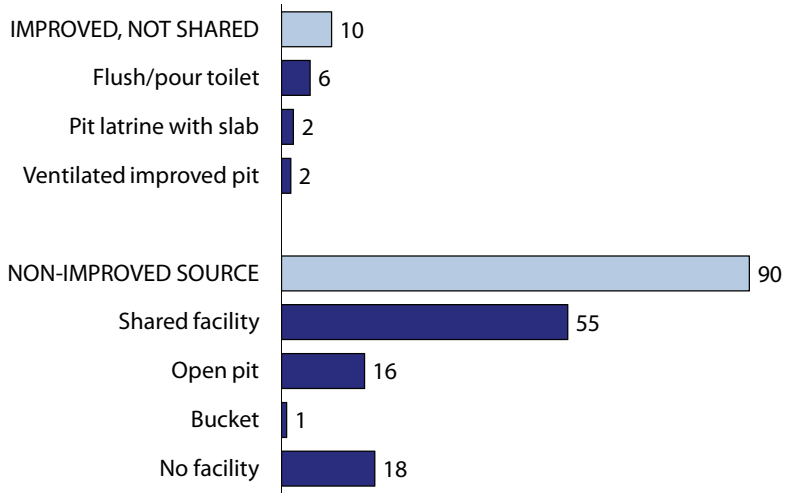
***Figure 2.4* Source of Drinking Water**
(Percentage of households)



The vast majority of households in Ghana do not have an improved toilet facility (Figure 2.5). Only one in ten households uses an improved toilet facility, with 6 percent having a flush/pour toilet, and 2 percent each having a ventilated improved pit or a pit latrine with a slab. Fifty-five percent of Ghanaian households share a toilet facility, 16 percent use a pit latrine without a slab (that is, an open pit), and 18 percent have no toilet facility and use the bush or field. Lack of sanitation facilities is much more common in rural areas than in urban areas.

Figure 2.5 Type of Toilet Facility

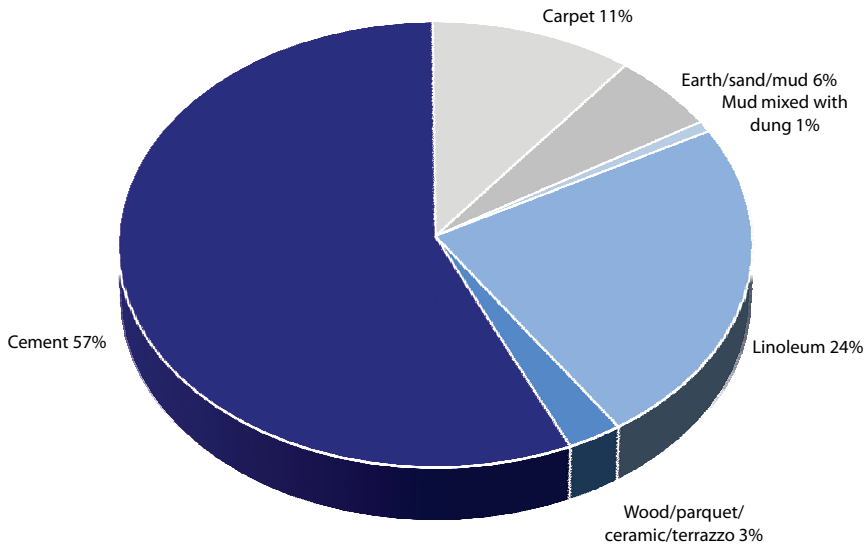
(Percentage of households)



As seen in Figure 2.6, the majority of households in Ghana have cement flooring (57 percent), one in four have linoleum (24 percent), one in nine have floors that are carpeted (11 percent) and 7 percent have earth/sand/mud floors (including mud mixed with dung). Rural households are nearly twice as likely as urban households to have cement floors. In contrast, urban households are more than twice as likely as rural households to have linoleum floors and about four times as likely to have carpeted flooring.

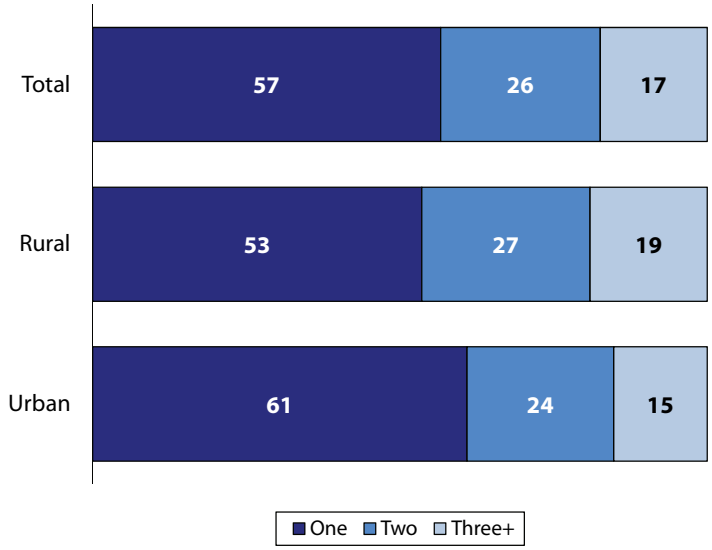
Figure 2.6 Flooring Materials

(Percentage of households)



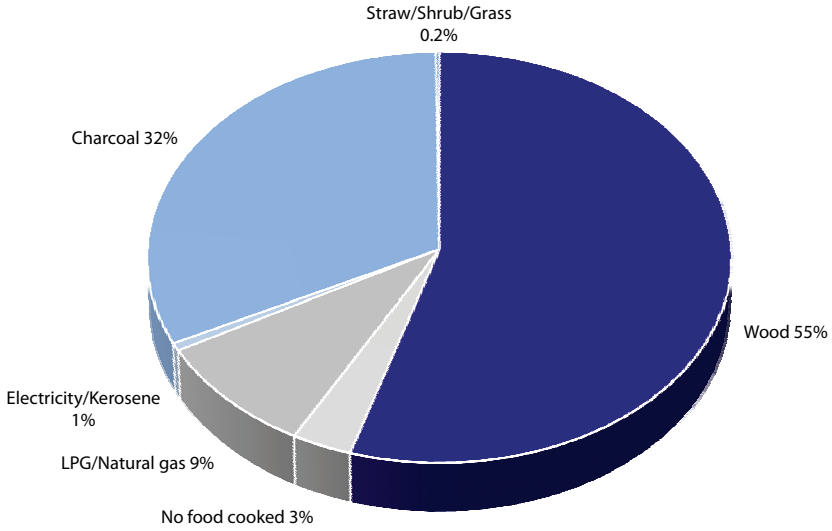
Crowding increases the risks of infection. The number of rooms used for sleeping gives an indication of the extent of crowding in households. Figure 2.7 shows that most households in Ghana have only one room for sleeping (57 percent), one in four have two bedrooms (26 percent) and one in six have three or more bedrooms (17 percent). Urban households are somewhat more likely than rural households to have just one bedroom.

***Figure 2.7* Rooms for Sleeping**
(Percentage of households)



Indoor pollution impacts the health of household members by exposing them to the risk of respiratory infections and other diseases. One measure of indoor air quality is the type of fuel used for cooking. As seen in Figure 2.8, the most common source of cooking fuel in Ghana is wood, used by more than one in two households (55 percent), while nearly one in three households uses charcoal (32 percent) and nearly one in ten uses LPG or natural gas (9 percent). Rural households are four times more likely than urban households to use wood for cooking, whereas urban households are nearly four times more likely than rural households to use charcoal. LPG/natural gas is mostly used in urban households.

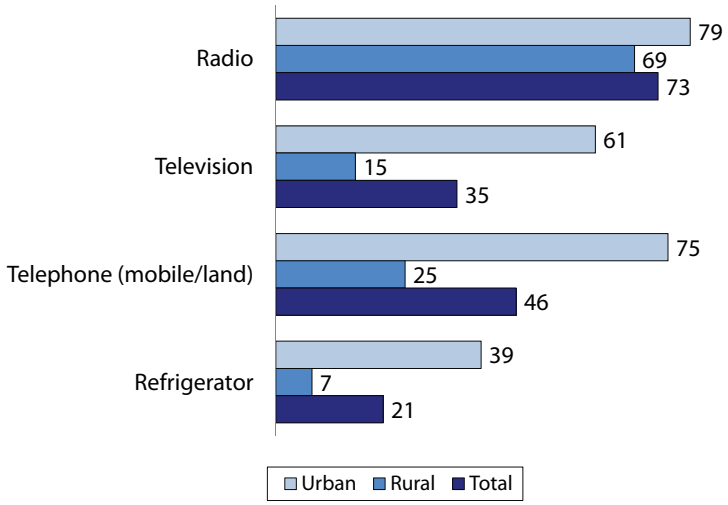
***Figure 2.8* Cooking Fuel**
(Percentage of households)



2.2.1 Household Possessions

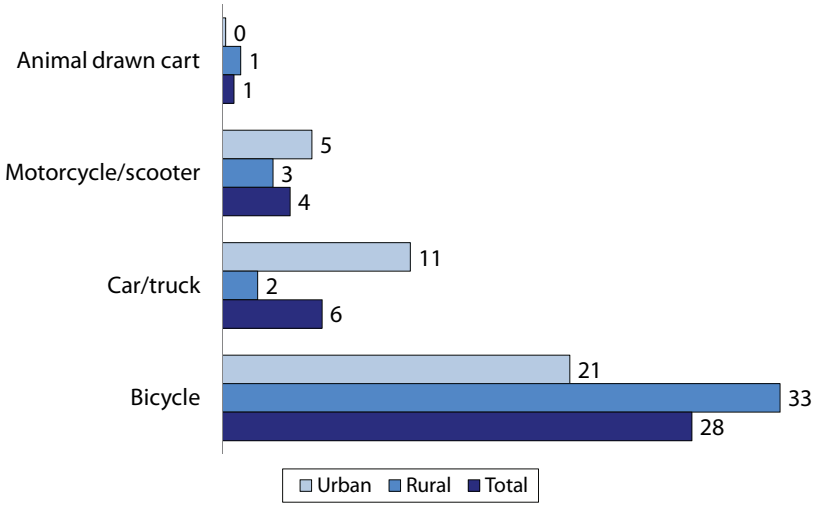
Information on the possession of various durable goods was collected at the household level. Possession of household durable goods is not common in Ghana. Overall, 73 percent of households own a radio, 35 percent own a television, 46 percent own a phone (mobile or landline) and 21 percent own a refrigerator (Figure 2.9).

Figure 2.9 **Household Possessions**
(Percentage of households)



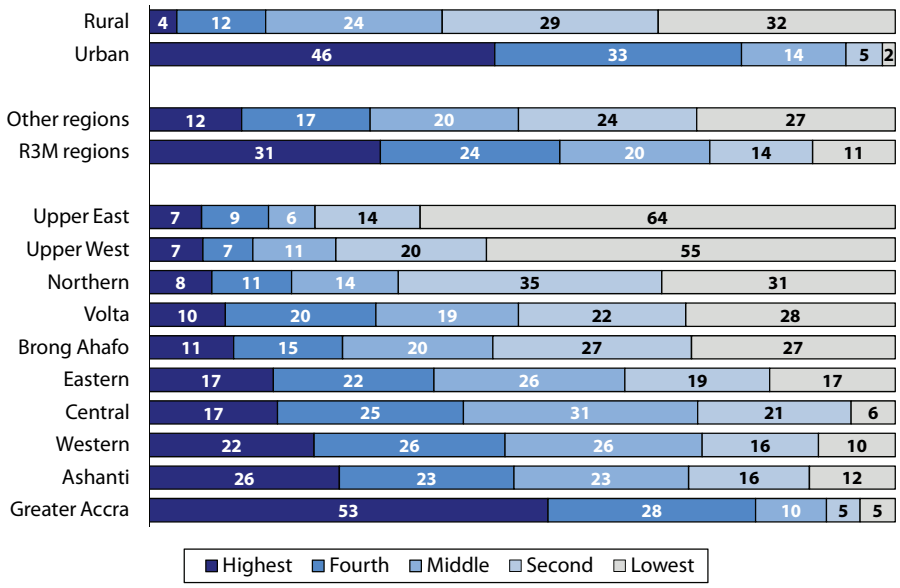
Twenty-eight percent of households own a bicycle, with one in three rural households owning a bicycle compared to one in five urban households (Figure 2.10). Conversely, urban households are more than five times as likely to own a car/truck as rural households (11 percent versus 2 percent). About 4 percent of households own a motorcycle/scooter, with possession of this means of transport somewhat more common in urban than rural households.

Figure 2.10 **Means of Transport**
(Percentage of households)



The wealth index was constructed from data on ownership of household assets, as well as dwelling characteristics such as source of drinking water, type of sanitation facilities, and flooring material. Each asset was assigned a weight (factor score) generated through principal components analysis, and the resulting asset scores were standardized to a normal distribution with a mean of zero and a standard deviation of one (Gwatkin et al., 2000). Each household was then assigned a score for each asset, and the scores were summed by household; individuals were ranked according to the total score of the household in which they resided. The sample was then divided into population quintiles ranked from lowest (poorest) to highest (wealthiest). According to Figure 2.11, 46 percent of urban households are in the highest quintile, compared with only 4 percent of rural households. As expected, the majority of households in Greater Accra belong to the wealthiest quintile (53 percent). One in three (31 percent) households in the R3M program regions are in the highest quintile, compared with one in eight (12 percent) households in the non-R3M regions.

Figure 2.11 **Wealth Quintile by Residence and Region**
(Percentage of households)



2.3 CHARACTERISTICS OF SURVEY RESPONDENTS

2.3.1 Background Characteristics

Table 2.4 shows the background characteristics of the interviewed women by age, marital status, place of residence, region, educational level, religion and ethnicity.

Table 2.4 Background characteristics of respondents

Percent distribution of women age 15-49 by selected background characteristics, GMHS 2007

Background characteristic	Weighted percent	Number of women	
		Weighted	Unweighted
Age			
15-19	19.9	2,064	2,052
20-24	16.9	1,756	1,772
25-29	16.2	1,677	1,694
30-34	14.5	1,508	1,472
35-39	13.6	1,405	1,404
40-44	9.6	996	1,011
45-49	9.3	962	965
Marital status			
Never married	30.6	3,172	3,265
Married	49.9	5,175	5,143
Living together	10.0	1,039	984
Divorced/separated	7.6	787	770
Widowed	1.9	193	205
Missing	0.0	3	3
Residence			
Urban	43.1	4,465	4,960
Rural	56.9	5,905	5,410
Region			
Western	9.0	937	835
Central	10.1	1,048	891
Greater Accra	13.5	1,402	1,850
Volta	9.4	976	836
Eastern	12.2	1,267	1,565
Ashanti	18.2	1,888	1,723
Brong Ahafo	10.3	1,073	911
Northern	10.5	1,090	818
Upper East	4.0	418	526
Upper West	2.6	271	415
R3M regions	43.9	4,557	5,138
Other regions	56.1	5,813	5,232
Education			
No education	25.8	2,670	2,588
Primary	21.3	2,208	2,169
Middle/JSS	39.6	4,107	4,055
Secondary+	13.3	1,383	1,557
Missing	0.0	1	1
Religion			
Catholic	14.8	1,535	1,496
Protestant	1.8	192	195
Methodist	8.4	876	817
Presbyterian	8.0	828	802
Pentacostal/Charismatic	28.2	2,925	3,066
Other Christian	15.4	1,599	1,600
Moslem	16.1	1,668	1,626
Traditional/Spiritualist	2.9	301	308
No religion	4.2	437	449
Other	0.0	5	7
Missing	0.0	4	4
Ethnicity			
Akan	48.9	5,068	4,886
Ga/Dangme	7.5	775	922
Ewe	13.5	1,398	1,422
Guan	2.3	239	223
Mole-Dagbani	9.4	971	890
Grussi	3.6	371	451
Gruma	5.5	573	562
Hausa	1.3	136	141
Other	8.1	835	869
Missing	0.0	3	4
Total 15-49	100.0	10,370	10,370

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

The age distribution of women 15-49 is similar to that found in the 1998 and 2003 Ghana Demographic and Health Surveys (GSS and MI, 1999 and GSS et al., 2004). One in two women is currently married (50 percent), one in three has never been married (31 percent), one in ten is living together (10 percent), and another one in ten is divorced/separated or widowed (10 percent). A higher proportion of women reside in rural areas (57 percent) than in urban areas (43 percent). More than two in five women (44 percent) live in the three R3M program regions of Greater Accra (14 percent), Eastern (12 percent) and Ashanti (18 percent).

About one-quarter of women (26 percent) age 15-49 years have never been to school. Twenty-one percent of respondents have attended only primary school, 40 percent have attended only middle/JSS and 13 percent have secondary or higher level of education.

Fifteen percent of women are Catholic, 18 percent are Protestant/Methodist/Presbyterian, 28 percent are Pentecostal/Charismatic, 15 percent belong to other Christian denominations, and 16 percent are Moslem. About 7 percent state that they are traditional/spiritualist or have no religion.

Akan is the dominant ethnic group in Ghana with nearly one in two women (49 percent) belonging to this group, 14 percent are Ewe, 8 percent are Ga/Dangme and another 9 percent are Mole-Dagbani. The remaining are Guan, Grussi, Gruma, Hausa or belong to other ethnic groups.

2.3.2 Educational Level of Survey Respondents

Table 2.5 shows the educational attainment of surveyed respondents by background characteristics. Education is inversely related to age, that is, older women are less educated than younger women. For instance, 10 percent of women age 15-19 years have never attended school, compared with 40 percent of those age 45-49.

Table 2.5 Educational attainment

Percent distribution of women age 15-49 by highest level of schooling attended or completed, and median grade completed, according to background characteristics, GMHS 2007

Background characteristic	Highest level of schooling						Total	Number of women
	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary[2]	More than secondary		
Age								
15-24	12.6	14.3	8.1	51.7	10.4	2.7	100.0	3,821
15-19	10.3	15.6	10.0	57.3	6.5	0.3	100.0	2,064
20-24	15.4	12.8	5.9	45.2	15.1	5.6	100.0	1,756
25-29	25.2	13.8	6.0	41.4	7.9	5.6	100.0	1,677
30-34	34.6	15.4	6.6	34.7	6.1	2.7	100.0	1,508
35-39	34.1	17.3	5.0	38.8	2.8	1.9	100.0	1,405
40-44	37.9	15.5	3.7	37.6	1.2	4.3	100.0	996
45-49	40.0	15.5	3.6	36.6	1.9	2.5	100.0	962
Residence								
Urban	12.7	12.0	5.3	51.3	12.2	6.5	100.0	4,465
Rural	35.6	17.3	7.0	36.9	2.5	0.7	100.0	5,905

Continued…

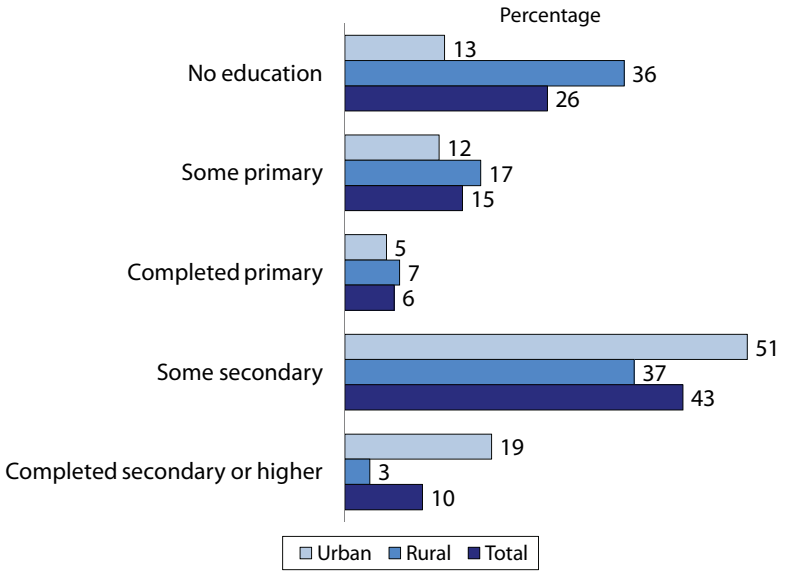
Table 2.5—*Continued*

Background characteristic	No education	Some primary	Completed primary[1]	Some secondary	Completed secondary[2]	More than secondary	Total	Number of women
		Highest level of schooling						
Region								
Western	19.0	17.1	7.1	47.2	6.0	3.7	100.0	937
Central	19.1	18.0	6.6	47.8	6.2	2.3	100.0	1,048
Greater Accra	13.5	13.1	5.8	45.2	13.9	8.5	100.0	1,402
Volta	23.4	18.3	7.2	43.6	4.8	2.7	100.0	976
Eastern	12.3	16.3	9.1	54.0	6.4	1.9	100.0	1,267
Ashanti	12.6	16.6	6.3	54.7	7.1	2.8	100.0	1,888
Brong Ahafo	27.7	16.0	6.3	44.8	4.0	1.3	100.0	1,073
Northern	67.5	8.7	2.9	14.1	4.5	2.4	100.0	1,090
Upper East	68.5	8.9	4.8	13.9	2.7	1.0	100.0	418
Upper West	59.9	9.0	4.2	20.5	4.3	2.1	100.0	271
R3M regions	12.8	15.4	6.9	51.6	9.0	4.3	100.0	4,557
Other regions	35.9	14.7	5.8	36.4	4.9	2.3	100.0	5,813
Wealth quintile								
Lowest	54.6	18.5	5.2	20.9	0.7	0.1	100.0	1,741
Second	39.0	16.9	7.4	35.5	1.2	0.0	100.0	1,839
Middle	23.0	17.5	7.8	48.5	2.5	0.7	100.0	2,025
Fourth	16.0	14.9	6.9	52.3	7.7	2.2	100.0	2,306
Highest	6.8	9.2	4.4	51.4	17.4	10.8	100.0	2,459
Total	25.8	15.0	6.3	43.1	6.7	3.2	100.0	10,370

[1] Completed 6 grades at the primary level
[2] Completed 12 grades at the secondary level

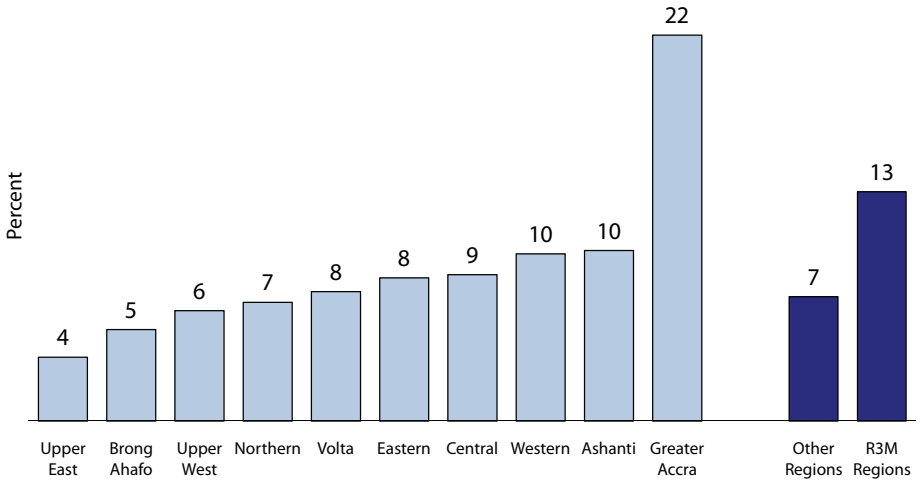
Urban residents are three times as likely to have been to school as rural residents and are more highly educated than rural residents (Figure 2.12). For example, 51 percent of urban women have only some secondary education, compared with 37 percent of rural women. Similarly, urban women are nearly six times as likely as rural women to have completed secondary school or higher (19 percent versus 3 percent).

***Figure 2.12* Educational Attainment among Women Age 15-49**



Women from the three R3M program regions are comparatively more highly educated than women in the other seven regions (Figure 2.13). For example, almost twice as many women in the R3M program regions have completed secondary or higher education as women in the non-R3M regions. Within the three R3M program regions, women in Greater Accra are proportionately more likely to have completed secondary or higher education (22 percent) than women in Eastern (8 percent) or Ashanti (10 percent). Educational attainment is lowest in Upper East, followed closely by the Northern and Upper West regions.

Figure 2.13 **Completed Secondary Education or Higher among Women Age 15-49, by Region**



2.3.3 Exposure to Mass Media

Access to information through the media is essential in enhancing people's knowledge and awareness of what is taking place around them, which may eventually affect their perceptions and behavior. The GMHS collected information on the exposure of respondents to three principal media sources. Respondents were asked whether they read a newspaper, listen to a radio or watch television at least once a week. This information is useful for program managers and planners in determining which medium may be more effective for disseminating health information to targeted audiences. Table 2.6 and Figure 2.14 show that 12 percent of women read a newspaper at least once a week, nearly half of women watch television (48 percent) and nearly three-quarters listen to the radio at least once a week (74 percent). However, less than one in ten women (8 percent) is exposed to all three media sources, and one in five (20 percent) is not exposed to any media at all.

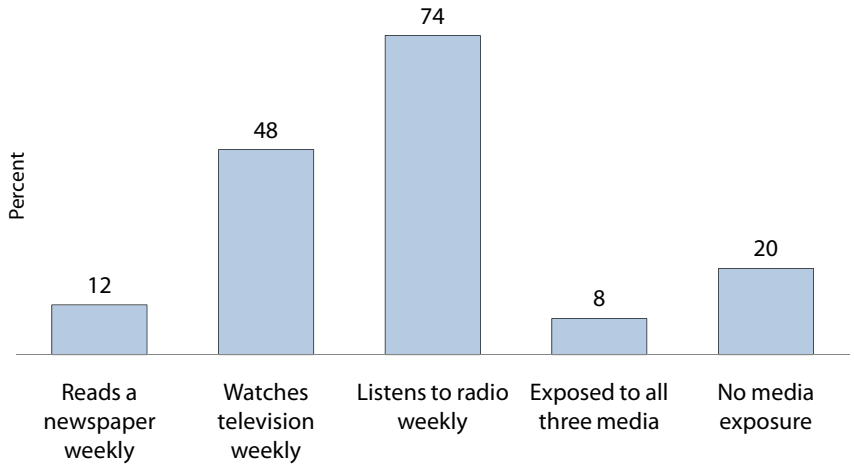
Table 2.6 Exposure to mass media

Percentage of women age 15-49 who are exposed to specific media on a weekly basis (at least once a week), by background characteristics, GMHS 2007

Background characteristic	Newspapers	Television	Radio	All three media	No media	Number of women
Age						
15-19	17.8	53.6	70.1	10.7	19.1	2,064
20-24	15.4	56.1	77.5	11.8	16.2	1,756
25-29	11.5	51.2	75.4	9.2	18.6	1,677
30-34	7.5	45.5	73.5	5.7	21.7	1,508
35-39	6.5	40.5	75.6	5.6	20.6	1,405
40-44	7.9	39.6	75.2	6.6	21.6	996
45-49	9.8	33.3	69.2	5.8	26.3	962
Residence						
Urban	20.5	71.6	81.5	16.0	9.5	4,465
Rural	5.0	29.2	68.0	2.7	28.0	5,905
Region						
Western	13.5	63.8	90.1	11.8	6.3	937
Central	10.7	51.3	80.5	8.0	13.5	1,048
Greater Accra	20.3	71.9	80.3	15.9	9.3	1,402
Volta	11.3	35.0	68.1	6.4	24.5	976
Eastern	13.4	44.2	77.2	8.6	18.0	1,267
Ashanti	8.7	55.7	80.7	6.8	12.8	1,888
Brong Ahafo	8.5	32.9	74.6	5.1	20.5	1,073
Northern	11.1	31.5	47.3	6.7	46.7	1,090
Upper East	3.8	19.0	52.1	3.6	45.3	418
Upper West	4.9	18.1	53.5	3.8	43.5	271
R3M regions	13.6	57.5	79.6	10.1	13.2	4,557
Other regions	10.1	39.6	69.4	7.1	25.4	5,813
Education						
No education	0.3	23.4	55.8	0.1	40.4	2,670
Primary	2.4	40.3	71.9	1.0	22.0	2,208
Middle/JSS	12.5	55.0	81.8	7.7	11.5	4,107
Secondary+	45.9	83.0	88.3	38.1	2.8	1,383
Wealth quintile						
Lowest	2.2	9.5	51.7	0.7	46.0	1,741
Second	3.4	18.1	65.1	0.8	31.4	1,839
Middle	6.7	39.3	75.9	3.4	19.1	2,025
Fourth	13.7	63.6	80.7	9.4	10.1	2,306
Highest	26.6	87.9	87.9	22.7	3.1	2,459
Total	11.6	47.5	73.9	8.4	20.0	10,370

Note: Total includes 1 woman with information missing on education.

Figure 2.14 **Media Exposure among Women Age 15-49**



Media exposure varies with the age of respondent. Younger women are somewhat more likely than older women to be exposed to all three media sources. Not surprisingly, media exposure is much higher in urban than rural areas, among the educated (Figure 2.15) and particularly among women residing in Greater Accra and the Western region (Figure 2.16). Exposure to media is also higher in the R3M program regions than non-R3M regions.

Figure 2.15 **Media Exposure (All Three Media) among Women age 15-49, by Level of Education**

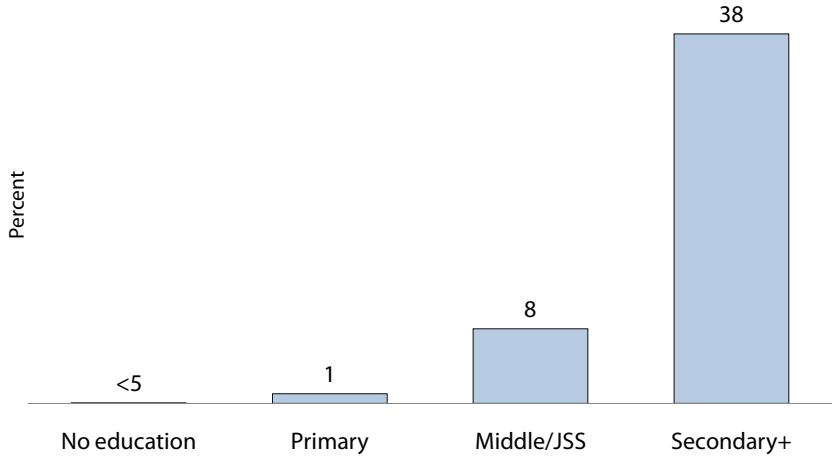
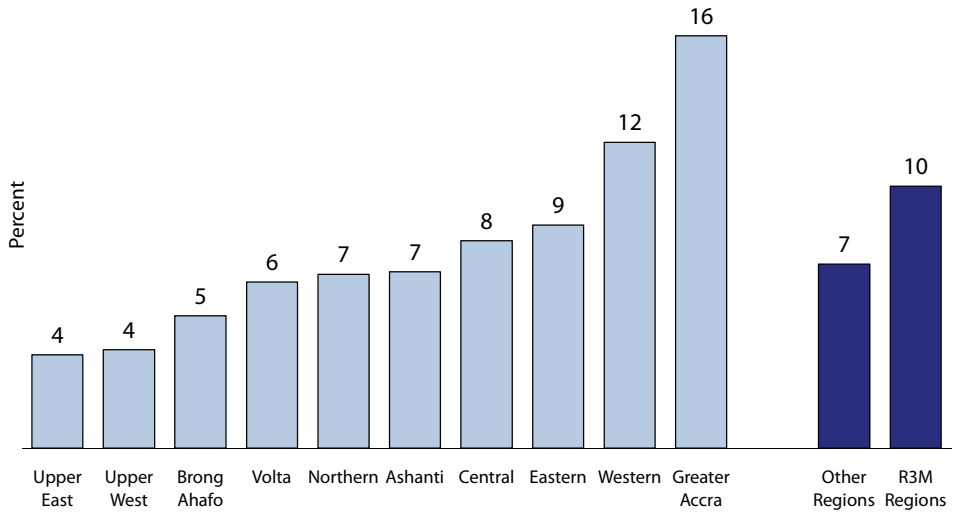


Figure 2.16 **Media Exposure (All Three media) among Women Age 15-49, by Region**



3 • MATERNAL MORTALITY IN GHANA

3.1 INTRODUCTION

The Ghana Maternal Health Survey collected information about maternal mortality in three ways. In order to explain fully the measures of maternal mortality reported in this chapter, it is essential to start with an explanation of which data were collected and how they were collected. In Chapter 1 the broad approach is described, but here the procedures that directly affect the measures are presented.

Phase I of the survey consisted of a very short household questionnaire administered in a sample of approximately 240,000 households. The household questionnaire was used to record the number of persons in each household and the number of deaths in the household in the past five years, and for female deaths, the age at death. In addition, three additional questions were asked if the death was to a female age 12-49: whether she was pregnant at the time of death, or; whether she died during childbirth, or; whether she died within two months of a pregnancy or childbirth. Households that reported one or more deaths of women of reproductive age 12-49 years were then revisited in Phase II for the administration of a verbal autopsy questionnaire that recorded signs and symptoms observed prior to the death, plus an open-ended narrative of the circumstances surrounding the death. A total of 4,203 verbal autopsy questionnaires were completed.

Phase II of the survey consisted of a data collection exercise similar to a standard Demographic and Health Survey, with a household questionnaire followed by a questionnaire administered to all women age 15-49. The woman's questionnaire included background information, a pregnancy history, a sibling history and extensive questioning about abortions, miscarriages and health-seeking behaviors. The Phase II survey was carried out in a subsample of 400 of the original 1,600 Phase I clusters and covered 10,858 households, resulting in 10,370 individual woman interviews.

Information about maternal mortality from the Phase II survey comes from the sibling history included in the woman's questionnaire, which collects information about each of the respondent's brothers and sisters: age if the sibling is still alive, years since death and age at death if the sibling has died, plus the same three additional questions about the timing of death relative to pregnancy, as in the Phase I household questionnaire if the dead sibling was a female who died at age 12 or more. An analysis of the data quality from the sibling history shows no major inconsistencies or omissions. These tables are shown in Appendix B.

It is important to note that the verbal autopsy questionnaire collects somewhat different types of information about maternal death than the Phase I household questionnaire and the sibling history. The verbal autopsy attempts to identify true maternal deaths (the death of a woman during pregnancy or within 42 days of the end of a pregnancy from causes related to or aggravated by the pregnancy, but not from incidental causes) and provides a breakdown of cause of death within the broad "maternal" category. The Phase I household questionnaire and the sibling history in the woman's questionnaire on the other hand, define a "maternal" death based on the time of death relative to pregnancy, without any attempt to distinguish maternal deaths from deaths incidental to the pregnancy, and use a two-month period following the end of the pregnancy. Thus, "maternal" deaths identified in the Phase I household questionnaire and through the sibling history are what are classified as pregnancy-related deaths according to the International Statistical Classification of Diseases and Related Health Problems (WHO, 2004c). This category includes true maternal deaths plus deaths from causes incidental to the pregnancy.

The comparisons of information on maternal mortality from the Phase I household questionnaire together with information on causes of death from the VA questionnaire, and mortality rates from the sibling history in Phase II are an important part of the data evaluation in this section. No nationally representative surveys for Ghana have VA data on adult deaths, so this information is a real contribution not only for gaining an understanding of maternal mortality but overall female mortality. In addition, the data from the sibling history

also provide valuable insight into adult deaths (both male and female). The sibling history provides information on all-cause mortality for males and females below age 50. The verbal autopsy provides data for cause-specific mortality estimates among women between the ages of 12 and 49. Trends and patterns in adult deaths are discussed in Appendix A.

It is important to point out the limitations of the data collected. First, the Phase I household questionnaire did not include a household roster about surviving members of the household to provide age, sex and birth information. Second, the quality of listing in Phase I and the failure to properly record the identification information in the verbal autopsy provided some challenges in estimating maternal mortality from these two sources of data. However, it is important to note that despite the limited information collected in Phase I, these data together with data collected in the verbal autopsy questionnaire administered in Phase II provide valuable insights into maternal mortality and can with some degree of approximation be used in calculating standard indicators that can be compared with data on maternal mortality from the sibling history. The most widely used indicator of maternal mortality is the maternal mortality ratio (MMR), maternal deaths per 100,000 live births. However, in Phase I, birth information was not collected, so fertility measures from the Phase II survey were used instead. Second, information on the age and sex of surviving household members was not collected in Phase I. In order to calculate MMRates, MMRatios, and age-specific mortality rates, an estimated age distribution by age and sex was constructed for the Phase I survey by assuming that it shares the proportionate age distribution of the Phase II survey. Both are random samples of the same national population, and the only comparison possible—of the distribution of households by number of household members—indicated no systematic differences between the two samples.

3.2 Estimates of Pregnancy-Related Mortality from the Sibling History

Table 3.1 shows total sister deaths, pregnancy-related sister deaths, and corresponding indicators of pregnancy-related mortality by age group of respondent for the five years and seven years preceding the survey collected from the sibling history. The table shows direct estimates of the pregnancy-related mortality rates (PRMRate) per 1,000 sister-years of exposure for all age groups combined; this value is obtained not directly from the sister data but rather by multiplying each age-specific PRMRate by the proportion of respondents in the woman's questionnaire in that age group, and summing the results across all age groups. The reason for calculating the total rate in this way is that the age distribution of sisters is systematically different from the true age distribution of women in the population.

Table 3.1 Direct estimates of pregnancy-related mortality rates for the past five years and seven years

Direct estimates of pregnancy-related mortality rates in the five years and seven years preceding the survey from the sibling history, by age, GMHS 2007

	0-4 years preceding survey					0-6 years preceding survey				
Maternal age	Total deaths	Pregnancy-related deaths	Sister exposure years	Pregnancy-related mortality rate (PRMRate)[1]	Proportion of pregnancy-related deaths to all woman deaths	Total deaths	Pregnancy-related deaths	Sister exposure years	Pregnancy-related mortality rate (PRMRate)[1]	Proportion of pregnancy-related deaths to all woman deaths
15-19	29.2	4.3	14,366	0.300	14.7	40.2	5.5	20,945	0.264	13.7
20-24	45.1	8.3	16,902	0.493	18.5	59.0	9.8	23,783	0.412	16.6
25-29	69.9	5.2	16,286	0.321	7.5	94.5	11.9	22,336	0.531	12.6
30-34	64.5	8.2	14,539	0.565	12.7	96.9	13.1	19,970	0.658	13.6
35-39	57.8	14.8	12,277	1.207	25.7	99.1	22.7	16,140	1.407	22.9
40-44	46.8	7.6	8,278	0.923	16.3	63.0	15.0	10,762	1.397	23.9
45-49	30.2	0.0	5,344	0.000	0.0	43.8	0.9	6,741	0.126	1.9
Total	343.4	48.5	87,989	0.530[a]	14.1	496.5	78.9	120,678	0.641[a]	15.9
General fertility rate (GFR)				0.140[a]					0.142[a]	
Pregnancy-related mortality ratio (PRMRatio)[2]				378					451	
Lifetime risk of pregnancy-related death[3]				0.017					0.021	

[1] Expressed per 1,000 woman-years of exposure
[2] Expressed per 100,000 live births, calculated as the PRMRate divided by the GFR
[3] Lifetime risk of pregnancy-related death = 1 - (1 - PRMratio/100,000)^{TFR} where TFR represents the total fertility rate for the five-year period preceding the survey
[a] Age-adjusted based on age distribution of respondents to woman's questionnaire

Table 3.1 also shows the pregnancy-related mortality ratios (PRMRatio) for all ages 15 to 49 for the five years and seven years preceding the survey; this value is obtained by dividing the all-age PRMRate by the general fertility rate (GFR). The GFR is also age-adjusted: it is calculated by multiplying each age-specific fertility rate for a period by the proportion of respondents in the woman's questionnaire in the corresponding age group, and summing the results across all age groups; it is necessary to do this (rather than divide births in a period by the woman-years lived in that period) because the birth history is only collected for women age 15-49 at the time of the survey, such that, for example, for the period 10 to 14 years preceding the survey the births available would all be to women under 40.

The total (weighted) number of sister deaths in the 0-4 years is 343, and the number of those deaths that were pregnancy-related is 49. The proportion of pregnancy-related sister deaths is thus 14 percent. Comparable data for the 0-6 years is 497 sister deaths, with 79 being pregnancy-related, accounting for 16 percent of all deaths. The pregnancy-related mortality ratio for the five years preceding the survey is 378 per 100,000 live births. The five-year ratio allows the comparison of the PRMRatio with that calculated from the Phase I household questionnaire. The PRMRatio for the 7 years preceding the survey is 451 deaths per 100,000 live births. This ratio is comparable to the published MMR for countries that have conducted the DHS and have included the maternal mortality module, and is used in reporting progress towards improving maternal health in achieving MDG-5.

Table 3.2 shows direct estimates of PRMRates from the sibling history by age group and three time periods: 0-4, 5-9, and 10-14 years preceding the survey. The numbers of pregnancy-related deaths are quite small, about 50 per time period, and the PRMRates by age group are quite unstable; across all reproductive ages, the PRMRate for the period 0-4 years before the survey is 0.53 per 1,000 woman-years, somewhat lower than the 0.71 for the period 5-9 years before the survey, which in turn is somewhat higher than the estimate of 0.58 for the period 10-14 years before the survey.

Table 3.2 Trends in direct estimates of pregnancy-related mortality rates

Direct estimates of pregnancy-related mortality rates for three five-year periods preceding the survey from the sibling history, by age, GMHS 2007

	0-4 years preceding survey			5-9 years preceding survey			10-14 years preceding survey		
Maternal age	Pregnancy-related deaths	Sister exposure years	Pregnancy-related mortality rate (PRMRates)[1]	Pregnancy-related deaths	Sister exposure years	Pregnancy-related mortality rate (PRMRates)[1]	Pregnancy-related deaths	Sister exposure years	Pregnancy-related mortality rate (PRMRates)[1]
15-19	4.3	14,366	0.300	4.3	17,079	0.253	4.4	16,736	0.260
20-24	8.3	16,902	0.493	4.5	16,567	0.272	6.4	15,113	0.423
25-29	5.2	16,286	0.321	13.6	14,884	0.911	3.2	12,834	0.248
30-34	8.2	14,539	0.565	8.2	12,628	0.653	8.6	8,758	0.979
35-39	14.8	12,277	1.207	13.1	8,578	1.526	3.8	5,653	0.671
40-44	7.6	8,278	0.923	8.1	5,505	1.470	0.2	2,968	0.060
45-49	0.0	5,344	0.000	0.9	2,883	0.295	2.5	1,313	1.913
Total	48.5	87,989	0.530[a]	52.7	78,125	0.714[a]	29.0	63,374	0.580[a]
General fertility rate (GFR)			0.140[a]			0.152[a]			0.160[a]
Pregnancy-related mortality ratio (PRMRatio)[2]			378			469			362
CI for PRMRatio lower bound[3]			249			306			148
CI for PRMRatio upper bound[3]			505			633			576

Note: PRMRatio for the 0-6 yrs prior to the survey is 451 with a 95 percent CI of 324 and 577
[1] Expressed per 1,000 woman-years of exposure
[2] Expressed per 100,000 live births, calculated as the PRMRate divided by the GFR
[3] CI = 95 percent confidence interval
[a] Age-adjusted based on age distribution of respondents to woman's questionnaire

The corresponding PRMRatios for the three periods preceding the survey are 378, 469 and 362 deaths per 100,000 live births. The MMR estimated for Ghana for 2005 by the WHO/UNICEF/UNFPA/World Bank (2007) joint exercise is 560, with an "uncertainty range" from 200 to 1,300; the estimate was arrived at on the basis of a proportion of maternal of deaths among women of reproductive age of 22 percent. The proportion of pregnancy-related deaths of women age 15-49 in the GMHS sibling history is 14 percent, which largely accounts for the discrepancy in the estimates.

The PRMRatio for the period 0-4 years before the survey is 20 percent lower than that for the period 5-9 years before the survey, suggesting a recent decline in the PRMRatio. This conclusion is undermined, however, by the fact that the estimate for the period 10-14 years before the survey is even lower than the estimate for the 0-4 period. It should also be noted that the 95 percent confidence intervals around the estimates are very wide—on the order of ±30 percent—so the confidence intervals for all the estimates overlap, indicating that there are no statistically significant differences between the estimates.

Table 3.3 shows pregnancy-related deaths by age group and by timing of death relative to pregnancy (during pregnancy, during delivery, or in the two months postpartum); values are reported for the 10 years preceding the survey, to reduce the sampling errors. The PRMRatio have a very clear age pattern: somewhat elevated for births to women age 15-19, at their lowest for women age 20-24, and rising sharply for women age 35-39 and again for women age 40-44, for whom the risk per birth is about six times higher than for women in their 20s. The estimate for women age 45-49 is lower, but it is based on only one pregnancy-related death and has a wide confidence interval, such that the 95 percent confidence intervals overlap with the estimate for women age 40-44. The PRMRatio for women age 35-39 and 40-44 are statistically significantly higher than those for women age 20-34. Data from the 2001 Bangladesh Maternal Mortality Services and Maternal Mortality Survey (BMMS) show a very similar age pattern, with the PRMRatio for women age 40-44 being more than five times higher than that for women age 20-24 (NIPORT et al., 2003).

Table 3.3 Direct estimates of pregnancy-related mortality by age and timing of death

Direct estimates of pregnancy-related mortality by age and timing of death in the ten years preceding the survey from the sibling history, GMHS 2007

Maternal age	Sister exposure years	Deaths during:			Total pregnancy-related deaths	PRMRate[1]	Age-specific fertility rate	PRMRatio[2]	95% Confidence Interval	
		Pregnancy	Delivery	Postpartum					Lower bound	Upper bound
15-19	31,445	5.5	0.0	3.1	8.6	0.274	0.085	324	89	558
20-24	33,469	6.2	6.1	0.5	12.8	0.384	0.196	196	65	328
25-29	31,170	11.7	5.3	1.8	18.8	0.603	0.221	273	102	444
30-34	27,167	4.7	4.4	7.4	16.5	0.606	0.201	301	143	458
35-39	20,854	7.6	9.7	10.6	27.9	1.338	0.143	935	486	1385
40-44	13,782	3.6	7.0	5.2	15.7	1.141	0.083	1373	576	2170
45-49	8,227	0.0	0.0	0.9	0.9	0.103	0.034	308	0	936
Total	166,114	39.3	32.4	29.4	101.2	0.606[a]	0.145	416	313	520

[1] Expressed per 1,000 woman-years of exposure
[2] Expressed per 100,000 live births, calculated as the PRMRate divided by the GFR
[a] Age-adjusted based on age distribution of respondents to woman's questionnaire

In terms of the distribution of deaths by timing relative to pregnancy, the highest number of deaths is reported during pregnancy itself, followed by delivery, and the postpartum period, though the differences are not large (Figure 3.1). The BMMS shows a similar pattern, though with a slightly higher proportion of pregnancy-related deaths occurring during pregnancy than during delivery or the postpartum period.

***Figure 3.1* Timing of Pregnancy-related Deaths in the Ten Years Preceding the Survey**

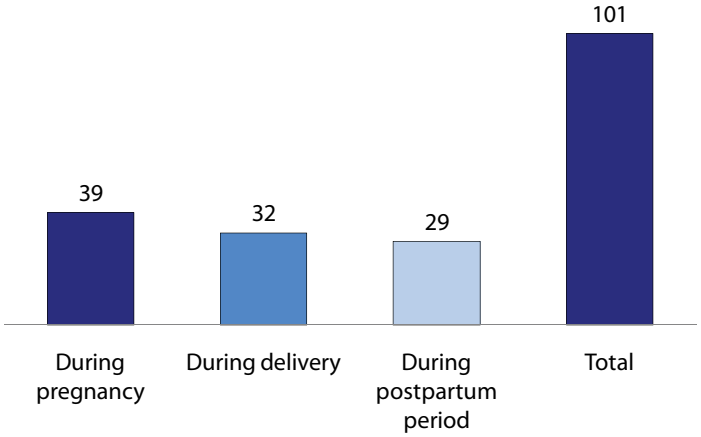


Table 3.4 examines differences in pregnancy-related mortality (of sisters) by the characteristics of respondents. By the nature of the sibling history approach, there is no information on the characteristics of the sisters themselves beyond their age or age at and timing of death. However, if it is assumed that on average, characteristics of sisters will be correlated with those of respondents, the pattern of differentials should be correct even if their magnitude is attenuated. The differentials in the table are counter-intuitive, however.

Table 3.4 Direct estimates of pregnancy-related mortality by background characteristics

Differentials in pregnancy-related mortality in the ten years preceding the survey by background characteristics, GMHS 2007

Background characteristic[1]	Sister exposure years	Total pregnancy-related deaths	PRMRate[2]	GFR	PRMRatio[3]	95% Confidence Interval	
						Lower bound	Upper bound
Residence							
Urban	70,088	36.9	0.527	0.114	464	265	662
Rural	96,025	64.3	0.669	0.189	354	244	463
R3M regions	73,250	42.3	0.577	0.136	423	268	578
Greater Accra	21,953	9.8	0.444	0.099	448	35	862
Eastern	20,492	17.2	0.838	0.141	594	302	885
Ashanti	30,804	15.3	0.498	0.162	308	113	503
Non-R3M regions[4]	92,864	58.9	0.635	0.173	367	241	493
Education							
No education	47,209	26.9	0.569	0.207	275	143	407
Primary	34,594	30.3	0.876	0.176	498	298	697
Middle/JSS	64,990	39.9	0.613	0.139	441	266	616
Secondary+	19,308	4.2	0.217	0.066	329	39	618
Wealth quintile							
Lowest	26,844	16.6	0.620	0.221	281	120	442
Second	31,483	17.2	0.546	0.200	273	100	446
Middle	32,772	25.5	0.779	0.165	473	259	688
Fourth	37,095	24.7	0.666	0.127	523	201	844
Highest	37,920	17.2	0.453	0.100	451	221	682
Total	166,114	101.2	0.606[a]	0.145[a]	416[a]	313	520

[1] Siblings are assumed to have the same background characteristics as the questionnaire respondent
[2] Expressed per 1,000 woman-years of exposure
[3] Expressed per 100,000 live births, calculated as the PRMRate divided by the GFR
[4] Non-R3M regions: Western, Central, Volta, Brong Ahafo, Northern, Upper East, Upper West
[a] Age-adjusted based on age distribution of respondents to woman's questionnaire

PRMRatios are higher in urban than rural areas, are lower in the two poorest wealth quintiles of households, and are lowest for women with no education (though the expected negative association between PRMRatio and education is observed among the categories with primary, secondary and higher education). Of the three R3M program regions, Greater Accra and Eastern have above average PRMRatios, whereas the Ashanti region has below average risk; on average, the R3M program regions have PRMRatios only slightly above the national average. It should be stressed, however, that none of the above differentials are statistically significant: confidence intervals are wide, and overlap for all the categories shown in the table.

3.3 Estimates of Maternal Mortality from the Phase I Survey

This section covers the estimates of maternal mortality available from the Phase I survey (in combination with population indicators from the Phase II survey). The Phase I household questionnaire provides numbers of pregnancy-related female deaths by age in the five years preceding the survey, with the cause of death established by a subsequent verbal autopsy (see Chapter 1 for a description of the verbal autopsy process); the verbal autopsy (VA) identifies true maternal deaths, not just pregnancy-related deaths. In Phase I, 5,623 households were identified with a total of 5,931 deaths to women age 12-49. In Phase II, 5,326 female deaths were identified, indicating a 10 percent dropout between the two phases, primarily due to households not found, or absent despite repeated return visits to administer the VA questionnaire. Additionally, VA questionnaires were not completed for 1,123 female deaths (about 20 percent), the majority of which were determined to be outside the age eligibility for the administration of the VA questionnaire and filtered out, resulting in 4,203 deaths for which cause of death information is available. In order to provide standard indicators of maternal mortality from the Phase I data and to compare this information with data obtained from the sibling history in Phase II, it is assumed that the age distribution of the female population from the Phase I household survey is the same as that obtained from the Phase II woman's questionnaire. A Phase I female age distribution was estimated by multiplying the Phase II age distribution by the ratio of the number of households interviewed in Phase I by the number interviewed in Phase II.

Pregnancy-related maternal mortality rates have been calculated by dividing maternal deaths in each age group (inflated by the age-specific ratios of deaths with verbal autopsies to total deaths reported by households) by the estimated woman-years lived in each age group. Years of exposure are calculated as follows: starting with the estimated 2007 population by five-year age group, half the deaths reported in that age group and half the deaths in the next younger age group in the preceding five years are added to the 2007 population to estimate the population five years earlier, that is in 2002, and five years younger; exposure time for a given age group is then estimated as five times the geometric mean of the 2007 population and the 2002 population.

It was then assumed that the GFR and age-specific fertility rates (ASFRs) calculated from the Phase II woman's questionnaire are representative of these measures for the Phase I survey also which allow the estimation of PRMRatios from the PRMRates. The cause-specific tables in this Chapter and in Appendix A (Tables 3.6, A.3 and A.4) provide the percentage breakdown of deaths by age group and cause. Numbers of deaths by cause are not reported because of differences between the numbers of deaths reported in the Phase I household questionnaire and the numbers of deaths for which VA questionnaires were completed and the inability to link these two data. Consequently, the MMR could not be estimated directly from the verbal autopsy data.

Table 3.5 shows the PRMRates and PRMRatios for the five years preceding the survey. Because of the numerous assumptions made to arrive at this table, no confidence intervals are included. The overall PRMRatio is estimated as 580 per 100,000 live births, substantially higher than the PRMRatio estimated from the sibling history in Table 3.1 but rather similar to the WHO/UNICEF/UNFPA/World Bank estimate of 560 for 2005. The pattern of PRMRatios by age shows the expected pattern of steeply rising risks after age 30; the relative risk for a woman age 40-44 is more than three times higher than for a pregnant woman age 20-24. It is interesting to note that this excess risk is about half the excess risk estimated from the sibling history. Part of the reason for the difference may be poorer reporting of maternal deaths at the household level, where the respondent is any adult member, than at the individual woman's level, where the respondent is the sister of the dead female sibling.

Table 3.5 Pregnancy-related maternal mortality rates and ratios

Pregnancy-related maternal mortality rates and ratios from Phase I household questionnaire and verbal autopsy data by age group, GMHS 2007

Age group	Maternal deaths[1]	Exposure time	Pregnancy-related mortality rate (PRMRate)[2]	Age-specific fertility rate (ASFR)[1]	Pregnancy-related mortality ratio (PRMRatio)[3]
15-19	76	209,819	0.0004	0.016	226
20-24	160	191,590	0.0008	0.032	261
25-29	205	176,443	0.0012	0.035	332
30-34	199	159,582	0.0012	0.029	430
35-39	144	131,806	0.0011	0.018	607
40-44	67	108,032	0.0006	0.007	886
45-49	23	98,220	0.0002	0.003	781
Total	874	1,075,493	0.0008[a]		580
GFR				0.140[a]	

[1] Obtained from the Phase I household questionnaire
[2] Expressed per 1,000 woman-years of exposure
[3] Expressed per 100,000 live births, calculated as the PRMRate divided by the GFR
[a] Age-adjusted based on age distribution of respondents to woman's questionnaire

Table 3.6 and Figure 3.2 show the percentage breakdown of maternal deaths from each cause. Overall, 14 percent of deaths of women of reproductive age are due to maternal causes. The proportion of deaths of sisters in the five years preceding the survey that were pregnancy-related in Table 3.1, calculated from the Phase II sibling history, is very similar, 14.1 percent, despite the fact that the sibling history includes some proportion of deaths incidental to the pregnancy. It was not possible to calculate the MMR from the verbal autopsy due to challenges posed in linking households listed in Phase I and the households for which the verbal autopsy was collected in Phase II.

Table 3.6 also shows the ICD-10 codes used to classify maternal deaths by obstetric complication. Overall, hemorrhage was the largest single cause of maternal death (24 percent) followed by "other not elsewhere classified infectious" (15 percent), "other not elsewhere classified non-infectious" diseases (13 percent) and "other miscellaneous" (13 percent). This high level of non-specificity, over 40 percent of maternal deaths classified to "other" categories, partly reflects the inability of a VA tool to come up with a detailed and plausible distribution of deaths by cause. Induced abortion accounted for 11 percent of deaths. Other major causes of maternal death include hypertensive disorders of pregnancy (9 percent), sepsis (7 percent) and obstructed labor (4 percent). Estimates of global patterns for the early 1990s are 25 percent hemorrhage, 15 percent sepsis, 13 percent hypertensive disorders of pregnancy, 7 percent obstructed labor, 13 percent unsafe abortion, and 26 percent other (AbouZahr, 1996).

For comparison purposes, the 2001 BMMS also identified household deaths (in the three years preceding the survey) and followed up deaths of women of reproductive age with a verbal autopsy, essentially the same methodology as that used by the GMHS (NIPORT et al., 2003). As in the Ghana survey, the largest single cause of maternal death was hemorrhage, accounting for 29 percent of maternal deaths (NIPORT et al., 2003).

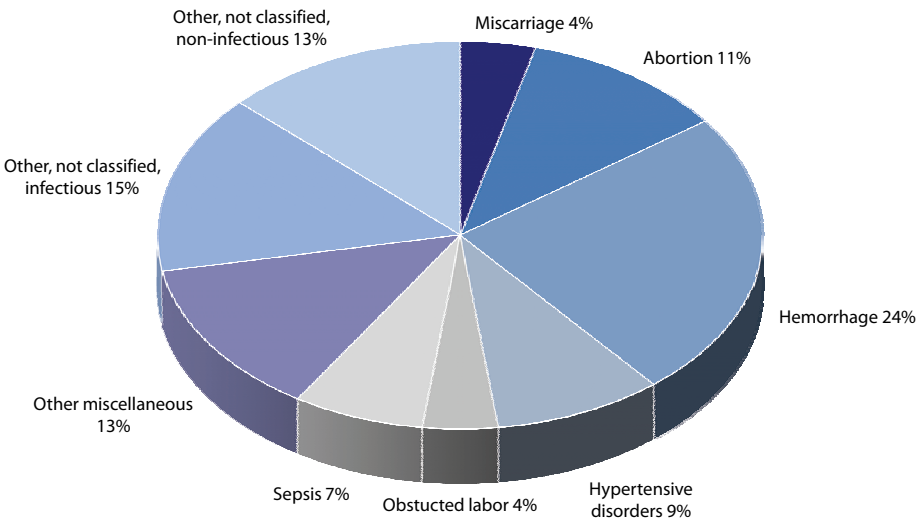
Table 3.6 Causes of maternal deaths

Number of deaths to women age 12-49, number and percentage of deaths that are maternal, and percent distribution of maternal deaths by cause of death, according to age at death and region, GMHS 2007

Characteristic	Total number of deaths	Total number of maternal deaths[1]	Percentage of total deaths that are maternal	Causes of maternal deaths: Spontaneous abortion/ miscarriage[2]	Abortion (medical, attempted, failed, other unspecified)[3]	Hemmor-hage (ante- and post-partum)[4]	Hypertensive disorders of pregnancy (including eclampsia)[5]	Obstructed labor[6]	Sepsis[7]	Other mis-cellaneous[8]	Other not elsewhere classified: Infectious[9]	Other not elsewhere classified: Non-infectious[10]	Total
Age at death													
12-14	95.6	3.0	3.2	27.6	72.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15-19	268.2	52.5	19.6	2.2	26.5	13.2	10.4	2.6	7.1	9.5	15.9	12.6	100.0
20-24	447.0	92.6	20.7	1.6	16.8	16.9	9.1	1.8	5.3	12.1	23.4	12.9	100.0
25-29	530.2	100.5	18.9	2.8	3.0	22.0	13.9	3.1	9.1	10.9	14.9	20.3	100.0
30-34	637.8	92.2	14.5	4.9	8.8	30.1	4.3	6.9	7.7	14.4	13.0	9.8	100.0
35-39	605.3	85.6	14.1	5.5	3.7	37.4	5.6	5.2	6.1	10.7	13.5	12.2	100.0
40-44	503.4	45.0	8.9	7.3	8.7	26.3	5.3	3.4	2.6	26.8	9.3	10.3	100.0
45-49	389.2	14.8	3.8	0.0	28.8	12.0	14.0	5.6	7.3	18.6	0.0	13.7	100.0
R3M regions	1395.3	177.5	12.7	2.5	12.3	22.9	10.4	3.7	11.1	13.6	14.2	9.3	100.0
Greater Accra	236.5	41.3	17.5	0.0	10.4	25.1	18.6	4.2	2.1	16.7	12.5	10.4	100.0
Eastern	452.8	56.2	12.4	2.4	13.1	22.6	7.1	4.8	14.3	19.0	8.3	8.4	100.0
Ashanti	706.0	80.0	11.3	3.9	12.6	21.9	8.4	2.6	13.5	8.3	19.3	9.4	100.0
Other regions	2081.5	308.7	14.8	4.6	10.5	25.1	7.4	4.2	4.1	13.0	15.4	15.7	100.0
Total	3476.8	486.2	14.0	3.9	11.1	24.3	8.5	4.0	6.7	13.3	15.0	13.4	100.0

ICD-10 code classification of cause of death:
[1] O00 - O99
[2] O03
[3] O04, O05, O06, O07
[4] O46, O72, O44, O45, O70, O71
[5] O10.9, O11, O12, O13, O14, O15, O16
[6] O63, O64, O65, O66
[7] O85, O41.1
[8] O71, O94, O96, O10, O82, O75, O74, O45, O21-29, O86, O92
[9] O98
[10] O99

***Figure 3.2* Causes of Maternal Deaths in the Ten Years Preceding the Survey**



Hypertensive disorders (eclampsia) accounted for 24 percent, "other direct" for 18 percent, "indirect" for 15 percent, with 16 percent not classified. Estimates for India, also based on a verbal autopsy, for the period 1997 to 2003 show 38 percent of deaths due to hemorrhage, 11 percent to sepsis, 5 percent to hypertensive disorders, 5 percent to obstructed labor, 8 percent to abortion and 34 percent to other causes (India Sample Registration System, 2006).

In terms of the regional breakdown of maternal deaths, it is interesting to note that Accra has a much higher proportion of deaths due to hypertensive disorders of pregnancy (nearly 19 percent) than other regions, and a dramatically lower proportion due to sepsis. The greater proportion of deaths from hypertensive disorders of pregnancy may reflect the emergence of obesity-related problems among women of reproductive age in Accra, while the lower proportion due to sepsis may reflect better access to appropriate antibiotics.

The breakdown by age shows only small differences except in the case of maternal deaths from induced abortion. A high proportion—over 35 percent—of maternal deaths at age 15-19 and 45-49 are due to induced abortion, and the proportion for women age 20-24 is also well above the average over all ages. The proportion of maternal deaths due to hemorrhage increases with age up to age 39, then declines. Younger women age 15-29 experience relatively higher proportions of deaths due to hypertensive disorder compared with women age 30-44.

3.4 Discussion and Conclusions

The GMHS provides two sources of estimates of maternal (or pregnancy-related) mortality, the sibling history in Phase II and the household deaths with verbal autopsy in Phase I. The estimate of the PRMR for the five years preceding the survey from the sibling history is 378 per 100,000 live births, whereas the estimate of MMR for the same time period from household deaths with VA is 580. Most of the difference arises from differences in the overall level of adult mortality estimated from the two sources. Both estimates are substantially higher than the Ghana Ministry of Health estimates as reported by health institutions. Although the sibling history data indicate small declines in PRMR over the 15 years preceding the survey, the changes are not statistically significant.

An important lesson learned from the survey process is that if the data collection is to be carried out in two phases, as was the case with the GMHS, is that sufficient ancillary information must be collected in Phase I of the survey. Nevertheless these data have proved to be valuable in providing comparable estimates of maternal mortality and insights into adult mortality. The analysis of the GMHS data on recent household deaths was compromised by the lack of information about the age distribution of the population and about recent births. At a minimum, information should be recorded on the household questionnaire about the age of each household member and, for women of reproductive age, the number of children ever born alive and the month and year of her most recent live birth. The availability of such data would enhance the evaluation of the data on household deaths and provide an internal basis for calculating key indices of maternal mortality.

The largest single cause of maternal death from the VA is hemorrhage, followed by induced abortion (among specific causes). Obstetric risk from induced abortion is clearly highest among women at the younger and older ages, but there do not seem to be large differences in abortion deaths as a percentage of all maternal deaths between regions; indeed, the proportion of maternal deaths due to induced abortions is somewhat below average in Greater Accra.

4 • MATERNITY CARE

This chapter covers findings from the Ghana Maternal Health Survey (GMHS) on decisionmaking and care-seeking behavior among Ghanaian women with regards to antenatal, delivery, and postnatal care. This information can be used to identify subgroups of women who face increased risk of illness because of nonuse of maternal health services, and to provide information to assist in the planning of appropriate improvements in services. Data were obtained in relation to the most recent live birth or stillbirth to women that occurred in the five years preceding the survey. Wherever possible, data from the GMHS are compared with data from the earlier DHS surveys in Ghana. However, analysis of trends in maternity care indicators is complicated by the fact that with the exception of the 2003 GDHS, earlier GDHS surveys asked questions on maternity care for all live births and in addition, the questions on maternity care referred to varying periods (sometimes five and sometimes three years) preceding the survey. In addition, DHS surveys collected maternity care information in relation to live births only. While it is possible to adjust for some of these inconsistencies, it is not possible to correct for them all. Nevertheless, these comparisons provide an overall picture of the trends in the quality of care over the last two decades.

4.1 ANTENATAL CARE

Proper care during pregnancy and childbirth is important to the health of mother and child. Antenatal care is a major component of comprehensive maternal health care. Antenatal care facilitates the detection and treatment of problems during pregnancy and provides an opportunity to inform women, and their families, about their health and the danger signs associated with a pregnancy. In addition, early and regular contact with a formal health care system during pregnancy can contribute to timely and effective use of services during and after delivery or in the event of an obstetric complication. It is during an antenatal care visit that screening for complications and advice on a range of maternity-related issues take place.

4.1.1 Antenatal Care Coverage

Women who had a live birth or a stillbirth in the five years preceding the survey were asked a series of questions in the GMHS on antenatal care coverage. Respondents were asked if they received antenatal care, and if so the type of person who provided that care, the frequency and timing of antenatal care visits to a health professional, reasons for seeking or not seeking antenatal care, the components of antenatal care to assess the quality of care received, and whether pregnant women received tetanus toxoid injections. Although interviewers were instructed to record all providers a woman consulted for care, only the most qualified person is considered in this table.

The data indicate that the majority (96 percent) of pregnant women in Ghana received antenatal care for births that occurred in the five years before the survey from a trained provider, that is, a doctor, nurse/midwife or auxiliary midwife (Table 4.1 and Figure 4.1). The primary source of antenatal care in Ghana is nurse/midwife or auxiliary midwife (78 percent). Only one in five women (19 percent) receive care from a doctor and less than 1 percent of pregnant mothers receive antenatal care from trained or untrained traditional birth attendants. Three percent of women mentioned that they did not receive any antenatal care for their most recent pregnancy.

Table 4.1 Antenatal care

Percent distribution of women age 15-49 who had a live birth or stillbirth in the five years preceding the survey by antenatal care (ANC) provider during pregnancy for the most recent birth, and the percentage receiving antenatal care from a skilled provider for the most recent birth, according to background characteristics, GMHS 2007

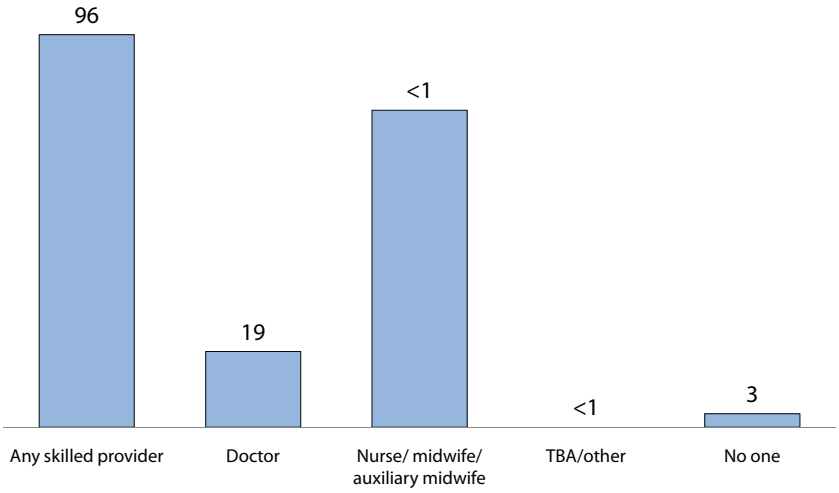
Background characteristic	Received any ANC	Medically trained		Not medically trained			No one	Missing	Total	Percentage receiving antenatal care from a skilled provider[1]	Number of women
		Doctor	Nurse/ midwife/ auxiliary midwife	Traditional birth attendant	Untrained traditional birth attendant	Other					
Birth outcome											
Live birth	96.7	18.5	77.8	0.2	0.1	0.1	3.2	0.1	100.0	96.3	4,847
Stillbirth	87.9	23.1	64.7	0.0	0.0	0.0	10.2	2.0	100.0	87.9	81
Mother's age at birth											
<20	97.0	14.7	82.1	0.1	0.0	0.0	3.0	0.0	100.0	96.8	534
20-34	96.8	19.2	77.2	0.2	0.1	0.1	3.0	0.1	100.0	96.4	3,391
35-49	95.2	18.1	76.6	0.3	0.1	0.0	4.4	0.4	100.0	94.7	1,003
Birth order											
1	98.6	20.7	77.7	0.1	0.0	0.2	1.2	0.2	100.0	98.4	1,051
2-3	97.2	20.5	76.4	0.2	0.0	0.0	2.7	0.1	100.0	96.9	1,769
4-5	96.9	18.3	77.8	0.2	0.4	0.2	2.9	0.2	100.0	96.1	1,161
6+	92.4	12.7	79.4	0.2	0.1	0.0	7.3	0.2	100.0	92.1	948
Residence											
Urban	98.7	30.8	67.6	0.1	0.1	0.0	0.9	0.4	100.0	98.4	1,683
Rural	95.4	12.1	82.8	0.2	0.1	0.1	4.6	0.0	100.0	94.9	3,245
Region											
Western	97.0	27.2	69.2	0.7	0.0	0.0	2.5	0.5	100.0	96.3	400
Central	97.8	13.2	84.4	0.2	0.0	0.0	2.2	0.0	100.0	97.7	479
Greater Accra	96.4	45.7	50.1	0.2	0.4	0.0	3.2	0.4	100.0	95.8	470
Volta	96.4	10.7	85.7	0.0	0.0	0.0	3.5	0.1	100.0	96.4	451
Eastern	97.2	16.9	79.4	0.7	0.2	0.1	2.7	0.1	100.0	96.2	567
Ashanti	97.9	27.6	69.8	0.0	0.1	0.3	1.9	0.2	100.0	97.5	922
Brong Ahafo	98.0	11.4	86.3	0.0	0.3	0.0	2.0	0.0	100.0	97.7	564
Northern	91.7	7.6	84.0	0.1	0.0	0.0	8.2	0.2	100.0	91.6	699
Upper East	98.7	2.4	95.9	0.5	0.0	0.0	1.3	0.0	100.0	98.3	225
Upper West	94.3	3.4	90.9	0.0	0.0	0.0	5.7	0.0	100.0	94.3	152
R3M regions	97.3	28.8	67.9	0.2	0.2	0.2	2.5	0.2	100.0	96.7	1,959
Other regions	96.0	11.7	84.0	0.2	0.1	0.0	3.9	0.1	100.0	95.7	2,969
Mother's education											
No education	93.5	11.1	82.1	0.2	0.1	0.0	6.3	0.1	100.0	93.2	1,678
Primary	96.7	18.2	77.9	0.2	0.4	0.1	2.8	0.4	100.0	96.1	1,102
Middle/JSS	98.6	21.3	76.9	0.3	0.0	0.1	1.4	0.0	100.0	98.2	1,797
Secondary+	99.5	40.8	58.6	0.0	0.0	0.0	0.5	0.0	100.0	99.5	350
Wealth quintile											
Lowest	93.1	7.9	84.8	0.2	0.3	0.0	6.9	0.0	100.0	92.7	1,074
Second	94.9	9.4	85.0	0.3	0.1	0.1	5.0	0.1	100.0	94.4	1,061
Middle	98.2	16.2	81.7	0.3	0.0	0.1	1.8	0.0	100.0	97.9	975
Fourth	98.1	25.5	72.2	0.2	0.0	0.2	1.5	0.3	100.0	97.7	983
Highest	99.0	38.2	60.6	0.0	0.2	0.0	0.6	0.4	100.0	98.7	835
Total	96.5	18.5	77.6	0.2	0.1	0.1	3.3	0.2	100.0	96.1	4,928

Note: If more than one source of ANC was mentioned, only the provider with the highest qualifications is considered in this tabulation. Total includes one woman with information missing on education.

[1] Skilled provider includes doctor, nurse/midwife, and auxiliary midwife

Figure 4.1 Antenatal Care by Provider

(Women 15-49 with a live birth or stillbirth in the five years preceding the survey)

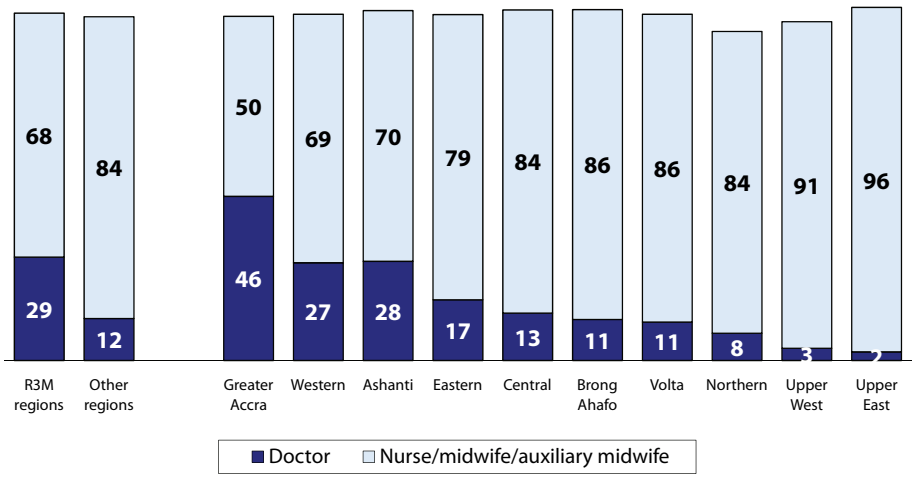


Differences in levels of antenatal care from a skilled provider among subgroups of women in Ghana are small. Antenatal care is more common among mothers who have had a live birth (96 percent) than among mothers who have had a stillbirth (88 percent) and is highest among births to mothers age 20 and below and among first order births. Antenatal care is also higher in urban areas, among women with secondary and higher level of education and among those in the highest wealth quintile.

Figure 4.2 shows that although overall antenatal care from a health professional is only slightly higher in the R3M program regions than in the non-R3M regions, women residing in the former regions are more than twice as likely to receive care from a doctor as women who reside in the latter regions (29 percent versus 12 percent). Conversely, 84 percent of women residing in the non-R3M regions received care from a nurse/midwife or auxiliary midwife compared with 68 percent of women residing in the R3M program regions.

Figure 4.2 Antenatal Care by Region

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



4.1.2 Number and Timing of Antenatal Care Visits

The frequency and timing of antenatal care visits and especially the timing associated with the first checkup are both important in detecting and preventing adverse pregnancy outcomes. Care is most effective if the visits begin early during a pregnancy and continue at regular intervals throughout the pregnancy. The World Health Organization (WHO) and the Government of Ghana (GoG) recommend a minimum of four antenatal care visits, and at least one during each trimester of pregnancy.

Table 4.2 and Figures 4.3 and 4.4 show the frequency of antenatal visits and the timing of the initial visit, for live births and stillbirths that occurred in the five years preceding the survey, by urban-rural residence. More than three in four women (77 percent) made four or more antenatal visits during pregnancy, however, only about one in two (53 percent) sought initial care during the first trimester. Not surprisingly, frequency of antenatal visits is higher in urban than rural areas, with 89 percent of urban women seeking care at least 4 times, compared with 70 percent of rural women. The timing of the initial antenatal care visit for many Ghanaian women is later than the recommended first trimester. The median number of months pregnant when women make their first visit is 3.8 months with small differences between urban (3.7 months) and rural (3.9 months) areas.

Table 4.2 Number of antenatal care visits and timing of first visit

Percent distribution of women age 15-49 who had a live birth or stillbirth in the five years preceding the survey by number of antenatal care (ANC) visits for the most recent birth, and by the timing of the first visit, and among women with ANC, median months pregnant at first visit, according to residence, GMHS 2007

Number and timing of ANC visits	Residence		Total
	Urban	Rural	
Number of ANC visits			
None	0.9	4.6	3.3
1	1.5	4.5	3.5
2-3	7.5	20.3	15.9
4+	89.1	70.3	76.7
Don't know/missing	1.0	0.4	0.6
Total	100.0	100.0	100.0
Number of months pregnant at time of first ANC visit			
No antenatal care	0.9	4.6	3.3
<4	58.8	49.7	52.8
4-5	32.3	34.2	33.5
6-7	6.8	9.7	8.7
8+	0.6	1.7	1.3
Don't know/missing	0.6	0.2	0.3
Total	100.0	100.0	100.0
Number of women	1,683	3,245	4,928
Median months pregnant at first visit (for those with ANC)	3.7	3.9	3.8
Number of women with ANC	1,662	3,094	4,756

***Figure 4.3* Number of Antenatal Care Visits**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)

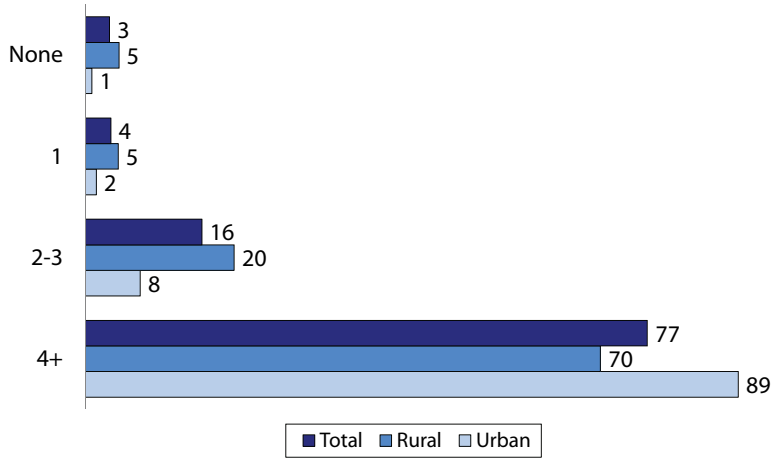
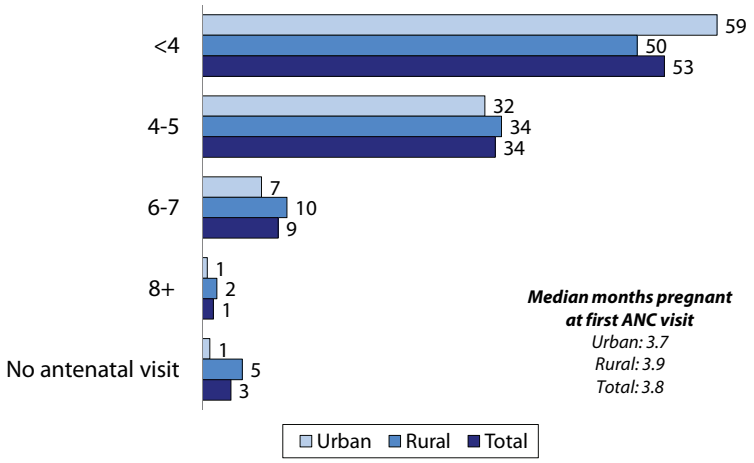


***Figure 4.4* Number of Months Pregnant at First Antenatal Care Visit**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



The median number of antenatal visits made by mothers for their most recent live birth or stillbirth in the five years before the survey is 5.9. Table 4.3 and Figure 4.5 demonstrates that the median number of visits is higher among mothers with a live birth outcome than among mothers who have had a stillbirth, among women age 20-34, among mothers of first order births, in urban areas, in Greater Accra, among those with at least secondary education, and among those who live in the wealthiest households. The median number of visits is also higher in the R3M program regions than in the non-R3M regions.

Differences by background characteristics in the median number of months pregnant at first visit are most notable for, mother's age at birth, birth order, region, education, and wealth quintile (data not shown). The early initiation of antenatal care is more common among women age 20-34 years, for births of order 5 and below, among women with secondary and higher education and among women from the richest households. Differences by region range from a low median of 3.4 months in the Upper West to a high of 4.3 months in the Northern region for seeking initial antenatal care. There was little difference in the median number of months pregnant at first visit between the R3M program regions and the other regions.

Table 4.3 Number of antenatal care visits by background characteristics

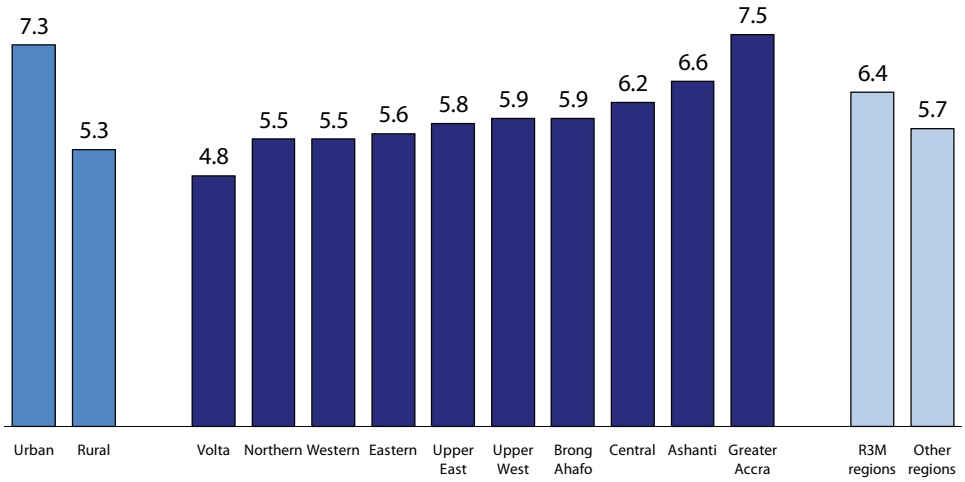
Percent distribution of the most recent live births and stillbirths in the five years preceding the survey by number of antenatal care visits, and median number of visits, according to background characteristics, GMHS 2007

Background characteristic	Number of antenatal care visits					Total	Median number of visits	Number of births
	0	1	2-3	4+	Don't know/ missing			
Birth outcome								
Live birth	3.2	3.4	16.0	77.0	0.5	100.0	5.9	4,847
Stillbirth	10.2	9.7	13.8	63.3	3.1	100.0	5.6	81
Mother's age at birth								
<20	3.0	3.9	20.9	71.7	0.5	100.0	5.2	534
20-34	3.0	3.0	14.9	78.5	0.5	100.0	6.1	3,391
35-49	4.4	4.8	16.6	73.3	0.8	100.0	5.7	1,003
Birth order								
1	1.2	2.9	14.0	81.5	0.4	100.0	6.2	1,051
2-3	2.7	2.9	14.2	79.6	0.5	100.0	6.1	1,769
4-5	2.9	3.4	16.2	76.8	0.6	100.0	6.0	1,161
6+	7.3	5.1	20.8	66.0	0.8	100.0	5.2	948
Residence								
Urban	0.9	1.5	7.5	89.1	1.0	100.0	7.3	1,683
Rural	4.6	4.5	20.3	70.3	0.4	100.0	5.3	3,245
Region								
Western	2.5	1.5	19.3	76.1	0.5	100.0	5.5	400
Central	2.2	3.1	10.1	84.3	0.2	100.0	6.2	479
Greater Accra	3.2	1.9	12.2	80.9	1.7	100.0	7.5	470
Volta	3.5	5.9	29.9	60.6	0.1	100.0	4.8	451
Eastern	2.7	4.3	20.1	72.8	0.1	100.0	5.6	567
Ashanti	1.9	3.1	11.5	83.2	0.3	100.0	6.6	922
Brong Ahafo	2.0	4.3	15.8	77.7	0.1	100.0	5.9	564
Northern	8.2	4.7	14.8	71.6	0.8	100.0	5.5	699
Upper East	1.3	0.0	10.6	87.6	0.6	100.0	5.8	225
Upper West	5.7	2.1	20.0	68.9	3.4	100.0	5.9	152
R3M regions	2.5	3.2	14.1	79.6	0.6	100.0	6.4	1,959
Other regions	3.9	3.6	17.1	74.8	0.5	100.0	5.7	2,969
Mother's education								
No education	6.3	5.2	19.2	68.6	0.8	100.0	5.3	1,678
Primary	2.8	4.4	21.1	70.5	1.1	100.0	5.4	1,102
Middle/JSS	1.4	1.7	11.8	85.0	0.1	100.0	6.5	1,797
Secondary+	0.5	1.0	5.2	92.9	0.4	100.0	7.9	350
Wealth quintile								
Lowest	6.9	7.2	23.6	61.9	0.5	100.0	4.9	1,074
Second	5.0	4.4	20.8	69.4	0.5	100.0	5.2	1,061
Middle	1.8	2.6	18.7	76.7	0.2	100.0	5.5	975
Fourth	1.5	1.4	9.9	86.5	0.6	100.0	6.7	983
Highest	0.6	0.9	3.7	93.7	1.1	100.0	8.3	835
Total	3.3	3.5	15.9	76.7	0.6	100.0	5.9	4,928

Note: Total includes 1 woman with information missing on education.

***Figure 4.5* Median Number of Antenatal Care Visits by Residence and Region**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



4.1.3 Reasons for Seeking or Not Seeking Antenatal Care

Figure 4.6 shows that among women who sought antenatal care, more than four in five (83 percent) sought care for a general checkup rather than for a specific problem. Among the 17 percent of women who did seek antenatal care for a specific reason, 5 percent each cited headache, lower abdominal pain and excessive vomiting, as the primary problem for which care was sought initially, with a smaller percentage citing blurry vision (3 percent) and vaginal bleeding (1 percent). Eight percent of women cited other problems, which included edema/pre-eclampsia, varicose veins, or limited fetal movement (less than 1 percent each).

As seen in Figure 4.7, among the small percentage of women who did not seek antenatal care (4 percent), the most frequently cited reason was lack of money (56 percent), followed by lack of need (32 percent). Other reasons, including distance to a health facility, and transportation problems were mentioned by 31 percent of women.

***Figure 4.6* Reasons for Seeking Antenatal Care**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)

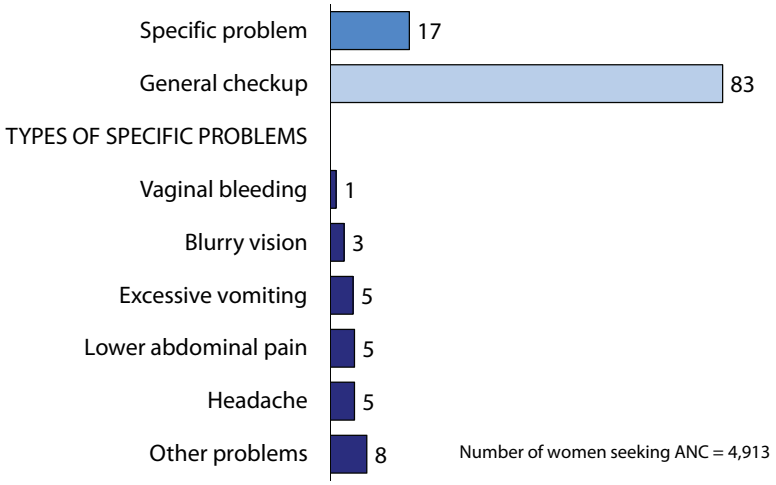
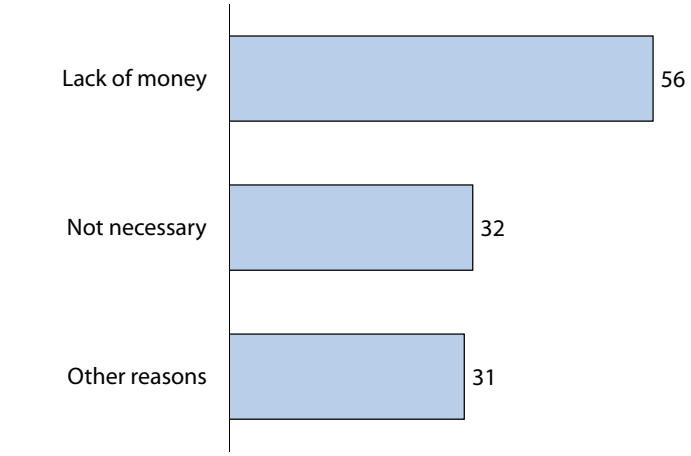


***Figure 4.7* Reasons for Not Seeking Antenatal Care**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



Number of women not seeking ANC = 173

4.1.4 Quality of Antenatal Care

Of particular interest is the quality of antenatal care services provided to women during their visit. The GMHS collected data on information and services provided during antenatal care to pregnant women in the five years preceding the survey for their most recent birth.

Seventy percent of women who received antenatal care for their most recent live birth or stillbirth in the past five years were informed of signs of pregnancy complications, and nearly all of them (68 percent) were also informed of where to go if complications occur (Table 4.4 and Figure 4.8). Women who had a live birth were much more likely to have been informed about signs of pregnancy complications (71 percent) than women who had a stillbirth (63 percent). Educated women with at least middle/JSS level of education were also much more likely to have been informed of pregnancy complications (78 percent) than women with no education (60 percent). Differences were also noticeable by region, ranging from 47 percent in Northern region to 90 percent in Western region. Differences between the R3M program regions and the other regions were small (72 percent versus 69 percent). A similar pattern by background characteristics was observed in terms of women being informed of where to go if complications occur.

Nearly all women who sought antenatal care were weighed and had their blood pressure measured (98 percent each), with lower percentages of women who had a urine and blood sample taken (89 percent each). Coverage of these services was generally lower in the Upper West region, among the uneducated and the poorest.

Table 4.4 also shows the percentage of all women who took iron tablets or syrup and intestinal parasitic drugs during their most recent pregnancy in the past five years. More than nine in ten women took iron tablets or syrup with only minor differences by background characteristics. On the other hand, only slightly more than one in three women (37 percent) took intestinal parasite drugs. Differences by background characteristics mirror the pattern discussed for quality of ANC care.

Table 4.4 Components of antenatal care

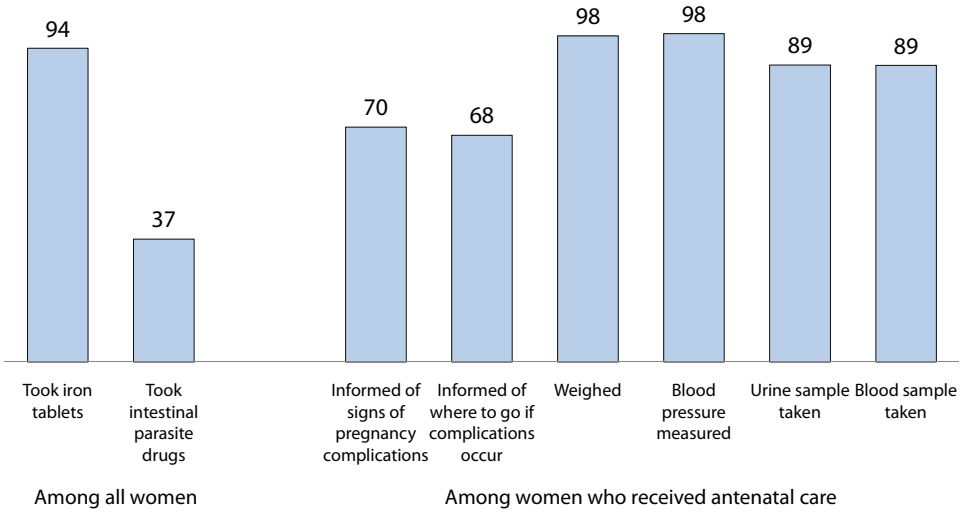
Among women age 15-49 with a live birth or stillbirth in the five years preceding the survey, the percentage who took iron tablets or syrup and who took drugs for intestinal parasites during the pregnancy of the most recent birth, and among women receiving antenatal care (ANC) for the most recent birth in the five years preceding the survey, the percentage receiving specific antenatal services, according to background characteristics, GMHS 2007

	Among women with a live birth or stillbirth in the past five years, the percentage who during the pregnancy for their last birth:			Among women who received antenatal care for their most recent live birth or stillbirth in the past five years, the percentage who received specific services:						
Background characteristic	Took iron tablets or syrup	Took intestinal parasite drugs	Number of women with a live birth or stillbirth in the past five years	Informed of signs of pregnancy complica-tions	Informed of where to go if complica-tions occur	Weighed	Blood pressure measured	Urine sample taken	Blood sample taken	Number of women with ANC for their most recent live birth or stillbirth
Birth outcome										
Live birth	94.1	36.9	4,847	70.5	68.1	97.6	98.3	89.0	88.9	4,691
Stillbirth	86.7	27.5	81	62.9	57.3	94.0	96.5	81.0	81.2	73
Mother's age at birth										
<20	94.1	43.4	534	73.3	70.9	97.2	98.6	86.5	87.1	518
20-34	94.4	37.2	3,391	70.7	68.3	97.8	98.4	89.5	89.0	3,288
35-49	92.3	31.9	1,003	67.7	65.3	97.1	97.7	88.2	89.0	959
Birth order										
1	96.4	39.1	1,051	71.3	69.2	97.4	98.8	90.7	90.2	1,038
2-3	94.6	38.0	1,769	71.9	69.1	97.9	98.5	90.6	90.0	1,721
4-5	94.0	36.4	1,161	70.2	68.0	97.6	97.7	86.3	85.6	1,127
6+	89.8	32.5	948	66.4	64.1	97.1	97.7	86.6	88.8	879
Residence										
Urban	96.0	36.1	1,683	76.5	74.3	98.1	98.9	96.2	95.8	1,668
Rural	92.9	37.2	3,245	67.0	64.5	97.3	97.9	84.9	85.0	3,096
Region										
Western	92.2	70.6	400	90.1	89.1	97.7	97.4	95.8	95.6	390
Central	94.9	55.0	479	65.5	60.4	99.2	99.8	94.9	95.1	468
Greater Accra	94.9	30.0	470	60.7	57.5	96.5	97.7	94.6	92.7	455
Volta	93.6	18.6	451	58.4	57.4	96.2	98.5	77.3	75.8	435
Eastern	91.1	43.0	567	69.5	65.8	95.3	97.2	90.4	89.0	552
Ashanti	95.5	37.2	922	79.8	78.3	98.5	99.2	92.5	91.9	904
Brong Ahafo	96.4	33.1	564	80.6	78.8	98.5	98.9	93.9	92.2	553
Northern	90.8	19.6	699	47.1	43.7	97.1	96.2	83.3	88.3	642
Upper East	97.5	31.6	225	88.9	88.5	99.6	100.0	73.9	72.8	222
Upper West	94.5	40.3	152	78.9	78.4	97.7	98.9	68.1	69.9	143
R3M regions	94.1	37.1	1,959	72.3	69.7	97.1	98.3	92.4	91.3	1,911
Other regions	93.8	36.6	2,969	69.1	66.7	97.9	98.3	86.6	87.1	2,853
Mother's education										
No education	91.7	30.3	1,678	60.4	58.2	97.5	97.6	81.7	83.2	1,572
Primary	93.7	38.4	1,102	69.2	65.7	96.6	97.8	87.7	88.4	1,070
Middle/JSS	95.7	41.9	1,797	78.5	76.4	97.8	98.8	94.1	92.8	1,773
Secondary+	95.8	36.3	350	77.5	75.8	99.5	100.0	98.1	94.8	349
Wealth quintile										
Lowest	91.5	29.4	1,074	62.1	60.2	96.7	97.4	74.7	75.5	1,000
Second	92.3	34.3	1,061	65.2	62.3	97.5	97.6	88.2	88.0	1,008
Middle	94.9	43.1	975	72.4	69.7	97.8	98.7	91.2	92.1	958
Fourth	95.2	41.5	983	73.0	70.5	97.5	98.5	94.8	93.0	968
Highest	96.5	36.6	835	81.0	79.2	98.6	99.3	97.3	97.0	830
Total	93.9	36.8	4,928	70.3	67.9	97.6	98.3	88.9	88.8	4,764

Note: Total includes 1 woman with information missing on education.

***Figure 4.8* Components of Antenatal Care**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



4.1.5 Tetanus Toxoid Coverage

An important component of antenatal care is ensuring that pregnant women and children are adequately protected against tetanus. Tetanus toxoid injections are given during pregnancy for the prevention of neonatal tetanus, an important cause of death among infants. Five doses given at specified periods provide lifetime protection. However for full antenatal protection, a pregnant woman should receive at least two doses of tetanus toxoid.

Table 4.5 and Figure 4.9 show that about three-fifths of women (62 percent) received at least two doses of tetanus toxoid during the pregnancy for their most recent birth, and four in five women (79 percent) were protected for their last birth. Stillbirths are less likely to be protected against neonatal tetanus than live births. Also less likely to be protected are births to women less than 20 years, first births, births in rural areas, in the Northern region, among women with no education and among women living in households falling in the lowest two wealth quintiles.

Table 4.5 Tetanus toxoid injections

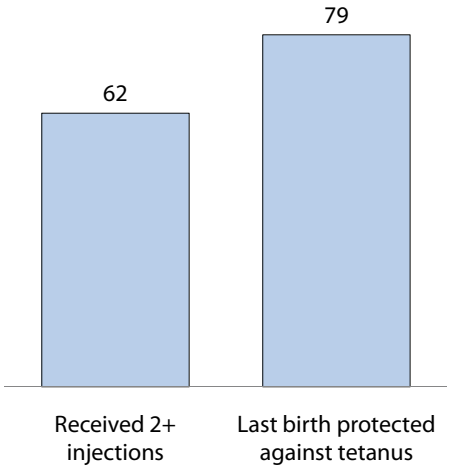
Among women age 15-49 with a live birth or stillbirth in the five years preceding the survey, the percentage receiving two or more tetanus toxoid (TT) injections during the pregnancy for the last birth, and the percentage whose last birth was protected against neonatal tetanus, according to background characteristics, GMHS 2007

Background characteristic	Percentage receiving two or more injections during last pregnancy	Percentage whose last birth was protected against neonatal tetanus	Number of mothers
Birth outcome			
Live birth	61.9	79.6	4,847
Stillbirth	47.3	69.4	81
Mother's age at birth			
<20	59.5	72.4	534
20-34	62.2	80.4	3,391
35-49	61.1	79.9	1,003
Birth order			
1	66.2	73.8	1,051
2-3	60.4	81.4	1,769
4-5	60.3	81.8	1,161
6+	60.8	79.1	948
Residence			
Urban	64.9	82.7	1,683
Rural	60.0	77.7	3,245
Region			
Western	62.4	83.5	400
Central	64.6	84.9	479
Greater Accra	57.6	74.0	470
Volta	54.6	78.5	451
Eastern	57.7	78.4	567
Ashanti	60.7	85.5	922
Brong Ahafo	59.5	80.8	564
Northern	67.0	69.8	699
Upper East	73.7	77.7	225
Upper West	71.4	79.1	152
R3M regions	59.1	80.7	1,959
Other regions	63.4	78.6	2,969
Mother's education			
No education	60.6	72.0	1,678
Primary	58.5	80.1	1,102
Middle/JSS	63.2	84.8	1,797
Secondary+	69.2	84.8	350
Wealth quintile			
Lowest	61.6	74.1	1,074
Second	57.3	75.5	1,061
Middle	61.2	81.6	975
Fourth	62.1	82.6	983
Highest	67.6	85.0	835
Total	61.7	79.4	4,928

[1] Includes mothers with two injections during the pregnancy of her last birth, or two or more injections (the last within 3 years of the last live or stillbirth), or three or more injections (the last within 5 years of the last birth), or four or more injections (the last within ten years of the last live or stillbirth), or five or more injections prior to the last birth. Total includes 1 woman with information missing on education.

***Figure 4.9* Tetanus Toxoid Immunization**

(Women age 15-49 with a live birth or stillbirth in the five years preceding the survey)



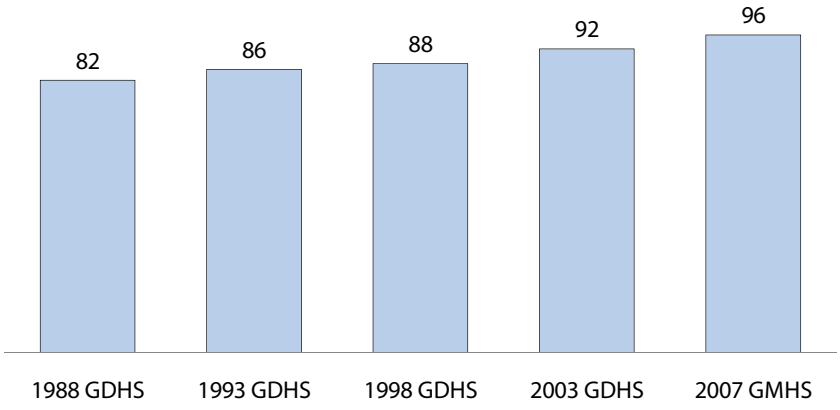
4.1.6 Trends in Antenatal Care

Data from the GMHS can be compared with data from the four Ghana Demographic and Health Surveys conducted between 1988 and 2003, to show trends in antenatal care coverage over the past two decades. Antenatal care from a skilled health professional has been increasing steadily over time, from 82 percent of births in 1988 to 92 percent in 2003 (GSS and IRD/Macro, 1989; GSS et al., 2004) and further to 96 percent in 2007, a 17 percent increase over the past two decades (Figure 4.10).[1] The proportion of women making at least four antenatal visits has increased by 31 percent in the past 15 years, while the proportion seeking pregnancy care in the first trimester increased by 61percent over the same period (Figure 4.11). At the same time there have been marked improvements in the quality of antenatal care received by pregnant women. In the five years between 2003 and 2007, the percentage of women informed of pregnancy complications increased from 61 percent to 70 percent (Figure 4.12). Tetanus toxoid coverage (two doses or more), for the most recent birth in the five years preceding the survey, increased from 50 percent to 62 percent over the same period (Figure 4.12).

[1] Mortality data on antenatal care collected in the four GDHS surveys were restricted to live births. Data collected in the 2008 GMHS includes live births and stillbirths. ANC information in the 1988 GDHS and the 1998 GDHS covers births in the five years preceding the survey; ANC information in the 1993 GDHS covers births in the three years preceding the survey. The 2003 GDHS and the 2008 GMHS information on ANC covers the last live birth or stillbirth in the five years preceding the survey.

Figure 4.10 Trends in Antenatal Care from a Skilled Provider

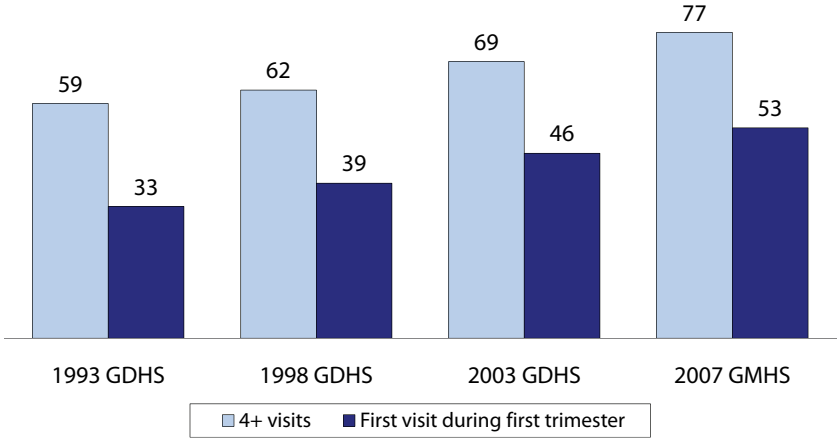
(Women/births in the three/five years preceding the survey)



Note: Data on antenatal care collected in the four GDHS surveys were restricted to live births. Data collected in the 2008 GMHS includes live births and stillbirths. ANC information in the 1988 and the 1998 GDHS was with reference to births in the five years before the survey, the 1993 GDHS information was with reference to births in the three years preceding the survey. The 2003 GDHS and the 2007 GMHS restricted this information to ANC received by women for the last live birth and the last live birth or stillbirth, respectively, in the five years preceding the survey.

Figure 4.11 Trends in Frequency and Timing of Antenatal Care Visits

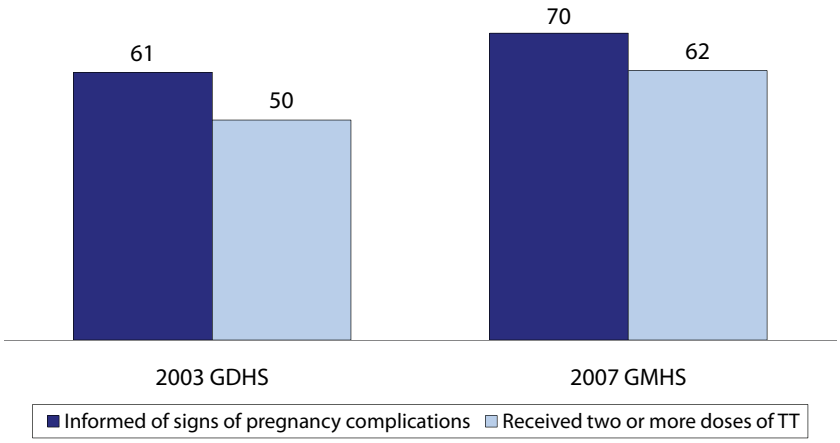
(Women/births in the three/five years preceding the survey)



Note: Data on antenatal care collected in the four GDHS surveys were restricted to live births. Data collected in the 2008 GMHS includes live births and stillbirths. ANC information in the 1998 GDHS was with reference to births in the five years before the survey, the 1993 GDHS information was with reference to births in the three years preceding the survey. The 2003 GDHS and the 2007 GMHS restricted this information to ANC received by women for the last live birth and the last live birth or stillbirth, respectively, in the five years preceding the survey.

***Figure 4.12* Trends in Quality of Care and Protection Against Tetanus**

(Women in the five years preceding the survey)



Note: Data in the 2003 GDHS were restricted to live births. Data in the 2008 GMHS include live births and stillbirths. The 2003 GDHS and the 2007 GMHS collected information on ANC received by women for the last live birth and the last live birth or stillbirth, respectively, in the five years preceding the survey.

4.2 DELIVERY CARE

Traditionally, children in Ghana are delivered at home with the assistance of birth attendants or elderly women of the community. An important component of efforts to reduce the health risks of mothers and children is to increase the proportion of babies delivered under medical supervision. Proper medical attention and hygienic conditions during delivery can reduce the risk of infection and increase the timeliness of effective intervention in the event of obstetric emergencies, both of which can lead to serious illness or death to the mother or the newborn.

4.2.1 Place of Delivery

Nationally, 54 percent of births are delivered in health facilities, with four times as many births delivered in public health facilities as in private health facilities (Table 4.6 and Figure 4.13). About two-fifths of births (45 percent) occur at home. A larger proportion of stillbirths take place in a health facility (68 percent) than live births (54 percent), presumably because women with delivery problems are more likely to go to a health facility for help. Health facility deliveries are more common among children of mother age 20-34 years (56 percent), and first order births (67 percent). As expected, a woman's education and wealth are strongly related to institutional deliveries. For example, 88 percent of births to women with at least secondary education occur in a health facility, compared with 31 percent of births to women with no education. Similarly, 92 percent of women in the highest wealth quintile have institutional deliveries, compared with 27 percent of women in the lowest wealth quintile. There is a direct association between the frequency of antenatal care visits and place of delivery: women who have four or more antenatal checkups are much more likely to deliver in a public or private facility (64 percent) (Figure 4.14). A child born in an urban area is more than twice as likely to be delivered at a health facility as a rural child. Four in five births in Greater Accra are delivered in a health facility, compared with one in four births in the Northern Region. More than two in three births (68 percent) in the R3M program regions take place in a health facility compared with less than one in two births (46 percent) in the other regions.

Table 4.6 Place of delivery

Percent distribution of the most recent live births and stillbirths in the five years preceding the survey by place of delivery, and percentage delivered in a health facility, according to background characteristics, GMHS 2007

Background characteristic	Health facility		Home	Other	Missing	Total	Percentage delivered in a health facility	Number of births
	Public sector	Private sector						
Birth outcome								
Live birth	42.9	11.1	45.4	0.4	0.1	100.0	54.1	4,847
Stillbirth	61.5	6.3	26.1	4.0	2.0	100.0	67.9	81
Mother's age at birth								
<20	43.9	10.3	45.7	0.1	0.0	100.0	54.2	534
20-34	44.5	11.2	43.8	0.4	0.1	100.0	55.7	3,391
35-49	38.8	10.8	49.3	0.7	0.4	100.0	49.6	1,003
Birth order								
1	53.3	13.7	32.4	0.3	0.2	100.0	67.1	1,051
2-3	46.3	10.6	42.8	0.1	0.1	100.0	56.9	1,769
4-5	40.2	11.2	47.7	0.8	0.2	100.0	51.4	1,161
6+	30.1	8.6	60.3	0.8	0.2	100.0	38.7	948
Antenatal care visits								
None	4.4	1.9	91.5	2.2	0.0	100.0	6.3	164
1-3	19.3	6.4	73.9	0.5	0.0	100.0	25.7	955
4+	51.1	12.6	35.9	0.3	0.0	100.0	63.7	3,781
Residence								
Urban	65.8	19.5	14.1	0.2	0.4	100.0	85.3	1,683
Rural	31.6	6.6	61.2	0.5	0.0	100.0	38.2	3,245
Region								
Western	43.8	9.4	45.8	0.5	0.5	100.0	53.2	400
Central	42.6	15.9	41.2	0.3	0.0	100.0	58.5	479
Greater Accra	55.0	24.0	20.1	0.5	0.4	100.0	79.0	470
Volta	35.3	5.8	58.7	0.0	0.1	100.0	41.2	451
Eastern	47.9	10.4	41.4	0.1	0.1	100.0	58.3	567
Ashanti	54.5	13.2	31.3	0.8	0.2	100.0	67.7	922
Brong Ahafo	43.1	13.6	42.8	0.4	0.1	100.0	56.7	564
Northern	21.9	4.4	72.9	0.7	0.2	100.0	26.3	699
Upper East	45.8	0.9	53.4	0.0	0.0	100.0	46.6	225
Upper West	40.2	1.0	58.8	0.0	0.0	100.0	41.2	152
R3M regions	52.7	15.0	31.6	0.5	0.2	100.0	67.7	1,959
Other regions	37.0	8.4	54.1	0.4	0.1	100.0	45.4	2,969
Mother's education								
No education	25.7	5.5	68.0	0.6	0.2	100.0	31.2	1,678
Primary	41.6	10.2	47.4	0.3	0.4	100.0	51.8	1,102
Middle/JSS	56.6	14.2	28.7	0.4	0.0	100.0	70.8	1,797
Secondary+	64.0	23.8	12.1	0.0	0.0	100.0	87.9	350
Wealth quintile								
Lowest	24.3	2.7	72.7	0.2	0.0	100.0	27.0	1,074
Second	30.2	5.6	62.8	1.2	0.1	100.0	35.8	1,061
Middle	41.4	10.5	47.9	0.2	0.0	100.0	51.9	975
Fourth	58.3	16.3	24.6	0.4	0.4	100.0	74.6	983
Highest	68.6	23.0	8.0	0.0	0.4	100.0	91.6	835
Total	43.3	11.0	45.1	0.4	0.2	100.0	54.3	4,928

Note: Total includes 1 woman with information missing on education and 31 women who don't know or have information missing on antenatal care visits.

***Figure 4.13* Place of Delivery**

(Most recent live birth or stillbirth in the five years preceding the survey)

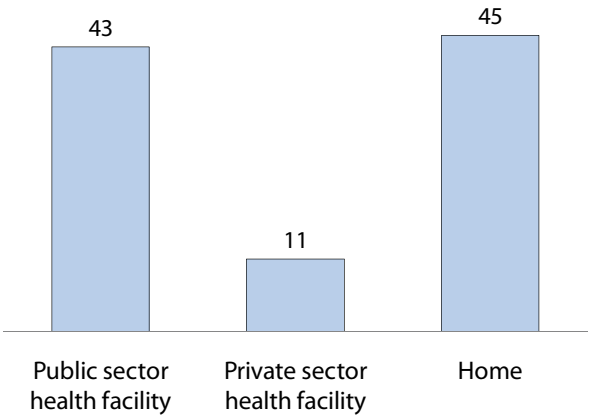
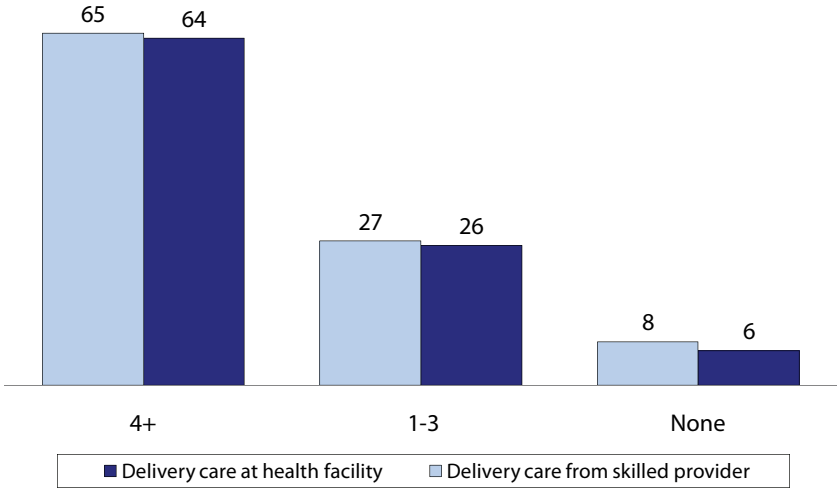


***Figure 4.14* Quality of Delivery Care by Number of Antenatal Care Visits**

(Most recent live birth or stillbirth in the five years preceding the survey)



4.2.2 Assistance at Delivery

An important component of maternal health included in the Millennium Development Goal Number 5 is the proportion of births delivered by skilled health personnel (UNDP, 2003). Table 4.7 and Figure 4.15 show the types of persons providing assistance during delivery, for the most recent live births and stillbirths in the five years preceding the survey. When more than one type of attendant was reported to have assisted at delivery, only the most qualified person is shown.

Table 4.7 Assistance during delivery

Percent distribution of the most recent live birth or stillbirth in the five years preceding the survey by person providing assistance during delivery, percentage of births assisted by a skilled provider, and percentage delivered by caesarean section, according to background characteristics, GMHS 2007

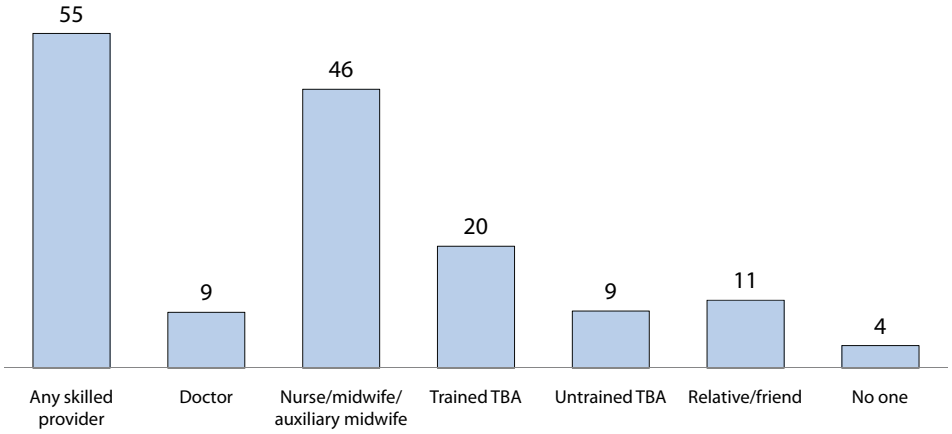
Background characteristic	Person providing assistance during delivery									Percentage delivered by a skilled provider	Percentage delivered by C-section	Number of births
	Doctor	Nurse/ midwife/ auxiliary midwife	Trained traditional birth attendant	Untrained traditional birth attendant	Relative/ friend	Other	No one	Missing	Total			
Birth outcome												
Live birth	8.9	46.1	20.3	9.5	11.2	0.0	3.7	0.3	100.0	55.0	6.3	4,847
Stillbirth	28.6	40.8	11.5	1.6	7.5	2.8	5.3	2.0	100.0	69.3	18.9	81
Mother's age at birth												
<20	8.6	46.5	22.2	9.1	11.7	0.0	1.9	0.0	100.0	55.1	6.5	534
20-34	9.3	47.4	19.6	9.4	11.0	0.0	3.1	0.2	100.0	56.7	6.6	3,391
35-49	9.2	41.1	21.0	9.4	11.5	0.2	6.8	0.9	100.0	50.2	6.3	1,003
Birth order												
1	12.4	54.6	16.8	7.6	7.0	0.0	1.1	0.5	100.0	67.0	9.4	1,051
2-3	9.2	49.2	19.5	8.6	11.3	0.0	2.1	0.1	100.0	58.4	6.4	1,769
4-5	8.1	43.8	21.1	9.8	12.6	0.1	4.2	0.2	100.0	51.9	5.9	1,161
6+	6.9	33.3	23.8	12.1	13.8	0.2	9.0	0.8	100.0	40.3	4.2	948
Antenatal care visits												
None	2.2	5.7	22.1	23.1	26.0	1.4	19.1	0.4	100.0	8.0	0.4	164
1-3	3.1	23.4	30.5	16.4	20.4	0.0	6.0	0.2	100.0	26.5	2.8	955
4+	11.0	53.6	17.5	7.0	8.2	0.0	2.4	0.2	100.0	64.6	7.8	3,781
Residence												
Urban	16.5	69.5	6.1	2.3	3.6	0.0	1.5	0.5	100.0	86.0	11.3	1,683
Rural	5.4	33.8	27.4	13.0	15.1	0.1	4.8	0.3	100.0	39.2	4.0	3,245
Region												
Western	10.5	43.1	26.3	12.8	4.4	0.0	1.5	1.5	100.0	53.7	6.1	400
Central	6.1	57.8	25.0	4.5	2.8	0.0	3.7	0.2	100.0	63.8	6.3	479
Greater Accra	24.2	55.1	10.2	2.9	3.7	0.0	3.6	0.4	100.0	79.3	13.1	470
Volta	2.7	38.7	22.4	5.5	26.9	0.0	3.8	0.1	100.0	41.3	3.5	451
Eastern	8.8	48.9	22.2	8.3	8.2	0.0	3.6	0.1	100.0	57.7	8.4	567
Ashanti	13.8	54.8	13.2	6.2	9.0	0.1	2.6	0.2	100.0	68.7	8.6	922
Brong Ahafo	6.3	50.6	18.2	7.9	11.1	0.0	5.6	0.3	100.0	56.9	5.1	564
Northern	4.8	22.5	21.0	24.5	21.0	0.3	5.6	0.2	100.0	27.3	3.1	699
Upper East	2.2	45.0	31.6	9.7	9.3	0.0	1.5	0.8	100.0	47.1	2.4	225
Upper West	3.2	39.0	33.3	5.7	13.8	0.0	4.6	0.4	100.0	42.2	3.7	152
R3M regions	14.9	53.2	15.1	6.0	7.5	0.1	3.1	0.2	100.0	68.0	9.6	1,959
Other regions	5.5	41.3	23.5	11.6	13.6	0.1	4.1	0.4	100.0	46.8	4.4	2,969
Mother's education												
No education	4.0	28.3	25.8	16.6	18.5	0.1	6.1	0.5	100.0	32.4	3.4	1,678
Primary	8.6	43.6	21.8	9.3	11.8	0.1	4.2	0.6	100.0	52.2	6.4	1,102
Middle/JSS	11.8	60.0	16.3	4.1	5.9	0.0	1.8	0.1	100.0	71.7	7.9	1,797
Secondary+	22.6	66.6	7.4	1.5	1.4	0.0	0.5	0.0	100.0	89.2	14.6	350
Wealth quintile												
Lowest	3.2	25.2	26.0	17.6	21.5	0.0	6.3	0.2	100.0	28.4	2.7	1,074
Second	4.6	32.3	28.8	13.3	15.3	0.3	5.1	0.2	100.0	36.9	3.1	1,061
Middle	6.4	46.5	24.8	8.5	9.7	0.0	3.9	0.2	100.0	52.9	4.7	975
Fourth	12.5	63.0	13.7	3.5	5.3	0.0	1.5	0.6	100.0	75.5	8.7	983
Highest	22.1	69.6	3.8	1.6	1.4	0.0	1.0	0.5	100.0	91.8	15.4	835
Total	9.2	46.0	20.1	9.4	11.2	0.1	3.7	0.3	100.0	55.2	6.5	4,928

Note: If the respondent mentioned more than one person attending during delivery, only the most qualified person is considered in this tabulation. Total includes 31 women who don't know or have information missing on antenatal care visits, and 1 woman with information missing on education.

[1] Skilled provider includes doctor, nurse/midwife and auxiliary midwife.

***Figure 4.15* Delivery Care by Provider**

(Most recent live birth or stillbirth in the five years preceding the survey)



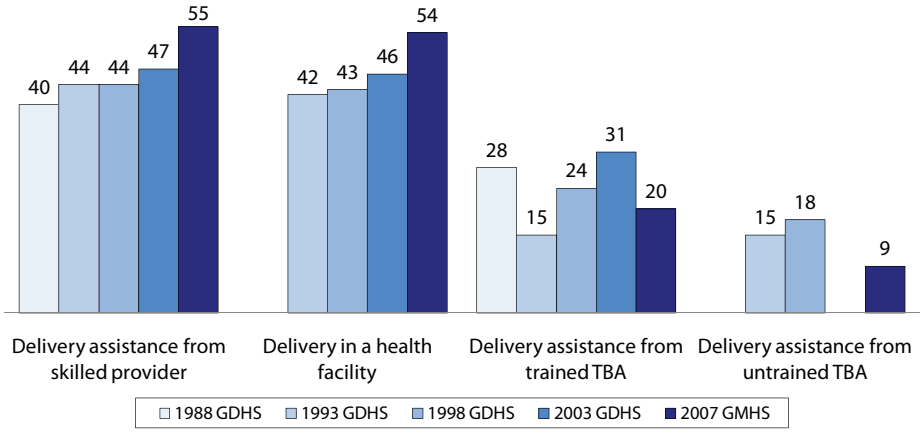
Just over one in two births (55 percent) in Ghana are delivered by a skilled provider, that is, a doctor, nurse/midwife or auxiliary midwife. Nearly half (46 percent) of all births are delivered by a nurse, midwife or auxiliary midwife, 9 percent of births are assisted by a doctor, one in five births (20 percent) is assisted by trained traditional birth attendants, and one in ten (9 percent) by an untrained traditional birth attendant. It is important to emphasize that the identification of a traditional birth attendant as trained or untrained is based wholly on reports from respondents and thus may not be accurate. An additional 11 percent of deliveries are assisted by relatives or friends. Four percent of deliveries take place with no assistance at all. Stillbirths, births to women age 20-34, first order births, births associated with 4 or more antenatal care visits, births in urban areas, births in Greater Accra, births in the R3M program regions, births to mothers with at least some secondary education, and births in the wealthiest households, are more likely than other births to be delivered by a skilled provider. Births in the R3M program regions are three times more likely to be assisted by a doctor than births in the other regions.

4.2.3 Trends in Delivery Care

As seen in Figure 4.16, over the past 15 years there has been a 29 percent increase in the proportion of women delivering in a health facility from 42 percent in 1993 to 54 percent in 2007. During the last two decades, delivery assistance from a skilled provider increased by 25 percent from 44 percent in 1988 to 55 percent in 2007. Delivery assistance from trained TBAs declined from 24 percent to 20 percent, while assistance from untrained TBAs fell by 50 percent between 1993 and 2007.

***Figure 4.16* Trends in Delivery Care**

(Births in the three/five years preceding the survey)



Note: Data on delivery care collected in the four GDHS surveys were restricted to live births. Data collected in the 2007 GMHS include live births and stillbirths. DC information in the 1988 and the 1998 GDHS was with reference to births in the five years before the survey, the 1993 GDHS information was with reference to births in the three years preceding the survey. The 2007 GMHS restricted this information to the last live birth or stillbirth in the five years preceding the survey. In 1988, information on delivery in a health facility was not obtained; in 1988 and 2003, no distinction was made between trained and untrained TBAs.

4.2.4 Reasons for Not Delivering at a Health Facility

Among the nearly one in two women who did not deliver in a health facility (46 percent), a third mentioned that they did not think it was necessary to deliver in a health facility (32 percent), and about one in five women cited lack of money (19 percent) as a reason for not delivering in a health facility. Access problems including distance to facility, transportation problems, no one to accompany and not knowing where to go were cited by more than one in three women (35 percent) (Table 4.8 and Figure 4.17). One in ten women mentioned service-related factors, with the majority (8 percent) of these women mentioning inconvenient service hours. Other service-related reasons include long waiting time and the non-availability of a female doctor. Five percent perceive better service at home as a reason for not delivering in a health facility, and less than 2 percent of women in total cited being afraid to go, not being permitted by family to go or not going for religious reasons. Surprisingly, a third of women who had 4 or more antenatal visits, believed that it was not necessary to deliver in a health facility, another third cited problems of access, and one-eighth did not deliver in a health facility for lack of money.

Women residing in the non-R3M regions were nearly twice as likely to state that it was not customary to deliver in a health facility. Access problems, inconvenient service hours and better service at home were more likely to be cited as reasons for not delivering in a health facility in the R3M program regions than other regions, while the reverse was true for all the other major reasons.

Table 4.8 Reasons for not delivering in a health facility

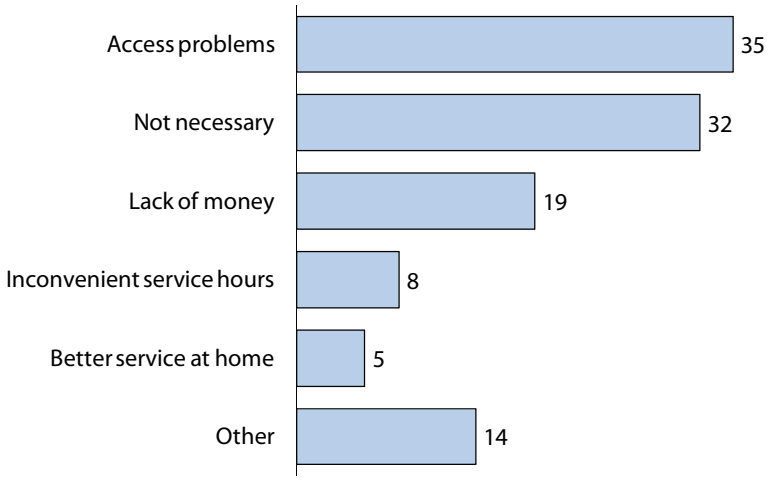
For the most recent live birth or stillbirth occurring at home in the five years preceding the survey, percentage for which the mother reported specific reasons for not delivering in a health facility, according to background characteristics, GMHS 2007

Background characteristic	Not necessary	Not customary	Lack of money	Access problem[1]	Good service not available	Not permitted by family	Better service at home	No female doctor available	Inconvenient service hours	Afraid to go	Long waiting time	Religious reason	Other	Missing	Number
Birth outcome															
Live birth	32.1	0.5	18.7	34.7	0.5	0.3	5.4	0.2	8.1	1.1	0.8	0.3	14.2	0.5	2,227
Stillbirth	(27.3)	(0.0)	(34.9)	(25.4)	(0.0)	(0.0)	(3.7)	(8.6)	(7.3)	(0.0)	(0.0)	(0.0)	(16.1)	(6.1)	26
Mother's age at birth															
<20	24.3	0.6	22.4	32.1	0.7	1.0	5.1	0.0	9.3	1.8	1.1	0.3	14.2	0.0	245
20-34	32.1	0.6	17.4	34.5	0.5	0.2	5.2	0.1	8.0	1.0	0.9	0.2	15.3	0.4	1,503
35-49	35.4	0.2	21.4	36.3	0.3	0.0	6.3	1.0	7.6	1.1	0.5	0.3	10.9	1.2	506
Birth order															
1	28.4	0.5	15.4	32.3	0.8	0.9	6.2	0.4	9.5	1.7	1.2	0.2	15.6	0.6	346
2-3	30.0	0.7	18.7	36.5	0.5	0.1	5.8	0.3	7.3	0.3	1.2	0.3	15.8	0.3	761
4-5	32.4	0.5	18.8	33.2	0.4	0.3	5.1	0.2	9.3	1.8	0.2	0.1	12.9	0.5	564
6+	36.4	0.2	21.2	35.0	0.4	0.0	4.7	0.4	7.1	1.0	0.8	0.4	12.6	0.7	581
Antenatal care visits															
None	27.8	0.6	54.5	25.0	0.0	0.0	3.6	1.5	0.3	2.0	0.0	1.4	2.6	0.0	153
1-3	30.6	1.0	22.7	38.8	1.1	0.7	6.1	0.1	7.9	1.7	0.7	0.2	12.0	0.1	710
4+	33.4	0.2	12.9	33.8	0.3	0.1	5.4	0.2	9.0	0.7	1.0	0.2	16.8	0.2	1,372
Residence															
Urban	29.3	0.2	15.1	21.8	1.1	0.4	8.6	0.0	11.8	1.7	0.4	0.4	19.3	2.6	248
Rural	32.3	0.5	19.3	36.2	0.4	0.2	5.0	0.3	7.6	1.0	0.9	0.2	13.6	0.3	2,005
Region															
Western	35.1	0.7	26.5	29.9	0.0	0.0	2.7	0.0	0.0	0.1	0.7	0.0	7.7	1.0	187
Central	16.2	0.0	13.1	18.9	0.0	0.0	14.2	0.0	23.5	2.5	0.2	0.0	20.6	0.0	199
Greater Accra	17.7	0.4	24.9	20.5	1.0	0.9	9.8	0.0	16.1	1.6	3.0	0.6	11.5	1.8	99
Volta	9.2	2.3	42.7	53.5	0.9	1.5	11.9	1.1	13.9	1.4	0.9	0.6	1.4	0.2	265
Eastern	17.5	0.4	12.3	29.9	1.4	0.0	12.2	0.0	13.0	2.9	0.6	0.0	25.1	0.9	236
Ashanti	21.1	0.0	17.0	44.3	0.4	0.0	4.1	0.4	9.1	1.0	0.2	0.1	28.4	0.9	298
Brong Ahafo	37.9	0.5	14.5	36.9	1.4	0.3	0.2	0.0	6.8	0.3	0.5	0.5	20.3	0.0	244
Northern	67.6	0.1	11.8	23.3	0.0	0.0	0.1	0.4	0.6	0.5	0.2	0.4	5.5	0.5	515
Upper East	23.9	0.5	17.3	52.0	0.0	0.0	2.8	0.0	1.2	0.8	4.3	0.0	6.5	0.0	120
Upper West	8.4	0.0	16.3	55.6	0.0	0.0	2.6	0.0	4.5	0.0	2.8	0.0	22.0	0.0	89
R3M regions	19.2	0.2	16.5	35.2	0.9	0.1	8.0	0.2	11.6	1.8	0.8	0.2	24.5	1.0	632
Other regions	37.0	0.6	19.8	34.4	0.4	0.3	4.4	0.3	6.7	0.8	0.8	0.3	10.2	0.3	1,620
Mother's education															
No education	40.2	0.8	19.8	33.3	0.1	0.3	2.8	0.3	5.0	0.8	0.6	0.3	11.2	0.4	1,155
Primary	24.5	0.0	21.4	36.7	0.5	0.3	7.9	0.0	11.9	1.7	1.4	0.0	13.0	1.0	531
Middle/JSS	22.8	0.3	14.5	34.9	1.3	0.2	7.8	0.6	11.2	1.0	0.7	0.3	21.5	0.3	525
Secondary+	(15.8)	(0.0)	(15.8)	(39.9)	(0.0)	(0.0)	(16.0)	(0.0)	(6.5)	(2.4)	(1.3)	(0.0)	(20.0)	(0.0)	43
Wealth quintile															
Lowest	31.0	0.9	22.7	42.5	0.3	0.4	4.4	0.1	5.8	0.9	1.3	0.4	11.2	0.2	784
Second	36.9	0.3	18.3	34.0	0.4	0.2	4.5	0.3	6.4	0.7	0.2	0.2	10.6	0.4	681
Middle	33.0	0.0	17.2	27.5	1.3	0.0	6.8	0.7	8.4	2.2	0.8	0.0	20.0	0.2	469
Fourth	22.8	0.5	14.6	25.5	0.2	0.2	7.3	0.0	18.1	0.7	1.3	0.4	21.1	1.4	250
Highest	21.6	0.6	7.2	33.0	0.0	0.6	10.0	0.0	12.4	0.0	0.0	0.0	19.1	5.1	70
Total	32.0	0.5	18.9	34.6	0.5	0.3	5.4	0.3	8.1	1.1	0.8	0.2	14.2	0.5	2,253

Note: Figures in parentheses refer to 25-49 unweighted cases. Total includes 19 women with information missing on antenatal care visits.
[1] Access problems include "too far," "transportation problem," "no one to accompany," and "did not know where to go."

***Figure 4.17* Main Reasons for Not Delivering in a Health Facility**

(Most recent live birth or stillbirth in the five years preceding the survey)



4.2.5 Medical Procedures Performed during Delivery

Table 4.9 and Figure 4.18 show medical procedures performed at the time of delivery among deliveries in a health facility. One in three mothers (36 percent) reported that they received intravenous fluid during delivery, 12 percent mentioned having an abdominal or caesarean section delivery,[2] 3 percent mentioned a forceps delivery, and 3 percent received blood transfusions.

Medical procedures are generally more common for stillbirths than live births, among first order births, births in urban areas, births associated with four or more antenatal visits, and births delivered in a public rather than a private health facility. Births to highly educated women are most likely to be delivered by caesarean section. Intravenous fluid receipt ranges from a low of 26 percent among mothers with no education to a high of 37-40 percent among mothers with middle/JSS or higher education.Births in the R3M program regions are much more likely to have been caesarean section deliveries and to have received intravenous fluids than in other regions. Forceps deliveries are most common in the Northern region (8 percent). One in six health facility deliveries in Greater Accra are by caesarean section. Regional differences in the receipt of blood transfusion are small but such differences are large in the case of receipt of intravenous fluid, ranging from a low of 5 percent in the Upper East region to a high of 54 percent in Greater Accra.

[2] The 12 percent figure is based on deliveries in a health facility, which is different from the 7 percent of all deliveries that occur by caesarean section (Table 4.7).

Table 4.9 Procedures performed during delivery

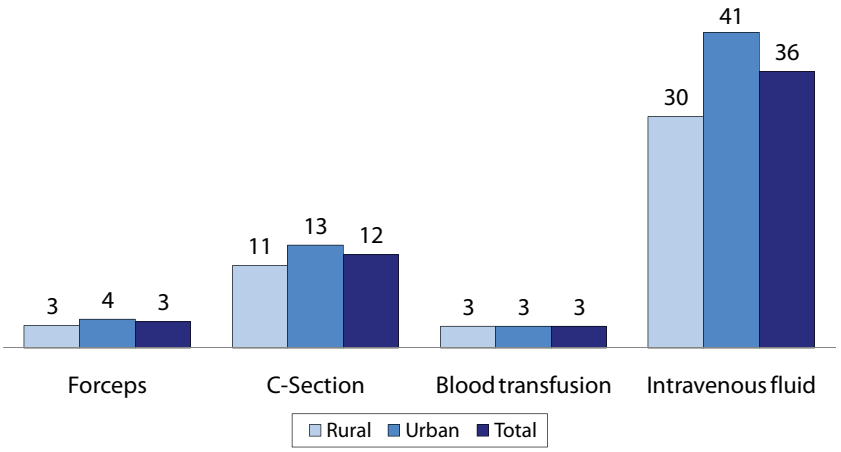
For the most recent live birth or stillbirth occurring in a health facility in the five years preceding the survey, percentage for which specific procedures were performed during delivery, by background characteristics, GMHS 2007

Background characteristic	Forceps delivery	Abdominal operation/ caesarean section	Blood transfusion	Received intravenous fluid	Number of births
Birth outcome					
Live birth	3.2	11.7	2.7	35.1	2,620
Stillbirth	9.6	27.8	8.0	57.9	55
Mother's age at birth					
<20	3.3	12.0	4.2	34.8	289
20-34	3.4	11.8	2.6	35.2	1,888
35-49	3.2	12.6	2.6	37.2	498
Birth order					
1	4.4	14.0	3.9	41.9	705
2-3	2.6	11.3	2.6	33.3	1,007
4-5	3.2	11.5	2.0	32.1	596
6+	3.6	10.9	2.7	34.9	367
Residence					
Urban	3.7	13.2	2.8	40.5	1,435
Rural	2.9	10.6	2.8	29.7	1,240
Region					
Western	0.7	11.5	1.5	27.7	213
Central	4.2	10.8	3.2	36.0	280
Greater Accra	2.2	16.5	3.3	54.0	371
Volta	0.3	8.4	4.8	32.8	185
Eastern	2.4	14.5	3.4	40.5	331
Ashanti	3.0	12.8	1.7	37.5	624
Brong Ahafo	6.5	9.0	3.8	33.5	319
Northern	8.2	11.9	1.0	23.5	183
Upper East	2.9	5.1	4.8	5.4	105
Upper West	4.6	9.0	2.5	9.1	63
R3M regions	2.6	14.2	2.5	42.9	1,326
Other regions	4.1	9.8	3.1	28.3	1,349
Mother's education					
No education	4.3	10.8	2.4	25.6	524
Primary	3.1	12.3	4.7	34.0	571
Middle/JSS	3.1	11.2	2.2	39.9	1,273
Secondary+	3.3	16.6	2.5	37.1	308
Wealth quintile					
Lowest	3.9	10.0	4.5	23.1	290
Second	3.7	8.5	2.3	31.2	380
Middle	2.6	9.0	2.3	30.7	506
Fourth	3.4	11.7	2.5	38.2	733
Highest	3.5	16.8	3.0	43.1	765
Antenatal care visits					
1-3	1.9	10.9	2.6	32.1	245
4+	3.5	12.2	2.8	35.8	2,409
Place of delivery					
Public health facility	3.5	12.1	3.0	36.1	2,132
Private health facility	3.0	11.5	2.2	33.1	544
Total	3.4	12.0	2.8	35.5	2,675

Note: Total includes 1 woman with information missing on education, 16 women who did not make any antenatal care visits, and 12 women who don't know or have information missing on antenatal care visits.

***Figure 4.18* Medical Procedures During Delivery**

(Most recent live birth or stillbirth occurring in a health facility in the five years preceding the survey)



4.3 POSTNATAL CARE

A number of problems that women and children experience surrounding childbirth occur during the postpartum period. The first forty-eight hours following delivery are especially critical for detecting and monitoring potential complications that if unattended could result in the death of the mother and or her baby. Thus, postnatal checkups and care are recognized as an integral component of comprehensive maternity and delivery care. In the GMHS, for the last live birth or stillbirth in the five years preceding the survey, respondents were asked whether they went for a checkup within two months of a delivery and, if so, the timing of the first postnatal checkup, and the types of providers seen.

4.3.1 Timing of Postnatal Care

Table 4.10 shows that three in four women (76 percent) reported having a postnatal checkup for themselves following their most recent birth in the five years preceding the survey. Three-fifths of women (60 percent) reported receiving a postnatal checkup within the first two days of delivery with the majority of them (44 percent) receiving care within four hours of delivery (Figure 4.19). Fifteen percent of women reported receiving a postnatal checkup after two days, and one in four women reported not receiving postnatal care at all. Differences in the level of postnatal care by demographic, socioeconomic and residential characteristics mirror differences already discussed for delivery care.

Table 4.10 Timing of first postnatal checkup

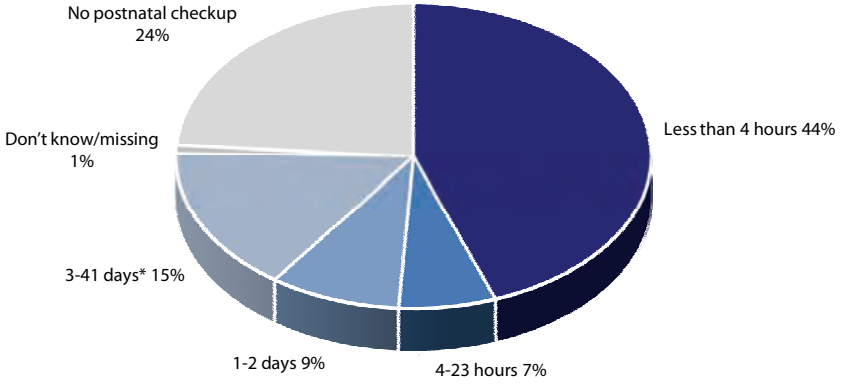
Among women with a birth in the five years preceding the survey, the percent distribution by timing of the mother's first postnatal checkup for the most recent live birth or stillbirth, according to background characteristics, GMHS 2007

Background characteristic	Time after delivery of mother's first postnatal checkup					No postnatal checkup	Missing PNC info	Total	Number of women
	Less than 4 hours	4-23 hours	1-2 days	3+ days	Don't know/ missing timing				
Birth outcome									
Live birth	44.4	6.5	8.9	15.5	0.5	23.9	0.2	100.0	4,847
Stillbirth	42.5	10.7	11.0	9.0	0.0	24.8	2.0	100.0	81
Mother's age at birth									
<20	41.3	5.0	9.5	17.2	0.4	26.6	0.0	100.0	534
20-34	45.0	7.1	8.8	15.6	0.5	22.8	0.3	100.0	3,391
35-49	43.8	5.8	9.1	14.0	0.7	26.1	0.5	100.0	1,003
Birth order									
1	46.0	6.2	8.7	16.1	0.5	22.3	0.3	100.0	1,051
2-3	44.5	7.5	9.4	16.6	0.5	21.1	0.2	100.0	1,769
4-5	42.3	5.5	9.4	15.3	0.7	26.6	0.3	100.0	1,161
6+	44.8	6.6	7.8	12.5	0.5	27.5	0.3	100.0	948
Antenatal care visits									
None	37.3	3.4	5.6	4.3	0.2	49.1	0.0	100.0	164
1-3	34.2	5.3	12.8	10.2	0.1	37.2	0.1	100.0	955
4+	47.4	7.0	8.1	17.3	0.6	19.4	0.1	100.0	3,781
Place of delivery									
Health facility	51.5	9.2	8.3	17.1	0.8	12.8	0.2	100.0	2,675
Elsewhere	36.0	3.5	9.7	13.4	0.1	37.2	0.1	100.0	2,244
Problems just before, during or after delivery									
No	43.8	6.0	9.0	15.6	0.4	25.0	0.1	100.0	3,908
Yes	46.9	8.8	8.5	14.8	1.0	19.9	0.1	100.0	1,011
Residence									
Urban	45.9	9.8	8.8	17.2	1.0	16.6	0.6	100.0	1,683
Rural	43.6	4.9	9.0	14.5	0.3	27.7	0.1	100.0	3,245
Region									
Western	37.4	9.3	11.6	14.1	0.3	26.8	0.5	100.0	400
Central	74.8	8.2	7.0	2.9	0.0	7.0	0.2	100.0	479
Greater Accra	35.8	10.8	4.6	11.8	1.1	35.2	0.5	100.0	470
Volta	17.8	5.5	30.7	1.9	0.0	43.7	0.3	100.0	451
Eastern	29.6	5.3	5.5	25.5	0.4	33.4	0.4	100.0	567
Ashanti	36.7	7.4	5.5	29.6	0.6	20.0	0.2	100.0	922
Brong Ahafo	51.2	7.6	8.0	23.9	0.3	8.7	0.3	100.0	564
Northern	70.2	2.8	3.5	2.3	0.8	20.2	0.2	100.0	699
Upper East	41.2	3.9	15.2	16.5	0.4	22.9	0.0	100.0	225
Upper West	35.1	2.0	9.7	12.4	2.0	38.8	0.0	100.0	152
R3M regions	34.4	7.6	5.3	24.1	0.7	27.5	0.3	100.0	1,959
Other regions	50.9	5.9	11.3	9.6	0.4	21.5	0.2	100.0	2,969
Mother's education									
No education	46.7	4.7	7.4	10.5	0.6	29.9	0.3	100.0	1,678
Primary	38.6	7.6	10.0	15.8	0.5	26.9	0.6	100.0	1,102
Middle/JSS	44.9	7.3	9.6	19.4	0.5	18.2	0.0	100.0	1,797
Secondary+	48.7	8.8	9.4	16.7	0.6	15.2	0.7	100.0	350
Wealth quintile									
Lowest	40.6	4.3	8.7	11.7	0.4	34.2	0.0	100.0	1,074
Second	46.3	4.5	9.9	13.0	0.2	26.0	0.2	100.0	1,061
Middle	43.5	6.7	9.1	18.0	0.0	22.5	0.2	100.0	975
Fourth	45.2	9.5	9.0	15.5	1.0	19.2	0.6	100.0	983
Highest	46.8	8.6	7.7	20.1	1.1	15.1	0.5	100.0	835
Total	44.4	6.6	8.9	15.4	0.5	23.9	0.3	100.0	4,928

Note: Total includes 31 women with information missing on antenatal care visits, 10 women with information missing on place of delivery, 10 women with information missing on problems just before, during or after delivery, and 1 woman with information missing on education.

***Figure 4.19* Timing of First Postnatal Care**

(Most recent live birth or stillbirth in the five years preceding the survey)



* Includes women who received a checkup after 41 days

4.3.2 Postnatal Care Provider

Thirteen percent of mothers received postnatal care from a doctor, and 42 percent received care from a nurse/midwife or auxiliary midwife (Table 4.11 and Figure 4.20). Eleven percent of women received care from a trained traditional birth attendant, 5 percent from an untrained traditional birth attendant, and another 5 percent from a relative/friend. As mentioned above, nearly one in four women (23 percent) reported not having received postnatal care at all following their most recent birth in the past five years. Differences in the type of care provider by other background characteristics are similar to that discussed for receipt of postnatal care.

The frequency of antenatal care visits varies positively with having had a postnatal checkup from a skilled provider (Figure 4.21). Similarly, mothers who delivered in a health facility are five times more likely to have had a postnatal checkup than mothers who delivered elsewhere (87 percent compared with 17 percent). In addition, women who had problems before, during or after delivery are more likely to have received postnatal care than women who reported no maternity related problems (64 percent compared with 53 percent).

Comparable data on postnatal care is not available from the previous GDHS surveys since these surveys collected postnatal care information on non-institutional births only in contrast to the GHMS which included this information for all births.

Table 4.11 Postnatal care provider

Percent distribution of most recent live birth or stillbirth in the five years preceding the survey by postnatal care provider for the mother, according to background characteristics, GMHS 2007

Background characteristic	Received postnatal care[1]	Received postnatal care from medically trained provider	Medically trained		Not medically trained							Total	Number
			Doctor	Nurse/ midwife/ auxiliary midwife	Trained traditional birth attendant	Untrained traditional birth attendant	Relative/ friend	Other	No one	Missing provider info	Missing PNC info		
Birth outcome													
Live birth	75.9	54.8	12.9	41.8	11.0	4.7	5.2	0.2	23.9	0.0	0.2	100.0	4,847
Stillbirth	73.3	61.9	35.8	26.1	5.9	0.0	5.5	0.0	24.8	0.0	2.0	100.0	81
Mother's age at birth													
<20	73.4	53.1	11.2	41.9	12.3	3.2	4.7	0.1	26.6	0.0	0.0	100.0	534
20-34	76.9	56.8	13.7	43.1	10.4	4.4	5.1	0.2	22.8	0.0	0.3	100.0	3,391
35-49	73.4	49.2	12.9	36.3	12.1	6.2	5.8	0.0	26.1	0.1	0.5	100.0	1,003
Birth order													
1	77.4	63.0	17.0	46.0	7.9	3.4	3.1	0.1	22.3	0.0	0.3	100.0	1,051
2-3	78.6	58.5	14.0	44.5	10.8	3.9	5.2	0.1	21.1	0.1	0.2	100.0	1,769
4-5	73.1	52.3	12.5	39.8	11.3	3.9	5.2	0.4	26.6	0.1	0.3	100.0	1,161
6+	72.1	42.2	8.8	33.5	14.3	8.1	7.5	0.0	27.5	0.0	0.3	100.0	948
Antenatal care visits													
None	50.9	10.6	2.5	8.0	10.0	12.7	17.2	0.0	49.1	0.4	0.0	100.0	164
1-3	62.7	29.4	6.3	23.1	16.8	7.7	8.7	0.0	37.2	0.0	0.1	100.0	955
4+	80.5	63.4	15.6	47.8	9.5	3.5	3.8	0.2	19.4	0.0	0.1	100.0	3,781
Place of delivery													
Health facility	87.0	86.5	23.6	63.0	0.5	0.0	0.0	0.0	12.8	0.0	0.2	100.0	2,675
Elsewhere	62.7	17.3	1.1	16.3	23.5	10.1	11.3	0.3	37.2	0.1	0.1	100.0	2,244
Problems just before, during or after delivery													
No	74.9	52.5	11.1	41.4	11.6	5.2	5.3	0.1	25.0	0.1	0.1	100.0	3,908
Yes	80.0	64.3	21.8	42.5	8.5	2.2	4.8	0.2	19.9	0.0	0.1	100.0	1,011
Residence													
Urban	82.7	76.9	23.7	53.2	3.4	0.9	1.4	0.0	16.6	0.0	0.6	100.0	1,683
Rural	72.2	43.4	7.9	35.6	14.9	6.5	7.1	0.2	27.7	0.1	0.1	100.0	3,245
Region													
Western	72.7	50.6	21.6	29.0	14.9	5.8	1.4	0.0	26.8	0.1	0.5	100.0	400
Central	92.8	64.2	9.5	54.7	22.7	3.9	2.0	0.0	7.0	0.0	0.2	100.0	479
Greater Accra	64.2	56.3	25.7	30.6	4.5	1.5	1.9	0.0	35.2	0.0	0.5	100.0	470
Volta	56.0	38.5	12.0	26.5	9.2	1.1	7.1	0.0	43.7	0.0	0.3	100.0	451
Eastern	66.1	57.4	14.6	42.8	5.7	1.5	1.3	0.2	33.4	0.0	0.4	100.0	567
Ashanti	79.9	71.0	17.3	53.8	5.9	1.3	1.2	0.4	20.0	0.0	0.2	100.0	922
Brong Ahafo	90.9	63.4	8.2	55.1	14.8	4.5	8.2	0.0	8.7	0.0	0.3	100.0	564
Northern	79.6	26.1	6.6	19.5	15.5	18.2	19.2	0.3	20.2	0.3	0.2	100.0	699
Upper East	77.1	66.8	4.7	62.1	10.3	0.0	0.0	0.0	22.9	0.0	0.0	100.0	225
Upper West	61.2	56.4	2.0	54.4	4.8	0.0	0.0	0.0	38.8	0.0	0.0	100.0	152
R3M regions	72.1	63.6	18.5	45.0	5.5	1.4	1.4	0.3	27.5	0.0	0.3	100.0	1,959
Other regions	78.2	49.1	9.8	39.3	14.5	6.7	7.7	0.1	21.5	0.1	0.2	100.0	2,969
Mother's education													
No education	69.9	36.8	6.2	30.6	14.1	9.2	9.5	0.2	29.9	0.1	0.3	100.0	1,678
Primary	72.6	51.8	11.5	40.3	10.6	4.1	5.9	0.2	26.9	0.0	0.6	100.0	1,102
Middle/JSS	81.7	68.9	17.2	51.7	9.6	1.5	1.6	0.1	18.2	0.0	0.0	100.0	1,797
Secondary+	84.1	79.2	32.8	46.4	4.1	0.1	0.7	0.0	15.2	0.0	0.7	100.0	350
Wealth quintile													
Lowest	65.8	35.0	5.4	29.7	12.3	8.4	9.7	0.2	34.2	0.1	0.0	100.0	1,074
Second	73.8	41.0	6.4	34.6	17.0	6.8	8.6	0.3	26.0	0.1	0.2	100.0	1,061
Middle	77.3	54.1	8.6	45.4	15.6	4.1	3.6	0.0	22.5	0.0	0.2	100.0	975
Fourth	80.2	69.8	20.2	49.6	6.3	1.6	2.3	0.2	19.2	0.0	0.6	100.0	983
Highest	84.3	81.5	29.6	51.9	1.7	0.9	0.3	0.1	15.1	0.0	0.5	100.0	835
Total	75.8	54.9	13.3	41.6	11.0	4.6	5.2	0.1	23.9	0.0	0.3	100.0	4,928

Note: Total includes 31 women with information missing on antenatal care visits, 10 women with information missing on place of delivery, 10 women with information missing on problems just before, during or after delivery, and 1 woman with information missing on education.

[1] Includes women who received a checkup after 41 days

***Figure 4.20* Postnatal Care Provider**

(Most recent live birth or stillbirth in the five years preceding the survey)

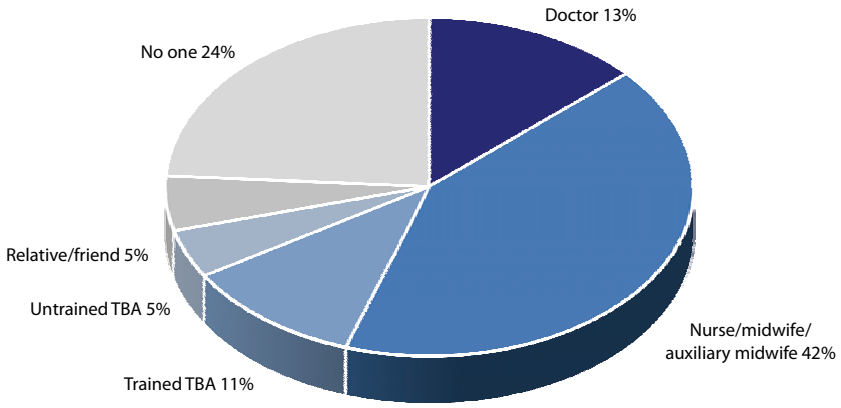
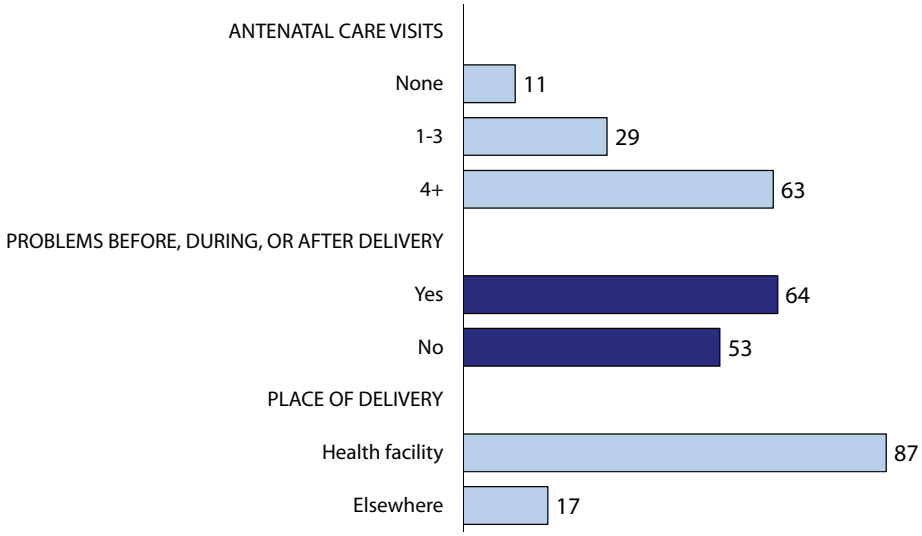


***Figure 4.21* Postnatal Care from Skilled Provider by Number of ANC Visits and Delivery Characteristics**

(Most recent live birth or stillbirth in the five years preceding the survey)

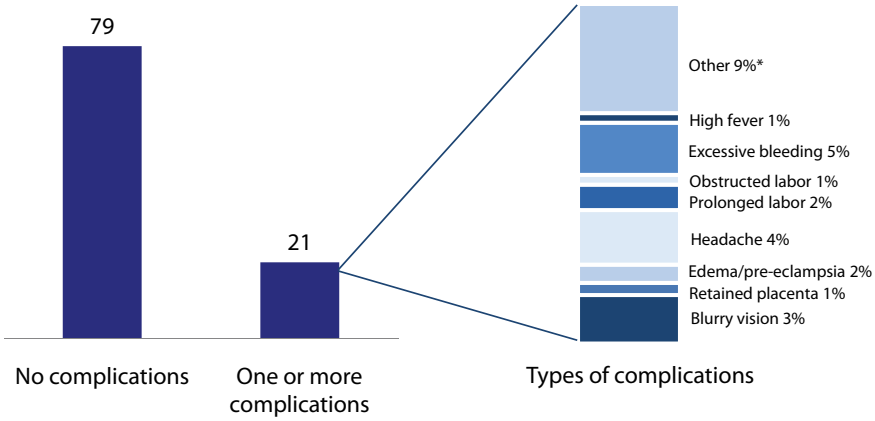


4.4 Maternity Complications

Women who had a birth in the five years before the survey were also asked if they had experienced complications at any time before, during or following the delivery of their most recent birth or stillbirth. Four-fifths of women stated that they did not suffer from any complications. As seen in Figure 4.22, the most common problem cited was excessive bleeding (5 percent), headache (4 percent), blurry vision (3 percent), prolonged labor (2 percent), and edema/pre-eclampsia (2 percent). About 1 percent of women each mentioned obstructed labor, retained placenta, and high fever. Nine percent of women mentioned causes not otherwise classified.

Figure 4.22 Maternity Complications

(Most recent live birth or stillbirth in the five years preceding the survey)



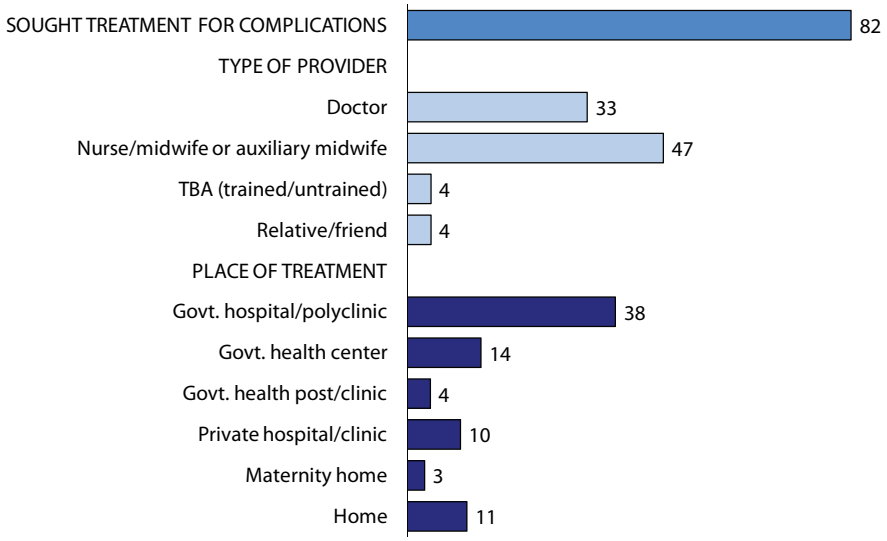
* Other includes convulsions/eclampsia, foul-smelling discharge, low baby movement, baby's hand/feet out first, and torn uterus, each of which accounts for less than 1%, and other unspecified complications; Total does not add up due to multiple complications.

The majority of women who had complications (82 percent) sought treatment for their problems (Figure 4.23). Among women who had complications, one-third (33 percent) sought assistance from a doctor, and nearly half (47 percent) saw a nurse/midwife or auxiliary midwife. Four percent sought assistance from a traditional birth attendant (trained or untrained) or a relative/friend. Nearly one in five women (18 percent) did not seek any medical care for their problems. The vast majority of women who sought treatment mentioned that their complication improved after receiving treatment (89 percent—data not shown).

The majority of women visited a public facility for treatment of maternity complications, with government hospitals/polyclinics most visited (38 percent), followed by government health centers (14 percent) and government health posts/clinics (4 percent). One in ten women visited a private hospital or clinic and another 3 percent visted a maternity home for treatment. More than one in ten women received treatment at home (Figure 4.23).

Figure 4.23 Treatment for Complications

(Most recent live birth or stillbirth in the five years preceding the survey for which they had complications before, during or after delivery)



4.5 CONSISTENT USE OF ANTENATAL CARE, DELIVERY CARE, AND POSTNATAL CARE

The findings from the 2008 GHMS show that 96 percent of pregnant women have received antenatal care from a skilled provider. This percentage however, decreases dramatically for skilled assistance during delivery and postnatal care following delivery (55 percent each). The continuity of maternity care from a skilled provider is especially important in ensuring that the unavoidable risks associated with a pregnancy are minimized (Figure 4.24).

Table 4.12 and Figure 4.25 show eight combinations of antenatal care, delivery care, and postnatal care received by mothers for their most recent birth in the five years preceding the survey that depict the consistency in the use, and the completeness of maternity care coverage. The figure and table show maternity care received from a doctor, nurse/midwife or auxiliary midwife, by eight categories: (i) antenatal care only; (ii) delivery care only; (iii) postnatal care only; (iv) antenatal and delivery care; (v) antenatal and postnatal care; (vi) delivery care and postnatal care; (vii) all three types of maternity care, and (viii) neither antenatal care nor delivery care nor postnatal care from a trained provider.

Only one in two women (48 percent) accesses all three maternity care components, ANC, DC, and PNC, from a skilled provider. Seven percent each have received both ANC and DC or ANC and PNC, with 3 percent not having received a single component of maternity care at all. One in three women (34 percent) have received ANC only, indicating the huge scope for educating and informing women to continue to access skilled maternity care providers during and after delivery.

As shown in Figures 4.26 and 4.27, an analysis by background characteristics shows essentially the same differences seen separately for the three indicators; that is, less educated women, rural women, and women in poorer households are less likely to receive complete maternity care than urban women, more educated women, and women in wealthier households. Complete coverage of maternity care declines with birth order from 58 percent for first births to 34 percent among births of order six and higher, and is highest among mothers age 20-34. Women residing in the R3M program regions are also more likely to have complete maternity care coverage than residents of the other regions, with completeness of coverage ranging from a high of about 62 percent in the Central region to a low of 24 percent in the Northern region. The data also confirm that women who accessed antenatal care during the first trimester are much more likely to receive complete maternity care than women who first sought antenatal care in the second and third trimesters.

Figure 4.24 **Maternity Care from Skilled Provider**

(Most recent live birth or stillbirth in the five years preceding the survey)

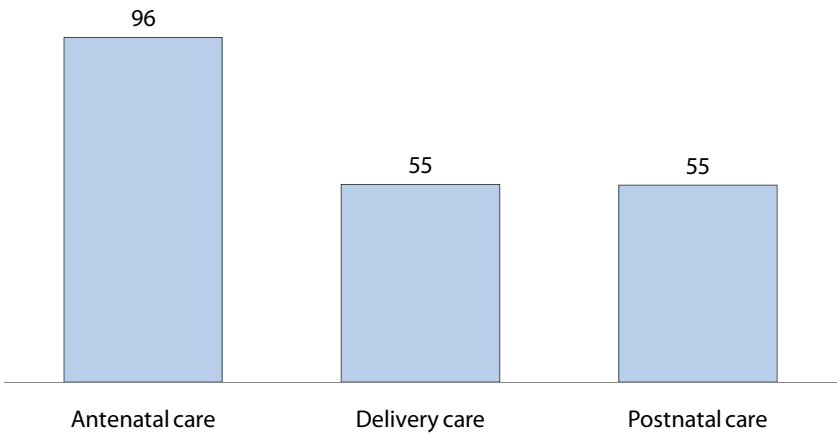


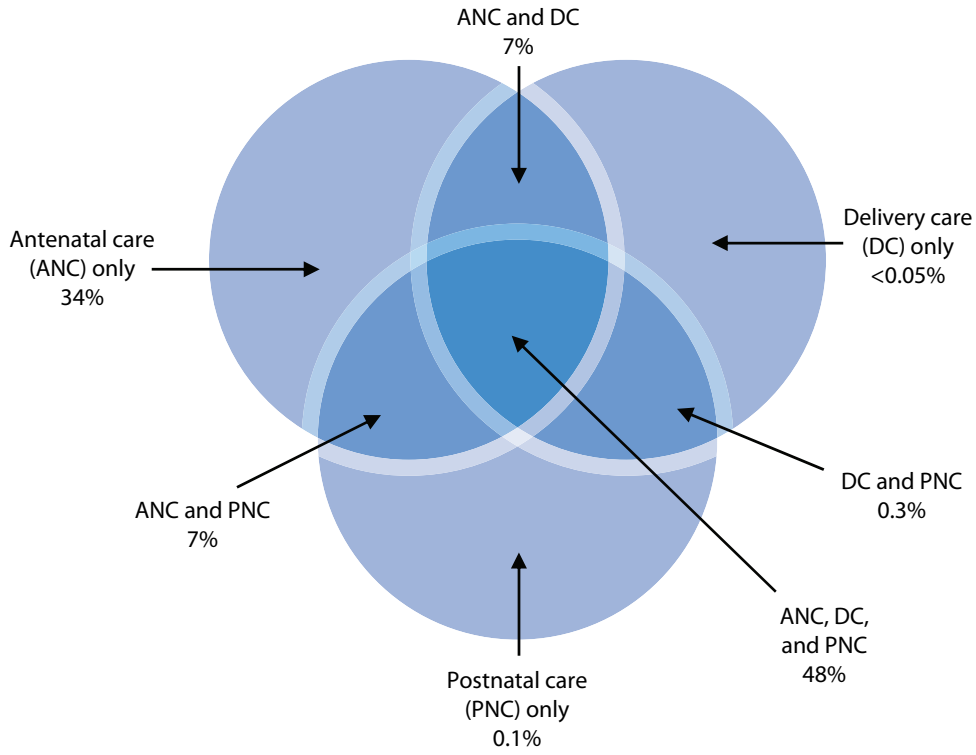
Table 4.12 Antenatal, delivery, and postnatal care

Percent distribution of most recent live birth or stillbirth in the five years preceding the survey by whether mother received antenatal care (ANC), delivery care (DC), and postnatal care (PNC) from medically trained persons, according to background characteristics, GMHS 2007

Background characteristic	ANC only	DC only	PNC only	Both ANC and DC	Both ANC and PNC	Both DC and PNC	All ANC, DC, and PNC	Neither ANC, DC, nor PNC	Missing	Total	Number of births
Mother's age at birth											
<20	36.3	0.2	0.0	7.7	5.9	0.3	46.9	2.7	0.0	100.0	534
20-34	32.6	0.0	0.2	7.3	7.2	0.4	49.0	2.9	0.4	100.0	3,391
35-49	39.0	0.0	0.0	6.4	5.3	0.2	43.4	4.5	1.1	100.0	1,003
Birth order											
1	26.7	0.1	0.1	8.9	4.7	0.4	57.5	0.9	0.6	100.0	1,051
2-3	31.6	0.0	0.1	6.9	7.0	0.1	51.3	2.7	0.3	100.0	1,769
4-5	36.2	0.0	0.2	7.8	8.1	0.1	43.9	3.3	0.4	100.0	1,161
6+	45.5	0.0	0.2	5.1	6.7	0.9	34.2	6.6	0.9	100.0	948
Residence											
Urban	9.7	0.1	0.1	12.0	3.0	0.3	73.5	0.8	0.7	100.0	1,683
Rural	47.1	0.0	0.1	4.7	8.6	0.3	34.2	4.5	0.4	100.0	3,245
Region											
Western	37.6	0.0	0.0	7.6	4.1	0.1	46.0	3.1	1.5	100.0	400
Central	32.2	0.0	0.0	1.3	1.7	0.2	62.1	2.1	0.4	100.0	479
Greater Accra	14.7	0.1	0.0	25.1	2.2	0.4	53.6	3.2	0.5	100.0	470
Volta	54.0	0.0	0.0	3.7	1.1	0.0	37.4	3.5	0.3	100.0	451
Eastern	28.4	0.0	0.4	11.3	10.9	0.7	45.4	2.5	0.4	100.0	567
Ashanti	19.1	0.0	0.2	8.2	10.3	0.7	59.7	1.4	0.2	100.0	922
Brong Ahafo	31.2	0.0	0.0	2.8	9.1	0.0	54.0	2.3	0.6	100.0	564
Northern	62.4	0.0	0.0	3.1	1.9	0.2	24.0	7.9	0.5	100.0	699
Upper East	31.0	0.0	0.2	0.6	19.3	0.0	46.5	1.6	0.8	100.0	225
Upper West	36.2	0.3	0.9	2.6	16.1	0.0	39.3	4.1	0.4	100.0	152
R3M regions	20.8	0.0	0.2	13.1	8.5	0.7	54.1	2.2	0.4	100.0	1,959
Other regions	43.3	0.0	0.1	3.2	5.5	0.1	43.3	3.9	0.6	100.0	2,969
Mother's education											
No education	52.8	0.0	0.3	3.8	7.9	0.2	28.3	6.0	0.7	100.0	1,678
Primary	36.8	0.1	0.1	8.0	7.4	0.6	43.5	2.8	0.8	100.0	1,102
Middle/JSS	20.8	0.0	0.0	8.9	5.8	0.3	62.6	1.4	0.1	100.0	1,797
Secondary+	7.4	0.0	0.0	12.2	2.9	0.0	76.3	0.5	0.7	100.0	350
Wealth quintile											
Lowest	55.0	0.0	0.2	3.0	9.3	0.3	25.1	6.8	0.4	100.0	1,074
Second	50.8	0.0	0.1	2.9	6.8	0.3	33.7	5.0	0.4	100.0	1,061
Middle	36.0	0.0	0.3	7.9	8.9	0.1	44.8	1.7	0.4	100.0	975
Fourth	17.7	0.0	0.0	10.6	4.8	0.6	64.0	1.3	0.9	100.0	983
Highest	4.4	0.1	0.0	13.1	2.9	0.3	78.3	0.5	0.6	100.0	835
Number of months pregnant at time of first ANC visit											
No antenatal care	0.0	0.6	3.2	0.0	0.0	7.4	0.0	88.1	0.8	100.0	164
<4	30.0	0.0	0.0	7.3	6.6	0.0	55.5	0.1	0.4	100.0	2,604
4-5	39.2	0.0	0.0	7.0	7.3	0.0	45.8	0.4	0.3	100.0	1,653
6-7	50.9	0.0	0.0	9.7	7.2	0.0	31.2	0.7	0.4	100.0	427
8+	62.2	0.0	0.0	6.2	9.6	4.4	14.5	3.2	0.0	100.0	64
Total	34.3	0.0	0.1	7.2	6.7	0.3	47.6	3.2	0.5	100.0	4,928

Note: Total includes 1 woman with information missing on education and 16 women who don't know or have information missing on number of months pregnant at time of first ANC visit.

Figure 4.25 Completeness of Maternity Care in Ghana



Note: For 4 percent of births, mothers received no antenatal, delivery, or postnatal care.

Figure 4.26 Maternity Care Coverage by Background Characteristics

(Most recent live birth or stillbirth in the five years preceding the survey for which ANC, DC and PNC were received)

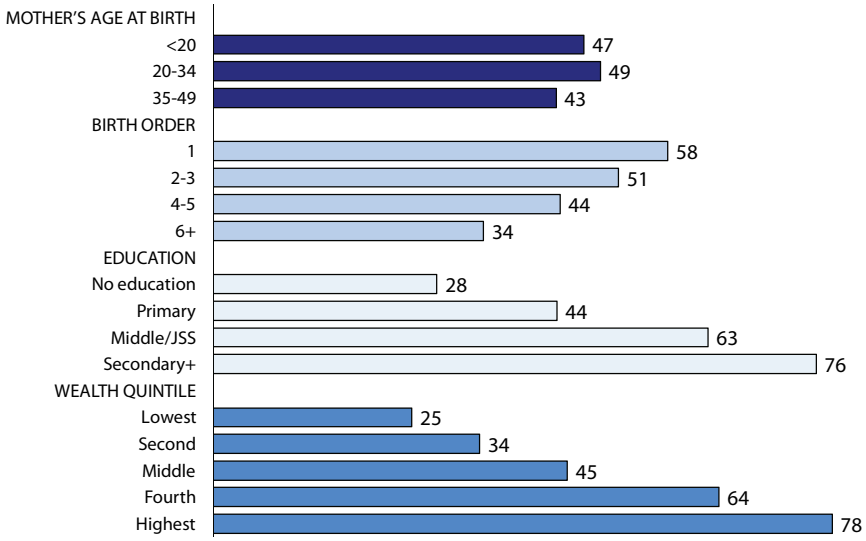
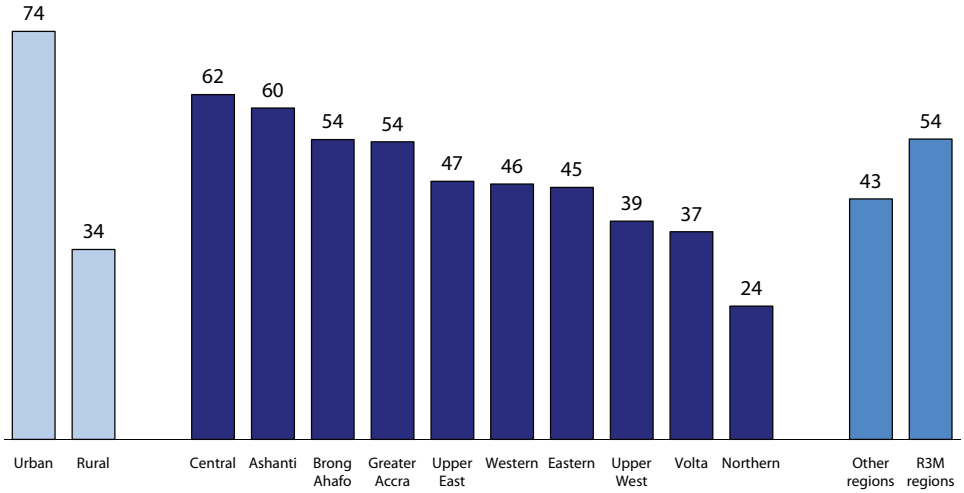


Figure 4.27 Maternity Care Coverage by Residence and Region

(Most recent live birth or stillbirth in the five years preceding the survey for which ANC, DC and PNC were received)



5 • ABORTION AND MISCARRIAGE

If not done properly and under hygienic conditions, induced abortion can adversely affect a woman's health, reduce her chances of future childbearing, and contribute to maternal and perinatal mortality. As discussed in Chapter 3, 11 percent of maternal deaths are abortion-related. Although abortion has been legal in Ghana under certain circumstances since 1985, the integration of safe abortion into Ghana's reproductive health policy did not take place until 2003, and it was not until 2006 that comprehensive abortion care services, as permitted by law, became one of the five components of the key "reduce maternal morbidity and mortality" objective of the 2007-2011 Ghana Reproductive Health Strategic Plan. Not surprisingly, misconceptions continue to exist regarding the legality of abortion in Ghana, and few health care facilities offer abortion services.

This chapter looks at the proportion of pregnancies that end in induced abortion, the reasons for having an abortion, steps taken to deliberately end a pregnancy, the complications of abortion, and health-seeking behavior of women who have induced abortions. People's knowledge of the circumstances under which abortion is legal is examined, and there is a discussion of miscarriage. Information on miscarriage is important because women's health is impacted by accidental termination of pregnancy and because, given the low level of knowledge that abortion is legal in Ghana, women may deliberately misstate an abortion as a miscarriage.

Analysis in this chapter is based on pregnancy histories collected from women age 15-49 interviewed during the survey. Information about induced abortion was collected through a detailed reproductive history section in the Women's Questionnaire. In collecting the histories, each woman was first asked about the total number of pregnancies that had ended in live births, stillbirths, miscarriages, and induced abortions. After obtaining these aggregate data, an event-by-event pregnancy history was recorded. For each pregnancy, information was recorded on the duration, the month and year the pregnancy ended, whether something was done deliberately to end the pregnancy, and the outcome of the pregnancy.[1]

5.1 PREGNANCY OUTCOMES

Table 5.1 and Figure 5.1 show the percent distribution of the outcomes of all pregnancies that ended during the five-year period preceding the survey. More than four in five pregnancies end in a live birth (82 percent). The majority of pregnancy losses are due to miscarriage (9 percent of pregnancies), followed by induced abortion (7 percent), and stillbirth (less than 2 percent).

[1] The pregnancy history was structured to ensure as complete as possible reporting of abortions and miscarriages. At the end of the pregnancy history, interviewers were required to check the consistency between the aggregate data collected and the number of specific events reported in the pregnancy history.

Table 5.1 Pregnancy outcomes by background characteristics

Percent distribution of pregnancies ending in the five years preceding the survey by type of outcome, according to background characteristics, GMHS 2007

Background characteristic	Pregnancy outcome				Total	Number of pregnancies
	Live birth	Stillbirth	Miscarriage	Abortion		
Age at pregnancy outcome						
< 20	75.4	2.1	6.3	16.2	100.0	1,008
20-24	80.7	1.9	8.6	8.7	100.0	2,080
25-34	84.5	1.2	9.4	4.9	100.0	3,729
35-44	81.7	2.8	11.0	4.5	100.0	1,409
45-49	73.6	0.0	23.2	3.2	100.0	96
Pregnancy order						
1	78.0	2.4	8.1	11.4	100.0	1,627
2	81.2	1.4	10.0	7.4	100.0	1,487
3	84.7	1.4	8.8	5.1	100.0	1,404
4	82.0	1.5	9.8	6.7	100.0	1,145
5+	83.0	1.9	9.6	5.6	100.0	2,659
Residence						
Urban	73.2	2.3	12.0	12.5	100.0	2,937
Rural	86.6	1.4	7.8	4.2	100.0	5,385
Region						
Western	77.3	0.7	11.7	10.4	100.0	710
Central	80.8	2.2	12.1	4.9	100.0	823
Greater Accra	73.6	1.2	11.1	14.2	100.0	828
Volta	81.7	1.7	11.2	5.4	100.0	764
Eastern	78.5	2.6	10.0	8.9	100.0	964
Ashanti	78.3	1.5	10.5	9.7	100.0	1,646
Brong Ahafo	82.5	2.7	7.5	7.2	100.0	911
Northern	93.4	1.9	4.1	0.7	100.0	1,128
Upper East	95.7	1.0	3.0	0.3	100.0	313
Upper West	91.2	1.0	7.9	0.0	100.0	235
R3M regions	77.2	1.7	10.5	10.6	100.0	3,438
Other regions	85.1	1.8	8.4	4.7	100.0	4,884
Education						
No education	90.9	1.4	5.9	1.8	100.0	2,670
Primary	81.6	1.8	9.6	7.1	100.0	1,916
Middle/JSS	77.5	2.1	10.7	9.7	100.0	3,055
Secondary+	66.6	1.4	15.4	16.6	100.0	680
Wealth quintile						
Lowest	91.1	1.5	5.2	2.2	100.0	1,760
Second	88.1	2.3	7.1	2.4	100.0	1,718
Middle	82.7	1.1	9.2	7.1	100.0	1,648
Fourth	76.5	1.7	10.3	11.5	100.0	1,672
Highest	69.0	2.2	15.4	13.4	100.0	1,523
Total	81.8	1.8	9.3	7.1	100.0	8,322

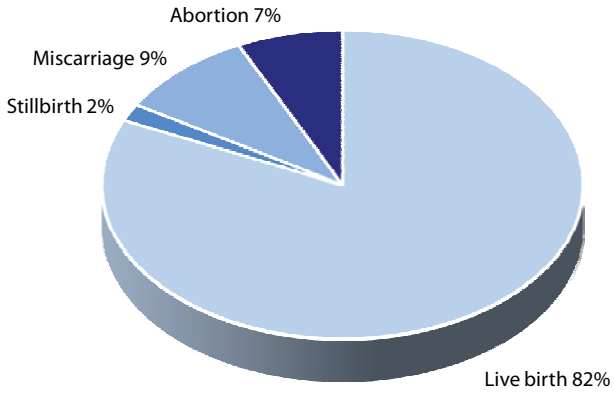
Note: Total includes 1 woman with information missing on education

The proportion of pregnancies that end in miscarriage increases with age from 6 percent among women under the age of 20 (at the time of the miscarriage) to 23 percent among women age 45-49. The proportion of pregnancies that end in miscarriage is higher among urban than rural women (12 percent compared with 8 percent) and increases with level of education and wealth quintile.

In contrast, abortion is highest among the youngest cohort of women and decreases steadily with age. Sixteen percent of pregnancies among women under the age of 20 end in abortion compared with just 3 percent of pregnancies among women age 45-49. In accordance with the data on abortion by age, first pregnancies are more likely to end in abortion than second or higher order pregnancies (11 percent compared with 7 percent or less). These findings indicate that in Ghana, abortion is used more commonly to delay the start of childbearing than to limit the number of children.

***Figure 5.1* Pregnancy Outcomes**

(Pregnancies ending in the five years preceding the survey)



The pregnancies of women living in urban areas are three times more likely to end in abortion than those of women living in rural areas (13 percent compared with 4 percent). Among regions, the proportion of pregnancies that end in abortion varies widely but the highest proportion is in Greater Accra (14 percent). The proportion of pregnancies ending in abortion is also high in Western (10 percent), Ashanti (10 percent), and Eastern (9 percent) regions. By contrast, less than 1 percent of pregnancies end in abortion in the Northern, Upper East, and Upper West regions. Overall, abortion is more common in R3M program regions (11 percent) than in other regions (5 percent). The proportion of pregnancies that end in abortion increases substantially with level of education, from 2 percent among women with no education to 17 percent among women with secondary education or higher. A similar pattern is observed by wealth quintile.

Data on pregnancy outcomes for the three-year period preceding the survey show similar results, with 80 percent of pregnancies ending in a live birth, 10 percent ending in miscarriage, and 8 percent ending in abortion (data not shown). The slightly higher percentage of pregnancies ending in miscarriage and abortion for the three-year period compared with the five-year period suggests that with increased time since the event, women are more likely to omit pregnancies that did not end in a live birth.

5.1.1 Lifetime Experience with Induced Abortion

Table 5.2 shows women's lifetime experience with induced abortion. Fifteen percent of women report that they have had an induced abortion at some time. One in three of these women has had more than one abortion. The mean number of abortions among women who have had an abortion is 1.5. The proportion of women who have ever had an abortion generally increases with age. Only 3 percent of women age 15-19 have ever had an abortion compared with 22 percent of women age 40-44. Women with 2-3 living children are more likely to have had an abortion than other women. Only 7 percent of women with no living children report ever having had an abortion, compared with 18 percent of women with one child and 15 percent of women with four or more living children.

Table 5.2 Lifetime experience with induced abortion

Percentage of women who ever had an induced abortion, and percent distribution of these women by number of abortions, and the mean number of abortions, according to background characteristics, GMHS 2007

Background characteristic	Percentage of women who ever had an induced abortion	Number of women	Percent distribution of women who ever had an abortion by number of abortions				Mean number of abortions	Number of women with an abortion
			1	2-3	4+	Total		
Age								
15-19	2.8	2,064	89.3	10.7	0.0	100.0	1.1	58
20-24	11.9	1,756	76.2	23.5	0.3	100.0	1.3	210
25-29	17.3	1,677	69.0	27.6	3.5	100.0	1.4	290
30-34	17.9	1,508	63.8	34.1	2.1	100.0	1.5	270
35-39	19.7	1,405	58.8	37.4	3.8	100.0	1.6	277
40-44	22.0	996	60.0	35.8	4.2	100.0	1.6	219
45-49	18.6	962	65.6	31.0	3.4	100.0	1.5	179
Number of living children								
0	7.1	3,202	77.3	21.5	1.2	100.0	1.3	227
1	17.5	1,588	70.7	27.0	2.4	100.0	1.4	278
2-3	20.8	2,699	61.6	35.5	2.9	100.0	1.5	560
4+	15.1	2,881	63.6	32.6	3.8	100.0	1.5	436
Marital status								
Never married	7.3	3,172	76.8	21.9	1.3	100.0	1.3	230
Married or living together	16.6	6,215	64.1	33.2	2.7	100.0	1.5	1,030
Divorced/separated/widowed	24.6	980	65.4	30.0	4.6	100.0	1.5	241
Residence								
Urban	19.9	4,465	61.9	34.6	3.5	100.0	1.5	887
Rural	10.4	5,905	72.6	25.7	1.7	100.0	1.4	615
Region								
Western	13.6	937	73.2	25.3	1.5	100.0	1.3	127
Central	10.6	1,048	71.7	28.3	0.0	100.0	1.3	111
Greater Accra	21.0	1,402	59.6	35.3	5.1	100.0	1.6	294
Volta	12.3	976	61.3	37.6	1.2	100.0	1.5	120
Eastern	19.6	1,267	68.6	29.2	2.2	100.0	1.4	249
Ashanti	20.8	1,888	62.1	33.7	4.1	100.0	1.6	393
Brong Ahafo	16.3	1,073	73.9	25.0	1.2	100.0	1.3	175
Northern	2.7	1,090	*	*	*	100.0	*	29
Upper East	0.4	418	*	*	*	100.0	*	2
Upper West	0.4	271	*	*	*	100.0	*	1
R3M regions	20.5	4,557	63.1	33.0	3.9	100.0	1.5	936
Other regions	9.7	5,813	71.5	27.5	1.0	100.0	1.4	566
Education								
No education	6.0	2,670	79.5	18.8	1.6	100.0	1.3	160
Primary	14.4	2,208	68.8	29.2	2.0	100.0	1.4	318
Middle/JSS	19.2	4,107	65.0	32.0	3.1	100.0	1.5	788
Secondary+	17.0	1,383	58.0	38.0	4.0	100.0	1.6	235
Wealth quintile								
Lowest	5.8	1,741	75.4	22.6	2.0	100.0	1.3	102
Second	8.5	1,839	76.8	22.8	0.4	100.0	1.3	156
Middle	13.5	2,025	72.1	26.8	1.1	100.0	1.3	273
Fourth	18.0	2,306	66.4	31.0	2.6	100.0	1.5	416
Highest	22.6	2,459	58.6	36.7	4.6	100.0	1.6	555
Total	14.5	10,370	66.3	30.9	2.8	100.0	1.5	1,502

Note: Total includes 3 women with information missing on marital status and 1 woman with information missing on education. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

Women in urban areas are twice as likely as women in rural areas to have ever had an abortion (20 percent compared with 10 percent). The proportion of women who have ever had an abortion ranges from 21 percent in Greater Accra and Ashanti regions to less than 1 percent in Upper East and Upper West regions (Figure 5.2).

One-quarter of women who are divorced, separated, or widowed have had an abortion at some time, compared with 17 percent of women who are currently married and 7 percent of women who have never been married (Figure 5.3). Ever having had an abortion generally increases with level of education and wealth quintile. The proportion of women who have ever had an abortion increases from 6 percent among women with no education to 19 percent among women with Middle/JSS, before declining to 17 percent among women with secondary education or higher. By wealth quintile, the percentage of women who have ever had an abortion increases from 6 percent among those in the lowest wealth quintile to 23 percent among those in the highest wealth quintile.

The mean number of abortions among women who have ever had an abortion (1.5) varies little by background characteristics, although it does increase slightly with age, number of living children, level of education, and wealth quintile.

Figure 5.2 Ever Had an Abortion by Residence and Region

(Women age 15-49 who ever had an abortion)

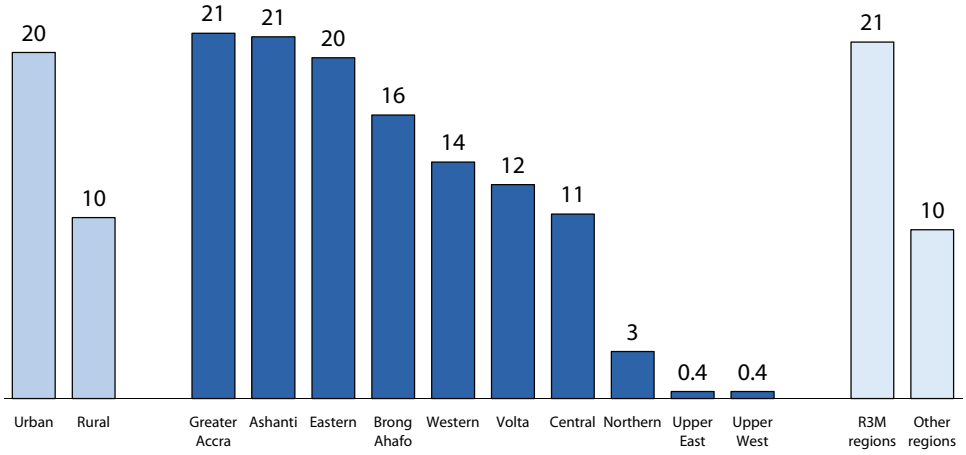
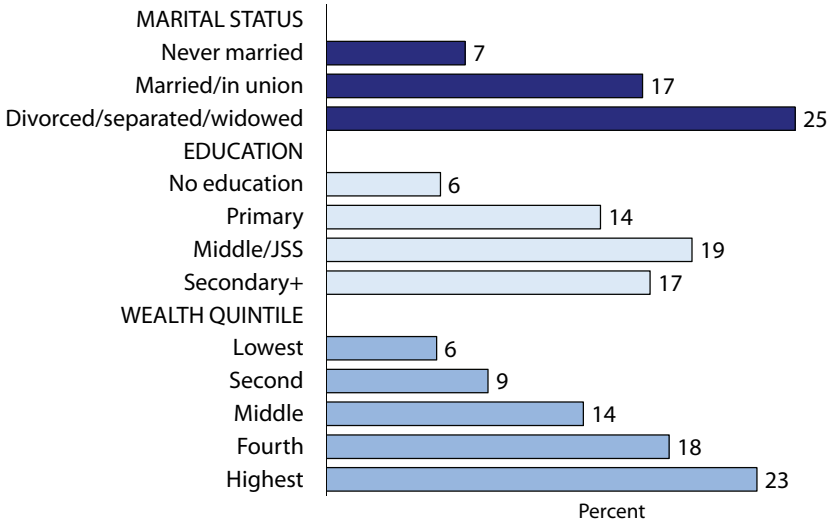


Figure 5.3 **Ever Had an Abortion by Background Characteristics**

(Women age 15-49 who ever had an induced abortion)



5.1.2 Recent Experience with Abortion or Miscarriage

While Table 5.1 shows the proportion of pregnancies that ended in abortion or miscarriage during the five-year period preceding the survey, Table 5.3 shows the proportion of women who had at least one abortion or one miscarriage during that period. Overall, 5 percent of women report having an abortion during this period, while 6 percent report having a miscarriage. Abortion occurs most frequently among women age 20-24 (9 percent) and slightly less frequently among women age 25-29 (8 percent); for all other age groups, the proportion of women having an abortion is less than 5 percent. Abortion is also prevalent among women with one living child (7 percent) and women who are divorced, widowed, or separated (7 percent).

Table 5.3 Recent experience with abortion or miscarriage

Percentage of women who had an induced abortion and the percentage of women who had a miscarriage in the five years preceding the survey, by background characteristics, GMHS 2007

Background characteristic	Percentage of women who had an abortion in the past five years	Percentage of women who had a miscarriage in the past five years	Number of women interviewed
Age			
15-19	2.7	0.9	2,064
20-24	9.3	7.3	1,756
25-29	7.5	9.1	1,677
30-34	4.2	8.2	1,508
35-39	4.0	8.0	1,405
40-44	2.1	5.1	996
45-49	1.2	4.0	962
Number of living children			
0	4.7	3.8	3,202
1	7.4	10.1	1,588
2-3	5.6	8.0	2,699
4+	2.7	4.3	2,881
Marital status			
Never married	4.9	1.9	3,172
Married or living together	4.4	8.2	6,215
Divorced/separated/widowed	7.0	5.2	980
Residence			
Urban	6.7	6.2	4,465
Rural	3.3	5.9	5,905
Region			
Western	6.1	7.5	937
Central	3.2	7.2	1,048
Greater Accra	6.8	4.8	1,402
Volta	3.7	7.5	976
Eastern	5.6	6.0	1,267
Ashanti	7.3	7.4	1,888
Brong Ahafo	5.2	5.1	1,073
Northern	0.7	3.6	1,090
Upper East	0.2	2.0	418
Upper West	0.0	6.4	271
R3M regions	6.7	6.2	4,557
Other regions	3.3	5.8	5,813
Education			
No education	1.6	4.9	2,670
Primary	5.2	6.2	2,208
Middle/JSS	6.1	6.7	4,107
Secondary+	6.2	5.9	1,383
Wealth quintile			
Lowest	1.9	4.6	1,741
Second	2.1	5.4	1,839
Middle	5.0	5.8	2,025
Fourth	6.8	6.3	2,306
Highest	6.7	7.3	2,459
Total	4.8	6.0	10,370

Note: Total includes 3 women with information missing on marital status and 1 woman with information missing on education.

As seen in other tables, women in urban areas are more likely than their counterparts in rural areas to report having an abortion during the past five years (7 percent compared with 3 percent). Seven percent of women in the R3M program regions had an abortion in the five years preceding the survey compared with 3 percent of women in other regions. About 6-7 percent of women in Western, Greater Accra, Eastern, and Ashanti regions had an abortion in the past five years. The likelihood of having an abortion increases with level of education and wealth quintile.

The patterns for miscarriage are different from those for abortion. Women age 25-39 are more likely than other women to have had a miscarriage in the five years preceding the survey. Miscarriage is more likely to occur among women with one living child and among women who are married or in union than among their counterparts. Urban and rural women are about equally likely to have a miscarriage. For most regions, the proportion of women with a miscarriage in the past five years ranges from 5 to 8 percent, with two exceptions: Northern (4 percent) and Upper East (2 percent) regions. It is possible that the lower percentages in these regions reflect underreporting. There is no clear relationship between miscarriage and level of education; however, the likelihood of a woman having a miscarriage increases with wealth status, from 5 percent among women in the lowest wealth quintile to 7 percent among those in the highest wealth quintile.

5.1.3 Rates of Induced Abortion

Table 5.4 shows rates of induced abortion from the 2007 Ghana Maternal Health Survey. The rates are calculated in a manner analogous to the calculation of fertility rates. Age-specific abortion rates (ASARs) express the number of abortions among women in each specific age group per 1,000 women in that age group. The total abortion rate (TAR), which is expressed per woman, is a summary measure of the age-specific rates. The TAR is interpreted as the number of abortions a woman would have in her lifetime if she experienced the currently observed age-specific abortion rates during her childbearing years. The general abortion rate (GAR) is the number of abortions per 1,000 women age 15-49. All of the rates refer to the three-year period prior to the survey.

Table 5.4 Induced abortion rates

Age-specific induced abortion rates (per 1,000 women), total abortion rates (TAR), and general abortion rates (GAR) for the three-year period preceding the survey, GMHS 2007

	Residence		
Age group	Urban	Rural	Total
15-19	22	13	17
20-24	34	17	25
25-29	22	11	16
30-34	12	10	11
35-39	15	5	9
40-44	5	1	3
45-49	3	1	1
TAR 15-49	0.6	0.3	0.4
TAR 15-44	0.6	0.3	0.4
GAR	21	10	15

Note: Total abortion rate (TAR) expressed per woman. General abortion rate (GAR) (abortions divided by number of women 15-44) expressed per 1,000 women.

The total abortion rate in Ghana is 0.4 abortions per woman. The total abortion rate is twice as high among urban women as among rural women (0.6 compared with 0.3). The age-specific abortion rates show that abortions are more common among women below the age of 30 than among women age 30-49. The age-specific abortion rate is highest among women age 20-24 (25 abortions per 1,000 women). This pattern is seen in both urban and rural areas.

Table 5.5 shows abortion rates by background characteristics. The total abortion rate is highest (0.6 abortions per woman) in Greater Accra and Ashanti regions. The total abortion rate is twice as high in the R3M program regions as in other regions (0.6 births per woman compared with 0.3). The total abortion rate increases with level of education and wealth quintile. For example, the TAR among women with no education is 0.1 abortions per woman compared with 0.5 abortions per woman among those attending Middle/JSS school or higher.

Similar trends are observed for the mean number of abortions per woman. By region, the mean number of abortions per woman ranges from 0.0 in Northern, Upper East, and Upper West regions to 0.6 in Greater Accra. The mean number of abortions per woman is highest (0.7 abortions per woman) among women who have attended secondary school and those in the highest wealth quintile.

Table 5.5 Induced abortion rates by background characteristics

Total induced abortion rates for the three years preceding the survey and mean number of abortions among women age 40-49, by background characteristics, GMHS 2007

Background characteristic	Total abortion rate	Mean number of abortions among women age 40-49
Residence		
Urban	0.6	0.5
Rural	0.3	0.2
Region		
Western	*	0.2
Central	(0.3)	0.2
Greater Accra	0.6	0.6
Volta	(0.3)	0.3
Eastern	0.5	0.4
Ashanti	0.6	0.5
Brong Ahafo	(0.3)	0.4
Northern	*	0.0
Upper East	*	0.0
Upper West	*	0.0
R3M regions	0.6	0.5
Other regions	0.3	0.2
Education		
No education	0.1	0.1
Primary	0.4	0.3
Middle/JSS	0.5	0.5
Secondary+	(0.5)	0.7
Wealth quintile		
Lowest	0.2	0.1
Second	0.2	0.2
Middle	0.4	0.3
Fourth	0.5	0.4
Highest	0.6	0.7
Total	0.4	0.3

Note: Figures in parentheses are based on 125-249 person-years of exposure; an asterisk indicates that a figure is based on fewer than 125 person-years of exposure and has been suppressed.

5.2 CHARACTERISTICS OF INDUCED ABORTION

5.2.1 Reasons for Induced Abortion and Partner's Attitude

Table 5.6 and Figure 5.4 show the main reasons given by women for their most recent abortion in the past five years. The reason cited most often is financial. One in five women report that the main reason for the abortion was that there was no money to take care of a baby. Thirteen percent of women report that they wanted to delay childrearing, and another 11 percent say that they wanted to continue their schooling. Nine percent of women cited a desire to continue working as the main reason for having an abortion. Not being in love with the father or not wanting to stay with him was mentioned by 9 percent of women, while 6 percent said the main reason was that their partner did not want the child or denied responsibility for the pregnancy. Other reasons including health risks were cited by less than 5 percent of women.

Table 5.6 Main reason for the most recent abortion in the past five years

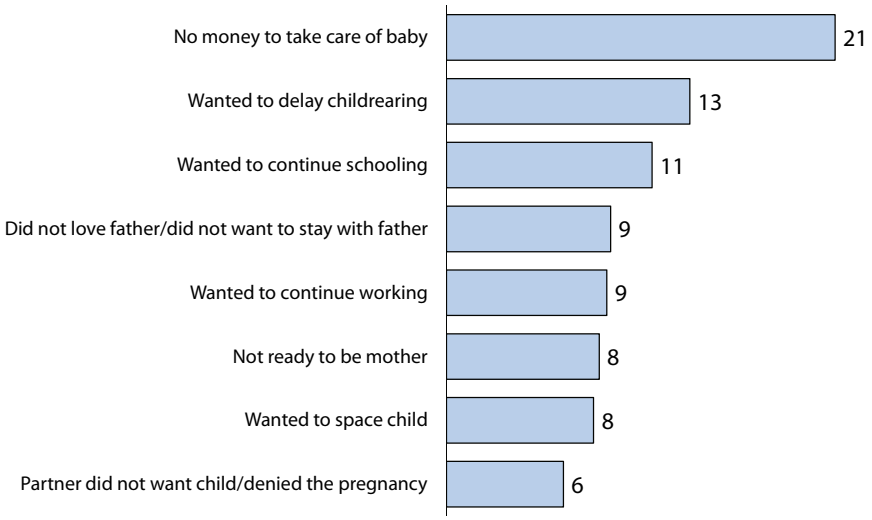
Percent distribution of women who had an induced abortion in the five years preceding the survey by the main reason for having the most recent abortion, according to background characteristics, GMHS 2007

Background characteristic	Main reason for having most recent abortion													Total	Number of women with at least one abortion since 2002
	Health of mother	No money to take care of baby	Not ready to be a mother	Wants to continue schooling	Does not love the father/ does not want to stay with father	Wants to delay child-rearing	Wants to continue working	Wants to space children	Partner does not want child/ denies pregnancy	To avoid shame/ afraid of parents	No one to help look after the child	Other	Missing		
Age at pregnancy outcome															
< 20	1.4	11.5	14.6	22.1	3.2	7.0	12.4	8.0	9.3	2.5	0.0	8.0	0.0	100.0	129
20-24	1.7	21.0	12.1	13.8	9.0	7.5	12.6	7.5	4.4	2.4	2.4	3.8	1.7	100.0	153
25-34	5.5	27.4	2.0	2.9	12.2	18.4	3.3	8.2	4.7	5.1	3.9	5.0	1.4	100.0	156
35-44	7.4	27.7	0.0	1.5	10.6	24.9	3.3	7.7	10.1	0.0	3.6	3.2	0.0	100.0	53
Pregnancy order															
1	1.2	13.3	18.3	22.3	7.1	2.9	16.1	0.0	7.7	2.9	0.6	6.5	1.3	100.0	157
2	1.9	9.5	11.9	15.2	12.1	10.0	12.6	11.4	6.4	4.0	0.9	2.6	1.4	100.0	93
3	7.6	27.2	0.0	4.6	11.3	20.3	0.0	15.5	1.1	4.0	8.4	0.0	0.0	100.0	58
5	2.8	37.9	0.0	3.8	6.1	16.2	3.3	9.8	8.5	1.6	5.7	4.4	0.0	100.0	63
5+	6.5	28.9	0.7	0.7	8.3	21.5	2.6	10.5	6.1	2.6	1.3	9.2	1.2	100.0	124
Residence															
Urban	3.9	20.1	8.0	13.1	10.3	13.6	7.0	6.3	5.8	3.6	2.1	5.9	0.2	100.0	298
Rural	3.1	23.0	8.6	8.2	6.3	11.1	10.8	10.1	7.2	2.0	2.7	4.7	2.1	100.0	197
Region															
Western	(1.3)	(26.6)	(5.6)	(7.3)	(4.6)	(7.0)	(18.5)	(6.8)	(9.8)	(3.2)	(1.0)	(8.4)	(0.0)	100.0	57
Central	(8.7)	(27.9)	(3.0)	(9.0)	(2.5)	(14.7)	(16.6)	(3.9)	(5.0)	(0.0)	(3.8)	(4.8)	(0.0)	100.0	33
Greater Accra	2.6	30.3	9.8	6.2	13.1	12.4	4.3	10.1	4.8	0.6	1.5	3.7	0.7	100.0	96
Volta	(4.0)	(21.8)	(12.3)	(6.8)	(5.2)	(24.1)	(5.7)	(9.7)	(4.0)	(0.0)	(6.4)	(0.0)	(0.0)	100.0	36
Eastern	1.6	12.7	11.5	8.0	8.9	7.4	11.0	9.9	10.1	5.3	2.4	10.2	1.1	100.0	71
Ashanti	4.6	14.1	8.7	12.0	11.9	17.1	4.7	9.0	5.3	4.0	3.3	5.5	0.0	100.0	137
Brong Ahafo	(5.4)	(26.0)	(4.5)	(21.6)	(4.6)	(8.0)	(10.2)	(2.1)	(6.9)	(2.4)	(0.0)	(3.7)	(4.7)	100.0	56
R3M regions	3.2	18.9	9.7	9.2	11.6	13.3	6.1	9.5	6.3	3.2	2.5	6.0	0.5	100.0	304
Other regions	4.2	25.0	5.9	14.2	4.1	11.5	12.4	5.1	6.6	2.6	2.2	4.4	1.7	100.0	191
Education															
No education	(4.0)	(25.9)	(2.4)	(0.0)	(7.0)	(28.6)	(7.3)	(7.7)	(7.6)	(0.0)	(6.3)	(0.0)	(3.2)	100.0	42
Primary	3.3	32.5	5.2	1.4	7.7	9.0	12.4	7.8	9.6	1.5	2.9	6.8	0.0	100.0	115
Middle/JSS	4.4	17.4	9.6	9.3	11.2	12.9	8.0	9.7	5.7	3.2	2.1	5.4	1.1	100.0	252
Secondary+	1.6	15.4	10.9	34.7	3.5	9.0	5.4	2.6	3.4	5.9	0.7	6.3	0.8	100.0	86
Wealth quintile															
Lowest	(0.0)	(23.1)	(4.7)	(9.0)	(4.8)	(13.0)	(15.0)	(7.6)	(8.8)	(0.0)	(0.0)	(6.1)	(7.9)	100.0	33
Second	(0.0)	(27.8)	(10.4)	(12.9)	(8.0)	(8.9)	(7.0)	(7.0)	(6.7)	(0.0)	(4.7)	(6.6)	(0.0)	100.0	38
Middle	3.6	20.3	5.5	10.0	7.9	19.6	8.1	9.9	9.8	2.6	2.8	0.0	0.0	100.0	102
Fourth	1.6	24.3	9.3	8.5	10.4	9.0	7.8	8.7	3.9	4.8	3.1	7.2	1.4	100.0	156
Highest	7.1	17.1	9.1	14.3	8.5	12.6	8.5	5.9	6.1	2.8	1.3	6.6	0.0	100.0	166
Total	3.6	21.2	8.2	11.1	8.7	12.6	8.5	7.8	6.4	3.0	2.4	5.4	1.0	100.0	495

Note: Total includes 4 women age 45-49, 7 women residing in the Northern region, and 1 woman residing in the Upper East region. Figures in parentheses are based on 25-49 unweighted cases. Other includes "Risk of birth defect," "Too young to be mother," "Because of rape," "Parents insisted," "Father of child died," and "other" unspecified reasons which accounted for less than one percent each.

***Figure 5.4* Main Reasons for Abortion**

(Women age 15-49 who had an abortion in the past five years)



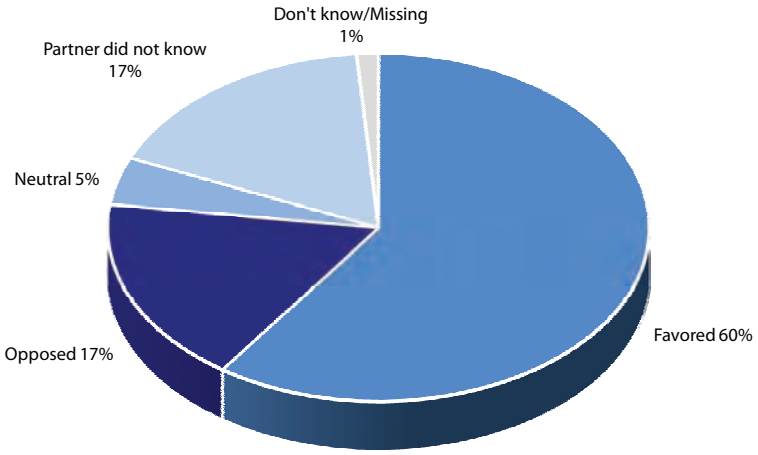
Overall, not having enough money to take care of the baby is the reason most often given for having an abortion. Wanting to continue schooling is the most commonly mentioned reason for having an abortion among women under age 20 (at the time of the abortion), women with first or second order pregnancies, and women who have attended secondary school or higher. In the Ashanti region, wanting to delay childrearing is the reason given most often for abortion. It is interesting to note that the percentage of women who have an abortion because they want to delay childrearing increases in the older age groups, at which point most women have already begun childrearing. It is possible that interviewers confused wanting to delay the start of childrearing with wanting to delay that particular pregnancy, or birth spacing, and miscoded the respondent's answer.

Although having no money to take care of a baby is the most common reason given for having an abortion by women in both urban and rural areas, differences between these two groups can be seen in the other reasons given. Whereas women in urban areas are more likely than their rural counterparts to report wanting to continue schooling and wanting to delay childrearing as reasons for abortion, women in rural areas are more likely than their urban counterparts to say they had an abortion because they wanted to continue working and wanted to their space births.

Figure 5.5 shows partner's attitudes towards the most recent abortion, for women who had an induced abortion in the five years preceding the survey. The data show that the majority of partners of women who had abortions favored having the abortion (60 percent), compared with about one in five partners who opposed having the abortion (17 percent), and an equal proportion of partners who were unaware of the abortion. Four percent of partners knew about the abortion, but had a neutral attitude.

***Figure 5.5* Partner's Attitude Towards the Abortion**

(Women age 15-49 who had an abortion in the past five years)



5.2.2 Actions Taken to End Pregnancy, and Use of Antibiotics, Pain Relief, and Anesthesia for Abortion

Figure 5.6 shows the percent distribution of women who had at least one induced abortion in the five years preceding the survey by the final or only action taken to terminate the most recent pregnancy that ended in abortion.[2] The most common action taken to end the pregnancy is dilation and curettage (D&C) (40 percent). Sixteen percent of women said they terminated their pregnancy by taking tablets, with another 6 percent of women specifying that they took Cytotec (Misoprostol) tablets. For 12 percent of women, manual vacuum aspiration (MVA) was the method used to terminate the pregnancy. These methods cover about three-quarters of abortions. Lesser used methods include inserting an herb, object, or other substance in the vagina, receiving an injection, and drinking an herbal concoction, among others.

Figure 5.7 shows the person who performed the last/only action taken to terminate the most recent pregnancy that ended in abortion. The majority of women go to a doctor (57 percent); 16 percent of women go to a pharmacist or chemical seller; and 10 percent do not go to see anyone. Nine percent of women go to a friend or relative, 4 percent go to a traditional practitioner, and 3 percent go to a nurse, midwife, or auxiliary midwife.

Abortion takes place most commonly in private hospitals and polyclinics (Figure 5.8). Among most recent abortions in the past five years, about four in ten (38 percent) took place in a private hospital or clinic; three in ten (30 percent) occurred in the respondent's home; and 15 percent were carried out in a government hospital or clinic. Actions to bring an end to a pregnancy take place less commonly in government health centers, health posts and health clinics, in a private pharmacy or drug store, and in someone else's home.

Most abortions are paid for either by the woman or her partner. Partners pay for about half (49 percent) of abortions, whereas respondents pay for 44 percent (data not shown). In 6 percent of cases, no one paid for the abortion, and in a small percentage of cases the respondent's mother, father, or other relative paid.

Figure 5.9 presents data on the use of antibiotics, pain relievers, and anesthesia regarding abortion. Almost seven in ten women who had an induced abortion in the past five years received antibiotics and/or pain relievers following the most recent abortion. In contrast, 14 percent received local anesthesia and one-quarter received general anesthesia.

[2] About one in ten women took more than one action to terminate the pregnancy.

Figure 5.6 Last/Only Action Taken to End Pregnancy

(Women age 15-49 who had an abortion in the past five years)

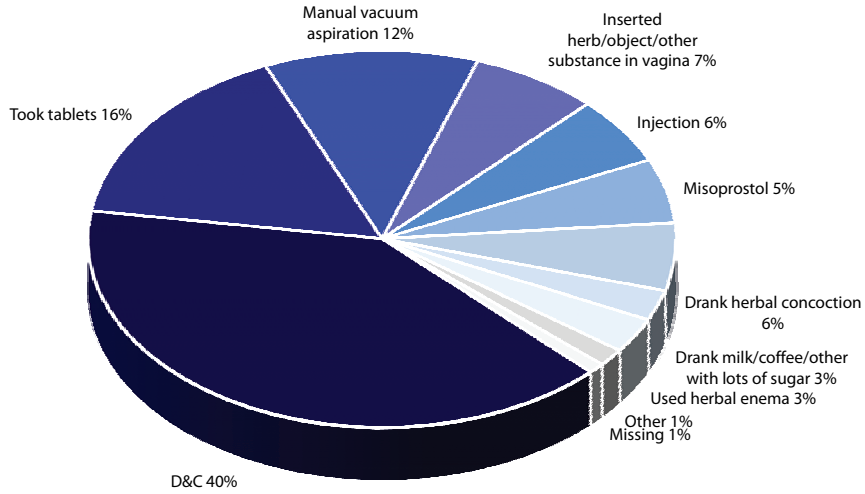


Figure 5.7 Person Who Performed Last/Only Action Taken to End Pregnancy

(Women age 15-49 who had an abortion in the past five years)

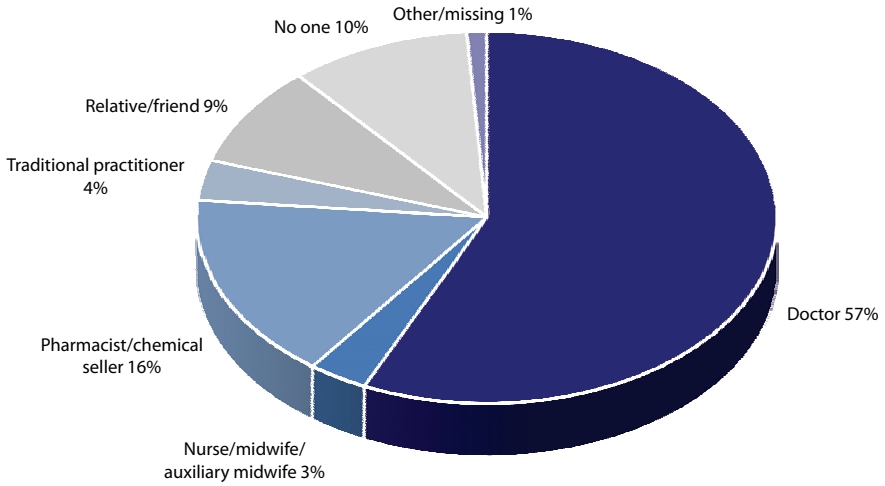


Figure 5.8 **Place Where Last/Only Action Taken to End Pregnancy**
(Women age 15-49 who had an abortion in the past five years)

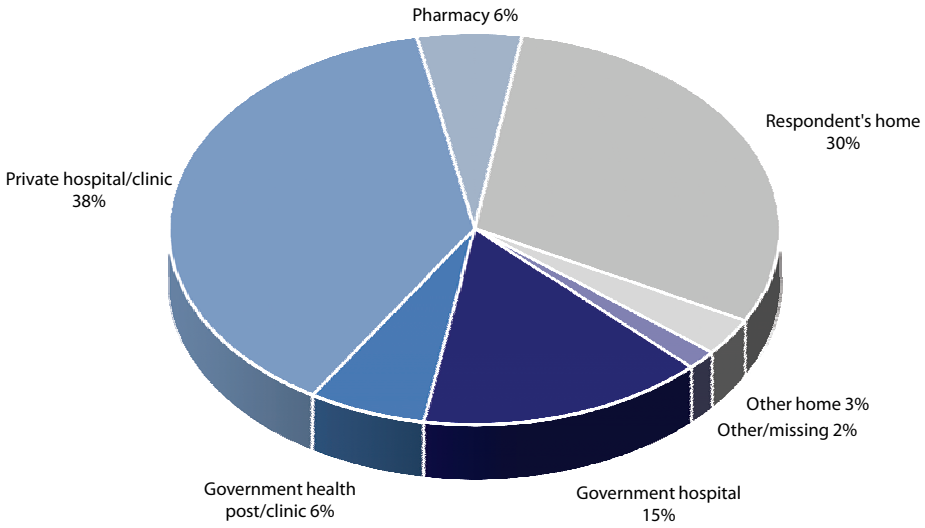
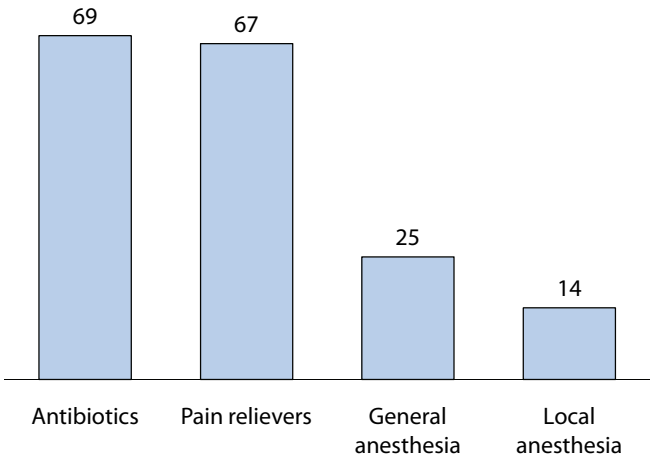


Figure 5.9 **Pain Management for Abortion**
(Women age 15-49 who had an abortion in the past five years)



5.2.3 Problems Experienced with Abortion and Treatment Received

Table 5.7 shows the proportion of women who experienced various problems during their last/only action taken to end a pregnancy in the past five years and the severity of the problem. The most common problem was pain, experienced by 10 percent of women who had an abortion. Among women who experienced pain, the majority characterized the pain as severe. One in twelve women receiving an abortion experienced bleeding, while 6 percent each experienced fever and foul-smelling discharge, both indications of infection. One percent of women who had an abortion reported that they experienced an injury or perforation as a result of the procedure. Pain and bleeding were the problems most likely to be reported as severe. It should be noted that these problems reflect reports from women who had abortions and are living; the most severe problems are underestimated because some women died as a result.

Table 5.7 Experience of problems related to abortion

Among women who had an induced abortion in the five years preceding the survey, percent distribution by severity of problems experienced during the last/only action taken to end the pregnancy, according to type of problem, GMHS 2007

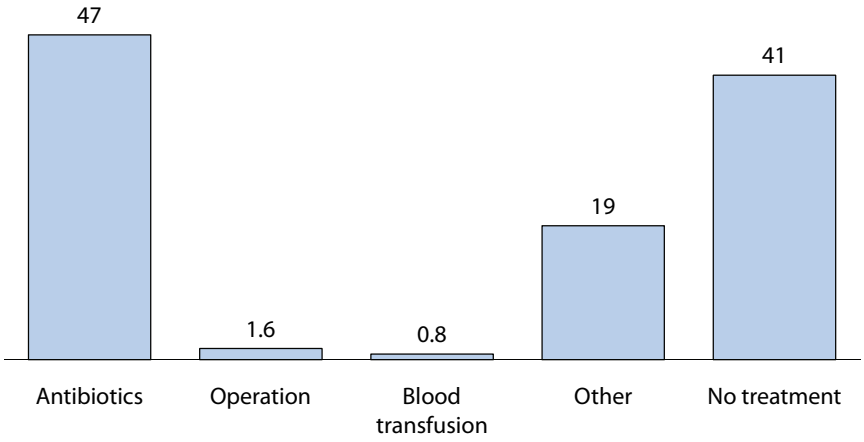
Type of problem	Experienced problem	Severity of problem			Did not experience problem	Don't know	Missing	Total	Number of women who had an abortion
		Mild	Moderate	Severe					
Bleeding	8.3	2.4	1.2	4.8	90.7	0.0	1.0	100.0	495
Pain	10.4	2.5	2.8	5.0	88.7	0.0	1.0	100.0	495
Fever	5.9	1.2	2.8	1.9	93.1	0.0	1.0	100.0	495
Injury/perforation	1.0	0.9	0.1	0.8	97.2	0.8	1.0	100.0	495
Foul-smelling discharge	5.6	2.1	2.2	1.3	93.4	0.1	1.0	100.0	495
Other	1.5	0.2	1.1	0.2	97.5	0.0	1.0	100.0	495

Note: For respondents with multiple "other problems," the problem with the highest level of severity was tabulated.

Among women who had an abortion in the past five years, 13 percent reported experiencing a problem after their most recent abortion. Figure 5.10 shows the percentage of these women who received specific treatments. While four in ten women with a problem following their abortion received no treatment, almost half of women with a problem received antibiotics (47 percent), about 2 percent received an operation, and just under 1 percent received a blood transfusion. Nineteen percent of women received other treatments.

***Figure 5.10* Treatment for Health Problems Due to Abortion**

(Women age 15-49 who had an abortion in the past five years and reported experiencing a problem following the abortion)



5.2.4 Characteristics of Abortion among Women Who Took Multiple Actions to End Pregnancy

About one in ten women with an abortion in the past five years took more than one action to complete their most recent abortion because the first action was not effective in terminating the pregnancy.[3] This section explores the first action these women took to end the pregnancy. Table 5.8 shows for women who took multiple actions to terminate the most recent pregnancy that ended in abortion, the distribution of first actions taken and the distribution of last actions taken.

[3] The analyses in this section are based on 50 unweighted women.

The proportion of women who drank milk, coffee, or tea with lots of sugar as a first action to terminate the pregnancy is much higher than the proportion who did this as the last action (27 percent compared with 5 percent), an indication of the low effectiveness of this method in terminating pregnancy. Taking tablets is also more common as a first action than as a last action (28 percent compared with 10 percent). On the other hand, the proportion of women who used injection increases markedly from the first to the last action. No women who took multiple actions to terminate their pregnancy used D&C or MVA as the first action; however, a combined 35 percent of women used one of these two methods as the last action in terminating the pregnancy.

Nearly one in two women who took multiple actions to end a pregnancy first went to a relative or friend (45 percent), while one in four went to a pharmacist or chemical seller (24 percent), and 13 percent went to a traditional practitioner (data not shown). Sixteen percent of women did not go to anyone about ending the pregnancy. Less than 2 percent went to a nurse/midwife, or auxiliary midwife. It is notable that none of these women went to a doctor as the first action to end their pregnancy, compared with 57 percent of women who went to a doctor as the last or only action to end the pregnancy.

The majority of women who took multiple actions to end their pregnancy carried out the first action in their own home (63 percent) (data not shown). One in five took the first action in someone else's home (21 percent), and 14 percent took the first action at a private pharmacy, chemist, or drug store. Less than 1 percent of these women took the first action to end their pregnancy in a health facility or maternity home. In contrast, over 59 percent of women took their last or only action to end their pregnancy in a health facility.

Table 5.8 First and last action taken to end pregnancy

Among women who had an induced abortion in the past five years and who took multiple actions to complete the most recent abortion, percent distribution by first action taken and percent distribution by last action taken, GMHS 2007

Action to end pregnancy	Percentage who took specified action first	Percentage who took specified action last
Drank milk/coffee/other with lots of sugar	27.3	5.3
Drank herbal concoction	8.7	4.2
Drank other home remedies	9.2	2.3
Used any herbal enema	8.6	2.5
Inserted herb/object/other substance in vagina	7.5	11.9
Took tablets	27.5	9.9
D&C	0.0	26.9
Manual vacuum aspiration (MVA)	0.0	8.1
Injection	4.0	18.4
Cytotec tablets (Misoprostol)	7.1	4.2
Catheter	0.0	2.4
Excessive physical activity	0.0	3.9
Total	100.0	100.0
Number of women	47	47

More than half (55 percent) of women who took multiple actions to end their pregnancy paid for the first action themselves (data not shown). For 30 percent of these women, the partner paid for the first action taken to end the pregnancy. One-third of women with multiple actions to end their pregnancy received pain relievers after the first action taken (data not shown).

Problems arising during the first action to end the most recent pregnancy among women who took multiple steps to end a pregnancy are shown in Table 5.9. The most common problem reported was pain. Over half of women (55 percent) reported experiencing pain during the first action taken to end the pregnancy. One in three women reported experiencing severe pain (36 percent). The next most common problem reported was bleeding (44 percent), followed by fever (42 percent), foul-smelling discharge (25 percent), and injury or perforation (8 percent). Twelve percent of women reported experiencing other problems.

Table 5.9 Experience of problems during first action to end pregnancy

Among women who had an induced abortion in the past five years, percent distribution by severity of problem experienced during the first action to end the pregnancy, according to type of problem, GMHS 2007

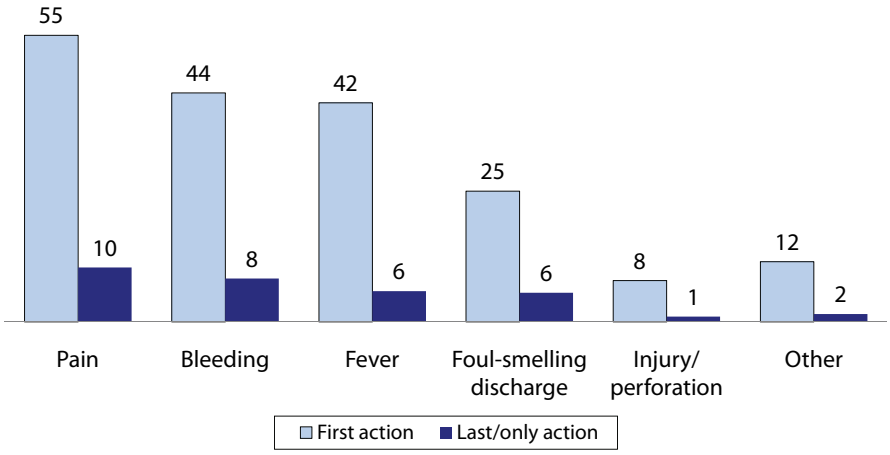
Type of problem	Experienced specified problem	Severity of problem			Did not experience specified problem	Don't know	Total	Number of women who had an abortion
		Mild	Moderate	Severe				
Bleeding	43.8	9.9	18.3	15.5	56.2	0.0	100.0	47
Pain	54.8	6.3	12.2	36.3	45.2	0.0	100.0	47
Fever	41.9	12.6	8.9	20.4	58.1	0.0	100.0	47
Injury/perforation	7.9	2.3	5.6	1.8	90.2	1.8	100.0	47
Foul-smelling discharge	25.0	4.7	13.4	6.8	73.8	1.2	100.0	47
Other	11.5	6.9	0.0	4.7	88.5	0.0	100.0	47

Note: For respondents with multiple "other problems," the problem with the highest level of severity was tabulated.

Figure 5.11 shows a comparison of women who experienced problems after the first of multiple actions to end pregnancy and those who experienced problems after the last or only action taken to end the pregnancy. The findings indicate that problems are more commonly associated with the first of multiple actions taken compared with the last or only action taken because women who take multiple actions to terminate a pregnancy are more likely to have had problems that led them to take subsequent actions. These results point to the increased risk posed by unsafe abortion procedures.

***Figure 5.11* Problems Associated with First and Last Action Taken to End Pregnancy**

(Women age 15-49 who had an abortion in the past five years)



5.2.5 Contraceptive Use and Abortion

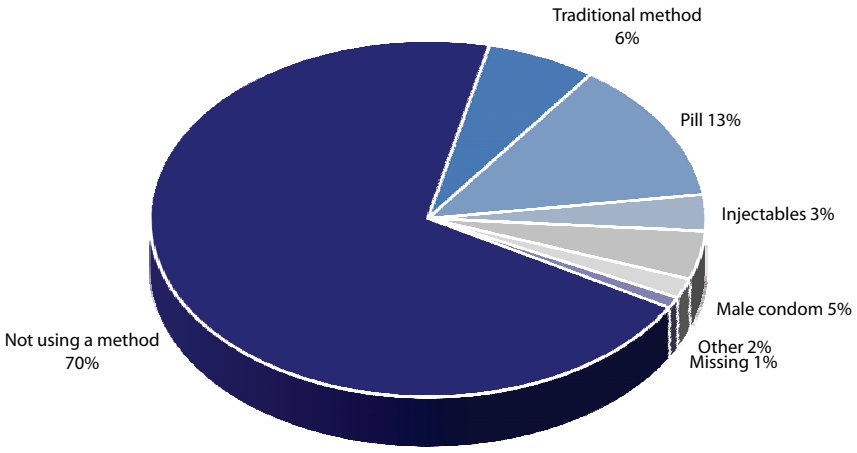
Information on contraceptive use prior to an abortion is of particular interest because a woman who has an induced abortion either was not using a method of contraception at the time of conception or was using (perhaps incorrectly) a method that failed. To obtain these data, each woman who had a pregnancy that ended with an abortion in the five years preceding the survey, was asked whether she was using a contraceptive method at the time of the most recent pregnancy that ended in abortion, and if so, which method.

The vast majority (70 percent) of the respondents who had an induced abortion were not using any method of contraception at the time they became pregnant (Figure 5.12). These findings indicate that unwanted pregnancies ending in abortion are more often a result of nonuse of contraception than method failure. Expanded access to family planning services and increased contraceptive use could reduce the incidence of unwanted pregnancies and induced abortions.

Around 28 percent of women who had a pregnancy that ended in induced abortion in the five years preceding the survey were using a method of contraception at the time the most recent such pregnancy occurred. Thus, these abortions were the result of contraceptive failure. Six percent of women had an abortion after the failure of a traditional method of contraception. Other abortions occurred after the failure of a modern method of contraception, primarily the pill (13 percent), followed by male condoms (4 percent), and injectables (3 percent) (Figure 5.12).

Figure 5.12 **Contraceptive Method Used at the Time of the Pregnancy**

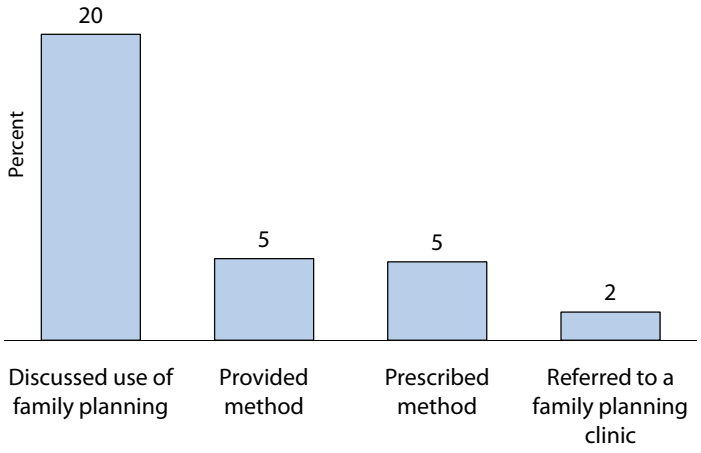
(Women age 15-49 who had an abortion in the past five years)



In the 2007 GMHS, each woman who had an abortion in the five years preceding the survey was asked if after the most recent abortion, any health professional had given her a contraceptive method, prescribed a contraceptive method, or referred her to a family planning clinic. Figure 5.13 shows that only one in five women who had an abortion were counseled about family planning by a health care professional; 5 percent received a contraceptive method from a health care worker; 5 percent received a prescription for a contraceptive method; and 2 percent were referred by their health care provider to a family planning clinic. In total, only one in eight women received a method, a prescription, or a referral for family planning following their abortion. These findings indicate that abortion and family planning services are not well integrated in Ghana. There are many missed opportunities to provide abortion clients with a family planning method that could reduce the chances of their having another unwanted pregnancy.

***Figure 5.13* Contraceptive Counseling by Health Professional Following Abortion**

(Women age 15-49 who had an abortion in the past five years)



5.3 KNOWLEDGE OF ABORTION

Respondents in the 2007 GMHS who had not had an abortion were asked if they had heard of abortion, or of a woman deliberately ending a pregnancy she did not want. Table 5.10 shows the percentage of women who have ever had an abortion or heard of abortion by background characteristics. Overall, nine in ten women know of abortion, with 15 percent having had an abortion, and 76 percent having heard of abortion. Having heard of abortion (including having had one) does not vary much by age. Overall, women age 20-24 are most likely to have had or heard of abortion (94 percent). Women in urban areas are more likely than their rural counterparts to know of abortion (96 percent compared with 86 percent). Regional variation in knowledge of abortion is notable. Women in Northern, Upper East, and Upper West regions are much less likely than women in other regions to have had or heard of abortion. In addition, women in the R3M program regions are more likely than women in other regions to have had or heard of abortion (97 percent compared with 85 percent). Knowledge of abortion increases with level of education and wealth quintile. For example, 71 percent of women with no education have ever had or heard of abortion, compared with 99 percent of women with secondary or higher education.

Table 5.10 Knowledge of abortion

Among all women age 15-49, the percentage who ever had an abortion, the percentage who have not had an abortion but have heard of abortion, and the percentage who have either had an abortion or heard of abortion, by background characteristics, GMHS 2007

Background characteristic	Ever had an abortion	Heard of abortion[1]	Ever had an abortion or heard of abortion	Number of women
Age				
15-19	2.8	86.4	89.3	2,064
20-24	11.9	82.2	94.1	1,756
25-29	17.3	73.5	90.8	1,677
30-34	17.9	71.8	89.6	1,508
35-39	19.7	69.4	89.1	1,405
40-44	22.0	67.5	89.4	996
45-49	18.6	68.6	87.1	962
Number of living children				
0	7.1	85.4	92.5	3,202
1	17.5	75.4	92.9	1,588
2-3	20.8	69.1	89.8	2,699
4+	15.1	71.3	86.5	2,881
Marital status				
Never married	7.3	85.6	92.9	3,172
Married or living together	16.6	71.4	88.0	6,215
Divorced/separated/widowed	24.6	70.8	95.4	980
Residence				
Urban	19.9	76.0	95.9	4,465
Rural	10.4	75.4	85.9	5,905
Region				
Western	13.6	85.1	98.7	937
Central	10.6	88.2	98.8	1,048
Greater Accra	21.0	76.7	97.7	1,402
Volta	12.3	85.4	97.7	976
Eastern	19.6	75.6	95.2	1,267
Ashanti	20.8	77.9	98.7	1,888
Brong Ahafo	16.3	81.4	97.8	1,073
Northern	2.7	49.1	51.8	1,090
Upper East	0.4	53.9	54.3	418
Upper West	0.4	57.5	57.9	271
R3M regions	20.5	76.9	97.4	4,557
Other regions	9.7	74.8	84.5	5,813
Education				
No education	6.0	65.3	71.3	2,670
Primary	14.4	78.3	92.7	2,208
Middle/JSS	19.2	78.8	98.0	4,107
Secondary+	17.0	82.4	99.4	1,383
Wealth quintile				
Lowest	5.8	70.4	76.2	1,741
Second	8.5	74.0	82.5	1,839
Middle	13.5	80.0	93.5	2,025
Fourth	18.0	77.6	95.7	2,306
Highest	22.6	75.3	97.9	2,459
Total	14.5	75.7	90.2	10,370

Note: Total includes 3 women with information missing on marital status and 1 woman with information missing on education.

[1] Women who had an abortion are not included in the numerator of this column.

5.3.1 Access to Abortion

Women who have heard of abortion but who have never had one were asked whether they could get an abortion if they wanted to. As shown in Table 5.11, around one in eight women (12 percent) said they could get an abortion if they wanted to. Younger and older women, women with no children, and never-married women are less likely than other women to say that they could get an abortion. Women in urban and rural areas are equally likely to report that they could get an abortion; however, women's perceived ability to obtain an abortion varies substantially by region. Less than 3 percent of women in Northern, Upper East, and Upper West regions say they could get an abortion, compared with 20 percent of women in Ashanti and 29 percent in Brong Ahafo. Women in the R3M program regions are more likely than women in other regions to say they could get an abortion if they wanted to (14 percent compared with 10 percent).

Women with no education are less likely than women with any education to say they could get an abortion (9 percent compared with 11 percent or higher). There is no clear pattern of access to abortion by wealth quintile. While women in the lowest wealth quintile are least likely (10 percent) to say they could get an abortion, women in the middle wealth quintile are most likely (15 percent) to say that they could get an abortion.

Table 5.11 Perceived access to abortion

Percent distribution of women age 15-49 who have heard of abortion but have not had an abortion by whether they could get an abortion if they wanted to, according to background characteristics, GMHS 2007

Background characteristic	Able to get an abortion				Total	Number of women who have heard of abortion but have not had an abortion
	Yes	No	Don't know	Missing		
Age						
15-19	9.6	88.3	2.1	0.1	100.0	1,784
20-24	13.7	85.1	1.1	0.1	100.0	1,443
25-29	13.6	84.8	1.4	0.1	100.0	1,233
30-34	12.3	85.9	1.5	0.2	100.0	1,082
35-39	13.1	84.9	1.9	0.1	100.0	975
40-44	11.6	87.7	0.8	0.0	100.0	672
45-49	8.2	91.4	0.4	0.0	100.0	660
Number of living children						
0	9.6	88.2	2.1	0.1	100.0	2,734
1	13.5	85.0	1.3	0.2	100.0	1,198
2-3	12.5	86.8	0.6	0.1	100.0	1,864
4+	13.2	85.3	1.5	0.0	100.0	2,054
Marital status						
Never married	10.4	87.2	2.2	0.1	100.0	2,716
Married or living together	12.5	86.4	1.0	0.1	100.0	4,438
Divorced/separated/widowed	13.2	85.9	0.9	0.0	100.0	694
Residence						
Urban	12.0	86.1	1.8	0.1	100.0	3,395
Rural	11.7	87.0	1.2	0.1	100.0	4,455

Continued…

Table 5.11—*Continued*

Background characteristic	Able to get an abortion				Total	Number of women who have heard of abortion but have not had an abortion
	Yes	No	Don't know	Missing		
Region						
Western	8.6	89.4	2.0	0.0	100.0	797
Central	6.1	93.0	0.9	0.0	100.0	924
Greater Accra	10.4	86.8	2.8	0.0	100.0	1,076
Volta	4.4	94.6	1.0	0.0	100.0	834
Eastern	9.3	90.2	0.4	0.1	100.0	958
Ashanti	19.7	77.8	2.5	0.0	100.0	1,470
Brong Ahafo	29.1	70.3	0.7	0.0	100.0	874
Northern	2.9	95.9	0.4	0.7	100.0	536
Upper East	2.3	95.2	1.6	0.9	100.0	225
Upper West	1.6	98.4	0.0	0.0	100.0	155
R3M regions	14.0	84.0	2.0	0.0	100.0	3,504
Other regions	10.1	88.8	1.0	0.1	100.0	4,345
Education						
No education	9.1	89.6	1.1	0.2	100.0	1,743
Primary	11.5	87.0	1.5	0.1	100.0	1,729
Middle/JSS	13.7	85.1	1.1	0.1	100.0	3,238
Secondary+	11.3	85.8	2.9	0.0	100.0	1,140
Wealth quintile						
Lowest	10.2	88.0	1.6	0.1	100.0	1,225
Second	10.9	88.2	0.8	0.1	100.0	1,362
Middle	14.8	84.5	0.5	0.2	100.0	1,621
Fourth	10.8	87.0	2.1	0.0	100.0	1,790
Highest	12.0	86.0	2.0	0.1	100.0	1,852
Total	11.8	86.6	1.4	0.1	100.0	7,849

All respondents in the 2007 GMHS who had not had an abortion were asked if they knew a place where they could get an abortion. The majority of women (59 percent) do not know of any place to get an abortion (Table 5.12). Almost three in ten women (29 percent) said they thought they could get an abortion from a government hospital or polyclinic, and 14 percent said they could get an abortion from a private hospital or clinic. All other sources were mentioned by less than 5 percent of women.

Table 5.12 Knowledge of places to get an abortion

Among women age 15-49 who have heard of abortion but have not had one, the percentage who report specific places where they think they could get an abortion, GMHS 2007

Place to get an abortion	Percentage of women
Government hospital/polyclinic	28.6
Government health center	4.2
Government health post/clinic	2.2
Public mobile clinic/fieldworker	0.3
Private hospital/clinic	13.9
Private doctor	2.5
Private mobile clinic/maternity home/shop/other private	0.8
Pharmacy/chemist/drug store	2.2
Friend/relative	3.0
Other	1.0
Knows any place	38.8
Knows no place	58.8
Don't know	2.2
Missing	0.2
Number of women	7,849

Note: Percentages may not sum to 100 percent because multiple responses were allowed for this question.

5.3.2 Knowledge of Laws Regarding Abortion

As mentioned earlier, abortion is legal in Ghana for pregnancies that result from rape, incest or "defilement of the female idiot," where there is high risk that the child would suffer from a serious deformity, or if the pregnancy threatens the woman's physical or mental health (MOH, 2008a). In the 2007 GMHS, all respondents who had heard of abortion (including those who had ever had an abortion) were asked if they thought that abortion is legal in Ghana. Those who stated that abortion is legal were asked under what circumstances it is legal. The results are shown in Table 5.13. The data indicate that only 4 percent of women think that abortion is legal in Ghana. Differentials by background characteristics are small;

however, it is worth noting that women in urban areas, women in Greater Accra and Northern regions, women with secondary or higher education, and women in the highest wealth quintile are more likely than other women to think that abortion is legal.

Table 5.13 Knowledge that abortion is legal in Ghana

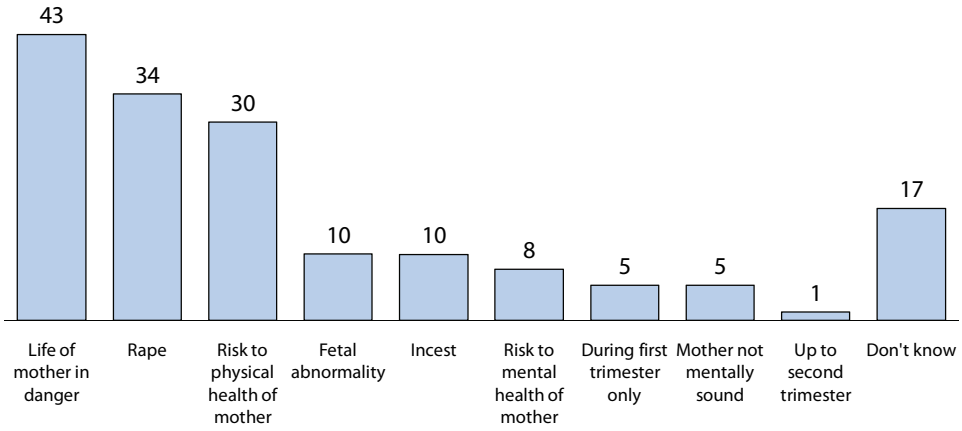
Among women age 15-49 who have heard of abortion, the percentage who think that abortion is legal in Ghana, and among women who think abortion is legal, the percentage who report specific circumstances under which abortion is legal, by background characteristics, GMHS 2007

Background characteristic	Percentage who think abortion is legal	Number of women who have heard of abortion	Rape	Incest	Life of mother in danger	Risk to physical health of mother	Risk to mental health of mother	Fetal abnormality	During first trimester only	Up to the second trimester	Mother not mentally sound	Don't know	Number of women who think that abortion is legal
Age													
15-19	3.3	1,843	41.9	9.4	37.6	26.4	4.5	6.4	7.4	3.1	5.8	22.7	61
20-24	5.6	1,653	45.4	6.9	34.4	22.3	8.2	12.1	3.3	1.0	7.0	15.4	93
25-29	3.6	1,523	29.8	6.2	54.2	32.9	8.0	9.1	2.4	0.0	1.7	8.7	55
30-34	3.8	1,352	26.6	18.5	52.8	36.9	5.6	12.9	7.0	1.4	3.1	18.5	51
35-39	4.1	1,252	(26.4)	(4.5)	(42.3)	(40.8)	(8.2)	(8.3)	(8.5)	(1.7)	(8.4)	(22.0)	51
40-44	3.4	891	(17.2)	(21.6)	(41.2)	(21.8)	(10.8)	(3.4)	(0.0)	(0.0)	(4.8)	(13.8)	30
45-49	2.7	838	(27.3)	(7.6)	(41.8)	(27.5)	(11.2)	(17.9)	(8.9)	(0.0)	(3.0)	(12.4)	22
Number of living children													
0	5.5	2,961	43.1	7.5	42.5	27.4	7.8	11.1	4.3	1.1	3.8	15.9	164
1	3.1	1,475	(29.2)	(8.4)	(41.5)	(24.4)	(12.9)	(10.4)	(1.9)	(1.9)	(12.7)	(22.7)	46
2-3	3.7	2,424	23.7	12.7	47.0	29.8	3.9	8.3	8.7	0.0	2.0	18.3	91
4+	2.5	2,491	26.6	12.7	37.5	38.4	8.3	8.8	4.7	2.6	8.4	11.7	62
Marital status													
Never married	5.6	2,946	44.2	7.5	40.2	25.2	6.4	9.8	4.0	1.7	4.9	16.8	165
Married or living together	3.0	5,469	26.7	11.4	43.0	34.4	7.7	9.2	5.4	1.0	5.8	17.5	166
Divorced/separated/widowed	3.4	935	(15.5)	(13.2)	(53.6)	(26.2)	(13.4)	(14.1)	(9.7)	(0.0)	(4.1)	(11.0)	32
Residence													
Urban	5.7	4,281	33.4	10.2	44.8	31.7	9.5	11.1	3.3	0.6	4.5	15.0	245
Rural	2.3	5,070	34.1	8.9	38.1	24.8	3.6	7.3	9.1	2.4	6.7	20.2	117
Region													
Western	3.3	924	(33.4)	(19.4)	(50.9)	(24.5)	(0.0)	(5.3)	(0.0)	(0.0)	(0.0)	(4.5)	31
Central	2.6	1,035	(21.7)	(6.2)	(42.1)	(26.5)	(8.5)	(12.7)	(4.7)	(0.0)	(7.8)	(7.2)	27
Greater Accra	7.1	1,370	37.1	4.6	42.0	34.7	11.4	10.7	2.0	0.0	1.4	15.1	98
Volta	1.1	954	*	*	*	*	*	*	*	*	*	*	11
Eastern	4.1	1,207	24.1	7.3	32.3	22.4	7.9	6.3	0.0	0.0	11.5	26.6	49
Ashanti	4.7	1,863	39.2	14.5	54.6	39.6	9.3	15.2	13.5	5.0	6.2	12.5	87
Brong Ahafo	2.3	1,049	*	*	*	*	*	*	*	*	*	*	24
Northern	5.7	565	*	*	*	*	*	*	*	*	*	*	32
Upper East	1.8	227	*	*	*	*	*	*	*	*	*	*	4
Upper West	0.2	157	*	*	*	*	*	*	*	*	*	*	0
R3M regions	5.3	4,440	35.2	8.9	44.7	34.0	9.9	11.5	5.9	1.9	5.3	16.6	234
Other regions	2.6	4,911	30.9	11.4	39.0	21.4	3.5	7.0	3.8	0.0	5.0	16.8	129
Education													
No education	1.5	1,903	(46.4)	(12.5)	(26.6)	(31.1)	(7.0)	(3.0)	(8.8)	(3.0)	(3.0)	(28.4)	29
Primary	2.0	2,047	(26.3)	(18.4)	(37.8)	(18.7)	(2.9)	(6.8)	(5.8)	(1.8)	(6.6)	(21.8)	41
Middle/JSS	3.5	4,026	27.8	8.1	40.2	29.7	5.2	8.7	6.8	0.9	4.7	16.6	142
Secondary+	11.0	1,375	38.7	8.5	49.3	31.9	11.2	13.2	2.8	1.0	5.7	13.0	151
Wealth quintile													
Lowest	1.4	1,326	*	*	*	*	*	*	*	*	*	*	19
Second	2.2	1,518	(34.7)	(12.0)	(27.8)	(32.1)	(2.7)	(8.8)	(6.5)	(6.5)	(6.7)	(20.0)	33
Middle	3.0	1,894	(30.3)	(12.1)	(39.9)	(14.4)	(4.0)	(2.6)	(18.3)	(0.0)	(3.2)	(19.7)	57
Fourth	3.4	2,207	37.2	11.4	42.7	35.0	7.6	9.0	3.5	1.0	6.7	13.7	75
Highest	7.4	2,407	33.2	8.5	47.3	32.9	10.3	13.1	1.9	0.8	4.9	15.0	178
Total	3.9	9,351	33.7	9.8	42.6	29.5	7.6	9.9	5.2	1.2	5.2	16.7	363

Note: Figures for the circumstances under which abortion is legal in Ghana may not sum to 100 percent because multiple responses were allowed for this question. Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Total number of women that have heard of abortion includes 1 woman with information missing on marital status.

***Figure 5.14* Knowledge of Circumstances Under Which Abortion is Legal**

(Women age 15-49 who think abortion is legal)



Among women who think that abortion is legal, 17 percent say they do not know under what circumstances it is legal (Table 5.13 and Figure 5.14). More than two-fifths (43 percent) say that abortion is legal if the life of the mother is in danger, while 30 percent say that abortion is legal if there is a risk to the physical health of the mother. Only 8 percent say that abortion is legal if there is a risk to the mental health of the mother, and 5 percent say it is legal if the mother is not mentally sound. One in three women say that abortion is legal in the case of rape, but only one in ten think that abortion is legal in the case of incest. Ten percent of women say that abortion is legal if the fetus has an abnormality.

5.4 MISCARRIAGE

5.4.1 Causes of Miscarriage

Respondents to the 2007 GMHS who had a miscarriage in the past five years were asked a series of questions about the most recent miscarriage they experienced. Table 5.14 shows the percent distribution of women with a miscarriage by reported caused of the miscarriage. More than four in five women with miscarriages said that their most recent miscarriage was spontaneous, or had no specific cause. Seven percent of women reported that their miscarriage was caused by an unintentional injury, and 3 percent reported that their miscarriage was a result of someone intentionally injuring them.

Table 5.14 Main cause of most recent miscarriage in the past five years

Percent distribution of women who had a miscarriage in the five years preceding the survey by cause of most recent miscarriage, according to background characteristics, GMHS 2007

Background characteristic	Cause of miscarriage				Don't know/ missing	Total	Number of women with miscarriage
	Spontaneous	Unintentional injury	Intentional injury	Other			
Age at pregnancy outcome							
< 20	73.5	13.3	9.0	1.5	2.8	100.0	57
20-24	83.3	5.8	1.6	8.7	0.7	100.0	148
25-34	81.3	8.8	2.8	5.1	2.0	100.0	269
35-44	86.6	3.6	4.6	2.5	2.7	100.0	128
Pregnancy order							
1	82.2	4.7	4.4	5.5	3.2	100.0	103
2	79.3	13.2	3.0	3.9	0.6	100.0	124
3	82.2	6.9	2.8	7.3	0.9	100.0	92
4	79.5	5.3	4.9	8.1	2.3	100.0	94
5+	84.6	6.3	2.7	4.3	2.2	100.0	210
Residence							
Urban	79.8	9.1	3.3	6.4	1.5	100.0	277
Rural	83.8	5.9	3.4	4.7	2.2	100.0	345
Region							
Western	96.5	2.7	0.0	0.8	0.0	100.0	70
Central	83.6	5.7	1.6	9.1	0.0	100.0	76
Greater Accra	63.8	12.9	4.5	13.1	5.7	100.0	68
Volta	81.4	10.8	4.6	0.0	3.2	100.0	73
Eastern	71.0	11.6	4.2	9.3	3.9	100.0	76
Ashanti	81.9	7.3	4.8	6.1	0.0	100.0	140
Brong Ahafo	91.5	4.2	1.3	3.0	0.0	100.0	55
Northern	(86.1)	(3.9)	(4.9)	(0.8)	(4.3)	(100.0)	39
R3M regions	74.7	9.8	4.6	8.6	2.4	100.0	284
Other regions	88.1	5.3	2.4	2.8	1.4	100.0	338
Education							
No education	85.0	3.1	3.9	6.7	1.3	100.0	130
Primary	85.2	8.7	0.8	3.1	2.2	100.0	136
Middle/JSS	79.0	8.6	4.1	6.6	1.6	100.0	276
Secondary+	81.9	7.6	4.1	3.1	3.3	100.0	81
Wealth quintile							
Lowest	79.8	11.2	3.2	5.4	0.4	100.0	81
Second	83.4	4.6	3.2	5.8	3.0	100.0	99
Middle	82.8	9.9	2.9	2.7	1.5	100.0	117
Fourth	79.3	6.9	4.0	7.5	2.3	100.0	146
Highest	83.8	5.8	3.3	5.4	1.7	100.0	179
Total	82.0	7.3	3.4	5.4	1.9	100.0	622

Note: Total includes 17 women age 44-49, 10 women residing in the Upper East region and 22 women who reside in the Upper West region. Figures in parentheses are based on 25-49 unweighted cases.

Intentional injury as a cause of miscarriage is most common among women under the age of 20 at the time of the miscarriage. Nine percent of women under age 20 said their miscarriage was the result of intentional injury, compared with 5 percent or less of women in the other age groups. Intentional injury as a cause of miscarriage is highest in Ashanti, Volta, and Greater Accra (5 percent each). There are no clear relationships between intentional injury as a cause of miscarriage and pregnancy order, urban-rural residence, level of education, and wealth quintile. Miscarriage resulting from intentional injury is twice as high in the R3M program regions as in other regions.

5.4.2 Care Received for Miscarriage

Most miscarriages (79 percent) take place in the respondent's home. Seven percent occur in a government hospital or polyclinic, and 3 percent take place at other types of government health facilities. Two percent take place in a private hospital or clinic, and 3 percent occur in someone else's home (data not shown).

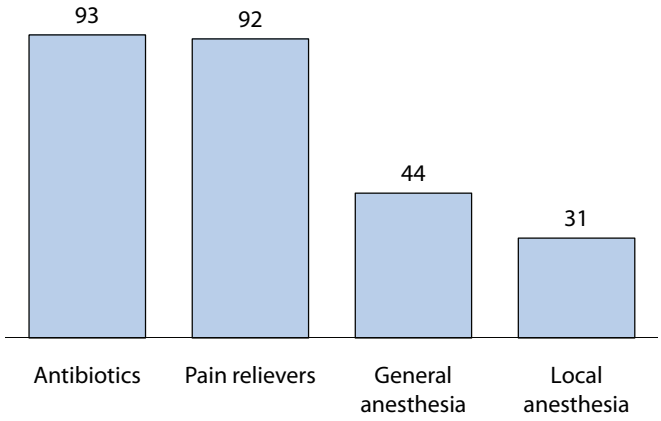
Almost half of women (45 percent) with a miscarriage in the past five years sought help from a doctor for their most recent miscarriage (data not shown). An additional 29 percent sought help from a nurse or midwife. Four percent said they sought help from a friend or relative, and one in four women with a miscarriage sought no help at all.

Among women who reported having a miscarriage in the past five years, 38 percent said that their uterus was cleaned after the most recent miscarriage. Among these women, D&C (70 percent) was by far the most common method used to clean the uterus. Eleven percent said that MVA was the method used, 5 percent said they were given oxytocin, and 3 percent were given tablets for insertion (data not shown).

Women who said that their uterus was cleaned after the miscarriage were also asked about the use of antibiotics, pain relievers, and anesthesia in association with the procedure. More than nine in ten women who had something done to clean the uterus following miscarriage received antibiotics, and a similar proportion received pain relievers (Figure 5.15). Three in ten women were given local anesthesia while 44 percent received general anesthesia.

Figure 5.15 **Treatment During Procedure to Clean Uterus After Miscarriage**

(Women age 15-49 who had a miscarriage and who had their uterus cleaned following their last miscarriage in the past five years)



5.4.3 Problems Following Miscarriage and Treatment Received

Table 5.15 shows the distribution of women who had a miscarriage in the past five years by whether they experienced various problems during the first month after the most recent miscarriage, and the severity of the problems. Pain was the most commonly reported problem. Fourteen percent of women experienced pain and 8 percent of women said they experienced severe pain. Ten percent of women experienced bleeding and the same percentage experienced fever. Five percent of women had a foul-smelling vaginal discharge, and 1 percent reported an injury or perforation.

Table 5.15 Experience of problems in the first month after miscarriage

Percent distribution of women who had a miscarriage in the past five years by severity of problems experienced in the first month after the most recent miscarriage, according to type of problem, GMHS 2007

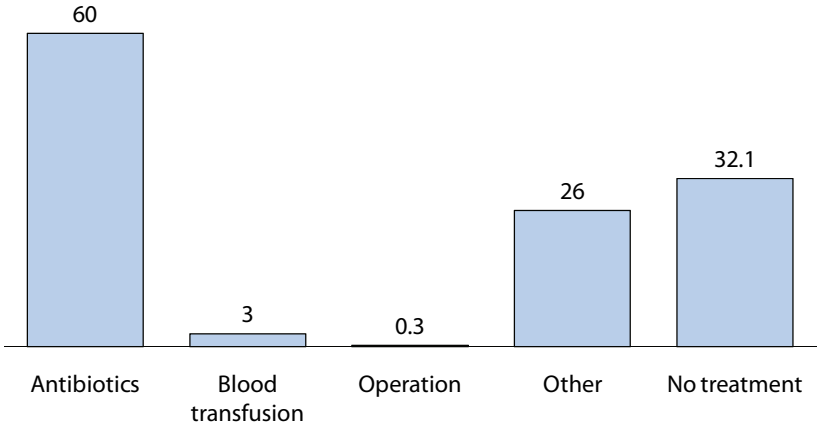
Type of problem	Experienced problem	Severity of problem			Did not experience problem	Don't know	Missing	Total	Number of women with at least one miscarriage
		Mild	Moderate	Severe					
Bleeding	10.4	2.6	4.3	3.5	88.5	0.4	0.1	100.0	622
Pain	13.7	2.0	3.5	8.2	85.3	0.5	0.5	100.0	622
Fever	9.7	2.4	4.5	2.7	89.3	0.5	0.6	100.0	622
Injury/perforation	1.1	0.5	0.2	0.5	97.6	0.7	0.5	100.0	622
Foul-smelling vaginal discharge	4.6	1.6	2.6	0.5	94.1	0.6	0.5	100.0	622
Other	1.1	0.1	0.4	0.7	97.6	0.4	0.7	100.0	622

Note: For respondents with multiple "other problems," the problem with the highest level of severity was tabulated.

Figure 5.16 shows treatments given to women who experienced problems following their most recent miscarriage. About 60 percent of women received antibiotics, 3 percent received a blood transfusion, and less than 1 percent received an operation. Almost one in three women (32 percent) who experienced a problem related to their miscarriage received no treatment.

Figure 5.16 Treatment for Health Problems Following Last Miscarriage

(Women age 15-49 who had a miscarriage and who experienced health problems following the last miscarriage in the past five years)



Among women who received treatment for a problem related to their most recent miscarriage, 34 percent went to a government hospital or polyclinic, 17 percent went to a government health center and 9 percent went to a government health post or clinic (data not shown). More than one in five women (22 percent) went to a private hospital or clinic, while 14 percent received care from a pharmacist, chemist or drug store. More than three-quarters of women who received treatment at a health facility for problems following a miscarriage did not spend the night in the health facility. Nine percent spent one to three nights in the health facility, 11 percent spent four to seven nights in the health facility, and 3 percent spent one to two weeks in the health facility (data not shown).

Five percent of women who had a miscarriage in the past five years had a problem related to the most recent miscarriage (data not shown). Most of these women complained of abdominal pain (3 percent), while 1 percent said they had an infection.

5.4.4 Contraceptive Use and Miscarriage

Some women who have a miscarriage may wish to become pregnant soon after; however, some women may want to wait longer before having their next child, or may wish not to have any more children. For this reason it is important to offer family planning counseling and services to women who have had a miscarriage. In the 2007 GMHS, each woman who had a pregnancy that ended in a miscarriage in the five years preceding the survey was asked whether she was using a method of contraception at the time she had the most recent pregnancy that ended in a miscarriage, and if so, which method.

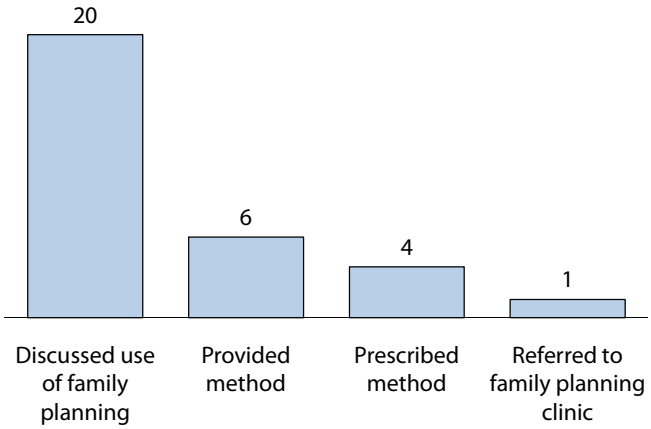
The vast majority (82 percent) of the respondents who had a miscarriage were not using any method of contraception at the time they became pregnant (data not shown). Around 13 percent of women who had a pregnancy that ended in miscarriage in the past five years were using a modern method of contraception at the time of the last such pregnancy; 4 percent were using a traditional method. The most commonly used method was the pill (7 percent) followed by injectables (4 percent).

Each woman who had a miscarriage in the five years preceding the survey was asked if, before or after the most recent miscarriage, a health professional had talked to her about contraception, and whether a health professional had given her a contraceptive method, prescribed a contraceptive method, or referred her to a family planning clinic. Figure 5.17 shows that only one in five women said that a health care professional talked to her about family planning before or after the miscarriage. It is important to note that this includes women who sought no health care for the miscarriage.

Six percent of women received a contraceptive method from a health worker following the miscarriage, 4 percent received a prescription for a method after the miscarriage, and 1 percent of women were referred by their health care provider to a family planning clinic after the miscarriage. In total, only 11 percent of women received a method, a prescription, or a referral for family planning following their most recent miscarriage.

Figure 5.17 **Contraceptive Counseling by Health Professional Following Last Miscarriage**

(Women age 15-49 who had a miscarriage in the past five years)



6 • FERTILITY, CONTRACEPTIVE USE AND CHILDHOOD MORTALITY

The primary objective of the Ghana Maternal Health Survey (GMHS) was to obtain quantitative information about maternal health and mortality in Ghana. The previous chapters have described the major findings of the survey, with regard to maternal mortality and its causes and utilization of health services for different pregnancy outcomes. However, data on fertility, contraceptive use, perinatal and childhood mortality are also important in the overall study of reproductive health. Data on fertility and childhood mortality are available from the complete pregnancy history information gathered from women in the subsample of the population administered the Women's Questionnaire. Data on contraceptive use are available from a series of questions administered on knowledge and current use by method type. Information on reproductive behaviors and associated risks can be used to identify women who are at risk for maternal health problems and to assist in the design of appropriate programs to improve health and family planning services, access, and delivery. This chapter presents the findings on fertility, current use of contraception, and childhood mortality.

6.1 FERTILITY

6.1.1 Introduction

Measures of fertility play a critical role in determining the size and structure of the population. Data from the 2007 GMHS and GDHS surveys conducted in earlier years are used to discuss measures of current fertility levels, trends, and differentials in fertility, cumulative fertility, birth intervals, and adolescent fertility.

The fertility measures presented here are based on the complete pregnancy histories collected from women age 15-49. To obtain this information, women were first asked a series of questions to determine the total number of pregnancies they had in their lifetime. For each live birth, information was collected on the age, sex, and survival status of the child. For dead children, age at death, and month and year of death was recorded. In addition, for stillbirths or pregnancies lost before full term, women were asked for the month and year the pregnancy ended, and the number of months each such pregnancy lasted. Information from the pregnancy history is used to assess current and completed fertility and to look at other factors related to fertility, including age at first birth, birth intervals, and teenage childbearing.

6.1.2 Current Fertility

The most commonly used measures of current fertility are the total fertility rate (TFR) and its component age-specific fertility rates (ASFRs). The TFR is defined as the number of children a woman would have by the end of her childbearing years if she were to pass through those years bearing children at the currently observed age-specific rates.[1] Another common measure is the general fertility rate (GFR), which represents the annual number of births in a population per 1,000 women age 15-44. The crude birth rate (CBR) is the annual number of births in a population per 1,000 people. The various measures of current fertility are calculated for the three-year period preceding the survey, which roughly corresponds to the calendar period 2005-2007. A

[1] Numerators of the ASFRs are calculated by summing the number of live births that occurred 1 to 36 months preceding the survey (determined by the date of interview and the date of birth of the child) and classifying the births by mother's age (five-year age group) at the time of the birth (determined by the mother's date of birth). The denominators of the rates are the number of woman-years lived in each of the specified five-year age groups during the 1 to 36 months preceding the survey.

three-year period was chosen because it reflects the current situation while also allowing the rates to be calculated on a sufficient number of cases so as not to compromise the statistical precision of estimates.

Table 6.1 shows that the total fertility rate for the three years before the survey is 4.6 children per woman age 15-49. The age-specific rates indicate that the prime reproductive years among Ghanaian women are the twenties and early thirties (Figure 6.1). More than half of childbearing occurs before age 30 and three-fourths before age 35. Rural women have on average two children more than urban women (5.5 versus 3.4 children per woman), with rural-urban differences in childbearing rates obvious at all ages but especially large in the 20-29 age group.

Like the TFR, the GFR and CBR also vary by urban-rural residence. Thus, with a GFR of 185 per 1,000 women, the average annual number of births to rural women is about 60 percent higher than that for urban women (115 per 1,000 women). A similar difference is seen in the CBR between rural (36 per 1,000) and urban (28 per 1,000) areas.

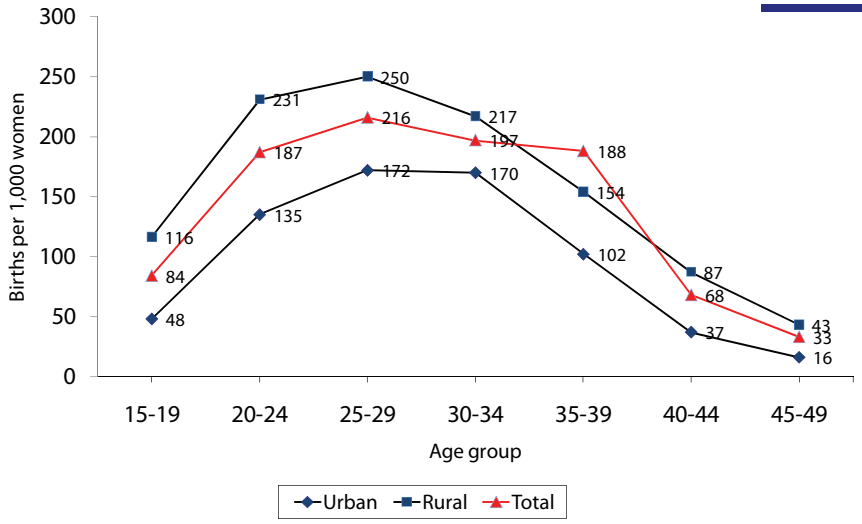
Table 6.1 Current fertility

Age-specific and total fertility rate, the general fertility rate, and the crude birth rate for the three years preceding the survey, by residence, GMHS 2007

	Residence		
Age group	Urban	Rural	Total
15-19	48	116	84
20-24	135	231	187
25-29	172	250	216
30-34	170	217	197
35-39	102	154	133
40-44	37	87	68
45-49	16	43	33
TFR	3.4	5.5	4.6
GFR	115	185	154
CBR	28.4	36.3	33.3

Notes: Age-specific fertility rates are per 1,000 women. Rates for age group 45-49 may be slightly biased due to truncation. Rates are for the period 1-36 months prior to interview.
TFR: Total fertility rate, expressed per woman
GFR: General fertility rate, expressed per 1,000 women
CBR: Crude birth rate, expressed per 1,000 population

***Figure 6.1* Age-specific Fertility Rates**

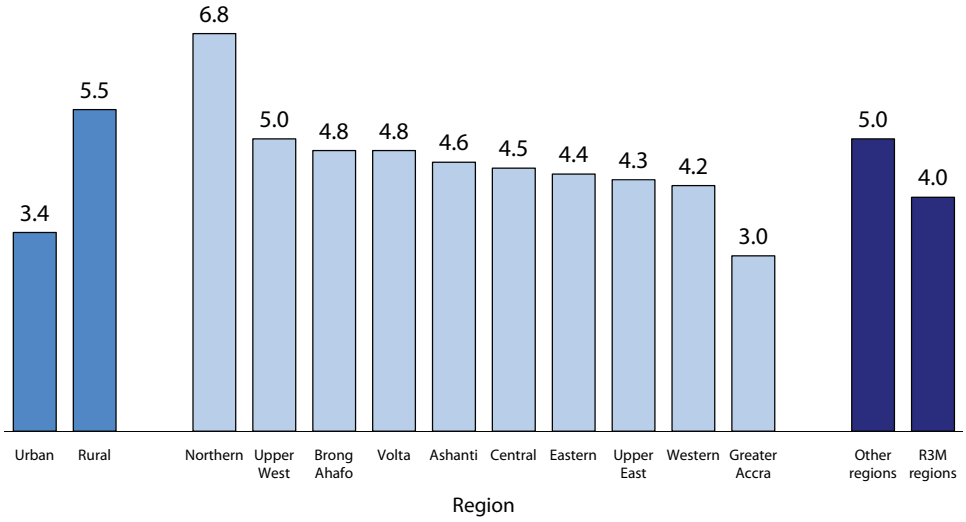


6.1.3 Fertility Differentials

The data show large regional differences in the level of fertility. Fertility is lowest in Greater Accra (3.0) and highest in the Northern region (6.8), a nearly four-child difference (Figure 6.2). Women living in the R3M program regions have on average one child less than women in the other regions.

***Figure 6.2* Fertility by Residence and Region**

(Average number of children per woman)

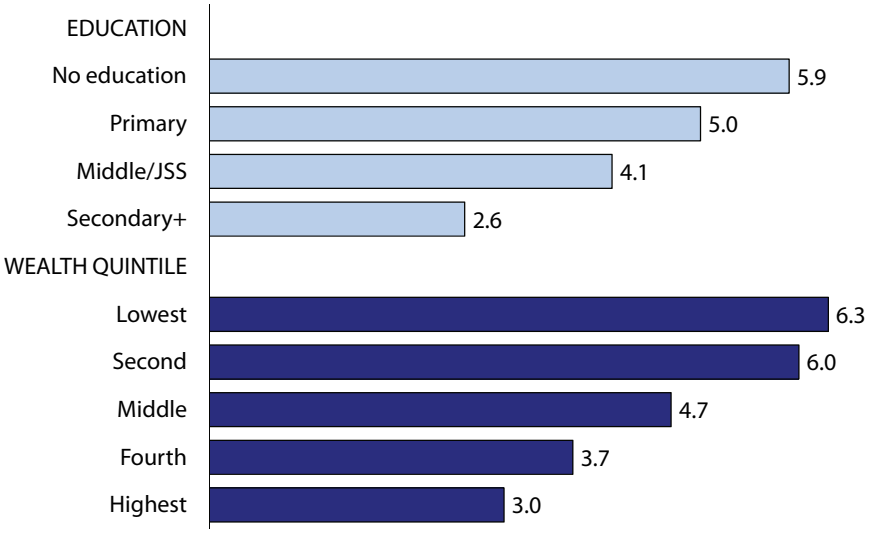


There is a strong association between fertility and education, with the TFR declining as the level of education increases (Figure 6.3). At current rates, a woman with no formal education will give birth to more than twice as many children on average in her lifetime as a woman with secondary and higher education (5.9 children compared with 2.6).

Like education, household wealth is strongly related to fertility. Women in poorer households have more children than women in wealthier households (Figure 6.3). With a TFR of 6.3, women in the poorest households are likely to have about three children more than women in the wealthiest households (TFR of 3.0).

***Figure 6.3* Fertility by Level of Education and Wealth Quintile**

(Average number of children per woman)

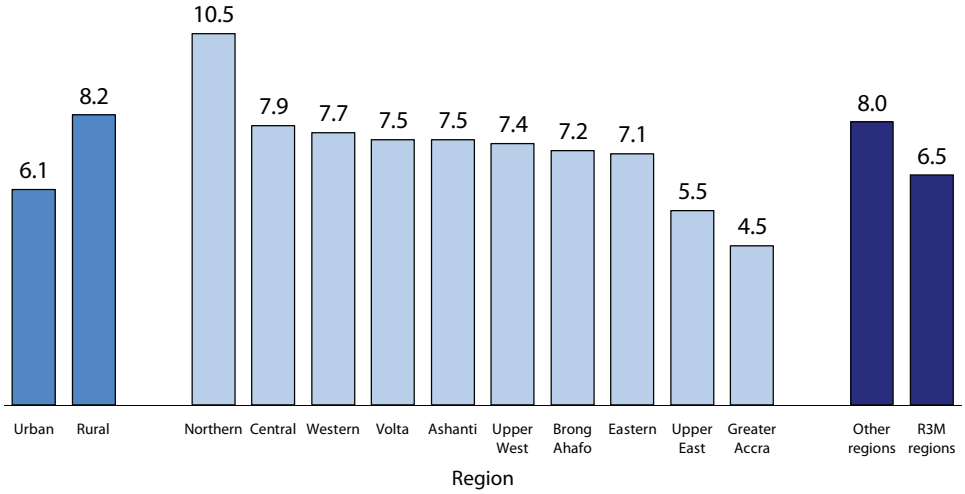


A useful measure of current fertility is the percentage of women who are pregnant at the time of interview. However, this measure may be an underestimate, since women in the early stages of pregnancy may not yet know that they are pregnant, or may not feel comfortable or confident to declare their pregnancy status. Seven percent of women reported that they were pregnant at the time of interview, with the proportion of

women currently pregnant ranging from a low of 4.5 percent in Greater Accra to a high of 10.5 percent in the Northern region, generally reflecting the differentials in the TFR (Figure 6.4). Differentials by education and wealth quintile also follow a similar pattern to differences in TFR.

Figure 6.4 **Currently Pregnant Women by Residence and Region**

(Percentage of women age 15-49 who are currently pregnant)



The data also allow a crude assessment of trends in fertility over time among population subgroups. The mean number of children ever born to women by the end of their reproductive period at age 40-49 is a measure of the average completed fertility. If fertility remained constant in the recent past and if the reported data on children ever born and births during the three years preceding the survey are reasonably accurate, the average completed fertility should be equal to the total fertility rate. Comparison of the mean number of children ever born to women age 40-49 (5.4) with the total fertility rate (4.6) suggests a decline of just over one child per woman over the past 10 to 15 years. A one-child difference is observed in Greater Accra, Central, Ashanti and Brong Ahafo regions, with a slightly larger difference in the Upper East region, and a somewhat smaller difference in the other regions, except for the Northern region (Figure 6.5). There is no difference between the TFR and the mean number of children ever born in the Northern region. Differences between TFR and the mean number of children ever born are more obvious in urban than rural areas. Differences between the two measures are also more marked among highly educated women than the less educated and among the wealthiest than poorest women (Figure 6.6).

Figure 6.5 **Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB) by Residence and Region**

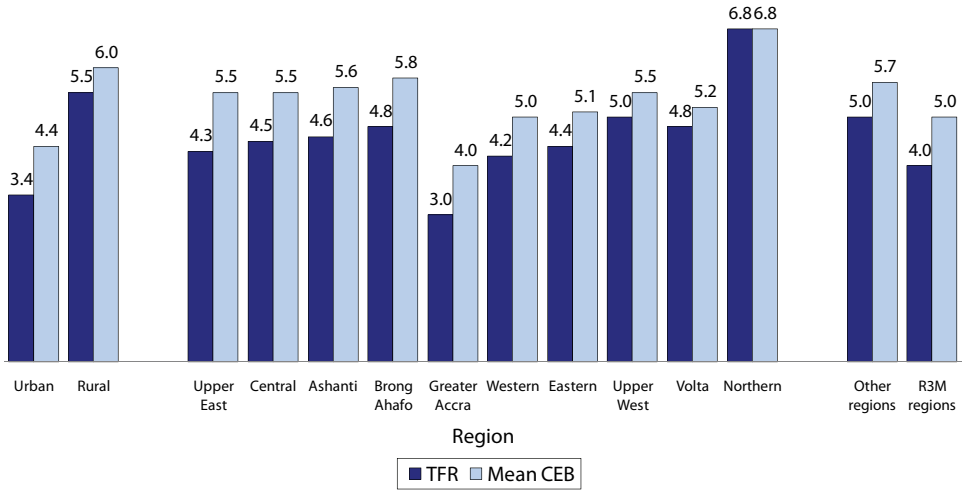
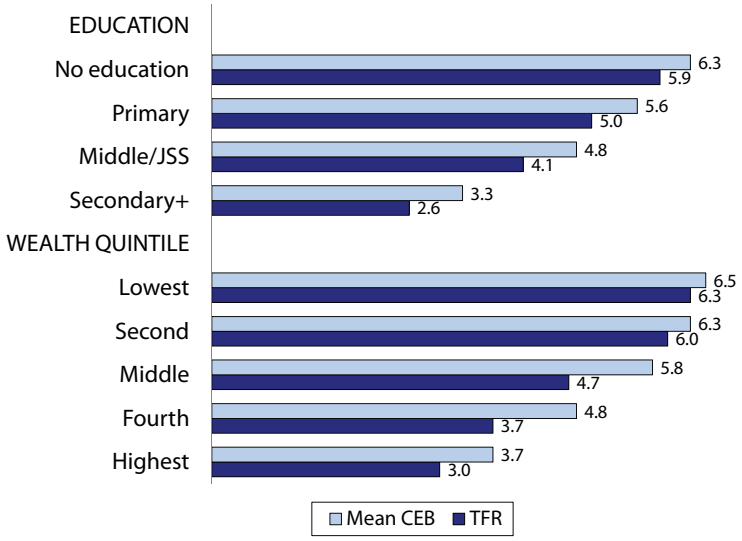


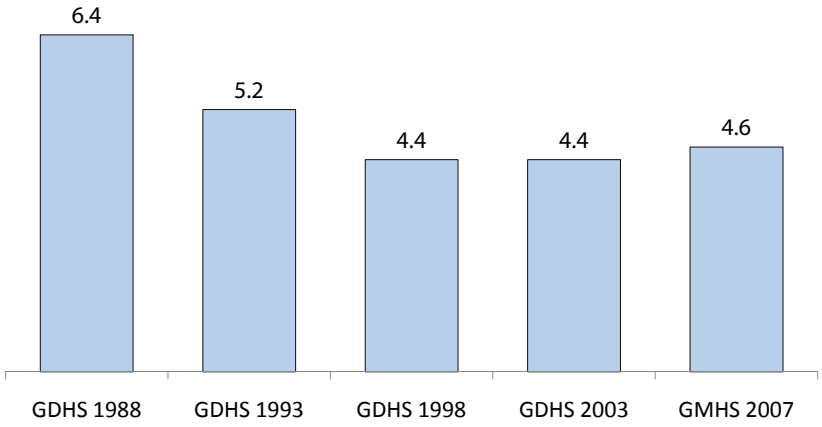
Figure 6.6 **Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB) by Level of Education and Wealth Quintile**



6.1.4 Fertility Trends

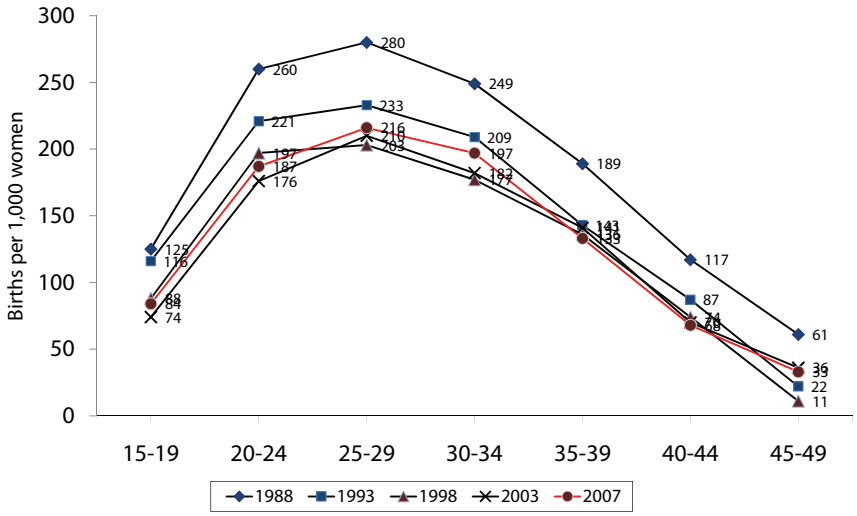
More direct evidence of the trend in fertility is obtained by looking at changes in age-specific fertility rates across the 5 demographic surveys that were conducted in Ghana between 1988 and 2003. The results shown in Figure 6.7 and Figure 6.8 describe the ongoing fertility transition in Ghana. The TFR declined dramatically from 6.4 children per woman in the 1988 GDHS (covering the period 1986-1988) to 4.4 children in the 1998 GDHS (covering the period 1996-1998)—a two-child decline over a 10-year period. However, this rapid decline plateaued between 1998 and 2003 at 4.4 children. Data from the 2007 GMHS show that fertility during 2005-2007 has in fact increased slightly in the last five years or so, with ASFRs higher among women age 15-34 and lower among women age 35 and above.

***Figure 6.7* Trends in Total Fertility Rate 1988-2007**
(Average number of children per woman)



Note: Rates are for the three-year period preceding the survey.

***Figure 6.8* Age-specific Fertility Rates 1988-2007**



6.1.5 Birth Intervals

Information on birth intervals provides insight into birth spacing patterns. Research shows that children born too soon after a previous birth are at an increased risk of poor health and, consequently, an increased risk of dying, particularly when the interval between births is less than 24 months. Maternal health is also jeopardized when births are close together.

Data from the 2007 GMHS confirm that birth intervals are generally long in Ghana (Table 6.2). Among non-first births, only one in six children (16 percent) is born after a "short" birth interval (less than 24 months). More than half (54 percent) of non-first births occur three or more years after the previous birth, while 30 percent of such births take place 24 to 35 months after the previous birth. The overall median length of birth interval is 37.9 months, slightly shorter than the median birth intervals reported in the 1998 and 2003 GDHS surveys.

Table 6.2 Trends in length of birth interval

Percent distribution of non-first births in the five years preceding the survey by number of months since previous birth, Ghana 1998-2007

Survey	Months since previous birth					Total	Median number of months since previous birth
	7-17	18-23	24-35	36-47	48+		
2007 GMHS	**5.4**	**10.5**	**29.7**	**21.8**	**32.6**	**100.0**	**37.9**
2003 GDHS	4.9	8.7	30.5	23.4	32.4	100.0	38.4
1998 GDHS	5.0	8.4	30.2	26.7	29.7	100.0	38.2

6.1.6 Age of Mothers at First Birth

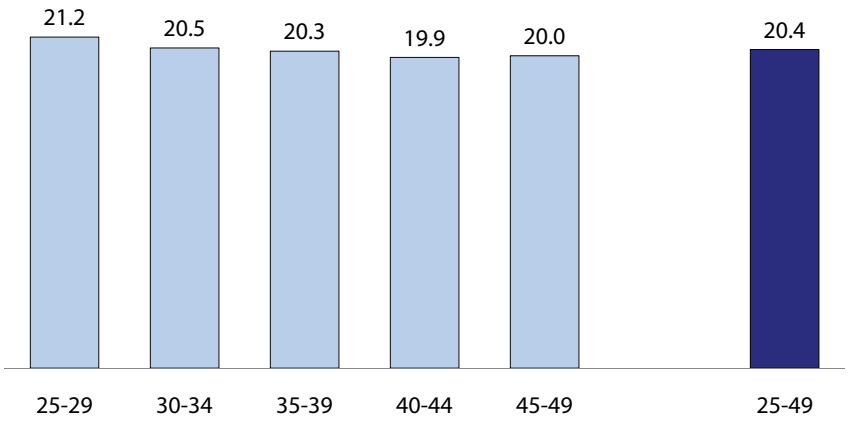
Age at first birth is an important determinant of current fetility. Early childbearing can lead to a large family size and may be associated with increased health risks for the mother and potential health hazards for the children. A rise in the median age at first birth is typically a sign of transition to lower fertility levels.

Childbearing begins relatively early in Ghana, with most women becoming mothers by age 20. The median age at first birth is 21.2 years for the youngest cohort for which a median could be computed (age 25-29) and is around 20 years for the older cohorts, indicating a noticeable rise in the median age at first birth during the most recent period (Figure 6.9).

Comparisons with data from the GDHS surveys show that the age at which women in Ghana have their first child has been inching slowly upwards from 20.2 years in 1993 to 20.5 years in 2003 (Figure 6.10). However, over the past five years (from 2003 to 2008), there has been a slight decline in the median age at first birth from 20.5 to 20.4 years.

***Figure 6.9* Median Age at First Birth**

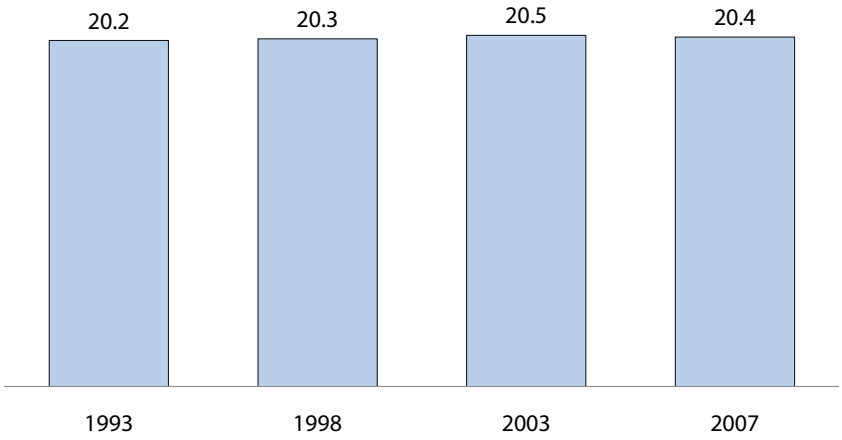
(Women age 25-49)



Note: The medians for cohorts 15-19 and 20-24 could not be determined because half of the women had not had a birth before reaching the lowest age in each of these cohorts.

***Figure 6.10* Trends in Median Age at First Birth 1993-2007**

(Women age 25-49)



6.1.7 Adolescent Fertility and Motherhood

Adolescent fertility has potentially negative demographic and social consequences. Data from the GDHS surveys have consistently confirmed that births to very young mothers are associated with an inflated risk of death before age five. This may be due to the fact that teenage mothers are more likely to suffer from pregnancy and delivery complications than older mothers.

About one in five (18 percent) adolescent women in Ghana reported having ever been pregnant, with 12 percent having already had a live birth and 3 percent pregnant with their first child at the time of the survey (Table 6.3). The proportion of teenagers who have ever been pregnant rises rapidly with age, from less than 2 percent of women age 15 to 38 percent of women age 19.

Differences in the proportion of young Ghanaian women who have ever been pregnant by residence, age and education are also marked. In urban areas, 13 percent of adolescents have ever been pregnant, compared with 22 percent in rural areas. About one in ten women in the Upper West region has ever been pregnant compared with about one in five in the Eastern, Western, Central and Brong Ahafo regions.

Table 6.3 Teenage pregnancy and motherhood

Percentage of women age 15-19 who have had a live birth or who are pregnant with their first child and percentage who have ever been pregnant, by background characteristics, GMHS 2007

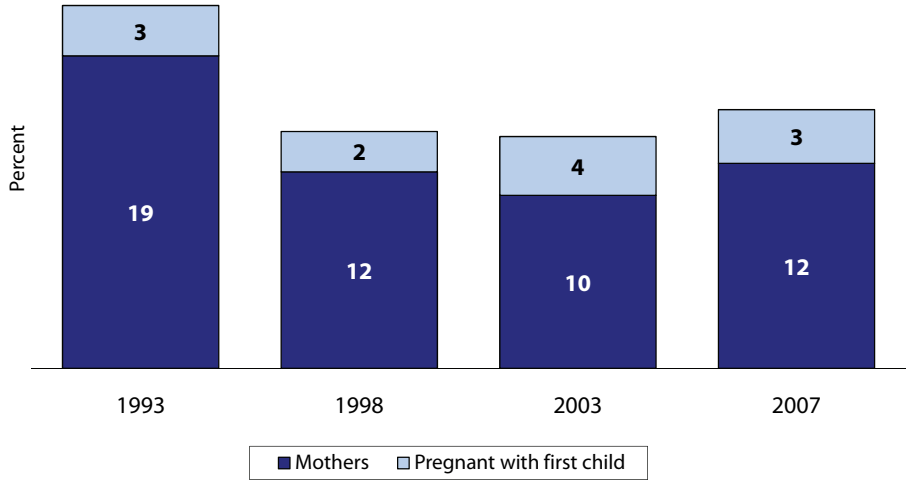
Background characteristic	Percentage who:		Percentage who have ever been pregnant	Number of women
	Have had a live birth	Are pregnant with first child		
Age				
15	0.4	1.2	1.8	564
16	5.3	3.1	10.5	408
17	12.4	2.4	17.4	376
18	21.8	6.1	33.2	402
19	29.8	4.5	38.2	314
Residence				
Urban	7.7	2.9	13.0	891
Rural	15.6	3.5	21.8	1,173
Region				
Western	14.6	2.8	21.2	207
Central	16.2	3.9	22.2	226
Greater Accra	8.5	2.1	12.7	251
Volta	13.2	1.1	15.0	207
Eastern	11.8	5.0	21.0	270
Ashanti	10.3	3.8	18.2	404
Brong Ahafo	13.8	3.2	19.2	205
Northern	12.4	3.0	15.6	175
Upper East	14.7	3.7	18.4	75
Upper West	4.8	3.4	9.1	45
R3M regions	10.2	3.7	17.5	925
Other regions	13.8	2.9	18.4	1,139
Education				
No education	19.0	6.5	27.7	212
Primary	16.6	4.4	23.7	528
Middle/JSS	10.2	2.5	15.7	1,064
Secondary+	5.8	1.3	8.1	260
Wealth quintile				
Lowest	16.6	4.0	22.7	340
Second	17.8	3.5	23.7	382
Middle	13.0	4.8	21.1	427
Fourth	11.4	3.1	17.6	439
Highest	4.7	1.3	7.8	477
Total	12.2	3.2	18.0	2,064

Three times as many young women with little or no education as women with secondary and higher education have ever been pregnant. Like education, household socioeconomic status is strongly related to early childbearing. Adolescents in the poorest households are almost three times more likely to have begun childbearing than those in the wealthiest households (23 and 8 percent, respectively).

The proportion of teenage women who have begun childbearing (as opposed to ever having been pregnant) declined from 22 percent in 1993 to 14 percent in 1998 but has not changed much since then. In 1998 and 2003, 14 percent of women age 15-19 had begun childbearing compared with 15 percent in 2007 (Figure 6.11).

Figure 6.11 **Trends in Teenage Pregnancy and Motherhood 1993-2007**

(Women age 15-19 who are mothers or pregnant with first child)



6.2 CONTRACEPTIVE USE

In the 2007 GMHS, only information on the current use of contraception was collected, unlike the GDHS in which information on knowledge and ever use is also collected. Information on current use was collected for all women interviewed, irrespective of their marital status.

Table 6.4 and Figure 6.12 show that one in five women age 15-49 is currently using a method of family planning (21 percent). Contraceptive use among married women is slightly higher at 23 percent. Modern methods are twice as likely to be used as traditional methods (14 percent versus 7 percent). Contraceptive use has increased over the past two decades from 12 percent of all women age 15-49 using in 1988 to 21 percent in 2008—a 70 percent increase (Figure 6.13). However, this increase was most obvious between 1988 and 1993 when contraceptive use increased by 46 percent over the five years. Between 1993 and 1998 there was in fact a slight decline in use (18.9 percent versus 18.0 percent), with current use increasing again over the next five years by 14 percent to 21 percent. There was little change in use over the most recent five years. The increase in overall use between 1988 and 2003 is primarily due to the tripling in the use of modern methods from 5 percent in 1988 to 15 percent in 2003.

The injectables, pill and male condom continue to be the more popular modern methods of contraception, used by about 3-4 percent of women. Other methods like IUD, female sterilization, implants and LAM are used by less than 1 percent each. The most popular traditional method and the most commonly used method of overall is periodic abstinence, used by 5 percent of women.

Table 6.4 Current use of contraception by background characteristics

Percent distribution of all women age 15-49 by contraceptive method currently used, according to background characteristics, GMHS 2007

Background characteristic	Any method	Any modern method	Modern method								Any traditional method	Traditional method			Not currently using	Total	Number of women
			Female sterilization	Pill	IUD	Injectables	Implants	Male condom	Female condom	LAM		Periodic abstinence	Withdrawal	Other			
Age																	
15-19	11.3	5.5	0.0	0.9	0.0	0.5	0.0	3.6	0.1	0.3	5.8	3.3	0.7	1.8	88.7	100.0	2,064
20-24	25.5	17.4	0.1	5.1	0.1	3.7	0.5	7.0	0.2	0.7	8.2	6.0	1.7	0.4	74.5	100.0	1,756
25-29	24.5	17.5	0.1	5.4	0.2	6.2	0.6	3.9	0.0	1.1	7.0	5.0	1.7	0.4	75.5	100.0	1,677
30-34	25.8	17.6	0.4	5.8	0.6	5.8	1.0	2.7	0.1	1.1	8.2	6.1	1.7	0.4	74.2	100.0	1,508
35-39	24.4	18.1	1.5	5.0	0.9	6.7	1.1	1.9	0.0	0.9	6.3	5.4	0.8	0.2	75.6	100.0	1,405
40-44	22.2	15.2	3.6	3.2	1.6	5.1	1.0	0.4	0.0	0.4	7.1	4.9	1.5	0.7	77.8	100.0	996
45-49	13.2	9.3	2.9	1.9	0.3	1.9	0.8	1.3	0.0	0.2	3.9	3.5	0.3	0.1	86.8	100.0	962
Number of living children																	
0	15.7	8.8	0.0	1.7	0.0	0.4	0.0	6.4	0.2	0.0	6.9	4.4	1.1	1.4	84.3	100.0	3,202
1-2	21.6	14.5	0.3	4.3	0.4	4.7	0.8	3.0	0.0	1.1	7.1	5.4	1.4	0.2	78.4	100.0	3,042
3-4	26.1	19.3	1.6	5.8	0.9	7.3	0.8	1.7	0.0	1.1	6.9	5.5	1.1	0.2	73.9	100.0	2,318
5+	22.4	16.6	2.5	4.7	0.7	5.9	1.4	0.6	0.0	0.9	5.8	4.0	1.3	0.5	77.6	100.0	1,808
Residence																	
Urban	24.0	15.4	1.1	3.1	0.8	3.6	0.6	5.4	0.1	0.5	8.7	6.4	1.5	0.8	76.0	100.0	4,465
Rural	18.6	13.3	0.7	4.5	0.1	4.6	0.7	1.8	0.0	0.9	5.3	3.7	1.1	0.5	81.4	100.0	5,905
Region																	
Western	31.0	19.9	1.7	5.4	0.4	3.8	0.4	6.1	0.1	1.9	11.1	8.6	2.2	0.2	69.0	100.0	937
Central	18.2	13.1	1.0	3.1	0.2	5.0	0.6	2.2	0.0	1.1	5.1	2.8	1.6	0.7	81.8	100.0	1,048
Greater Accra	23.9	14.9	0.6	2.1	0.8	3.4	0.5	6.9	0.1	0.6	9.0	6.8	1.7	0.5	76.1	100.0	1,402
Volta	13.0	11.4	1.3	2.3	0.1	5.2	0.1	2.2	0.0	0.2	1.7	1.1	0.5	0.0	87.0	100.0	976
Eastern	24.3	16.5	1.5	4.2	0.7	3.6	1.5	4.0	0.0	1.0	7.9	5.1	1.9	0.9	75.7	100.0	1,267
Ashanti	24.8	15.1	0.9	5.8	0.3	4.0	0.6	3.3	0.1	0.1	9.7	7.7	1.3	0.7	75.2	100.0	1,888
Brong Ahafo	25.8	17.5	0.6	7.1	0.6	4.9	0.6	2.1	0.2	1.4	8.3	6.6	1.0	0.7	74.2	100.0	1,073
Northern	9.6	7.3	0.3	1.8	0.6	3.3	0.4	0.7	0.0	0.2	2.3	0.7	0.0	1.6	90.4	100.0	1,090
Upper East	9.7	8.8	0.3	1.3	0.3	4.1	1.9	1.0	0.0	0.0	0.9	0.9	0.0	0.0	90.3	100.0	418
Upper West	11.0	10.8	0.0	2.2	0.2	6.7	0.7	0.2	0.0	0.8	0.1	0.0	0.0	0.1	89.0	100.0	271
R3M regions	24.4	15.4	1.0	4.2	0.5	3.7	0.8	4.6	0.1	0.5	9.0	6.7	1.6	0.7	75.6	100.0	4,557
Other regions	18.2	13.2	0.9	3.7	0.4	4.5	0.5	2.4	0.1	0.9	5.0	3.5	0.9	0.6	81.8	100.0	5,813
Education																	
No education	12.8	9.8	0.9	2.4	0.4	4.1	0.7	0.4	0.0	0.8	3.0	1.9	0.7	0.5	87.2	100.0	2,670
Primary	19.9	14.1	0.8	4.8	0.4	4.9	0.5	2.0	0.0	0.7	5.9	4.0	1.3	0.6	80.1	100.0	2,208
Middle/JSS	24.4	16.2	1.0	4.8	0.5	4.4	0.9	3.8	0.0	0.8	8.2	6.1	1.5	0.6	75.6	100.0	4,107
Secondary+	28.0	16.9	0.7	2.9	0.4	2.3	0.3	9.8	0.3	0.2	11.1	8.4	1.5	1.2	72.0	100.0	1,383
Missing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	1
Wealth quintile																	
Lowest	12.6	9.7	0.6	2.7	0.0	3.9	0.6	0.9	0.0	0.9	2.8	1.8	0.4	0.7	87.4	100.0	1,741
Second	17.1	12.9	0.6	4.0	0.2	5.3	0.6	1.4	0.1	0.7	4.2	3.1	0.6	0.5	82.9	100.0	1,839
Middle	22.0	15.6	0.8	6.4	0.4	4.1	0.7	2.3	0.0	0.8	6.4	4.3	1.5	0.5	78.0	100.0	2,025
Fourth	24.5	15.9	1.3	3.7	0.4	4.9	0.9	4.1	0.0	0.5	8.6	6.4	1.5	0.7	75.5	100.0	2,306
Highest	25.6	15.6	1.1	2.9	0.9	2.8	0.5	6.6	0.2	0.6	10.0	7.4	1.8	0.8	74.4	100.0	2,459
Total	20.9	14.2	0.9	3.9	0.4	4.2	0.7	3.3	0.1	0.7	6.8	4.9	1.2	0.6	79.1	100.0	10,370

***Figure 6.12* Contraceptive Prevalence**
(Women age 15-49)

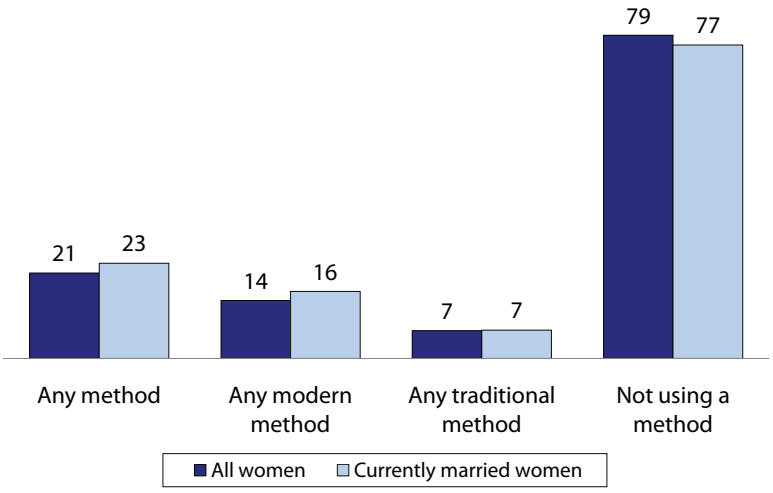
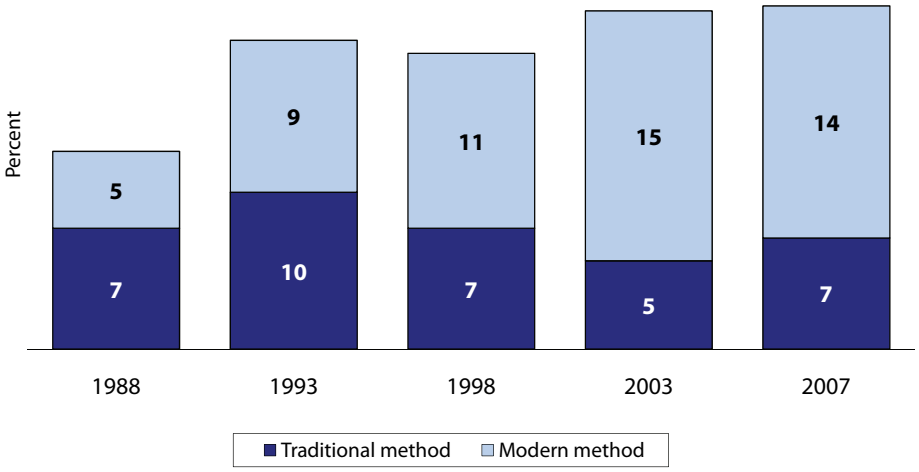


***Figure 6.13* Trends in Contraceptive Prevalence 1988-2007**
(Women age 15-49)



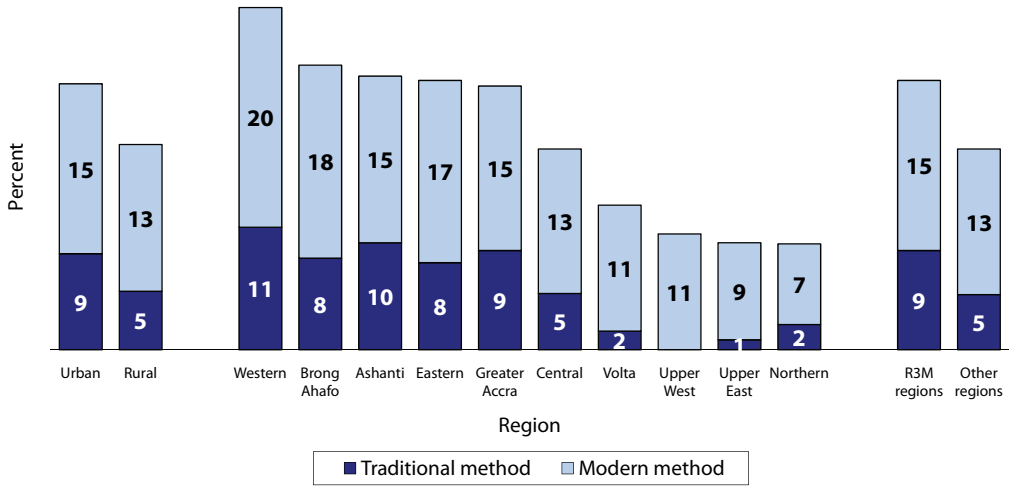
Current use varies by women's age and is lowest among currently married women age 15-19 and highest among women age 30-34. Use of modern methods ranges from 6 percent among women age 15-19 to a high of 18 percent among women age 35-39. There are also variations by age in the methods that women use. Male condom is most popular among women under age 25. The pill and injectables increase in popularity from age 25. With a gradual shift to long-term methods among older women, the use of female sterilization increases among women in their forties.

There is a strong association between use of family planning and the number of living children, with use of modern methods rising from 9 percent among women with no children to 19 percent among women with 3-4 children. Education has a direct relationship with use; current use of a modern method rises from 10 percent among women with no education to 17 percent among those with at least secondary education. A similar pattern is seen by household wealth.

There are obvious differences in contraceptive use by residence, with use of modern methods varying moderately by urban-rural residence but markedly by region, ranging from a low of 7 percent in the Northern region to a high of 20 percent in the Western region (Figure 6.14). Modern contraceptive use in the R3M program regions is slightly higher than in the other regions.

Figure 6.14 **Contraceptive Use by Residence and Region**

(Women age 15-49)



6.3 CHILDHOOD MORTALITY

Measures of childhood mortality are commonly used as broad indicators of social development or as more specific measures of health status and are also useful in population projections. Studies of childhood mortality and characteristics such as age pattern and socioeconomic and demographic differentials are used to highlight factors that contribute to child survival as well as those that hinder it. Consequently, the impact of maternal health and care seeking behavior on childhood mortality are helpful in identifying promising directions for maternal and child health programs.

In the GMHS, all interviewed women age 15-49 were asked to provide a complete history of their births and pregnancies including, for each live birth, the sex, month and year of birth, survival status, and age at the time of the survey or age at death. Age at death was recorded in days for children dying in the first month of life, in months for children dying before their second birthday, and in years for children dying at later ages. This information was used to calculate the following five commonly used direct measures of infant and child mortality:[2]

[2] A detailed description of the method for calculating the probabilities presented here is given by Rutstein (1984). The mortality estimates are not rates but are true probabilities calculated according to the conventional life-table approach. Deaths and exposure in any calendar period are first tabulated for the age intervals 0, 1-2, 3-5, 6-11, 12-23, 24-35, 36-47, and 48-59 months. Then age-interval-specific probabilities of survival are calculated. Finally, probabilities of mortality for larger age segments are produced by multiplying the relevant age-interval survival probabilities together and subtracting the product from 1:

$$ {}_nq_x = 1 - \sum_{i=x}^{i=x+n} (1 - q_i) $$

Neonatal mortality: The probability of dying in the first month of life

Postneonatal mortality: The probability of dying after the first month of life and before the first birthday, that is, the difference between infant and neonatal mortality

Infant mortality ($_1q_0$): The probability of dying before the first birthday

Child mortality ($_4q_1$): The probability of dying between the first and fifth birthdays

Under-five mortality ($_5q_0$): The probability of dying before the fifth birthday

6.3.1 Early Childhood Mortality Rates: Levels and Trends

Data from the 2007 GMHS show that in the five years preceding the survey, one in every twelve Ghanaian children dies before reaching age five (82 deaths per 1,000 live births) (Table 6.5). Three-fifths of these deaths occur in the first year of life—infant mortality is 50 deaths per 1,000 live births and child mortality is 34 deaths per 1,000 children surviving to age one. Neonatal mortality is 29 deaths per 1,000 live births in the most recent five-year period preceding the survey, while postneonatal mortality is 21 deaths per 1,000 live births. Neonatal deaths account for nearly three out of five infant deaths.

Data from the GMHS can be compared with similarly collected data from the Ghana DHS surveys conducted between 1988 and 2003. The data confirm the continued decline in childhood mortality as evidenced in the previous DHS surveys (Table 6.5 and Figure 6.15). Under-five mortality fell by almost 50 percent over the past two decades. Huge declines were also seen in child mortality (60 percent) and infant mortality (35 percent). Neonatal and postneonatal mortality declined by 29 percent and 19 percent, respectively, in the 15-year period between the 1993 GDHS and the 2007 GMHS.

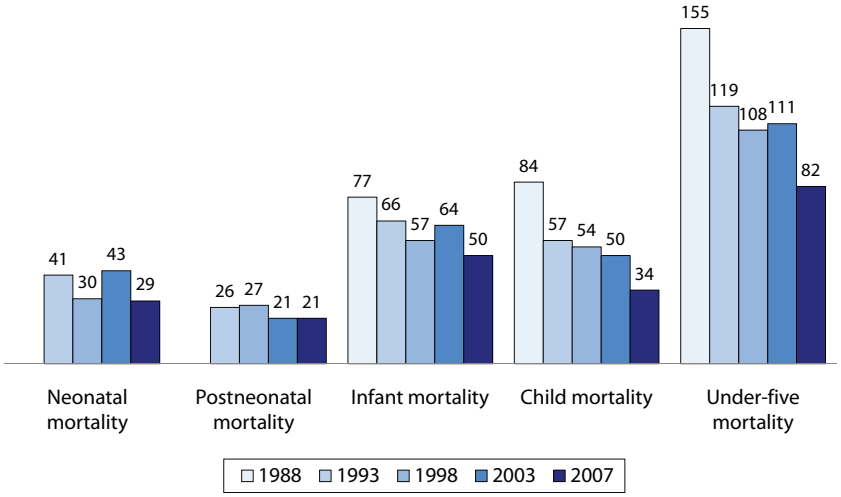
Table 6.5 Trends in early childhood mortality rates

Neonatal, postneonatal, infant, child, and under-five mortality rates for the five-year period preceding the survey, Ghana 1988-2007

Survey	Approximate calendar period	Neonatal mortality (NN)	Postneonatal mortality (PNN)[1]	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
2007 GMHS	**2003-2007**	**29**	**21**	**50**	**34**	**82**
2003 GDHS	1999-2003	43	21	64	50	111
1998 GDHS	1994-1998	30	27	57	54	108
1993 GDHS	1989-1993	41	26	66	57	119
1988 GDHS	1983-1987	na	na	77	84	155

[1] Computed as the difference between the infant and neonatal mortality rates

***Figure 6.15* Trends in Early Childhood Mortality Rates**



6.3.2 Socioeconomic and Demographic Differentials in Childhood Mortality

Infant and child mortality is closely related to socioeconomic and demographic characteristics of mothers and children. Table 6.6 and Figure 6.16 show that with the exception of postneonatal mortality, where there is little gender difference, male children experience higher childhood mortality than female children. As expected, the relationship between maternal age at birth and childhood mortality is U-shaped, and relatively higher among children born to the youngest and oldest mothers than among children whose mothers are in the prime reproductive ages.[3] Children born to young mothers are more likely to be of low birth weight, which is probably an important factor contributing to their higher neonatal mortality rate. Similarly, children born to mothers above age 30 are at a higher risk of experiencing congenital problems. Childhood death rates also tend to have a U-shaped pattern by birth order, with first births and high-order births having elevated mortality rates. For example, under-five mortality for first births and births of order seven and higher is 105 and 102 deaths per 1,000 births, respectively, compared with 83-91 deaths per 1,000 births for births of order two through six. Childhood mortality is strongly associated with variation in birth interval, with risk of under-five death more than twice as high among births that occur within 24 months of a previous birth as among births that occur at longer intervals.

Maternal education is strongly related to mortality (Figure 6.17). Children born to mothers with no education have much higher levels of mortality than children born to mothers with some education. The overall under-five mortality rate declines sharply with increasing education of mothers, ranging from 109 deaths per 1,000 live births for uneducated mothers to a low of 66 deaths per 1,000 live births for mothers who have at least some secondary education, though the latter figure is based on a relatively small number of cases. Other mortality indicators also decline similarly with increasing level of mother's education. The under-five mortality rate for children in the wealthiest households is 63 deaths per 1,000 live births, whereas the corresponding rate for children in the poorest households is 105 deaths per 1,000 live births. Children residing in rural areas experience higher mortality than urban children (Figure 6.17).

Differences in mortality by region are also marked. Under-five mortality is lowest in Greater Accra (Figure 6.18). Children in the Northern region are most likely to experience early death. Childhood mortality rates are lower in the R3M program regions than in the other regions.

[3] Under-five mortality rates are not shown for mothers age 40-49 at birth because they are based on fewer than 250 exposed persons.

Table 6.6 Early childhood mortality rates by socioeconomic characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the 10-year period preceding the survey, by background characteristic, GMHS 2007

Background characteristic	Neonatal mortality (NN)	Postneonatal mortality (PNN)[1]	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Child's sex					
Male	35	26	61	39	98
Female	28	27	55	35	87
Mother's age at birth					
<20	45	40	84	43	124
20-29	29	25	54	38	91
30-39	29	20	49	33	81
40-49	(41)	(44)	(85)	*	*
Birth order					
1	40	29	69	38	105
2-3	29	22	52	34	83
4-6	28	25	52	41	91
7+	35	36	72	32	102
Previous birth interval					
<2 years	53	42	95	66	155
2 years	17	29	46	29	74
3 years	27	16	43	31	73
4+ years	27	18	45	29	73
Residence					
Urban	30	19	49	28	75
Rural	33	29	62	41	100
Region					
Western	(31)	(33)	(63)	(48)	(108)
Central	37	25	61	(35)	(94)
Greater Accra	38	15	53	17	68
Volta	22	18	(39)	(34)	(72)
Eastern	27	17	44	35	77
Ashanti	31	27	58	28	85
Brong Ahafo	33	37	69	36	103
Northern	37	35	72	56	123
Upper East	(27)	(19)	(46)	(35)	(79)
Upper West	(32)	(25)	(58)	(50)	(105)
R3M regions	31	21	53	27	79
Other regions	32	29	61	42	101
Education					
No education	34	29	64	48	109
Primary	29	27	56	40	93
Middle/JSS	31	23	54	22	75
Secondary+	(34)	(13)	(47)	(20)	(66)
Wealth quintile					
Lowest	26	30	56	51	105
Second	36	30	66	37	101
Middle	32	28	60	38	95
Fourth	37	20	58	31	87
Highest	28	18	46	18	63

Note: Rates based on 250 to 499 exposed persons are in parentheses. Rates based on fewer than 250 exposed persons are not shown (*).

[1] Computed as the difference between the infant and neonatal mortality rates

Figure 6.16 Under-five Mortality Rates by Demographic Characteristics

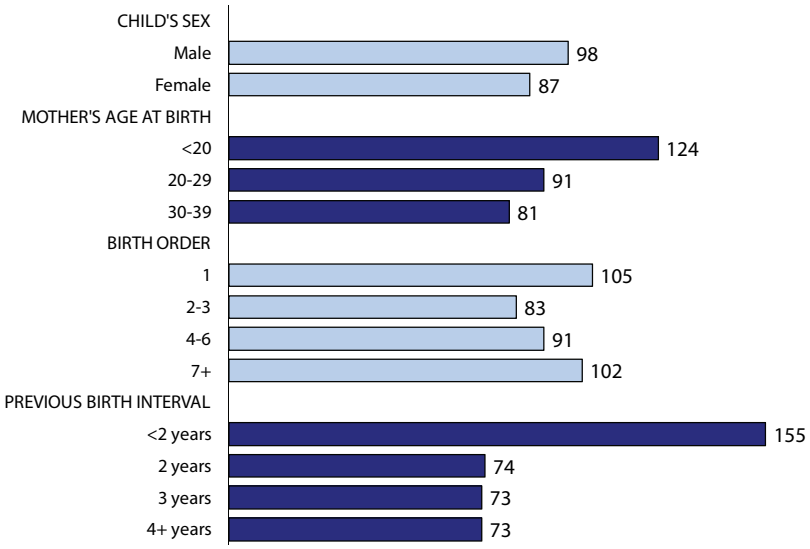


Figure 6.17 Under-five Mortality Rates by Background Characteristics

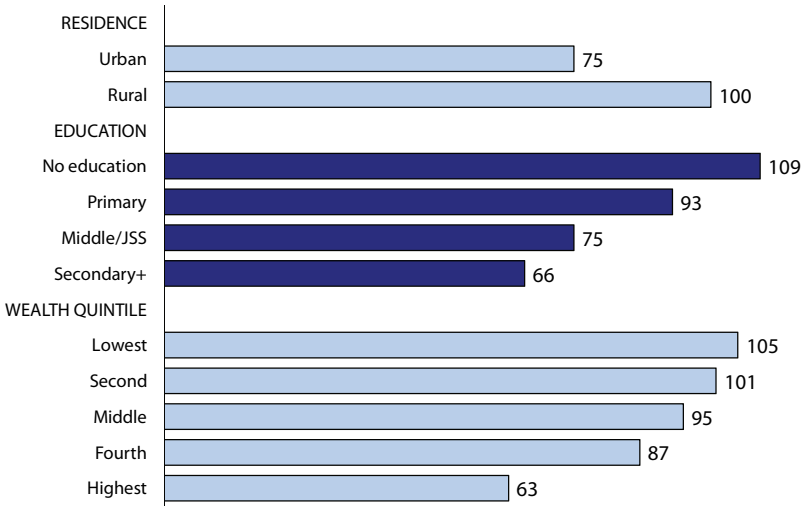
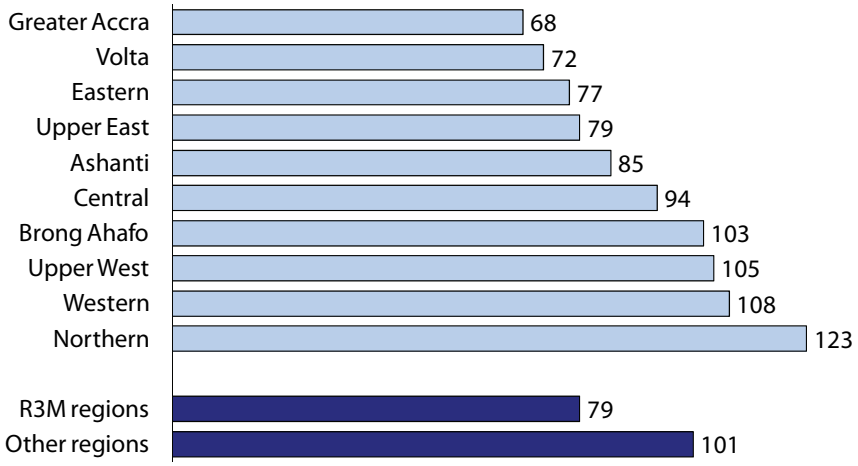


***Figure 6.18* Under-five Mortality Rates by Region**



6.4 PERINATAL MORTALITY

Information on pregnancy losses can also be used to calculate perinatal deaths which are pregnancy losses occurring after seven completed months of gestation (stillbirths) plus deaths among live births within the first seven days of life (early neonatal deaths). The perinatal mortality rate is calculated by dividing the total number of perinatal deaths by the total number of pregnancies reaching seven months' gestation. The reports on stillbirths and early neonatal deaths are often subject to omission, underreporting, or misclassification since the distinction between a stillbirth and an early neonatal death is less obvious, often depending on the observed presence or absence of signs of life after delivery, which may be faint or difficult to detect. The causes of stillbirths and early neonatal deaths are often interconnected and therefore examining just one or the other can understate the true level of mortality at the time of delivery. It is for this reason that both events are often combined and examined together.

Table 6.7 shows stillbirths, early neonatal deaths, and perinatal mortality rate, according to demographic and socioeconomic characteristics. The perinatal mortality rate for Ghana is estimated at 45 deaths per 1,000 pregnancies of 7 or more months' duration,

Table 6.7 Perinatal mortality

Number of stillbirths and early neonatal deaths, and the perinatal mortality rate for the five-year period preceding the survey, by background characteristics, GMHS 2007

Background characteristic	Number of stillbirths[1]	Number of early neonatal deaths[2]	Perinatal mortality rate[3]	Number of pregnancies of 7+ months duration
Mother's age at birth				
<20	13	17	48	625
20-29	65	82	43	3,394
30-39	43	54	40	2,430
40-49	3	8	24	463
Previous pregnancy interval in months				
First pregnancy	45	39	64	1,326
<15	8	11	66	292
15-26	28	35	47	1,341
27-38	23	22	28	1,633
39+	42	57	42	2,368
Residence				
Urban	68	52	54	2,222
Rural	78	112	40	4,738
Region				
Western	5	15	36	553
Central	18	29	68	683
Greater Accra	10	15	39	619
Volta	13	11	38	636
Eastern	25	11	45	783
Ashanti	24	25	37	1,313
Brong Ahafo	25	16	52	777
Northern	21	37	54	1,077
Upper East	3	6	30	303
Upper West	2	1	13	216
R3M regions	59	50	40	2,715
Other regions	87	115	48	4,245
Education				
No education	36	61	40	2,465
Primary	35	34	43	1,599
Middle/JSS	66	53	48	2,434
Secondary+	9	17	58	462
Total	146	165	45	6,960

[1] Stillbirths are fetal deaths in pregnancies lasting seven or more months.
[2] Early neonatal deaths are deaths at age 0-6 days among live-born children.
[3] The sum of the number of stillbirths and early neonatal deaths divided by the number of pregnancies of seven or more months' duration, expressed per 1000.

and has changed little in the past five years (46 deaths per 1000 pregnancies in 2003). Perinatal mortality is highest among the youngest group of women (age at birth less than 20 years), among pregnancies that occurred within 15 months of a previous pregnancy, and in the Central region. Contrary to expectations, perinatal mortality is proportionately higher in urban than rural areas, and among the highly educated than the less educated women, despite the fact that the number of pregnancies are much lower among these groups.

6.5 HIGH-RISK CHILDBEARING

The survival of infants and children depends in part on the demographic and biological characteristics of their mothers. Typically, the probability of dying in infancy is much greater among children born to mothers who are too young (under age 18) or too old (over age 34), children born after a short birth interval (less than 24 months after the preceding birth), and children born to mothers of high parity (more than three children). The risk is further elevated when a child is born to a mother who has a combination of these risk characteristics.

Table 6.8 shows the percentage of live births in the five years preceding the survey that fall into specific risk categories, as well as the distribution of all currently married women across these categories. The table shows the relative risks of children dying across the different risk categories. The purpose of this table is to identify areas in which changed reproductive behavior would be likely to effect a reduction in childhood and maternal mortality. Mortality risks are represented by the proportion of children who were born during the five years preceding the survey and who had died by the time of the survey. The "risk ratio" is the ratio of the proportion of dead children in a given high-risk category to the proportion of dead children not in any high-risk category.

Among children born in the five years preceding the survey, more than one in four (29 percent) births were not in any high-risk category. Nineteen percent were first births—considered an unavoidable risk category—while 31 percent were in single high-risk categories and 21 percent in multiple high-risk categories. The most common single high-risk category was births of order three and higher (20 percent), while the most common multiple high-risk category was births to mothers older than 34 years and birth order three and higher (14 percent).

Risk ratios measure the extent of vulnerability to death associated with being in a

Table 6.8 High-risk fertility behavior

Percent distribution of children born in the five years preceding the survey by category of elevated risk of mortality and the risk ratio, and percent distribution of currently married women by category of risk if they were to conceive a child at the time of the survey, GMHS 2007

Risk category	Births in the 5 years preceding the survey		Percentage of currently married women[1]
	Percentage of births	Risk ratio	
Not in any high risk category	29.1	1.00	18.5[a]
Unavoidable risk category			
First order births between ages 18 and 34 years	18.7	1.27	4.3
Single high-risk category			
Mothers age <18	4.3	(1.60)	0.2
Mothers age >34	1.8	*	6.0
Birth interval <24 months	5.3	1.35	9.2
Birth order >3	19.9	0.96	13.9
Subtotal	31.2	1.14	29.2
Multiple high-risk category			
Age <18 & birth interval <24 months[2]	0.1	*	0.2
Age >34 & birth interval <24 months	0.1	*	0.4
Age >34 & birth order >3	14.1	1.23	32.4
Age >34 & birth interval <24 months & birth order >3	2.0	*	5.9
Birth interval <24 months & birth order >3	4.7	(2.63)	9.1
Subtotal	21.0	1.64	47.9
In any avoidable high-risk category	52.2	1.35	77.2
Total	100.0	na	100.0
Number of births/women	6,811	na	6,215

Note: Risk ratio is the ratio of the proportion dead among births in a specific high-risk category to the proportion dead among births not in any high-risk category. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Figures in parentheses are based on 25-49 unweighted cases.
na = Not applicable
[1] Women are assigned to risk categories according to the status they would have at the birth of a child if they were to conceive at the time of the survey: current age less than 17 years and 3 months or older than 34 years and 2 months, latest birth less than 15 months ago, or latest birth being of order 3 or higher.
[2] Includes the category age <18 and birth order >3
[a] Includes sterilized women

particular risk category when compared with a reference category, which in this case is those "not in any high-risk category" (Table 6.8). Risk ratios are generally higher for children in multiple high-risk categories than for those in single high-risk categories. Five percent of births occur at less than a 24-month interval and are of birth order greater than three. These children are nearly three times as likely to die as children whose births fall into the reference category.

REFERENCES

Aboagye, P.K., H. Gebreselassie, G.Q. Asare, E.M.H. Mitchell, and J. Addy. 2007. *An assessment of the readiness to offer contraceptives and comprehensive abortion care in the Greater Accra, Eastern and Ashanti regions of Ghana.* Chapel Hill, USA: Ipas.

AbouZahr, C. 1998. Maternal mortality overview. Chapter 3 in *Health dimensions of sex and reproduction*, ed. C.J.M. Murray and A. Lopez, Geneva: World Health Organization.

Benjamin, C. 2007. *A brief history of family planning and reproductive health in Ghana.* The Statesman accessed at http://www.thestatesmanonline.com/pages/news_detail.php?newsid=2507&section=13 on July 22, 2007.

Campbell, O.M., and W.J. Graham. 2006. Strategies for reducing maternal mortality: Getting on with what works. *The Lancet* [Maternal Survival Series] 368(9543): 1284-99.

Ghana Health Service (GHS). 2007a. *Reproductive Health Strategic Plan 2007-2011*. Accra, Ghana: Ghana Health Service.

Ghana Health Service (GHS). 2007b. *Ghana Health Service Annual Report 2007.* Accra, Ghana: Ghana Health Service.

Ghana Statistical Service (GSS), and Institute for Resource Development/Macro Systems Inc. (IRD/Macro). 1989. *Ghana Demographic and Health Survey 1988.* Columbia, Maryland, USA: Ghana Statistical Service and IRD/Macro.

Ghana Statistical Service (GSS) and Macro International Inc. (MI). 1994. *Ghana Demographic and Health Survey 1993.* Calverton, Maryland, USA: Ghana Statistical Service and Macro International Inc.

Ghana Statistical Service (GSS) and Macro International Inc. (MI). 1999. *Ghana Demographic and Health Survey 1998.* Calverton, Maryland, USA: Ghana Statistical Service and Macro International Inc.

Ghana Statistical Service (GSS), Health Research Unit, Ministry of Health, and ORC Macro. 2003. *Ghana Service Provision Assessment Survey 2002.* Calverton, Maryland, USA: Ghana Statistical Service and ORC Macro.

Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro. 2004. *Ghana Demographic and Health Survey 2003*. Calverton Maryland, USA: Ghana Statistical Service, Noguchi Memorial Institute for Medical Research, and ORC Macro.

Gwatkin, D.R., S.O. Rutstein, K. Johnson, R.P. Pande, and A. Wagstaff. 2000. *Socio-economic differences in health, nutrition and poverty.* HNP/Poverty Thematic Group of the World Bank. Washington, D.C.: The World Bank.

Human Mortality Database. 2009. Accessed at http://www.mortality.org/ on February 2, 2009.

India Sample Registration System. 2006. *Maternal mortality in India: 1997-2003. Trends, causes and risk factors*. New Delhi, India: Office of the Registrar General, Government of India.

Integrated Regional Information Networks (IRIN). 2004. *Ghana: National health insurance scheme launched.* Accessed at http://www.irinnews.org/report.aspx?reportid=49172 on September 9, 2008.

Ipas. 2008. *Ghana program summary*. accessed at http://www.ipas.org/Countries/Ghana.apsx on July 22, 2008.

Lopez, A.D., O.B. Ahmad, M. Guillot, B.D. Ferguson, J.A. Salomon, C.J.L. Murray, and K.H. Hill. 2002. *World mortality in 2000: Life tables for 191 countries*. Geneva: World Health Organization.

Mayhew, S. 2004. Sexual and reproductive health in Ghana and the role of donor assistance. In *Progress and promises: Trends in international assistance for reproductive health and population,* ed. S. Ethelston, A. Bechtel, and C.G. Vogel. Washington, D.C.: Population Action International.

Ministry of Health (MOH) [Ghana]. 2008a. *Independent Review Health Sector Programme of Work 2007: Draft report.* Accra, Ghana: Ministry of Health.

Ministry of Health (MOH) [Ghana]. 2008b. *National Consultative Meeting for the Reduction of Maternal Mortality in Ghana, July 8, 2008.* Accessed at http://www.moh-ghana.org/moh/docs/programs_of_work/Consecutive%20meeting/Minister'sspeech.pdf on September 22, 2008.

Ministry of Health (MOH) [Ghana]. 2008c. *Aide memoir of the Joint Ministry of Health – Partners Business Meeting, 23rd April 2008.* Accessed at http://www.moh-ghana.org/moh/docs/reports_pub/Aidememoire/aide%20Memoire.pdf on September 22, 2008.

National Institute of Population Research and Training (NIPORT), ORC Macro, Johns Hopkins University, and ICDDR,B. 2003. *Bangladesh Maternal Health Services and Maternal Mortality Survey 2001.* Dhaka, Bangladesh and Calverton, Maryland, USA: NIPORT, ORC Macro, Johns Hopkins University, and ICDDR,B.

Nyonator, F.K., J.K. Awoonor-Williams, J.F. Phillips, T.C. Jones, and R.A. Miller. 2005. The Ghana community-based health planning and services initiative for scaling up service delivery innovation. *Health Policy and Planning* 20(1): 25-34.

Population Council. 2008. *R3M project summary*. Accessed at http://www.popcouncil.org/projects/RH_GhanaR3M.htm on July 27, 2008.

Population Council, Ministry of Health [Ghana], UNFPA/Ghana, and Ghana Health Service. 2006. *Priority setting for reproductive health at the district level in the context of health sector reforms in Ghana.* Accra, Ghana: Population Council.

Ronsmans, C., and W. Graham. 2006. Maternal mortality: Who, when, where, and why. *The Lancet* 368: 1189-1200.

Rutstein, S.O. 1984. *Infant and child mortality: Levels, trends and demographic differentials.* Revised edition World Fertility Survey Comparative Studies No. 43. Voorburg, Netherland: International Statistical Institute.

Thaddeus, S., and D. Maine. 1994. Too far to walk: Maternal mortality in context. *Social Science & Medicine* 38(8): 1091.

United Nations Development Programme (UNDP). 2003. *Indicators for monitoring the Millennium Development Goals: Definitions, rationale, concepts, and sources.* New York: United Nations.

Witter, S., A. Kusi, and M. Aikins. 2007. *Working practices and incomes of health workers: Evidence from an evaluation of a delivery fee exemption scheme in Ghana.* Human Resources for Health 5: 2.

World Health Organization (WHO). 2004a. *Making pregnancy safer: The critical role of the skilled attendant.* A joint statement by WHO, ICM, and FIGO. Geneva: Department of Reproductive Health and Research, World Health Organization.

World Health Organization (WHO). 2004b. *Unsafe abortion: Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2000.* Fourth edition. Geneva: World Health Organization.

World Health Organization (WHO). 2004c. *International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Volume 2, 2nd edition.* Geneva: World Health Organization.

World Health Organization (WHO), UNICEF, UNFPA and The World Bank. 2007. *Maternal mortality in 2005: Estimates developed by WHO, UNICEF, UNFPA and The World Bank.* Geneva: World Health Organization.

APPENDIX A • Estimates of Overall Adult Mortality

The deaths by age reported in the Phase I household questionnaire for the five years preceding the survey, in combination with the female age distribution from the Phase II household questionnaire—adjusted as described in previous sections—allow the calculation of all-cause, age-specific mortality rates and a life table. Unfortunately, formal methods developed to evaluate the completeness of death reporting from the Phase I household questionnaire cannot readily be applied because the information on the age distribution of the population is approximate. Evaluation is therefore based on comparison with indicators from other parts of Ghana or other countries. The sibling history also provides a basis for calculating all-cause, age-specific mortality rates for males and females separately up to age 50; above age 50, the sibling history shows fewer and fewer deaths, and the mortality rates quickly become unstable. Information on the cause of Phase I household deaths, available from the VA for female deaths at age 12-49, allows an analysis of the proportionate cause distribution of all adult female deaths.

Table A.1 shows the calculation of all-cause, age-specific mortality rates and the resulting life table. The household deaths indicate an under-five mortality rate (U5MR) of 42 per 1,000 live births, and an infant mortality rate (IMR) of 16 per 1,000 live births. The U5MR and IMR estimates for Ghana from the Phase II pregnancy history data are 82 and 50 deaths per 1,000 live births, respectively, for the period 2003-2008. Assuming that the estimates based on pregnancy histories are correct, it appears likely that the GMHS Phase I survey substantially underreported deaths of young children.

Table A.1 Female life table, GMHS 2007

Age group	Person-years	Number of deaths	${}_nM_x$	Probability of dying in age interval (${}_nq_x$)	Number of survivors (l_x)	Number of deaths in age interval (${}_nd_x$)	Person-years lived in age interval (${}_nL_x$)	Total number of person-years (T_x)	Life expectancy (e_x)
0-1	71,794	1,150	0.0160	0.016	100,000	1,584	98,891	7,353,812	73.5
1-4	262,768	1,808	0.0069	0.027	98,416	2,663	387,007	7,254,921	73.7
5–9	316,104	592	0.0019	0.009	95,753	892	476,534	6,867,914	71.7
10–14	262,004	375	0.0014	0.007	94,861	676	472,612	6,391,380	67.4
15–19	209,819	533	0.0025	0.013	94,184	1,189	467,949	5,918,768	62.8
20–24	191,590	719	0.0038	0.019	92,995	1,729	460,656	5,450,818	58.6
25–29	176,443	958	0.0054	0.027	91,267	2,444	450,223	4,990,163	54.7
30–34	159,582	1,050	0.0066	0.032	88,822	2,875	436,924	4,539,940	51.1
35–39	131,806	970	0.0074	0.036	85,947	3,105	421,974	4,103,016	47.7
40–44	108,032	846	0.0078	0.038	82,842	3,181	406,257	3,681,043	44.4
45–49	98,220	627	0.0064	0.031	79,661	2,503	392,046	3,274,786	41.1
50–54	76,674	632	0.0082	0.040	77,158	3,116	378,000	2,882,740	37.4
55–59	60,040	403	0.0067	0.033	74,042	2,444	364,101	2,504,739	33.8
60–64	49,625	600	0.0121	0.059	71,598	4,201	347,488	2,140,638	29.9
65–69	44,214	498	0.0113	0.055	67,397	3,692	327,755	1,793,150	26.6
70–74	32,412	763	0.0235	0.111	63,705	7,082	300,822	1,465,395	23.0
75+	41,977	2,041	0.0486	1.000	56,624	56,624	1,164,573	1,164,573	20.6
Probability of dying									
0-5 (${}_5q_0$)			0.0425						
15-49 (${}_{35}q_{15}$)			0.1810						
15-60 (${}_{45}q_{15}$)			0.2800						

A commonly used indicator of adult mortality is the probability of dying between age 15 and 60 (${}_{45}q_{15}$ in demographic notation). The life table in Table A.1 reports this probability for Ghanaian females as 28 percent (0.28 per 1,000), substantially lower than the estimate of 35 percent for the Navrongo Demographic Surveillance

Site in the Upper East region of Ghana or the estimate of 33 percent for Ghana estimated by the World Health Organization for the year 2000 (Lopez et al., 2002), but substantially higher than the estimate for Bangladesh from the BMMS 2001 (15 percent) that used a similar methodology (NIPORT et al., 2003). Mortality at older ages appears to have been underestimated by the GMHS; life expectancy at age 60 in Table 3.7 is 30 years, substantially higher than that reported for Sweden in 2005-2007 (24.9 years) (Human Mortality Database, 2009).

Table A.2 shows the age-specific mortality rates for males and females age 15-49 estimated from the Phase II sibling history data. The Phase II sample is only one-twentieth the size of the Phase I sample, so irregularities by age group are larger. A summary mortality measure, the female probability of dying between age 15 and 50 ($_{35}q_{15}$ in standard demographic notation) in the five years preceding the survey, is 0.137 from the sibling history and 0.181 from the household deaths. The $_{35}q_{15}$'s from the sibling history show a slight downward trend over the period between 10-14 and 0-4 years preceding the survey for females, but indicate a rising trend for males. For the five years preceding the survey, the risk of dying is substantially larger for males than females, but the differential is apparently reversed for the period 10-14 years preceding the survey. Figure A.1 plots the age-specific rates for males and females from the sibling histories and the age-specific female rates from the Phase I survey. The substantial difference between the estimates of adult mortality from the sibling history and from the household deaths raises questions about the completeness of reporting of dead siblings, and accounts for the large difference in estimates of pregnancy-related or maternal mortality between the two approaches.

Figure A.1 **Age-Specific Mortality Rates by Sex from Sibling Histories and Phase I Survey**

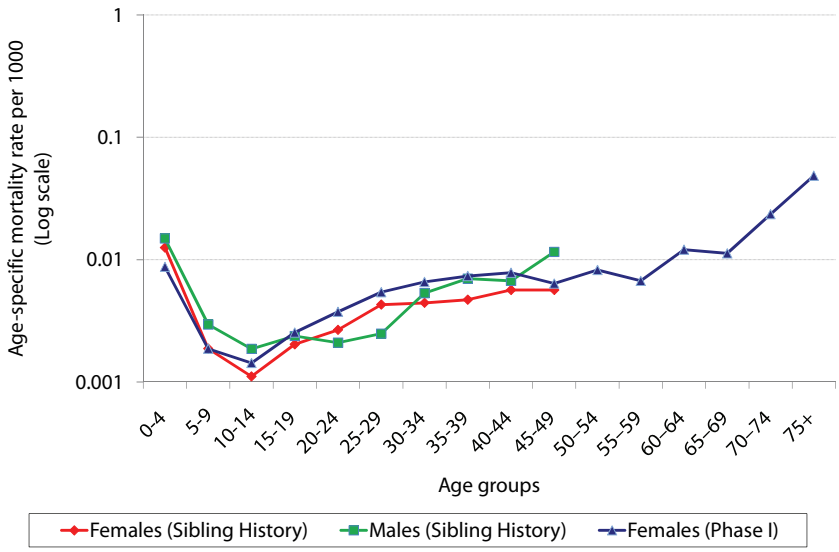


Table A.2 Mortality rates from sibling histories

Direct estimates of mortality rates from sibling listings for specific periods preceding the survey, GMHS 2007

	Females			Males		
Age group	0-4 years prior	5-9 years prior	10-14 years prior	0-4 years prior	5-9 years prior	10-14 years prior
0-4	0.01254	0.01105	0.01167	0.01489	0.01278	0.01088
5-9	0.00188	0.00195	0.00167	0.00295	0.00268	0.00275
10-14	0.00111	0.00137	0.00158	0.00187	0.00182	0.00138
15-19	0.00203	0.00155	0.00172	0.00238	0.00168	0.00151
20-24	0.00267	0.00219	0.00236	0.00210	0.00201	0.00188
25-29	0.00429	0.00311	0.00257	0.00249	0.00163	0.00196
30-34	0.00444	0.00411	0.00369	0.00533	0.00444	0.00294
35-39	0.00471	0.00767	0.00455	0.00699	0.00536	0.00269
40-44	0.00565	0.00576	0.00364	0.00672	0.00677	0.00691
45-49	0.00565	0.00673	0.01425	0.01158	0.01044	0.00980
Probability of dying						
15-49 ($_{35}q_{15}$)	0.13690	0.14410	0.15120	0.17130	0.14930	0.12920

Table A.3 shows the Phase I deaths among women of reproductive age by age group and major cause of death as identified by the verbal autopsy. For all women age 12-49, infectious diseases account for over 40 percent of deaths. Maternal mortality is the second largest cause of death (14 percent), followed by diseases of the nervous, digestive, or respiratory systems (12 percent), diseases of the circulatory system (12 percent), and other causes (11 percent) (Figure A.2). For comparison, the BMMS 2001 showed a higher proportion of deaths from maternal causes (20 percent), a lower proportion of deaths from infectious diseases (13 percent), a much higher proportion of deaths from malignancies (15 percent), a slightly higher proportion of deaths from diseases of the circulatory system (14 percent), and almost 10 percent of deaths from suicide (NIPORT et al., 2003). The patterns are similar to those in Table A.2.

***Figure A.2* All Cause-specific Mortality**

(Women age 15-49 in the ten years preceding the survey)

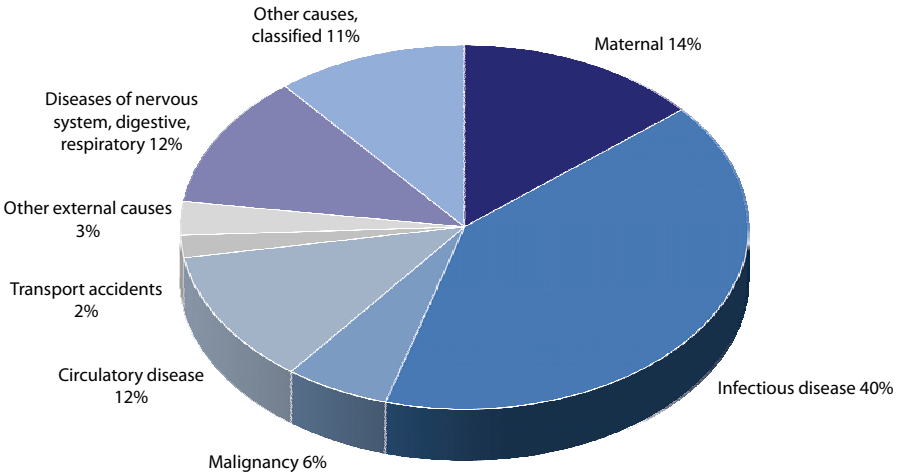


Table A.3 All cause-specific mortality

Percent distribution of deaths among women age 12-49 in the five years preceding the survey by cause of death, according to age at death and region, GMHS 2007

Characteristic	Maternal	Infectious disease	Malignancy	Circulatory disease	Transport accidents	Other external causes	Nervous system, digestive, respiratory	Other causes, classified	Not classified	Total	Number of deaths
Age at death											
12-14	3.2	28.6	5.2	4.2	4.3	7.3	24.4	22.8	0.0	100.0	95.6
15-19	19.6	24.3	4.3	10.0	3.1	3.5	19.8	15.4	0.0	100.0	268.2
20-24	20.7	40.6	4.0	4.8	2.0	2.7	13.7	11.4	0.0	100.0	447.0
25-29	18.9	44.8	2.7	7.1	1.4	2.4	11.6	10.8	0.3	100.0	530.2
30-34	14.5	47.6	5.5	9.7	0.8	2.7	11.1	8.2	0.0	100.0	637.8
35-39	14.1	43.7	6.9	12.6	1.6	2.1	9.4	9.4	0.0	100.0	605.3
40-44	8.9	39.2	9.5	17.4	1.8	1.2	10.8	11.1	0.2	100.0	503.4
45-49	3.8	39.2	10.0	23.3	1.3	2.4	10.4	8.6	0.9	100.0	389.2
Region											
Greater Accra	17.5	28.3	8.4	18.9	2.9	2.9	7.3	12.4	1.5	100.0	236.5
Eastern	12.4	43.1	5.6	9.8	2.2	1.8	10.6	14.5	0.0	100.0	452.8
Ashanti	11.3	46.1	5.3	10.9	0.9	3.9	10.3	11.3	0.0	100.0	706.0
R3M regions	12.7	42.1	5.9	11.9	1.7	3.0	9.9	12.5	0.2	100.0	1,395.3
Other regions	14.8	40.4	6.2	11.6	1.7	2.2	13.6	9.4	0.1	100.0	2,081.5
Total	14.0	41.1	6.1	11.7	1.7	2.5	12.1	10.6	0.2	100.0	3,476.8

It is interesting to note that the distribution of deaths by cause and by region show substantial differences in two cause groups. Greater Accra has a smaller proportion of deaths from infectious diseases than the average, but a higher proportion from circulatory diseases. There is also a pattern in Greater Accra of relatively high proportions of deaths from hypertensive disorders of pregnancy and relatively low proportions of deaths from sepsis, seen earlier for maternal deaths. This pattern may be indicative of the emergence of a shift from infectious to degenerative diseases, as described in the theory of epidemiologic transition in Accra.

As shown in Table A.3, there is an increase with age in the proportion of deaths from diseases of the circulatory system and from malignancies, while deaths from maternal causes fall with age; most other categories show no clear pattern.

Table A.4 shows the age-specific death rates for women age 15-49 for all causes of death in relation to the overall population. This information is calculated from the total number of household members from Phase I, assuming the age distribution from the Phase II household data. The risk of dying from maternal causes for the population as a whole (the MMRate) is 0.45 per 1,000 woman-years of exposure. For the youngest women (15-19), the probability of dying from infectious diseases and diseases of the nervous system, digestive and respiratory organs are almost as high as the risk of dying from maternal causes. As women age, the risk of dying from infectious diseases rises relative to other causes. For deaths due to circulatory disease and malignancy the risk of dying increases steadily with age.

Table A.4 Age-specific mortality rates for women age 15-49 (per 1,000 woman-years of exposure) in the five years preceding the survey by cause of death, GMHS 2007

Age at death	Person-years lived[1]	Maternal	Infectious disease	Malignancy	Circulatory disease	Transport accidents	Other external causes	Nervous system, digestive, respiratory	Other causes, classified	Not classified	Number of deaths
15-19	209,819	0.2505	0.3106	0.0550	0.1278	0.0396	0.0447	0.2531	0.1968	-	268.2
20-24	191,590	0.4830	0.9472	0.0933	0.1120	0.0467	0.0630	0.3196	0.2660	-	447.0
25-29	176,443	0.5679	1.3462	0.0811	0.2133	0.0421	0.0721	0.3486	0.3245	0.0090	530.2
30-34	159,582	0.5795	1.9024	0.2198	0.3877	0.0320	0.1079	0.4436	0.3277	-	637.8
35-39	131,806	0.6475	2.0069	0.3169	0.5786	0.0735	0.0964	0.4317	0.4317	-	605.3
40-44	108,032	0.4147	1.8266	0.4427	0.8108	0.0839	0.0559	0.5033	0.5172	0.0093	503.4
45-49	98,220	0.1506	1.5533	0.3963	0.9233	0.0515	0.0951	0.4121	0.3408	0.0357	389.2
Total	1,075,493	0.4526	1.3287	0.1972	0.3782	0.0550	0.0808	0.3912	0.3427	0.0065	3,476.8

[1] Rates are based on person-years lived data from the Phase II household questionnaire.

The comparison of mortality estimates from the various sources included in the GMHS—the pregnancy history providing estimates of child mortality, the sibling history providing estimates of mortality up to age 50, and the Phase I data on household deaths providing estimates of female mortality at all ages—is instructive. The pregnancy history and sibling history give broadly similar estimates of mortality in childhood, whereas the data on household deaths appear to underestimate child mortality. Between age 15 and 49, the household deaths data appear to give more plausible estimates of mortality than the sibling history data, but above age 60 the household data appear to be seriously underestimating mortality. Clearly, different data collection strategies have different strengths and weaknesses; in the absence of a true "gold standard," it is not possible to definitively recommend one approach over another; careful data evaluation is always required.

APPENDIX B • Sample Implementation

Table B.1 Sample implementation

Percent distribution of households and eligible women by results of the household and individual interviews, and household, eligible women and overall response rates, according to urban-rural residence and region, GMHS 2007

	Residence		Region										
Result	Urban	Rural	Western	Central	Greater Accra	Volta	Eastern	Ashanti	Brong Ahafo	Northern	Upper East	Upper West	Total
Selected households													
Completed (C)	93.8	93.8	91.9	95.8	91.8	95.5	91.5	94.0	93.9	95.4	99.1	97.0	93.8
Household present but no competent respondent at home (HP)	0.8	0.5	0.3	0.6	0.9	0.8	0.9	0.4	0.8	0.6	0.2	0.7	0.7
Refused (R)	0.2	0.2	1.5	0.1	0.3	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.2
Dwelling not found (DNF)	0.3	0.3	0.0	0.1	0.3	1.0	0.6	0.2	0.1	0.0	0.0	0.0	0.3
Household absent (HA)	3.1	3.4	4.6	2.3	4.2	1.6	4.6	3.6	3.0	2.3	0.3	0.9	3.3
Dwelling vacant/address not a dwelling (DV)	1.5	1.4	1.2	1.1	2.1	1.2	2.0	1.3	2.1	1.0	0.0	1.4	1.5
Dwelling destroy (DD)	0.2	0.3	0.5	0.1	0.2	0.0	0.3	0.2	0.1	0.6	0.3	0.0	0.2
Other (O)	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of sampled households	5,357	6,222	1,015	1,015	1,970	1,016	1,878	1,941	1,012	725	575	432	11,579
Household response rate (HRR)	98.6	98.9	98.1	99.2	98.4	98.2	98.3	99.2	99.1	99.3	99.8	99.3	98.8
Eligible women													
Completed (EWC)	97.6	97.6	99.3	98.5	96.3	97.4	97.4	98.6	97.7	95.8	98.0	97.6	97.6
Not at home (EWNH)	1.8	1.9	0.6	1.4	2.5	1.5	2.1	1.1	1.4	3.5	2.0	2.1	1.9
Postponed (EWP)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (EWR)	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Partly completed (EWPC)	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1
Incapacitated (EWI)	0.3	0.4	0.1	0.1	0.5	0.7	0.3	0.2	0.8	0.5	0.0	0.0	0.3
Other (EWO)	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Total	100.0	100.0	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	5,082	5,545	841	905	1,922	858	1,606	1,747	932	854	537	425	10,627
Eligible women response rate (EWRR)	97.6	97.6	99.3	98.5	96.3	97.4	97.4	98.6	97.7	95.8	98.0	97.6	97.6
Overall response rate (ORR)	96.3	96.5	97.4	97.6	94.7	95.7	95.8	97.8	96.8	95.1	97.8	97.0	96.4

[1] Using the number of households falling into specific response categories, the household response rate (HRR) is calculated as:

$$\frac{100 * C}{C + HP + P + R + DNF}$$

[2] Using the number of eligible women falling into specific response categories, the eligible woman response rate (EWRR) is calculated as:

$$\frac{100 * EWC}{EWC + EWNH + EWP + EWR + EWPC + EWI + EWO}$$

[3] The overall response rate (ORR) is calculated as:

$$ORR = HRR * \frac{EWRR}{100}$$

APPENDIX C • Data Quality Tables

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), GMHS 2007

	Female		Male			Female		Male	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	722	3.1	724	3.4	36	235	1.0	157	0.7
1	560	2.4	618	2.9	37	216	0.9	178	0.8
2	703	3.0	700	3.3	38	303	1.3	205	1.0
3	673	2.9	644	3.0	39	202	0.9	146	0.7
4	753	3.2	704	3.3	40	390	1.7	374	1.7
5	646	2.7	649	3.0	41	122	0.5	117	0.5
6	681	2.9	672	3.1	42	225	1.0	199	0.9
7	710	3.0	723	3.4	43	164	0.7	135	0.6
8	689	2.9	645	3.0	44	132	0.6	57	0.3
9	569	2.4	566	2.7	45	350	1.5	338	1.6
10	710	3.0	741	3.5	46	123	0.5	98	0.5
11	434	1.8	469	2.2	47	142	0.6	133	0.6
12	683	2.9	647	3.0	48	180	0.8	166	0.8
13	588	2.5	567	2.7	49	157	0.7	92	0.4
14	539	2.3	576	2.7	50	242	1.0	279	1.3
15	584	2.5	608	2.8	51	105	0.4	66	0.3
16	416	1.8	474	2.2	52	200	0.8	149	0.7
17	388	1.6	445	2.1	53	162	0.7	91	0.4
18	425	1.8	501	2.3	54	141	0.6	99	0.5
19	314	1.3	307	1.4	55	237	1.0	166	0.8
20	461	2.0	423	2.0	56	108	0.5	100	0.5
21	295	1.2	243	1.1	57	69	0.3	90	0.4
22	391	1.7	324	1.5	58	87	0.4	57	0.3
23	326	1.4	271	1.3	59	60	0.3	70	0.3
24	352	1.5	265	1.2	60	280	1.2	185	0.9
25	512	2.2	370	1.7	61	38	0.2	36	0.2
26	281	1.2	235	1.1	62	120	0.5	68	0.3
27	339	1.4	270	1.3	63	60	0.3	49	0.2
28	374	1.6	295	1.4	64	44	0.2	44	0.2
29	226	1.0	160	0.7	65	193	0.8	139	0.7
30	560	2.4	413	1.9	66	44	0.2	30	0.1
31	193	0.8	145	0.7	67	46	0.2	46	0.2
32	359	1.5	277	1.3	68	67	0.3	43	0.2
33	260	1.1	126	0.6	69	36	0.2	32	0.2
34	201	0.9	188	0.9	70+	876	3.7	690	3.2
35	476	2.0	439	2.1					
					Don't know/ missing	30	0.1	17	0.1
					Total	23,584	100.0	21,359	100.0

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, interviewed women age 15-49, and percentage of eligible women who were interviewed (weighted), by five-year age groups, Ghana 2007

Age group	Household population of women age 10-54	Percentage of households	Interviewed women age 15-49		Percentage of eligible women interviewed
			Number	Percent	
10-14	2,954	na	na	na	na
15-19	2,128	19.9	2,075	19.9	97.5
20-24	1,825	17.1	1,780	17.1	97.6
25-29	1,732	16.2	1,693	16.2	97.7
30-34	1,573	14.7	1,543	14.8	98.1
25-39	1,432	13.4	1,405	13.5	98.1
40-44	1,033	9.7	1,013	9.7	98.0
45-49	952	8.9	928	8.9	97.4
50-54	851	na	na	na	na
15-49	10,675	na	10,437	100.0	97.8

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before the interview. Weights for both household population of women and interviewed women are household weights. Age is based on the household schedule.
na = Not applicable

Table C.3 Completeness of reporting

Percentage of observations with information missing for selected demographic and health questions (weighted), Ghana 2007

Subject	Reference group	Percentage with information missing	Number of cases
Birth date			
Month only	Births in the 15 years preceding the survey	0.44	18,214
Month and year	Deceased children born in the 15 years preceding the survey	0.08	18,214
Age at death		0.06	1,695
Age/date at first union[1]	Ever-married women age 15-49	0.12	7,195
Respondent's education	All women age 15-49	0.04	10,370

[1] Both year and age missing

Table C.4 Births by calendar years

Number of births, percentage with complete birth date, sex ratio at birth, and calendar year ratio by calendar year, according to living, dead, and total children (weighted), GMHS 2007

	Number of births			Percentage with complete birth date[1]			Sex ratio at birth[2]			Calendar year ratio[3]		
Calendar year	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total
2007	1,327	43	1,371	99.8	100.0	99.8	98.7	92.1	98.5	na	na	na
2006	1,200	70	1,269	99.6	100.0	99.6	112.3	113.8	112.4	na	na	na
2005	1,321	90	1,411	99.7	98.3	99.6	95.3	134.1	97.4	110.6	103.9	110.2
2004	1,190	104	1,294	99.8	98.3	99.7	96.2	163.8	100.3	91.4	115.5	92.9
2003	1,283	90	1,373	99.6	100.0	99.6	103.9	67.9	101.0	111.6	71.2	107.6
2002	1,110	148	1,258	99.5	97.8	99.3	101.3	119.6	103.3	90.5	135.5	94.2
2001	1,170	129	1,299	99.4	100.0	99.5	104.0	100.3	103.7	101.1	87.9	99.6
2000	1,205	145	1,349	99.7	98.1	99.5	101.0	142.1	104.8	103.2	114.1	104.3
1999	1,163	125	1,289	99.6	100.0	99.7	98.2	119.5	100.1	107.7	93.7	106.2
1998	956	122	1,078	99.0	100.0	99.1	102.0	138.5	105.6	84.6	89.6	85.2
2003-2007	6,321	396	6,717	99.7	99.2	99.7	101.0	112.8	101.6	na	na	na
1998-2002	5,604	669	6,273	99.5	99.1	99.4	101.3	123.2	103.4	na	na	na
1993-1997	4,537	621	5,159	99.4	98.9	99.3	102.0	114.3	103.4	na	na	na
1988-1992	3,496	563	4,059	99.3	97.9	99.1	108.5	126.2	110.8	na	na	na
<1988	3,485	752	4,237	99.0	98.6	98.9	104.6	120.2	107.2	na	na	na
All	23,444	3,002	26,446	99.4	98.7	99.3	102.9	119.7	104.7	na	na	na

na = Not applicable

[1] Both year and month of birth given

[2] (Bm/Bf)x100, where Bm and Bf are the numbers of male and female births, respectively

[3] [2Bx/(Bx-1+Bx+1)]x100, where Bx is the number of births in calendar year x

Table C.5 Reporting of age at death in days

Distribution of reported deaths under one month of age by age at death in days and the percentage of neonatal deaths reported to occur at ages 0-6 days, for four five-year periods preceding the survey (weighted), GMHS 2007

Age at death (days)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1	28	20	27	14	89
1	85	83	51	43	262
2	9	6	8	3	26
3	23	42	15	13	93
4	9	11	8	10	39
5	8	8	3	9	28
6	3	5	9	11	28
7	12	15	15	20	61
8	0	5	3	6	14
9	0	1	1	0	2
10	2	1	4	2	9
11	2	0	0	0	2
12	0	0	2	1	3
13	1	0	0	0	1
14	5	16	9	13	43
15	0	1	0	1	2
16	0	0	2	0	2
17	0	0	1	1	2
18	0	0	2	0	2
19	0	0	0	3	3
20	0	1	0	0	1
21	4	7	1	3	14
24	0	0	0	2	2
26	0	0	0	0	0
27	1	0	0	0	1
28	1	1	0	0	2
30	1	0	0	0	1
31+	1	0	1	1	3
Total 0-30	194	223	160	155	733
Percent early neonatal[1]	84.8	78.7	75.4	66.9	77.1

[1] (0-6 days / 0-30 days) X 100

Table C.6 Reporting of age at death in months

Distribution of reported deaths under two years of age by age at death in months and the percentage of infant deaths reported to occur at age under one month, for four five-year periods preceding the survey, GMHS 2007

Age at death (months)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1[a]	194	223	160	155	733
1	12	22	18	28	80
2	15	22	21	13	72
3	19	38	20	25	102
4	14	20	21	7	62
5	3	12	9	7	32
6	9	24	19	12	63
7	17	19	11	8	55
8	9	13	8	9	40
9	13	18	13	10	53
10	6	5	6	5	24
11	4	2	1	3	10
12	10	12	15	15	51
13	5	12	10	12	39
14	7	6	13	7	33
15	7	3	5	4	19
16	2	3	6	9	19
17	0	0	4	3	7
18	3	8	12	9	31
19	2	3	1	1	7
20	2	2	0	3	6
21	0	3	3	1	7
23	0	1	4	1	6
24+	3	1	2	1	6
Missing	0	0	0	0	0
1 Year	14	26	35	21	96
Total 0-11	316	418	309	283	1,326
Percent neonatal[1]	61.6	53.4	51.9	54.6	55.3

[a] Includes deaths under one month reported in days
[1] Under one month / under one year

Table C.7 Data on siblings

Number of sisters and brothers reported by interviewed women in the sibling history; completeness of age data for living siblings; and age at death (AD) and years since death (YSD), data for dead siblings, GMHS 2007

	Sisters		Brothers		Total	
	Number	Percent	Number	Percent	Number	Percent
All siblings	26,188.9	100.0	27,125.1	100.0	53,314.0	100.0
Living	22,816.5	87.1	23,309.0	85.9	46,125.5	86.5
Dead	3,362.7	12.8	3,813.1	14.1	7,175.8	13.5
Status unknown	9.7	0.0	3.0	0.0	12.6	0.0
Living siblings	22,816.5	100.0	23,309.0	100.0	46,125.5	100.0
Age reported	22,786.0	99.9	23,268.1	99.8	46,054.1	99.8
Age missing	30.5	0.1	40.9	0.2	71.5	0.2
Dead siblings	3,362.7	100.0	3,813.1	100.0	7,175.8	100.0
AD and YSD reported	3,325.9	98.9	3,757.7	98.5	7,083.6	98.7
Missing only AD	22.4	0.7	37.8	1.0	60.2	0.8
Missing only YSD	7.3	0.2	6.5	0.2	13.8	0.2
Missing both	7.0	0.2	11.2	0.3	18.2	0.3

Table C.8 Indicators of data quality

Percent distribution of respondents and siblings by year of birth, GMHS 2007

Year of birth	Respondents	Siblings
Before 1950	0.0	1.9
1950-1954	0.0	2.6
1955-1959	3.5	5.2
1960-1964	8.7	7.3
1965-1969	11.7	10.9
1970-1974	13.1	12.2
1975-1979	15.9	13.9
1980-1984	16.9	14.1
1985 or later	30.3	31.8
Total	100.0	100.0
Lower range	1957	1927
Upper range	1992	2007
Median	1972	1970
Number of cases	10,370	53,289

Table C.9 Sibship size and sex ratio of siblings

Mean sibship size and sex ratio of births, GMHS 2007

Respondent year of birth	Mean sibship size	Sex ratio at birth of siblings
<1959	6.6	105.9
1960-1964	6.6	105.7
1965-1969	6.6	101.6
1970-1974	6.6	109.2
1975-1979	6.3	102.0
1980-1984	6.0	100.7
1985-1989	5.7	105.3
1990-1995	5.4	100.5

Table C.10 Additional data on siblings

Additional indicators of data quality on siblings, GMHS 2007

Indicator	Total
Males	27,125.1
Females	26,188.9
Sex ratio at birth	103.6
Women interviewed	10,370.0
Had siblings	10,030.8
Had no siblings	332.6
Not determined	6.6
Average sibship size	6.1

Table C.11 Imputation of data on living female siblings by age group, GMHS 2007

	Data imputed	
Age of living sibling	No	Yes
0-4	443.7	1.1
5-9	1,069.6	2.1
10-14	1,784.1	2.2
15-19	2,457.9	0.3
20-24	3,168.0	6.1
25-29	3,306.5	1.9
30-34	3,073.8	3.3
35-39	2,672.3	5.6
40-44	2,108.0	5.7
45-49	1,311.2	0.7
50+	1,390.9	1.5

APPENDIX D • Sampling Errors

Table D.1 List of selected variables for sampling errors, GMHS 2007

Variable	Estimate	Base Population
Urban	Proportion	All women
No education	Proportion	All women
Secondary education	Proportion	All women
Never married	Proportion	All women
Currently married	Proportion	All women
Exposed to all three media	Proportion	All women
Exposed to no media	Proportion	All women
Received ANC from skilled provider for most recent birth*	Proportion	Women with at least one live birth or stillbirth in five years before survey
Most recent birth protected against neonatal tetanus	Proportion	Women with at least one live birth or stillbirth in five years before survey
Received DC from skilled provider for most recent birth*	Proportion	Most recent live births or stillbirths in five years before survey
Delivery in a health facility for most recent birth	Proportion	Most recent live births or stillbirths in five years before survey
Received PNC from skilled provider following most recent birth*	Proportion	Women with at least one live birth or stillbirth in five years before survey
One or more complications for most recent birth	Proportion	Women with at least one live birth or stillbirth in five years before survey
Pregnancies that end in abortion	Proportion	Pregnancies ending in the five years before survey
Pregnancies that end in miscarriage	Proportion	Pregnancies ending in the five years before survey
Women with abortion in the five years before the survey	Proportion	Women with pregnancies in five years before survey
Women with miscarriage in the five years before the survey	Proportion	Women with pregnancies in five years before survey
Ever had abortion	Proportion	All women
Ever had miscarriage	Proportion	All women
Ever heard of abortion	Proportion	All women
Believe abortion is legal	Proportion	All women
Currently using any contraceptive method	Proportion	All women
Total fertility rate (3 years)	Rate	All women
Total abortion rate (3 years)	Rate	All women
Perinatal mortality (0-4 years)	Ratio	Number of pregnancies of 7+ months
Neonatal mortality (0-4 years)	Rate	Children exposed to the risk of mortality
Postneonatal mortality (0-4 years)	Rate	Children exposed to the risk of mortality
Infant mortality (0-4 years)	Rate	Children exposed to the risk of mortality
Child mortality (0-4 years)	Rate	Children exposed to the risk of mortality
Under-five mortality (0-4 years)	Rate	Children exposed to the risk of mortality

* Doctor, Nurse/midwife, Auxiliary midwife

Table D.2 Sampling errors for National sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.431	0.014	10370	10370	2.901	0.033	0.402	0.459
No education	0.258	0.012	10370	10370	2.802	0.047	0.233	0.282
Secondary education	0.133	0.007	10370	10370	2.188	0.055	0.119	0.148
Never married	0.306	0.006	10370	10370	1.416	0.021	0.293	0.319
Currently married	0.599	0.007	10370	10370	1.475	0.012	0.585	0.614
Exposed to all three media	0.084	0.006	10370	10370	2.126	0.069	0.072	0.095
Exposed to no media	0.200	0.009	10370	10370	2.310	0.045	0.182	0.218
Received ANC from skilled provider for most recent birth	0.961	0.005	4755	4928	1.873	0.005	0.951	0.972
Most recent birth protected against neonatal tetanus	0.794	0.009	4755	4928	1.485	0.011	0.777	0.811
Received DC from skilled provider for most recent birth	0.552	0.017	4755	4928	2.306	0.030	0.519	0.585
Delivery in a health facility for most recent birth	0.543	0.017	4755	4928	2.335	0.031	0.509	0.577
Received PNC from skilled provider following most recent birth	0.549	0.015	4755	4928	2.082	0.027	0.519	0.579
Pregnancies that end in abortion	0.071	0.004	8041	8322	1.366	0.062	0.062	0.080
Pregnancies that end in miscarriage	0.093	0.005	8041	8322	1.327	0.053	0.083	0.103
Women with abortion in the five years before the survey	0.048	0.003	10370	10370	1.324	0.058	0.042	0.053
Women with miscarriage in the five years before the survey	0.060	0.003	10370	10370	1.215	0.047	0.054	0.066
Ever had abortion	0.145	0.005	10370	10370	1.567	0.037	0.134	0.156
Ever heard of abortion	0.902	0.010	10370	10370	3.557	0.012	0.881	0.923
Believe abortion is legal	0.039	0.002	9381	9351	1.182	0.061	0.034	0.043
Currently using any contraceptive method	0.209	0.006	10370	10370	1.426	0.027	0.198	0.221
Total fertility rate (3 years)	4.586	0.132	na	28843	1.875	0.029	4.323	4.850
Total abortion rate (3 years)	0.410	0.032	na	28843	1.355	0.079	0.346	0.475
Perinatal mortality (5 years)	44.680	3.045	6672	6960	1.166	0.068	38.591	50.769
Neonatal mortality (5 years)	28.715	2.528	6545	6828	1.186	0.088	23.659	33.772
Postneonatal mortality (5 years)	21.086	2.207	6557	6842	1.192	0.105	16.672	25.500
Infant mortality (5 years)	49.802	3.172	6560	6846	1.140	0.064	43.457	56.146
Child mortality (5 years)	33.849	2.471	6629	6922	1.119	0.073	28.906	38.791
Under-five mortality (5 years)	81.964	3.904	6647	6943	1.168	0.048	74.156	89.773

Table D.3 Sampling errors for Urban sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	1.000	0.000	4960	4465	na	0.000	1.000	1.000
No education	0.127	0.010	4960	4465	2.151	0.080	0.107	0.147
Exposed to all three media	0.160	0.011	4960	4465	2.173	0.071	0.137	0.182
Exposed to no media	0.095	0.008	4960	4465	1.861	0.082	0.079	0.110
Received ANC from skilled provider for most recent birth	0.984	0.003	1809	1683	1.082	0.003	0.978	0.991
Most recent birth protected against neonatal tetanus	0.827	0.011	1809	1683	1.244	0.013	0.805	0.850
Received DC from skilled provider for most recent birth	0.860	0.015	1809	1683	1.807	0.017	0.830	0.889
Delivery in a health facility for most recent birth	0.853	0.015	1809	1683	1.820	0.018	0.822	0.883
Received PNC from skilled provider following most recent birth	0.769	0.016	1809	1683	1.647	0.021	0.737	0.802
Pregnancies that end in abortion	0.125	0.008	3171	2937	1.201	0.064	0.109	0.141
Pregnancies that end in miscarriage	0.120	0.008	3171	2937	1.227	0.068	0.103	0.136
Women with abortion in the five years before the survey	0.067	0.004	4960	4465	1.178	0.063	0.058	0.075
Women with miscarriage in the five years before the survey	0.062	0.004	4960	4465	1.185	0.065	0.054	0.070
Ever had abortion	0.199	0.008	4960	4465	1.333	0.038	0.184	0.214
Ever heard of abortion	0.959	0.007	4960	4465	2.335	0.007	0.946	0.972
Believe abortion is legal	0.057	0.004	4777	4281	1.241	0.073	0.049	0.066
Currently using any contraceptive method	0.240	0.008	4960	4465	1.284	0.032	0.225	0.256
Total fertility rate (3 years)	3.402	0.125	na	12505	1.404	0.037	3.151	3.653
Total abortion rate (3 years)	0.570	0.050	na	12505	1.206	0.088	0.470	0.670
Perinatal mortality (5 years)	54.331	5.720	2395	2222	1.199	0.105	42.892	65.770
Neonatal mortality (10 years)	29.619	3.091	4399	4055	1.161	0.104	23.437	35.801
Postneonatal mortality (10 years)	18.927	2.429	4402	4057	1.149	0.128	14.068	23.786
Infant mortality (10 years)	48.546	3.988	4404	4059	1.191	0.082	40.570	56.522
Child mortality (10 years)	28.101	3.383	4416	4072	1.328	0.120	21.335	34.867
Under-five mortality (10 years)	75.283	4.835	4423	4079	1.184	0.064	65.613	84.953

Table D.4 Sampling errors for Rural sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
Urban	0.000	0.000	5410	5905	na	na	0.000	0.000
No education	0.356	0.017	5410	5905	2.669	0.049	0.321	0.391
Exposed to all three media	0.027	0.003	5410	5905	1.416	0.116	0.020	0.033
Exposed to no media	0.280	0.013	5410	5905	2.187	0.048	0.253	0.307
Received ANC from skilled provider for most recent birth	0.949	0.008	2946	3245	1.921	0.008	0.934	0.965
Most recent birth protected against neonatal tetanus	0.777	0.012	2946	3245	1.531	0.015	0.753	0.800
Received DC from skilled provider for most recent birth	0.392	0.019	2946	3245	2.115	0.048	0.354	0.431
Delivery in a health facility for most recent birth	0.382	0.019	2946	3245	2.152	0.050	0.344	0.421
Received PNC from skilled provider following most recent birth	0.434	0.018	2946	3245	1.936	0.041	0.399	0.470
Pregnancies that end in abortion	0.042	0.005	4870	5385	1.515	0.116	0.032	0.052
Pregnancies that end in miscarriage	0.078	0.006	4870	5385	1.314	0.075	0.066	0.090
Women with abortion in the five years before the survey	0.033	0.004	5410	5905	1.489	0.109	0.026	0.041
Women with miscarriage in the five years before the survey	0.059	0.004	5410	5905	1.221	0.067	0.051	0.066
Ever had abortion	0.104	0.007	5410	5905	1.695	0.068	0.090	0.118
Ever heard of abortion	0.859	0.017	5410	5905	3.560	0.020	0.825	0.892
Believe abortion is legal	0.023	0.002	4604	5070	1.076	0.103	0.018	0.028
Currently using any contraceptive method	0.186	0.008	5410	5905	1.507	0.043	0.170	0.202
Total fertility rate (3 years)	5.490	0.178	na	16338	1.724	0.032	5.134	5.845
Total abortion rate (3 years)	0.287	0.040	na	16338	1.486	0.141	0.206	0.367
Perinatal mortality (5 years)	40.155	3.588	4277	4738	1.136	0.089	32.978	47.331
Neonatal mortality (10 years)	32.670	2.433	8169	9023	1.142	0.074	27.803	37.537
Postneonatal mortality (10 years)	29.277	2.894	8179	9037	1.385	0.099	23.489	35.065
Infant mortality (10 years)	61.947	3.641	8180	9038	1.229	0.059	54.665	69.229
Child mortality (10 years)	40.681	2.520	8230	9098	1.037	0.062	35.642	45.721
Under-five mortality (10 years)	100.108	4.165	8242	9114	1.153	0.042	91.777	108.439

Table D.5 Sampling errors for Western region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.352	0.053	835	937	3.202	0.150	0.246	0.458
Currently married	0.571	0.018	835	937	1.041	0.031	0.535	0.607
Exposed to all three media	0.118	0.024	835	937	2.159	0.204	0.070	0.166
Exposed to no media	0.063	0.014	835	937	1.649	0.220	0.035	0.091
Received ANC from skilled provider for most recent birth	0.963	0.015	361	400	1.466	0.015	0.934	0.992
Most recent birth protected against neonatal tetanus	0.835	0.023	361	400	1.162	0.027	0.790	0.881
Received DC from skilled provider for most recent birth	0.537	0.048	361	400	1.819	0.089	0.441	0.632
Delivery in a health facility for most recent birth	0.532	0.043	361	400	1.620	0.080	0.447	0.617
Received PNC from skilled provider following most recent birth	0.506	0.041	361	400	1.560	0.081	0.424	0.588
Pregnancies that end in abortion	0.104	0.018	629	710	1.189	0.171	0.068	0.139
Pregnancies that end in miscarriage	0.117	0.020	629	710	1.371	0.169	0.077	0.157
Women with abortion in the five years before the survey	0.061	0.009	835	937	1.071	0.146	0.043	0.078
Women with miscarriage in the five years before the survey	0.075	0.013	835	937	1.429	0.174	0.049	0.101
Ever had abortion	0.136	0.017	835	937	1.410	0.123	0.102	0.169
Ever heard of abortion	0.987	0.005	835	937	1.242	0.005	0.977	0.997
Believe abortion is legal	0.033	0.009	820	924	1.372	0.258	0.016	0.051
Currently using any contraceptive method	0.310	0.017	835	937	1.068	0.055	0.276	0.344
Total fertility rate (3 years)	4.183	0.335	na	2585	1.365	0.080	3.512	4.854
Perinatal mortality (5 years)	36.486	9.050	497	553	1.074	0.248	18.385	54.586
Neonatal mortality (10 years)	30.563	6.389	973	1106	1.091	0.209	17.784	43.341
Postneonatal mortality (10 years)	32.620	8.924	974	1107	1.459	0.274	14.772	50.468
Infant mortality (10 years)	63.182	11.627	975	1108	1.363	0.184	39.928	86.437
Child mortality (10 years)	47.683	6.550	983	1121	0.823	0.137	34.584	60.782
Under-five mortality (10 years)	107.853	11.893	986	1123	1.159	0.110	84.067	131.639

Table D.6 Sampling errors for Central region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.414	0.045	891	1048	2.696	0.107	0.325	0.503
Currently married	0.579	0.028	891	1048	1.676	0.048	0.524	0.635
Exposed to all three media	0.080	0.023	891	1048	2.524	0.287	0.034	0.126
Exposed to no media	0.135	0.017	891	1048	1.520	0.129	0.101	0.170
Received ANC from skilled provider for most recent birth	0.977	0.008	411	479	1.123	0.009	0.960	0.993
Most recent birth protected against neonatal tetanus	0.849	0.022	411	479	1.267	0.026	0.805	0.894
Received DC from skilled provider for most recent birth	0.638	0.045	411	479	1.880	0.070	0.549	0.728
Delivery in a health facility for most recent birth	0.585	0.042	411	479	1.743	0.073	0.500	0.670
Received PNC from skilled provider following most recent birth	0.642	0.042	411	479	1.763	0.065	0.559	0.726
Pregnancies that end in abortion	0.049	0.010	696	823	1.008	0.198	0.030	0.068
Pregnancies that end in miscarriage	0.121	0.022	696	823	1.468	0.180	0.077	0.165
Women with abortion in the five years before the survey	0.032	0.006	891	1048	0.958	0.178	0.020	0.043
Women with miscarriage in the five years before the survey	0.072	0.010	891	1048	1.107	0.133	0.053	0.092
Ever had abortion	0.106	0.011	891	1048	1.085	0.106	0.083	0.128
Ever heard of abortion	0.988	0.004	891	1048	0.953	0.004	0.980	0.995
Believe abortion is legal	0.026	0.006	879	1035	1.030	0.212	0.015	0.037
Currently using any contraceptive method	0.182	0.014	891	1048	1.096	0.078	0.154	0.210
Total fertility rate (3 years)	4.503	0.413	na	2890	1.692	0.092	3.677	5.329
Perinatal mortality (5 years)	68.220	13.673	581	683	1.144	0.200	40.874	95.565
Neonatal mortality (10 years)	36.583	7.344	1092	1287	1.129	0.201	21.896	51.270
Postneonatal mortality (10 years)	24.569	4.160	1092	1286	0.851	0.169	16.249	32.890
Infant mortality (10 years)	61.152	7.197	1093	1288	0.935	0.118	46.759	75.546
Child mortality (10 years)	34.760	6.398	1101	1297	1.042	0.184	21.964	47.557
Under-five mortality (10 years)	93.787	10.118	1103	1301	1.072	0.108	73.551	114.022

Table D.7 Sampling errors for Greater Accra region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.832	0.025	1850	1402	2.879	0.030	0.782	0.882
Currently married	0.485	0.015	1850	1402	1.248	0.030	0.456	0.514
Exposed to all three media	0.159	0.014	1850	1402	1.705	0.091	0.130	0.188
Exposed to no media	0.093	0.013	1850	1402	1.894	0.137	0.068	0.119
Received ANC from skilled provider for most recent birth	0.958	0.013	601	470	1.547	0.013	0.933	0.984
Most recent birth protected against neonatal tetanus	0.741	0.031	601	470	1.736	0.042	0.679	0.803
Received DC from skilled provider for most recent birth	0.793	0.026	601	470	1.598	0.033	0.740	0.846
Delivery in a health facility for most recent birth	0.790	0.029	601	470	1.769	0.037	0.731	0.849
Received PNC from skilled provider following most recent birth	0.563	0.031	601	470	1.537	0.055	0.501	0.625
Pregnancies that end in abortion	0.142	0.014	1073	828	1.188	0.100	0.113	0.170
Pregnancies that end in miscarriage	0.111	0.013	1073	828	1.105	0.116	0.085	0.136
Women with abortion in the five years before the survey	0.068	0.007	1850	1402	1.114	0.096	0.055	0.082
Women with miscarriage in the five years before the survey	0.048	0.005	1850	1402	1.020	0.105	0.038	0.058
Ever had abortion	0.210	0.014	1850	1402	1.468	0.066	0.182	0.238
Ever heard of abortion	0.977	0.005	1850	1402	1.501	0.005	0.967	0.988
Believe abortion is legal	0.071	0.009	1815	1370	1.436	0.122	0.054	0.089
Currently using any contraceptive method	0.239	0.012	1850	1402	1.208	0.050	0.215	0.263
Total fertility rate (3 years)	2.953	0.201	na	3982	1.459	0.068	2.550	3.356
Perinatal mortality (5 years)	39.488	7.561	791	619	1.080	0.191	24.366	54.610
Neonatal mortality (10 years)	38.020	6.562	1424	1137	1.240	0.173	24.896	51.144
Postneonatal mortality (10 years)	14.573	4.093	1426	1138	1.236	0.281	6.387	22.759
Infant mortality (10 years)	52.593	7.189	1426	1138	1.176	0.137	38.216	66.970
Child mortality (10 years)	16.530	3.984	1427	1139	1.203	0.241	8.563	24.498
Under-five mortality (10 years)	68.254	8.626	1429	1140	1.311	0.126	51.002	85.507

Table D.8 Sampling errors for Volta region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.325	0.077	836	976	4.767	0.238	0.171	0.480
Currently married	0.625	0.017	836	976	1.018	0.027	0.591	0.659
Exposed to all three media	0.064	0.021	836	976	2.541	0.337	0.021	0.107
Exposed to no media	0.245	0.031	836	976	2.060	0.125	0.183	0.306
Received ANC from skilled provider for most recent birth	0.964	0.010	382	451	1.034	0.010	0.944	0.984
Most recent birth protected against neonatal tetanus	0.785	0.027	382	451	1.262	0.034	0.731	0.838
Received DC from skilled provider for most recent birth	0.413	0.080	382	451	3.178	0.194	0.253	0.573
Delivery in a health facility for most recent birth	0.412	0.081	382	451	3.212	0.197	0.250	0.574
Received PNC from skilled provider following most recent birth	0.385	0.071	382	451	2.852	0.185	0.243	0.528
Pregnancies that end in abortion	0.054	0.015	648	764	1.568	0.284	0.023	0.085
Pregnancies that end in miscarriage	0.112	0.018	648	764	1.335	0.160	0.077	0.148
Women with abortion in the five years before the survey	0.037	0.009	836	976	1.442	0.254	0.018	0.056
Women with miscarriage in the five years before the survey	0.075	0.011	836	976	1.185	0.144	0.053	0.096
Ever had abortion	0.123	0.022	836	976	1.976	0.183	0.078	0.168
Ever heard of abortion	0.977	0.008	836	976	1.464	0.008	0.962	0.992
Believe abortion is legal	0.011	0.004	821	954	1.179	0.389	0.002	0.020
Currently using any contraceptive method	0.130	0.012	836	976	1.040	0.093	0.106	0.155
Total fertility rate (3 years)	4.795	0.350	na	2661	1.401	0.073	4.095	5.494
Perinatal mortality (5 years)	37.703	7.716	544	636	0.912	0.205	22.272	53.134
Neonatal mortality (10 years)	21.528	4.920	1050	1209	1.015	0.229	11.689	31.367
Postneonatal mortality (10 years)	17.617	5.753	1051	1210	1.050	0.327	6.112	29.122
Infant mortality (10 years)	39.145	8.701	1051	1210	1.186	0.222	21.743	56.547
Child mortality (10 years)	34.166	8.045	1057	1219	1.287	0.235	18.077	50.256
Under-five mortality (10 years)	71.973	8.299	1058	1220	0.928	0.115	55.376	88.571

Table D.9 Sampling errors for Eastern region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.410	0.029	1565	1267	2.329	0.071	0.352	0.468
Currently married	0.566	0.016	1565	1267	1.297	0.029	0.533	0.598
Exposed to all three media	0.086	0.011	1565	1267	1.484	0.122	0.065	0.107
Exposed to no media	0.180	0.016	1565	1267	1.618	0.087	0.148	0.211
Received ANC from skilled provider for most recent birth	0.962	0.008	692	567	1.065	0.008	0.947	0.978
Most recent birth protected against neonatal tetanus	0.782	0.021	692	567	1.355	0.027	0.739	0.825
Received DC from skilled provider for most recent birth	0.577	0.030	692	567	1.595	0.052	0.517	0.637
Delivery in a health facility for most recent birth	0.583	0.031	692	567	1.639	0.053	0.522	0.645
Received PNC from skilled provider following most recent birth	0.574	0.030	692	567	1.611	0.053	0.513	0.635
Pregnancies that end in abortion	0.089	0.011	1174	964	1.085	0.119	0.068	0.110
Pregnancies that end in miscarriage	0.100	0.011	1174	964	1.029	0.110	0.078	0.122
Women with abortion in the five years before the survey	0.056	0.006	1565	1267	1.069	0.111	0.044	0.068
Women with miscarriage in the five years before the survey	0.060	0.006	1565	1267	0.928	0.093	0.049	0.071
Ever had abortion	0.196	0.012	1565	1267	1.176	0.060	0.173	0.220
Ever heard of abortion	0.952	0.007	1565	1267	1.293	0.007	0.938	0.966
Believe abortion is legal	0.041	0.007	1493	1207	1.286	0.162	0.028	0.054
Currently using any contraceptive method	0.243	0.016	1565	1267	1.488	0.066	0.211	0.275
Total fertility rate (3 years)	4.448	0.224	na	3510	1.310	0.050	3.999	4.896
Perinatal mortality (5 years)	45.497	8.956	962	783	1.299	0.197	27.584	63.410
Neonatal mortality (10 years)	27.387	5.053	1763	1425	1.155	0.185	17.281	37.494
Postneonatal mortality (10 years)	16.717	3.158	1765	1426	0.935	0.189	10.400	23.034
Infant mortality (10 years)	44.104	6.026	1765	1426	1.070	0.137	32.051	56.157
Child mortality (10 years)	34.936	4.863	1767	1428	1.053	0.139	25.210	44.662
Under-five mortality (10 years)	77.499	7.430	1769	1429	1.075	0.096	62.640	92.358

Table D.10 Sampling errors for Ashanti region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.449	0.028	1723	1888	2.349	0.063	0.393	0.506
Currently married	0.553	0.016	1723	1888	1.322	0.029	0.521	0.585
Exposed to all three media	0.068	0.008	1723	1888	1.376	0.123	0.051	0.085
Exposed to no media	0.128	0.012	1723	1888	1.433	0.090	0.105	0.151
Received ANC from skilled provider for most recent birth	0.975	0.007	807	922	1.219	0.007	0.961	0.988
Most recent birth protected against neonatal tetanus	0.855	0.016	807	922	1.287	0.019	0.823	0.887
Received DC from skilled provider for most recent birth	0.687	0.035	807	922	2.121	0.050	0.617	0.756
Delivery in a health facility for most recent birth	0.677	0.035	807	922	2.125	0.052	0.607	0.747
Received PNC from skilled provider following most recent birth	0.710	0.029	807	922	1.818	0.041	0.652	0.769
Pregnancies that end in abortion	0.097	0.013	1457	1646	1.486	0.129	0.072	0.122
Pregnancies that end in miscarriage	0.105	0.011	1457	1646	1.207	0.107	0.083	0.128
Women with abortion in the five years before the survey	0.073	0.010	1723	1888	1.547	0.133	0.053	0.092
Women with miscarriage in the five years before the survey	0.074	0.007	1723	1888	1.137	0.097	0.060	0.089
Ever had abortion	0.208	0.015	1723	1888	1.506	0.071	0.179	0.238
Ever heard of abortion	0.987	0.004	1723	1888	1.318	0.004	0.980	0.994
Believe abortion is legal	0.047	0.005	1697	1863	1.027	0.113	0.036	0.057
Currently using any contraceptive method	0.248	0.014	1723	1888	1.364	0.057	0.220	0.277
Total fertility rate (3 years)	4.554	0.271	na	5198	1.533	0.060	4.012	5.096
Perinatal mortality (5 years)	37.375	6.128	1136	1313	1.119	0.164	25.119	49.630
Neonatal mortality (10 years)	30.640	4.840	2104	2409	1.236	0.158	20.960	40.319
Postneonatal mortality (10 years)	27.401	4.484	2107	2413	1.278	0.164	18.433	36.370
Infant mortality (10 years)	58.041	7.009	2107	2413	1.308	0.121	44.024	72.058
Child mortality (10 years)	28.153	4.248	2117	2424	1.143	0.151	19.656	36.649
Under-five mortality (10 years)	84.560	7.826	2120	2429	1.236	0.093	68.908	100.212

Table D.11 Sampling errors for Brong Ahafo region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.363	0.031	911	1073	1.944	0.085	0.301	0.425
Currently married	0.638	0.021	911	1073	1.310	0.033	0.596	0.680
Exposed to all three media	0.051	0.011	911	1073	1.476	0.211	0.029	0.073
Exposed to no media	0.205	0.019	911	1073	1.447	0.094	0.167	0.244
Received ANC from skilled provider for most recent birth	0.977	0.009	468	564	1.252	0.009	0.959	0.994
Most recent birth protected against neonatal tetanus	0.808	0.022	468	564	1.200	0.027	0.764	0.852
Received DC from skilled provider for most recent birth	0.569	0.055	468	564	2.405	0.097	0.459	0.679
Delivery in a health facility for most recent birth	0.567	0.054	468	564	2.366	0.096	0.458	0.675
Received PNC from skilled provider following most recent birth	0.634	0.046	468	564	2.070	0.073	0.541	0.726
Pregnancies that end in abortion	0.072	0.013	763	911	1.253	0.180	0.046	0.098
Pregnancies that end in miscarriage	0.075	0.010	763	911	0.880	0.127	0.056	0.094
Women with abortion in the five years before the survey	0.052	0.009	911	1073	1.167	0.165	0.035	0.069
Women with miscarriage in the five years before the survey	0.051	0.006	911	1073	0.865	0.123	0.039	0.064
Ever had abortion	0.163	0.018	911	1073	1.462	0.110	0.128	0.199
Ever heard of abortion	0.978	0.006	911	1073	1.303	0.007	0.965	0.990
Believe abortion is legal	0.023	0.005	890	1049	1.054	0.231	0.012	0.033
Currently using any contraceptive method	0.258	0.021	911	1073	1.469	0.083	0.215	0.300
Total fertility rate (3 years)	4.835	0.372	na	2976	1.627	0.077	4.091	5.580
Perinatal mortality (5 years)	52.213	8.548	642	777	0.900	0.164	35.116	69.310
Neonatal mortality (10 years)	32.680	6.422	1236	1482	1.242	0.197	19.836	45.525
Postneonatal mortality (10 years)	36.783	8.146	1238	1485	1.490	0.221	20.490	53.076
Infant mortality (10 years)	69.464	9.516	1238	1485	1.289	0.137	50.431	88.496
Child mortality (10 years)	35.995	6.581	1244	1492	1.123	0.183	22.833	49.156
Under-five mortality (10 years)	102.958	12.243	1246	1495	1.348	0.119	78.471	127.444

Table D.12 Sampling errors for Northern region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.298	0.043	818	1090	2.719	0.146	0.211	0.385
Currently married	0.752	0.026	818	1090	1.689	0.034	0.701	0.803
Exposed to all three media	0.067	0.030	818	1090	3.417	0.446	0.007	0.127
Exposed to no media	0.467	0.046	818	1090	2.615	0.098	0.376	0.558
Received ANC from skilled provider for most recent birth	0.916	0.031	525	699	2.594	0.034	0.853	0.979
Most recent birth protected against neonatal tetanus	0.698	0.031	525	699	1.552	0.045	0.636	0.760
Received DC from skilled provider for most recent birth	0.273	0.039	525	699	2.014	0.144	0.195	0.351
Delivery in a health facility for most recent birth	0.263	0.043	525	699	2.247	0.165	0.176	0.349
Received PNC from skilled provider following most recent birth	0.261	0.033	525	699	1.697	0.125	0.196	0.326
Pregnancies that end in abortion	0.007	0.004	863	1128	1.463	0.591	-0.001	0.016
Pregnancies that end in miscarriage	0.041	0.010	863	1128	1.271	0.238	0.021	0.060
Women with abortion in the five years before the survey	0.007	0.004	818	1090	1.421	0.576	-0.001	0.016
Women with miscarriage in the five years before the survey	0.036	0.008	818	1090	1.270	0.231	0.019	0.052
Ever had abortion	0.027	0.010	818	1090	1.791	0.377	0.007	0.047
Ever heard of abortion	0.518	0.067	818	1090	3.849	0.130	0.384	0.653
Believe abortion is legal	0.057	0.012	438	565	1.089	0.212	0.033	0.081
Currently using any contraceptive method	0.096	0.015	818	1090	1.454	0.156	0.066	0.126
Total fertility rate (3 years)	6.846	0.562	na	3094	1.804	0.082	5.721	7.971
Perinatal mortality (5 years)	54.249	10.268	817	1077	1.241	0.189	33.714	74.785
Neonatal mortality (10 years)	36.994	5.862	1500	1968	1.131	0.158	25.270	48.719
Postneonatal mortality (10 years)	34.672	8.901	1503	1973	1.490	0.257	16.870	52.474
Infant mortality (10 years)	71.666	9.005	1503	1973	1.190	0.126	53.657	89.676
Child mortality (10 years)	55.708	6.288	1515	1987	0.961	0.113	43.133	68.283
Under-five mortality (10 years)	123.382	8.198	1518	1993	0.909	0.066	106.987	139.778

Table D.13 Sampling errors for Upper East region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.223	0.024	526	418	1.338	0.109	0.174	0.272
No education	0.685	0.042	526	418	2.081	0.062	0.601	0.769
Exposed to all three media	0.036	0.013	526	418	1.600	0.360	0.010	0.062
Exposed to no media	0.453	0.024	526	418	1.108	0.053	0.405	0.501
Received ANC from skilled provider for most recent birth	0.983	0.007	281	225	0.904	0.007	0.969	0.997
Most recent birth protected against neonatal tetanus	0.777	0.024	281	225	0.982	0.031	0.728	0.826
Received DC from skilled provider for most recent birth	0.471	0.059	281	225	1.986	0.126	0.353	0.590
Delivery in a health facility for most recent birth	0.466	0.059	281	225	1.982	0.127	0.348	0.585
Received PNC from skilled provider following most recent birth	0.668	0.043	281	225	1.528	0.064	0.582	0.754
Pregnancies that end in abortion	0.003	0.003	385	313	1.158	1.022	-0.003	0.010
Pregnancies that end in miscarriage	0.030	0.009	385	313	0.964	0.296	0.012	0.047
Women with abortion in the five years before the survey	0.002	0.002	526	418	1.138	1.004	-0.002	0.007
Women with miscarriage in the five years before the survey	0.020	0.006	526	418	1.033	0.313	0.008	0.033
Ever had abortion	0.004	0.003	526	418	1.071	0.739	-0.002	0.010
Ever heard of abortion	0.543	0.039	526	418	1.793	0.072	0.465	0.621
Believe abortion is legal	0.018	0.009	283	227	1.200	0.530	-0.001	0.037
Currently using any contraceptive method	0.097	0.020	526	418	1.547	0.206	0.057	0.137
Total fertility rate (3 years)	4.290	0.303	na	1189	1.085	0.071	3.684	4.896
Perinatal mortality (5 years)	30.428	11.887	373	303	1.233	0.391	6.655	54.201
Neonatal mortality (10 years)	26.746	7.017	765	617	1.086	0.262	12.713	40.780
Postneonatal mortality (10 years)	19.005	5.563	764	616	1.148	0.293	7.878	30.132
Infant mortality (10 years)	45.751	10.522	765	617	1.278	0.230	24.707	66.795
Child mortality (10 years)	34.513	7.046	770	621	1.146	0.204	20.422	48.605
Under-five mortality (10 years)	78.685	11.400	771	622	0.960	0.145	55.885	101.486

Table D.14 Sampling errors for Upper West region sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.152	0.026	415	271	1.463	0.170	0.101	0.204
No education	0.599	0.058	415	271	2.391	0.096	0.484	0.714
Exposed to all three media	0.038	0.008	415	271	0.823	0.202	0.023	0.054
Exposed to no media	0.435	0.024	415	271	0.978	0.055	0.387	0.482
Received ANC from skilled provider for most recent birth	0.943	0.022	227	152	1.439	0.023	0.899	0.988
Most recent birth protected against neonatal tetanus	0.791	0.031	227	152	1.133	0.039	0.729	0.852
Received DC from skilled provider for most recent birth	0.422	0.084	227	152	2.557	0.199	0.254	0.590
Delivery in a health facility for most recent birth	0.412	0.088	227	152	2.699	0.215	0.235	0.588
Received PNC from skilled provider following most recent birth	0.564	0.077	227	152	2.339	0.137	0.410	0.718
Pregnancies that end in abortion	0.000	0.000	353	235	na	na	0.000	0.000
Pregnancies that end in miscarriage	0.079	0.016	353	235	1.089	0.209	0.046	0.112
Women with abortion in the five years before the survey	0.000	0.000	415	271	na	na	0.000	0.000
Women with miscarriage in the five years before the survey	0.064	0.012	415	271	1.032	0.194	0.039	0.088
Ever had abortion	0.004	0.003	415	271	0.969	0.709	-0.002	0.011
Ever heard of abortion	0.579	0.022	415	271	0.904	0.038	0.535	0.623
Believe abortion is legal	0.002	0.002	245	157	0.763	1.024	-0.002	0.007
Currently using any contraceptive method	0.110	0.022	415	271	1.439	0.201	0.066	0.154
Total fertility rate (3 years)	4.977	0.573	na	759	1.732	0.115	3.830	6.124
Perinatal mortality (5 years)	13.378	8.682	329	216	1.394	0.649	-3.987	30.742
Neonatal mortality (10 years)	32.299	7.395	661	439	0.981	0.229	17.510	47.089
Postneonatal mortality (10 years)	25.471	5.920	661	439	0.981	0.232	13.631	37.311
Infant mortality (10 years)	57.770	9.975	661	439	1.016	0.173	37.821	77.720
Child mortality (10 years)	50.070	14.121	665	441	1.287	0.282	21.827	78.312
Under-five mortality (10 years)	104.947	16.525	665	441	1.168	0.157	71.898	137.997

Table D.15 Sampling errors for R3M regions sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)			R-2SE	R+2SE
Urban	0.556	0.017	5138	4557	2.489	0.031	0.522	0.591
No education	0.128	0.010	5138	4557	2.066	0.075	0.109	0.147
Exposed to all three media	0.101	0.006	5138	4557	1.522	0.063	0.088	0.114
Exposed to no media	0.132	0.008	5138	4557	1.611	0.058	0.116	0.147
Received ANC from skilled provider for most recent birth	0.967	0.005	2100	1959	1.270	0.005	0.957	0.977
Most recent birth protected against neonatal tetanus	0.807	0.013	2100	1959	1.462	0.016	0.782	0.832
Received DC from skilled provider for most recent birth	0.680	0.020	2100	1959	1.946	0.029	0.641	0.720
Delivery in a health facility for most recent birth	0.677	0.020	2100	1959	1.987	0.030	0.637	0.718
Received PNC from skilled provider following most recent birth	0.636	0.018	2100	1959	1.739	0.029	0.599	0.672
Pregnancies that end in abortion	0.106	0.007	3704	3438	1.339	0.071	0.091	0.121
Pregnancies that end in miscarriage	0.105	0.007	3704	3438	1.171	0.066	0.091	0.119
Women with abortion in the five years before the survey	0.067	0.005	5138	4557	1.378	0.072	0.057	0.076
Women with miscarriage in the five years before the survey	0.062	0.004	5138	4557	1.102	0.060	0.055	0.070
Ever had abortion	0.205	0.008	5138	4557	1.445	0.040	0.189	0.222
Ever heard of abortion	0.974	0.003	5138	4557	1.343	0.003	0.968	0.980
Believe abortion is legal	0.053	0.004	5005	4440	1.218	0.073	0.045	0.060
Currently using any contraceptive method	0.244	0.008	5138	4557	1.378	0.034	0.228	0.261
Total fertility rate (3 years)	4.021	0.153	na	12689	1.609	0.038	3.716	4.327
Total abortion rate (3 years)	0.574	0.054	na	12689	1.310	0.093	0.467	0.682
Perinatal mortality (5 years)	40.199	4.317	2889	2715	1.197	0.107	31.565	48.833
Neonatal mortality (10 years)	31.392	3.104	5291	4970	1.231	0.099	25.184	37.600
Postneonatal mortality (10 years)	21.395	2.565	5298	4977	1.273	0.120	16.265	26.525
Infant mortality (10 years)	52.787	4.136	5298	4977	1.270	0.078	44.514	61.060
Child mortality (10 years)	27.439	2.665	5311	4991	1.165	0.097	22.110	32.768
Under-five mortality (10 years)	78.777	4.755	5318	4998	1.243	0.060	69.267	88.288

Table D.16 Sampling errors for Non-R3M regions sample, GMHS 2007

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
Urban	0.332	0.021	5232	5813	3.156	0.062	0.291	0.373
No education	0.359	0.019	5232	5813	2.910	0.054	0.321	0.398
Exposed to all three media	0.071	0.009	5232	5813	2.582	0.130	0.052	0.089
Exposed to no media	0.254	0.014	5232	5813	2.403	0.057	0.225	0.283
Received ANC from skilled provider for most recent birth	0.957	0.008	2655	2969	2.060	0.008	0.941	0.973
Most recent birth protected against neonatal tetanus	0.786	0.012	2655	2969	1.468	0.015	0.762	0.809
Received DC from skilled provider for most recent birth	0.468	0.023	2655	2969	2.394	0.050	0.421	0.514
Delivery in a health facility for most recent birth	0.454	0.023	2655	2969	2.424	0.052	0.407	0.501
Received PNC from skilled provider following most recent birth	0.491	0.021	2655	2969	2.152	0.042	0.450	0.533
Pregnancies that end in abortion	0.047	0.005	4337	4884	1.327	0.105	0.037	0.057
Pregnancies that end in miscarriage	0.084	0.007	4337	4884	1.419	0.080	0.071	0.098
Women with abortion in the five years before the survey	0.033	0.003	5232	5813	1.227	0.092	0.027	0.039
Women with miscarriage in the five years before the survey	0.058	0.004	5232	5813	1.279	0.071	0.050	0.066
Ever had abortion	0.097	0.007	5232	5813	1.633	0.069	0.084	0.111
Ever heard of abortion	0.845	0.018	5232	5813	3.555	0.021	0.809	0.880
Believe abortion is legal	0.026	0.003	4376	4911	1.174	0.108	0.021	0.032
Currently using any contraceptive method	0.182	0.008	5232	5813	1.441	0.042	0.167	0.198
Total fertility rate (3 years)	5.026	0.192	na	16154	1.891	0.038	4.642	5.411
Total abortion rate (3 years)	0.279	0.037	na	16154	1.343	0.131	0.206	0.353
Perinatal mortality (5 years)	47.545	4.176	3783	4245	1.129	0.088	39.192	55.898
Neonatal mortality (10 years)	31.929	2.476	7277	8108	1.116	0.078	26.978	36.880
Postneonatal mortality (10 years)	28.939	3.112	7283	8117	1.396	0.108	22.715	35.162
Infant mortality (10 years)	60.868	3.817	7286	8120	1.235	0.063	53.233	68.503
Child mortality (10 years)	42.384	2.743	7335	8179	1.040	0.065	36.898	47.870
Under-five mortality (10 years)	100.672	4.372	7347	8194	1.141	0.043	91.928	109.415

APPENDIX E • Personnel Involved in GMHS 2007

Ghana Statistical Service (GSS) Secretariat
Dr. Grace Bediako
Prof. N.N.N. Nsowah Nuamah
Mrs. Edith Mote
Francis Yankey
Peter Peprah
Martin Poku
Faustina Ainguah
Late George Mettle
Abena Osei Akoto
Emma Sepah
William Antiaye Addy
Kingsley Fobi Boateng
Agnes Amankwah
Emmanuel Larbi
Prosper Tagoe
Priscilla Annan

Ghana Health Service (GHS) Physicians
Dr. Mrs. Henrietta Odoi-Agyarko
Dr. Patrick K. Aboagye
Dr. John E. Williams

Macro International Inc.
Dr. Pav Govindasamy
Dr. Alfredo Aliaga
Datla Vishnu Raju
Dr. John Anarfi
Dr. Yusuf Hemed
Svetlana Negroustoueva
Dr. Gulnara Semenov
Joy Fishel
Zhuzhi Moore
Annie Cross
Dr. Sidney Moore
Christopher Gramer
Kaye Mitchell

Guttmacher Institute
Dr. Akin Bankole

Harvard School of Public Health
Dr. Kenneth Hill
Livia Montana
Dr. Michael Levin

Field Staff

Ghana Statistical Service

Supervisors

Haruna Mustapha
John Saka
Emmanuel Baidoo
Bismark Owusu Adjei
Sebastian K. Atsrim
Isaac Dadson
Richard Atsu Kuadamah
William Ofosu
Richard Sackey
Akwasi opoku Agyeman
Ansah Moses
Kpentey Ernest
Opare Mintah G
J.B.K. Amankra
Amatus Nobabumah

Editors

Judith Attipoe
Helen Mensahfio
Priscilla Opoku
Georgina Sika
Beatrice Saforo
Margaret Richardson
Lucy Buckman
Mabel Appiah Danso
Roselove Darko
Stephanie Akorfa Dartey

Interviewers

Serwaa Addo
Linda Tano Donkor
Leila Ibrahim
Claudia Acheampong
Maureen Mamle Azu
Eugenia Dzabaki Oklah
Afifatu Issifu
Laami Yussif
Sarah Adomah
Eunice Osaa Sekyere
Sandra Arthur
Ruth Grant
Rhodaline Obodai
Emma Wilson
Delphina Ocquaye
Paschalina Ampofo
Mavis Barfour Kyei
Henrietta Wilson
Mary Kwarteng
Lydia E. Laye
Deborah Dodoo
Cynthia Ayensu
Sarah Amerloku
Francisca Asamoah
Abraham Monica
Harmony Bubune Sepah
Akabutu Solace
Justina Amankwah
Abigail A. Boateng
Josepine Otoo
Paulina Amo Ampaw
Hetsa Jennifer Agbenyegah
Abigail Barkey Teye
Juliet Ofosua Acquah
Gadri Augustina

Quality Control Staff

Gifty Obeng
Damba Swabirat
Regina Clottey
Cynthia Addo
Patience Korang
Umuhera
Larrabella Sacker

Stand-by Supervisors

Edmund Essah Ameyaw
Adom Fritz
John Botchway
Alex O. Anyetei

Ghana Health Service

Vesta Aryordyiah
Innocentia Anthonia
Lucy Bonuedie
Amina Yakubu
Gifty M. Nyarko
Kate Jectey
Nusrat Issah
Elizabeth A. Issaka
Fati Lansah
Gladys Oware
Margaret Sampson
Esther A. M. Aryidoho
Grace Oppong
Cecilia Abboah
Lydia E. Tawiah
Margaret Azure
Irene Korkoi Aboh
Edith Offei
Vivian Addo-Cobbinah
Priscilla Ama Amoah
Evelyn A. Naaso
Beatrice Nyamekye
Asmawu Yaro
Fati Grant
Esther Amankwah
Rahanatu Rufai

APPENDIX F • Questionnaires

22 March 2007

GHANA MATERNAL MORTALITY SURVEY 2008
HOUSEHOLD QUESTIONNAIRE (PHASE I)

GHANA STATISTICAL SERVICE

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . | | | |

STRUCTURE NUMBER . . . . . | | | |

HOUSEHOLD NUMBER . . . . . | | | |

REGION . . . . . | | |

DISTRICT . . . . . | | |

LARGE CITY/SMALL CITY/TOWN/RURAL . . . . . | |
(LARGE CITY=1, SMALL CITY=2, TOWN=3, RURAL=4)

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY | |
				MONTH | |
				YEAR | | | |
INTERVIEWER'S NAME				INT. NUMBER | | |
RESULT*				RESULT |
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS |
TIME				

*RESULT CODES:

1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER _____ (SPECIFY)

TOTAL DEATHS TO WOMEN AGE 12-49 | |

SUPERVISOR

NAME _____

DATE _____ | | | |

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP

INTRODUCTION

Hello. My name is _____ and I am working with the Ghana Statistical Service. We are conducting a national survey that asks about some health issues. We would very much appreciate your participation in this survey. This information will help the government to improve health services. The survey will take just a few minutes to complete.

Participation in this survey is voluntary, and if we should come to any question you don't want to answer, just let me know and I will go to the next question; or you can stop the interview at any time. However, we hope that you will participate in this survey since your views are important.

1	Please tell me how many persons live in this household	NUMBER OF PERSONS	
2	How many years have you lived in this house? IF LESS THAN ONE RECORD '00'	NUMBER OF YEARS	
3	How many children do you have? IF NONE RECORD '00'	NUMBER OF CHILDREN	
4	Has anyone in your household suffered from any health problems recently?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
5	Now I would like to ask you a few more questions about your household. Think back over the past 5 years. Has any member of your household died in the last 5 years?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 → END	
6	ASK Qs.12-18 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS, USE ADDITIONAL QUESTIONNAIRE(S).		

7	Please tell me the full name of the person. who died.	NAME _____	NAME _____	NAME _____	
8	Was (NAME) male or female?	MALE . . . . . 1 (GO TO Q.14) FEMALE 2	MALE . . . . . 1 (GO TO Q.14) FEMALE 2	MALE . . . . . 1 (GO TO Q.14) FEMALE 2	
9	How old was (NAME) when she died?	AGE	AGE	AGE	
10	CHECK 9: AGE OF PERSON AT DEATH	LESS THAN 12 OR AGE 50 AND ABOVE (GO TO Q.14) 12-49	LESS THAN 12 OR AGE 50 AND ABOVE (GO TO Q.14) 12-49	LESS THAN 12 OR AGE 50 AND ABOVE (GO TO Q.14) 12-49	
11	Was (NAME) pregnant when she died?	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	
12	Did (NAME) die during childbirth?	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	
13	Did (NAME) die within two months after the end of a pregnancy or childbirth?	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.14) NO . . . . . 2 DK 8	
14	Has any other member of your household died in the last five years?	YES . . . . . 1 (GO TO Q.7 IN NEXT COLUMN) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.7 IN NEXT COLUMN) NO . . . . . 2 DK 8	YES . . . . . 1 (GO TO Q.7 IN NEXT COLUMN) NO . . . . . 2 DK 8	

15	CHECK Q.8 AND Q.9:		
	FEMALE AGE 12-49	MALE ANY AGE OR FEMALE AGE 0-11 OR AGE 50+ → END	
16	We would like to get more information on the circumstances surrounding the deaths of women age 12-49 years so that the government can provide health services to help reduce these deaths. We will come back and talk with you about this (these) death (s) in a few months time.		
	INTERVIEWER'S COMMENTS		

6 September 2007

GHANA MATERNAL MORTALITY SURVEY 2007
HOUSEHOLD QUESTIONNAIRE (PHASE II)

GHANA STATISTICAL SERVICE

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . [ ][ ][ ][ ]

STRUCTURE NUMBER . . . . . [ ][ ][ ]

HOUSEHOLD NUMBER . . . . . [ ][ ][ ]

REGION . . . . . [ ][ ]

DISTRICT . . . . . [ ][ ]

LARGE CITY/SMALL CITY/TOWN/RURAL . . . . . [ ]
(LARGE CITY=1, SMALL CITY=2, TOWN=3, RURAL=4)

NAME AND LINE NUMBER OF RESPONDENT _____ [ ][ ]

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY [ ][ ]
				MONTH [ ][ ]
				YEAR 2007
INTERVIEWER'S NAME				INT. NUMBER [ ][ ][ ]
RESULT*				RESULT [ ]
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS [ ]
TIME				

*RESULT CODES:
1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER _____ (SPECIFY)

TOTAL NUMBER IN HOUSEHOLD [ ]

TOTAL NUMBER OF WOMEN 15-49 [ ]

LANGUAGE OF QUESTIONNAIRE: [1] LANGUAGE OF INTERVIEW: [ ] LANGUAGE OF RESPONDENT [ ]

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6 OTHER = 7

TRANSLATOR USED: [ ]
(YES = 1, NO = 2)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____	NAME _____	[ ][ ]	[ ][ ]
DATE _____ [ ][ ]	DATE _____ [ ][ ]		

HOUSEHOLD SCHEDULE

							IF AGE 10 OR OLDER	
LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	MARITAL STATUS	ELIGIBILITY
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-8 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	What is (NAME'S) current marital status? 1 = CURRENTLY MARRIED/ LIVING TOGETHER 2 = DIVORCED/ SEPARATED 3 = WIDOWED 4 = NEVER-MARRIED 8 = DON'T KNOW	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
01			M F 1 2	Y N 1 2	Y N 1 2	IN YEARS		01
02			1 2	1 2	1 2			02
03			1 2	1 2	1 2			03
04			1 2	1 2	1 2			04
05			1 2	1 2	1 2			05
06			1 2	1 2	1 2			06
07			1 2	1 2	1 2			07
08			1 2	1 2	1 2			08
09			1 2	1 2	1 2			09
10			1 2	1 2	1 2			10

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = BROTHER-IN-LAW OR SISTER-IN-LAW
10 = NIECE/NEPHEW
11 = CO-WIFE
12 = OTHER RELATIVE
13 = ADOPTED/FOSTER/STEPCHILD
14 = NOT RELATED
98 = DON'T KNOW

							IF AGE 10 OR OLDER	
LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	MARITAL STATUS	ELIGIBILITY
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-23 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) stay here last night?	How old is (NAME)?	What is (NAME'S) current marital status? 1 = CURRENTLY MARRIED/ LIVING TOGETHER 2 = DIVORCED/ SEPARATED 3 = WIDOWED 4 = NEVER-MARRIED 8 = DON'T KNOW	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			M F	Y N	Y N	IN YEARS		
11			1 2	1 2	1 2			11
12			1 2	1 2	1 2			12
13			1 2	1 2	1 2			13
14			1 2	1 2	1 2			14
15			1 2	1 2	1 2			15
16			1 2	1 2	1 2			16
17			1 2	1 2	1 2			17
18			1 2	1 2	1 2			18
19			1 2	1 2	1 2			19
20			1 2	1 2	1 2			20

TICK HERE IF CONTINUATION SHEET USED ☐

(2A) Just to make sure that I have a complete listing. Are there any other persons such as small children or infants that we have not listed? YES ☐ → ADD TO TABLE NO ☐

2B) Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here? YES ☐ → ADD TO TABLE NO ☐

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed? YES ☐ → ADD TO TABLE NO ☐

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = BROTHER-IN-LAW OR SISTER-IN-LAW
10 = NIECE/NEPHEW
11 = CO-WIFE
12 = OTHER RELATIVE
13 = ADOPTED/FOSTER/ STEPCHILD
14 = NOT RELATED
98 = DON'T KNOW

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
10	What is the main source of drinking water for members of your household?	PIPED WATER 11 WATER FROM OPEN WELL OR BOREHOLE 21 WATER FROM COVERED WELL OR BOREHOLE 31 WATER FROM SPRING PROTECTED SPRING . . . . . 41 UNPROTECTED SPRING . . . . . 42 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CANAL) . . . . . 51 RAINWATER . . . . . 61 TANKER TRUCK . . . . . 71 BOTTLED/SACHET WATER . . . . . 81 OTHER _____ 96 (SPECIFY)	
11	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET 11 PIT LATRINE VENTILATED IMPROVED PIT LATRINE (KVIP) 21 PIT LATRINE WITH SLAB 22 PIT LATRINE WITHOUT SLAB/ OPEN PIT 23 BUCKET/PAN TOILET . . . . . 41 NO FACILITY/BUSH/FIELD . . . . . 61 OTHER _____ 96	→ 13
12	Do you share this toilet facility with other households?	YES . . . . . 1 NO 2	
13	Does your household have:		
	Electricity?	ELECTRICITY . . . . . YES 1 NO 2	
	A radio?	RADIO 1 2	
	A television?	TELEVISION 1 2	
	A mobile telephone?	MOBILE TELEPHONE . . . 1 2	
	A non-mobile telephone?	NON-MOBILE TELEPHONE . 1 2	
	A freezer?	FREEZER 1 2	
	A refrigerator?	REFRIGERATOR 1 2	
	A computer?	COMPUTER 1 2	
	A clock?	CLOCK 1 2	
	A water pump?	WATER PUMP 1 2	
	A table?	TABLE 1 2	
	A chair?	CHAIR 1 2	
	A sofa?	SOFA 1 2	
	A cupboard?	CUPBOARD 1 2	
	A bed?	BED 1 2	
	A kerosense lantern?	KEROSENE LANTERN 1 2	
	A video deck/dvd?	VIDEO DECK/DVD 1 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
14	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . . 01 LPG . . . . . 02 NATURAL GAS . . . . . 03 KEROSENE . . . . . 04 COAL, LIGNITE . . . . . 05 CHARCOAL . . . . . 06 FIREWOOD . . . . . 07 STRAW/SHRUBS/GRASS . . . . . 08 NO FOOD COOKED IN HOUSEHOLD . . . . . 95 OTHER _____ 96 (SPECIFY)	
15	MAIN MATERIAL OF THE FLOOR. RECORD OBSERVATION.	NATURAL FLOOR EARTH/SAND/MUD 11 MUD MIXED WITH DUNG 12 RUDIMENTARY FLOOR WOOD PLANKS . . . . . 21 PALM/BAMBOO . . . . . 22 FINISHED FLOOR PARQUET OR POLISHED WOOD . . . . . 31 LINOLEUM . . . 32 CERAMIC TILES . . . . . 33 CEMENT . . . . . 34 CARPET . . . . . 35 TERRAZZO . . . . . 36 OTHER _____ 96 (SPECIFY)	
16	How many rooms in this household are used for sleeping?	ROOMS	
17	Does any member of this household own: A watch? A bicycle? A motorcycle or motor scooter? An animal-drawn cart? A car or truck? A canoe? A tractor?	YES NO WATCH . . . . . 1 2 BICYCLE . . . . . 1 2 MOTORCYCLE/SCOOTER . 1 2 ANIMAL-DRAWN CART . 1 2 CAR/TRUCK . . . . . 1 2 CANOE . . . . . 1 2 TRACTOR 1 2	

6 Sept 2007

GHANA MATERNAL MORTALITY SURVEY 2007
VERBAL AUTOPSY QUESTIONNAIRE

GHANA STATISTICAL SERVICE

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . [ ][ ][ ][ ]

STRUCTURE NUMBER . . . . . [ ][ ][ ][ ]

HOUSEHOLD NUMBER . . . . . [ ][ ][ ][ ]

REGION . . . . . [ ][ ][ ][ ]

DISTRICT . . . . . [ ][ ][ ][ ]

LARGE CITY/SMALL CITY/TOWN/RURAL (LARGE CITY=1, SMALL CITY=2, TOWN=3, RURAL=4) [ ]

NAME OF MAIN RESPONDENT _____

NAME OF DECEASED WOMAN _____

LINE NUMBER OF DECEASED WOMAN FROM HOUSEHOLD QUESTIONNAIRE . . . . . [ ][ ]

RELATIONSHIP OF THE MAIN RESPONDENT TO THE DECEASED
(FATHER = 1, MOTHER = 2, HUSBAND = 3, BROTHER/SISTER = 4, CHILD = 5
OTHER RELATIVE = 6, NO RELATION = 7) [ ]

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY [ ][ ]
				MONTH [ ][ ]
				YEAR 2 0 0 7
INTERVIEWER'S NAME	_____	_____	_____	INT. NUMBER [ ][ ][ ]
RESULT*	_____	_____	_____	RESULT [ ]
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS [ ]
TIME	_____	_____		

*RESULT CODES:

1	COMPLETED	4	REFUSED	7	OTHER _____ (SPECIFY)
2	NOT AT HOME	5	PARTLY COMPLETED		
3	POSTPONED	6	APPROPRIATE PERSON NOT FOUND		

LANGUAGE OF QUESTIONNAIRE: [1] LANGUAGE OF INTERVIEW: [ ] LANGUAGE OF RESPONDENT [ ]

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6 OTHER = 7

TRANSLATOR USED: [ ]
(YES = 1, NO = 2)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____	NAME _____		
DATE _____ [ ][ ]	DATE _____ [ ][ ]	[ ][ ]	[ ][ ]

SECTION 1. DECEASED WOMAN'S BACKGROUND

INFORMED CONSENT

IDEALLY THE MAIN RESPONDENT SHOULD HAVE BEEN PRESENT AT THE TIME OF DEATH OF THE WOMAN FOR WHOM INFORMATION ON THE CAUSE OF DEATH IS BEING COLLECTED AND SHOULD HAVE THE BEST KNOWLEDGE ABOUT THE CIRCUMSTANCES AROUND THE WOMAN'S DEATH.

Hello. My name is _____ and I am working with the Ghana Statistical Service. We are conducting a national survey that asks about women's health issues. We would very much appreciate your participation in this survey. A few months ago when we visited your house, we were informed about the death of (NAME OF WOMAN AGE 12-49 WHO HAS DIED). I am here now to ask you about the circumstances that led to her death. This information will help the government to improve women's health services. The survey will take between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Signature of interviewer: _____ Date: _____

RESPONDENT AGREES TO BE INTERVIEWED . . . . . 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . . 2 → END

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	
102	In what day, month and year was (NAME) born?	DAY . . . . . [ ][ ] DON'T KNOW DAY . . . . . 98 MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ]	
103	In what day, month and year did (NAME) die?	DAY . . . . . [ ][ ] DON'T KNOW DAY . . . . . 98 MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [2][0][ ][ ]	
103A	CHECK 103: DIED IN 2002, 2003, 2004, 2005, 2006 OR 2007 ☐ ↓ DIED BEFORE 2002 ☐ → END		
104	How old was (NAME) when she died? RECORD AGE IN COMPLETED YEARS. COMPARE AND CORRECT 102, 103 AND/OR 104 IF INCONSISTENT.	AGE AT DEATH . . . . . [ ][ ]	
105	CHECK 104: AGE AT DEATH 12-49 ☐ ↓ AGE AT DEATH <12 OR 50 AND ABOVE ☐ → END		
106	What was (NAME'S) marital status?	NEVER MARRIED . . . . . 1 MARRIED/LIVING WITH A PARTNER . . 2 SEPARATED . . . . . 3 DIVORCED . . . . . 4 WIDOWED 5	
107	What is the highest level of school (NAME) had attended: primary, middle/JSS, secondary/SSS, or higher?	PRIMARY . . . . . 1 MIDDLE/JSS . . . . . 2 SECONDARY/SSS . . . . . 3 HIGHER . . . . . 4 NEVER ATTENDED SCHOOL . . . . . 5 DON'T KNOW 8	
108	Where did (NAME) die?	HOME . . . . . 1 HEALTH FACILITY . . . . . 2 SHRINE/PRAYER CAMP . . . . . 3 OTHER _____ 6 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
109	Where was (NAME'S) usual place of residence?	IN THIS HOUSE/LOCALITY 1 IN A DIFFERENT VILLAGE/TOWN 2 OTHER _____ 6 (SPECIFY)	
110	Where did the burial take place?	IN THIS HOUSE/LOCALITY 1 IN A DIFFERENT VILLAGE/TOWN 2 OTHER _____ 6 (SPECIFY)	

SECTION 2. OPEN HISTORY QUESTIONS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now could you please tell me about the illnesses and events leading to (NAME'S) death?		

NO.	QUESTIONS AND FILTERS		CODING CATEGORIES	SKIP
202	Before (NAME) died did any medical staff person ever say she had NAME OF DISEASE? READ EACH DISEASE BELOW AND RECORD IF RESPONDENT ANSWERS 'YES', ASK: For how many months or years prior to death was (NAME) diagnosed with NAME OF DISEASE?			
			MONTHS / YEARS	
01	High blood pressure?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	HIGH BLOOD PRESSURE 1 ☐☐ 2 ☐☐	
02	Heart disease?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	HEART DISEASE 1 ☐☐ 2 ☐☐	
03	Stroke?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	STROKE 1 ☐☐ 2 ☐☐	
04	Mental disorder (including depression)?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	MENTAL 1 ☐☐ 2 ☐☐	
05	HIV/AIDS?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	HIV/AIDS 1 ☐☐ 2 ☐☐	
06	Diabetes?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	DIABETES 1 ☐☐ 2 ☐☐	
07	Tuberculosis (TB)?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	TB 1 ☐☐ 2 ☐☐	
08	Epilepsy?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	EPILEPSY 1 ☐☐ 2 ☐☐	
09	Cancer? PROBE: Cancer of _____	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	CANCER 1 ☐☐ 2 ☐☐	
10	Asthma?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	ASTHMA 1 ☐☐ 2 ☐☐	
11	Malaria?	YES . . . . 1 NO . . . . . 2 DON'T KNOW. . 8	MALARIA 1 ☐☐ 2 ☐☐	
12	Other chronic ilness:		OTHER _____ 1 ☐☐ 2 ☐☐	
203	What do you think was the cause of death? (Write exactly as the respondent tells you)			

SECTION 3. SIGNS AND SYMPTOMS DURING THE FINAL ILLNESS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	At this time I would like to ask you some questions concerning symptoms that (NAME) had/showed when she was ill. Some of these questions may not appear directly related to her health. Please bear with me and answer all the questions. Your answers will help us to get a clear picture of all possible symptoms that she may have had.		
301	For how long was (NAME) ill before she died?	DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐	
302	Did (NAME) have a fever? IF YES, ASK: For how long did she have fever?	NO FEVER . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→303
302A	Was the fever continous or on and off?	CONTINOUS . . . . . 1 ON AND OFF . . . . . 2 DON'T KNOW 8	
302B	Did she have fever only at night?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
302C	Did she have chills/rigor?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
303	Did (NAME) have a cough? IF YES, ASK: For how long did she have a cough?	NO COUGH . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→304
303A	Was the cough severe?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
303B	Was the cough productive with sputum?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
303C	Did she cough out blood?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
303D	Did she have night sweats?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
304	Did (NAME) have trouble breathing? IF YES, ASK: For how long did she have breathlesness?	NO BREATHLESNESS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→305
304A	Was she unable to carry out daily routines due to breathlesness?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
304B	Was she breathless while lying flat?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
304C	Did she have wheezing?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
305	Did (NAME) have a chest pain? IF YES, ASK: For how long did she have a chest pain?	NO CHEST PAIN . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→306
305A	How did the chest pain start?	SUDDENLY . . . . . 1 GRADUALLY . . . . . 2 DON'T KNOW 8	
305B	Did she have severe chest pain? IF YES: How long did it last?	LESS THAN HALF AN HOUR . . . . . 1 HALF HOUR TO 24 HOURS . . . . . 2 MORE THAN 24 HOURS . . . . . 3 NO SEVERE CHEST PAIN . . . . . 4 DON'T KNOW 8	
305C	Was the chest pain located below the breastbone (sternum)?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
305D	Was the chest pain located over the heart and spread to the left arm?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
305E	Was the chest pain located over the ribs (sides)?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
305F	Was chest pain continous or on and off?	CONTINOUS . . . . . 1 ON AND OFF . . . . . 2 DON'T KNOW 8	
305G	Did the pain get worse while coughing?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
305H	Did she have palpitations?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
306	Did (NAME) have diarrhea? IF YES, ASK: For how long did she have diarrhea?	NO DIARRHEA . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→307
306A	Was the diarhea continous or on and off?	CONTINOUS . . . . . 1 ON AND OFF . . . . . 2 DON'T KNOW 8	
306B	At any time during the final ilness was there blood in the stool?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
306C	When the diarhea was worst, how many times did she pass stools in a day?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
307	Did (NAME) vomit? IF YES, ASK: How long did she vomit?	NO VOMITTING . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→308
307A	What did it look like?	COFFEE-COLORED FLUID . . . . . 1 BRIGHT RED/BLOOD RED . . . . . 2 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
307B	When the vomitng was severe, how many times did she vomit in a day?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
308	Did (NAME) have abdominal pain? IF YES, ASK: How long did she have abdominal pains?	NO ABDOMINAL PAIN . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 309
308A	Was the abdominal pain severe?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
309	Did (NAME) have abdominal distention? IF YES, ASK: How long did she have abdominal distention?	NO ABDOMINAL DISTENTION . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 310
309A	How quickly did the distention develop?	RAPIDLY, WITHIN DAYS . . . . . 1 GRADUALLY, OVER MONTHS . . . . . 2 DON'T KNOW 8	
309B	Was there a period of a day or longer during which she did not pass any stool?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
310	Did (NAME) have any mass in the abdomen? IF YES, ASK: How long did she have the mass?	NO MASS IN THE ABDOMEN . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 311
310A	Where was the mass located?	RIGHT UPPER ABDOMEN . . . . . 1 LEFT UPPER ABDOMEN . . . . . 2 LOWER ABDOMEN . . . . . 3 ALL OVER ABDOMEN . . . . . 4 DON'T KNOW 8	
311	Did (NAME) have any difficulty or pain while swallowing solids? IF YES, ASK: How long did she have difficulty or pain while swallowing solids?	NO DIFFICULTY SWALLOWING SOLIDS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
312	Did she have any difficulty or pain while swallowing liquids? IF YES, ASK: How long did she have difficulty or pain while swallowing liquids?	NO DIFFICULTY SWALLOWING LIQUIDS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
313	Did (NAME) have a headache? IF YES, ASK: How long did she have a headache?	NO HEADACHE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 314
313A	Was the headache severe?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
314	Did she have stiff or painful neck? IF YES, PROBE: For how long did she have stiff or painful neck?	NO STIFF OR PAINFUL NECK . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
315	Did she have mental confusion? IF YES, PROBE: For how long did she have mental confusion?	NO MENTAL CONFUSION . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 316
315A	How did the mental confusion start?	SUDDENLY . . . . . 1 FAST (WITHIN A DAY) . . . . . 2 SLOWLY (OVER MANY DAYS) . . . . . 3 DON'T KNOW 8	
316	Did she become unconscious? IF YES, ASK: For how long was she unconscious?	WAS NOT UNCONSCIOUS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 317
316A	How did the unconsciousness start?	SUDDENLY . . . . . 1 FAST (WITHIN A DAY) . . . . . 2 SLOWLY (OVER MANY DAYS) . . . . . 3 DON'T KNOW 8	
317	Did she have convulsions? IF YES, ASK: For how long did she have convulsions?	NO CONVULSIONS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
318	Was she unable to open her mouth? IF YES, ASK: How long was she unable to open her mouth?	NO PROBLEM OPENING MOUTH . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
319	Did she have stiffness of the whole body? IF YES, ASK: For how long did she have the stiffness?	NO STIFFNESS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
320	Did she have paralysis of one side of the body? IF YES, ASK: For how long was one side of her body paralyzed?	NO PARALYSIS OF ONE SIDE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 321
320A	How did the paralysis of one side of her body start?	SUDDENLY . . . . . 1 FAST (WITHIN A DAY) . . . . . 2 SLOWLY (OVER MANY DAYS) . . . . . 3 DON'T KNOW 8	
321	Did she have paralysis in the lower limbs? IF YES, ASK: For how long did she have paralysis in the lower limbs?	NO PARALYSIS OF LOWER LIMBS . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 322
321A	How did the paralysis in the lower limbs start?	SUDDENLY . . . . . 1 FAST (WITHIN A DAY) . . . . . 2 SLOWLY (OVER MANY DAYS) . . . . . 3 DON'T KNOW 8	
322	Did she have difficulty passing urine? IF YES, ASK: For how long did she have difficulty passing urine?	NO DIFFICULTY . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
323	Was there any change in the color of her urine? IF YES, ASK: How long did she have a change in the color of her urine?	NO CHANGE IN URINE COLOR . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
324	During the final illness, did (NAME) ever pass blood in the urine? IF YES, ASK: For how long did she have blood in the urine?	NO BLOOD IN URINE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
325	Was there any change in the amount of urine she passed daily? IF YES, ASK: For how long did she have a change in the amount of urine she passed?	NO CHANGE IN URINE AMOUNT . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 326
325A	How much urine did she pass?	TOO MUCH . . . . . 1 TOO LITTLE . . . . . 2 NO URINE AT ALL . . . . . 3 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
326	During the ilness that led to her death, did (NAME) have any skin rash? IF YES, ASK: For how long did she have the skin rash?	NO SKIN RASH . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→327
326A	Where was the rash located?	FACE . . . . . 1 TRUNK . . . . . 2 ARMS AND LEGS . . . . . 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
326B	What did the rash look like?	MEASLES RASH 1 RASH WITH CLEAR FLUID 2 RASH WITH PUS . . . . . 3 DON'T KNOW 8	
326C	Did she have red eyes?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
326D	Did she have bleeding from the nose, mouth or anus?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
327	Did she have weight loss? IF YES, ASK: For how long had she been losing weight?	NO WEIGHT LOSS . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→328
327A	Did she look very thin and wasted?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
328	Did she have mouth sores? IF YES, ASK: For how long did she have mouth sores?	NO MOUTH SORES . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
329	Did she have any swelling? IF YES, ASK: For how long did she have swelling?	NO SWELLING . . . . . .000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→330
329A	Where was the sweling? CIRCLE ALL MENTIONED.	FACE . . . . . A JOINTS . . . . . B ANKLES . . . . . C WHOLE BODY . . . . . D OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
330	Did she have any lumps? IF YES, ASK: For how long did she have lumps?	NO LUMPS . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 331
330A	Where were the lumps? CIRCLE ALL THAT APPLY	NECK . . . . . A ARMPIT . . . . . B GROIN . . . . . C OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y	
331	Did she have yellow discoloration of the eye? IF YES, ASK: For how long did she have the yellow discoloration of the eye?	NO DISCOLORATION . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
332	Did she look pale (lack of blood) or have pale palms, eyes or nail beds? IF YES, ASK: For how long was she pale?	NOTHING PALE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
333	Did she have an ulcer, abscess, or sore anywhere on the body? IF YES, ASK: For how long did she have the ulcer, abscess or sore?	NO ULCER/ABSCESS/SORE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	→ 401
333A	What was the location of the ulcer, abscess, or sore? CIRCLE ALL MENTIONED.	NECK . . . . . A ARMPIT . . . . . B GROIN . . . . . C FACE . . . . . D JOINTS . . . . . E ANKLES . . . . . F GENITALS . . . . . G WHOLE BODY . . . . . H OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y	

SECTION 4. SIGNS AND SYMPTOMS DURING THE FINAL ILLNESS RELATED TO REPRODUCTIVE HEALTH

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
401	Did (NAME) have an ulcer or swelling in the breast? IF YES, ASK: For how long did she have ulcer or swelling?	NO ULCER/SWELLING IN BREAST 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
402	Did (NAME) have excessive vaginal bleeding during menstrual periods? IF YES, ASK: For how long did she have excessive vaginal bleeing during menstrual periods?	NO EXCESSIVE BLEEDING . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
403	Did (NAME) have vaginal bleeding in between menstrual periods? IF YES, ASK: For how long did the condition last?	NO VAGINAL BLEEDING . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
404	Did (NAME) have abnormal vaginal discharge? IF YES, ASK: For how long did she have abnormal vaginal discharge?	NO ABNORMAL DISCHARGE . . . . . 000 DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
405	Was (NAME) pregnant at the time of death?	YES . . . . . 1 NO . . . . . 2 UNSURE 8	→ 406
405A	How long was (NAME) pregnant?	DAYS . . . . . 1 ☐☐ MONTHS . . . . . 2 ☐☐ DON'T KNOW 998	
405B	How many pregnancies did (NAME) have in total, including the last one?	NUMBER OF PREGNANCIES ☐☐	
405C	During the last 3 months of pregnany, did (NAME) suffer from any of the following ilnesses? Anything else? CIRCLE ALL MENTIONED.	VAGINAL BLEEDING . . . . . A FOUL-SMELLING VAGINAL DISCHARGE . . . . . B PUFFY FACE . . . . . C HEADACHE . . . . . D BLURRED VISION . . . . . E CONVULSION . . . . . F FEBRILE ILLNESS . . . . . G SEVERE ABDOMINAL PAIN THAT WAS NOT LABOR PAINS . . . H PALLOR AND SHORTNESS OF BREATH (BOTH PRESENT) . . . I OTHER _____ X (SPECIFY) NONE . . . . . Y DON'T KNOW . . . . . Z	
405D	Did (NAME) die during labour, but undelivered?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
406	Did (NAME) give birth recently?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 407
406A	How many days after giving birth did (NAME) die?	NUMBER OF DAYS ☐☐ DON'T KNOW 98	
406B	Was there excessive bleeding on the day labor started?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406C	Was there excessive bleeding during labor before the baby was delivered?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406D	Was there excessive bleeding after the baby was delivered?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406E	Did (NAME) have difficulty in delivering the placenta?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406F	Was (NAME) in labor for more than 24 hours?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406G	Was it a normal vaginal delivery?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 406I → 406I
406H	What type of delivery was it?	FORCEPS/VACUUM . . . . . 1 CAESARIAN SECTION . . . . . 2 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
406I	Did (NAME) have foul-smelling vaginal discharge?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
406J	Where did (NAME) give birth? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	HOME RESPONDENT'S HOME . . . . . 01 OTHER HOME . . . . . 02 PUBLIC SECTOR GOVT. HOSPITAL/CLINIC . . . . . 03 GOVT. HEALTH CENTER . . . . . 04 GOVT. HEALTH POST . . . . . 05 OTHER PUBLIC _____ 06 (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . 07 MATERNITY HOME . . . . . 08 OTHER PRIVATE _____ 09 (SPECIFY) SHRINE/PRAYER CAMP 10 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
406K	Who assisted with the delivery? PROBE: Anyone else? PROBE FOR THE TYPE(S) OF PERSON(S) AND RECORD ALL MENTIONED. IF RESPONDENT SAYS NO ONE ASSISTED, PROBE TO DETERMINE WHETHER ANY ADULTS WERE PRESENT AT THE DELIVERY.	HEALTH PERSONNEL DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C OTHER PERSON TRADITIONAL BIRTH ATTENDANT D RELATIVE/FRIEND . . . . . E OTHER _____ X (SPECIFY) NO ONE . . . . . Y DON'T KNOW . . . . . Z	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
407	During the 6 weeks before she died, was (NAME) pregnant?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 408
407A	How far along was (NAME) in her pregnancy? First three months (1st trimester)? Second three months (2nd trimester)? Last three months (3rd trimester)?	1ST TRIMESTER . . . . . 1 2ND TRIMESTER . . . . . 2 3RD TRIMESTER . . . . . 3 DON'T KNOW 8	
407B	Was (NAME) doing something or using any method to delay or avoid pregnancy at the time when she became pregnant?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407C	Did (NAME) want to become pregnant at that time?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407D	Did (NAME) have heavy bleeding around the time the pregnancy ended?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407E	During the last 3 days before (NAME) died, did she have severe abdominal pain?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407F	Did (NAME) have fever before she died?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 407I
407G	Did (NAME) have fever that started at anytime in the 3 days before her death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407H	Did (NAME) have fever with shivering?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407I	Did (NAME) have foul smelling dicharge in the 6 weeks before her death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407J	Did (NAME) have any medical treatment in the 6 weeks before she died?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 407L
407K	Did (NAME) have the following treatment: Operation? Blood transfusion? Antibiotics? Any other treatment? (SPECIFY)	YES NO DK OPERATION 1 2 8 BLOOD TRANSFUSION 1 2 8 ANTIBIOTICS 1 2 8 OTHER 1 2 8 (SPECIFY)	
407L	As far as you know, did (NAME) want to do anything to attempt to end the pregnancy?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
407M	As far as you know, did (NAME) attempt to end the pregnancy?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 408

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
407N	How long before her death did (NAME) first attempt to end the pregnancy?	DAYS . . . . . 1 [ ][ ] WEEKS . . . . . 2 [ ][ ] MONTHS . . . . . 3 [ ][ ] DON'T KNOW 998	
407O	Did (NAME) take medicine or receive treatment to attempt to end the pregnancy?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 501
408	Did (NAME) have an abortion recently before she died?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 501
408A	Did (NAME) die during the abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
408B	How many days before death did (NAME) have the abortion?	NUMBER OF DAYS [ ][ ] DON'T KNOW 98	
408C	How many months pregnant was (NAME) when she had the abortion?	MONTHS . . . . . [ ][ ] DON'T KNOW 98	
408D	Did (NAME) have any heavy bleeding after the abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
408E	Did the abortion occur by itself, spontaneously?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 501 → 501
408F	Did (NAME) take medicine or treatment to end the pregnancy?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

SECTION 5. HISTORY OF INJURY/ACCIDENT

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	Did (NAME) suffer from any injury or accident that led to her death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 504
502	What kind of injury/accident was it?	ROAD TRAFFIC ACCIDENT . . . . . 01 FALL . . . . . 02 DROWNING . . . . . 03 POISONING . . . . . 04 BURNS . . . . . 05 VIOLENCE/ASSAULT /HOMICIDE/ ABUSE . . . . . 06 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
503	Was the injury/accident intentionally inflicted by someone else?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
504	Do you think (NAME) committed suicide?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
505	Did (NAME) suffer from any animal/insect bite that led to her death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 601
506	What type of animal/insect was it?	DOG . . . . . 1 SNAKE . . . . . 2 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	

SECTION 6. TREATMENT AND HEALTH SERVICE USE FOR FINAL ILNESS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
601	Did (NAME) receive any treatment for the illness that led to death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 608
602	What type of treatment did (NAME) receive? PROBE: Anything else? CIRCLE ALL MENTIONED	ORS TREATMENT . . . . . A INTRAVENOUS FLUIDS . . . . . B TREATMENT/FOOD THROUGH TUBE C GIVEN DRUGS . . . . . D OPERATION . . . . . E BLOOD TRANSFUSION . . . . . F OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y	
603	Where did (NAME) receive treatment during the illness that led to death? Anywhere else? CIRCLE ALL MENTIONED. IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	HOME RESPONDENT'S HOME . . . . . A OTHER HOME . . . . . B PUBLIC SECTOR GOVT. HOSPITAL/CLINIC . . . . . C GOVT. HEALTH CENTER . . . . . D GOVT. HEALTH POST . . . . . E OTHER PUBLIC _____ F (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . G MATERNITY HOME . . . . . H OTHER PRIVATE _____ I (SPECIFY) SHRINE/PRAYER CAMP . . . . . J OTHER _____ K (SPECIFY) DON'T KNOW L	
604	CHECK 603: AT LEAST ONE CATEGORY C-I CIRCLED ↓ NO CATEGORY C-I CIRCLED → 608		
605	In the month before her death, how many times did (NAME) have contact with (NAME OF PLACE/S MENTIONED IN Q.603 C-I)? IF MORE THAN ONE FORMAL PLACE MENTIONED IN Q.603 ADD THE NUMBER OF TIMES OF CONTACT IN EACH PLACE	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
606	Did a health worker tell you or anyone the cause of death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 608
607	What did s/he say? WRITE DOWN EXACTLY WHAT THE RESPONDENT SAYS _____ _____ _____ _____ _____		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
608	Did (NAME) have any operation for the illness?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 611
609	How long before death did (NAME) have the operation?	DAYS . . . . . 1 ☐☐ WEEKS . . . . . 2 ☐☐ MONTHS . . . . . 3 ☐☐ DON'T KNOW 998	
610	Which part of her body was she operated on?	ABDOMEN . . . . . 1 CHEST . . . . . 2 HEAD . . . . . 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
611	Did she have a measles vaccination?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

SECTION 7. RISK FACTORS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
701	Did (NAME) drink alcohol?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 706
702	How long had (NAME) been drinking?	MONTHS . . . . . 1 ☐☐ YEARS . . . . . 2 ☐☐ DON'T KNOW 998	
703	How often did (NAME) drink alcohol?	DAILY . . . . . 1 WEEKLY . . . . . 2 ONCE IN A WHILE/RARELY . . . . . 3 DON'T KNOW 8	
704	Did (NAME) stop drinking before death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 706
705	How long before death did (NAME) stop drinking?	DAYS . . . . . 1 ☐☐ WEEKS . . . . . 2 ☐☐ MONTHS . . . . . 3 ☐☐ YEARS . . . . . 4 ☐☐ DON'T KNOW 998	
706	Did (NAME) use snuff or smoke tobacco (cigarette, cigar, pipe, etc.)	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 801
707	How long had (NAME) been smoking?	MONTHS . . . . . 1 ☐☐ YEARS . . . . . 2 ☐☐ DON'T KNOW 998	
708	How often did (NAME) smoke?	DAILY . . . . . 1 WEEKLY . . . . . 2 ONCE IN A WHILE/RARELY . . . . . 3 DON'T KNOW 8	
709	How many cigarettes/cigars/pipes did (NAME) smoke daily?	NUMBER OF CIGARETTES . . ☐☐ DON'T KNOW 98	
710	Did (NAME) stop smoking before death?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 801
711	How long before death did (NAME) stop smoking?	DAYS . . . . . 1 ☐☐ WEEKS . . . . . 2 ☐☐ MONTHS . . . . . 3 ☐☐ YEARS . . . . . 4 ☐☐ DON'T KNOW 998	

SECTION 8. DATA EXTRACTED FROM DEATH CERTIFICATE

801	Do you have a death certifcate for (NAME)?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 901
802	COPY DAY, MONTH AND YEAR OF DEATH FROM THE DEATH CERTIFICATE.	DAY MONTH YEAR ☐☐ ☐☐ ☐☐☐☐	
803	COPY DAY, MONTH AND YEAR OF ISSUE OF DEATH CERTIFICATE.	DAY MONTH YEAR ☐☐ ☐☐ ☐☐☐☐	
804	RECORD THE CAUSE OF DEATH FROM THE FIRST (TOP) LINE OF THE DEATH CERTIFICATE: _____		
805	RECORD THE CAUSE OF DEATH FROM THE SECOND LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
806	RECORD THE CAUSE OF DEATH FROM THE THIRD LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
807	RECORD THE CAUSE OF DEATH FROM THE FOURTH LINE OF THE DEATH CERTIFICATE (IF ANY): _____		

SECTION 9. DATA EXTRACTED FROM OTHER HEALTH RECORDS

901	Do you have any other documents like (READ EACH OF THE DOCUMENTS LISTED FROM 901A-901H) or others that have a record of the death? IF YES ASK THE RESPONDENT TO SHOW YOU THESE DOCUMENTS THAT HAVE A RECORD OF THE DEATH. FOR EACH TYPE OF HEALTH RECORD SUMMARIZE DETAILS FOR LAST 2 VISITS (IF MORE THAN 2) AND RECORD DATE OF ISSUE		
	DOCUMENT	RECORDED CAUSE OF DEATH	DATE OF ISSUE DAY MONTH YEAR
901A	BURIAL PERMIT: 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901B	POST MORTEM RESULTS 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901C	MCH/ANC CARD 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901D	HOSPITAL PRESCRIPTION FORM 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901E	TREATMENT CARDS 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901F	HOSPITAL DISCHARGE FORM 1 . . . YES → 2 . . . NO →	_____ (CAUSE OF DEATH)	
901G	LABORATORY RESULTS 1 . . . YES → 2 . . . NO →	(CAUSE OF DEATH)	
901H	COMMUNITY REGISTER 1 . . . YES → _____ 2 . . . NO → (SPECIFY)	_____ (CAUSE OF DEATH)	
901I	OTHER HOSPITAL DOCUMENTS 1 . . . YES → _____ 2 . . . NO → (SPECIFY)	_____ (CAUSE OF DEATH)	
902	RECORD THE TIME.		HOURS . . . . . . MINUTES . . . . .

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S/EDITOR'S OBSERVATIONS

NAME OF SUPERVISOR/EDITOR: _____ DATE: _____

6 Sept 2007

GHANA MATERNAL MORTALITY SURVEY 2007
WOMEN'S QUESTIONNAIRE

GHANA STATISTICAL SERVICE

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . [ ][ ][ ][ ]

STRUCTURE NUMBER . . . . . [ ][ ][ ]

HOUSEHOLD NUMBER . . . . . [ ][ ][ ]

REGION . . . . . [ ][ ]

DISTRICT . . . . . [ ][ ]

LARGE CITY/SMALL CITY/TOWN/RURAL . . . . . [ ]
(LARGE CITY=1, SMALL CITY=2, TOWN=3, RURAL=4)

NAME AND LINE NUMBER OF WOMAN _____ [ ][ ]

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY [ ][ ]
				MONTH [ ][ ]
				YEAR 2 0 0 7
INTERVIEWER'S NAME				INT. NUMBER [ ][ ][ ]
RESULT*				RESULT [ ]
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS [ ]
TIME				

*RESULT CODES:

1	COMPLETED	4	REFUSED	7	OTHER _____ (SPECIFY)
2	NOT AT HOME	5	PARTLY COMPLETED		
3	POSTPONED	6	INCAPACITATED		

LANGUAGE OF QUESTIONNAIRE: [1] LANGUAGE OF INTERVIEW: [ ] LANGUAGE OF RESPONDENT [ ]

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6 OTHER = 7

TRANSLATOR USED: [ ]
(YES = 1, NO = 2)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ [ ][ ]	NAME _____ [ ][ ]	[ ][ ]	[ ][ ]
DATE _____	DATE _____		

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	INTRODUCTION AND CONSENT Hello. My name is _____ and I am working with the Ghana Statistical Service. We are conducting a national survey that asks about women's health issues. We would very much appreciate your participation in this survey. This This information will help the government to improve women's health services. The survey will take just a few minutes to complete. Participation in this survey is voluntary, and if we should come to any question you don't want to answer, just let me know and I will go to the next question; or you can stop the interview at any time. However, we hope that you will participate in this survey since your views are important. At this time, do you want to ask me anything about the survey? May I begin the interview now? Signature of interviewer: _____ Date: _____ RESPONDENT AGREES TO BE INTERVIEWED 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED 2 → END		
102	RECORD THE TIME.	HOUR . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	
103	In what month and year were you born?	MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
104	How old were you at your last birthday? COMPARE AND CORRECT 105 AND/OR 106 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
105	Have you ever attended school?	YES . . . . . 1 NO 2	→ 108
106	What is the highest level of school you attended: primary, middle/JSS, secondary/SSS, or higher?	PRIMARY . . . . . 1 MIDDLE/JSS . . . . . 2 SECONDARY/SSS . . . . . 3 HIGHER 4	
107	What is the highest grade you completed at that level?	GRADE . . . . . [ ][ ]	
108	Do you read a newspaper or magazine almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
109	Do you listen to the radio almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
110	Do you watch television almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . . 1 AT LEAST ONCE A WEEK . . . . . 2 LESS THAN ONCE A WEEK . . . . . 3 NOT AT ALL 4	
111	What is your religion?	CATHOLIC . . . . . 01 PROTESTAN . . . . . 02 METHODIST . . . . . 03 PRESBYTERIAN . . . . . 04 PENTACOSTAL/CHARISMATIC 05 OTHER CHRISTIAN . . . . . 06 MOSLEM . . . . . 07 TRADITIONAL/SPIRITUALIST . . . . . 08 NO RELIGION . . . . . 09 OTHER _____ 96 (SPECIFY)	
112	To which ethnic group do you belong?	AKAN . . . . . 01 GA/DANGME . . . . . 02 EWE . . . . . 03 GUAN . . . . . 04 MOLE-DAGBANI . . . . . 05 GRUSSI . . . . . 06 GRUMA . . . . . 07 HAUSA . . . . . 08 OTHER _____ 96 (SPECIFY)	

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Now I would like to ask about all the births you have had during your life. Have you ever given birth?	YES . . . . . 1 NO 2	→ 206
202	Do you have any sons or daughters to whom you have given birth who are now living with you?	YES . . . . . 1 NO 2	→ 204
203	How many sons live with you? And how many daughters live with you? IF NONE, RECORD '00'.	SONS AT HOME . . . . . [ ][ ] DAUGHTERS AT HOME . . . . . [ ][ ]	
204	Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?	YES . . . . . 1 NO 2	→ 206
205	How many sons are alive but do not live with you? And how many daughters are alive but do not live with you? IF NONE, RECORD '00'.	SONS ELSEWHERE . . . . . [ ][ ] DAUGHTERS ELSEWHERE . [ ][ ]	
206	Have you ever given birth to a boy or girl who was born alive but later died? IF NO, PROBE: Any baby who cried or showed signs of life but did not survive?	YES . . . . . 1 NO 2	→ 208
207	How many boys have died? And how many girls have died? IF NONE, RECORD '00'.	BOYS DEAD . . . . . [ ][ ] GIRLS DEAD . . . . . [ ][ ]	
208	Some women lose their pregnancy spontaneously, that is they have a miscarriage. Have you ever had a miscarriage? That is have you ever lost a pregnancy spontaneously?	YES . . . . . 1 NO 2	→ 210
209	How many miscarriages have you had in your lifetime?	MISCARRIAGE . . . . . [ ][ ]	
210	Women sometimes take steps to end their pregnancy, because they find themselves pregnant when they do not want to be, or when it is difficult for them to continue with their pregnancy because of opposition from their husband, partner, relatives or others. Have you ever been in a situation when you or someone else have had to do something to end <u>your</u> pregnancy?	YES . . . . . 1 NO 2	→ 212
211	How many pregnancies have ended this way In your lifetime?	ABORTION . . . . . [ ][ ]	
212	Some women have stillbirths, that is, they give birth in late pregnancy to a dead child. Have you ever had a still birth?	YES . . . . . 1 NO 2	→ 214
213	How many stillbirths have you had in your lifetime?	STILLBIRTH . . . . . [ ][ ]	
214	SUM ANSWERS TO 203, 205, 207, 209, 211 AND 213 AND ENTER TOTAL. IF NONE, RECORD '00'.	TOTAL . . . . . [ ][ ]	
215	CHECK 214: Just to make sure that I have this right: you have had in TOTAL _____ pregnancies during your life. Is that correct? YES ☐ NO ☐ → PROBE AND CORRECT 201-213 AS NECESSARY.		
216	CHECK 214: ONE OR MORE PREGNANCIES ☐ NO PREGNANCIES ☐ →		238

217	Now I would like to record all your pregnancies, whether born alive, born dead, or lost before full term, starting with the first one you had. RECORD ALL THE PREGNANCIES IN 219. RECORD TWINS AND TRIPLETS ON SEPARATE LINES. (IF THERE ARE MORE THAN 11 PREGNANCIES, USE AN ADDITIONAL QUESTIONNAIRE STARTING WITH THE SECOND ROW).

218	219	220	221	222	223	224	225	226	227	228	229	230	231	232
									IF BORN ALIVE BUT NOW DEAD		IF BORN DEAD OR LOST BEFORE BIRTH			
	Think back to your first/ next pregnancy. Was that a single or multiple pregnancy?	Was the baby born alive or born dead, or did you have a miscarriage or abortion?	Did that baby cry, move, or breathe when it was born?	What name was given to the child?	Is (NAME) a boy or a girl?	In what month and year was name born?	Is (NAME) still alive?	How old was (NAME) at his/her last birthday? RECORD AGE IN COM-PLETED YEARS.	How old was (NAME) when he/she died? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; OR YEARS.	In what month and year did (NAME) die?	In what month and year did this pregnancy end?	How many months did this pregnancy last? RECORD IN COM-PLETED MONTHS.	Did you or someone else do something to end this pregnancy?	Were there any other pregnancies between the previous pregnancy and this pregnancy?
01	SING ... 1 MULT ... 2	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . 1 NO . . 2 → 227	AGE IN YEARS → NEXT PREGNANCY	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → NEXT PREGNANCY	MONTH YEAR	MONTHS	YES . . . 1 NO 2	
02	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . 1 NO . . 2 → 227	AGE IN YEARS → SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. NO . . . . . 2 NEXT PREG.
03	SING 1 MULT 2 DK..... 3	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . . 1 NO . . . 2 → 227	AGE IN YEARS → SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. NO . . . . . 2 NEXT PREG.
04	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . . 1 NO . . . 2 → 227	AGE IN YEARS → SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. NO . . . . . 2 NEXT PREG.
05	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . . 1 NO . . . 2 → 227	AGE IN YEARS → SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. NO . . . . . 2 NEXT PREG.
06	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ABORTION 4	YES . . 1 NO . . . 2 → 229	NAME	BOY ... 1 GIRL ... 2	MONTH YEAR	YES . . 1 NO . . . 2 → 227	AGE IN YEARS → SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR → SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. NO . . . . . 2 NEXT PREG.

218	219 Think back to your first/ next pregnancy. Was that a single or multiple pregnancy?	220 Was the baby born alive or born dead, or did you have a miscarriage or abortion?	221 Did that baby cry, move, or breathe when it was born?	222 What name was given to the child?	223 Is (NAME) a boy or a girl?	224 In what month and year was name born?	225 Is (NAME) still alive?	226 How old was (NAME) at his/her last birthday? RECORD AGE IN COM-PLETED YEARS.	227 IF BORN ALIVE BUT NOW DEAD How old was (NAME) when he/she died? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; OR YEARS.	228 In what month and year did (NAME) die?	229 IF BORN DEAD OR LOST BEFORE BIRTH In what month and year did this pregnancy end?	230 How many months did this pregnancy last? RECORD IN COM-PLETED MONTHS.	231 Did you or someone else do something to end this pregnancy?	232 Were there any other pregnancies between the previous pregnancy and this pregnancy?
07	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) ← BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ← ABORTION 4	YES . . 1 NO . . . 2 ↓ 229	NAME	BOY . . . 1 GIRL . . . 2	MONTH YEAR	YES . . 1 NO . . . 2 ↓ 227	AGE IN YEARS ↓ SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR ↓ SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. ↲ NO . . . . . 2 NEXT PREG. ↲
08	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222 ← BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ← ABORTION 4	YES . . 1 NO . . . 2 ↓ 229	NAME	BOY . . . 1 GIRL . . . 2	MONTH YEAR	YES . . 1 NO . . . 2 ↓ 227	AGE IN YEARS ↓ SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR ↓ SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. ↲ NO . . . . . 2 NEXT PREG. ↲
09	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) ← BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ← ABORTION 4	YES . . 1 NO . . . 2 ↓ 229	NAME	BOY . . . 1 GIRL . . . 2	MONTH YEAR	YES . . 1 NO . . . 2 ↓ 227	AGE IN YEARS ↓ SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR ↓ SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. ↲ NO . . . . . 2 NEXT PREG. ↲
10	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) ← BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ← ABORTION 4	YES . . 1 NO . . . 2 ↓ 229	NAME	BOY . . . 1 GIRL . . . 2	MONTH YEAR	YES . . 1 NO . . . 2 ↓ 227	AGE IN YEARS ↓ SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR ↓ SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. ↲ NO . . . . . 2 NEXT PREG. ↲
11	SING 1 MULT 2	BORN ALIVE 1 (SKIP TO 222) ← BORN DEAD 2 MISCARRIAGE 3 (SKIP TO 229) ← ABORTION 4	YES . . 1 NO . . . 2 ↓ 229	NAME	BOY . . . 1 GIRL . . . 2	MONTH YEAR	YES . . 1 NO . . . 2 ↓ 227	AGE IN YEARS ↓ SKIP TO 232	DAYS . . . 1 MONTHS . 2 YEARS . . 3	MONTH YEAR ↓ SKIP TO 232	MONTH YEAR	MONTHS	YES . . . 1 NO 2	YES . . . . 1 ADD PREG. ↲ NO . . . . . 2 NEXT PREG. ↲

233	Have you had any pregnancy since the last pregnancy mentioned? IF YES, RECORD PREGNANCY(S) IN TABLE.	YES . . . . . 1 NO 2
234	COMPARE 214 WITH NUMBER OF PREGNANCIES IN HISTORY ABOVE AND MARK: NUMBERS ARE SAME ↓ ☐ NUMBERS ARE DIFFERENT ☐→ (PROBE AND RECONCILE) FOR EACH PREGNANCY: MONTH AND YEAR IS RECORDED IN 224, 228 OR 229. FOR EACH LIVING CHILD: CURRENT AGE IS RECORDED IN 226. FOR EACH DEAD CHILD: AGE AT DEATH IS RECORDED IN 227. FOR EACH PREGNANCY LOST BEFORE FULL TERM NUMBER OF MONTHS PREGNAN IS RECORDED IN 230	☐
235	CHECK 229 AND 231 AND ENTER THE NUMBER OF ABORTIONS (Q.231=1) SINCE 2002 OR LATER IF NONE, RECORD '0'.	☐
236	CHECK 229, 230 AND 231 AND ENTER THE NUMBER OF MISCARRIAGES (Q.230 IS 6 MONTHS OR LESS AND Q.231=2) SINCE 2002 OR LATER. IF NONE, RECORD '0'.	☐
237	CHECK 224 AND ENTER THE NUMBER OF BIRTHS IN 2002 OR LATER. IF NONE, RECORD '0'.	☐

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
238	Are you pregnant now?	YES . . . . . 1 NO . . . . . 2 UNSURE 8	→ 241
239	How many months pregnant are you?	MONTHS . . . . . ☐☐	
240	At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?	THEN . . . . . 1 LATER . . . . . 2 NOT AT ALL 3	
241	When did your last menstrual period start? _____ (DATE, IF GIVEN)	DAYS AGO . . . . . 1 ☐☐ WEEKS AGO . . . . . 2 ☐☐ MONTHS AGO . . . . . 3 ☐☐ YEARS AGO . . . . . 4 ☐☐ IN MENOPAUSE/ HAS HAD HYSTERECTOMY . . . 994 BEFORE LAST BIRTH . . . . . 995 NEVER MENSTRUATED 996	
242	CHECK 214: ONE OR MORE PREGNANCIES ☐ ↓ NO PREGNANCIES ☐ →		344

SECTION 3. ABORTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	CHECK 235: ONE OR MORE ABORTIONS SINCE 2002 OR LATER ☐	NO ABORTIONS SINCE 2002 OR LATER ☐ →	→ 344
302	CHECK 235: ENTER THE LINE NUMBER OF THE LAST PREGNANCY THAT ENDED IN AN ABORTION IN 2002 OR LATER. ASK THE QUESTIONS ABOUT ONLY THIS LAST ABORTION. LINE NUMBER FROM 218	LAST ABORTION LINE NO. ☐☐	
303	You said your last abortion was in YEAR FROM Q.229. Now I would like to ask you some questions about this pregnancy that ended in an abortion.		
304	What was the main reason you decided to have this abortion?	HEALTH OF MOTHER . . . . . 01 RISK OF BIRTH DEFECT . . . . . 02 NO MONEY TO TAKE CARE OF BABY . . . . . 03 TOO YOUNG TO HAVE CHILD . . . . . 04 NOT READY TO BE A MOTHER . . . . . 05 WANTED TO CONTINUE SCHOOLING . . . . . 06 DID NOT LOVE THE FATHER . . . . . 07 WANTED TO DELAY CHILDBEARING . . . . . 08 WANTED TO CONTINUE WORKING . . . . . 09 DID NOT WANT TO STAY WITH THE FATHER . . 10 WANTED TO SPACE CHILD . . . . . 11 PARTNER DID NOT WANT CHILD/DENIED THE PREGNANCY . . . . . 12 CHILD'S SEX . . . . . 13 BECAUSE OF RAPE . . . . . 14 TO AVOID SHAME . . . . . 15 AFRAID OF PARENTS 16 NO ONE TO HELP ME LOOK AFTER THE CHILD . . 17 PARENTS INSISTED 18 FATHER OF CHILD DIED 19 OTHER _____ 96 (SPECIFY)	
305	What was the attitude of your partner toward you having the abortion?	FAVORED . . . . . 01 OPPOSED . . . . . 02 NEUTRAL . . . . . 03 HE DID NOT KNOW . . . . . 04 DON'T KNOW/DON'T REMEMBER 05	
306	Women sometimes take many steps to stop a pregnancy. Did you do more than one thing to end this pregnancy?	YES . . . . . 1 NO . . . . . 2 →	→ 320A
307	How many days or weeks was it between your first attempt to end this pregnancy and when you actually succeeded in stopping it?	DAYS . . . . . 1 ☐☐ WEEKS . . . . . 2 ☐☐ DON'T KNOW 998	
308	What did you first do to end this pregnancy?	DRANK MILK/COFFEE/OTHER LIQUID WITH LOTS OF SUGAR . . . . . 01 DRANK HERBAL CONCOCTION . . . . . 02 DRANK OTHER HOME REMEDIES . . . . . 03 USED ANY HERBAL ANEMA . . . . . 04 INSERTED HERB/OBJECT/OTHER SUBSTANCE IN THE VAGINA . . . . . 05 TOOK TABLETS . . . . . 06 HEAVY MASSAGE . . . . . 07 D & C . . . . . 08 MANUAL VACUUM ASPIRATION . . . . . 09 INJECTION . . . . . 10 SALINE INSTILLATION . . . . . 11 CYTOTEC TABLETS (MISOPROSTOL) . . . . . 12 OXYTOCIN . . . . . 13 CATHETER . . . . . 14 EXCESSIVE PHYSICAL ACTIVITY . . . . . 15 OTHER _____ 16 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
309	Who did you see to get this first step done?	HEALTH PROFESSIONAL DOCTOR . . . . . 01 NURSE/MIDWIFE . . . . . 02 AUXILIARY MIDWIFE . . . . . 03 OTHER PERSON PHARMACIST/CHEMICAL SELLER . . . . . 04 TRADITIONAL BIRTH ATTENDANT . . . . . 05 COMMUNITY HEALTH WORKER . . . . . 06 RELATIVE/FRIEND . . . . . 07 TRADITIONAL PRACTITIONER . . . . . 08 OTHER _____ 09 (SPECIFY) NO ONE 10	
310	Where did you go to get this first step done?	PUBLIC SECTOR GOVT. HOSPITAL/ POLYCLINIC . . . . . 11 GOVT. HEALTH CENTER . . . . . 12 GOVT. HEALTH POST/CLINIC . . . . . 13 MOBILE CLINIC . . . . . 14 OTHER PUBLIC _____ 15 (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . 21 MOBILE CLINIC . . . . . 22 MATERNITY HOME . . . . . 23 PHARMACY/CHEMIST/DRUG STORE 24 OTHER PRIVATE MEDICAL _____ 25 (SPECIFY) HOME RESPONDENT'S HOME . . . . . 31 OTHER HOME . . . . . 32 TBA'S HOME . . . . . 33 OTHER _____ 96 (SPECIFY)	
311	Who paid to get this procedure done? PROBE: Anyone else? CIRCLE ALL MENTIONED.	RESPONDENT . . . . . A PARTNER . . . . . B MOTHER . . . . . C FATHER . . . . . D OTHER FAMILY MEMBER . . . . . E FRIEND . . . . . F OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
312	Now I would like to talk about any problems that you may have had when you had this first thing done to stop the pregnancy? Did you have any bleeding? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE BLEEDING . . . . . 4 DON'T KNOW 8	
313	Did you have any pain? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE PAIN . . . . . 4 DON'T KNOW 8	
314	Did you have any fever? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE FEVER . . . . . 4 DON'T KNOW 8	
315	Did you suffer any injury/perforation? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE INJURY . . . . . 4 DON'T KNOW 8	
316	Did you have any foul-smelling vaginal discharge? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE DISCHARGE . . . . . 4 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
317	Did you have any other problems?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 319
318	What other problems did you have? THEN FOR EACH ADDITIONAL PROBLEM LISTED ASK: Was it mild, moderate or severe? CIRCLE THE APPROPRIATE CODE.	NO MORE MILD MODERATE SEVERE _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY	
319	Were you given any pain relievers?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
320 320A	What was the last thing you did to end this pregnancy? What did you do to end this pregnancy?	DRANK MILK/COFFEE/OTHER LIQUID WITH LOTS OF SUGAR . . . . . 01 DRANK HERBAL CONCOCTION . . . . . 02 DRANK OTHER HOME REMEDIES . . . . . 03 USED ANY HERBAL ANEMA . . . . . 04 INSERTED HERB/OBJECT/OTHER SUBSTANCE IN THE VAGINA . . . . . 05 TOOK TABLETS . . . . . 06 HEAVY MASSAGE . . . . . 07 D & C . . . . . 08 MANUAL VACUUM ASPIRATION . . . . . 09 INJECTION . . . . . 10 SALINE INSTILLATION . . . . . 11 CYTOTEC TABLETS (MISOPROSTOL) . . . . . 12 OXYTOCIN . . . . . 13 CATHETER . . . . . 14 EXCESSIVE PHYSICAL ACTIVITY . . . . . 15 OTHER _____ 16 (SPECIFY)	
321	Who did you see to get this (last step) done?	HEALTH PROFESSIONAL DOCTOR . . . . . 01 NURSE/MIDWIFE . . . . . 02 AUXILIARY MIDWIFE . . . . . 03 OTHER PERSON PHARMACIST/CHEMICAL SELLER . . . . . 04 TRADITIONAL BIRTH ATTENDANT . . . . . 05 COMMUNITY HEALTH WORKER . . . . . 06 RELATIVE/FRIEND . . . . . 07 TRADITIONAL PRACTITIONER . . . . . 08 OTHER _____ 09 (SPECIFY) NO ONE 10	
322	Where did you go to get this (last step) done?	PUBLIC SECTOR GOVT. HOSPITAL/ POLYCLINIC . . . . . 11 GOVT. HEALTH CENTER . . . . . 12 GOVT. HEALTH POST/CLINIC . . . . . 13 MOBILE CLINIC . . . . . 14 OTHER PUBLIC _____ 15 (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . 21 MOBILE CLINIC . . . . . 22 MATERNITY HOME . . . . . 23 PHARMACY/CHEMIST/DRUG STORE 24 OTHER PRIVATE MEDICAL _____ 25 (SPECIFY) HOME RESPONDENT'S HOME . . . . . 31 OTHER HOME . . . . . 32 TBA'S HOME . . . . . 33 OTHER _____ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
323	Who paid to get this procedure done? PROBE: Anyone else? CIRCLE ALL MENTIONED.	RESPONDENT . . . . . A PARTNER . . . . . B MOTHER . . . . . C FATHER . . . . . D OTHER FAMILY MEMBER . . . . . E FRIEND . . . . . F OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
324	Did you take any antibiotics after this abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
325	Were you given any pain relievers?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
326	Did you have any local or general (intravenous) anethesia for this abortion? By local I mean an injection in the vagina opening?	LOCAL . . . . . 1 GENERAL . . . . . 2 NEITHER . . . . . 3 DON'T KNOW 8	
327	In the first one month after the abortion, did you have any health problems because of the abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 338
328	Did you have any bleeding? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE BLEEDING . . . . . 4 DON'T KNOW 8	
329	Did you have any pain? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE PAIN . . . . . 4 DON'T KNOW 8	
330	Did you have any fever? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE FEVER . . . . . 4 DON'T KNOW 8	
331	Did you suffer any injury/perforation? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE INJURY . . . . . 4 DON'T KNOW 8	
332	Did you have any foul-smelling vaginal discharge? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE DISCHARGE . . . . . 4 DON'T KNOW 8	
333	Did you have any other problems?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 335
334	What other problems did you have? THEN FOR EACH ADDITIONAL PROBLEM LISTED ASK: Was it mild, moderate or severe? CIRCLE THE APPROPRIATE CODE.	NO MORE MILD MODERATE SEVERE _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY _____ 0 1 2 3 SPECIFY	
335	Did you get any treatment for the health problems you had because of the abortion? IF YES: What kind of treatment did you receive? CIRCLE ALL TREATMENTS MENTIONED.	OPERATION . . . . . A BLOOD TRANSFUSION . . . . . B ANTIBIOTICS . . . . . C OTHER _____ X (SPECIFY) NO TREATMENT . . . . . Y	→ 337

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
336	Where did you go to get this treatment? CIRCLE ALL SOURCES MENTIONED	PUBLIC SECTOR GOVT. HOSPITAL/ POLYCLINIC . . . . . A GOVT. HEALTH CENTER . . . . . B GOVT. HEALTH POST /CLINIC. . . . . C MOBILE CLINIC . . . . . D OTHER PUBLIC _____ E (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . F MOBILE CLINIC . . . . . G MATERNITY HOME . . . . . H PHARMACY/CHEMIST/DRUG STORE I OTHER PRIVATE MEDICAL _____ J (SPECIFY) HOME RESPONDENT'S HOME . . . . . K OTHER HOME . . . . . L TBA'S HOME . . . . . M OTHER _____ X (SPECIFY)	→ 338
337	In the first one month after this abortion, how many nights did you spend in a health facility (including readmissions)? IF NONE RECORD '00'	NIGHTS . . . . . [ ][ ] DON'T KNOW 98	
338	Either before or after the abortion, did a doctor or other health worker visit you?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
339	After six months, did you have any health problems as a result of this abortion?	YES . . . . . 1 NO . . . . . 2 NOT YET SIX MONTHS . . . . . 3 DON'T KNOW 8	→ 341
340	What health problems did you have? PROBE: Any other? CIRCLE ALL MENTIONED.	ABDOMINAL PAIN . . . . . A STERILITY . . . . . B INFECTION . . . . . C LACK OF PERIOD D IRREGULAR PERIOD . . . . . E MORE PAINFUL PERIOD . . . . . F OTHER _____ X (SPECIFY)	
341	At the time you got pregnant, were you using any method of contraception? IF YES, ASK: What method of contraception were you using? IF MORE THAN ONE METHOD IS MENTIONED, CIRCLE THE HIGHEST METHOD ON THE LIST.	FEMALE STERILIZATION . . . . . 01 MALE STERILIZATION . . . . . 02 PILL . . . . . 03 IUD . . . . . 04 INJECTABLES . . . . . 05 IMPLANTS . . . . . 06 MALE CONDOM . . . . . 07 FEMALE CONDOM . . . . . 08 DIAPHRAGM . . . . . 09 FOAM/JELLY . . . . . 10 LACTATIONAL AMEN. METHOD . . . . . 11 RHYTHM METHOD . . . . . 12 WITHDRAWAL . . . . . 13 NOT USING A METHOD 14 OTHER _____ 96 (SPECIFY)	
342	Either before or after the abortion, did a doctor or other health professional talk to you about contraception?	YES BEFORE THE ABORTION . . . . . 1 YES AFTER THE ABORTION . . . . . 2 BOTH BEFORE AND AFTER THE ABORTION . . . . 3 NO . . . . . 4 DON'T KNOW 8	
343	After this abortion, did a doctor or health worker give you a method, prescribe a method, or refer you to a family planning clinic?	YES GAVE METHOD . . . . . 1 YES PRESCRIBED A METHOD . . . . . 2 YES GAVE REFERREL . . . . . 3 NO . . . . . 4 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
344	CHECK 211: NO ABORTIONS ONE OR MORE ABORTIONS		349
345	Have you heard of abortion? IF NO PROBE: That is a woman can deliberately end a pregnancy that she does not want. Have you heard about this?	YES . . . . . 1 NO 2	401
346	If you wanted to could you yourself get an abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
347	Do you know where to go to get an abortion?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	349
348	Where is that? Any other place? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. _____ (NAME OF PLACE(S))	PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC . . . A GOVT. HEALTH CENTER . . . . . B GOVT. HEALTH POST /CLINIC. . . . . C MOBILE CLINIC . . . . . D FIELDWORKER . . . . . E OTHER PUBLIC _____ F (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . G PRIVATE DOCTOR . . . . . H MOBILE CLINIC . . . . . I PHARMACY/CHEMIST/DRUG STORE . . . . . J FIELDWORKER . . . . . K FP/PPAG CLINIC . . . . . L MATERNITY HOME . . . . . M OTHER PRIVATE MEDICAL _____ N (SPECIFY) OTHER SOURCE SHOP . . . . . O CHURCH . . . . . P FRIEND/RELATIVE . . . . . Q OTHER _____ X (SPECIFY)	
349	Is abortion legal in Ghana?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	401
350	Under what conditions is abortion legal in Ghana? PROBE: Anything else? CIRCLE ALL MENTIONED.	RAPE . . . . . A INCEST . . . . . B LIFE OF MOTHER IN DANGER . . . . . C RISK TO PHYSICAL HEALTH OF MOTHER D RISK TO MENTAL HEALTH OF MOTHER E FOETAL ABNORMALITY . . . . . F DURING FIRST TRIMESTER ONLY . . . . . G UP TO THE SECOND TRIMESTER . . . . . H MOTHER MENTALLY NOT SOUND . . . . . I DON'T KNOW . . . . . Z	

SECTION 4. MISCARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
401	CHECK 236: ONE OR MORE MISCARRIAGES ☐	NO MISCARRIAGES ☐ → 501	
402	ENTER THE LINE NUMBER OF THE LAST PREGNANCY THAT ENDED IN A MISCARRIAGE IN 2002 OR LATER. ASK THE QUESTIONS ABOUT ONLY THIS LAST MISCARRIAGE. LINE NUMBER FROM 218	LAST MISCARRIAGE LINE NO. ☐☐	
403	You said you had a miscarriage in YEAR FROM Q.229. Now I would like to ask you some questions about this pregnancy that ended in an miscarriage.		
404	What caused this miscarriage to happen?	ACCIDENT . . . . . 01 ATE SOMETHING . . . . . 02 SOMEONE HURT ME . . . . . 03 SPONTANEOUS 04 OTHER _____ 06 (SPECIFY) DON'T KNOW 98	
405	Where did this miscarriage take place?	PUBLIC SECTOR GOVT. HOSPITAL/ POLYCLINIC . . . . . 11 GOVT. HEALTH CENTER . . . . . 12 GOVT. HEALTH POST/CLINIC . . . . . 13 MOBILE CLINIC . . . . . 14 OTHER PUBLIC _____ 15 (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . 21 MOBILE CLINIC . . . . . 22 MATERNITY HOME . . . . . 23 PHARMACY/CHEMIST/DRUG STORE . . . . . 24 OTHER PRIVATE MEDICAL _____ 25 (SPECIFY) HOME RESPONDENT'S HOME . . . . . 31 OTHER HOME . . . . . 32 TBA'S HOME . . . . . 33 OTHER _____ 96 (SPECIFY)	
406	Did you seek help from anyone for this miscarriage? IF YES: Who did you see? PROBE: Anyone else? CIRCLE ALL MENTIONED.	HEALTH PROFESSIONAL DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C OTHER PERSON PHARMACIST/CHEMICAL SELLER . . . . . D TRADITIONAL BIRTH ATTENDANT . . . . . E COMMUNITY HEALTH WORKER . . . . . F RELATIVE/FRIEND . . . . . G TRADITIONAL PRACTITIONER . . . . . H OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
407	Did you have your uterus cleaned after the miscarriage?	YES . . . . . 1 NO 2	→ 412
408	What method was used to clean your uterus following the miscarriage?	D & C . . . . . 01 MANUAL VACUUM ASPIRATION . . . . . 02 TABLETS FOR INSERTION . . . . . 03 HERBAL MIXTURE INSERTION 04 OXYTOCIN 05 CATHETER 07 OTHER _____ 06 (SPECIFY) DON'T KNOW 98	
409	Did you have any local or general (intravenous) anethesia for this miscarriage? By local I mean an injection in the vagina opening?	LOCAL . . . . . 1 GENERAL . . . . . 2 NEITHER . . . . . 3 DON'T KNOW 8	
410	Were you given any pain relievers?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
411	Did you take any antibiotics after this procedure?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
412	In the first one month after the miscarriage, did you have any health problems because of the miscarriage?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 423
413	Did you have any bleeding? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE BLEEDING . . . . . 4 DON'T KNOW 8	
414	Did you have any pain? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE PAIN . . . . . 4 DON'T KNOW 8	
415	Did you have any fever? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE FEVER . . . . . 4 DON'T KNOW 8	
416	Did you suffer any injury/perforation? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE INJURY . . . . . 4 DON'T KNOW 8	
417	Did you have any foul-smelling vaginal discharge? IF YES: Was it mild, moderate or severe?	MILD . . . . . 1 MODERATE . . . . . 2 SEVERE . . . . . 3 DID NOT HAVE DISCHARGE . . . . . 4 DON'T KNOW 8	
418	Did you have any other problems?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 420
419	What other problems did you have? THEN FOR EACH ADDITIONAL PROBLEM LISTED ASK: Was it mild, moderate or severe? CIRCLE THE APPROPRIATE CODE.	NO MORE / MILD / MODERATE / SEVERE _____ SPECIFY: 0 1 2 3 _____ SPECIFY: 0 1 2 3 _____ SPECIFY: 0 1 2 3 _____ SPECIFY: 0 1 2 3	
420	Did you get any treatment for the health problems you had because of the miscarriage? IF YES: What kind of treatment did you receive? CIRCLE ALL TREATMENTS MENTIONED.	OPERATION . . . . . A BLOOD TRANSFUSION . . . . . B ANTIBIOTICS . . . . . C OTHER _____ (SPECIFY) X NO TREATMENT . . . . . Y	→ 422
421	Where did you go to get this treatment?	PUBLIC SECTOR GOVT. HOSPITAL/ POLYCLINIC . . . . . A GOVT. HEALTH CENTER . . . . . B GOVT. HEALTH POST/CLINIC . . . . . C MOBILE CLINIC . . . . . D OTHER PUBLIC _____ (SPECIFY) E PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . F MOBILE CLINIC . . . . . G MATERNITY HOME . . . . . H PHARMACY/CHEMIST/DRUG STORE . . . . . I OTHER PRIVATE MEDICAL _____ (SPECIFY) J HOME RESPONDENT'S HOME . . . . . K OTHER HOME . . . . . L TBA'S HOME . . . . . M OTHER _____ (SPECIFY) X	→ 423
422	In the first one month after this miscarriage, how many nights did you spend in a health facility (including readmissions)? IF NONE RECORD '00'	NIGHTS . . . . . ☐☐ DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
423	Either before or after the miscarriage, did a doctor or other health worker visit you?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
424	After six months, did you have any health problems as a result of this miscarriage?	YES . . . . . 1 NO . . . . . 2 NOT YET SIX MONTHS . . . . . 3 DON'T KNOW 8	→ 426
425	What health problems did you have? PROBE: Any other? CIRCLE ALL MENTIONED.	ABDOMINAL PAIN . . . . . A STERILITY . . . . . B INFECTION . . . . . C LACK OF PERIOD D IRREGULAR PERIOD . . . . . E MORE PAINFUL PERIOD . . . . . F OTHER _____ C (SPECIFY)	
426	At the time you got pregnant, were you using any method of contraception? IF YES, ASK: What method of contraception were you using? IF MORE THAN ONE METHOD IS MENTIONED, CIRCLE THE HIGHEST METHOD ON THE LIST.	FEMALE STERILIZATION . . . . . 01 MALE STERILIZATION . . . . . 02 PILL . . . . . 03 IUD . . . . . 04 INJECTABLES . . . . . 05 IMPLANTS . . . . . 06 MALE CONDOM . . . . . 07 FEMALE CONDOM . . . . . 08 DIAPHRAGM . . . . . 09 FOAM/JELLY . . . . . 10 LACTATIONAL AMEN. METHOD . . . . . 11 RHYTHM METHOD . . . . . 12 WITHDRAWAL . . . . . 13 NOT USING A METHOD 14 OTHER _____ 96 (SPECIFY)	
427	Either before or after the miscarriage, did a doctor or other health professional talk to you about contraception?	YES BEFORE THE MISCARRIAGE . . . . . 1 YES AFTER THE MISCARRIAGE . . . . . 2 BOTH BEFORE AND AFTER THE MISCARRIAGE . . 3 NO . . . . . 4 DON'T KNOW 8	
428	After this miscarriage, did a doctor or health worker give you a method, prescribe a method, or refer you to a family planning clinic?	YES GAVE METHOD . . . . . 1 YES PRESCRIBED A METHOD . . . . . 2 YES GAVE REFERREL . . . . . 3 NO . . . . . 4 DON'T KNOW 8	

SECTION 5. ANTENATAL, DELIVERY AND POSTNATAL CARE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	CHECK 224 AND 230: ONE OR MORE BIRTHS IN 2002 OR LATER → ONE OR MORE STILLBIRTHS Q.230 IS 7 MONTHS OR MORE → NO BIRTHS/STILLBIRTHS IN 2002 OR LATER		→ 601
502	CHECK 224, AND 230: ENTER IN THE TABLE THE LINE NUMBER AND NAME OF THE LAST BIRTH OR STILLBIRTH THAT TOOK PLACE IN 2002 OR LATER. IF THERE ARE MORE THAN ONE BIRTH OR STILLBIRTH ASK THE QUESTIONS ABOUT ONLY THE LAST BIRTH OR STILLBIRTH. FOR STILLBIRTHS WRITE 'BABY'.		
503	LINE NUMBER FROM 218	LAST BIRTH/STILLBIRTH LINE NO. ☐☐	
504	NAME FROM 222 IF NO NAME LISTED WRITE 'BABY'.	NAME _____	
505	Now I would like to ask you some questions about the health care you received while pregnant with NAME or after the birth of (NAME) born to you in the last five years.		
506	Did you see anyone for antenatal care during this pregnancy? IF YES: Who did you see? Anyone else? PROBE TO IDENTIFY EACH TYPE OF PERSON AND RECORD ALL MENTIONED.	HEALTH PERSONNEL DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT . . . . . D UNTRAINED TRADITIONAL BIRTH ATTENDANT . . . . . E OTHER _____ X (SPECIFY) NO ONE . . . . . Y	→ 508
507	Why did you not see anyone? PROBE: Any other reason? CIRCLE ALL MENTIONED.	NOT NECESSARY A NOT CUSTOMARY . . . . . B LACK OF MONEY C TOO FAR . . . . . D TRANSPORTATION PROBLEM E NO ONE TO ACCOMPANY . . . . . F GOOD SERVICE NOT AVAILABLE G NOT PERMITTED BY FAMILY H BETTER SERVICE AT HOME I DID NOT KNOW WHERE TO GO J NO FEMALE DOCTOR AVAILABLE K INCONVENIENT SERVICE HOUR L AFRAID TO GO . . . . . M LONG WAITING TIME . . . . . N RELIGIOUS REASON O OTHER _____ X (SPECIFY)	→ 516
508	The very first time you went for antenatal care when you were pregnant with (NAME), did you go because of problems with the pregnancy or just for a checkup?	BECAUSE OF A PROBLEM . . . . . 1 JUST FOR A CHECKUP 2	→ 510
509	What problems did you have when you first went for antenatal care when you were pregnant with (NAME)? Anything else? CIRCLE ALL MENTIONED.	HEADACHE . . . . . A BLURRY VISION . . . . . B EDEMA/PRE-ECLAMSIA . . . . . C VAGINAL BLEEDING . . . . . D CONVULSIONS/ECLAMSIA . . . . . E TETANUS . . . . . F FOUL-SMELLING DISCHARGE . . . . . G LOWER ABDOMINAL PAIN . . . . . H FELL DOWN . . . . . I BABY MOVEMENT WAS LOW . . . . . J VARICOSE VEIN . . . . . K EXCESSIVE VOMITTING . . . . . L OTHER _____ X (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
510	Where did you receive antenatal care for this pregnancy? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE PROBE: Any other place? RECORD ALL PLACES MENTIONED.	HOME RESPONDENT'S HOME . . . . . A OTHER HOME . . . . . B PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC . . . . C GOVT. HEALTH CENTER . . . . . D GOVT. HEALTH POST/CLINIC . . . . . E MOBILE CLINIC . . . . . F OTHER PUBLIC _____ G (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . H MOBILE CLINIC . . . . . I MATERNITY HOME . . . . . J OTHER PRIVATE _____ K (SPECIFY) OTHER _____ X (SPECIFY)	
511	How many months pregnant were you when you first received antenatal care for this pregnancy?	MONTHS . . . . . ☐☐ DON'T KNOW 98	
512	How many times did you receive antenatal care during this pregnancy?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
513	As part of your antenatal care during this pregnancy, were any of the following done at least once? Were you weighed? Was your blood pressure measured? Did you give a urine sample? Did you give a blood sample?	YES NO WEIGHT . . . . . 1 2 BP . . . . . 1 2 URINE . . . . . 1 2 BLOOD 1 2	
514	During (any of) your antenatal care visit (s), were you told about the signs of pregnancy complications?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 516
515	Were you told where to go if you had any of these complications?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
516	During this pregnancy, were you given an injection in the arm to prevent the baby from getting tetanus, that is, convulsions after birth?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 519
517	During this pregnancy, how many times did you get this tetanus injection?	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
518	CHECK 517: OTHER ↓ TWO OR MORE TIMES →		→ 523
519	At any time before this pregnancy, did you receive any tetanus injections, either to protect yourself or another baby?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 523
520	Before this pregnancy, how many other times did you receive a tetanus injection? IF 7 OR MORE TIMES, RECORD '7'.	NUMBER OF TIMES . . . . . ☐☐ DON'T KNOW 98	
521	In what month and year did you receive the last tetanus injection before this pregnancy?	MONTH . . . . . ☐☐ DK MONTH . . . . . 98 YEAR . . . . . ☐☐☐☐ DON'T KNOW YEAR 9998	→ 523
522	How many years ago did you receive that tetanus injection? injection?	YEARS AGO . . . . . ☐☐	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
523	During this pregnancy, were you given or did you buy any iron tablets or iron syrup? SHOW TABLETS/SYRUP.	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	→ 525
524	During the whole pregnancy, for how many days did you take the tablets or syrup? IF ANSWER IS NOT NUMERIC, PROBE FOR APPROXIMATE NUMBER OF DAYS.	DAYS . . . . . [ ][ ][ ] DON'T KNOW 998	
525	During this pregnancy, did you take any drug for intestinal worms?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	
526	Who assisted with the delivery of (NAME)? PROBE: Anyone else? PROBE FOR THE TYPE(S) OF PERSON(S) AND RECORD ALL MENTIONED. IF RESPONDENT SAYS NO ONE ASSISTED, PROBE TO DETERMINE WHETHER ANY ADULTS WERE PRESENT AT THE DELIVERY.	HEALTH PERSONNEL DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT . . . . . D UNTRAINED TRADITIONAL BIRTH ATTENDANT . . . . . E RELATIVE/FRIEND . . . . . F OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
527	Where did you give birth to (NAME)? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	HOME RESPONDENT'S HOME . . . . . 01 OTHER HOME . . . . . 02 PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC . . . . 03 GOVT. HEALTH CENTER . . . . . 04 GOVT. HEALTH POST/CLINIC. . . . 05 OTHER PUBLIC _____ 06 (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . 07 MATERNITY HOME . . . . . 08 OTHER PRIVATE _____ 09 (SPECIFY) OTHER _____ 10 (SPECIFY)	→ 529
528	Why did you not deliver at a hospital or health center? PROBE: Any other reason? CIRCLE ALL MENTIONED.	NOT NECESSARY . . . . . A NOT CUSTOMARY . . . . . B LACK OF MONEY . . . . . C TOO FAR . . . . . D TRANSPORTATION PROBLEM . . . . . E NO ONE TO ACCOMPANY . . . . . F GOOD SERVICE NOT AVAILABLE . . . G NOT PERMITTED BY FAMILY . . . . . H BETTER SERVICE AT HOME . . . . . I DID NOT KNOW WHERE TO GO . . . J NO FEMALE DOCTOR AVAILABLE . . . K INCONVENIENT SERVICE HOUR . . . L AFRAID TO GO . . . . . M LONG WAITING TIME . . . . . N RELIGIOUS REASON . . . . . O OTHER . . . . . _____ X (SPECIFY)	→ 530
529	Were any of the following procedures performed at the time of delivery? a. Instruments were used to get the baby out (Forceps) b. Received blood transfusions. c. Received intravenous fluids (IV).	YES NO DK a. Forceps 1 2 8 b. Blood transfusion 1 2 8 c. Intravenous fluid 1 2 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
530	At any time just before, during or after the delivery of (NAME) did you suffer from any problems? IF YES: What problems did you have? Anything else? CIRCLE ALL MENTIONED.	HEADACHE . . . . . A BLURRY VISION . . . . . B EDEMA/PRE-ECLAMSIA . . . . . C EXCESSIVE BLEEDING . . . . . D CONVULSIONS/ECLAMSIA . . . . . E TETANUS . . . . . F FOUL-SMELLING DISCHARGE . . . . . G BABY MOVEMENT WAS LOW . . . . . H BABY'S HANDS/FEET CAME OUT FIRST . . . . . I PROLONGED LABOR . . . . . J OBSTRUCTED LABOR . . . . . K TORN UTERUS . . . . . L PLACENTA PREVIA/RETAINED . . . . . M HIGH FEVER . . . . . N FISTULA . . . . . 0 DID NOT HAVE ANY PROBLEMS . . . P OTHER _____ X (SPECIFY)	→ 540
531	Did you see anyone about this (these) problems?	YES . . . . . 1 NO 2	→533
532	Why did you not see anyone for the problems you had? PROBE: Any other reason? CIRCLE ALL MENTIONED.	NOT NECESSARY A NOT CUSTOMARY . . . . . B LACK OF MONEY C TOO FAR . . . . . D TRANSPORTATION PROBLEM E NO ONE TO ACCOMPANY . . . . . F GOOD SERVICE NOT AVAILABLE G NOT PERMITTED BY FAMILY H BETTER SERVICE AT HOME I DID NOT KNOW WHERE TO GO J NO FEMALE DOCTOR AVAILABLE K INCONVENIENT SERVICE HOUR L AFRAID TO GO . . . . . M LONG WAITING TIME . . . . . N RELIGIOUS REASON . . . . . O NOT LIFE THREATENING . . . . . P OTHER _____ X (SPECIFY)	→ 540
533	Who did you see about the problems you had PROBE: Anyone else? PROBE FOR THE TYPE(S) OF PERSON(S) AND RECORD ALL MENTIONED.	HEALTH PERSONNEL DOCTOR . . . . . A NURSE/MIDWIFE . . . . . B AUXILIARY MIDWIFE . . . . . C OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT . . . . . D UNTRAINED TRADITIONAL BIRTH ATTENDANT . . . . . E RELATIVE/FRIEND . . . . . F OTHER _____ X (SPECIFY) NO ONE . . . . . Y	
534	Where were you treated for this (these) problems? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	HOME RESPONDENT'S HOME . . . . . A OTHER HOME . . . . . B PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC C GOVT. HEALTH CENTER . . . . . D GOVT. HEALTH POST/CLINIC. . . . E OTHER PUBLIC _____ F (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . G MATERNITY HOME . . . . . H OTHER PRIVATE _____ I (SPECIFY) OTHER _____ X (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
535	Did your condition improve after you were treated at this place?	NO CHANGE . . . . . 1 IMPROVED . . . . . 2 WORSENED . . . . . 3 DON'T KNOW 8	
536	Were you referred or told to go to another place for treatment or advice?	YES . . . . . 1 NO 2	→540
537	Where were you referred to or told to go for treatment for this (these) problems? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC . .. . 01 GOVT. HEALTH CENTER . . . . . 02 GOVT. HEALTH POST/CLINIC . . . . 03 OTHER PUBLIC _____ 04 (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . 05 MATERNITY HOME . . . . . 06 OTHER PRIVATE _____ 07 (SPECIFY) OTHER _____ 16 (SPECIFY)	
538	Did you go to the place you were referred to or told to go for treatment?	YES . . . . . 1 NO 2	→540
539	Why did you not go to the referred place or any other place for treatment? PROBE: Any other reason? CIRCLE ALL MENTIONED.	NOT NECESSARY A NOT CUSTOMARY . . . . . B LACK OF MONEY C TOO FAR . . . . . D TRANSPORTATION PROBLEM E NO ONE TO ACCOMPANY . . . . . F GOOD SERVICE NOT AVAILABLE G NOT PERMITTED BY FAMILY H BETTER SERVICE AT HOME I DID NOT KNOW WHERE TO GO J NO FEMALE DOCTOR AVAILABLE K INCONVENIENT SERVICE HOUR L AFRAID TO GO . . . . . M LONG WAITING TIME . . . . . N RELIGIOUS REASON . . . . . O NOT LIFE THREATENING . . . . . P OTHER _____ X (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
540	CHECK 527: ANY CODES '03' TO '09' CIRCLED ☐ → ↓ OTHER CODES CIRCLED ☐ → 543		
541	How long after (NAME) was delivered did you stay there? IF LESS THAN ONE DAY, RECORD HOURS. IF LESS THAN ONE WEEK, RECORD DAYS.	HOURS 1 ☐☐ DAYS 2 ☐☐ WEEKS 3 ☐☐ DON'T KNOW . . . 998	
542	Was (NAME) delivered by cesarian section?	YES . . . . . 1 NO 2	
543	After (NAME) was born, did any one check on your health?	YES . . . . . 1 NO 2	→ 601
544	How long after (NAME) was delivered did the first check on your health take place? IF LESS THAN ONE DAY, RECORD HOURS. IF LESS THAN ONE WEEK, RECORD DAYS.	HOURS 1 ☐☐ DAYS 2 ☐☐ WEEKS 3 ☐☐ DON'T KNOW . . . 998	
545	Who checked on your health at that time? PROBE FOR MOST QUALIFIED PERSON.	HEALTH PERSONNEL DOCTOR . . . . . 01 NURSE/MIDWIFE . . . . . 02 AUXILIARY MIDWIFE . . . . . 03 OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT . . . . . 04 UNTRAINED TRADITIONAL BIRTH ATTENDANT . . . . . 05 RELATIVE/FRIEND . . . . . 06 OTHER _____ 07 (SPECIFY) NO ONE 08	
548	Where did this first check on your health take place? IF SOURCE IS A HOSPITAL, HEALTH CENTER, OR CLINIC WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. _____ NAME OF PLACE	HOME RESPONDENT'S HOME . . . . . 01 OTHER HOME . . . . . 02 PUBLIC SECTOR GOVT. HOSPITAL/CLINIC . . . . . 03 GOVT. HEALTH CENTER . . . . . 04 GOVT. HEALTH POST . . . . . 05 OTHER PUBLIC _____ 06 (SPECIFY) PRIVATE MEDICAL SECTOR PVT. HOSPITAL/CLINIC . . . . . 07 MATERNITY HOME . . . . . 08 OTHER PRIVATE _____ 09 (SPECIFY) OTHER _____ 10 (SPECIFY)	

SECTION 6. CONTRACEPTION

601	Now I would like to talk about family planning - the various ways or methods that a couple can use to delay or avoid a pregnancy. Which ways or methods have you heard about? FOR METHODS NOT MENTIONED SPONTANEOUSLY, ASK: Have you ever heard of (METHOD)? CIRCLE CODE 1 IN 601 FOR EACH METHOD MENTIONED SPONTANEOUSLY. THEN PROCEED DOWN COLUMN 601, READING THE NAME AND DESCRIPTION OF EACH METHOD NOT MENTIONED SPONTANEOUSLY. CIRCLE CODE 1 IF METHOD IS RECOGNIZED, AND CODE 2 IF NOT RECOGNIZED. THEN, FOR EACH METHOD WITH CODE 1 CIRCLED IN 601, ASK 602.		602 Have you ever used (METHOD)?
01	FEMALE STERILIZATION Women can have an operation to avoid having any more children.	YES . . . . . 1 NO 2	Have you ever had an operation to avoid having any more children? YES . . . . . 1 NO 2
02	MALE STERILIZATION Men can have an operation to avoid having any more children.	YES . . . . . 1 NO 2	Have you ever had a partner who had an operation to avoid having any more children? YES . . . . . 1 NO 2
03	PILL Women can take a pill every day to avoid becoming pregnant.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
04	IUD Women can have a loop or coil placed inside them by a doctor or a nurse.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
05	INJECTABLES Women can have an injection by a health provider that stops them from becoming pregnant for one or more months.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
06	IMPLANTS Women can have several small rods placed in their upper arm by a doctor or nurse which can prevent pregnancy for one or more years.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
07	MALE CONDOM Men can put a rubber sheath on their penis before sexual intercourse.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
08	FEMALE CONDOM Women can place a sheath in their vagina before sexual intercourse.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
09	LACTATIONAL AMENORRHEA METHOD (LAM)	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
10	RHYTHM METHOD Every month that a woman is sexually active she can avoid pregnancy by not having sexual intercourse on the days of the month she is most likely to get pregnant.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
11	WITHDRAWAL Men can be careful and pull out before climax.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
12	EMERGENCY CONTRACEPTION As an emergency measure after unprotected sexual intercourse, women can take special pills at any time within five days to prevent pregnancy.	YES . . . . . 1 NO 2	YES . . . . . 1 NO 2
13	Have you heard of any other ways or methods that women or men can use to avoid pregnancy?	YES . . . . . 1 _____ (SPECIFY) _____ (SPECIFY) NO 2	YES . . . . . 1 NO . . . . . 2 YES . . . . . 1 NO 2
603	CHECK 602: NOT A SINGLE "YES" (NEVER USED) → AT LEAST ONE "YES" (EVER USED) → 606		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
604	Have you ever used anything or tried in any way to delay or avoid getting pregnant?	YES . . . . . 1 NO 2	→ 611
605	What have you used or done? CORRECT 602 AND 603 (AND 601 IF NECESSARY).		
606	Now I would like to ask you about the first time that you did something or used a method to avoid getting pregnant. How many living children did you have at that time, if any? IF NONE, RECORD '00'.	NUMBER OF CHILDREN . . . . . ☐☐	
607	CHECK 602 (01): WOMAN NOT STERILIZED ☐ ↓ — WOMAN STERILIZED ☐		→ 610A
608	CHECK 238: NOT PREGNANT OR UNSURE ☐ ↓ — PREGNANT ☐		→ 611
609	Are you currently doing something or using any method to delay or avoid getting pregnant?	YES . . . . . 1 NO 2	→ 611
610 610A	Which method are you using? **(3)** CIRCLE ALL MENTIONED. IF MORE THAN ONE METHOD MENTIONED, FOLLOW SKIP INSTRUCTION FOR HIGHEST METHOD IN LIST. CIRCLE 'A' FOR FEMALE STERILIZATION.	FEMALE STERILIZATION . . . . . A MALE STERILIZATION . . . . . B PILL . . . . . C IUD . . . . . D INJECTABLES . . . . . E IMPLANTS . . . . . F MALE CONDOM . . . . . G FEMALE CONDOM . . . . . H DIAPHRAGM . . . . . I FOAM/JELLY . . . . . J LACTATIONAL AMEN. METHOD . . . . . K RHYTHM METHOD . . . . . L WITHDRAWAL . . . . . M OTHER _____ X (SPECIFY)	→ 701
611	Do you know of a place where you can obtain a method of family planning?	YES . . . . . 1 NO 2	→ 701
612	Where is that? Any other place? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. _____ (NAME OF PLACE(S))	PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC . . . A GOVT. HEALTH CENTER . . . . . B GOVT. HEALTH POST/CLINIC . . . . . C FAMILY PLANNING CLINIC . . . . . D MOBILE CLINIC . . . . . E FIELDWORKER . . . . . F OTHER PUBLIC _____ G (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC . . . . . H PRIVATE DOCTOR . . . . . I MOBILE CLINIC . . . . . J PHARMACY/CHEMIST/DRUG STORE . . . . . K FIELDWORKER . . . . . L FP/PPAG CLINIC . . . . . M MATERNITY HOME . . . . . N OTHER PRIVATE MEDICAL _____ O (SPECIFY) OTHER SOURCE SHOP . . . . . P CHURCH . . . . . Q FRIEND/RELATIVE . . . . . R OTHER _____ X (SPECIFY)	

SECTION 7. MARRIAGE AND SEXUAL ACTIVITY

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
701	Are you currently married or living together with a man as if married?	YES, CURRENTLY MARRIED . . . . . 1 YES, LIVING WITH A MAN . . . . . 2 NO, NOT IN UNION 3	→ 704
702	Have you ever been married or lived together with a man as if married?	YES, FORMERLY MARRIED . . . . . 1 YES, LIVED WITH A MAN . . . . . 2 NO 3	→ 708
703	What is your marital status now: are you widowed, divorced, or separated?	WIDOWED . . . . . 1 DIVORCED . . . . . 2 SEPARATED 3	→ 705
704	Is your husband/partner living with you now or is he staying elsewhere?	LIVING WITH HER . . . . . 1 STAYING ELSEWHERE 2	
705	Have you been married or lived with a man only once or more than once?	ONLY ONCE . . . . . 1 MORE THAN ONCE 2	
706	CHECK 705: MARRIED/ LIVED WITH A MAN ONLY ONCE → In what month and year did you start living with your husband/partner? MARRIED/ LIVED WITH A MAN MORE THAN ONCE → Now I would like to ask about when you started living with your first husband/partner. In what month and year was that?	MONTH . . . . . ☐☐ DON'T KNOW MONTH . . . . . 98 YEAR . . . . . ☐☐☐☐ DON'T KNOW YEAR 9998	→ 708
707	How old were you when you first started living with him?	AGE . . . . . ☐☐	
708	CHECK FOR THE PRESENCE OF OTHERS. BEFORE CONTINUING, MAKE EVERY EFFORT TO ENSURE PRIVACY.		
709	Now I need to ask you some questions about sexual activity in order to gain a better understanding of some important life issues. How old were you when you had sexual intercourse for the very first time?	NEVER HAD SEXUAL INTERCOURSE . . . . . 00 AGE IN YEARS . . . . . ☐☐ FIRST TIME WHEN STARTED LIVING WITH (FIRST) HUSBAND/PARTNER 95	→ 712 → 712
710	CHECK 104: AGE 15-24 → AGE 25-49		→ 801
711	Do you intend to wait until you get married to have sexual intercourse for the first time?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW/UNSURE 8	→ 801
712	When was the last time you had sexual intercourse? IF LESS THAN 12 MONTHS, ANSWER MUST BE RECORDED IN DAYS, WEEKS OR MONTHS. IF 12 MONTHS (ONE YEAR) OR MORE, ANSWER MUST BE RECORDED IN YEARS.	DAYS AGO . . . . . 1 ☐☐ WEEKS AGO . . . . . 2 ☐☐ MONTHS AGO . . . . . 3 ☐☐ YEARS AGO . . . . . 4 ☐☐	

SECTION 8. MATERNAL MORTALITY

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
801	Now I would like to ask you some questions about your brothers and sisters, that is, all of the children born to your natural mother, including those who are living with you, those living elsewhere and those who have died. How many children did your mother give birth to, including you?	NUMBER OF BIRTHS TO NATURAL MOTHER	
802	CHECK 801: TWO OR MORE BIRTHS ☐ ONLY ONE BIRTH (RESPONDENT ONLY) ☐ → 814		
803	How many of these births did your mother have before you were born?	NUMBER OF PRECEDING BIRTHS	

804	What was the name given to your oldest (next oldest) brother or sister?	(1) _____	(2) _____	(3) _____	(4) _____	(5) _____	(6) _____
805	Is (NAME) male or female?	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2
806	Is (NAME) still alive?	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (2)	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (3)	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (4)	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (5)	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (6)	YES . . . 1 NO . . . 2 → GO TO 808 DK . . . 8 → GO TO (7)
807	How old is (NAME)?	☐☐ GO TO (2)	☐☐ GO TO (3)	☐☐ GO TO (4)	☐☐ GO TO (5)	☐☐ GO TO (6)	☐☐ GO TO (7)
808	How many years ago did (NAME) die?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
809	How old was (NAME) when he/she died?	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (2)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (3)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (4)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (5)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (6)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (7)
810	Was (NAME) pregnant when she died?	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2
811	Did (NAME) die during childbirth?	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2	YES . . . 1 → GO TO 813 NO . . . 2
812	Did (NAME) die within two months after the end of a pregnancy or childbirth?	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2
813	How many live born children did (NAME) give birth to during her lifetime (before this pregnancy)?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐

IF NO MORE BROTHERS OR SISTERS, GO TO 814.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES					SKIP
804	What was the name given to your oldest (next oldest) brother or sister?	(7) _____	(8) _____	(9) _____	(10) _____	(11) _____	(12) _____
805	Is (NAME) male or female?	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2	MALE 1 FEMALE 2
806	Is (NAME) still alive?	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (8)	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (9)	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (10)	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (11)	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (12)	YES . . . 1 NO . . . 2 GO TO 808 DK . . . 8 GO TO (13)
807	How old is (NAME)?	☐☐ GO TO (8)	☐☐ GO TO (9)	☐☐ GO TO (10)	☐☐ GO TO (11)	☐☐ GO TO (12)	☐☐ GO TO (13)
808	How many years ago did (NAME) die?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
809	How old was (NAME) when he/she died?	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (8)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (9)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (10)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (11)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (12)	☐☐ IF MALE OR DIED BEFORE 12 YEARS OF AGE GO TO (13)
810	Was (NAME) pregnant when she died?	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2
811	Did (NAME) die during childbirth?	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2	YES . . . 1 GO TO 813 NO . . . 2
812	Did (NAME) die within two months after the end of a pregnancy or childbirth?	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2	YES . . . 1 NO . . . 2
813	How many live born children did (NAME) give birth to during her lifetime (before this pregnancy)?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
IF NO MORE BROTHERS OR SISTERS, GO TO 814.							
814	RECORD THE TIME.	HOURS . . . . . ☐☐ MINUTES . . . . . ☐☐					

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

EDITOR'S OBSERVATIONS

NAME OF EDITOR: _____ DATE: _____

SUPERVISOR'S OBSERVATIONS

NAME OF SUPERVISOR: _____ DATE: _____