FINAL REPORT

Bangladesh Maternal Health Services and Maternal Mortality Survey 2001

Bangladesh
Maternal Health Services and Maternal Mortality Survey
2001

National Institute of Population Research and Training (NIPORT)
Dhaka, Bangladesh

ORC Macro
Calverton, Maryland, USA

Johns Hopkins University
Baltimore, Maryland, USA

ICDDR,B: Centre for Health and Population Research
Dhaka, Bangladesh

December 2003

Data collection and data processing agencies:

Associates for Community and Population Research (ACPR)
3/10 Block A, Lalmatia, Dhaka-1207

Mitra and Associates
2/17 Iqbal Road, Mohammadpur, Dhaka-1207

Special acknowledgement:

Dr. Kanta Jamil, Program Coordinator for Research, PHN Team, USAID, Dhaka for technical assistance at all steps of survey implementation, data analysis and report generation

Mr. Han Raggers for data tabulation and analysis

Cover photo courtesy:

Dr. Syed Moshfiqur Rahman

The 2001 Bangladesh Maternal Health Services and Maternal Mortality Survey is part of the worldwide MEASURE *DHS+* project, which is funded by the U.S. Agency for International Development (USAID). The opinions expressed herein are those of the authors and do not necessarily reflect the views of the Government of Bangladesh or USAID.

Additional information about the Bangladesh Maternal Health Services and Maternal Mortality Survey may be obtained from the National Institute of Population Research and Training (NIPORT), Azimpur, Dhaka-1205, Bangladesh (Telephone: 862-5251; Fax: 861-3362). Information about the MEASURE *DHS+* program may be obtained from ORC Macro, Suite 300, 11785 Beltsville Drive, Calverton, MD 20705, U.S.A. (Telephone: 301-572-0200; Fax: 301-572-0999).

Suggested citation:

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.

CONTENTS

Page

Tables and Figures vii
Foreword xi
Preface xiii
Summary of Findings xv

CHAPTER 1 INTRODUCTION

1.1 Safe Motherhood and MCH-FP Programs in Bangladesh 1
1.2 History of MCH in Bangladesh 1
1.3 NGO Sector 4
1.4 Plans for Emergency Obstetric Care (EOC) and Safe Motherhood 4
1.5 Met Need for Emergency Obstetric Care 5
1.6 Organization of the 2001 BMMS 6

1.6.1 Survey Objectives and Implementing Organizations 6
1.6.2 Survey Design 6
1.6.3 Questionnaires 7
1.6.4 Training and Fieldwork 8
1.6.5 Data Processing 8
1.6.6 Response Rate 9

CHAPTER 2 CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

2.1 Household Population 11

2.1.1 Demographic Characteristics of Households 11
2.1.2 Marital Status 11
2.1.3 Household Composition 12
2.1.4 Education 13

2.2 Housing Characteristics 14

2.2.1 Household Possessions 15

2.3 Characteristics of Survey Respondents 17

2.3.1 Background Characteristics 17
2.3.2 Educational Level of Survey Respondents 17
2.3.3 Exposure to Mass Media 18

CHAPTER 3 ADULT FEMALE MORTALITY: LEVELS AND CAUSES

3.1 Measures of Maternal Mortality 21

3.1.1 Measuring Maternal Mortality 21
3.1.2 Maternal Mortality Measures in the BMMS 23

3.2 Maternal Mortality In Bangladesh: Levels And Causes 23

3.2.1 Estimates from Household Deaths 23
3.2.2 Estimates of Pregnancy-Related Mortality from Sibling Histories 28
3.2.3 Distribution of Maternal Deaths by Timing Relative to Delivery 29
3.2.4 Summary of Estimates of Pregnancy-Related and Maternal Mortality, 1986 to 2001 30

3.3 Overall Adult Mortality 31

3.3.1 Adult Mortality Estimates from Household Deaths 31
3.3.2 Adult Mortality Estimates from Sibling Histories 34

CHAPTER 4 MATERNITY CARE

4.1 Antenatal Care 37

4.1.1 Source of Antenatal Care 38
4.1.2 Number and Initial Timing of Antenatal Care 39
4.1.3 Reasons for Seeking or Not Seeking Antenatal Care 41
4.1.4 Information/Services Received during Antenatal Care 42
4.1.5 Antenatal Care in Consecutive Pregnancies 45

4.2 Birth Planning 46

4.2.1 Information Received on Delivery Advice During Pregnancy 46
4.2.2 Decision on Delivery Assistance for Current Pregnancy 47
4.2.3 Decisionmaker Regarding Delivery Assistance 49

4.3 Delivery Care 50

4.3.1 Place of Delivery 50
4.3.2 Assistance During Delivery 50
4.3.3 Reasons for Delivering at a Health Facility 53
4.3.4 Medical Procedures Performed during Delivery 55

4.4 Postnatal Care 57
4.5 Consistent Use of Antenatal, Delivery, and Postnatal Care 62

CHAPER 5 MATERNAL HEALTH PROBLEMS AND TREATMENT-SEEKING BEHAVIOR

5.1 Knowledge of Life-threatening Conditions 65
5.2 Women's Reporting of Maternal Complications 65
5.3 Treatment-seeking Decisions and Behavior for Reference Complication 69

5.3.1 Decisionmaker for Seeking Treatment 73
5.3.2 Type of Provider for Treatment 74
5.3.3 Place Where Treatment Sought 76
5.3.4 Number of Facilities Visited 79
5.3.5 Reasons for Not Seeking Treatment 80

5.4 Delays in Seeking Treatment for Reported Complications 81

5.4.1 Delay in Recognizing Complication 82
5.4.2 Delay in Seeking Treatment 84
5.4.3 Travel Time To Facility 86
5.4.4 Waiting Time at Facility 88

5.5 Delivery Expenditures 91
5.6 Source of Funds for Delivery/Treatment of Complications 92

CHAPTER 6 REPRODUCTIVE AND CHILD HEALTH

6.1 Fertility 93

6.1.1 Introduction 93
6.1.2 Current Fertility 93
6.1.3 Pregnancy Outcomes 95
6.1.4 Fertility Differentials 95
6.1.5 Fertility Trends 96
6.1.6 Birth Intervals 97
6.1.7 Age of Mothers at Their First Birth 98
6.1.8 Adolescent Fertility and Motherhood 98

6.2 Fertility Regulation 100
6.3 Childhood Mortality 103

6.3.1 Early Childhood Mortality Rates: Levels and Trends 103
6.3.2 Socioeconomic and Maternal Health Differentials in Childhood Mortality 104

6.4 Perinatal Mortality 106
6.5 High-risk Childbearing 108

CHAPTER 7 POLICY IMPLICATIONS

7.1 Introduction 111

7.1.1 Maternal Mortality 112
7.1.2 Antenatal Care 114
7.1.3 Delivery Care 117
7.1.4 Postnatal Care 118
7.1.5 Awareness of Complications 119
7.1.6 Treatment for Complications 120
7.1.7 Delays in Seeking Treatment for Complications 121

7.2 Conclusions and Recommendations 123

REFERENCES 127

APPENDIX A TABLES 131

APPENDIX B DATA QUALITY 133

APPENDIX C ASSESSMENT OF DATA QUALITY FOR CHILDHOOD MORTALITY 139

APPENDIX D SAMPLE IMPLEMENTATION 147

APPENDIX E SAMPLING ERRORS 149

APPENDIX F PERSONNEL INVOLVED IN BMMS 2001 155

APPENDIX G QUESTIONNAIRES 157

TABLES AND FIGURES

Page

CHAPTER 1 INTRODUCTION

Table 1.1 Percent distribution of health facilities by level of EOC services, according to type of institution, Bangladesh 1999 5
Table 1.2 Results of the household and individual interviews 9

CHAPTER 2 CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

Table 2.1 Marital status of the household population 12
Table 2.2 Household composition 13
Table 2.3 Household characteristics 14
Table 2.4 Household durable goods, land ownership, and household wealth index 16
Table 2.5 Background characteristics of respondents 17
Table 2.6 Level of education by background characteristics 18
Table 2.7 Exposure to mass media 19

Figure 2.1 Percentage of males and females age 10-14 and age 15-19 with some secondary education, 1996-2001 13

CHAPTER 3 ADULT FEMALE MORTALITY: LEVELS AND CAUSES

Table 3.1 Pregnancy-related mortality rates and ratios 24
Table 3.2 Maternal mortality rates and ratios 25
Table 3.3 Differentials in maternal mortality 26
Table 3.4 Maternal mortality ratios by prior parity 27
Table 3.5 Maternal mortality rates by cause of death 27
Table 3.6 Estimates of pregnancy-related mortality rates from the BMMS sibling history 28
Table 3.7 Sibling history pregnancy-related mortality by age and timing of death 29
Table 3.8 Age-specific mortality rates by sex 31
Table 3.9 Age-specific mortality rates by background characteristics 33
Table 3.10 Mortality rates by cause of death 34
Table 3.11 Mortality rates from sibling histories 35

Figure 3.1 BMMS estimates of pregnancy-related mortality and maternal mortality. 1998-2001 30
Figure 3.2 Age-specific mortality rates by sex, BMMS 1998-2000 32

CHAPTER 4 MATERNITY CARE

Table 4.1 Antenatal care 38
Table 4.2 Summary of frequency and timing of antenatal care visits 39
Table 4.3 Number of antenatal care visits 40
Table 4.4 Stage of pregnancy at first antenatal care visit 41
Table 4.5 Reasons for seeking antenatal care 42
Table 4.6 Information given for antenatal care 43
Table 4.7 Procedures performed during pregnancy 45
Table 4.8 Patterns of antenatal care from trained providers 46
Table 4.9 Information given about delivery 47
Table 4.10 Intended assistance during delivery 48
Table 4.11 Person making decision regarding assistance during delivery 49
Table 4.12 Place of delivery 51
Table 4.13 Assistance during delivery 52
Table 4.14 Reasons for delivering in a health facility 54
Table 4.15 Reasons for not delivering in a health facility 55
Table 4.16 Procedures performed during delivery 56
Table 4.17 Postnatal care for mother 58
Table 4.18 Postnatal care for the baby 60
Table 4.19 Reasons mother did not receive postnatal care 61
Table 4.20 Antenatal delivery and postnatal care 62

Figure 4.1 Percentage of women who received antenatal care from a medically trained provider for the last live birth in the three years preceding the survey, Bangladesh 1996-1997, 1999-2000, and 2001 37
Figure 4.2 Percentage of live births for which no antenatal care was sought, by reason for not seeking antenatal care 42
Figure 4.3 Among live births for which antenatal care was received, percentage for which specific procedures were performed at least once 44
Figure 4.4 Percentage of live births and stillbirths for which specific procedures were performed during delivery 57
Figure 4.5 Completeness of maternity care in Bangladesh 63

CHAPTER 5 MATERNAL HEALTH PROBLEMS AND TREATMENT-SEEKING BEHAVIOR

Table 5.1 Knowledge of life-threatening maternal conditions 66
Table 5.2 Women's reporting of recent maternal complications 67
Table 5.3 Percentage of reported complications considered life threatening 68
Table 5.4 Multiple complications 69
Table 5.5 Sought treatment for recent reference complication 70
Table 5.6 Person who decided that treatment should be sought 73
Table 5.7.1 Type of provider seen for life-threatening complications 74
Table 5.7.2 Type of provider seen for non-life-threatening complications 75
Table 5.8.1 Place of treatment for life-threatening complications 77
Table 5.8.2 Place of treatment for non-life-threatening complications 78
Table 5.9 Number of places women went for treatment of complications 79
Table 5.10 Reasons for not seeking treatment for complications 80

Table 5.11.1 Delay in recognizing life-threatening complications 83
Table 5.11.2 Delay in recognizing non-life-threatening complications 84
Table 5.12.1 Delay between recognizing the life-threatening complication and deciding to seek treatment 85
Table 5.12.2 Delay between recognizing the non-life-threatening complication and deciding to seek treatment 86
Table 5.13.1 Travel time to facility for treatment of life-threatening complications 87
Table 5.13.2 Travel time to facility for treatment of non-life-threatening complications 88
Table 5.14 Waiting time at facility 89
Table 5.15 Treatment costs for deliveries 91
Table 5.16 Source of funds for delivery costs 92

Figure 5.1 Women's reporting of recent maternal complications 67
Figure 5.2 Percentage of women seeking treatment by whether reference complication was perceived as life threatening 71
Figure 5.3.1 Path diagram of treatment-seeking behavior for reference life-threatening maternal complication 72
Figure 5.3.2 Path diagram of treatment-seeking behavior for reference non-life-threatening maternal complication 72
Figure 5.4 Source of treatment for perceived life-threatening complications 79
Figure 5.5 Reasons cited for not seeking treatment for reference complication 81
Figure 5.6 Summary of responses of women who were asked about specific delays in treatment for reference complication 82
Figure 5.7 Summary of delays in treatment-seeking behavior for reference life-threatening complications 90

CHAPTER 6 REPRODUCTIVE AND CHILD HEALTH

Table 6.1 Current fertility 94
Table 6.2 Pregnancy outcomes 95
Table 6.3 Fertility by background characteristics 96
Table 6.4 Trends in current fertility rates 97
Table 6.5 Trends in length of birth interval 98
Table 6.6 Adolescent fertility 99
Table 6.7 Current use of contraception by background characteristics 101
Table 6.8 Early childhood mortality rates 104
Table 6.9 Infant and child mortality by background characteristics 106
Table 6.10 Perinatal mortality 107
Table 6.11 High-risk fertility behavior 109

Figure 6.1 Age-specific fertility rates 1989-2001 97
Figure 6.2 Trends in teenage pregnancy and motherhood among women age 15-19, 1993-2001 100
Figure 6.3 Trends in contraceptive use among currently married women under age 50 102

Figure 6.4 Trends in infant and childhood mortality, 1989-2000 104

APPENDIX A TABLES

Table A.1 Household population by age, residence, and sex 131
Table A.2 Level of education by background characteristics..... 132

APPENDIX B DATA QUALITY

Figure B.1 Brass "growth balance" analysis of completeness of male death reporting in the BMMS 134
Figure B.2 Brass "growth balance" analysis of completeness of female death reporting in the BMMS 134
Figure B.3 Male age-specific mortality rates: BMMS and Matlab HDSS..... 135
Figure B.4 Female age-specific mortality rates: BMMS and Matlab HDSS 135
Figure B.5 Male age-specific mortality rates: BMMS sibling histories and Matlab HDSS..... 137
Figure B.6 Female age-specific mortality rates: BMMS sibling histories and Matlab HDSS..... 138

APPENDIX C ASSESSMENT OF DATA QUALITY FOR CHILDHOOD MORTALITY

Table C.1 Household age distribution..... 141
Table C.2 Age distribution of eligible and interviewed women..... 142
Table C.3 Completeness of reporting 142
Table C.4 Births by calendar years 143
Table C.5 Reporting of age at death in days..... 144
Table C.6 Reporting of age at death in months 145

APPENDIX D SAMPLE IMPLEMENTATION

Table D.1 Sample implementation..... 147

APPENDIX E SAMPLING ERRORS

Table E.1 List of selected variables for sampling errors..... 149
Table E.2 Sampling errors for selected variables, National sample..... 149
Table E.3 Sampling errors for selected variables, Urban sample..... 150
Table E.4 Sampling errors for selected variables, Rural sample..... 150
Table E.5 Sampling errors for selected variables, Barisol sample 151
Table E.6 Sampling errors for selected variables, Chittagong sample 151
Table E.7 Sampling errors for selected variables, Dhaka sample..... 152
Table E.8 Sampling errors for selected variables, Khulna sample..... 152
Table E.9 Sampling errors for selected variables, Rajshahi sample..... 153
Table E.10 Sampling errors for selected variables, Sylhet sample 153

FOREWORD

The 2001 Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) is the first nationally representative sample survey designed to provide information on the level of maternal mortality, causes of maternal and nonmaternal deaths, and perception, experience, and utilization of maternal health care in Bangladesh.

The 2001 BMMS provides a comprehensive look at levels of and differentials in maternal health parameters for policymakers and program managers. The survey estimates the maternal mortality ratio (MMR) in Bangladesh during the period 1998-2001 as in the range of 320 to 400 per 100,000 live births. The direct estimates show a 20 percent decline over a decade, from 514 in 1986-1991 to 400 in 1998-2001. In Bangladesh, two-thirds of maternal deaths occur after delivery, only one in ten occurs during delivery, and the remaining one in five occurs before delivery. The major causes of maternal deaths are retained placenta, postpartum/puerperal sepsis, and postpartum hemorrhage.

The information presented in this report will be instrumental in identifying strategic directions for the national Health and Family Planning Program in Bangladesh. Information from the survey will provide crucial indicators for evaluating policies and programs and for designing future program strategies. The survey will hopefully contribute to an increased global commitment to improving the lives of mothers and children worldwide.

The need for further detailed analysis of the BMMS data remains. It is hoped that researchers, academicians, and program personnel will carry out such analysis to provide in-depth information that will benefit the future direction and effective implementation of maternal health programs.

The contributors of this report deserve special thanks. I express my thanks to the National Institute of Population Research and Training (NIPORT) and ORC Macro for their sincere efforts in conducting the 2001 BMMS. I thank The Johns Hopkins University (USA) and the ICDDR,B for providing technical support. Special thanks also goes to Associates for Community and Population Research ACPR) and Mitra and Associates for their sincere efforts in conducting the field survey. The U.S. Agency for International Development (USAID) deserves thanks for their financial support to accomplish the important survey.

A.F.M. Sarwar Kamal
Secretary
Ministry of Health and Family Welfare
Government of the People's
Republic of Bangladesh

PREFACE

NIPORT

The Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) carried out in 2001 is a nationally representative survey that was implemented for the first time in Bangladesh through a collaborative effort of the National Institute of Population Research and Training (NIPORT) and ORC Macro (USA). The Johns Hopkins University (USA) and the ICDDR,B provided technical assistance. Associates for Community and Population Research (ACPR) and Mitra and Associates, two Bangladeshi private research firms, collected the survey data. The financial support for the survey was provided by the United States Agency for International Development (USAID)/Dhaka. The BMMS 2001 provides updated estimates of levels of maternal mortality, causes of maternal deaths, and utilization of maternal health services in Bangladesh.

The information concerning maternal health services and maternal mortality at the national level will be instrumental in identifying new directions for the national health and family planning program in Bangladesh. The survey report will hopefully contribute to an increased commitment to improving the lives of mothers and children.

The members of the Technical Review Committee (TRC) included persons with professional expertise from government, nongovernmental, and international organizations, as well as researchers and professionals working for the maternal health program, who contributed valuable comments during major phases of the survey. In addition, a Technical Task Force (TTF) was formed with representatives from NIPORT, the Directorate of Family Planning, USAID, ICDDR,B, UNICEF, and ORC Macro for designing and implementing the survey. I would like to extend my deepest gratitude and appreciation to the members of the TRC and the TTF for their valuable contributions during different phases of the survey.

The preliminary results of the 2001 BMMS with its major findings were released in a dissemination seminar held in March 2002. The final report supplements the preliminary report released earlier. I hope the survey results will be useful for monitoring and implementation of the national maternal health program.

The contributors of the various chapters of this report deserve special thanks. I express also my heartfelt thanks to the professionals of the research unit of NIPORT, ORC Macro, The Johns Hopkins University, ICDDR,B, ACPR, Mitra and Associates, and USAID/Dhaka for their sincere efforts in the successful completion of the survey.

Lokman Hakim
Director General
National Institute of Population
Research and Training

SUMMARY OF FINDINGS

The 2001 Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) is a nationally representative survey that was implemented by Associates for Community and Population Research (ACPR) and Mitra and Associates under the authority of the National Institute of Population Research and Training (NIPORT) from January through June 2001. The Johns Hopkins University (JHU) in the U.S. and the International Center for Diarrheal Disease Research, Bangladesh (ICDDR,B) provided assistance in questionnaire design and data analysis. ORC Macro of Calverton, Maryland provided technical assistance in all phases of the project as part of its international MEASURE *DHS+* program, while financial assistance was provided by the U.S. Agency for International Development (USAID)/Bangladesh.

The BMMS is intended to serve as a source of maternal health and maternal death data for policymakers and the research community. In general, the objectives of the BMMS were to (i) collect data at the national level that will facilitate an assessment of the level of maternal mortality in Bangladesh; (ii) identify specific causes of maternal and nonmaternal deaths among adult women; (iii) collect data on women's perceptions of and experience with antenatal, maternity, and emergency obstetrical care; and (iv) measure indicators of utilization of maternal health services in Bangladesh.

MATERNAL AND OTHER CAUSES OF ADULT MORTALITY

On the basis of deaths among women of reproductive age reported by households as occurring in the three years before the survey combined with a verbal autopsy to identify those deaths that are maternal, the maternal mortality ratio (MMR) for the approximate period 1998-2000 is estimated as 322 per 100,000 live births (95 percent confidence interval (CI) 253-391). Questions about timing of these deaths relative to pregnancy estimate the pregnancy-related mortality ratio (PRMR) as 382 (95% CI 305-460). A survival history for each respondent's sisters combined with questions about timing of death relative to pregnancy estimate the pregnancy-related mortality ratio (PRMR) as 400 (95% CI 337-462) for the same time period, and indicates a gradual decline in the PRMR over the recent past from 514 for the period 10-14 years before the survey. It is thus notable that the various methods give rather similar estimates. The survey does not find large differences in maternal mortality or pregnancy-related mortality by region or socioeconomic status, but does find very large differences in risk by age of mother.

A by-product of the methods used to estimate maternal mortality is estimates of overall adult mortality, both male and female. Data quality checks show these data to be satisfactory. Overall adult mortality in Bangladesh is estimated to be very similar to that found by the ICDDR,B Demographic and Health Surveillance System in Matlab Thana. The proportion of persons expected to die between age 15 and 60 is 18 percent for males and 15 percent for females. Data from household deaths and sibling histories are once again notably consistent. The sibling histories suggest a marked improvement in female adult survivorship during the 15 years preceding the survey, but a much smaller improvement among males.

MATERNAL HEALTH PROBLEMS AND TREATMENT-SEEKING BEHAVIOR

Knowledge of life-threatening maternal complications: Knowledge of life-threatening complications among Bangladeshi women is low, with fewer than half able to name most major complications. Knowledge of such conditions ranges from a high of 56 percent for tetanus, to 49 percent for prolonged or obstructed labor, to only 18 percent for vaginal bleeding. Knowledge levels for life- threatening conditions are low among all major demographic and socioeconomic subgroups.

Prevalence of maternal complications: Among live births and stillbirths that took place during the three years preceding the survey, 61 percent had at least one associated complication during pregnancy, delivery, or after delivery. The most

commonly reported complication was one or more symptoms of preeclampsia (41 percent), followed by malpresentation or prolonged/obstructed labor (22 percent). The importance of specific complications varied by stage of pregnancy, with one or more symptoms of preeclampsia (39 percent) the most commonly reported complication during pregnancy, malpresentation or prolonged/obstructed labor the most commonly reported complication during delivery (22 percent), and excessive vaginal bleeding the most commonly reported complication after delivery (10 percent). Among reported complications, almost one-half (46 percent) were perceived as potentially life threatening, with this proportion ranging from 75 percent for retained placenta to 55 percent for excessive vaginal bleeding to 31 percent for symptoms of preeclampsia.

Treatment-seeking behavior: Among the most recent reference complication, treatment was sought for 62 percent of those complications which were perceived as life threatening, compared to 42 percent of those perceived as nonlife threatening. Considerable variation is evident in the propensity to seek treatment by the nature of the complication: among perceived life-threatening cases, treatment was sought for 77 percent of convulsions cases, 57 percent of cases of malpresentation or prolonged/obstructed labor, and 39 percent of cases of retained placenta. Treatment seeking for perceived life-threatening complications was associated with urban residence and higher socioeconomic status. Among women with perceived life-threatening complications who did seek treatment, only one in three women (32 percent) sought care from a facility or nonfacility-based qualified provider. In the remaining two-thirds of cases, either the woman failed to seek care (38 percent), or she sought care from an unqualified provider (29 percent). Among women who failed to seek treatment for perceived life-threatening complications, the most commonly cited reason was cost (44 percent), followed by perception that treatment was not necessary (39 percent).

Delays in obtaining treatment: Among women with a perceived potentially life-threatening condition, recognition of the complication was generally timely, with 26 percent recognizing the problem immediately, and 55 percent recognizing it within six hours of onset. Delays in the decision to seek treatment were also not lengthy, with 46 percent deciding to seek treatment immediately after recognizing the complication, and 64 percent seeking treatment within six hours. Among the subgroup of women who sought treatment outside the home, 73 percent reported that they were required to travel less than 60 minutes to the clinic or provider. Waiting time to be seen for treatment was similarly brief, with 85 percent reporting that they were seen by a staff member within one hour of reaching the facility.

Reproductive and Child Health

Fertility: Like the 1993-1994, 1996-1997, and 1999-2000 Bangladesh Demographic and Health Surveys (BDHS), the BMMS results show that Bangladesh continues to experience a fairly rapid decline in fertility. However, the pace of fertility decline has slowed in the most recent period compared with the exceptionally rapid decline during the late 1980s and early 1990s. The total fertility rate dropped slightly from 3.4 for the period 1991-1993 to 3.3 in 1994-1996, remained constant during 1997-1999, and then edged lower again to 3.2 for the period 1998-2000. At current fertility levels, a Bangladeshi woman will have an average of 3.2 children during her reproductive years. The total fertility rate is higher in rural areas (3.4 children per woman) than in urban areas (2.7 children per woman). Fertility is lowest in Khulna (2.6) and Rajshahi (2.9) divisions, and highest in Sylhet (4.3) and Chittagong (3.7) divisions. Dhaka and Barisal divisions have intermediate levels of fertility, with total fertility rates of about 3.2 children per woman. Women with no formal education and women in poorer households have more children than their counterparts. With a TFR of 4.2, women in the poorest households are likely to bear about two children more than women in the wealthiest households (2.4).

In Bangladesh, 90 percent of pregnancies result in a live birth, and 5 percent in a miscarriage or abortion. Stillbirths and menstrual regulations (MRs) comprise another 5 percent of pregnancy outcomes. Miscarriages and abortions are higher among younger women and older women.

The data show that birth intervals are generally long in Bangladesh. Among nonfirst births, nearly one in six children (16 percent) is born after a "too short" interval (less than 24 months). More than

half (57 percent) of nonfirst births occur three or more years after the previous birth, and 27 percent of such births take place 24 to 35 months after the previous birth. The overall median birth interval length is 38.8 months, the same as that found in the 1999-2000 BDHS survey. Childbearing begins early in Bangladesh, with the large majority of women becoming mothers before they reach the age of 20. The median age at first birth is 19 years women age 20-24.

Almost 30 percent of adolescent women in Bangladesh are already mothers with at least one child and 5 percent are currently pregnant, for a total of 34 percent who have started childbearing. The proportion who have begun childbearing increases rapidly with age. In rural areas, 35 percent of the adolescents have already begun childbearing, compared with 27 percent in urban areas. There are also variations by division.

Fertility Regulation: The 2001 BMMS indicates that 50 percent of currently married women in Bangladesh are using a method of family planning. Modern methods are more widely used (44 percent of married women) than traditional methods (6 percent). The increase in use of family planning from 8 percent of married women in the 1975 Bangladesh Fertility Survey to 54 percent in the 1999-2000 BDHS survey has declined to 50 percent in the 2001 BMMS. The decline in overall use is due to a decline in the use of traditional methods (from 10 to 6 percent). Use of modern methods has remained unchanged since 1999-2000.

Contraceptive use varies moderately by urban-rural residence but greatly by division. Contraceptive use is highest in Khulna division (62 percent), followed by Rajshahi (56 percent) and Dhaka divisions (52 percent), and lowest in Sylhet division (28 percent). Contraceptive prevalence ranges from 43 percent among women living in the poorest households to 58 percent among women living in the wealthiest households.

Childhood Mortality: Evidence of a decline in childhood mortality comes from comparing the BMMS data with the data from BDHS surveys. The estimate for under-five mortality calculated from the 1993-1994 BDHS data (for the period 1989-1993) is 133 deaths per 1,000, compared with 85 per 1,000 from the 2001 BMMS (for the period 1999-2000). This represents a 36 percent decline, or nearly 5 percent per year during the 1990s. The internal data from the BMMS show that under-five mortality decreased by one-third from the period 1986-1990 to 1996-2000. The variable most strongly associated with variation in under-five mortality is the length of the interval between births. As the birth interval gets shorter, the risk that a child will die increases sharply. For example, the neonatal mortality rate is twice as high for children born less than 24 months after a previous sibling as for children born 24 months or more after a previous sibling (72 and 35 percent, respectively). Differences are even larger for child mortality (between age 1 and 4). Sylhet division has extremely high mortality rates: Neonatal, postneonatal, infant, and under-five mortality in Sylhet is about 40 percent higher than the national average. Rajshahi and Dhaka divisions also have relatively high under-five mortality rates of about 100 per 1,000 live births.

The perinatal mortality rate in Bangladesh is estimated to be 59 perinatal deaths per 1,000 qualifying pregnancies. First pregnancies have a risk of 88 deaths per 1,000, and pregnancies with interpregnancy intervals of less than 15 months have a risk of 79 deaths per 1,000, compared with a risk of just 46 per 1,000 for pregnancies with interpregnancy intervals of 39 months or more. Perinatal mortality is higher in rural areas (60 deaths per 1,000 pregnancies) than in urban areas (52 per 1,000). Perinatal mortality is the highest in Sylhet Division (74 deaths per 1,000 pregnancies) and the lowest in Barisal and Chittagong divisions (48 per 1,000).

MATERNITY CARE

Antenatal Care: The data indicate that less than half of mothers in Bangladesh receive antenatal care from a trained or untrained provider. For births that occurred in the three years before the survey, only 48 percent of mothers received any antenatal care during pregnancy. The primary source of antenatal care is doctors (24 percent), followed by nurses, midwives, and female paramedical workers (15 percent). Among those who receive care, the median number of antenatal visits per live birth was less than two; women had three or more antenatal visits for only one in five births. Antenatal care is more common among younger women and low-parity women. The percentage of births for which mothers had one or more antenatal care checkups

was also significantly higher in urban areas than in rural areas (64 and 44 percent, respectively), with differences due largely to the percentage seeking care from a qualified doctor. The highest and lowest levels of antenatal care are found in Khulna division (57 percent) and Barisal division (33 percent), respectively. The use of antenatal care is strongly associated with level of education and household economic status. Among women who sought antenatal care, three in four sought care for a general checkup rather than for a specific problem. For all live births in which at least one antenatal visit took place, an abdominal examination or measurement of blood pressure was common but not universal (75 percent). For two-thirds of live births, measurement of maternal weight and/or height was reported. Blood or urine tests were less commonly reported (30 and 37 percent, respectively).

Delivery Care: Delivery at home remains almost universal in Bangladesh. Use of health facilities for delivery is more common in urban areas (22 percent of births), among mothers with some secondary education (23 percent), and among women in wealthier households (30 percent). For women who deliver at a health facility, more than half said that the reason they did so was to ensure a safe delivery. Three-fourths of births in Bangladesh are assisted by a traditional birth attendant, and only 12 percent of births are assisted by a trained medical professional. Low-parity women, urban women, and women with more education or who live in wealthier households are associated with greater likelihood that the delivery is assisted by a trained medical professional. Caesarean section is reported in fewer than 3 percent of deliveries.

Postnatal Care: Less than one in five women with recent deliveries reported having a postnatal checkup for themselves, with most reporting being seen by a qualified doctor (9 percent) or an unqualified doctor (5 percent). The proportions of women seeking postnatal care for their babies was also low (24 percent). Women whose pregnancy resulted in a stillbirth, or who had their first birth, and those who live in urban areas, have more education, or live in wealthier households were all more likely to have had a postnatal checkup. The primary reason for not having a postnatal checkup was the perceived absence of need (56 percent). Concern about cost (22 percent) was the second most commonly cited reason for not having a postnatal checkup.

INTRODUCTION 1

Peter Kim Streatfield, Tulshi D. Saha, and Alfredo Aliaga

1.1 Safe Motherhood and MCH-FP Programs in Bangladesh

The past three decades have seen impressive achievements from certain maternal and child health and family programs (MCH-FPs), such as a dramatic increase in the use of family planning to over half of all couples and a consequent halving of fertility levels. During the same period, however, indicators of safe motherhood suggest that there was little progress in the crucial area of reproductive health. Two out of three pregnant women have not had even a single antenatal care visit, and nine out of ten births still occur at home, usually attended only by an untrained birth attendant or unskilled relative or neighbor.

Thus, it is significant that at the beginning of a new century the government has released the long-awaited Bangladesh National Strategy for Maternal Health (Ministry of Health and Family Welfare, 2001). This strategy is explicitly focused on emergency obstetric care (EOC) for reducing maternal mortality, based on the following:

- All pregnant women are at risk of developing life-threatening complications;
- Most complications can neither be predicted accurately nor prevented;
- Once a woman develops complications, she needs prompt access to emergency obstetric care services if death or disability is to be prevented.

The strategy also sets out several other priorities under the headings of 1) providing essential obstetric care and basic maternity care services for early detection and appropriate referral of complications, 2) promoting women's access to resources, and 3) improving quality of services. Five aims of the strategy are articulated with clear indicators to be achieved over the ten-year strategy duration. Some progress has already been made during the final years of the national Health and Population Sector Programme (HPSP) 1998-2003.

The strategy has adopted the "Three Delays" framework of factors that affect safe motherhood service utilization and outcomes. The three phases of delay relate to birth complications requiring facility-based intervention and include: 1) deciding to seek care—usually the family of the pregnant woman, 2) reaching the medical facility, and 3) receiving adequate treatment or management at the facility.

The Three Delays approach marks a change from earlier approaches, and a review of the history of MCH and safe motherhood programs in Bangladesh can be seen in terms of the evolving focus on the different levels of the process, from the service provider at the household and community level, to the provision of facilities offering higher level care.

1.2 History of MCH in Bangladesh

Bangladesh has a long history of MCH activities going back to 1946, but the first MCH unit was established in the Directorate of Health in 1952-1953. At that time, the Maternal and Child Health Training Institute in Azimpur started training lady health visitors, and ten maternal and child welfare centers

(MCWCs) started functioning, mainly at district level, some at the thana level.[1] Between 1961 and 1971, 152 rural health centers (RHCs) were established, each with six MCH beds.

In the mid-1970s, it was realized that improving child survival would encourage wider adoption of family planning, so in 1975 MCH services were integrated with the health service, and a combined approach was adopted in the first official population policy document in 1976. This approach promoted the construction of facilities at the union and thana levels, utilization of traditional birth attendants (TBAs) for integrated MCH-FP activities, training of family welfare assistants (FWAs) for MCH work, and an accelerated training program for family welfare visitors (FWVs).[2] Since 1975, the previous RHCs were converted to thana health complexes (THCs), and many new ones were built. These are the centers of MCH activity at thana level, supported by the MCWCs and district hospitals offering MCH services and referral at district level.

At the union level, FWCs provided basic MCH care, and the FWVs provided technical support to the TBAs and FWAs for community-based MCH services. At the ward and village levels, the 23,500 FWAs, 50,000 TBAs, and 30,000 satellite clinics (started in 1988) constituted the core MCH services for the rural population.

Under this initial approach of providing low- or intermediate-level MCH-FP facilities with training for field-level staff rather than for specialized institution-based EOC staff, the primary focus was on the promotion of antenatal care, TBA training, risk identification, tetanus toxoid immunization, iron and folic acid supplementation, clean delivery practices, and family planning. But there were relatively few actions to provide emergency obstetric care for women who develop complications during pregnancy and delivery.

This emphasis on provision of mid-level facilities was an advance on the earlier approach, which focused on household deliveries. In the 1970s, TBAs handled most deliveries, so the government took the initiative at that time to train these TBAs, who had generally not received any previous training in hygiene or proper delivery practices. The TBA training project trained women across the entire country, with the goal of providing one trained TBA for each of the 68,000 villages.

An evaluation found that many negative and harmful practices continued despite the training, although these practices were less common among trained TBAs than among untrained TBAs (Akhter et al., 1995). After some time it also became apparent that there was no decline in maternal mortality. One reason was that although more than 42,000 TBAs were trained, only about 6 percent of births were delivered by them. This evaluation highlighted numerous issues that persist today including problems of inadequate supervision and support and insufficient practical experience. Finally, the referral system was not sufficiently well developed to ensure that complicated cases, if identified by the TBAs, would receive adequate treatment as required (Chowdhury et al., 2002).

It was at this time that global policy shifted away from the "risk approach," in which women with certain characteristics[3] were defined as being at risk of a complicated pregnancy. (This approach was useful at the clinical or individual level but not at the public health or group level.) The late 1980s saw the promotion of the Three Delays model (described above). While recognizing that the three delays were critical in hindering use of EOC facilities, the approach in Bangladesh was that first the facilities themselves must be made available.

---

[1] The administrative levels (with numbers) are, from highest to lowest, division (6), district (64), thana or upazila (name can change with different governments) (460 or 490), union (more than 4,000), and ward (13,500).

[2] Across the country there are now 12 FWV training institutes.

[3] Very young or old, high parity, short birth interval, short stature, poor pregnancy history, etc.

There was an immediate response to the new initiative, with many ongoing programs adopting an EOC approach. The main avenue for developing the national initiative was the Pilot Project for the Development of Maternal and Neonatal Health Care supported by the World Health Organization (WHO). The project targeted the thana level (31 thanas in four districts), the most difficult level for implementing change. This effort emphasized training of health and community-level workers for community mobilization in addition to physicians such as anesthetists and obstetricians as in other projects. Initially, most of the trained physicians were transferred within six months, although restrictions were later enforced.

At the same time, the UNFPA supported the Strengthening of Maternal and Child Welfare Centres (MCWCs) project, and the European Union supported the Thana Functional Improvement Pilot Project (TFIPP). The UNFPA project used a phased MCWC upgrading approach, starting in July 1995, with 11 MCWCs then 17 more in 1998, 18 more in 1999, and the remaining 14 in 2000. These formerly underutilized facilities, staffed predominantly by females, showed a dramatic increase in most EOC indicators—antenatal care (ANC), delivery care, C-sections, postnatal care (PNC), treatment of complications, and clinical contraception. There has been some overlap of services in upgraded MCWCs at the district level with services at nearby district hospitals.

The TFIPP project, like the WHO pilot project, targeted the thana level, but was limited to 55 thanas (out of 460 nationwide) with a range of intensive and comprehensive interventions. The interventions were generously financed and proved quite effective, but the project came to an end in the late 1990s, and many of the most innovative aspects were never scaled up to the national level.

Meanwhile, on behalf of the Ministry of Health and Family Welfare (MOHFW), representatives of the Obstetrics and Gynaecology Society of Bangladesh met with UNICEF in 1993 to develop a pilot project called Strengthening of EOC Services in 11 Districts of Bangladesh, which commenced in 1994 with a series of advocacy workshops organized at the national and district levels. The objectives of this project included establishing 1) comprehensive EOC facilities at district hospitals, 2) basic EOC facilities at THCs, and 3) obstetric first aid facilities at health and family welfare centers (HFWCs) and MCWCs. Links would be established between district hospitals and tertiary referral facilities for monitoring and improving EOC, as well as between the different levels of facilities. Another objective was to formulate a proposal for a national plan of action for reducing maternal mortality through provision of EOC services.

As with many of the other approaches tried, this one concentrated primarily on the provision of high-level EOC facilities (i.e., the third delay). The final review of the project highlighted a number of obstacles to implementing such EOC activities in Bangladesh. These included issues of inappropriate selection and frequent transfers of trained doctors (i.e., trained in obstetrics or anesthesiology), lack of qualified trainers, reluctance of trained female doctors to work in remote areas, shortages of drugs and equipment, and transport to facilities (the second delay). Many of these obstacles still hinder the functioning of high-level EOC facilities around the country.

The conclusion was that “there has been essentially no change in the performance (increased coverage or utilization of services) of key strategies to address maternal health during the Fourth Population and Health Program (FPHP) 1992-1998: 95 percent of deliveries still occur at home, 10 percent are attended by medical/nursing personnel and 8 percent are attended by trained traditional birth attendants (i.e., dais); 27 percent of pregnant women receive antenatal care from qualified medical/nursing personnel. Similarly, just over 25 percent of women seek care for maternal morbidity” (Allison et al., 1999).

Although efforts to coordinate health and family planning activities during the FPHP proved difficult, the experience gained was valuable for the design of future programs such as the Health and Population Sector Program (HPSP) 1998-2003 “in terms of level of EOC training needed and the need to develop both a community behavior change communication (BCC) and a service delivery system respon-

siveness." This explicitly highlighted the first and second delays rather than just the third delay in obtaining EOC (Allison et al., 1999).

1.3 NGO Sector

While the government has tended to emphasize the provision of EOC facilities during the last two decades, the nongovernmental organization (NGO) sector has focused its efforts on provision of household-level services and referrals. Although NGO catchment areas are not always clearly delineated, they have field workers who perform domiciliary visits, provide preventive services, and refer clients for appropriate care to their clinics. The clinics can usually provide limited pregnancy care along with other services. Most of the NGOs charge modest fees for services.

Most of the NGOs have supported a network of trained traditional birth attendants (TTBAs) who were trained, supervised, and paid by them (Quaiyum et al., 1999). In some cases, these TTBAs received incentives based on their performance in bringing pregnant women to facilities that provide ANC, for referring women with obstetric complications, and for accompanying patients to the referral hospital.

Few NGOs have facilities for delivery and first-aid EOC, so their staff are expected to refer women to government facilities, but this does not happen often. Systems using referral slips (from NGOs to government EOC facilities) for patients were not common and did not function well. Providing pictorial cards showing the signs of high-risk pregnancy did appear to have a positive impact on clients' referral to higher-level facilities, particularly when efforts had been made to raise community awareness of the danger signs of complicated pregnancies.

In selected cases, the NGO approach had a substantial impact on improving maternal health care: in the FPHP-funded NGOs (Bangladesh Population and Health Consortium) at least 60 percent of women receive two antenatal care visits compared with 25 percent nationally, and 55 percent receive postnatal care compared with 16 percent in the government program. NGO experience was gained in innovative Bangladesh Population and Health Consortium NGOs that emphasized birth preparedness, accompanied referral, and the shift to a case management approach. Other NGOs also have well-integrated systems with good linkage between the community and EOC-level facilities. The role of the private sector in maternal health care needs further review to assess how partnerships with this group can be strengthened (Allison et al., 1999).

1.4 Plans for Emergency Obstetric Care (EOC) and Safe Motherhood

In line with global goals for the provision of safe motherhood, the Bangladesh government has a plan for comprehensive EOC to be available at all 13 medical college hospitals and all 59 district hospitals, as well as at 64 MCWCs and 120 upazila health complexes (UHCs). Basic EOC services should be available at all union health and family welfare centers (UHFWCs).

Translating these goals into numbers means that the target by the end of the HPSP 1998-2003 was that for every 500,000 people there will be four facilities offering basic EOC and one facility offering comprehensive EOC, which implies around 1,000 basic EOC facilities and 250 comprehensive EOC facilities nationwide.

In 1994 the actual number of facilities per 500,000 population offering EOC was 0.41 for basic EOC (10 percent of target) and 0.14 for comprehensive EOC (14 percent of target). By 1999, these ratios had increased to 0.60 for basic EOC (15 percent of target) and to 0.27 for comprehensive EOC (27 percent of target). A survey conducted in 1999 by Associates for Community and Population Research (ACPR) for UNICEF reviewed the status of a number of these EOC facilities (see Table 1.1).

Table 1.1 Percent distribution of health facilities by level of EOC services, according to type of institution, Bangladesh 1999

Service level	Medical college hospital	District hospital	Upazila health complex	MCWC	Private	Total
Comprehensive EOC	100 .0	81.4	18.3	27.4	41.7	40.9
Basic EOC	0.0	6.8	25.8	19.4	5.7	10.2
No EOC	0.0	11.9	55.8	53.2	52.5	48.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of facilities	13	59	120	62	472	726

Source: Figures for the medical college hospitals, some upazila health complexes, the maternal and child welfare centers, and private facilities are based on the 1999 survey by Associates for Community and Population Research.

The government of Bangladesh (GOB) comprehensive EOC facilities are mainly at division and district levels, while basic EOC services are at district and lower levels (UHC and MCWC). The private clinics offering comprehensive EOC tend to be concentrated in the four big cities: Dhaka, Chittagong, Rajshahi, and Khulna.

1.5 Met Need for Emergency Obstetric Care

While the provision of EOC facilities gives a picture of the essential inputs for safe motherhood, it does not give any indication of the outputs, particularly the utilization of facilities. A measure used increasingly is "met need" for EOC services. Met need for EOC is calculated from the number of complicated deliveries taking place in EOC facilities compared with the estimated number requiring such services, based on the global assumption that 15 percent of all deliveries are complicated and 5 percent are potentially life threatening (i.e., one-third of the complicated cases). The second national facility survey indicated an impressive rise in met need for EOC from 5 percent in 1994 to 27 percent in 1999.[4]

The Unit of Management Information System (UMIS) of the Ministry of Health and Family Welfare currently has a system implemented in all 13 medical college hospitals, 59 district hospitals, 56 MCWCs, 2 national specialized hospitals, and 120 upazila health complexes. The reporting is not yet fully functional, but a first report is available from 218 of the 250 facilities for the year 2002. These data will be useful for monitoring progress in institutional deliveries (particularly complicated cases), but at this time the proportion of births taking place in the reporting institutions is still quite low (3 percent nationwide). Caesarean sections account for 19 percent of deliveries and 10 percent of births are by other, non-normal means (UMIS, 2003: 5). Met need for complicated cases is 13 percent, which is considerably lower than the 27 percent observed in the second national facility survey. The UMIS does not include any private sector institutions, but this cannot fully explain the difference.

It seems clear that the focus must be on all three of the potential delays to women delivering safely in a suitably equipped clinic or hospital. Greater understanding is needed about the cultural and social obstacles to women and their families recognizing that childbirth is potentially risky and that decisions and actions must be taken immediately when complications arise. Such responsive decision-making

[4] The latter figure was calculated from the 72,505 complicated deliveries in government facilities plus 27,275 in private facilities, amounting to about one-quarter of the estimated 376,498 complicated births from 2.5 million estimated total births nationwide. The 2.5 million is almost certainly an underestimate, so met need may be overestimated.

may be facilitated by well-trained field-level health staff, but they cannot be expected to resolve the problems without referral to appropriate facilities.

The recent efforts to upgrade facilities nationwide to provide obstetric first aid, and basic and comprehensive EOC are admirable, but the monitoring data suggest that they remain substantially underutilized, partly because of functional problems, and partly because the referral system is not working properly. More fundamentally, a key reason for the underutilization of EOC services may be that communities do not yet accept that safe delivery can be assured only in a properly equipped and staffed institutional environment. The potential exists now in Bangladesh to make rapid progress in minimizing maternal morbidity and mortality, provided the present momentum is maintained and accelerated.

1.6 Organization of the 2001 BMMS

1.6.1 Survey Objectives and Implementing Organizations

The Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) is intended to serve as a source of maternal health and maternal death data for policymakers and the research community. In general, the objectives of the BMMS are to:

- Collect data at the national level, which will facilitate an assessment of the level of maternal mortality in Bangladesh;
- Identify specific causes of maternal and nonmaternal deaths to adult women;
- Collect data on women's perception of and experience with antenatal, maternity, and emergency obstetrical care;
- Measure indicators of utilization of maternal health services in Bangladesh.

The 2001 BMMS was conducted under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. The survey was implemented by Associates for Community and Population Research (ACPR) and Mitra and Associates, two Bangladeshi research firms located in Dhaka. These two field organizations had primary responsibility for implementing the following tasks for the 2001 BMMS: translating and pretesting the questionnaires, hiring and training the field staff, implementing and supervising the data collection, and entering and processing the data. Each organization was responsible for the fieldwork in three divisions. The Johns Hopkins University (JHU) in the United States and the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) provided assistance in questionnaire design and data analysis. ORC Macro of Calverton, Maryland provided technical assistance in all phases of the project as part of its international MEASURE *DHS+* program, while financial assistance was provided by the U.S. Agency for International Development (USAID)/Bangladesh.

1.6.2 Survey Design

Administratively, Bangladesh is divided into six divisions. Each division is divided into districts (zilas), and then thanas or upazilas. Each urban area in a thana or upazila is divided into wards, and each ward is divided into mohallas; each rural area in a thana or upazila is divided into union parishadas, and each union is divided into mouzas.

Smaller subdivisions called enumeration areas (EAs) were created for the 1991 census based on the number of dwellings units. However, experience with the 1999-2000 Bangladesh Demographic and Health Survey (BDHS) showed that EA maps and sketch maps were not easily accessible. For this reason,

EAs were not considered suitable as primary sampling units for the 2001 BMMS survey. Also, it was not feasible to obtain a computer file of the census information with the codes for the different subdivisions and their corresponding basic household or population information. However, the complete basic census information is available in published reports, from the division level down to the mouza level, but not at the EA level. Consequently, it was decided to make use of the published census reports and to use wards and unions as the primary sampling units. The second stage of sampling for urban areas involved selecting two mohallas in each ward, while for rural areas, two mouzas were selected in each selected union (with a few exceptions of one mouza or one mohalla per union or per ward, respectively). The third stage involved selecting households. In summary, in each division, the list of wards constituted the initial sample frame for urban areas and the list of unions was the sample frame for rural areas. A total of 808 primary sampling units were selected: 134 urban and 674 rural.

The field organizations (ACPR and Mitra and Associates) conducted a household listing operation in all of the sample points from November 2000 to April 2001. To obtain an accurate estimate of the maternal mortality rate at the national level (as well as to achieve other objectives of the survey), a stratified national sample of 104,323 households was systematically selected from a total of 1,616 clusters.

All ever-married women age 13-49 were eligible to be interviewed. It was expected that the sample would yield interviews with more than 100,000 ever-married women.

1.6.3 Questionnaires

Three questionnaires were used for the BMMS: a Household Questionnaire, a Women's Questionnaire (for ever-married women age 13-49), and a Verbal Autopsy Questionnaire (for deaths of women age 13-49).

The Household Questionnaire consisted of a schedule for listing all household members. For each listed person, the survey collected basic information such as age, sex, marital status, and education. Information was also collected on household characteristics such as type of housing, source of water, and availability of electricity. The Household Questionnaire asked about any deaths of household members in the three years preceding the survey. The information on age, sex, and marital status of household members was used to identify eligible respondents for the Women's Questionnaire. The information about female adult deaths identified deaths for which the Verbal Autopsy Questionnaire was used.

The Women's Questionnaire was administered to all ever-married women age 13-49 who were listed in the Household Questionnaire. These women were asked questions on the following topics:

- Background characteristics (age, education, religion, etc.),
- Reproductive history,
- Use of family planning methods,
- Information about siblings (to calculate the maternal mortality rate),
- Knowledge of maternal health problems,
- Antenatal, delivery, and postnatal care,
- Experience with and treatment of maternal health problems during pregnancy, delivery, and after delivery,

- Treatment-seeking behavior.

The Verbal Autopsy Questionnaire was used to collect information on causes of death for all female adult (age 13-49) deaths in the household in the three years preceding the survey. The questionnaire was both structured (precoded questions) and nonstructured (open-ended questions) in nature, and was answered by the most knowledgeable member of the household.

During the design of the questionnaires, input was sought from various organizations that were expecting to use the data. ORC Macro designed the questionnaires with assistance from JHU, ICDDR,B, and USAID. After preparation of the questionnaires in English, they were translated into Bengali. Then back-translations were done by people other than the initial translators, to verify the accuracy of the translations.

1.6.4 Training and Fieldwork

The BMMS questionnaires were pretested in November 2000. Pretest teams from both ACPR and Mitra and Associates were trained jointly at NIPORT. After training, the teams conducted interviews at various locations in the field under the observation of staff from the two field organizations and members of the technical task force. Before the pretest, the verbal autopsy methodology was validated in a field trial in Matlab, Bangladesh, during October-November 2000. ACPR was responsible for recruiting a field trial team and conducting fieldwork, with assistance from ICDDR,B, to pretest the methodology in a sample of households with a disproportionate number of maternal deaths as reported by the Demographic Surveillance System. Based on observations in the field and suggestions made by the pretest and field trial teams, the technical task force revised the wording of the questionnaires and adjusted the translations.

In December 2000, candidates for field staff positions for the main survey were recruited. Recruitment criteria included educational attainment, maturity, experience with other surveys, and a firm commitment to spend one month in training and at least five months in the field. Training for the main survey was conducted at two different sites by each field organization from December 3 to January 7, 2001. Initially, training consisted of lectures on how to complete the questionnaires, with mock interviews between participants to gain practice in asking questions. Toward the end of the training course, the participants spent several days carrying out practice interviews in places close to Dhaka. Trainees whose performance was considered superior were selected as supervisors and field editors.

Fieldwork for the BMMS was carried out by 50 interviewing teams (23 teams from ACPR and 27 teams from Mitra and Associates) in five phases. Each team consisted of a male supervisor, a female field editor, and four female interviewers. During fieldwork, emphasis was placed on the quality of data. ACPR and Mitra and Associates also fielded quality control teams to check on the fieldwork. Feedback was given to teams after each phase to improve on the quality of data collection. In addition, staff from USAID, NIPORT, and ORC Macro monitored the fieldwork by visiting teams in the field. Fieldwork started on January 9, 2001 and was completed in the second week of June 2001.

1.6.5 Data Processing

All questionnaires for the BMMS were returned to Dhaka for data processing at ACPR and Mitra and Associates. Data entry personnel were trained in Dhaka in February 2001 by ORC Macro data processing personnel. 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 working in double shifts. The ISSA (Integrated System for Survey Analysis) program developed by MEASURE *DHS+* was used during all stages of data entry and processing. Data processing commenced in mid-February 2001 and was completed by the end of August 2001.

1.6.6 Response Rate

Table 1.2 shows response rates for the survey. A total of 104,323 households were selected for the sample, of which 99,202 were successfully interviewed. The shortfall is primarily due to dwellings being vacant or the inhabitants being gone for an extended period at the time of the survey. Of the 100,379 households occupied, 99 percent were successfully interviewed. In these households, 106,789 women were identified as eligible for the individual interview (i.e., ever-married women age 13-49), and interviews were completed for 103,796, or 97 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.

Table 1.2 Results of the household and individual interviews

Number of households, number of interviews, and response rates, according to residence, Bangladesh 2001

	Residence				
Result	All urban	Metro-politan/ town	Other urban	Rural	Total
Household interviews					
Households selected	17,294	9,169	8,125	87,029	104,323
Households occupied	16,536	8,699	7,837	83,843	100,379
Households interviewed	16,306	8,541	7,765	82,896	99,202
Household response rate	**98.6**	**98.2**	**99.1**	**98.9**	**98.8**
Individual interviews					
Number of eligible women	17,943	9,502	8,441	88,846	106,789
Number of women interviewed	17,330	9,094	8,236	86,466	103,796
Eligible woman response rate	**96.6**	**95.7**	**97.6**	**97.3**	**97.2**

CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

2

Tulshi D. Saha

This chapter provides information on some of the socioeconomic characteristics of the household[1] population and the individual survey respondents, such as age, sex, and educational level. It also examines the conditions of the households in which the survey population lives, including availability of electricity, sanitation facilities, housing materials, and possession of household durable goods. The background characteristics of women age 13-49 are discussed in the last part of the chapter. Information collected on the characteristics of the households and respondents is important in understanding and interpreting the findings of the survey and also provides indicators of the representativeness of the survey.

Whenever possible, the Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) data are compared with the data from the 1999-2000 and 1996-1997 Bangladesh Demographic and Health Surveys (BDHS). The BMMS 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). Since the difference between these two populations is very small, all tables in this report refer to the de facto population unless otherwise specified.

2.1 HOUSEHOLD POPULATION

The BMMS Household Questionnaire 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 important demographic variables and are the primary basis of demographic classification in vital statistics, censuses, and surveys. They are also important variables in the study of mortality, fertility, and nuptiality. The effect of variations in sex composition from one population group to another should be taken into account in comparative studies of mortality. In general, a cross-classification with sex is useful for the effective analysis of all forms of data obtained in surveys.

The BMMS households constitute a population of 502,385 persons (Table A.1 in Appendix A). The population is almost equally divided between females (50 percent) and males (50 percent). Because of relatively high levels of fertility in the past, as well as the effects of mortality, there are more persons in the younger age groups than in the older age groups for both sexes.

2.1.2 Marital Status

The BMMS includes information on the marital status of all household members age 10 and above. Table 2.1 shows the marital status distribution of the de facto household population age 13 and above. Among females age 15-49, 77 percent are currently married and 17 percent have never been married. The proportion never married is higher for males (40 percent) than for females (17 percent). The proportion formerly married (widowed, divorced, separated, or deserted) is small—6 percent for females and less than 1 percent for males.

[1] A household was defined as a person or group of people who live and eat together.

Table 2.1 Marital status of the household population

Percent distribution of the de facto household population by current marital status according to sex and age group, Bangladesh 2001

	Male						Female					
Age	Currently married	Formerly married	Never married	Missing	Total	Number	Currently married	Formerly married	Never married	Missing	Total	Number
13-14	1.3	0.2	97.8	0.8	100.0	11,945	11.2	0.3	87.7	0.8	100.0	13,269
15-19	4.0	0.2	95.3	0.5	100.0	25,643	46.5	1.2	52.1	0.2	100.0	31,639
20-24	25.4	0.4	73.9	0.3	100.0	17,765	80.4	2.8	16.8	0.0	100.0	24,157
25-29	64.0	0.6	35.3	0.1	100.0	17,025	92.0	3.9	4.1	0.0	100.0	19,346
30-34	87.4	0.6	12.0	0.1	100.0	16,066	92.6	6.2	1.2	0.0	100.0	17,326
35-39	96.6	0.6	2.8	0.1	100.0	16,089	90.8	8.7	0.4	0.0	100.0	14,280
40-44	98.4	0.7	0.8	0.0	100.0	13,259	86.9	12.8	0.3	0.0	100.0	11,507
45-49	98.9	0.7	0.4	0.0	100.0	10,758	81.8	18.0	0.2	0.0	100.0	8,502
50-54	98.4	1.2	0.3	0.0	100.0	8,040	70.9	28.7	0.2	0.2	100.0	6,689
55+	93.5	6.2	0.2	0.1	100.0	24,920	40.1	59.3	0.3	0.4	100.0	21,717
15-49	59.8	0.5	39.6	0.2	100.0	116,604	77.2	5.6	17.1	0.1	100.0	126,757

Also of interest is the proportion of persons who marry young. At age 15-19, the proportions ever married are 4 percent for males and 48 percent for females. By age 25-29, 96 percent of females in Bangladesh have been married. For males in this age group, 65 percent have been married. The singulate mean age at marriage (SMAM) calculated from age-specific proportions single in the BMMS is 26 for males and 19 for females.[2] According to the SMAM measure, men in Bangladesh tend to marry women who are almost seven years younger than they are.

2.1.3 Household Composition

Table 2.2 shows the distribution of the households in the survey by the sex of the head of the household and by the number of de jure household members in 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.

A small minority of households in Bangladesh are headed by women (10 percent), with 90 percent headed by males. The average household size observed in the survey is 5.1 people, with no variation between rural and urban areas.

[2] For 15-49 years of age

Table 2.2 Household composition

Percent distribution of households by sex of head of household and mean household size, according to residence, Bangladesh 2001

	Residence				
Household headship/size	All urban	Metro-politan/ town	Other urban	Rural	Total
Sex of head of household					
Male	89.4	89.6	89.0	90.3	90.1
Female	10.6	10.4	11.0	9.7	9.9
Total	100.0	100.0	100.0	100.0	100.0
Number of households	18,541	10,205	8,336	80,661	99,202
Mean size of household	5.1	5.1	5.2	5.1	5.1

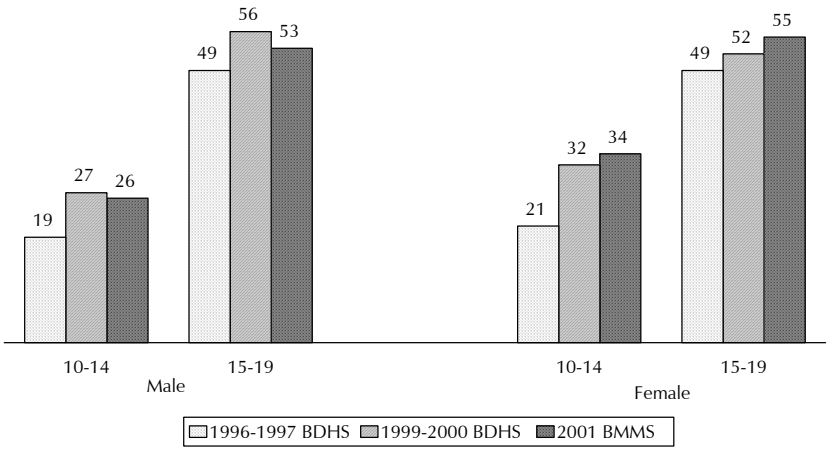
Note: Table is based on de jure members (i.e., usual residents).

2.1.4 Education

The educational attainment of household members is an important determinant of their opportunities and behavior. Studies have consistently shown that educational attainment has strong effects on reproductive behavior, contraceptive use, fertility, infant and child mortality, morbidity, and issues related to family health and hygiene. Table A.2 in Appendix A provides data on educational attainment of the household population listed in the BMMS.

Education has become more widespread over time in Bangladesh. This is apparent from the differences in levels of educational attainment by age group. A steadily decreasing percentage of both males and females have never attended school in each younger age group. Data from previous BDHSs (1996-1997 and 1999-2000) show that proportions who attended secondary school have increased for women age 10-14 and 15-19, although not recently for men (Figure 2.1).

Figure 2.1 **Percentage of Males and Females Age 10-14 and Age 15-19 with Some Secondary Education, 1996-2001**



BMMS 2001

2.2 Housing Characteristics

The physical characteristics of households are important in assessing the general socioeconomic condition of the population. In the BMMS, respondents to the Household Questionnaire were asked about access to electricity, type of toilet facility, and main materials of the roof, wall, and floor. Information on the characteristics of the sampled households is presented in Table 2.3.

Table 2.3 Household characteristics

Percent distribution of households by housing characteristics, according to residence, Bangladesh 2001

	Residence				
Characteristic	All urban	Metro-politan/ town	Other urban	Rural	Total
Electricity					
Yes	64.6	82.0	43.3	23.7	31.4
No	35.4	18.0	56.7	76.2	68.6
Total	100.0	100.0	100.0	100.0	100.0
Sanitation facility					
Septic tank, modern toilet	26.1	38.7	10.6	4.7	8.7
Water sealed/slab latrine	20.8	21.7	19.7	14.6	15.7
Traditional pit latrine	22.5	16.0	30.5	25.6	25.0
Open latrine	17.6	17.3	18.0	24.8	23.4
Hanging latrine	2.6	1.4	3.9	3.7	3.5
No facility	10.4	4.8	17.2	26.6	23.6
Total	100.0	100.0	100.0	100.0	100.0
Roof material					
Katcha (bamboo/thatch)	8.7	6.0	12.0	17.1	15.6
Tin	68.6	59.3	80.1	77.5	75.9
Tile	1.7	1.5	1.9	2.7	2.5
Cement/concrete	19.6	31.5	5.1	2.0	5.3
Other	1.3	1.7	0.8	0.6	0.7
Total	100.0	100.0	100.0	100.0	100.0
Wall material					
Katcha (jute/bamboo/mud)	37.8	27.9	49.9	63.4	58.6
Wood	2.1	1.2	3.2	2.3	2.3
Brick/Cement	38.8	57.4	16.1	9.0	14.6
Tin	20.8	12.9	30.5	24.7	24.0
Other	0.4	0.6	0.3	0.5	0.5
Total	100.0	100.0	100.0	100.0	100.0
Floor material					
Earth/bamboo (katcha)	60.2	40.8	84.0	93.3	87.1
Wood	0.3	0.4	0.2	0.4	0.4
Cement/concrete	39.4	58.8	15.7	6.3	12.5
Other	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0

About one-third (31 percent) of households in Bangladesh have electricity, but this varies widely by residence. Three-quarters of Bangladeshi households have some type of toilet facility; only 49 percent have hygienic toilets (septic tank/modern toilets, water-sealed/slab latrines, and pit toilets). Lack of sanitation facilities is more common in rural areas than in urban areas. Twenty-seven percent of rural households have no toilet facility at all, compared with only 10 percent of urban households.

Tin is the most common roofing material in Bangladesh, accounting for 76 percent of households. In urban areas, 20 percent of households live in dwellings with cement or concrete roofs, while in rural areas, bamboo or thatch (17 percent) is the most common roofing material after tin.

About six in ten households in Bangladesh live in structures with walls made of natural materials such as jute, bamboo, or mud. Fifteen percent live in houses with brick or cement walls, and 24 percent live in houses with tin walls. Urban households live in more solid dwellings than rural households. Almost 40 percent of urban households live in structures with brick or cement walls, compared with only 9 percent of rural households.

Eighty-seven percent of households have floors made of earth; only 13 percent have cement floors. Rural houses are more likely than urban houses to have earth floors. Likewise, urban houses are more likely than rural houses to have cement floors. About 60 percent of households in towns (39 percent for total urban) have cement floors, while more than 90 percent of rural households have floors made of earth.

2.2.1 Household Possessions

Information on the possession of various durable goods was collected at the household level. Table 2.4 shows that possession of household durable goods is not common in Bangladesh. Overall, 86 percent of households own a cot or bed, 61 percent own a table or chair, 58 percent own a watch or clock, 34 percent own an almirah (wardrobe), and 19 percent own a bench. For more valuable items, 30 percent of households own a radio, 21 percent own a bicycle, 17 percent own a television, and 5 percent own a sewing machine; only 2 percent of households have a telephone. About one in ten households owns none of the items listed in the questionnaire. In general, households in rural Bangladesh are less likely to have consumer items like a radio, television, or telephone.

The BMMS collected data on household ownership of land. Almost 90 percent of Bangladeshi households own a homestead, while half own land other than a homestead; 8 percent of households do not own any land. Ownership of a homestead or land is less common in urban areas than in rural areas.

The wealth index was constructed from data on ownership of household assets, as well as dwelling characteristics such as type of drinking water available, sanitation facilities, roofing, and flooring. Each asset was assigned a weight (factor score) generated through principle 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 Table 2.4, 45 percent of urban households are in the highest quintile, compared with only 12 percent of rural households. As expected, most of the wealthiest households are located in metropolitan/town areas.

Table 2.4 Household durable goods, land ownership, and household wealth

Percentage of households possessing various durable consumer goods, ownership of land, and household wealth, according to residence, Bangladesh 2001

Ownership and wealth index	Residence: All urban	Metro-politan/ town	Other urban	Rural	Total
Durable goods					
Almirah (wardrobe)	54.7	64.8	42.3	29.7	34.3
Table/chair	68.9	71.4	65.8	59.6	61.3
Bench	16.0	12.4	20.5	19.4	18.7
Watch/clock	72.5	79.7	63.7	54.0	57.5
Cot/bed	91.5	94.3	88.0	84.5	85.8
Radio	39.1	43.4	33.9	28.1	30.1
Television	41.2	54.1	25.4	11.7	17.2
Bicycle	17.4	17.1	17.7	21.5	20.7
Motorcycle	3.2	3.8	2.4	1.0	1.4
Sewing machine	11.4	15.6	6.2	3.2	4.7
Telephone	6.7	10.5	2.0	0.5	1.6
None of the above	5.3	3.5	7.6	10.2	9.3
Land ownership					
Owns a homestead	81.2	75.0	88.8	91.6	89.7
Owns other land	42.1	39.6	45.3	52.7	50.7
None of the above	14.1	18.2	9.0	7.0	8.3
Wealth quintile					
Lowest	11.8	6.1	18.8	25.5	23.0
Second	13.2	8.9	18.4	23.3	21.4
Middle	14.0	10.3	18.5	21.0	19.7
Fourth	15.6	12.3	19.5	18.7	18.1
Highest	45.4	62.2	24.8	11.5	17.8
Number of households	18,541	10,205	8,336	80,661	99,202

2.3 CHARACTERISTICS OF SURVEY RESPONDENTS

2.3.1 Background Characteristics

The distribution of ever-married women age 13-49 by background characteristics including age, marital status, place of residence, division, educational level, and participation in women's organizations is shown in Table 2.5.

The age distribution of ever-married women is similar to that found in the BDHS (1993-1994, 1996-1997, and 1999-2000) surveys; half of ever-married women are age 13-29. About 20 percent of respondents live in urban areas (11 percent in metropolitan city/town and 9 percent in the other urban areas), while about 80 percent live in rural areas. About one-third of respondents live in Dhaka division, and about one-fourth live in Rajshahi division. Eighteen percent of respondents live in Chittagong division, 12 percent in Khulna division, 7 percent in Barisal division, and only 6 percent in Sylhet division.

About half (47 percent) of ever-married women have never been to school. Twenty-eight percent of respondents have attended primary school and one-quarter have some secondary school. More than one-quarter of respondents have an affiliation with a women's organization. Ninety-three percent of ever-married women are currently married.

Table 2.5 Background characteristics of respondents

Percent distribution of ever-married women by background characteristics, Bangladesh 2001

Background characteristic	Weighted percent	Number of women	
		Weighted	Unweighted
Age			
13-19	14.5	15,097	15,051
20-24	18.7	19,417	19,396
25-29	17.2	17,840	17,860
30-34	16.1	16,736	16,706
35-39	13.3	13,809	13,816
40-44	10.7	11,083	11,129
45-49	7.9	8,190	8,241
Residence			
All urban	19.2	19,896	17,330
Metropolitan/town	10.7	11,083	9,094
Other urban	8.5	8,813	8,236
Rural	80.8	83,900	86,466
Division			
Barisal	6.6	6,839	10,202
Chittagong	17.6	18,275	18,633
Dhaka	34.5	35,848	27,577
Khulna	11.9	12,307	17,079
Rajshahi	23.6	24,495	19,296
Sylhet	5.8	6,032	11,009
Education			
No education	46.5	48,243	47,860
Primary incomplete	17.9	18,630	18,999
Primary complete	10.4	10,764	11,236
Secondary+	25.2	26,159	25,701
Marital status			
Currently married	93.4	96,945	96,805
Separated	0.9	937	947
Deserted	0.7	759	785
Divorced	1.2	1,280	1,330
Widowed	3.7	3,875	3,929
Membership in any women's organization			
No	73.8	76,564	76,957
Yes	26.2	27,232	26,839
Total	100.0	103,796	103,796

2.3.2 Educational Level of Survey Respondents

Table 2.6 shows the educational level of ever-married women by background characteristics. Among ever-married women, education is inversely related to age, that is, older women are less educated than younger women. For instance, 26 percent of ever-married women age 13-19 years have never attended school, compared with 63 percent of those age 45-49.

Urban residents have more education than rural residents. For example, 49 percent of rural women have had no education, compared with 36 percent of urban women. In contrast, while about four in ten urban women (39 percent) have attended secondary school, only 22 percent of rural women have done so.

Women in Barisal, Chittagong, and Khulna divisions are better educated than women in the other divisions. In these divisions, the proportion of women with no education does not exceed 43 percent. Respondents in these divisions are also more likely than other respondents to complete primary school and/or to attend secondary school.

Table 2.6 Level of education by background characteristics

Percent distribution of ever-married women by highest level of education attended, according to background characteristics, Bangladesh 2001

Background characteristic	Level of education: No education	Primary incomplete	Primary complete	Secondary or higher	Total	Number
Age						
13-19	25.5	20.2	14.0	40.3	100.0	15,097
20-24	36.3	18.3	10.6	34.8	100.0	19,417
25-29	47.2	17.5	9.6	25.7	100.0	17,840
30-34	53.0	17.6	9.2	20.2	100.0	16,736
35-39	56.5	17.4	9.3	16.8	100.0	13,809
40-44	60.9	16.0	9.0	14.1	100.0	11,083
45-49	63.1	16.4	9.4	11.1	100.0	8,190
Residence						
Urban	35.9	15.4	9.5	39.2	100.0	19,896
Metropolitan/town	31.0	13.7	9.5	45.9	100.0	11,083
Other urban	42.1	17.6	9.5	30.8	100.0	8,813
Rural	49.0	18.6	10.6	21.9	100.0	83,900
Division						
Barisal	30.5	25.2	17.8	26.5	100.0	6,839
Chittagong	43.2	14.6	11.5	30.6	100.0	18,275
Dhaka	47.1	18.2	9.5	25.3	100.0	35,848
Khulna	40.2	22.3	9.4	28.2	100.0	12,307
Rajshahi	52.7	16.8	8.8	21.7	100.0	24,495
Sylhet	58.7	14.3	12.1	14.9	100.0	6,032
Wealth quintile						
Lowest	76.3	15.5	4.8	3.4	100.0	21,186
Second	60.6	21.4	8.6	9.3	100.0	20,982
Middle	46.8	21.7	12.4	19.1	100.0	20,491
Fourth	30.8	19.2	14.7	35.4	100.0	20,257
Highest	17.0	12.0	11.6	59.4	100.0	20,880
Total	46.5	17.9	10.4	25.2	100.0	103,796

2.3.3 Exposure to Mass Media

The BMMS collected information on the exposure of respondents to the broadcast media. Respondents were asked whether they listen to a radio or watch television at least once a week. This information is important because it provides an indication of women's exposure to mass media; mass media are used to disseminate family planning, health, and other information. Table 2.7 shows that more than one-third of women watch television or listen to the radio at least once a week. Half of women are exposed to at least one of these media sources once a week.

Media exposure varies with the age of respondent. Younger women are somewhat more likely than older women to listen to the radio or watch television. Exposure to these media is higher among urban and more educated women. For example, the proportion of women who watch television at least once a week ranges from 21 percent among those with no education to 61 percent among those with some secondary school. Differentials by division are not large, except that women in Sylhet and Barisal divisions have less exposure to mass media than women in other divisions. Women in wealthier households are more likely to be exposed to mass media than women in poorer households.

Table 2.7 Exposure to mass media

Percentage of women who usually watch television at least once a week and listen to the radio at least once a week, by background characteristics, Bangladesh 2001

	Exposure to mass media			
Background characteristic	Watches television at least once a week	Listens to the radio at least once a week	Exposed to either TV or radio once a week	Number
Age				
13-19	39.7	44.0	58.7	15,097
20-24	41.6	39.6	57.2	19,417
25-29	37.0	34.0	51.4	17,840
30-34	34.7	31.1	48.1	16,736
35-39	31.3	29.9	45.1	13,809
40-44	28.1	28.3	41.8	11,083
45-49	26.7	27.0	40.4	8,190
Residence				
Urban	62.9	39.5	70.9	19,896
Metropolitan/town	75.6	39.3	80.7	11,083
Other urban	46.9	39.6	58.6	8,813
Rural	28.8	33.4	45.5	83,900
Division				
Barisal	21.7	34.2	41.9	6,839
Chittagong	36.1	38.7	52.2	18,275
Dhaka	42.2	35.6	55.8	35,848
Khulna	38.8	37.8	55.0	12,307
Rajshahi	29.8	29.9	44.2	24,495
Sylhet	23.2	28.2	38.1	6,032
Education				
No education	21.3	23.5	34.6	48,243
Primary incomplete	32.3	34.8	49.4	18,630
Primary complete	40.3	42.1	58.9	10,764
Secondary+	61.3	51.7	76.6	26,159
Wealth quintile				
Lowest	14.0	16.2	24.1	21,186
Second	19.8	24.6	34.7	20,982
Middle	25.6	35.4	46.4	20,491
Fourth	40.1	46.2	62.4	20,257
Highest	77.5	50.9	85.1	20,880
Total	35.3	34.5	50.4	103,796

ADULT FEMALE MORTALITY: LEVELS AND CAUSES

3

Kenneth Hill, Shams-El-Arifeen, Hafizur Rahman Chowdhury, and Saifur Rahman

Two of the principal objectives of the BMMS were to measure maternal mortality and to test alternative strategies for such measurement. This chapter presents BMMS findings relevant to these objectives. Maternal mortality was expected to be high, given Bangladesh's relatively low levels of female literacy and proportions of deliveries assisted by trained professionals. Identifying factors associated with high risk provides a basis for targeting interventions. The methods used in the BMMS to collect data on maternal mortality also provide information about overall adult mortality, and this chapter reviews the information on adult mortality in general and on maternal mortality in particular.

3.1 MEASURES OF MATERNAL MORTALITY

The "Tenth Revision of the International Classification of Diseases" defines a maternal death as any "death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" (World Health Organization, 1992). A pregnancy-related death is defined as any death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause.

Maternal mortality can be measured using a number of different indicators. The most commonly used indicator is the *maternal mortality ratio* (MMR), which is calculated as the ratio of maternal deaths in a period to live births during the period, expressed per 100,000 live births. This indicator relates maternal deaths to a measure of risky events, namely births; ideally, the indicator should relate maternal deaths to the number of pregnancies, since pregnancies are the risky events, but good counts of pregnancies are rarely available. In this chapter, the *pregnancy-related mortality ratio* (PRMR) is also used. The PRMR which is calculated in the same way as the MMR, but it includes not just maternal deaths, but all pregnancy-related deaths in the numerator.

Maternal mortality is sometimes expressed relative to the number of women of reproductive age. The *maternal mortality rate* (MMRate) is typically calculated as the ratio of the annual number of maternal deaths to the midyear number of women age 15-44, expressed per 1,000. The MMRate thus does not express the risk of death per risky event, but rather per person potentially exposed to the risk. A change in fertility will not per se affect the MMR, but it will directly affect the MMRate.

Two other measures of maternal mortality are sometimes cited: the lifetime risk of dying of maternal causes, which takes into account not only the risk per event but also the number of risky events a woman may expect during her reproductive life; and the proportion maternal of deaths of women of reproductive age, which expresses the risk of a maternal death relative to the risk of death from all causes during age 15-49.

Each of these measures expresses reproductive mortality in a different and potentially revealing way. Most of the results in this chapter will be PRMRs because of the way the data were collected, but MMR and MMRate results are also presented.

3.1.1 Measuring Maternal Mortality

Despite their major societal impacts, maternal deaths are relatively infrequent events. They are also difficult events to record. Even in countries with complete recording of births and deaths, maternal deaths are generally underreported because of incorrect classification of cause. (Bouvier-Colle et al., 1991; Atrash et al., 1995). In countries lacking complete vital registration systems, the problems are even greater: Not only may maternal deaths be misclassified, they may simply be omitted. Various strategies have been developed for trying to estimate maternal mortality in settings where death registration is seriously incomplete. The most widely used method is the "sisterhood" approach. Respondents to a sample survey are asked about the survival or otherwise of their sisters, and for sisters who have died, a further set of questions is added to identify those deaths that occurred while the woman was pregnant, during delivery, or in a defined postpartum period. There are two versions of the sisterhood method: an indirect method, collecting only information on numbers of sisters alive or dead (Graham et al., 1989), and a direct method, collecting detailed information about each individual sister (Rutenberg and Sullivan, 1991). A second strategy uses a population census or large household survey to collect information about deaths by age and sex in each household in a defined reference period and asks additional questions for deaths of women of reproductive age to determine whether they died while they were pregnant or during some defined postpartum period (Stanton et al., 2001).

The fact that maternal deaths are relatively infrequent has important implications for measurement. Sample surveys need large samples to obtain reasonably precise estimates. The sisterhood method can enhance sample size in a high fertility population because each respondent will report on multiple sisters. However, once fertility drops below about four children per woman, this advantage erodes and may be a major disadvantage in a population with an average of two children per mother. Both the direct sisterhood approach and the deaths in the household approach can attempt to improve precision by increasing the length of the reference period for which estimates are calculated. For the direct sisterhood approach, the length of the reference period for which an estimate is calculated can be determined during the tabulation stage. Experience from the Demographic and Health Surveys (DHS) project has shown that samples of about 10,000 households will provide direct sisterhood estimates of maternal mortality for a reference period covering the seven years before the survey with 95 percent confidence intervals (95% CI) on the order of ±25 percent. For the household deaths approach, the basic data on deaths are collected for a specified reference period; estimates can be calculated for shorter but not longer periods during the tabulation stage. Accurate recall of household deaths also becomes a concern as the reference period for which information on deaths is collected increases.

Both the sisterhood and the household deaths approaches to measuring maternal mortality generally define a "maternal" death in terms of time of death relative to pregnancy. Both methods thus measure pregnancy-related mortality rather than maternal mortality. Although these deaths will include some deaths that are unrelated to the pregnancy (and thus should not be considered maternal deaths), it has been argued that the time of death questions tend to omit some maternal deaths in early pregnancy, simply because the pregnancy was not known to the respondent, and that the overreporting of maternal deaths resulting from the inclusion of incidental deaths tends to cancel out the exclusion of maternal deaths for which the pregnancy was not declared (Hill et al., 2001).

A measure of maternal mortality can be obtained by combining the household death approach with a verbal autopsy, which attempts to identify the true cause of each death by asking about the symptoms that accompanied the final illness. Methods for conducting a verbal autopsy vary, but a common approach is to interview a close relative or other knowledgeable household member. The interview starts with an open-ended question asking the respondent to describe in his or her own words the circumstances surrounding the death, and then it continues with questions about the presence or absence of specific symptoms. Evaluations of verbal autopsies indicate that their results, particularly for many chronic dis-

eases of adulthood, are neither highly specific nor highly sensitive [e.g., for maternal mortality (Sloan et al., 2001)]; results therefore need to be treated with caution. It is also possible that a verbal autopsy may misclassify some maternal deaths because the autopsy respondent did not know the deceased woman was pregnant.

3.1.2 Maternal Mortality Measures in the BMMS

The BMMS used both the sisterhood and the household deaths approaches to measuring maternal mortality and also used both a time of death and a verbal autopsy approach to identify pregnancy-related or maternal deaths among deaths of women of reproductive age. The Household Questionnaire included a section concerning deaths of usual residents of the household since April 1997. If any death was reported, further details regarding the name, sex, age at death, and month and year of death were collected. In addition, if the deceased person was a woman age 13-49 at the time of death, three questions were asked as to whether the woman died while she was pregnant, giving birth, or within 42 days of the end of the pregnancy, and a verbal autopsy was conducted with the household to try to ascertain whether the death was maternal. Cause of death was determined from the verbal autopsy by physician review; two physicians independently reviewed each case, but if they could not agree, the case was reviewed by a third physician.

The Women's Questionnaire, administered to all ever-married female household members age 13-49, included a complete sibling history—the name, sex, survival status, and age (if living) or age at death and years since death (if dead)—for every live birth the respondent's mother had, excluding the respondent herself. Further, for any sisters who died at age 12 or older, the time of death relative to pregnancy, childbirth, and the first two months after the end of the pregnancy was also ascertained.

In addition to providing information about maternal mortality, both sets of questions provide information about overall mortality, at all ages in the case of household deaths of usual residents and for age 15-49 in the case of data from the sibling history. The verbal autopsy also provides information on nonmaternal causes of death for women of reproductive age. Overall and nonmaternal mortality are examined in Section 3.3.

3.2 Maternal Mortality In Bangladesh: Levels And Causes

The BMMS included three ways of measuring the mortality risks associated with pregnancy: estimates of pregnancy-related mortality obtained from both household deaths and sister deaths combined with time of death information and estimates of maternal mortality obtained from household deaths combined with the verbal autopsy.

3.2.1 Estimates from Household Deaths

Pregnancy-related mortality estimates based on time of death information and maternal mortality estimates based on the verbal autopsy are presented below. The BMMS recorded household deaths for the period from April 1997 to the time of the survey, but the results presented here are based on deaths in the 36 months before interview date, excluding the month of interview. Since BMMS fieldwork was conducted during the first six months of 2001, and half of the households covered had been interviewed by the end of March, the mortality estimates given here refer approximately to the period from early 1998 to early 2001. For a discussion of data quality of household deaths, see Appendix B.

Pregnancy-Related Mortality

Table 3.1 shows pregnancy-related deaths in the period 1998-2001 by the age of the deceased woman and by the time of death relative to the pregnancy. Deaths are weighted, hence the decimal portions. Table 3.1 also shows exposure time: the number of woman-years of exposure to risk in each age group.[1] Mortality rates are calculated by dividing the number of events (deaths) in a particular category by the exposure time in that category. A rate can then be expressed relative to births by dividing by the fertility rate specific for the category. The overall PRMR is 382 per 100,000 live births. Assuming that there were 3.8 million births in Bangladesh in 2001, there would have been about 14,500 pregnancy-related deaths in that year. The PRMR increases monotonically with age from the age group 15-19 to 45-49. Risks are very high for the oldest women, but the difference in risk even between women age 15-19 and those age 35-39 is substantial: the risk per birth for women age 35-39 is over 3.5 times that for women age 15-19.

Table 3.1 Pregnancy-related mortality rates and ratios

Pregnancy-related mortality rates and ratios for the three years preceding the survey by age, Bangladesh 2001

	Mortality						Age-specific fertility rate and age-specific pregnancy-related mortality ratio	
	Exposure time	Deaths:			Total pregnancy-related deaths	Pregnancy-related mortality rate[1]		
Maternal age	(woman years)	During pregnancy	During delivery	Post-partum			ASFR[2]	PRMR[3]
15-19	90,099	12.981	2.100	11.543	26.624	0.296	0.134	221
20-24	67,390	10.854	3.444	17.253	31.550	0.468	0.185	253
25-29	57,606	10.651	5.013	16.499	32.164	0.558	0.149	374
30-34	48,931	10.654	4.488	15.580	30.722	0.628	0.097	650
35-39	40,111	7.187	2.700	7.456	17.343	0.432	0.053	814
40-44	31,989	2.411	0.000	6.251	8.662	0.271	0.020	1,363
45-49	21,881	7.306	0.000	0.937	8.242	0.377	0.006	6,166
Total	358,007	62.044	17.745	75.519	155.308	0.434	3.222	-
GFR	-	-	-	-	-	-	0.113	-
PRMR	-	-	-	-	-	-	-	382

Note: Information from the Household Questionnaire considers de jure female household population in exposure, gets maternal deaths from listing with usual members who died in the three years before the survey, and assumes same fertility rates as de facto interviewed women.
[1] Deaths per 1,000
[2] Births per woman
[3] Deaths per 100,000

Maternal Mortality

The verbal autopsies administered for all households where the death of a woman age 13-49 was reported provide a basis for identifying maternal, as opposed to pregnancy-related, deaths. Table 3.2 shows the numbers of deaths judged to be maternal on the basis of the verbal autopsy, by the same time of death relative to pregnancy categories as used in Table 3.1. The total (weighted) number of maternal deaths is 131, about 15 percent lower than the number of pregnancy-related deaths in Table 3.1. The estimated MMR is 322 per 100,000 live births, compared with the PRMR of 382 in Table 3.1. Assuming

[1] Exposure to risk is the length of time lived in a particular category by all women surveyed—thus, a woman who was 21 at the beginning of 1998 and survived to age 24 at the end of 2000 contributed three years of exposure time to age group 20-24.

again that there were 3.8 million births in Bangladesh in 2001, there would have been about 12,200 maternal deaths in that year. The age pattern of maternal risk is very similar to pregnancy-related risk, rising very steeply with age, such that the risk per birth for women over 35 is almost ten times the risk per birth for women age 15-24.

Table 3.2 Maternal mortality rates and ratios

Maternal mortality rates and ratios for the three years preceding the survey by age, Bangladesh 2001

	Mortality						Age-specific fertility rate and age-specific maternal mortality ratio	
		Deaths:						
Maternal age	Exposure time (woman years)	During pregnancy	During delivery	Post-partum	Total maternal deaths	Maternal mortality rate[1]	ASFR[2]	MMR[3]
15-19	90,099	3.173	3.822	13.506	20.501	0.228	0.134	169.883
20-24	67,389	8.467	1.246	19.845	29.559	0.439	0.185	236.585
25-29	57,605	5.256	1.838	23.726	30.820	0.535	0.149	358.383
30-34	48,931	5.814	4.194	14.392	24.399	0.499	0.097	516.151
35-39	40,110	1.947	1.584	6.960	10.490	0.262	0.053	492.483
40-44	31,989	2.411	1.105	8.852	12.367	0.387	0.020	1,945.921
45-49	21,880	1.838	0.709	0.709	3.256	0.149	0.006	2,435.431
Total	358,007	28.906	14.498	87.989	131.392	0.367	3.222	-
GFR	-	-	-	-	-	-	0.113	-
MMR	-	-	-	-	-	-	-	322.156

Note: Information from the Household Questionnaire and the verbal autopsy considers de jure female household population in exposure, gets maternal deaths from the Verbal Autopsy Questionnaire, and assumes same fertility rates as de facto interviewed women.
[1] Deaths per 1,000
[2] Births per woman
[3] Deaths per 100,000

Maternal Mortality Ratios by Background Characteristics

Table 3.3 shows exposure time, maternal deaths, and MMRs based on household deaths with verbal autopsy by selected background characteristics: residence, division, and socioeconomic status of the household. These estimates were interpreted on the basis of limited exposure time and small numbers of events; thus, they have large potential sampling errors (the 95 percent confidence intervals around each estimate are shown in Table 3.3). Risks are below average in the major metropolitan areas, but they are above average in the smaller urban areas. By division, Sylhet and Barisal have the highest risks, whereas Dhaka and Rajshahi have the lowest. There is a general tendency for risks to be lower in households that are better-off economically and higher in poorer households, although the highest risk is found in the middle quintile.

Table 3.3 Differentials in maternal mortality

Differentials in maternal mortality by residence, division, and socioeconomic status, Bangladesh 2001

Characteristic	Exposure time (woman years)	Maternal deaths	Maternal mortality rate	General fertility rate	Maternal mortality ratio	95% confidence interval	
						Lower	Upper
Residence							
Metropolitan	41,570	9.7	0.233	0.087	262	62	463
Other urban	30,937	11.6	0.374	0.106	344	111	576
Rural	285,498	110.2	0.386	0.117	326	251	401
Division							
Barisal	23,562	10.4	0.443	0.115	387	176	597
Chittagong	66,717	27.7	0.416	0.127	325	186	463
Dhaka	123,201	45.6	0.370	0.112	320	203	437
Khulna	40,745	13.3	0.327	0.094	351	149	552
Rajshahi	80,856	19.0	0.235	0.104	223	96	351
Sylhet	22,922	15.2	0.665	0.139	471	259	682
Wealth quintile							
Lowest	68,835	34.4	0.499	0.146	343	222	466
Second	68,531	26.9	0.392	0.128	302	177	428
Middle	69,092	36.4	0.527	0.112	473	308	637
Fourth	72,409	19.7	0.272	0.100	268	144	393
Highest	79,143	14.0	0.177	0.084	208	93	324
Total	358,007	131.4	0.367	0.113	322	253	391

Note: Data are weighted; hence, the number of deaths is not a round number.

The verbal autopsy used to follow up all deaths of women of reproductive age included a question on the number of previous live births the deceased woman had. It is thus possible to classify maternal deaths, as identified by the verbal autopsy, by the woman's parity prior to the final pregnancy and estimate parity-specific maternal mortality risks. Table 3.4 shows the maternal deaths by parity, as well as the parity-specific births in the three years before the survey and the resulting MMRs by parity. The MMRs in this instance are calculated in a different way from those elsewhere in this report. Elsewhere, MMRates are calculated from maternal deaths and exposure time, and converted into MMRs using the general fertility rate (GFR). For the calculations by parity, the MMR was calculated directly from maternal deaths at a given parity divided by the births of that parity, estimated after adjusting observed births for those not reported by women who died. Although small numbers of deaths at higher parities result in a rather erratic pattern, it is clear that the safest births of all are second births, and second to fifth births are all of fairly low risk. First births are associated with more than twice the risk of second and third births, and births of parity six and over also average twice the risk of the least risky births.

Table 3.4 Maternal mortality ratios by prior parity

Maternal mortality ratios for the three years preceding the survey by prior parity, Bangladesh 2001

Prior parity	Births	General fertility rate	Estimated total live births	Maternal deaths	Maternal mortality ratio
0	10,662	0.0330	10,691	54.6	511
1	9,872	0.0306	9,900	19.0	192
2	6,870	0.0213	6,889	16.0	232
3	4,422	0.0137	4,434	12.2	275
4	2,913	0.0090	2,921	8.1	276
5 +	4,517	0.0139	4529	21.5	475
Total	39,256	0.1215	39,364	131.4	334

Note: Data are weighted; hence, the number of deaths is not a round number. Prior parity is the woman's parity prior to the final pregnancy.

Maternal Deaths by Cause of Death

A verbal autopsy is a fairly blunt instrument for identifying cause of death, especially when it is administered as much as three years after the death. Interpreting the information recorded is still something of an art form. It is not surprising, therefore, that of 189 deaths identified as maternal, the cause of death could not be specified for 31 (16 percent). Table 3.5 shows the cause-specific maternal mortality rates by age group. Ante- and postpartum hemorrhage and eclampsia were the most common causes of maternal death, followed by obstructed or prolonged labor, and deaths related to induced abortion. The BMMS finds a smaller proportion of maternal deaths associated with induced abortion than observed by ICDDR, B in Matlab, though closer inspection of the BMMS verbal autopsy information reveals no evident problems with the data.

Table 3.5 Maternal mortality rates by cause of death

Maternal mortality rates (per 1,000) in the three years preceding the survey by cause of death and age, Bangladesh 2001

Age group	Exposure time (woman-years)	Hemorrhage (ante- and post-partum)	Eclampsia	Other direct	Indirect	Not classified	Total
15-19	90,099	0.014	0.126	0.030	0.032	0.024	0.228
20-24	67,390	0.073	0.135	0.066	0.077	0.087	0.439
25-29	57,606	0.187	0.056	0.089	0.076	0.102	0.535
30-34	48,931	0.197	0.096	0.107	0.046	0.052	0.499
35-39	40,111	0.127	0.079	0.016	0.000	0.039	0.262
40-44	31,989	0.168	0.000	0.098	0.092	0.029	0.387
45-49	21,881	0.032	0.000	0.032	0.000	0.084	0.149
Total	358,007	0.105	0.088	0.061[a]	0.055[b]	0.058	0.367

[a] Major components of the other direct category and their rates were obstructed/prolonged labor (0.019), puerperal sepsis (0.013), abortion-related deaths (0.018), and other direct (0.011).
[b] Major components of the indirect category were anemia (0.014), cardiovascular conditions (0.002), respiratory conditions (0.013), and other indirect (0.026).

3.2.2 Estimates of Pregnancy-Related Mortality from Sibling Histories

Data from the sibling histories can be analyzed in one of two ways: direct estimation, based on reported pregnancy-related deaths and exposure time, and indirect estimation, using the proportion of sisters dead of pregnancy-related causes by age of respondent as a basis for estimating the lifetime risk of dying from maternal causes. The latter method makes strong assumptions about unchanging fertility and produces an estimate of risk for a time point that is approximately 12 years before the survey. In the Bangladesh case, the fertility assumption clearly does not hold, and the value of producing an estimate for around 1990 is questionable. Therefore, only direct estimates are presented in this report.

For each death of a woman of reproductive age identified in the sibling history, additional information was collected about the timing of the death relative to pregnancy. Pregnancy-related deaths can therefore be identified and PRMRates and PRMRs can be calculated. The average PRMRate for women age 15-49 can then be divided by the GFR for the same period to estimate the PRMR. One advantage of the sibling history over the household deaths is that the data can be used to look at trends, since information is available about deaths for a lengthy period in the past. Table 3.6 shows pregnancy-related sister deaths, sister exposure time, and rates by age group of sister for three five-year periods—1986-1991, 1991-1996, and 1996-2001—as well as for the most recent three-year period—1998-2001. The PRMR declines from 514 per 100,000 live births in the period 1986-1990 to 449 for the period 1996-2000, and to 400 for the three-year period 1998-2000.

Table 3.6 Estimates of pregnancy-related mortality rates from the BMMS sibling history

Estimates of pregnancy-related mortality from the BMMS sibling history, Bangladesh 2001

	1986-1990			1991-1996			1996-2001			1998-2001		
Age group	Pregnancy-related deaths	Sister exposure	Pregnancy-related mortality rate	Pregnancy-related deaths	Sister exposure	Pregnancy related-mortality rate	Pregnancy-related deaths	Sister exposure	Pregnancy-related mortaltiy rate	Pregnancy-related deaths	Sister exposure	Pregnancy-related mortality rate
15-19	153	201,360	0.00076	112	205,084	0.00055	100	187,243	0.00054	48	109,058	0.00044
20-24	140	170,280	0.00082	165	198,992	0.00083	116	202,957	0.00057	61	120,526	0.00050
25-29	133	132,239	0.00100	123	168,298	0.00073	132	196,810	0.00067	64	120,740	0.00053
30-34	86	82,003	0.00105	104	130,366	0.00080	89	166,278	0.00054	52	103,286	0.00050
35-39	40	43,998	0.00092	67	80,727	0.00083	76	128,732	0.00059	40	82,961	0.00048
40-44	24	18,078	0.00130	43	43,011	0.00100	28	79,192	0.00035	16	52,688	0.00030
45-49	7	5,973	0.00119	9	17,596	0.00050	10	42,076	0.00023	7	28,497	0.00024
Total	584	653,932	0.00089	623	844,074	0.00074	552	1,003,288	0.00055	287	617,758	0.00046
GFR			184			151			119			113
PRMR			514[1]			485[2]			449[3]			400[4]

GFR = General fertility rate
PRMR = Pregnancy-related mortality rate
CI = Confidence interval
[1] 95% CI 453 to 574
[2] 95% CI 438 to 532
[3] 95% CI 400 to 498
[4] 95% CI 337 to 462

The nature of the information concerning time of death relative to pregnancy for the sibling deaths makes it possible to calculate the proportion of such deaths that occurred during pregnancy, during delivery, and in the postpartum period, as was done with household deaths. Table 3.7 shows this breakdown for the period 1998-2001. Also shown are PRMRs by age group for the same time period. The distribution of deaths by time relative to pregnancy is different from the distribution for household deaths and very different from the distribution of household deaths identified as maternal by the verbal autopsy. The age pattern of pregnancy-related mortality risk, however, is remarkably similar to that estimated from the household deaths, rising steeply with age of woman.

Table 3.7 Sibling history pregnancy-related mortality by age and timing of death

Sibling history pregnancy-related mortality by age and timing of death, Bangladesh 2001

Age group	Exposure time (woman years)	Deaths during: Pregnancy	Delivery	Post-partum	Total pregnancy-related deaths	Pregnancy-related mortality rate (per 1,000)	Age-specific fertility rate[1]	Pregnancy-related mortality ratio
15-19	109,058	27.1	7.9	12.7	47.7	0.437	0.134	326
20-24	120,526	31.4	15.7	13.5	60.7	0.503	0.185	272
25-29	120,740	24.1	13.6	26.5	64.3	0.532	0.149	357
30-34	103,286	22.3	11.0	18.7	52.0	0.503	0.097	519
35-39	82,961	19.0	7.8	13.1	39.9	0.481	0.053	908
40-44	52,688	11.9	1.5	2.2	15.5	0.295	0.020	1,475
45-49	28,497	3.0	2.6	1.2	6.7	0.236	0.006	3,933
Total	617,758	138.7	60.1	88.0	286.7	0.464	0.113	400

Note: Data are weighted; hence, the number of deaths is not a round number.
[1] Births per woman age 15-49

3.2.3 Distribution of Maternal Deaths by Timing Relative to Delivery

As mentioned, the timing of maternal deaths relative to delivery varies by source of data. Less than 25 percent of the maternal deaths identified by the Verbal Autopsy Questionnaire occurred during pregnancy, and two-thirds occurred after delivery (Table 3.2). However, when this pattern is compared with pregnancy-related deaths from the Household Questionnaire and from the sibling history, some interesting patterns emerge. Of the pregnancy-related deaths recorded by the time-of-death questions on the Household Questionnaire, 40 percent occurred during pregnancy and 49 percent occurred postpartum (Table 3.1). The difference is more pronounced for sibling deaths: 48 percent occurred during pregnancy and 31 percent occurred postpartum (Table 3.7).

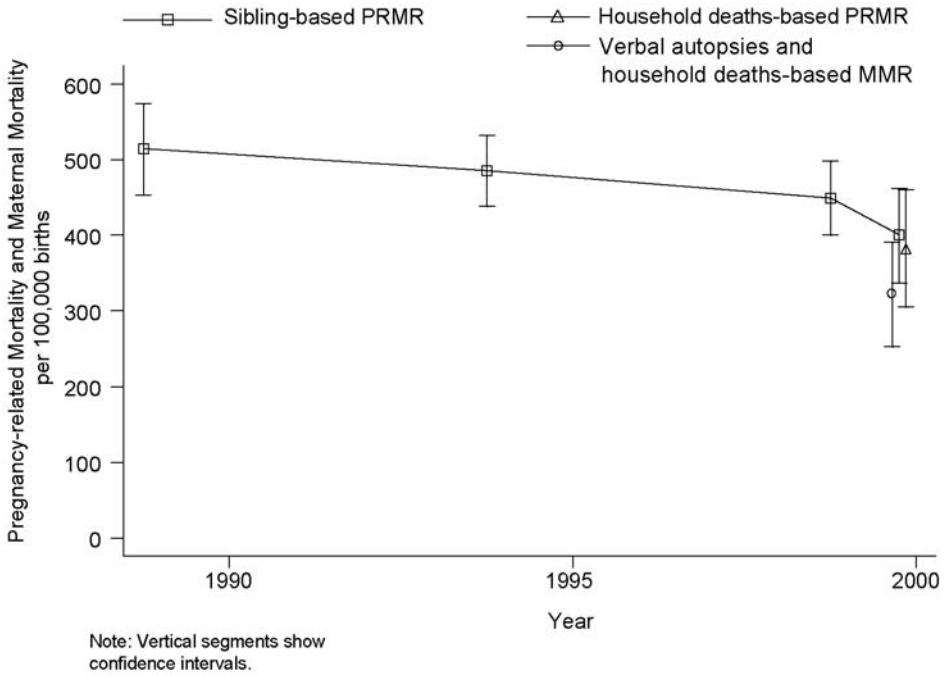
For deaths reported in the Household Questionnaire, it is possible to compare the classification of deaths as pregnancy-related using time of death with the classification as maternal from the verbal autopsy. Overall, about 18 percent of the pregnancy-related deaths were not classified as maternal by the verbal autopsy, but this figure was 26 percent for pregnancy-related deaths that were reported as occurring during pregnancy (the nonmaternal causes of pregnancy-related deaths included infections, malignancies, and violent deaths, including suicides). The difference probably reflects the hierarchical way in which the questions about timing of death relative to pregnancy were asked in both the Household Questionnaire and the sibling history, starting with pregnancy, then delivery, and finally after delivery. Support for this conclusion comes from the fact that 20 percent and 13 percent, respectively, of pregnancy-related deaths reportedly occurring during pregnancy were defined by the verbal autopsy as maternal deaths during delivery or after delivery. This shift is one reason why the number of maternal deaths is higher than the number of pregnancy-related deaths in the postpartum period; the other reason is that five deaths occurring more than 42 days after delivery, the cutoff for pregnancy-related deaths, were classified as maternal deaths by the verbal autopsy.

The magnitude of the difference between the number of pregnancy-related deaths on the one hand and the number of maternal deaths on the other serves to inform the debate in the literature concerning the interpretation of sisterhood-based estimates of the PRMR as estimates of the MMR. Stecklov (1995) estimated that 31 percent of the pregnancy-related sister deaths reported by the 1988 Bolivia DHS survey were nonmaternal, and argued that pregnancy-related sister deaths were overestimating the MMR. Shahidullah (1995) collected sibling reports of maternal and nonmaternal deaths in the Demographic Surveillance System in Matlab, Bangladesh, and found that 19 percent of true maternal deaths were not reported by siblings as pregnancy related. It has been argued (Stanton et al., 2000) on the basis of these two studies that the two errors—including incidental deaths among maternal deaths by interpreting the PRMR as the MMR on the one hand, and the failure to report as pregnancy-related deaths those deaths that actually were pregnancy-related deaths—may approximately cancel out. The BMMS results, however, suggest that deaths reported as pregnancy-related, both in the Household Questionnaire and in the sibling history, substantially overestimate the number of maternal deaths. Of course, it has to be recognized that the BMMS verbal autopsy may also have missed some maternal deaths during pregnancy as a result of the failure to report the fact that the deceased woman was pregnant; such an error may for instance account for the relatively low proportion of maternal deaths reported as due to induced abortion.

3.2.4 Summary of Estimates of Pregnancy-Related and Maternal Mortality, 1986 to 2001

Figure 3.1 shows estimates of pregnancy-related and maternal mortality by time period, together with the 95 percent confidence intervals (95% CI) around the estimates. The sibling estimates show a steady but nonsignificant downward trend over time, from 514 per 100,000 live births (95% CI 453-574) in the late 1980s to 485 per 100,000 live births (95% CI 438-532) in the early 1990s, to 449 per 100,000 live births (95% CI 400-498) in the late 1990s, and to 400 per 100,000 live births (95% CI 337-462) in the three years before the survey. This last value is slightly (though not significantly) higher than the corresponding PRMR estimate derived from household deaths over the same period, 382 (95% CI 305-460). The MMR estimate based on verbal autopsies and household deaths for the three years before the survey, 322 (95% CI 253-391), is about 15 percent lower than the PRMR based on the same deaths.

Figure 3.1 **BMMS Estimates of Pregnancy-Related Mortality and Maternal Mortality, 1988 -2001**



3.3 OVERALL ADULT MORTALITY

3.3.1 Adult Mortality Estimates from Household Deaths

The mortality estimates given here are based on deaths recorded in the 36 months prior to interview and refer approximately to the period early 1998 to early 2001.

Mortality Levels and Patterns

Table 3.8 shows the deaths, exposure time, and mortality rates from the BMMS for the three years before the survey. The rates are graphed (on a log scale) in Figure 3.2. The rates show the expected J-shaped pattern with age of high risk in early childhood, dropping to a minimum at age 10-14, and then rising steadily into old age. Male mortality is generally slightly higher than female mortality, although the differences are least pronounced between age 5 and 40. Table 3.8 shows two summary measures of adult mortality: the probability of dying between age 15 and 50 (${}_{35}q_{15}$) and the probability of dying between age 15 and 60 (${}_{45}q_{15}$). Females have a slight advantage on the first measure and a somewhat larger advantage on the second. For both sexes, however, the mortality risks are surprisingly low, corresponding approximately to mortality risks in England and Wales around 1960 for males and around 1950 for females.

Table 3.8 Age-specific mortality rates by sex

Age-specific mortality rates by sex, Bangladesh 2001

	Male			Female		
Age group	Deaths	Exposure	Mortality rates	Deaths	Exposure	Mortality rates
< 1	1,407	19,076	0.07374	1,109	18,434	0.06019
1-4	415	78,826	0.00526	407	76,366	0.00533
5-9	138	103,210	0.00134	146	99,441	0.00147
10-14	87	96,935	0.00089	97	101,442	0.00096
15-19	101	74,174	0.00137	103	90,099	0.00115
20-24	67	56,349	0.00120	83	67,390	0.00123
25-29	93	56,631	0.00164	95	57,606	0.00165
30-34	95	51,289	0.00185	106	48,931	0.00217
35-39	105	48,876	0.00214	94	40,111	0.00233
40-44	143	36,373	0.00394	89	31,989	0.00277
45-49	157	29,669	0.00529	114	21,881	0.00521
50-54	238	19,272	0.01236	117	25,541	0.00459
55-59	180	19,938	0.00901	233	22,162	0.01052
60-64	475	14,485	0.03278	467	13,198	0.03541
65-69	379	15,666	0.02419	354	10,600	0.03337
70-74	781	9,132	0.08551	574	5,227	0.10975
75-79	350	7,884	0.04442	232	5,739	0.04050
80+	1,357	5,657	0.23984	1,212	4,797	0.25270
Total	6,567	743,441	0.00883	5,633	740,954	0.00760
Probability of dying						
${}_{35}q_{15}$	-	-	0.08348	-	-	0.07931
${}_{45}q_{15}$	-	-	0.17645	-	-	0.14635

Note: Rates are based on data from the Household Questionnaire.

Figure 3.2 **Age-Specific Mortality Rates by Sex, BMMS 1998-2000**

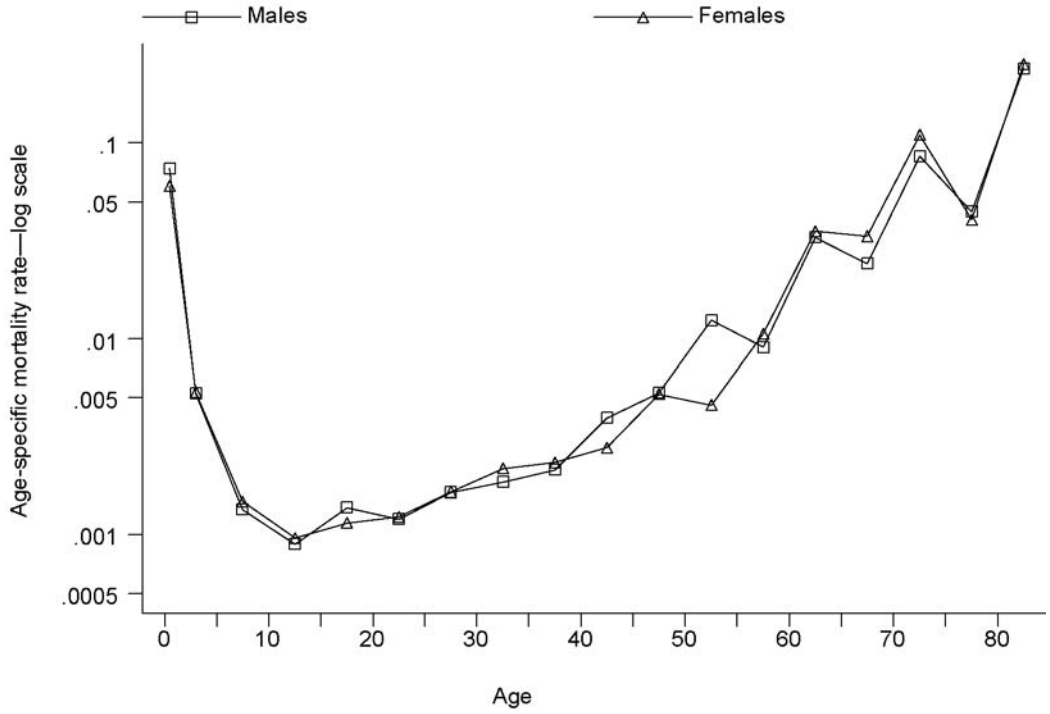


Table 3.9 shows mortality rates by age, sex, residence, and household wealth quintile. The two summary measures of adult mortality are also shown. For both summary indicators, urban males have higher mortality risks than their rural counterparts, whereas rural females have higher risks between age 15 and 50 but somewhat lower risks between age 15 and 60. The rural female excess mortality is particularly pronounced in the age groups of highest fertility and may be related to higher reproductive risks in rural areas. Mortality risks tend to be highest in the poorest households and lowest in the wealthiest households. The patterns are not entirely uniform, however—perhaps because of fairly small numbers of deaths. For example, for both males and females, the ${}_{35}q_{15}$ for the second quintile is lower than that for the middle quintile, and for males, the ${}_{45}q_{15}$ for the highest quintile is higher than that for the middle or fourth quintiles.

Table 3.9 Age-specific mortality rates by background characteristics

Age-specific mortality rates by residence and household wealth quintile, Bangladesh 2001

	Residence		Wealth quintile					
Age group	Urban	Rural	Lowest	Second	Middle	Fourth	Highest	Total
				MALE				
< 1	0.07309	0.07384	0.08882	0.08706	0.07521	0.06260	0.04351	0.07374
1-4	0.00407	0.00550	0.00725	0.00601	0.00440	0.00446	0.00292	0.00526
5-9	0.00103	0.00140	0.00206	0.00173	0.00079	0.00102	0.00072	0.00134
10-14	0.00085	0.00090	0.00128	0.00113	0.00084	0.00078	0.00045	0.00089
15-19	0.00132	0.00138	0.00162	0.00163	0.00137	0.00125	0.00113	0.00137
20-24	0.00127	0.00118	0.00186	0.00142	0.00124	0.00069	0.00108	0.00120
25-29	0.00208	0.00153	0.00154	0.00172	0.00156	0.00148	0.00189	0.00164
30-34	0.00188	0.00184	0.00259	0.00113	0.00159	0.00214	0.00178	0.00185
35-39	0.00203	0.00218	0.00321	0.00169	0.00245	0.00152	0.00177	0.00214
40-44	0.00373	0.00399	0.00609	0.00357	0.00364	0.00343	0.00297	0.00394
45-49	0.00611	0.00509	0.00708	0.00388	0.00588	0.00492	0.00478	0.00529
50-54	0.01392	0.01197	0.02028	0.01693	0.00848	0.00682	0.01168	0.01236
55-59	0.01136	0.00854	0.01031	0.00904	0.00649	0.00768	0.01218	0.00901
60-64	0.03953	0.03142	0.04818	0.03651	0.02926	0.02324	0.03079	0.03278
65-69	0.03593	0.02213	0.02908	0.02312	0.02143	0.02332	0.02466	0.02419
70-74	0.13104	0.07781	0.09993	0.09132	0.08307	0.06771	0.09016	0.08551
75-79	0.06424	0.04093	0.04172	0.04012	0.04271	0.04281	0.05421	0.04442
80+	0.28888	0.23109	0.24079	0.23793	0.26016	0.20909	0.25708	0.23984
Total	0.00901	0.00879	0.01095	0.00943	0.00818	0.00770	0.00796	0.00883
Probability of dying								
$_{35}q_{15}$	0.08799	0.08234	0.11311	0.07246	0.08486	0.07426	0.07412	0.08348
$_{45}q_{15}$	0.19645	0.17189	0.23917	0.18559	0.15092	0.13907	0.17837	0.17645
				FEMALE				
< 1	0.05077	0.06220	0.08190	0.06712	0.05825	0.04422	0.03717	0.06019
1-4	0.00354	0.00570	0.00797	0.00612	0.00494	0.00361	0.00230	0.00533
5-9	0.00100	0.00156	0.00199	0.00197	0.00179	0.00085	0.00030	0.00147
10-14	0.00089	0.00097	0.00113	0.00100	0.00124	0.00078	0.00066	0.00096
15-19	0.00073	0.00125	0.00114	0.00151	0.00193	0.00079	0.00055	0.00115
20-24	0.00069	0.00138	0.00164	0.00109	0.00200	0.00090	0.00070	0.00123
25-29	0.00123	0.00176	0.00215	0.00167	0.00173	0.00200	0.00074	0.00165
30-34	0.00181	0.00227	0.00292	0.00269	0.00246	0.00149	0.00126	0.00217
35-39	0.00215	0.00238	0.00215	0.00267	0.00336	0.00172	0.00178	0.00233
40-44	0.00271	0.00279	0.00438	0.00291	0.00210	0.00304	0.00164	0.00277
45-49	0.00484	0.00530	0.00802	0.00445	0.00628	0.00437	0.00348	0.00521
50-54	0.00583	0.00436	0.00359	0.00518	0.00435	0.00387	0.00611	0.00459
55-59	0.01343	0.00998	0.01092	0.01162	0.00945	0.01086	0.00975	0.01052
60-64	0.04120	0.03422	0.04139	0.04237	0.03659	0.02967	0.02886	0.03541
65-69	0.03472	0.03311	0.02400	0.03452	0.03528	0.03678	0.03597	0.03337
70-74	0.11759	0.10799	0.12497	0.13608	0.11023	0.09725	0.08921	0.10975
75-79	0.05479	0.03757	0.03860	0.03852	0.03365	0.03798	0.05167	0.04050
80+	0.26929	0.24926	0.26335	0.24444	0.24793	0.23072	0.27842	0.25270
Total	0.00695	0.00775	0.00886	0.00799	0.00766	0.00688	0.00661	0.00760
Probability of dying								
$_{35}q_{15}$	0.06835	0.08205	0.10603	0.08149	0.09457	0.06902	0.04951	0.07931
$_{45}q_{15}$	0.15399	0.14561	0.16862	0.15556	0.15497	0.13520	0.12206	0.14635

Note: Rates are based on data from the Household Questionnaire.

Causes of Nonmaternal Deaths

The Verbal Autopsy Questionnaire was used to collect information about signs and symptoms surrounding every female death between age 13 and 49 (inclusive) and reported by the household. The primary purpose of the verbal autopsy was to identify maternal deaths, but the results also permit the assignation of nonmaternal causes. Table 3.10 shows mortality rates by cause of death among women 15-49 in the three years preceding the survey. The cause categories are infectious diseases; malignancies; diseases of the circulatory system; suicide; other violent deaths; miscellaneous causes; and deaths for which it was impossible to assign a cause on the basis of the verbal autopsy, or for which the reviewing physicians could not agree).

Table 3.10 Mortality rates by cause of death

Mortality rates (per 1,000 years of exposure) among women age 15-49 in the three years preceding the survey, by cause of death, Bangladesh 2001

Age group	Maternal	Infectious disease	Malignancy	Circulatory disease	Suicide	Other violent causes	Miscel-laneous causes	Not classified	Total
15-19	0.228	0.140	0.102	0.000	0.232	0.058	0.153	0.122	1.035
20-24	0.439	0.153	0.107	0.055	0.212	0.066	0.153	0.039	1.225
25-29	0.535	0.245	0.035	0.105	0.227	0.063	0.133	0.197	1.541
30-34	0.499	0.396	0.213	0.268	0.074	0.030	0.274	0.199	1.953
35-39	0.262	0.200	0.433	0.502	0.167	0.112	0.236	0.413	2.326
40-44	0.387	0.268	0.590	0.691	0.083	0.090	0.545	0.380	3.035
45-49	0.149	0.411	1.178	1.321	0.059	0.294	0.607	0.544	4.563
Total	0.367	0.229	0.254	0.263	0.175	0.080	0.239	0.211	1.816

It was not possible to assign a cause to 82 deaths (12 percent of the total). However, for mortality across all ages, the largest single cause of death was maternal death (20 percent), followed by diseases of the circulatory system (14 percent), malignancies (14 percent), and infectious diseases (13 percent). Death rates from circulatory diseases and malignancies both rise sharply with age, whereas death rates from infections rise moderately with age. Suicide rates, on the other hand, are highest under the age of 30. External causes— injuries, drowning and a few homicides—show no clear age pattern of risk. Both miscellaneous and unclassified death rates rise moderately with age.

3.3.2 Adult Mortality Estimates from Sibling Histories

All eligible women (ever-married women age 13-50) were asked for a complete sibling history, as described above. The information from the sibling history permits the calculation of age-specific mortality rates by sex for age groups up to 45-49: sibling deaths at a given age and a given number of years before the survey provide the numerators for the rates, and the person-years lived by both surviving siblings and prior to death by those who died provide the denominators. Table 3.11 shows mortality rates by age and sex estimated from the BMMS sibling histories for three five-year periods, 1986-1991, 1991-1996, 1996-2001, and for the three years preceding the survey, 1998-2001.

Table 3.11 Mortality rates from sibling histories

Direct estimates of mortality rates from sibling listings for specific periods preceding the survey, Bangladesh 2001

	Male				Female			
Age group	1986-1991	1991-1996	1996-2001	1998-2001	1986-1991	1991-1996	1996-2001	1998-2001
0-4	0.02790	0.02052	0.01412	0.01235	0.02965	0.02379	0.01875	0.01401
5-9	0.00401	0.00350	0.00178	0.00124	0.00521	0.00374	0.00276	0.00223
10-14	0.00181	0.00144	0.00094	0.00072	0.00241	0.00145	0.00113	0.00092
15-19	0.00132	0.00092	0.00104	0.00083	0.00211	0.00196	0.00165	0.00164
20-24	0.00153	0.00130	0.00121	0.00102	0.00252	0.00226	0.00166	0.00135
25-29	0.00170	0.00136	0.00154	0.00140	0.00259	0.00221	0.00188	0.00154
30-34	0.00256	0.00212	0.00168	0.00131	0.00357	0.00276	0.00200	0.00180
35-39	0.00322	0.00222	0.00227	0.00204	0.00357	0.00326	0.00243	0.00198
40-44	0.00676	0.00492	0.00361	0.00299	0.00662	0.00498	0.00348	0.00300
45-49	0.00571	0.00732	0.00595	0.00555	0.00714	0.00590	0.00449	0.00375
Probability of dying								
${}_{35}q_{15}$	0.10783	0.09593	0.08289	0.07291	0.13125	0.11019	0.08422	0.07254

Mortality Levels and Trends

An important potential advantage of the sibling history over the household deaths approach to measuring adult mortality is that the sibling history provides information about recent trends, assuming that recall or other data errors do not change over time. Table 3.11 shows trends in the summary measure ${}_{35}q_{15}$ over the 15 years before the survey. For the three-year period preceding the survey, the sibling estimates of ${}_{35}q_{15}$ are similar to, if somewhat lower than, the estimates based on household deaths for both males and females shown in Table 3.9: a 7.3 percent risk of dying between age 15 and 50 for both males and females, as opposed to 8.3 percent for males and 7.9 percent for females from the household deaths. The sibling data show declining adult mortality for both sexes, but more rapid declines for females (45 percent over 10 years) than males (33 percent over 10 years). For the period 10-14 years before the survey, females have more than a 20 percent excess risk of dying between the age 15 and 50 relative to males, but this male advantage declines sharply to approximate equality in the period 0 to 4 years before the survey. These declines compare with a reduction of 35 percent in the under-five mortality rate for both sexes over the same period, shown in Table 6.8 (chapter 6). It appears therefore that adult mortality has been declining at much the same pace as child mortality during the 1990s on average, but faster for females than for males. The nature of the sibling mortality data precludes the calculation of differentials because the persons at risk (siblings) do not necessarily share the geographic or socioeconomic characteristics of the respondent.

MATERNITY CARE

4

Michael Koenig, Tulshi D. Saha, and Ahmed Al-Sabir

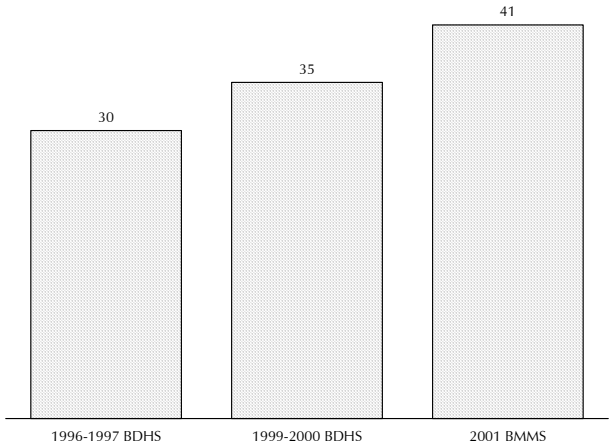
This chapter presents findings from the Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) on aspects of birth planning and antenatal, delivery, and postdelivery care decisionmaking and behavior among Bangladeshi women. The results in the following section are based on data obtained from mothers on all stillbirths and live births that occurred in the three years preceding the survey.

4.1 ANTENATAL CARE

Proper care during pregnancy and childbirth is important to the health of both the mother and child. Antenatal care is recognized as a major component of comprehensive maternal health care. Antenatal care facilitates the detection and treatment of problems during pregnancy such as infections, hypertensive disease, and maternal anemia, and provides an important and timely opportunity to provide health information to women and their families (Carroli et al., 2001a, 2001b). In addition, early and regular contact by women with the formal health care system can contribute to timely and effective use of services during delivery or obstetric complications. It is during an antenatal care visit that screening for complications and advice on a range of issues (including place of delivery and referral of mothers with complications) occur.

In the 1999-2000 Bangladesh Demographic and Health Survey (BDHS) and 1996-1997 BDHS, questions on antenatal care were asked for live births in the five years preceding the survey. In the BMMS, data were collected for all birth outcomes (live and stillbirths) in the three years preceding the survey. In addition, sample size and sample designs differed slightly between the two BDHS surveys and the BMMS. A comparison of estimates of antenatal care across the three surveys is shown in Figure 4.1. The figure shows that antenatal care has been increasing steadily over time, from 30 percent of births in the 1996-1997 BDHS survey to 35 percent in the 1999-2000 BDHS and to 41 percent in the 2001 BMMS.

Figure 4.1 **Percentage of Women Who Received Antenatal Care from a Medically Trained Provider for the Last Live Birth in the Three Years Preceding the Survey, Bangladesh 1996-1997, 1999-2000, and 2001**



4.1.1 Source of Antenatal Care

In the BMMS, women who had a live birth or a stillbirth in the three years preceding the survey were asked a number of questions about antenatal care. Interviewers recorded the source of antenatal care, the person who provided that care, advice or information received on birth planning, and elements of antenatal care received. Table 4.1 shows the percent distribution of source of antenatal care received during pregnancy for all births in the three years before the survey, according to background characteristics. Although interviewers were instructed to record all the providers a woman consulted for care, only the most qualified provider is considered in this analysis.

Table 4.1 Antenatal care

Percent distribution of live births and stillbirths in the three years preceding the survey by source of antenatal care (ANC) during pregnancy, according to background characteristics, Bangladesh 2001

		Medically trained			Nonmedically trained								
Background characteristic	Received any ANC	Qualified doctor	Nurse/ midwife/ paramedic FWV	MA/ SACMO	HA/ FWA	Trained birth attendant	Untrained birth attendant	Unqualified provider	Other	No one	Missing	Total	Number
Birth outcome													
Live birth	47.6	24.4	15.4	0.3	4.5	0.2	0.1	2.1	0.6	52.4	0.1	100.0	39,525
Stillbirth	47.9	25.1	15.8	0.4	3.7	0.2	0.0	2.4	0.3	51.3	0.9	100.0	1,133
Mother's age at birth													
<20	49.8	23.6	17.5	0.4	5.2	0.2	0.1	2.2	0.6	50.2	0.1	100.0	13,016
20-34	47.8	25.7	14.8	0.3	4.2	0.2	0.1	2.0	0.5	52.2	0.1	100.0	24,899
35+	35.0	15.7	11.6	0.2	4.0	0.1	0.0	2.7	0.6	64.9	0.2	100.0	2,743
Birth order													
1	58.3	32.8	17.7	0.4	4.5	0.2	0.0	2.0	0.5	41.7	0.1	100.0	11,663
2-3	48.7	24.5	16.4	0.4	4.5	0.2	0.1	2.0	0.6	51.3	0.1	100.0	16,405
4-5	38.0	16.9	13.0	0.3	4.7	0.2	0.1	2.1	0.6	62.0	0.1	100.0	7,102
6+	30.4	13.2	9.4	0.2	4.5	0.1	0.1	2.3	0.5	69.6	0.1	100.0	4,355
Residence													
Urban	64.2	42.2	16.5	0.2	3.5	0.1	0.1	1.3	0.3	35.8	0.1	100.0	6,989
Metropolitan/town	73.3	55.0	14.7	0.2	2.2	0.1	0.1	0.7	0.3	26.7	0.0	100.0	3,681
Other urban	54.2	28.0	18.5	0.3	4.9	0.1	0.0	1.9	0.3	45.8	0.2	100.0	3,308
Rural	44.1	20.7	15.2	0.4	4.7	0.2	0.1	2.3	0.6	55.8	0.1	100.0	33,669
Division													
Barisal	32.8	19.3	10.4	0.1	1.7	0.1	0.0	0.9	0.2	67.2	0.0	100.0	2,672
Chittagong	42.1	25.6	13.7	0.1	1.3	0.3	0.2	0.9	0.0	57.9	0.0	100.0	8,440
Dhaka	52.0	26.4	13.8	0.4	7.1	0.1	0.1	2.8	1.1	47.9	0.2	100.0	13,978
Khulna	57.4	28.5	18.9	0.6	6.0	0.1	0.0	2.8	0.5	42.6	0.1	100.0	3,919
Rajshahi	44.1	18.2	21.7	0.2	2.6	0.1	0.0	1.2	0.0	55.9	0.0	100.0	8,559
Sylhet	52.5	27.9	10.0	0.7	7.2	0.1	0.1	4.9	1.3	47.4	0.3	100.0	3,088
Mother's education													
No education	34.2	12.0	13.5	0.3	5.2	0.1	0.0	2.4	0.6	65.8	0.1	100.0	18,158
Primary incomplete	44.6	18.7	16.9	0.5	5.0	0.2	0.2	2.5	0.7	55.3	0.1	100.0	7,544
Primary complete	49.9	25.6	16.7	0.4	4.6	0.3	0.1	1.7	0.3	50.1	0.0	100.0	4,332
Secondary+	71.7	49.1	17.1	0.3	2.9	0.2	0.0	1.5	0.5	28.3	0.1	100.0	10,624
Wealth quintile													
Lowest	31.3	9.0	12.9	0.3	5.6	0.1	0.1	2.7	0.6	68.6	0.1	100.0	10,201
Second	37.9	13.8	15.2	0.3	5.1	0.2	0.1	2.4	0.7	62.1	0.1	100.0	8,911
Middle	45.5	19.9	17.3	0.3	4.9	0.2	0.1	2.2	0.5	54.5	0.1	100.0	7,721
Fourth	56.4	30.8	18.4	0.4	3.8	0.3	0.0	1.9	0.7	43.6	0.1	100.0	7,166
Highest	78.5	60.3	14.1	0.4	2.4	0.1	0.0	0.8	0.4	21.5	0.2	100.0	6,658
Total	47.6	24.4	15.4	0.3	4.5	0.2	0.1	2.1	0.6	52.4	0.1	100.0	40,657

FWV = Family welfare visitor, MA = Medical assistant, SACMO = Sub-assistant community medical officer, HA = Health assistant, FWA = Family welfare assistant.

The data indicate that fewer than half of mothers in Bangladesh receive antenatal care from a trained or untrained provider. For births that occurred in the three years before the survey, only 48 percent of mothers received any antenatal care during pregnancy. The primary source of antenatal care is doctors (24 percent), followed by nurses, midwives, and family welfare visitors (FWVs) (15 percent). Fewer than 1 percent of pregnant mothers receive antenatal care from trained or untrained traditional birth attendants *(dais).* Table 4.1 shows that there are substantial differences in levels of antenatal care among subgroups in Bangladesh. Antenatal care is more common among younger women and women of lower birth order. The percentage of births for which the mother had one or more antenatal care checkups was significantly higher in urban than rural areas (64 and 44 percent, respectively), with differences largely due to the percentage seeking care from qualified doctors. The highest and lowest levels of antenatal care are found in Khulna division (57 percent) and Barisal division (33 percent), respectively. The use of antenatal care is strongly associated with level of education and household economic status. Mothers with some secondary education are twice as likely as mothers with no education to receive antenatal care, and mothers from the wealthiest households are more than twice as likely to obtain antenatal care as mothers from the poorest households.

4.1.2 Number and Initial Timing of Antenatal Care

The number of antenatal care visits and the timing of the first checkup are both considered important in detecting and preventing an adverse pregnancy outcome (Carolli et al., 2001a). Care is most effective if the visits are started early during pregnancy and continued at regular intervals throughout the pregnancy. The World Health Organization and the Government of Bangladesh recommend a minimum of three antenatal care visits, with one visit taking place in each pregnancy trimester.

Table 4.2 shows the frequency and timing of the initial antenatal visit for live births and stillbirths that occurred in the three years preceding the survey. For a majority of these birth outcomes (52 percent), no antenatal care was sought. The median number of antenatal visits sought per live birth was 1.8 visits. Only one in five births was characterized by three or more antenatal visits. Table 4.3 shows that the median number of antenatal visits is highest among women with first births, women in urban or metropolitan areas, women who have completed secondary school or more, and women in households in the highest wealth quintile, with substantial percentages of each reporting four or more antenatal care visits. Table 4.4 shows that the timing of the initial antenatal care visit for many Bangladeshi women is quite late, a median of 5.4 months into the pregnancy. Among births to women who sought antenatal care, less than one in three sought initial antenatal care during the first trimester (31 percent) and one in four (24 percent) delayed seeking care until the third trimester. Table 4.4 shows that early initiation of antenatal care is more common among women who resided in urban areas, have completed secondary school or more, and are from households in the highest wealth quintile.

Table 4.2 Summary of frequency and timing of antenatal care visits

Percent distribution of live births and stillbirths in the three years preceding the survey by number of antenatal care visits and by the stage of pregnancy at the time of the first visit, Bangladesh 2001

Number and timing of ANC visits	Total
Number of visits	
0	52.4
1	14.3
2	12.3
3	9.3
4+	11.6
Don't know/missing	0.2
Total	100.0
Median number of visits	1.8
Number of months pregnant at the time of the first visit	
No antenatal care	52.4
<4 months	14.6
4-6 months	21.1
7+ months	11.7
Don't know/missing	0.2
Total	100.0
Median number of months pregnant at first visit	5.4
Total	40,657

Table 4.3 Number of antenatal care visits

Percent distribution of live births and stillbirths in the three years preceding the survey by number of antenatal care visits, according to background characteristics, Bangladesh 2001

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	52.4	14.3	12.3	9.3	11.6	0.1	100.0	1.8	39,525
Stillbirth	51.3	14.8	14.0	8.4	10.4	1.2	100.0	1.6	1,133
Mother's age at birth									
< 20	50.2	15.5	13.7	9.8	10.7	0.2	100.0	1.7	13,016
20-34	52.2	13.8	12.0	9.2	12.7	0.1	100.0	1.8	24,899
35+	64.9	13.0	8.9	7.4	5.5	0.3	100.0	1.5	2,743
Birth order									
1	41.7	15.0	14.6	11.2	17.4	0.1	100.0	2.0	11,663
2-3	51.3	14.4	12.6	9.5	12.0	0.1	100.0	1.8	16,405
4-5	62.0	13.8	10.0	7.6	6.6	0.1	100.0	1.5	7,102
6+	69.6	12.5	8.2	6.4	3.2	0.2	100.0	1.3	4,355
Residence									
Urban	35.8	13.0	13.1	12.1	26.0	0.1	100.0	2.5	6,989
Metropolitan/town	26.7	11.0	12.9	13.1	36.1	0.1	100.0	3.0	3,681
Other urban	45.8	15.3	13.3	10.9	14.6	0.1	100.0	1.9	3,308
Rural	55.8	14.5	12.2	8.7	8.6	0.2	100.0	1.6	33,669
Division									
Barisal	67.2	11.7	8.1	5.9	7.0	0.1	100.0	1.6	2,672
Chittagong	57.9	12.3	11.1	8.2	10.5	0.0	100.0	1.8	8,440
Dhaka	47.9	15.8	13.5	9.3	13.4	0.2	100.0	1.8	13,978
Khulna	42.6	15.8	15.4	11.3	14.6	0.3	100.0	1.8	3,919
Rajshahi	55.9	13.0	10.7	10.1	10.2	0.0	100.0	1.8	8,559
Sylhet	47.4	16.6	14.7	10.5	10.4	0.4	100.0	1.6	3,088
Mother's education									
No education	65.8	13.4	9.8	6.8	4.2	0.1	100.0	1.4	18,158
Primary incomplete	55.3	15.5	13.1	8.7	7.2	0.2	100.0	1.5	7,544
Primary complete	50.1	15.6	13.8	9.9	10.5	0.2	100.0	1.7	4,332
Secondary+	28.3	14.5	15.5	13.7	27.9	0.1	100.0	2.4	10,624
Wealth quintile									
Lowest	68.6	12.7	8.9	6.3	3.3	0.2	100.0	1.3	10,201
Second	62.1	14.9	11.2	7.0	4.7	0.1	100.0	1.4	8,911
Middle	54.5	15.4	13.4	9.5	7.0	0.1	100.0	1.5	7,721
Fourth	43.6	16.6	15.5	11.3	12.8	0.1	100.0	1.7	7,166
Highest	21.5	12.0	14.3	14.5	37.4	0.2	100.0	2.9	6,658
Total	52.4	14.3	12.3	9.3	11.6	0.2	100.0	1.8	40,657

Table 4.4 Stage of pregnancy at first antenatal care visit

Percent distribution of live births and stillbirths in the three years preceding the survey for which antenatal care was received, by stage of pregnancy at the time of the first visit, according to background characteristics, Bangladesh 2001

Background characteristic	Stage of pregnancy at first antenatal care visit				Total	Number of months pregnant at first visit	Number of births for which antenatal care was sought
	<4 months	4-6 months	7+ months	Don't know/ missing			
Birth outcome							
Live birth	31.0	44.3	24.4	0.3	100.0	5.4	18,804
Stillbirth	23.2	49.3	27.2	0.3	100.0	5.6	543
Mother's age at birth							
<20	27.1	47.4	25.2	0.2	100.0	5.5	6,483
20-34	32.8	43.1	23.8	0.3	100.0	5.3	11,903
35+	29.7	41.0	28.8	0.5	100.0	5.5	960
Birth order							
1	33.6	44.2	22.0	0.2	100.0	5.3	6,796
2-3	30.5	45.3	23.9	0.4	100.0	5.4	7,984
4-5	28.2	42.7	28.7	0.4	100.0	5.5	2,698
6+	26.3	41.8	31.3	0.6	100.0	5.6	1,326
Residence							
Urban	40.1	41.6	18.0	0.3	100.0	5.0	4,488
Metropolitan/town	46.4	39.9	13.6	0.2	100.0	4.3	2,697
Other urban	30.6	44.3	24.7	0.4	100.0	5.4	1,791
Rural	28.0	45.3	26.4	0.3	100.0	5.5	14,859
Division							
Barisal	34.5	43.8	21.1	0.6	100.0	5.2	877
Chittagong	30.0	44.0	25.8	0.2	100.0	5.4	3,551
Dhaka	33.4	43.6	22.7	0.3	100.0	5.3	7,274
Khulna	27.9	45.8	26.0	0.3	100.0	5.5	2,250
Rajshahi	24.4	47.3	27.9	0.3	100.0	5.6	3,772
Sylhet	37.3	40.7	21.4	0.7	100.0	5.1	1,622
Mother's education							
No education	24.3	45.9	29.3	0.5	100.0	5.6	6,207
Primary incomplete	25.2	45.6	28.6	0.5	100.0	5.6	3,366
Primary complete	28.3	46.8	24.8	0.2	100.0	5.5	2,161
Secondary+	39.2	42.0	18.6	0.2	100.0	5.0	7,612
Wealth quintile							
Lowest	23.4	46.9	29.1	0.7	100.0	5.7	3,195
Second	23.6	45.5	30.8	0.1	100.0	5.7	3,373
Middle	24.7	46.3	28.7	0.3	100.0	5.6	3,513
Fourth	29.2	45.9	24.4	0.4	100.0	5.4	4,042
Highest	45.2	39.8	14.8	0.2	100.0	4.5	5,224
Total	30.8	44.4	24.5	0.3	100.0	5.4	19,347

4.1.3 Reasons for Seeking or Not Seeking Antenatal Care

Table 4.5 shows that among women who sought antenatal care, three in four sought care for a general checkup rather than for a specific problem. Among the 24 percent of women who did seek antenatal care for a specific reason, 9 percent cited lower abdominal pain as the primary problem for which care was sought, with smaller percentages citing excessive vomiting (4 percent), headache (4 percent), edema (3 percent), or vaginal bleeding (1 percent). Ten percent of women cited other problems, which included weakness, loss of appetite, or limited fetal movement.

Table 4.5 Reasons for seeking antenatal care

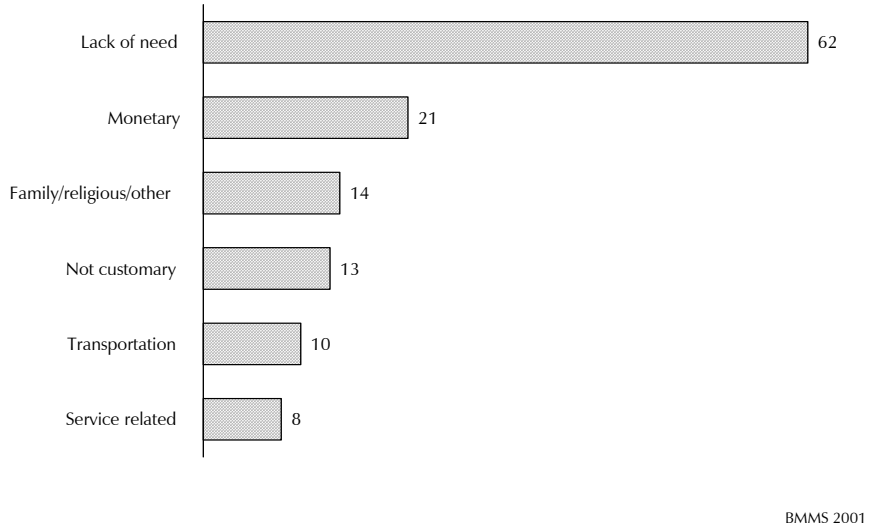
Percent distribution of live births in the three years preceding the survey for which antenatal care (ANC) was received, by reason for seeking care, and percentage citing specific problems, Bangladesh 2001

Reason for ANC visit	Percentage	Number of births
General checkup	76.0	14,287
Specific problem	24.0	4,517
Total	100.0	18,804
Specific problem		
Headache	3.6	686
Edema/preeclampsia	2.6	495
Lower abdominal pain	8.6	1,623
Excessive vomiting	3.9	742
Vaginal bleeding	1.1	200
Other	10.2	1,913

Note: Multiple problems were allowed.

Among the majority of women who did not seek antenatal care, the most frequently cited reason was lack of need (62 percent), followed by monetary constraints (21 percent), familial or religious constraints (14 percent), perception that antenatal care is not "customary" (13 percent), transportation constraints (10 percent), and service-related constraints (8 percent) (Figure 4.2).

Figure 4.2 Percentage of Live Births for Which no Antenatal Care was Sought, by Reason for not Seeking Antenatal Care, Bangladesh 2001



4.1.4 Information/Services Received during Antenatal Care

Of particular interest is the range and content of services provided to women during their antenatal care visit(s). The BMMS collected data on information and services provided during antenatal care for all birth outcomes during the three years preceding the survey. Table 4.6 shows the specific types of information provided during any of the antenatal visits by background characteristics, among women who

reported making at least one antenatal visit. While 84 percent of women received advice about diet, only 54 percent recall being told where to go if complications occurred, and fewer than half (45 percent) were informed about the danger signs of pregnancy. Women who resided in urban areas, more educated women, and women who live in wealthier households were more likely than others to report having received information on both the danger signs of pregnancy and where to go if complications occur. The association of these characteristics with having received advice on diet, however, was weaker.

Table 4.6 Information given for antenatal care

Percent distribution of live births and stillbirths in the three years preceding the survey for which mothers received information on antenatal care, by background characteristics, Bangladesh 2001

Background characteristic	Advice on diet	Danger signs of pregnancy	Where to go if complications occur	Number of births for which antenatal care was sought
Birth outcome				
Live birth	84.0	45.5	54.3	18,804
Stillbirth	78.0	42.6	49.8	543
Mother's age at birth				
<20	83.1	43.3	51.8	6,483
20-34	84.6	46.9	55.8	11,903
35+	78.2	41.8	50.6	960
Birth order				
1	85.9	46.5	56.0	6,796
2-3	84.5	47.0	56.2	7,984
4-5	81.2	42.1	50.0	2,698
6+	76.1	38.0	43.4	1,326
Residence				
Urban	87.8	48.7	60.6	4,488
Metropolitan/town	89.9	51.7	65.0	2,697
Other urban	84.7	44.3	53.9	1,791
Rural	82.6	44.4	52.2	14,859
Division				
Barisal	86.8	51.6	57.0	877
Chittagong	86.5	51.1	60.5	3,551
Dhaka	82.0	42.2	50.5	7,274
Khulna	84.4	44.1	56.5	2,250
Rajshahi	86.8	50.3	58.6	3,772
Sylhet	76.5	34.6	41.8	1,622
Mother's education				
No education	78.2	38.9	44.6	6,207
Primary incomplete	82.7	44.4	51.5	3,366
Primary complete	85.2	45.4	54.8	2,161
Secondary+	88.4	51.2	63.0	7,612
Wealth quintile				
Lowest	75.5	37.7	41.6	3,195
Second	80.6	40.8	48.5	3,373
Middle	83.4	45.1	52.1	3,513
Fourth	85.9	46.3	56.3	4,042
Highest	89.5	52.7	65.3	5,224
Total	83.8	45.4	54.2	19,347

The specific procedures that women reported receiving during their antenatal checkups are shown in Figure 4.3 (for live births only) and Table 4.7 (live births and stillbirths). It should be emphasized that respondents are likely to report those procedures that could be directly observed (e.g., physical procedures, discussions); other procedures (e.g., separate laboratory tests) are likely to have been under-reported. Among all live births where at least one antenatal visit took place, an abdominal examination or measurement of blood pressure was common but by no means universal (75 percent). For two-thirds of live births, measurement of maternal weight and/or height was reported. Blood or urine tests were less commonly reported (30 and 37 percent, respectively). For 17 percent of births, the mothers reported having an ultrasound taken during an antenatal care visit, and for 12 percent of births the mothers reported receiving an internal pelvic examination. Table 4.7 shows that women of lower parity, urban women, and women who are more educated or live in wealthier households were more likely than others to report having these antenatal procedures, most likely because of their greater propensity to seek antenatal care from a doctor. Particularly striking are the proportions of women in urban areas (29 percent), more highly educated women (31 percent), and women in wealthier households (40 percent) who report having undergone an ultrasound procedure. In urban areas, this number is almost 50 percent among more educated women and women in wealthier households (results not shown).

Figure 4.3 Among Live Births for Which Antenatal Care Was Received, Percentage for Which Specific Procedures Were Performed at Least Once, Bangladesh 2001

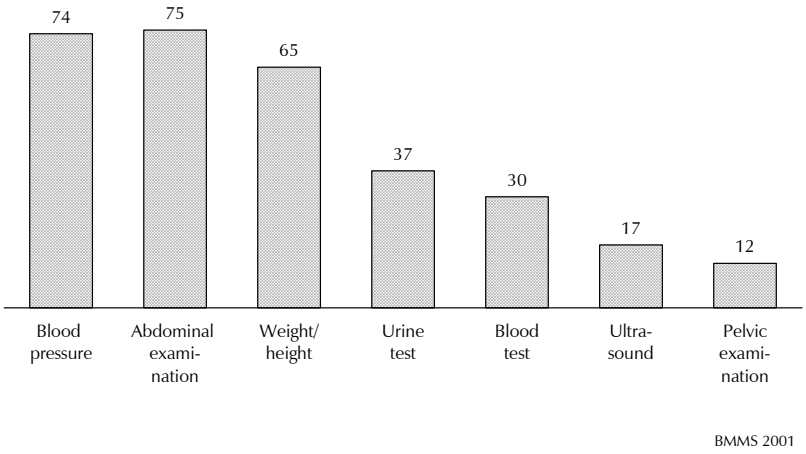


Table 4.7 Procedures performed during pregnancy

Among all live births and stillbirths in the three years preceding the survey for which antenatal care was received, percentage for which mothers received specific procedures during pregnancy, by background characteristics, Bangladesh 2001

Background characteristic	Procedures performed during antenatal visit							Number of births for which antenatal care was sought
	Weight or height measured	Blood pressure taken	Blood test done	Urine tested	Abdomen examined	Internal pelvic exam	Ultra-sound	
Birth outcome								
Live birth	65.3	73.8	30.1	37.2	74.7	12.3	16.5	18,804
Stillbirth	62.0	73.5	30.9	39.1	73.3	13.9	21.9	543
Mother's age at birth								
<20	66.7	72.0	27.2	34.2	75.4	10.7	12.6	6,483
20-34	65.3	75.0	32.3	39.7	75.1	13.5	19.1	11,903
35+	53.7	71.3	22.3	28.3	65.2	9.3	13.7	960
Birth order								
1	71.2	77.0	36.3	43.2	80.3	14.4	20.4	6,796
2-3	65.9	74.0	29.2	37.3	74.6	12.5	16.4	7,984
4-5	57.0	69.1	22.2	28.4	68.8	9.3	11.0	2,698
6+	48.3	66.3	18.9	24.2	58.9	6.8	8.3	1,326
Residence								
Urban	75.2	82.6	43.2	49.5	82.9	19.4	28.6	4,488
Metropolitan/town	82.5	88.0	52.6	57.8	88.2	23.9	36.4	2,697
Other urban	64.1	74.4	29.0	36.9	75.1	12.7	17.0	1,791
Rural	62.2	71.2	26.1	33.6	72.2	10.2	13.0	14,859
Division								
Barisal	69.7	77.9	30.1	37.0	76.6	13.5	14.9	877
Chittagong	67.6	79.4	38.8	44.6	82.7	17.7	17.8	3,551
Dhaka	60.3	69.6	29.6	35.2	70.3	11.0	20.0	7,274
Khulna	69.3	74.3	25.5	35.0	75.6	10.5	16.1	2,250
Rajshahi	77.5	78.3	27.6	38.1	80.3	12.4	11.7	3,772
Sylhet	44.7	67.5	25.2	32.4	61.4	8.6	12.0	1,622
Mother's education								
No education	56.2	63.8	16.0	22.3	63.3	6.4	5.2	6,207
Primary incomplete	62.2	69.5	21.0	29.1	70.5	8.9	8.8	3,366
Primary complete	63.4	73.7	27.1	33.8	75.6	9.7	13.0	2,161
Secondary+	74.3	84.0	46.4	54.2	85.6	19.6	30.5	7,612
Wealth quintile								
Lowest	54.1	60.9	15.1	21.2	59.7	6.0	2.6	3,195
Second	58.7	66.1	16.4	23.5	67.0	6.4	5.0	3,373
Middle	62.5	71.0	20.9	28.6	72.8	8.8	8.3	3,513
Fourth	65.0	74.7	30.0	38.0	76.9	11.3	15.1	4,042
Highest	78.2	88.0	54.3	61.3	88.4	23.3	39.5	5,224
Total	65.2	73.8	30.1	37.3	74.7	12.4	16.6	19,347

4.1.5 Antenatal Care in Consecutive Pregnancies

Among women who had a live birth or stillbirth during the three years preceding the BMMS, 8 percent (3,330 women) had more than one birth event during this period. For these women, it is possible to examine the consistency of individual women in seeking antenatal care for their two most recent pregnancies (Table 4.8). The results indicate that more than half (52 percent) did not receive any antenatal care for either pregnancy; an additional 21 percent received care for one but not both pregnancies. Only 27 percent of women reported having one or more antenatal visits for both recent pregnancies. The likelihood of consistent antenatal care is highest for women in urban areas, more educated women, and women in wealthier households.

Table 4.8 Patterns of antenatal care from trained providers

Percent distribution of women with more than one live or stillbirth in the three years preceding the survey, by their consistency of receipt of antenatal care (ANC) from a medically trained person for the last two birth outcomes, according to background characteristics, Bangladesh 2001

Background characteristic	ANC for both births	ANC for first birth only	ANC for last birth only	No ANC for either birth	Missing	Total	Number of women
Residence							
Urban	39.9	7.9	13.0	39.1	0.1	100.0	485
Metropolitan/town	48.4	4.6	14.9	32.1	0.0	100.0	210
Other urban	33.4	10.4	11.5	44.4	0.2	100.0	275
Rural	24.8	7.8	13.5	53.7	0.1	100.0	2,845
Division							
Barisal	13.8	6.1	13.0	67.0	0.0	100.0	172
Chittagong	25.1	4.8	14.1	56.0	0.0	100.0	761
Dhaka	28.1	8.0	13.4	50.3	0.2	100.0	1,161
Khulna	35.1	9.1	16.1	39.8	0.0	100.0	240
Rajshahi	25.2	10.4	13.1	51.3	0.0	100.0	598
Sylhet	31.3	9.0	11.5	47.6	0.6	100.0	398
Mother's education							
No education	17.7	7.5	13.3	61.4	0.2	100.0	1,701
Primary incomplete	25.5	8.2	14.3	52.0	0.0	100.0	586
Primary complete	32.1	8.1	14.5	45.1	0.1	100.0	362
Secondary+	48.9	8.2	12.6	30.1	0.2	100.0	681
Wealth quintile							
Lowest	16.3	7.2	11.2	65.1	0.2	100.0	999
Second	19.5	8.3	15.5	56.8	0.0	100.0	785
Middle	26.7	8.5	12.8	51.8	0.2	100.0	628
Fourth	36.2	8.0	17.1	38.7	0.1	100.0	529
Highest	57.8	7.0	11.1	23.7	0.3	100.0	390
Total	27.0	7.8	13.5	51.6	0.1	100.0	3,330

4.2 BIRTH PLANNING

4.2.1 Information Received on Delivery Advice During Pregnancy

The BMMS collected detailed information on types of information about delivery care provided to women during antenatal care. For all live births and stillbirths during the three years preceding the survey for which the mother received antenatal care, women were asked whether they or their family members had been informed about a range of issues related to safe delivery. The results presented in Table 4.9 underscore the low level of information that pregnant Bangladeshi women and their families receive on aspects of delivery; on no subject did a majority of respondents report having received information or advice. The proportion having received advice or information during pregnancy ranged from 45 percent, concerning the location of a hospital to go to if delivery complications occurred, to 31 percent, regarding the importance of the delivery assistant washing their hands or using gloves, to only 15 percent, concerning the importance of making transport arrangements. Although differences were not pronounced, women who were more educated and from wealthier families were more likely to report having received information regarding aspects of safe delivery. It is interesting that while urban women were more likely to have received information about place of delivery or complications and delivery personnel, rural women were equally well (or poorly) informed in terms of appropriate aseptic delivery procedures.

Table 4.9 Information given about delivery

Among the live births and stillbirths in the three years preceding the survey for which mothers received antenatal care, percentage for which mother received information on delivery, by background characteristics, Bangladesh 2001

characteristic	Where baby can be delivered	Person who can assist in delivery	Hospital for compli-cation handling	Arrange-ment of trans-por-tation	Arrange-ment of money	Arrange-ment of safe delivery kit	Compli-cation during pregnancy	Washing hands/ using gloves	Using sterilized blade	Using clean thread to tie cord	Use of anti-septic	Births with antenatal care
Birth outcome												
Live birth	34.2	27.4	45.2	14.5	20.1	15.9	25.6	30.6	41.5	41.1	39.7	18,804
Stillbirth	27.9	23.0	43.1	14.4	17.3	11.7	21.1	25.0	32.5	32.7	31.6	543
Mother's age at birth												
<20	31.0	25.0	41.7	13.5	20.1	15.9	23.6	30.3	42.5	41.9	40.9	6,483
20-34	36.2	28.8	47.3	15.3	20.4	16.0	26.8	30.9	41.0	40.7	39.4	11,903
35+	28.5	23.8	40.8	11.7	15.6	11.2	21.6	26.5	36.0	35.1	32.0	960
Birth order												
1	35.5	28.5	46.7	16.0	22.1	16.9	26.8	31.0	42.7	42.2	41.6	6,796
2-3	36.3	28.4	46.8	14.9	20.8	16.9	26.9	32.1	42.1	41.9	40.5	7,984
4-5	29.9	25.2	41.0	11.7	16.5	12.9	21.8	28.5	39.4	38.6	36.5	2,698
6+	24.5	19.8	36.2	10.0	13.2	10.7	19.2	24.2	35.9	35.1	31.8	1,326
Residence												
Urban	43.1	33.8	52.0	15.7	22.5	16.4	27.9	30.1	39.6	39.1	39.1	4,488
Metropolitan/town	48.8	37.3	56.2	16.7	24.7	15.1	30.5	29.6	36.7	36.1	36.9	2,697
Other urban	34.6	28.6	45.8	14.2	19.2	18.4	24.0	30.8	43.9	43.8	42.4	1,791
Rural	31.3	25.3	43.0	14.1	19.3	15.6	24.8	30.6	41.8	41.3	39.6	14,859
Division												
Barisal	39.5	33.1	48.5	15.3	19.7	20.1	29.9	39.1	48.1	48.0	46.7	877
Chittagong	40.3	34.3	51.2	18.4	24.8	19.3	30.6	33.6	45.9	45.9	44.6	3,551
Dhaka	31.7	23.4	41.2	12.6	19.2	13.2	22.5	27.5	36.5	35.7	34.5	7,274
Khulna	33.4	25.8	46.0	13.3	17.9	11.5	23.7	28.1	38.3	38.5	37.5	2,250
Rajshahi	36.4	31.3	49.7	17.3	21.7	21.8	29.2	35.7	49.2	49.0	47.3	3,772
Sylhet	23.3	18.4	35.3	9.4	12.5	9.0	18.9	23.7	34.2	33.1	31.4	1,622
Mother's education												
No education	24.4	20.1	35.6	10.0	15.0	11.2	18.0	25.5	36.7	36.2	33.2	6,207
Primary incomplete	29.9	23.9	41.3	11.8	17.9	14.5	23.7	28.6	40.7	40.7	39.0	3,366
Primary complete	32.2	26.0	46.4	14.1	20.9	16.1	24.8	31.6	42.7	42.3	41.4	2,161
Secondary+	44.3	35.0	54.1	19.5	24.9	19.9	32.6	35.1	44.8	44.3	44.4	7,612
Wealth quintile												
Lowest	21.1	17.5	32.1	10.3	14.7	11.4	18.3	25.2	36.6	36.0	32.8	3,195
Second	25.8	21.4	37.5	11.0	16.8	13.0	20.1	27.5	40.2	40.1	36.9	3,373
Middle	29.1	24.0	42.7	13.0	20.0	15.3	23.5	31.2	43.0	42.8	41.8	3,513
Fourth	35.7	28.8	47.4	14.9	21.4	18.0	26.9	32.6	44.4	44.1	42.9	4,042
Highest	49.4	38.0	57.7	20.0	24.4	18.9	33.6	33.5	41.2	40.4	41.1	5,224
Total	34.1	27.3	45.1	14.5	20.0	15.8	25.5	30.5	41.3	40.8	39.5	19,347

4.2.2 Decision on Delivery Assistance for Current Pregnancy

Women who were currently pregnant at the time of the survey were asked whether they had discussed or decided who would assist them during delivery. Table 4.10 shows that among currently pregnant women, almost two-thirds had neither discussed nor made a decision concerning assistance at delivery. Among those who had made a decision, the most frequently cited providers were untrained (22 percent) and trained (5 percent) traditional birth attendants. Only 4 percent mentioned a doctor as the intended assistant. The likelihood of having decided on delivery assistance was greater the more advanced the pregnancy was. Nonetheless, more than half of pregnant women in their third trimester had still not decided on delivery assistance. Women with no previous live births were less likely to have decided on the type of assistance during delivery. Not surprisingly, the intention to seek medically trained delivery assistance is higher for urban women, more educated women, and women in wealthier households.

Table 4.10 Intended assistance during delivery

Percent distribution of currently pregnant women by whether a decision regarding assistance during delivery had been made, and by type of intended assistant, according to background characteristics, Bangladesh 2001

Background characteristic	Intended assistant during delivery						No decision regarding assistance during delivery	Total	Number of women
	Doctor	Nurse/ midwife	Trained TBA	Untrained TBA	Relative/ other	Don't know/ missing			
Duration of pregnancy									
<4 months	4.4	0.8	3.2	13.7	1.8	0.0	76.1	100.0	2,217
4-6 months	4.7	1.6	4.6	19.6	2.8	0.1	66.6	100.0	2,861
>6 months	4.2	2.2	6.7	31.0	4.5	0.1	51.3	100.0	2,534
Age									
<20	3.3	1.2	6.0	21.1	3.6	0.1	64.6	100.0	2,790
20-34	5.3	1.8	4.4	21.9	2.8	0.1	63.8	100.0	4,417
35+	1.6	1.5	3.0	23.3	2.9	0.0	67.7	100.0	406
Number of live births before current pregnancy									
0	5.3	1.4	3.4	14.0	2.5	0.1	73.3	100.0	2,642
1	7.0	2.1	5.8	21.6	2.9	0.1	60.5	100.0	1,894
2-3	2.9	1.7	5.9	26.1	3.8	0.1	59.5	100.0	1,975
4-5	0.4	1.0	5.1	32.2	3.7	0.0	57.6	100.0	728
6+	0.9	1.1	5.1	31.4	3.4	0.0	58.1	100.0	374
Residence									
Urban	14.0	3.4	4.2	18.6	1.9	0.2	57.7	100.0	1,371
Metropolitan/town	21.7	3.9	3.6	16.9	1.7	0.2	52.1	100.0	730
Other urban	5.3	2.7	4.8	20.5	2.2	0.2	64.2	100.0	641
Rural	2.3	1.2	5.0	22.3	3.3	0.1	65.7	100.0	6,242
Division									
Barisal	2.1	1.4	3.4	20.4	2.6	0.0	70.2	100.0	462
Chittagong	3.9	2.0	5.0	21.5	1.8	0.0	65.8	100.0	1,601
Dhaka	6.0	1.7	5.4	23.7	3.3	0.2	59.8	100.0	2,623
Khulna	6.2	1.8	5.3	20.6	4.4	0.3	61.4	100.0	741
Rajshahi	2.9	1.1	4.5	16.6	3.5	0.0	71.4	100.0	1,624
Sylhet	2.2	1.1	3.9	29.7	3.5	0.2	59.4	100.0	562
Education									
No education	0.6	0.6	4.8	25.9	3.5	0.0	64.6	100.0	2,833
Primary incomplete	1.0	0.8	4.2	25.2	3.7	0.1	65.0	100.0	1,331
Primary complete	2.1	1.0	5.8	23.3	3.7	0.1	64.0	100.0	892
Secondary+	11.2	3.3	5.1	14.5	2.1	0.1	63.7	100.0	2,557
Wealth quintile									
Lowest	0.4	0.4	4.5	23.1	3.4	0.0	68.1	100.0	1,726
Second	0.7	0.6	4.5	22.1	3.8	0.0	68.2	100.0	1,570
Middle	1.2	1.3	5.8	23.7	3.4	0.0	64.6	100.0	1,452
Fourth	3.1	1.9	5.3	22.0	2.5	0.1	65.1	100.0	1,520
Highest	18.7	4.2	4.3	16.8	2.2	0.3	53.4	100.0	1,345
Total	4.4	1.6	4.9	21.7	3.1	0.1	64.3	100.0	7,613

4.2.3 DECISIONMAKER REGARDING DELIVERY ASSISTANCE

Among currently pregnant women who had discussed or decided on delivery assistance, the primary decisionmaker on this issue was the respondent (51 percent) (Table 4.11). The second most frequently cited main decisionmaker was the husband (24 percent), followed by in-laws (13 percent), and then the woman's own parents (9 percent). The importance of in-laws and parents in delivery assistance decisions is particularly striking for women having their first birth; thereafter, the importance of the woman herself sharply increases, with a corresponding decrease in importance of the husband and other family members. The greater level of primary decisionmaking by the husband and the lower level by the wife among more educated women and women in wealthier households is evident in Table 4.11.

Table 4.11 Person making decision regarding assistance during delivery

Percent distribution of currently pregnant women who have decided on assistance during delivery by person who mainly made the decision, according to background characteristics, Bangladesh 2001

	Person who mainly made decision on assistance during delivery								
Background characteristic	Respondent	Husband	In-laws	Parents	Other family members/ relatives	Others	Don't know/ missing	Total	Number of women
Age									
<20	48.7	23.0	13.6	11.1	2.3	0.6	0.8	100.0	953
20-34	52.9	25.4	12.0	7.1	2.0	0.3	0.3	100.0	1,553
35+	48.0	21.0	18.8	8.0	3.5	0.0	0.7	100.0	126
Number of live births before current pregnancy									
0	26.0	29.5	17.1	22.0	4.3	0.3	0.8	100.0	668
1	50.2	26.3	14.3	7.0	1.5	0.5	0.1	100.0	727
2-3	61.3	20.6	12.6	2.9	1.4	0.6	0.6	100.0	784
4-5	70.1	20.1	5.8	1.9	1.6	0.0	0.4	100.0	299
6+	75.6	19.5	2.5	0.0	1.5	0.0	0.8	100.0	155
Residence									
Urban	48.4	30.3	10.3	6.5	3.2	0.5	0.8	100.0	558
Metropolitan/town	46.5	31.1	9.9	6.4	4.3	0.8	0.9	100.0	338
Other urban	51.3	29.1	11.0	6.5	1.6	0.0	0.6	100.0	220
Rural	51.9	22.7	13.5	9.2	1.9	0.4	0.5	100.0	2,075
Division									
Barisal	51.1	23.3	15.7	8.1	1.7	0.0	0.0	100.0	134
Chittagong	49.5	24.6	17.1	5.7	2.9	0.2	0.0	100.0	529
Dhaka	52.3	23.3	11.4	9.1	2.5	0.4	1.0	100.0	1,023
Khulna	47.6	26.5	8.3	13.6	2.7	0.5	0.9	100.0	275
Rajshahi	52.8	26.0	10.4	9.7	0.6	0.6	0.0	100.0	448
Sylhet	50.8	22.3	18.3	5.1	2.2	0.7	0.5	100.0	224
Education									
No education	60.1	19.0	13.7	4.7	1.6	0.1	0.7	100.0	981
Primary incomplete	55.1	22.8	11.1	9.0	1.2	0.1	0.7	100.0	450
Primary complete	48.3	19.3	15.1	13.8	2.9	0.3	0.2	100.0	308
Secondary+	40.2	32.5	12.1	10.9	3.1	0.9	0.3	100.0	893
Wealth quintile									
Lowest	58.8	20.0	13.5	5.8	1.1	0.1	0.7	100.0	539
Second	57.2	21.0	10.7	9.5	0.7	0.0	0.9	100.0	480
Middle	49.4	23.0	15.4	9.3	2.1	0.7	0.2	100.0	500
Fourth	47.6	22.8	14.7	11.6	2.2	0.6	0.4	100.0	509
Highest	43.9	33.0	10.5	7.2	4.5	0.5	0.4	100.0	604
Total	51.1	24.3	12.9	8.6	2.2	0.4	0.5	100.0	2,633

4.3 DELIVERY CARE

An important component of efforts to reduce the health risks for mothers and children is to increase the proportion of babies who are delivered by skilled providers with adequate medical supervision (Graham et al., 2001). 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.

4.3.1 Place of Delivery

Table 4.12 presents data on the place of delivery for all live births and stillbirths that occurred during the three years preceding the survey. Delivery at home remains almost universal among Bangladeshi women (91 percent). Six percent of deliveries occur in a public sector clinical facility (hospital, upazila health complex, maternal and child welfare center, or upazila health and family welfare center), and 3 percent occur in a private hospital or clinic. Twenty-two percent of urban (32 percent of metropolitan/town) deliveries, compared with only 7 percent of rural deliveries, took place in a facility. Delivery in a facility was more common for first births (15 percent), for women who reported health problems during pregnancy or delivery (12 percent), for more educated women (23 percent), and for women in wealthier households (30 percent). There is an association between the frequency of antenatal care visits and place of delivery: women who have three or more antenatal checkups are much more likely to deliver in a public or private sector institutional setting (27 percent).

4.3.2 Assistance During Delivery

Increasing the proportion of births delivered by skilled health personnel constitutes one of the main indicators of maternal health in the Millennium Development Goals (UNFPA, 2003). Table 4.13 shows the types of persons providing assistance during delivery, according to background characteristics, for all live births and stillbirths in the three 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. Three-fourths of births in Bangladesh are assisted by traditional birth attendants (i.e., *dais*), with 12 percent reporting assistance from a trained birth attendant and 63 percent reporting assistance from an untrained birth attendant. It is important to emphasize that the designation of trained versus untrained is based wholly on reports from respondents and thus may not be accurate. An additional 11 percent of deliveries were assisted by friends or relatives. Only 12 percent of births were assisted by medically trained persons, either doctors (7 percent), or nurses, midwives, or family welfare visitors (5 percent). A comparison with the 1999-2000 BDHS shows comparable results in terms of the type of assistance during delivery. Lower order births, urban residence, and higher education or socioeconomic status are all associated with a greater likelihood of the delivery being assisted by a trained medical professional (doctors, nurses, midwives, or family welfare visitors). More frequent antenatal visits also show a strong association with delivery assistance from a trained medical professional.

Table 4.12 Place of delivery

Percent distribution of live births and stillbirths in the three years preceding the survey by place of delivery, according to background characteristics, Bangladesh 2001

Background characteristic	Place of delivery: Not delivered in health facility	Government hospital/ upazila health complex/ MCWC	UHFWC	Private hospital/clinic	NGO health facilities and others	Total	Number
Birth outcome							
Live birth	91.2	5.4	0.1	2.7	0.6	100.0	39,525
Stillbirth	76.4	15.5	0.3	5.5	1.5	100.0	1,133
Mother's age at birth							
<20	91.5	5.6	0.2	2.0	0.6	100.0	13,016
20-34	90.1	5.9	0.1	3.3	0.6	100.0	24,899
35+	94.1	4.0	0.1	1.4	0.4	100.0	2,743
Birth order							
1	85.0	9.1	0.2	4.7	0.9	100.0	11,663
2-3	91.9	4.8	0.1	2.6	0.6	100.0	16,405
4-5	96.2	2.7	0.1	0.8	0.3	100.0	7,102
6+	97.3	2.0	0.1	0.5	0.2	100.0	4,355
Problems during pregnancy or delivery							
No	94.9	3.1	0.1	1.4	0.4	100.0	17,797
Yes	87.6	7.6	0.2	3.8	0.8	100.0	22,860
Residence							
Urban	78.4	12.0	0.1	8.4	1.1	100.0	6,989
Metropolitan/town	68.4	17.0	0.0	13.3	1.3	100.0	3,681
Other urban	89.5	6.4	0.2	3.0	0.9	100.0	3,308
Rural	93.4	4.3	0.1	1.6	0.5	100.0	33,669
Division							
Barisal	94.9	3.7	0.1	1.1	0.2	100.0	2,672
Chittagong	92.0	5.5	0.1	1.9	0.5	100.0	8,440
Dhaka	89.3	5.9	0.1	3.9	0.7	100.0	13,978
Khulna	87.4	6.7	0.3	4.6	1.0	100.0	3,919
Rajshahi	91.3	6.2	0.1	1.7	0.7	100.0	8,559
Sylhet	93.9	3.9	0.0	1.8	0.2	100.0	3,088
Mother's education							
No education	96.6	2.5	0.1	0.5	0.3	100.0	18,158
Primary incomplete	94.4	3.9	0.1	1.1	0.4	100.0	7,544
Primary complete	92.7	5.4	0.1	1.3	0.5	100.0	4,332
Secondary+	77.5	12.4	0.3	8.4	1.4	100.0	10,624
Wealth quintile							
Lowest	97.5	1.9	0.0	0.3	0.3	100.0	10,201
Second	96.0	2.9	0.1	0.6	0.3	100.0	8,911
Middle	94.4	4.0	0.2	0.9	0.4	100.0	7,721
Fourth	90.8	6.5	0.2	1.9	0.5	100.0	7,166
Highest	69.6	16.0	0.1	12.4	1.8	100.0	6,658
Antenatal care visits							
None	97.6	1.8	0.0	0.4	0.2	100.0	21,295
1-2	91.8	5.8	0.2	1.8	0.4	100.0	10,811
3+	72.7	15.1	0.3	9.9	2.0	100.0	8,489
Total	90.8	5.7	0.1	2.7	0.6	100.0	40,657

Note: Total includes 63 births for which antenatal care visits are missing.
MCWC = Maternal and child welfare center, UHFWC = Union health and family welfare center, NGO= Nongovernment organization

Table 4.13 Assistance during delivery

Percent distribution of births in the three years preceding the survey by type of assistance during delivery, according to background characteristics, Bangladesh 2001

	Medically trained				Nonmedically trained						
Background characteristic	Doctor	Nurse midwife/ FWV	MA/ SACMO	HA/ FWA	Trained birth attend-ant	Un-trained birth attend-ant	Relatives and friends	Other	No one	Total	Number
Birth outcome											
Live birth	6.5	5.1	0.0	0.2	11.9	63.7	11.1	0.3	1.3	100.0	39,525
Still birth	16.5	8.2	0.1	0.5	9.3	49.3	11.5	1.3	3.3	100.0	1,133
Mother's age at birth											
<20	5.8	5.4	0.1	0.2	12.8	64.0	10.9	0.3	0.6	100.0	13,016
20-34	7.6	5.2	0.0	0.2	11.6	62.4	11.2	0.3	1.5	100.0	24,899
35+	4.1	3.5	0.0	0.1	9.4	68.1	10.9	0.6	3.3	100.0	2,743
Birth order											
1	11.4	7.7	0.1	0.3	13.2	58.4	8.4	0.3	0.3	100.0	11,663
2-3	5.8	5.0	0.1	0.2	12.4	63.4	11.8	0.2	1.2	100.0	16,405
4-5	2.7	2.8	0.0	0.1	11.1	68.0	12.9	0.4	2.0	100.0	7,102
6+	1.9	2.1	0.0	0.0	8.2	71.6	12.6	0.3	3.1	100.0	4,355
Problems during pregnancy or delivery											
No	3.4	3.6	0.0	0.2	10.9	66.6	13.1	0.2	1.9	100.0	17,797
Yes	9.4	6.3	0.0	0.2	12.6	60.6	9.5	0.3	0.9	100.0	22,860
Residence											
Urban	16.9	10.1	0.0	0.3	11.8	53.3	6.6	0.1	0.9	100.0	6,989
Metropolitan/town	25.5	11.7	0.0	0.3	9.8	46.0	5.9	0.1	0.7	100.0	3,681
Other urban	7.3	8.3	0.0	0.2	14.0	61.5	7.4	0.1	1.1	100.0	3,308
Rural	4.7	4.1	0.0	0.2	11.9	65.3	12.0	0.3	1.4	100.0	33,669
Division											
Barisal	4.0	4.3	0.1	0.3	10.5	69.6	9.9	0.0	1.2	100.0	2,672
Chittagong	6.4	5.2	0.0	0.1	12.0	68.6	6.7	0.0	0.9	100.0	8,440
Dhaka	8.3	4.8	0.0	0.2	13.1	62.4	9.7	0.4	1.1	100.0	13,978
Khulna	8.7	7.7	0.1	0.4	12.8	58.6	10.0	0.7	1.0	100.0	3,919
Rajshahi	5.0	5.5	0.1	0.2	11.2	56.4	19.2	0.1	2.4	100.0	8,559
Sylhet	5.5	3.3	0.0	0.2	7.8	72.2	9.6	0.5	0.9	100.0	3,088
Mother's education											
No education	2.0	2.4	0.0	0.1	10.0	70.1	13.0	0.4	1.9	100.0	18,158
Primary incomplete	3.7	3.9	0.0	0.3	11.9	66.4	12.5	0.2	1.2	100.0	7,544
Primary complete	5.1	5.3	0.0	0.1	13.0	64.4	10.9	0.2	1.0	100.0	4,332
Secondary+	17.7	10.8	0.1	0.3	14.7	48.9	6.9	0.2	0.4	100.0	10,624
Wealth quintile											
Lowest	1.3	2.2	0.0	0.1	9.5	70.0	14.3	0.4	2.2	100.0	10,201
Second	2.3	3.1	0.0	0.2	10.4	68.3	13.4	0.3	1.9	100.0	8,911
Middle	3.6	4.1	0.0	0.1	12.7	66.8	11.2	0.3	1.1	100.0	7,721
Fourth	6.7	6.0	0.0	0.3	14.6	62.6	9.0	0.1	0.6	100.0	7,166
Highest	24.8	12.6	0.1	0.4	13.5	42.9	5.2	0.2	0.4	100.0	6,658
Antenatal care visits											
None	1.4	2.0	0.0	0.1	9.0	71.7	13.7	0.3	1.8	100.0	21,295
1-2	5.6	6.1	0.0	0.3	14.2	62.7	9.8	0.3	0.9	100.0	10,811
3+	21.6	11.9	0.1	0.3	15.9	42.9	6.4	0.1	0.8	100.0	8,489
Total	6.8	5.2	0.0	0.2	11.9	63.3	11.1	0.3	1.3	100.0	40,657

Note: "Other" includes 17 unweighted cases with missing information on assistance during delivery. Total includes 63 births for which antenatal care visits are missing.
FWV = Family welfare visitor, MA = Medical assistant, SACMO = Sub-assistant community medical officer, HA = Health assistant, FWA = Family welfare assistant, TBA= Traditional birth attendant.

4.3.3 Reasons for Delivering at a Health Facility

The reasons cited by respondents for both delivering and not delivering in a health facility are shown in Tables 4.14 and 4.15, respectively. For recent births in a health facility, the reason most commonly cited for using the facility was to ensure a safe delivery (51 percent). Health or delivery-related problems were the second most commonly cited reason for delivering in a facility (38 percent). Other less frequently cited reasons included the availability of a doctor/modern facility (9 percent), having been advised to do so by a doctor or health worker (7 percent), the baby being overdue (7 percent), and the preceding birth having been a caesarean delivery (5 percent). Concern for safe delivery, as the reason for delivering in a facility, is more commonly cited by low parity women, urban women, more educated women, and women in wealthier households. Women with more antenatal visits are more likely to cite concern for safe delivery and are correspondingly less likely to cite health or delivery problems as reasons for delivering in a facility, suggesting that such visits may have been motivated largely for preventive care, rather than in response to pregnancy-related problems.

Table 4.15 summarizes the reasons women cited for not delivering in a health facility. Among the high proportion of women who delivered at home, the most frequently cited reason for not delivering in a facility was the perceived absence of need ("not necessary"), cited by 68 percent of such women; 9 percent said that the practice of facility-based delivery was "not customary." Cost was mentioned by 18 percent of women as a reason for not going to a health facility for delivery. Service-related factors were also important, with 10 percent mentioning poor quality service, 6 percent mentioning access or transport problems, and smaller numbers of women citing fear of service (4 percent) or not wanting to be attended by a male doctor (1 percent). As would be expected, less-educated women and women in poorer households were more likely to cite cost as a reason for not going to a health facility for delivery. Women with more antenatal visits are less likely to cite cost or access as factors and are somewhat more likely to cite poor quality and fear of service as reasons for delivering outside of a facility, although these differences are small.

Table 4.14 Reasons for delivering in a health facility

Percentage of live births and stillbirths in a health facility during the three years preceding the survey for which the mother cited specific reasons for delivering in a health facility, according to background characteristics, Bangladesh 2001

	Reason for delivering in a hospital/health center								
Background characteristic	Previous child was caesarean	Availability of doctor and modern facility	Delivery/ health-related problem	Baby overdue	Doctor/ health worker advised	For safe delivery	Other	Missing	Number of births a health facility
Birth outcome									
Live birth	4.9	9.3	36.2	7.6	6.9	53.5	5.4	0.6	3,465
Stillbirth	0.0	1.6	63.7	5.6	7.5	22.5	9.4	4.0	267
Mother's age at birth									
<20	0.9	6.0	47.6	7.4	5.9	43.7	5.9	0.8	1,104
20-34	6.2	10.3	33.5	7.4	7.4	55.6	5.3	0.8	2,467
35+	4.4	4.9	45.3	7.3	7.7	37.4	8.4	1.6	162
Birth order									
1	NA	9.5	39.6	8.3	6.5	52.4	5.0	0.7	1,746
2-3	11.7	9.4	29.3	6.8	6.8	57.6	5.5	0.3	1,331
4-5	3.0	8.7	41.7	7.3	9.4	47.7	7.2	1.4	271
6+	4.1	6.7	53.3	5.8	8.6	37.8	4.2	0.0	118
Problems during pregnancy or delivery									
No	6.4	16.0	11.2	6.5	5.4	70.1	3.2	2.0	899
Yes	3.9	6.5	46.8	7.7	7.5	45.3	6.4	0.4	2,833
Residence									
Urban	5.4	11.4	28.2	8.2	7.8	60.0	5.5	0.5	1,512
Metropolitan/town	5.9	12.9	26.3	7.9	7.0	62.0	4.2	0.5	1,163
Other urban	3.8	6.4	34.7	9.3	10.2	53.3	9.7	0.7	349
Rural	4.0	7.0	45.0	6.8	6.4	45.3	5.8	1.0	2,221
Division									
Barisal	2.4	10.9	39.9	8.8	6.8	51.2	1.9	0.0	136
Chittagong	4.2	15.0	37.0	6.5	8.5	52.2	0.8	0.0	675
Dhaka	5.0	6.3	35.9	7.6	6.9	53.4	8.6	1.5	1,496
Khulna	4.0	6.5	37.0	8.8	5.4	54.1	9.6	0.9	493
Rajshahi	3.7	9.9	43.3	6.1	6.2	47.3	1.4	0.0	746
Sylhet	8.4	6.1	42.7	9.6	8.7	39.0	9.0	2.3	187
Mother's education									
No education	2.4	5.2	53.7	4.8	5.7	36.9	8.5	2.4	610
Primary incomplete	2.0	4.9	46.1	7.8	7.4	42.5	7.6	0.9	420
Primary complete	3.5	5.5	45.0	6.9	4.5	45.3	5.4	0.8	316
Secondary+	5.6	10.8	31.9	8.1	7.5	57.3	4.6	0.4	2,387
Wealth quintile									
Lowest	2.3	5.0	56.0	5.7	4.2	32.5	6.4	2.8	259
Second	1.1	4.7	55.2	4.3	7.7	34.9	6.5	2.3	357
Middle	1.6	4.6	48.9	7.5	7.6	43.5	6.7	0.5	432
Fourth	3.1	6.2	45.2	7.5	6.5	47.5	6.9	0.3	657
Highest	6.5	11.7	28.4	8.1	7.2	59.4	4.8	0.6	2,027
Antenatal care visits									
None	2.0	4.1	58.3	4.3	3.2	32.1	8.8	0.5	506
1-2	3.1	4.7	45.2	7.1	5.2	48.1	5.5	0.5	887
3+	5.7	11.5	31.4	8.2	8.5	57.0	5.0	0.3	2,316
Total	4.5	8.8	38.2	7.4	7.0	51.3	5.6	0.8	3,733

Note: Total includes 63 births for which antenatal care visits are missing.

Table 4.15 Reasons for not delivering in a health facility

Percentage of live births and stillbirths at home in the three years preceding the survey for which the mother reported specific reasons for not delivering in a health facility, according to background characteristics, Bangladesh 2001

	Reason for not delivering in a health facility								
Background characteristic	Not necessary	Not customary	Cost	Access/ transport	Poor quality service	Fear of service	Did not want service from male	Other	Number
Birth outcome									
Live birth	68.6	9.3	17.7	5.8	9.6	3.4	1.3	7.6	36,059
Stillbirth	41.5	11.5	23.3	11.8	10.1	4.7	1.7	23.0	866
Mother's age at birth									
<20	69.9	7.5	14.0	5.8	9.4	3.6	1.3	9.2	11,913
20-34	67.7	9.6	19.2	6.0	9.9	3.4	1.2	7.4	22,432
35+	61.3	15.3	23.5	6.8	8.6	3.3	2.1	6.8	2,580
Birth order									
1	70.3	6.4	12.5	5.8	10.4	4.1	1.2	9.4	9,917
2-3	70.6	8.4	16.7	5.5	9.6	3.2	1.2	7.4	15,074
4-5	65.2	11.6	22.9	6.2	8.9	3.5	1.5	6.4	6,831
6+	63.0	15.1	25.2	6.6	9.0	2.7	1.7	6.1	4,237
Residence									
Urban	69.5	7.7	15.0	4.1	11.7	6.1	1.7	8.6	5,477
Metropolitan/town	67.2	5.0	15.4	4.5	11.1	7.7	1.5	9.2	2,518
Other urban	71.5	9.9	14.8	3.6	12.3	4.8	1.9	8.2	2,959
Rural	67.7	9.6	18.3	6.3	9.3	3.0	1.3	7.8	31,448
Division									
Barisal	63.0	7.7	16.4	6.7	7.2	3.4	2.0	7.3	2,536
Chittagong	59.4	10.8	19.6	5.8	9.4	2.9	1.5	6.6	7,765
Dhaka	72.9	9.0	19.5	6.6	11.4	4.8	1.4	8.6	12,482
Khulna	74.7	7.3	17.8	7.4	9.5	3.7	1.2	11.1	3,426
Rajshahi	65.5	9.8	12.2	4.4	9.4	2.0	1.0	7.6	7,813
Sylhet	72.3	8.9	22.9	5.8	5.8	2.9	1.3	6.4	2,901
Mother's education									
No education	64.0	11.8	23.8	6.6	9.3	3.2	1.2	6.9	17,548
Primary incomplete	68.4	8.3	18.6	6.2	9.7	3.0	1.6	8.5	7,124
Primary complete	70.6	7.9	13.4	5.2	10.3	3.3	1.3	8.4	4,017
Secondary+	74.8	5.6	6.7	4.9	10.0	4.5	1.4	9.4	8,237
Wealth quintile									
Lowest	61.0	11.6	28.6	7.9	9.3	2.9	1.0	6.4	9,942
Second	66.3	10.2	21.8	6.0	9.0	2.7	1.4	8.3	8,554
Middle	69.9	8.8	14.9	5.5	9.7	3.4	1.5	8.5	7,289
Fourth	73.2	8.4	8.5	4.6	10.2	3.5	1.5	8.6	6,509
Highest	75.6	5.0	5.1	4.6	10.6	6.3	1.4	8.8	4,631
Antenatal care visits									
None	65.6	11.5	20.2	6.7	8.6	2.8	1.3	7.9	20,789
1-2	71.5	7.2	16.8	5.5	10.7	3.7	1.5	7.3	9,924
3+	70.1	5.4	11.8	4.4	11.6	5.3	1.2	9.1	6,173
Total	68.0	9.3	17.9	6.0	9.6	3.5	1.3	8.0	36,925

Note: Total includes 63 births for which antenatal care visits are missing.

4.3.4 Medical Procedures Performed during Delivery

Table 4.16 and Figure 4.4 show the medical procedures performed at the time of delivery, as reported by women respondents. Caesarean section was reported to have occurred in fewer than 3 percent of deliveries. Forceps delivery occurred in fewer than 2 percent of such deliveries, and fewer than 1 percent of deliveries involved blood transfusions. These levels are substantially below levels of intervention

suggested by previous studies of rates of operative instrumental intervention and/or postpartum hemorrhage (Abou Zahr, 1998). By far the most common procedure was the provision of intravenous fluids, reported to have occurred in 15 percent of recent deliveries. The 1999-2000 BDHS also found that 2 percent of recent deliveries were delivered by caesarean section.

Table 4.16 Procedures performed during delivery

Percentage of live births and stillbirths in the three years preceding the survey for which specific procedures were performed during delivery, according to background characteristics, Bangladesh 2001

	Procedures performed at time of delivery				
Background characteristic	Forceps delivery	Abdominal operation/ caesarean section	Blood transfusion	Received intravenous fluid	Number of births
Birth outcome					
Live birth	1.7	2.6	0.7	14.6	39,525
Stillbirth	5.2	5.0	4.6	32.1	1,133
Mother's age at birth					
<20	1.9	1.9	0.7	16.4	13,016
20-34	1.8	3.2	0.9	14.9	24,899
35+	0.9	1.6	1.0	10.7	2,743
Birth order					
1	3.4	4.7	1.1	24.4	11,663
2-3	1.2	2.4	0.7	12.4	16,405
4-5	0.8	0.8	0.4	8.3	7,102
6+	0.5	0.6	0.3	7.0	4,355
Residence					
Urban	3.5	7.5	1.5	27.3	6,989
Metropolitan/town	4.6	11.5	2.2	37.5	3,681
Other urban	2.3	3.0	0.8	16.0	3,308
Rural	1.5	1.7	0.7	12.5	33,669
Division					
Barisal	1.0	1.7	0.7	9.9	2,672
Chittagong	1.9	2.3	0.8	15.8	8,440
Dhaka	2.0	3.4	0.9	16.1	13,978
Khulna	2.4	3.6	1.1	19.8	3,919
Rajshahi	1.2	1.9	0.8	13.6	8,559
Sylhet	1.9	1.9	0.8	11.4	3,088
Mother's education					
No education	0.7	0.6	0.5	7.8	18,158
Primary incomplete	1.0	1.2	0.7	11.1	7,544
Primary complete	1.4	1.8	0.6	14.1	4,332
Secondary+	4.5	7.5	1.6	30.7	10,624
Wealth quintile					
Lowest	0.5	0.4	0.4	6.2	10,201
Second	0.7	0.8	0.5	9.0	8,911
Middle	1.2	1.0	0.7	11.8	7,721
Fourth	2.3	2.1	0.9	17.3	7,166
Highest	5.5	11.1	2.1	38.1	6,658
Antenatal care visits					
None	0.5	0.5	0.3	7.1	21,295
1-2	1.6	1.8	0.8	15.8	10,811
3+	5.2	9.3	2.2	34.2	8,489
Place of delivery					
At home	0.4	0.1	0.2	8.6	36,925
Government hospital/ THC/MCWC	16.2	22.2	7.9	78.9	2,301
UHFWC	6.4	0.0	2.5	67.7	51
Private hospital/clinic	17.4	46.7	8.3	88.4	1,113
NGO and others	9.7	11.9	2.8	52.0	246
Total	1.8	2.7	0.8	15.1	40,657

Note: Total includes 63 births for which antenatal care visits and 21 births for which place of delivery are missing.

Figure 4.4 **Percentage of Live Births and Stillbirths for Which Specific Procedures Were Performed during Delivery, Bangladesh 2001**

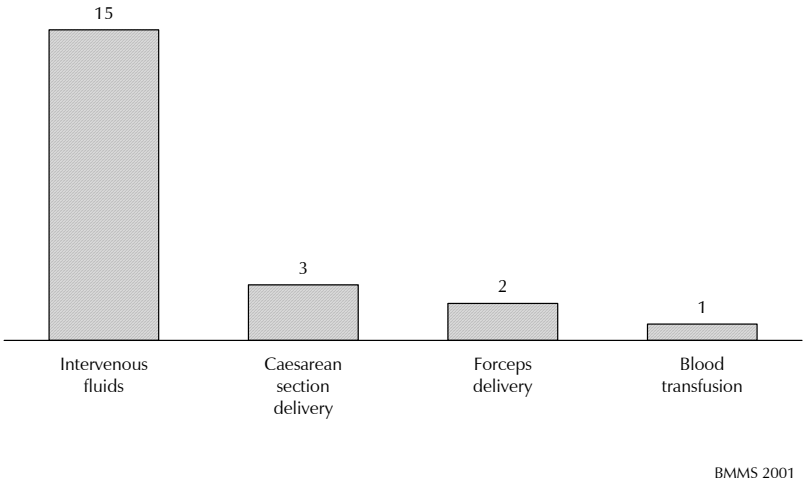


Table 4.16 shows that a strong urban-rural differential exists with respect to the frequency of caesarean section (8 and 2 percent, respectively), differences that are even more pronounced when only women residing in metropolitan areas or towns are considered. Low parity, higher education, and living in wealthier households were all associated with an increased likelihood of having a forceps delivery, caesarean section, or intravenous fluid during the delivery. A similar association is evident with respect to a greater number of antenatal visits. As would be expected, the place of delivery was an important factor in whether these medical procedures took place: while all such procedures were unlikely for the large number of deliveries that occurred at home, a striking 22 and 47 percent of deliveries that took place in government and private clinics, respectively, involved caesarean section; significantly higher rates of forceps delivery and blood transfusion were also evident for deliveries in these settings. A plausible explanation for this finding may be that the delivery caseloads in such facilities are heavily composed of more complicated deliveries, requiring these medical procedures. The provision of intravenous fluids during delivery appears to be an almost universal practice in government and private sector facilities.

4.4 POSTNATAL CARE

A number of problems that women and children experience surrounding childbirth occur during the postpartum period. Thus, postnatal checkups and care are recognized as an integral component of comprehensive maternity and delivery care. In the BMMS, for each live birth or stillbirth in the three years preceding the survey, respondents were asked whether they went for a checkup for either themselves or their baby during the two months following delivery and, if so, the types of providers seen and facility visited. Those who did not go for a checkup were asked the reasons for not doing so.

Table 4.17 shows that only 17 percent of women with recent deliveries reported having a postnatal checkup for themselves, with 9 percent reporting having been seen by a qualified doctor and 5 percent reporting having been seen by an unqualified doctor. Women whose pregnancy resulted in a stillbirth or a first birth, urban women, more educated women, and women in wealthier households were more likely to have had a postnatal checkup. Problems during pregnancy and, particularly, problems after delivery were both strongly linked to women having sought postnatal care. Significant differences appear to exist across

Table 4.17 Postnatal care for mother

Percent distribution of live births and stillbirths in the three years preceding the survey by type of postnatal care received for the mother, according to background characteristics, Bangladesh 2001

Background characteristic	Received postnatal care	Medically trained: Qualified doctor	Medically trained: Nurse/ midwife/ paramedic/ FWV	Medically trained: MA/ SACMO	Nonmedically trained: HA/ FWA	Nonmedically trained: Unqualified doctor	Nonmedically trained: Other	Nonmedically trained: No one	Nonmedically trained: Missing	Total	Number
Birth outcome											
Live birth	16.1	8.7	1.4	0.1	0.4	5.1	0.3	83.9	0.1	100.0	39,525
Stillbirth	32.1	20.3	1.8	0.2	0.5	8.4	0.8	67.0	1.0	100.0	1,133
Mother's age at birth											
<20	15.7	8.1	1.4	0.1	0.4	5.2	0.4	84.3	0.1	100.0	13,016
20-34	17.1	9.8	1.4	0.1	0.4	5.0	0.3	82.9	0.1	100.0	24,899
35+	16.1	7.1	1.2	0.1	0.5	6.5	0.6	83.8	0.1	100.0	2,743
Birth order											
1	19.9	12.7	1.7	0.1	0.4	4.5	0.4	80.1	0.1	100.0	11,663
2-3	15.3	8.1	1.2	0.1	0.4	4.9	0.4	84.7	0.1	100.0	16,405
4-5	13.0	5.6	1.4	0.1	0.3	5.5	0.2	86.9	0.1	100.0	7,102
6+	14.0	5.5	1.0	0.1	0.5	6.4	0.4	86.0	0.1	100.0	4,355
Problems during pregnancy or delivery											
No	9.1	4.6	1.0	0.1	0.3	2.9	0.2	90.8	0.1	100.0	17,797
Yes	22.4	12.5	1.7	0.1	0.5	6.9	0.5	77.6	0.1	100.0	22,860
Problems after delivery											
No	13.0	7.5	1.3	0.1	0.3	3.4	0.3	86.9	0.1	100.0	31,217
Yes	28.2	14.1	1.6	0.2	0.7	10.9	0.7	71.7	0.1	100.0	9,440
Residence											
Urban	23.9	18.0	1.9	0.0	0.4	3.2	0.4	76.0	0.1	100.0	6,989
Metropolitan/town	29.4	24.3	1.8	0.0	0.2	2.6	0.3	70.6	0.1	100.0	3,681
Other urban	17.8	10.9	2.0	0.1	0.6	3.7	0.5	82.0	0.2	100.0	3,308
Rural	15.0	7.2	1.3	0.1	0.4	5.6	0.4	84.9	0.1	100.0	33,669
Division											
Barisal	7.0	3.9	1.5	0.0	0.6	1.0	0.1	93.0	0.0	100.0	2,672
Chittagong	9.3	6.3	1.1	0.0	0.3	1.4	0.1	90.7	0.0	100.0	8,440
Dhaka	22.9	12.5	1.4	0.1	0.5	7.7	0.5	77.0	0.2	100.0	13,978
Khulna	28.1	13.5	1.3	0.1	0.6	11.5	1.0	71.9	0.1	100.0	3,919
Rajshahi	6.4	3.5	1.5	0.0	0.4	1.0	0.0	93.6	0.0	100.0	8,559
Sylhet	29.3	15.5	1.5	0.5	0.4	10.6	0.7	70.5	0.3	100.0	3,088
Mother's education											
No education	11.7	4.3	1.0	0.1	0.4	5.5	0.3	88.2	0.1	100.0	18,158
Primary incomplete	14.6	6.1	1.2	0.1	0.5	6.2	0.4	85.4	0.1	100.0	7,544
Primary complete	16.2	8.8	1.2	0.1	0.5	5.4	0.2	83.8	0.1	100.0	4,332
Secondary+	26.4	19.3	2.3	0.2	0.4	3.7	0.4	73.6	0.1	100.0	10,624
Wealth quintile											
Lowest	10.9	3.3	0.9	0.1	0.4	5.8	0.4	89.1	0.1	100.0	10,201
Second	12.3	4.6	0.9	0.1	0.5	5.8	0.4	87.6	0.1	100.0	8,911
Middle	14.0	6.5	1.2	0.1	0.5	5.3	0.4	85.9	0.1	100.0	7,721
Fourth	17.7	9.8	1.9	0.1	0.5	4.9	0.2	82.3	0.1	100.0	7,166
Highest	32.6	26.0	2.2	0.2	0.4	3.4	0.5	67.3	0.2	100.0	6,658
Antenatal care visits											
None	9.1	3.2	0.5	0.0	0.2	4.9	0.2	90.9	0.0	100.0	21,295
1-2	17.7	8.4	1.6	0.2	0.5	6.6	0.4	82.3	0.1	100.0	10,811
3+	33.7	24.4	3.4	0.2	0.8	4.1	0.7	66.3	0.2	100.0	8,489
Total	16.5	9.1	1.4	0.1	0.4	5.1	0.4	83.4	0.1	100.0	40,657

FWV = Family welfare visitor, MA = Medical assistant, SACMO = Sub-assistant community medical officer, HA = Health assistant, FWA = Family welfare assistant, TBA= Traditional birth attendant

geographical divisions in the propensity to have a postnatal checkup, with only 6 to 9 percent of women in Barisal, Chittagong, and Rajshahi divisions reporting a postnatal visit, compared with 22 to 29 percent of women in Dhaka, Khulna, and Sylhet divisions. Not surprisingly, more frequent antenatal visits are associated with a greater likelihood of having a postnatal checkup.

Table 4.18 indicates that the proportions of women seeking postnatal care for their baby were also very low (24 percent). Qualified doctors were the most frequently reported providers of postnatal baby care (12 percent), followed by unqualified doctors (6 percent). Differences in seeking postnatal care for the baby closely mirrored those found for postnatal care for the mother, with low parity women, urban women, more educated women, and women in wealthier households being much more likely to receive a postnatal checkup. The strong link between frequent prenatal care and a postnatal checkup is also again evident. The percentage of women who brought their babies for a postnatal checkup ranged from a low of 9 percent in Rajshahi division to a high of 42 percent in Khulna division.

Table 4.19 shows the main reasons cited for not seeking a postnatal checkup for the mother, among women who did not obtain a postnatal checkup for themselves. The primary reason for not having a postnatal checkup was the perceived absence of need (56 percent). Concern about cost was the second most commonly cited reason (22 percent). Other service-related factors (access, transportation, poor service quality, reluctance to be seen by a male provider) were cited by much smaller percentages of respondents. Cost was much more likely to be cited as a factor in not seeking care among older women, women of higher parity, women with lower education, and women in poorer households. Higher percentages of more educated or wealthier respondents cited the absence of need as a primary reason for not seeking postnatal care.

Table 4.18 Postnatal care for the baby

Percent distribution of live births in the three years preceding the survey by type of postnatal care received for the baby, according to background characteristics, Bangladesh 2001

		Medically trained			Non-medically trained						
Background characteristic	Received postnatal care	Quali-fied doctor	Nurse/ midwife/ paramedic/ FWV	MA/ SACMO	HA/ FWA	Unquali-fied doctor	Other	No one	Missing	Total	Number
Mother's age at birth											
<20	24.5	11.7	3.0	0.2	1.5	6.3	1.7	75.1	0.6	100.0	12,562
20-34	24.5	12.8	2.8	0.1	1.9	5.2	1.5	75.2	0.4	100.0	24,312
35+	19.4	7.7	2.4	0.1	1.8	5.8	1.5	80.1	0.5	100.0	2,650
Birth order											
1	29.8	17.5	3.2	0.2	1.5	5.5	1.7	69.9	0.5	100.0	11,663
2-3	24.0	11.8	2.8	0.2	1.9	5.5	1.7	75.7	0.5	100.0	16,405
4-5	19.4	7.9	2.4	0.1	1.8	5.8	1.3	80.2	0.4	100.0	7,102
6+	17.6	5.9	2.4	0.1	2.0	5.7	1.3	81.9	0.7	100.0	4,355
Problems during pregnancy or delivery											
No	16.6	7.9	2.5	0.1	1.6	3.6	0.9	83.1	0.4	100.0	17,559
Yes	30.2	15.5	3.1	0.2	1.9	7.1	2.2	69.4	0.5	100.0	21,966
Problems after delivery											
No	22.3	11.5	2.9	0.1	1.7	4.7	1.4	77.3	0.5	100.0	30,456
Yes	30.3	14.4	2.6	0.2	2.0	8.6	2.4	69.4	0.6	100.0	9,069
Residence											
Urban	35.6	25.0	3.7	0.1	1.5	3.5	1.7	64.1	0.4	100.0	6,826
Metropolitan/town	43.5	33.1	4.4	0.0	1.6	2.6	1.5	56.2	0.5	100.0	3,599
Other urban	26.8	15.9	2.9	0.1	1.4	4.4	1.9	73.0	0.3	100.0	3,227
Rural	21.8	9.4	2.7	0.2	1.8	6.0	1.6	77.8	0.5	100.0	32,699
Division											
Barisal	11.1	4.8	2.6	0.0	2.0	1.1	0.6	88.4	0.6	100.0	2,615
Chittagong	13.0	8.3	2.3	0.0	0.6	1.5	0.3	86.6	0.4	100.0	8,247
Dhaka	35.0	17.7	3.2	0.2	2.6	8.7	2.4	64.6	0.6	100.0	13,531
Khulna	42.0	18.8	3.1	0.2	2.8	12.7	4.1	57.5	0.7	100.0	3,792
Rajshahi	9.4	4.4	3.0	0.1	0.9	0.9	0.1	90.4	0.3	100.0	8,359
Sylhet	35.8	17.0	2.1	0.5	2.3	10.2	3.5	63.6	0.7	100.0	2,980
Mother's education											
No education	17.9	6.3	2.4	0.1	1.7	6.0	1.4	81.6	0.5	100.0	17,668
Primary incomplete	22.6	8.8	2.6	0.3	2.2	7.0	1.7	77.1	0.5	100.0	7,296
Primary complete	23.3	11.0	2.9	0.1	1.6	5.6	1.9	76.5	0.4	100.0	4,220
Secondary+	36.3	25.0	3.8	0.2	1.7	3.7	1.7	63.4	0.4	100.0	10,340
Wealth quintile											
Lowest	17.1	5.1	1.9	0.1	1.6	6.8	1.6	82.5	0.4	100.0	9,893
Second	18.5	6.3	2.3	0.2	1.7	6.3	1.6	80.9	0.6	100.0	8,670
Middle	21.4	8.4	3.0	0.2	2.3	5.9	1.6	78.1	0.6	100.0	7,504
Fourth	24.7	12.8	3.5	0.1	1.8	4.7	1.6	75.1	0.5	100.0	6,948
Highest	45.0	34.1	4.2	0.2	1.5	3.3	1.6	54.9	0.3	100.0	6,509
Antenatal care visits											
None	14.4	5.1	1.3	0.1	1.2	5.4	1.3	85.1	0.5	100.0	20,714
1-2	26.5	11.4	3.6	0.1	2.4	6.8	1.9	73.2	0.4	100.0	10,486
3+	45.6	30.6	5.8	0.2	2.5	4.3	1.9	54.2	0.4	100.0	8,276
Total	24.2	12.1	2.8	0.2	1.8	5.6	1.6	75.5	0.5	100.0	39,525

Note: Total includes 49 births for which antenatal care visits are missing.
FWV = Family welfare visitor, MA = Medical assistant, SACMO = Sub-assistant community medical officer, HA = Health assistant, FWA = Family welfare assistant, TBA= Traditional birth attendant

Table 4.19 Reasons mother did not receive postnatal care

Among live births in the three years preceding the survey for which the mother did not receive postnatal care, percentage for which the mother cited specific reasons for not receiving postnatal care, according to background characteristics, Bangladesh 2001

	Reasons mother did not receive postnatal care										
Background characteristic	Not necessary	Not customary	Cost	Access/ transport	Quality	Did not want service from male	Family did not allow	No time to go	Unaware of need	Other	Number
Mother's age at birth											
<20	58.6	5.5	17.5	5.2	1.4	0.2	5.8	0.3	20.0	0.3	10,663
20-34	55.5	7.2	23.6	5.2	1.7	0.3	4.3	0.3	17.7	0.3	20,248
35+	46.4	10.3	31.5	5.4	2.2	0.6	3.7	0.3	19.1	0.3	2,239
Birth order											
1	60.5	5.2	14.6	4.9	1.4	0.2	5.6	0.3	20.2	0.3	9,341
2-3	57.4	6.4	21.0	5.1	1.5	0.2	4.7	0.3	18.2	0.3	13,892
4-5	50.7	8.1	30.1	5.5	2.1	0.5	4.0	0.3	17.4	0.4	6,172
6+	47.4	10.3	32.8	6.0	1.9	0.5	3.9	0.3	17.5	0.3	3,744
Problems during pregnancy or delivery											
No	59.9	7.0	16.5	4.6	1.4	0.3	4.0	0.2	20.1	0.2	15,971
Yes	52.1	6.7	27.5	5.7	1.9	0.3	5.4	0.4	17.1	0.4	17,179
Problems after delivery											
No	58.6	6.8	19.5	4.7	1.5	0.3	4.3	0.3	18.8	0.3	26,567
Yes	44.8	7.0	33.3	7.0	2.4	0.4	6.4	0.4	17.5	0.5	6,582
Residence											
Urban	64.4	5.9	17.4	3.2	1.7	0.3	3.6	0.3	16.9	0.3	5,202
Metropolitan/town	66.4	4.4	16.1	3.1	1.1	0.3	3.1	0.4	15.9	0.4	2,546
Other urban	62.6	7.3	18.7	3.2	2.3	0.2	4.1	0.2	18.0	0.3	2,656
Rural	54.3	7.0	23.1	5.6	1.6	0.3	4.9	0.3	18.8	0.3	27,948
Division											
Barisal	44.1	6.5	20.7	6.4	1.2	0.5	4.7	0.2	25.0	0.0	2,434
Chittagong	45.8	8.6	20.8	6.3	1.2	0.5	4.2	0.2	26.0	0.1	7,501
Dhaka	67.5	5.4	26.9	4.8	2.3	0.2	5.1	0.4	9.2	0.6	10,495
Khulna	69.8	5.2	24.2	4.3	1.9	0.2	5.7	0.3	10.2	0.8	2,758
Rajshahi	46.9	8.4	13.8	5.0	1.3	0.2	4.6	0.3	28.8	0.0	7,834
Sylhet	62.4	4.4	34.3	4.0	1.3	0.3	3.9	0.3	3.7	0.6	2,128
Mother's education											
No education	49.0	7.9	30.2	5.5	1.7	0.3	4.3	0.2	19.9	0.2	15,669
Primary incomplete	54.2	6.4	22.6	5.8	1.7	0.3	5.4	0.3	19.4	0.6	6,262
Primary complete	59.4	6.4	17.4	5.0	1.7	0.5	5.1	0.2	17.2	0.2	3,563
Secondary+	69.8	5.3	7.9	4.2	1.4	0.3	4.9	0.4	15.7	0.4	7,656
Wealth quintile											
Lowest	43.7	7.5	36.3	6.3	1.7	0.2	3.8	0.3	20.6	0.3	8,862
Second	51.1	6.8	27.6	5.4	1.8	0.3	5.3	0.3	19.7	0.3	7,624
Middle	57.1	7.5	18.1	5.0	1.6	0.4	5.6	0.2	19.5	0.3	6,494
Fourth	64.0	6.7	11.2	5.0	1.7	0.3	5.4	0.4	16.9	0.4	5,755
Highest	76.3	4.8	5.0	3.2	1.4	0.4	3.4	0.4	13.2	0.4	4,415
Antenatal care visits											
None	50.6	8.2	25.9	6.1	1.5	0.4	5.8	0.2	19.3	0.3	18,903
1-2	60.9	5.5	20.2	4.3	2.0	0.2	3.9	0.3	16.9	0.3	8,685
3+	66.1	4.2	12.7	3.4	1.5	0.1	2.3	0.6	18.5	0.3	5,533
Total	55.9	6.8	22.2	5.2	1.6	0.3	4.7	0.3	18.5	0.3	33,150

Note: Total includes 29 births for which antenatal care visits are missing.

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

Table 4.20 and Figure 4.5 show eight combinations of antenatal care, delivery care, and postnatal care for live births and stillbirths in the three years preceding the survey, by background characteristics. The column headings separate maternity care received from a doctor, nurse, or midwife into 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. Postnatal care refers to care for the mother.

Table 4.20 Antenatal delivery and postnatal care

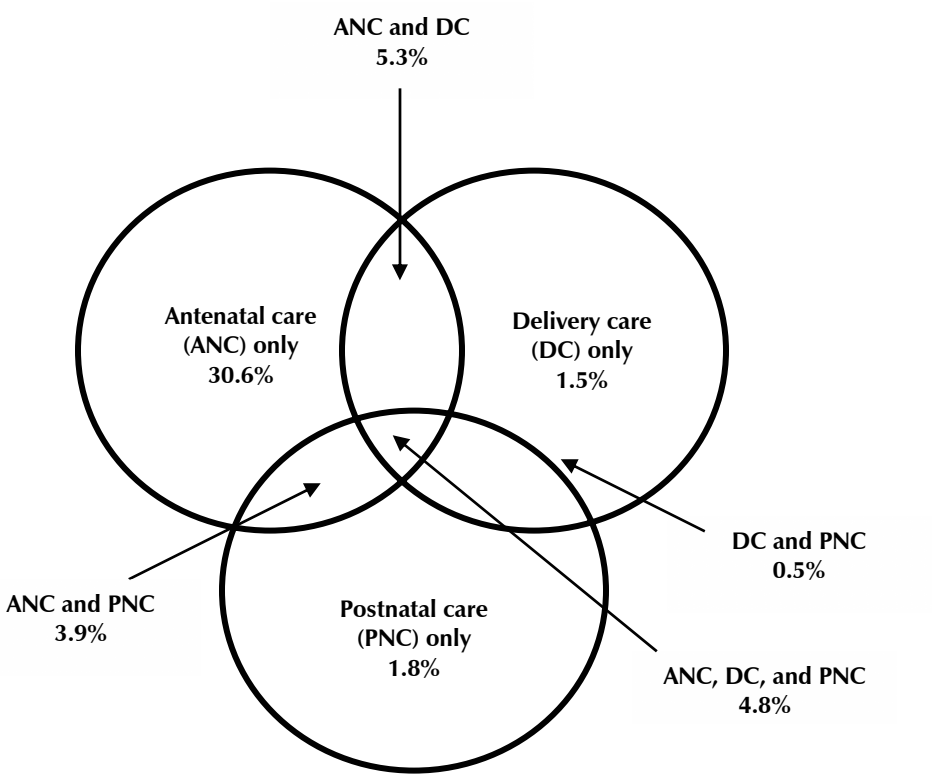
Percent distribution of live births and stillbirths in the three years preceding the survey by whether mother received antenatal care (ANC), delivery care (DC), and postnatal care (PNC) from medically trained persons, according to background characteristics, Bangladesh 2001

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	33.6	1.8	1.5	5.2	4.0	0.6	3.9	49.3	0.2	100.0	13,016
20-34	29.8	1.3	1.8	5.7	3.9	0.4	5.5	51.2	0.2	100.0	24,899
35+	23.0	1.5	2.4	2.8	3.1	0.9	2.5	63.4	0.4	100.0	2,743
Number of pregnancies in last three years											
1	31.1	1.5	1.7	5.7	3.9	0.5	5.2	50.2	0.2	100.0	33,965
2	27.7	1.5	2.0	3.5	3.8	0.7	2.6	57.8	0.4	100.0	6,595
3	22.0	6.9	3.2	4.9	4.7	0.0	6.4	51.9	0.0	100.0	98
Birth order											
1	34.2	2.0	1.3	8.3	4.4	0.8	8.4	40.4	0.3	100.0	11,663
2-3	32.3	1.2	1.6	5.4	3.9	0.3	4.2	51.1	0.1	100.0	16,405
4-5	27.3	1.1	2.0	2.4	3.3	0.2	1.9	61.6	0.2	100.0	7,102
6+	21.8	1.1	2.8	1.6	2.9	0.4	1.0	68.2	0.3	100.0	4,355
Residence											
Urban	32.3	1.8	1.4	11.8	5.3	0.7	12.9	33.6	0.3	100.0	6,989
Rural	30.2	1.4	1.9	4.0	3.6	0.5	3.1	55.2	0.2	100.0	33,669
Division											
Barisal	22.2	1.5	1.6	5.2	2.3	0.2	1.8	65.1	0.0	100.0	2,672
Chittagong	28.1	1.6	1.1	6.2	2.7	0.3	3.7	56.4	0.0	100.0	8,440
Dhaka	31.8	1.1	2.5	4.6	4.5	0.7	6.7	47.6	0.5	100.0	13,978
Khulna	34.9	1.8	2.2	6.7	5.0	1.0	7.3	40.9	0.2	100.0	3,919
Rajshahi	31.9	1.9	0.5	6.3	2.3	0.3	2.3	54.6	0.0	100.0	8,559
Sylhet	29.9	1.1	3.8	2.3	8.5	0.4	5.1	48.4	0.5	100.0	3,088
Mother's education											
No education	25.7	1.3	2.0	1.8	2.3	0.5	1.0	65.1	0.3	100.0	18,158
Primary incomplete	31.7	1.8	1.8	3.8	3.9	0.6	1.6	54.7	0.2	100.0	7,544
Primary complete	34.7	1.9	2.2	4.8	4.5	0.5	3.4	48.0	0.1	100.0	4,332
Secondary+	36.3	1.5	1.2	12.7	6.2	0.6	14.1	27.2	0.3	100.0	10,624
Wealth quintile											
Lowest	23.8	1.2	1.6	1.5	2.0	0.5	0.5	68.7	0.2	100.0	10,201
Second	28.1	1.7	1.9	2.5	2.8	0.4	1.0	61.4	0.2	100.0	8,911
Middle	32.8	1.3	2.0	3.8	3.6	0.6	2.1	53.6	0.2	100.0	7,721
Fourth	37.7	1.8	2.1	6.0	5.0	0.6	4.6	42.0	0.2	100.0	7,166
Highest	34.0	1.5	1.3	16.1	7.2	0.6	19.6	19.4	0.3	100.0	6,658
Number of months pregnant at the time of the first visit											
No antenatal care	0.0	2.6	3.1	0.0	0.0	0.9	0.0	93.3	0.1	100.0	21,295
<4 months	52.6	0.2	0.5	12.7	9.8	0.1	17.8	6.0	0.3	100.0	5,954
4-6 months	68.0	0.2	0.3	11.0	7.9	0.1	7.8	4.5	0.3	100.0	8,594
7+ months	72.0	0.2	0.4	9.7	6.6	0.1	4.6	6.2	0.2	100.0	4,737
Total	30.6	1.5	1.8	5.3	3.9	0.5	4.8	51.4	0.2	100.0	40,657

Note: Medically trained persons include doctor, nurse, paramedic, family welfare visitor, sub-assistant community medical officer, health assistant, and family welfare assistant. Pregnancy status was not known for 77 births.

Background characteristics show essentially the same differences seen separately for the three indicators; that is, births to less educated women, rural women, and women in poorer households are less likely to receive maternity care than urban women, more educated women, and women in wealthier households.

Figure 4.5 Completeness of Maternity Care in Bangladesh



Note: Percentage of births for which mothers received neither antenatal, delivery, nor postnatal care: 51.4 percent

MATERNAL HEALTH PROBLEMS AND TREATMENT-SEEKING BEHAVIOR

5

Michael Koenig, Tulshi D. Saha, Peter Kim Streatfield, and Yasmin Ali Haque

An innovative feature of the Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) is the collection of information on women's reports of complications during pregnancy, during delivery, and after delivery and related treatment-seeking behavior. In this chapter, BMMS findings on maternal complications are explored in detail. The focus is on women's knowledge of potentially life-threatening complications, the frequency of self-reported complications, and treatment-seeking behavior in relation to the most recently occurring complication.

5.1 KNOWLEDGE OF LIFE-THREATENING CONDITIONS

Awareness of life-threatening conditions during pregnancy, during delivery, or after delivery is low among Bangladeshi women (Table 5.1). While 56 percent of women cited tetanus and 49 percent cited prolonged or obstructed labor as potentially life threatening, smaller numbers of women identified retained placenta (38 percent), convulsions (26 percent), abnormal fetal presentation (24 percent), or excessive vaginal bleeding (18 percent) as potentially life-threatening conditions. Knowledge of life-threatening conditions is particularly low among the youngest group of women (<20 years) and, overall, differentials in knowledge according to background characteristics are small, with low levels of knowledge for almost all subgroups.

5.2 WOMEN'S REPORTING OF MATERNAL COMPLICATIONS

In this section, results are presented on self-reported maternal health complications among all women who had either one or two live births or stillbirths during the three-year period preceding the survey. The limitations of self-reported reproductive morbidity (generally) and maternal morbidity (specifically) are widely recognized, with poor correspondence between women's self-reports and clinically diagnosed conditions (Jejeebhoy et al., 2003; Fortney and Smith, 1999). However, obtaining information on women's self-reports of morbidity is critical for understanding how women perceive such conditions, their perceived severity, and treatment-seeking decisions and behavior in response to such complications (Cleland and Harlow, 2003).

Table 5.2 shows the frequency of individual maternal complications during pregnancy, during delivery, or after delivery, as reported by women with a live birth or stillbirth outcome during the three years preceding the BMMS survey. It is striking that 61 percent of women reported at least one complication during or following their pregnancy; only 39 percent of pregnancies were free of one or more perceived complications. The most commonly reported complication overall was headache/blurry vision/high blood pressure (27 percent), followed by prolonged or obstructed labor (16 percent), edema/pre-eclampsia (14 percent), and excessive bleeding (13 percent). Less commonly reported complications included convulsions/eclampsia (5 percent), retained placenta (5 percent), and high fever with foul-smelling discharge (4 percent).

Table 5.1 Knowledge of life-threatening maternal conditions

Percentage of women who mention specific life-threatening maternal conditions, by type of condition and background characteristics, Bangladesh 2001

	Problems during pregnancy, during delivery, and after delivery											
Background characteristic	Severe head-ache	Edema/ pre-eclampsia	Con-vulsions/ eclampsia	Extensive vaginal bleeding	Foul-smelling discharge with high fever	Tetanus	Abnormal presenta-tion	Pro-longed labor/ obstructed labor	Retained placenta	Other	Don't know/ missing	Number of women
Age												
<20	5.2	5.4	17.1	11.6	0.8	43.3	18.3	38.7	28.8	15.9	20.8	15,097
20-24	7.2	7.0	24.1	16.9	0.9	52.5	24.2	46.2	36.6	20.6	10.4	19,417
25-29	8.4	7.6	27.7	19.1	0.9	58.5	25.3	49.1	39.3	22.4	7.4	17,840
30-34	8.7	8.3	28.7	20.4	1.0	61.1	26.4	51.7	41.2	24.2	5.9	16,736
35-39	8.6	7.9	28.8	20.0	1.0	60.6	26.1	53.1	41.5	22.4	6.3	13,809
40-44	8.3	7.5	28.8	19.7	1.0	58.9	26.8	54.9	41.1	23.0	6.6	11,083
45-49	7.3	7.5	28.7	18.8	0.9	58.4	27.2	57.0	41.9	21.8	6.9	8,190
Children ever born												
None	4.7	4.8	15.8	10.5	0.7	41.1	14.5	27.8	22.0	15.3	29.5	11,905
1	7.5	7.4	24.1	17.4	1.0	50.3	23.9	46.2	36.2	21.3	10.7	18,210
2-3	8.2	8.0	27.8	19.9	1.0	59.2	25.9	50.5	41.1	23.2	6.7	36,445
4-5	8.1	7.4	27.8	18.9	0.9	60.4	26.3	53.9	41.5	22.2	6.0	21,515
6+	7.8	6.8	27.6	17.1	0.9	56.9	26.9	57.0	39.9	20.0	7.1	15,722
Residence												
Urban	9.7	8.5	27.6	20.6	1.0	55.8	24.9	44.8	33.5	28.3	9.5	19,896
Metropolitan/ town	10.3	8.8	29.8	21.9	0.8	54.3	24.7	38.0	29.6	31.5	9.9	11,083
Other urban	9.0	8.1	24.9	19.0	1.2	57.8	25.0	53.4	38.4	24.3	9.1	8,813
Rural	7.1	6.9	25.3	17.1	0.9	55.4	24.4	49.8	39.0	19.6	10.0	83,900
Division												
Barisal	7.2	7.0	23.6	19.7	0.7	61.4	23.0	40.3	41.0	12.7	12.0	6,839
Chittagong	8.4	8.1	16.3	17.6	0.9	50.2	32.7	42.8	30.3	13.1	15.0	18,275
Dhaka	5.8	7.1	27.1	17.1	0.8	59.4	22.9	54.5	34.0	30.3	7.8	35,848
Khulna	5.9	6.5	28.5	19.3	1.2	59.3	21.7	51.1	40.9	31.9	6.5	12,307
Rajshahi	7.7	6.6	25.7	19.6	1.0	55.0	22.8	44.3	50.3	11.2	10.3	24,495
Sylhet	18.8	8.8	42.9	9.2	0.9	35.9	22.9	57.2	25.1	20.9	10.8	6,032
Education												
No education	6.8	5.7	25.4	14.4	0.8	53.3	23.7	51.4	39.1	18.0	10.6	48,243
Primary incomplete	6.7	6.6	25.2	17.3	0.9	57.2	24.5	52.3	40.8	21.5	8.9	18,630
Primary complete	7.1	7.8	24.9	17.9	1.0	57.4	23.8	48.8	37.7	21.8	10.1	10,764
Secondary+	9.8	10.1	27.1	24.1	1.3	57.4	26.1	41.8	33.9	26.9	9.2	26,159
Wealth quintile												
Lowest	7.1	5.4	26.1	12.8	0.7	51.0	22.0	49.6	37.6	17.1	12.1	21,186
Second	6.6	6.1	25.0	15.0	0.8	55.4	23.2	50.7	39.9	18.5	10.3	20,982
Middle	6.6	6.4	23.9	17.0	0.9	57.1	24.1	50.2	40.2	19.5	9.8	20,491
Fourth	7.1	7.9	23.7	19.2	1.1	58.2	25.7	49.7	39.5	21.2	9.4	20,257
Highest	10.5	10.3	29.8	25.0	1.2	55.8	27.4	44.0	32.7	30.1	7.9	20,880
Total	7.6	7.2	25.7	17.8	0.9	55.5	24.5	48.8	38.0	21.2	9.9	103,796

Table 5.2 also shows that complications were most commonly reported during pregnancy (46 percent), followed by during delivery (35 percent), then after delivery (24 percent).[1] Figure 5.1 shows the frequency of reported complications, grouped into seven major categories,[2] across pregnancy stages. The importance of specific complications varies over specific segments of pregnancy/delivery. For example, during pregnancy the most commonly reported cluster of complications was one or more symptoms of preeclampsia (headache/blurry vision/high blood pressure), reported for 39 percent of all pregnancies.

[1] It is possible that the same complication persisted over multiple segments of pregnancy or delivery. In such cases, the complication would be included in the prevalence of all periods in which it occurred.

[2] "One or more symptoms of preeclampsia" includes headache, blurry vision, high blood pressure, edema, and pre-eclampsia; "malpresentation and prolonged/obstructed labor" includes hands/feet came first, prolonged labor, and obstructed labor; "other" includes tetanus, torn uterus, vomiting, diarrhea, gastric problems, dysentery, general weakness, premature leakage of membrane, and other miscellaneous complications.

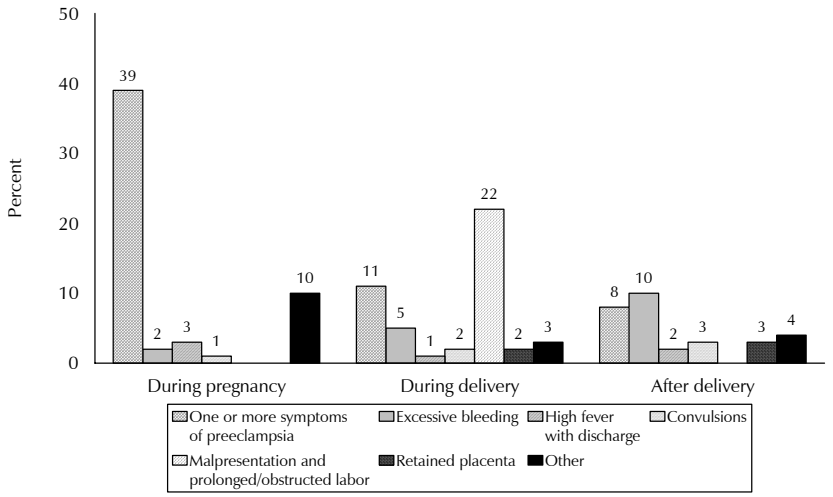
Table 5.2 Women's reporting of recent maternal complications

Percentage of live births and stillbirths in the last three years for which women had complications during pregnancy, during delivery, or after delivery, by type of complication, Bangladesh 2001

Type of complication	Complications			
	During pregnancy	During delivery	After delivery	Any stage
No complications	54.2	65.4	76.2	39.4
One or more complications	45.8	34.6	23.8	60.6
Headache/blurry vision/ high blood pressure	25.2	4.7	5.2	27.2
Edema/preeclampsia	13.4	6.2	2.5	13.5
Excessive bleeding	1.6	4.6	10.2	13.3
High fever with foul-smelling discharge	2.6	0.7	2.0	4.4
Convulsions/eclampsia	1.4	1.7	3.1	5.4
Hands/feet came first	na	2.4	na	2.4
Prolonged labor	na	16.3	na	16.3
Tetanus	0.1	0.1	0.2	0.3
Retained placenta	na	2.2	2.8	4.7
Torn uterus	na	0.4	na	0.4
Obstructed labor	na	3.1	na	3.1
Abdominal pain	3.1	0.0	0.0	3.1
Vomiting	1.6	0.0	0.0	1.6
Diarrhea/gastric problems/ dysentery	0.4	0.0	0.0	0.4
General weakness	1.1	0.0	0.0	1.1
Premature leakage of membrane	0.3	0.0	na	0.3
Other	4.1	2.5	4.1	7.6
Missing	0.2	0.3	0.6	0.0
Number	40,657	40,657	40,657	40,657

na = Not applicable

Figure 5.1 Women's Reporting of Recent Maternal Complications



BMMS 2001

Other complications were less frequently reported. During delivery, complications related to fetal malpresentation and prolonged or obstructed labor were most commonly reported (22 percent), followed by one or more symptoms of preeclampsia (11 percent). During the postdelivery period, excessive bleeding was the most commonly reported complication (10 percent), followed by one or more symptoms of preeclampsia (8 percent).

Table 5.3 shows, for all individual complications reported (N=48,434), the proportion perceived by women to be life threatening. Overall, 46 percent of reported complications were perceived as life threatening. Considerable variation in the perception of life-threatening complications is evident across grouped categories of complications: The categories of complications that women were most likely to have perceived as life threatening were retained placenta and malpresentation/prolonged or obstructed labor (75 and 70 percent, respectively). A majority of women who reported having experienced either convulsions (57 percent) or excessive bleeding (55 percent) also viewed these complications as life threatening. A much lower percentage of women viewed the complication of one or more symptoms of preeclampsia—the most commonly reported complication group—as life threatening (31 percent); the percentage perceiving high fever with discharge to be potentially life threatening was also very low (29 percent).

Table 5.3 Percentage of reported complications considered life threatening

Among live births and stillbirths in the last three years with complications during pregnancy, at delivery or after delivery, percentage perceived by the mother to be life threatening, by type of complication, Bangladesh 2001

Grouped complications	Percentage of complications considered life threatening	Number of complications
One or more symptoms of preeclampsia	30.9	20,393
Excessive bleeding	55.2	5,419
High fever with discharge	29.2	1,777
Convulsions	57.3	2,200
Malpresentation and prolonged/ obstructed labor	70.3	10,130
Retained placenta	75.1	1,905
Other	39.4	6,611
Total	45.9	48,434

Note: Totals include births with type of complication missing.

Table 5.4 shows the distribution of perceived life-threatening complications among women reporting one or more complications during the most recent pregnancy outcome in the three years preceding the survey. For the 11,188 women reporting only one complication, 56 percent considered it to be life threatening. Among women reporting two complications, 18 percent viewed neither complication as life threatening, 15 percent viewed both complications as life threatening, and the majority (67 percent) reported one of the two complications as life threatening. A similar mix of perceived life threatening and nonlife threatening complications was evident for the substantial number of women (N=6,400) who reported three or more complications during the most recent pregnancy, with the highest proportion reporting one of the three or more complications to be life threatening.

Table 5.4 Multiple complications

Percent distribution of live births and stillbirths with complications by number of complications considered life threatening, according to total number of complications, Bangladesh 2001

Number of complications	Number of complications considered life threatening									
	None		One		Two		Three or more			
	Total	Number	Total	Number	Total	Number	Total	Number	Total	Number
One complication	44.3	4,960	55.7	6,228	-	-	-	-	100.0	11,188
Two complications	18.2	1,279	67.3	4,734	14.5	1,017	-	-	100.0	7,030
Three or more complications	8.4	536	55.8	3,568	23.2	1,483	12.7	813	100.0	6,400

5.3 TREATMENT-SEEKING DECISIONS AND BEHAVIOR FOR REFERENCE COMPLICATION

A central objective of the BMMS was to obtain a better understanding of women's treatment-seeking behavior in response to life-threatening complications. Women were therefore asked a series of questions concerning treatment-seeking behavior in relation to the most recent life-threatening complication. When women reported more than one life threatening complication, only the last reported life-threatening complication was considered (N=18,117). For those women who reported the occurrence of complications, but none as life threatening (N=6,501), treatment-seeking behavior in relation to the last reported (non-life-threatening) complication was explored. Given this selection process, it is important to emphasize that in the following presented data on treatment-seeking behavior, cases with perceived life-threatening complications are significantly overrepresented and are thus not representative of treatment-seeking behavior among the population as a whole. For this reason, the results for life-threatening and non-life-threatening complications are shown separately.

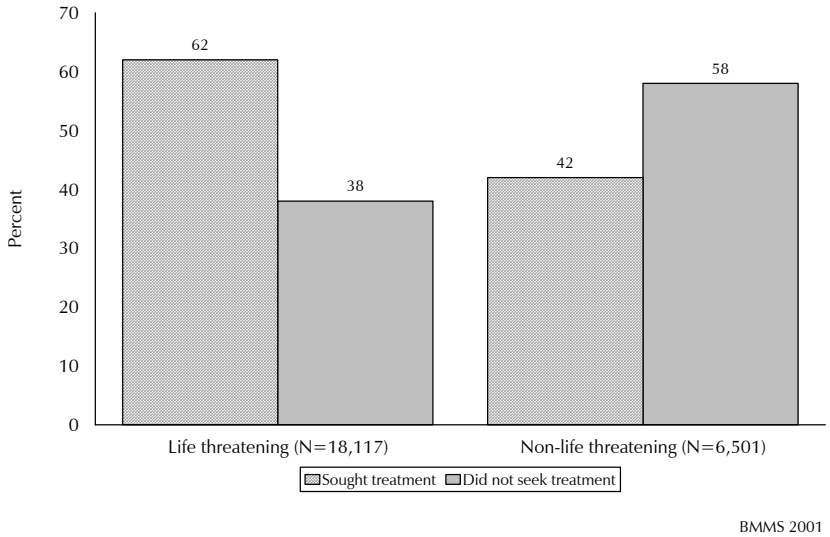
Table 5.5 and Figure 5.2 show the percentage of births with complications for which the mother sought care, according to whether the complication was life threatening and other background characteristics. As expected, the proportion of women seeking care was substantially higher for perceived life-threatening than non-life-threatening complications (62 versus 42 percent). For perceived life-threatening conditions, care was most likely to be sought for convulsions (77 percent) and high fever with discharge (74 percent), and least likely to be sought for retained placenta (39 percent). Care seeking was also very high among the "other" group of complications, which included tetanus, torn uterus, vomiting, diarrhea, gastric problems, dysentery, general weakness, premature leakage of membrane, and other miscellaneous conditions. The likelihood of seeking care for life threatening complications was also higher among urban residents and women from more educated or wealthier households. Similar differentials persisted among the subgroup of women with non-life-threatening complications.

Table 5.5 Sought treatment for recent reference complication

Percentage of live births and stillbirths in the last three years with life-threatening and non-life-threatening complications during pregnancy, at delivery, or after delivery for which treatment was sought, by type of complication and background characteristics, Bangladesh 2001

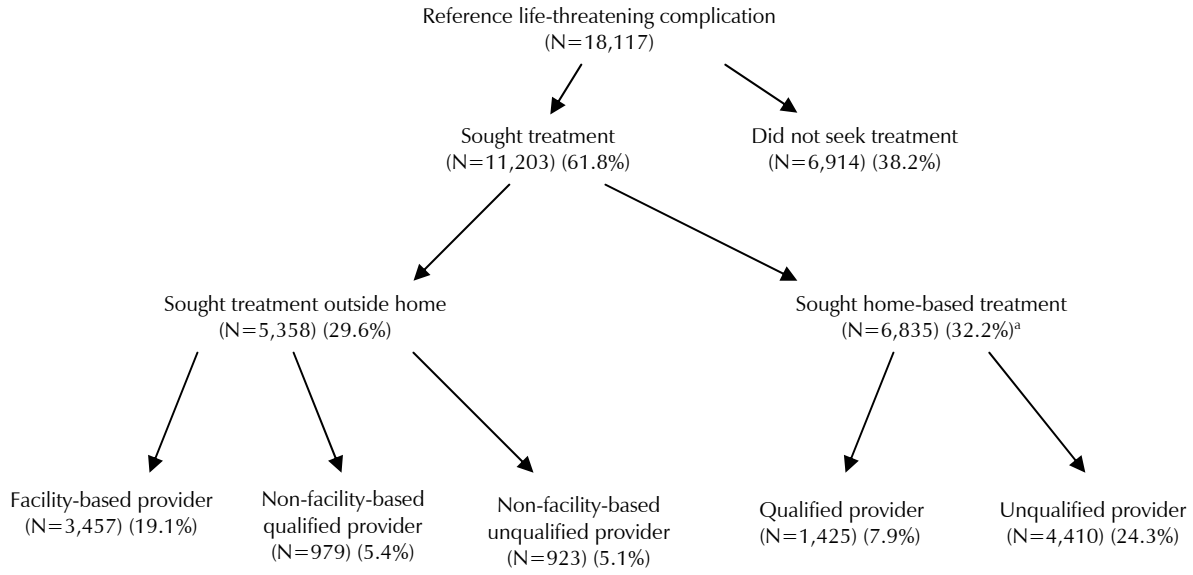
Background characteristic	Life-threatening complications		Non-life-threatening complications	
	Sought treatment for reference complication	Number	Sought treatment for reference complication	Number
Grouped complications				
One or more symptoms of preeclampsia	55.6	4,621	34.0	3,636
Excessive bleeding	65.1	2,653	38.3	595
High fever with discharge	74.5	387	54.9	129
Convulsions	76.6	961	59.3	91
Malpresentation and prolonged/ obstructed labor	57.1	5,711	42.4	708
Retained placenta	38.6	1,250	20.0	129
Other	84.3	2,533	69.6	1,109
Residence				
Urban	68.9	3,181	52.7	1,185
Metropolitan/town	74.3	1,670	57.3	688
Other urban	63.0	1,511	46.2	496
Rural	60.3	14,936	40.0	5,316
Division				
Barisal	55.6	1,044	38.5	281
Chittagong	67.0	3,138	48.4	1,047
Dhaka	60.0	7,314	40.6	2,778
Khulna	65.3	2,078	41.6	845
Rajshahi	61.1	2,837	38.8	1,035
Sylhet	61.2	1,706	49.2	515
Mother's education				
No education	53.9	7,758	33.0	2,848
Primary incomplete	58.6	3,514	39.1	1,205
Primary complete	64.8	1,916	45.0	633
Secondary+	75.4	4,929	58.0	1,814
Wealth quintile				
Lowest	51.4	4,512	30.3	1,566
Second	56.1	3,907	35.8	1,386
Middle	61.4	3,435	39.4	1,196
Fourth	68.3	3,133	48.6	1,151
Highest	78.2	3,130	62.2	1,201
Total	61.8	18,117	42.3	6,501

Figure 5.2 **Percentage of Women Seeking Treatment by Whether Reference Complication Was Perceived as Life Threatening**



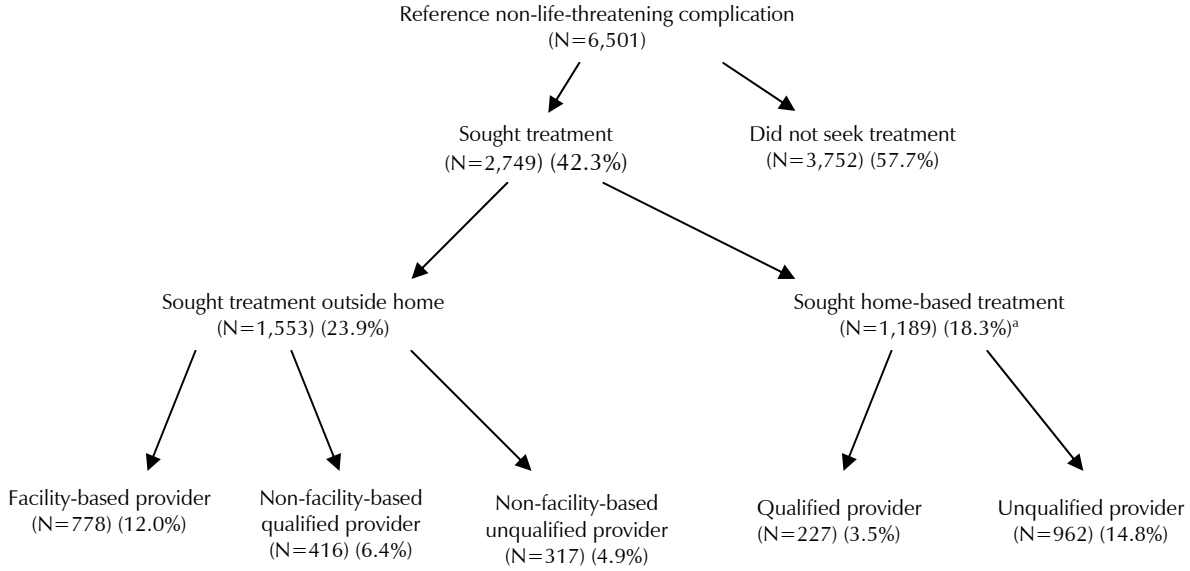
Figures 5.3.1 and 5.3.2 show the path diagrams of treatment-seeking behavior for the most recent life-threatening and non-life-threatening complication among the 24,618 stillbirths or live births in which one or more complications were reported. For the 18,117 women with one or more life-threatening complications (Figure 5.3.1), some form of treatment was sought in 11,203 cases (62 percent); in the other 6,914 cases (38 percent), no treatment was sought. Among those women seeking treatment, 30 percent sought treatment outside the home, and 32 percent sought home-based treatment. The 30 percent of cases who sought treatment outside the home could be further stratified as follows: 19 percent reported visiting a facility (public or private), 5 percent reported visiting a qualified provider (e.g., office of private doctor) but not at a facility, and the remaining 5 percent visited an unqualified provider outside of a formal facility. Among the 32 percent of cases who obtained home-based treatment, 8 percent visited or were visited by a qualified provider, while 24 percent were seen by an unqualified provider. Thus, only one in three women (32 percent) who reported at least one life-threatening complication could be considered to have sought care at a facility or from a qualified provider (either at home or at the provider's office/home); in two-thirds of cases with complications, either the respondent failed to seek care (38 percent) or sought care from an unqualified provider (29 percent). For cases with perceived non-life-threatening complications (Figure 5.3.2), a significantly higher percentage (58 percent) failed to seek any treatment; only 22 percent of such cases sought care from a facility or a qualified provider.

Figure 5.3.1 Path Diagram of Treatment-Seeking Behavior for Reference Life-Threatening Maternal Complication, Bangladesh 2001



[a] Ten missing cases on place of treatment

Figure 5.3.2 Path Diagram of Treatment-Seeking Behavior for Reference Non-Life-Threatening Maternal Complication, Bangladesh 2001



[a] Six missing cases on place of treatment

5.3.1 Decisionmaker for Seeking Treatment

Table 5.6 shows the distribution of births with complications, by the person(s) who made the decision to seek treatment for complications (with multiple responses permitted), separately for perceived life-threatening and non-life-threatening complications. For life-threatening complications, the husband was mentioned in approximately two-thirds of cases with complications as a primary decisionmaker concerning seeking treatment. Other prominent decisionmakers include the respondent's parents (31 percent), other family members (22 percent), and the parents-in-law (17 percent). The respondent cited herself as a main decision-maker in 28 percent of the cases. The significance of the wife's parents as decision-makers among very young (<20 years) or first order births (48 percent) may reflect in part the common practice of the wife returning to her natal home to deliver her first child. The decline in significance of the husband's and wife's parents in treatment decisions with increasing age or parity, and the corresponding increased decisionmaking by the respondent or her husband in such decisions, is also evident from Table 5.6.

Among non-life-threatening complications, the husband is again mentioned in two-thirds of all cases. The parents and other family members are mentioned less frequently, and the respondent herself is mentioned more frequently, compared with decisionmakers in life-threatening complications. Similar associations are evident with respect to maternal age and birth order.

Table 5.6 Person who decided that treatment should be sought

Among live births and stillbirths in the last three years for which women had complications during pregnancy, at delivery, or after delivery and for which treatment was sought, percentage for which specific people made the decision that treatment should be sought, by background characteristics, Bangladesh 2001

	Person who decided that treatment should be sought						
Background characteristic	Respondent	Husband	Parents-in-law	Parents	Other family members	Other	Number[1]
LIFE-THREATENING COMPLICATIONS							
Mother's age at birth							
< 20	18.4	53.1	23.2	46.7	24.4	5.4	3,527
20-34	31.0	68.1	15.6	25.7	20.8	5.0	6,870
35+	37.5	76.7	6.7	8.6	20.2	5.8	806
Birth order							
1	20.5	52.5	22.1	48.3	26.8	5.9	3,655
2-3	29.2	66.0	17.1	27.9	20.3	4.6	3,953
4-5	33.9	72.9	12.4	16.2	17.7	4.7	1,850
6+	36.4	80.2	9.8	9.0	15.7	5.6	1,182
Total	27.5	64.0	17.3	31.1	21.9	5.2	11,203
NON-LIFE-THREATENING COMPLICATIONS							
Mother's age at birth							
< 20	25.0	53.9	20.1	35.9	14.5	2.3	901
20-34	39.2	70.1	12.8	17.1	11.2	3.3	1,710
35+	42.8	69.1	7.0	3.2	13.9	4.6	138
Birth order							
1	25.6	54.7	19.9	37.0	18.0	3.4	888
2-3	38.7	67.7	14.5	19.7	11.0	2.3	1,158
4-5	40.0	71.0	9.6	8.9	7.2	4.4	402
6+	42.8	77.2	5.7	3.4	7.1	3.0	240
Total	34.7	64.8	14.9	22.6	12.4	3.0	2,749

[1] Percentages may not sum to 100 percent because of multiple responses

5.3.2 Type of Provider for Treatment

Table 5.7.1 shows the type of provider initially sought for treatment of complications, among those with perceived life threatening complications. In 38 percent of cases, women did not seek treatment for their complication(s). Among those respondents who sought care, 28 percent sought treatment from a

Table 5.7.1 Type of provider seen for life-threatening complications

Percentage of live births and stillbirths in the last three years with life-threatening complications for which women sought assistance from providers for the last occurring complication, by type of provider and background characteristics, Bangladesh 2001

Background characteristic	Did not seek assistance from provider	Provider seen for last occurring complication								Number
		Qualified doctor	Nurse/ midwife/ paramedic/ FWV	MA/ SACMO	HA/ FWA	Trained birth attendant	Untrained attendant	Unqualified private doctor	Other	
Grouped complications										
One or more symptoms of preeclampsia	44.4	26.7	4.1	0.5	0.9	0.1	0.1	21.8	4.4	4,621
Excessive bleeding	34.9	25.9	4.9	0.3	0.8	0.1	0.1	33.9	4.0	2,653
High fever with discharge	25.5	32.5	3.9	1.0	0.3	0.0	0.3	35.0	7.8	387
Convulsions	23.4	33.6	6.9	0.6	0.6	0.4	0.2	37.3	4.0	961
Malpresentation and prolonged/obstructed labor	42.9	23.8	11.3	0.4	0.5	1.0	2.0	21.2	5.2	5,711
Retained placenta	61.4	13.2	5.4	0.2	0.3	1.1	5.9	13.0	3.1	1,250
Other	15.7	43.0	9.3	0.4	1.1	0.2	0.2	31.7	7.0	2,533
Mother's age at birth										
< 20	38.7	26.2	8.0	0.4	0.8	0.5	1.2	25.6	4.9	5,753
20-34	37.7	28.7	7.2	0.4	0.6	0.4	1.2	24.8	4.8	11,034
35+	39.4	23.0	6.7	0.7	1.0	0.4	0.9	28.0	5.7	1,330
Birth order										
1	33.4	32.8	10.6	0.4	0.7	0.7	1.0	23.8	4.8	5,492
2-3	40.5	26.4	6.5	0.5	0.7	0.4	1.2	24.1	5.1	6,641
4-5	41.1	22.6	5.6	0.3	0.8	0.4	1.1	27.1	5.2	3,144
6+	42.6	19.9	3.8	0.5	0.7	0.2	1.3	29.7	4.9	2,059
Residence										
Urban	31.1	42.8	11.4	0.2	1.0	0.4	1.1	15.6	4.3	3,181
Metropolitan/town	25.7	52.2	12.4	0.1	0.6	0.5	1.4	12.9	3.2	1,670
Other urban	37.0	32.5	10.4	0.2	1.4	0.3	0.9	18.7	5.5	1,511
Rural	39.7	24.2	6.6	0.5	0.7	0.5	1.1	27.3	5.0	14,936
Division										
Barisal	44.4	24.8	7.0	0.4	0.7	0.4	0.4	22.4	3.5	1,044
Chittagong	33.0	30.1	7.8	0.3	0.7	0.7	1.8	27.3	3.3	3,138
Dhaka	40.0	26.8	7.3	0.4	0.7	0.3	1.3	23.3	6.4	7,314
Khulna	34.7	28.5	8.0	0.4	1.1	0.4	0.5	30.1	5.1	2,078
Rajshahi	38.9	25.9	9.0	0.3	0.8	0.7	1.1	26.2	3.0	2,837
Sylhet	38.8	29.0	4.6	1.1	0.4	0.4	0.7	24.6	5.0	1,706
Mother's education										
No education	46.1	17.4	4.9	0.4	0.7	0.4	1.2	27.8	5.2	7,758
Primary incomplete	41.4	23.6	6.6	0.5	0.6	0.3	1.4	25.5	5.5	3,514
Primary complete	35.2	29.8	7.2	0.6	0.8	0.6	0.6	26.2	4.4	1,916
Secondary+	24.6	45.3	12.1	0.4	0.8	0.6	1.0	20.8	4.2	4,929
Wealth quintile										
Lowest	48.6	15.1	4.3	0.4	0.7	0.4	1.3	27.3	6.0	4,512
Second	43.9	19.0	5.6	0.4	0.7	0.5	1.0	28.5	4.8	3,907
Middle	38.6	24.8	6.5	0.5	0.9	0.4	1.4	27.6	5.2	3,435
Fourth	31.7	33.0	9.4	0.4	0.8	0.6	0.9	24.9	4.6	3,133
Highest	21.8	53.5	13.4	0.5	0.6	0.4	1.1	16.3	3.4	3,130
Total	38.2	27.5	7.4	0.4	0.7	0.5	1.1	25.3	4.9	18,117

Note: Percentages may not sum to 100 percent because of multiple responses. Table excludes 8 cases with missing information on all complications.

Table 5.7.2 Type of provider seen for non-life-threatening complications

Percentage of live births and stillbirths in the last three years with non-life-threatening complications for which women sought assistance from providers by the last occurring complication, by type of provider and background characteristics, Bangladesh 2001

Background characteristic	Did not seek assistance from provider	Provider seen for last occurring complication								
		Qualified doctor	Nurse/ midwife/ paramedic/ FWV	MA/ SACMO	HA/ FWA	Trained birth attendant	Untrained attendant	Unqualified private doctor	Other	Number
Grouped complications										
One or more symptoms of pre-eclampsia	66.0	15.9	2.3	0.2	0.5	0.1	0.0	13.4	2.6	3,636
Excessive bleeding	61.7	14.8	2.1	0.1	0.3	0.0	0.5	19.7	1.4	595
High fever with discharge	45.1	19.5	2.2	0.0	1.0	0.0	0.0	29.2	5.0	129
Convulsions	40.7	28.0	8.0	0.0	0.0	0.0	0.0	22.7	4.8	91
Malpresentation and prolonged/obstructed labor	57.6	16.8	7.4	0.0	0.6	1.0	2.8	14.5	4.5	708
Retained placenta	80.0	8.1	2.0	0.0	0.0	1.0	1.0	6.4	2.6	129
Other	30.4	31.8	6.0	0.3	0.5	0.1	0.0	27.7	7.0	1,109
Mother's age at birth										
< 20	59.8	16.1	4.3	0.1	0.5	0.3	0.4	17.0	3.5	2,241
20-34	55.9	21.2	3.3	0.2	0.5	0.1	0.4	17.0	3.5	3,874
35+	64.2	13.7	4.1	0.1	0.7	0.2	0.3	15.2	3.7	386
Birth order										
1	54.8	22.5	5.2	0.1	0.7	0.1	0.3	15.1	3.9	1,964
2-3	57.6	19.6	3.1	0.2	0.4	0.1	0.5	17.1	3.2	2,730
4-5	61.6	14.5	2.5	0.3	0.2	0.3	0.4	18.3	3.4	1,046
6+	60.8	11.5	2.6	0.0	0.8	0.2	0.5	20.5	4.5	613
Residence										
Urban	47.3	35.5	5.6	0.2	0.5	0.1	0.2	10.5	3.4	1,185
Metropolitan/town	42.7	44.3	6.7	0.0	0.3	0.0	0.2	7.3	2.7	688
Other urban	53.8	23.3	4.0	0.5	0.7	0.1	0.2	15.0	4.5	496
Rural	60.0	15.4	3.2	0.2	0.5	0.2	0.4	18.3	3.5	5,316
Division										
Barisal	61.5	19.4	3.1	0.2	0.7	0.0	0.0	15.3	1.9	281
Chittagong	51.6	23.3	3.2	0.1	0.5	0.2	0.7	19.6	2.7	1,047
Dhaka	59.4	18.5	3.8	0.1	0.5	0.2	0.4	15.2	4.0	2,778
Khulna	58.4	16.9	4.5	0.1	0.6	0.2	0.2	17.6	4.7	845
Rajshahi	61.2	15.3	3.5	0.2	0.2	0.0	0.5	18.1	1.7	1,035
Sylhet	50.8	23.7	3.0	0.7	0.5	0.3	0.3	18.0	5.4	515
Mother's education										
No education	67.0	10.4	2.0	0.1	0.5	0.2	0.4	17.4	2.9	2,848
Primary incomplete	60.9	12.7	3.3	0.2	0.5	0.0	0.6	18.8	4.7	1,205
Primary complete	55.0	18.4	2.8	0.2	0.0	0.2	0.6	20.8	4.7	633
Secondary+	42.0	37.1	6.9	0.2	0.6	0.2	0.1	13.5	3.3	1,814
Wealth quintile										
Lowest	69.7	7.2	2.0	0.2	0.5	0.1	0.4	18.2	3.0	1,566
Second	64.2	10.8	1.9	0.3	0.4	0.2	0.6	19.6	3.3	1,386
Third	60.6	15.2	2.7	0.1	0.3	0.3	0.3	17.8	4.0	1,196
Fourth	51.4	21.9	5.7	0.0	0.5	0.1	0.5	17.6	4.9	1,151
Highest	37.8	45.0	6.8	0.4	0.7	0.2	0.1	10.6	2.5	1,201
Total	57.7	19.0	3.7	0.2	0.5	0.2	0.4	16.9	3.5	6,501

Note: Percentages may not sum to 100 percent because of multiple responses. Table excludes 8 cases with missing information on all complications.

qualified doctor, another 9 percent sought treatment from other health professionals, 25 percent sought care from unqualified private doctors, and less than 1 percent sought care from traditional birth attendants. In terms of types of life-threatening complications, cases in the "other" category of complications were more likely to seek treatment from a qualified doctor (43 percent), followed by respondents who experienced convulsions (34 percent) and high fever with discharge (33 percent); women with retained placenta were least likely to seek care from a qualified doctor (13 percent). The likelihood of seeking treatment for perceived life-threatening complications from a qualified doctor was notably higher for lower order births, respondents residing in urban areas, and respondents from more educated or wealthier families. The likelihood of seeking treatment from an unqualified doctor was higher among women in rural areas.

Among those respondents with non-life-threatening complications, only 19 percent sought treatment from a qualified doctor (Table 5.7.2). The lower visitation rates for these complications were seen for all categories of providers, reflecting the greater tendency of this group to not seek any treatment (58 percent).

5.3.3 Place Where Treatment Sought

Table 5.8.1 and Figure 5.4 show the place where treatment was sought for respondents for whom the reference complication was perceived as life threatening and where some form of treatment was sought. A total of 55 percent of respondents with life threatening complications reported obtaining treatment at home from qualified (14 percent) and unqualified (42 percent) providers. Among respondents who sought treatment outside their home, the most commonly mentioned site was a government hospital facility (hospital, thana health complex, or maternal and child welfare center) (21 percent). Private sector sources—either private health facilities or the offices of qualified private doctors—were the source of treatment for 18 percent of all cases with complications. Another 8 percent reported visiting the office or pharmacy of an unqualified private doctor. Treatment at a government or private health facility was substantially more common among younger women, women with first births, urban women, women with greater education, and women in wealthier households. In particular, the use of private health facilities for treatment is more common among women with the highest education levels or wealth categories (24 percent of women in the highest wealth quintile versus only 2 percent of women in the lowest quintile).

Respondents for whom the reference complication was perceived as non-life-threatening were somewhat less likely to have sought treatment from a public sector facility and more likely to have sought treatment from the office of either a qualified or unqualified private doctor (Table 5.8.2).

Table 5.8.1 Place of treatment for life-threatening complications

Percentage of live births and stillbirths in the last three years with life-threatening complications during pregnancy, during delivery, or after delivery for which women sought treatment, by place where treatment was received and background characteristics, Bangladesh 2001

	Place where respondent received assistance								
	Home						Private doctor's office		
Background characteristic	Qualified provider	Un-qualified provider	Government hospital/ thana health complex/ MCWC	FWC/ satellite clinic	NGO static and satellite clinic	NGO and private hospital and clinic	Qualified doctor	Un-qualified doctor	Number
Grouped complications									
One or more symptoms of pre-eclampsia	8.6	30.5	20.0	4.5	1.2	7.0	18.0	15.7	2,570
Excessive bleeding	19.3	51.4	13.2	1.1	0.6	6.0	7.0	7.1	1,727
High fever with discharge	14.4	39.1	17.8	2.0	0.5	4.9	11.1	16.4	288
Convulsions	17.8	50.5	21.6	0.9	0.0	7.5	4.4	3.4	737
Malpresentation and prolonged/obstructed labor	17.0	48.1	23.8	0.9	0.4	11.1	1.6	1.6	3,263
Retained placenta	19.2	56.8	20.8	0.4	0.3	4.9	1.9	0.9	483
Other	11.0	32.6	22.1	3.1	1.2	10.9	16.1	10.4	2,135
Mother's age at birth									
< 20	14.9	44.1	22.2	2.1	0.7	7.2	7.9	6.6	3,527
20-34	14.0	40.5	20.2	2.2	0.8	9.7	10.3	8.1	6,870
35+	15.1	44.8	16.8	2.6	0.7	6.4	8.3	10.9	806
Birth order									
1	15.2	39.0	25.5	1.9	0.7	11.6	7.7	4.7	3,655
2-3	14.0	41.6	18.6	2.5	0.8	9.0	10.4	8.5	3,953
4-5	14.0	44.9	15.5	2.4	1.0	5.1	10.5	11.1	1,850
6+	13.0	50.1	13.8	1.9	0.3	3.9	10.2	11.6	1,182
Residence									
Urban	17.0	25.0	27.6	1.9	1.1	17.5	11.5	5.0	2,193
Metropolitan/town	16.4	20.6	29.3	1.6	1.4	23.7	11.4	3.0	1,241
Other urban	17.7	30.7	25.5	2.4	0.8	9.6	11.6	7.5	952
Rural	13.7	46.1	18.8	2.3	0.7	6.5	8.9	8.5	9,010
Division									
Barisal	18.5	39.7	20.4	2.7	0.8	3.8	11.0	7.6	581
Chittagong	17.8	42.6	20.2	1.8	0.6	7.0	9.4	6.6	2,102
Dhaka	12.6	41.4	20.3	2.0	0.6	10.4	9.4	8.5	4,386
Khulna	11.9	44.5	20.9	2.4	0.7	12.9	7.2	7.6	1,357
Rajshahi	14.5	44.3	23.8	2.9	1.5	6.8	6.9	5.4	1,733
Sylhet	15.7	36.7	16.7	2.0	0.4	5.1	15.3	11.7	1,044
Mother's education									
No education	12.3	50.8	15.5	2.6	0.6	3.0	7.9	11.6	4,184
Primary incomplete	14.9	45.8	18.9	2.1	1.2	5.1	9.9	8.1	2,061
Primary complete	14.3	41.3	23.2	2.1	0.7	6.5	10.9	7.3	1,241
Secondary+	16.3	30.0	26.2	1.7	0.7	17.8	10.3	3.7	3,717
Wealth quintile									
Lowest	10.9	52.6	14.9	2.3	0.7	2.2	7.5	13.2	2,317
Second	13.2	49.9	16.5	2.4	0.9	3.5	8.4	9.9	2,190
Middle	15.9	45.8	19.1	2.2	0.6	4.6	9.3	8.8	2,108
Fourth	15.9	39.4	24.4	2.7	0.6	7.3	9.8	5.1	2,141
Highest	16.0	23.5	27.5	1.6	1.0	24.1	11.8	2.4	2,447
Total	14.4	41.9	20.6	2.2	0.8	8.7	9.4	7.8	11,203

Note: Percentages may not sum to 100 percent because of multiple responses. Table excludes 8 cases with missing information on all complications.

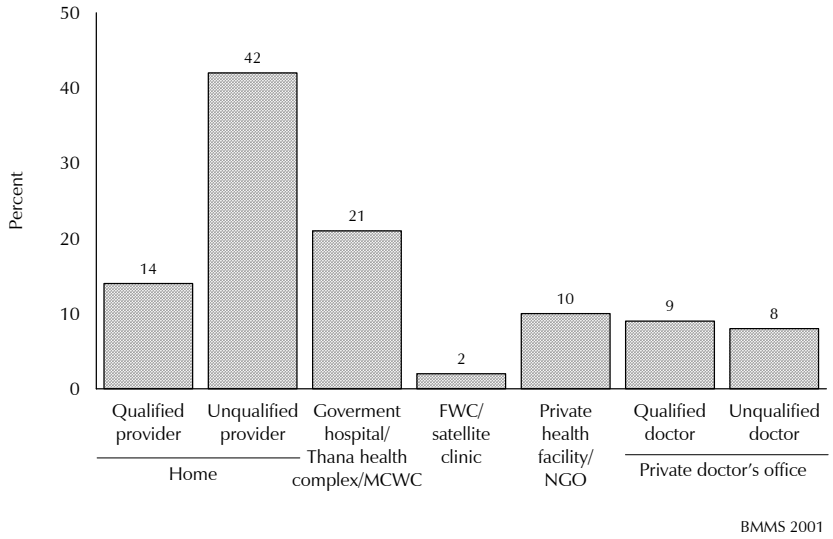
Table 5.8.2 Place of treatment for non-life-threatening complications

Percentage of live births and stillbirths in the last three years with non-life-threatening complications during pregnancy, during delivery, or after delivery, for which women sought treatment, by place where treatment was received and background characteristics, Bangladesh 2001

	Place where respondent received assistance								
	Home						Private doctor's office		
Background characteristic	Qualified provider	Un-qualified provider	Government hospital/ thana health complex/ MCWC	FWC/ satellite clinic	NGO static and satellite clinic	NGO and private hospital and clinic	Qualified doctor	Un-qualified doctor	Number
Grouped complications									
One or more symptoms of preeclampsia	7.1	30.9	16.0	3.6	1.4	9.4	18.1	14.8	1,238
Excessive bleeding	13.1	49.9	11.1	0.5	1.9	5.8	9.4	8.9	228
High fever with discharge	7.1	38.6	16.7	1.7	0.0	3.1	17.4	22.2	71
Convulsions	22.4	44.5	28.6	2.3	2.2	5.1	0.0	5.5	54
Malpresentation and prolonged/obstructed labor	13.0	50.1	20.8	0.7	0.0	14.3	0.4	0.8	300
Retained placenta	15.2	54.6	18.7	0.0	0.0	11.4	5.0	0.0	26
Other	8.5	35.2	15.8	4.2	0.4	11.4	16.1	11.2	772
Missing	16.1	23.0	34.0	4.2	1.0	13.9	14.7	9.3	60
Mother's age at birth									
< 20	8.7	36.8	16.1	3.4	1.4	6.8	14.0	13.2	901
20-34	9.0	35.9	17.1	2.8	0.9	12.1	14.6	10.5	1,710
35+	14.4	37.4	16.0	4.4	0.0	6.1	12.2	12.2	138
Birth order									
1	8.7	31.0	18.8	3.0	1.6	13.6	15.0	9.7	888
2-3	9.6	36.0	17.1	3.0	0.7	9.7	14.5	12.3	1,158
4-5	8.3	45.1	12.8	3.5	0.7	5.8	14.8	11.3	402
6+	9.3	46.5	10.1	3.8	0.8	4.1	10.5	15.6	240
Residence									
Urban	10.0	19.0	23.4	1.7	1.0	22.4	16.7	6.5	624
Metropolitan/town	9.8	13.8	23.3	1.8	1.3	30.7	17.3	3.5	395
Other urban	10.3	27.8	23.4	1.4	0.6	8.1	15.7	11.5	229
Rural	8.9	41.4	14.8	3.5	1.0	6.4	13.6	13.0	2,125
Division									
Barisal	7.9	29.8	23.9	5.5	0.6	7.3	13.5	13.1	108
Chittagong	10.0	33.7	17.6	3.0	1.2	7.3	17.8	12.3	506
Dhaka	8.8	35.8	15.7	2.3	1.0	12.9	14.1	10.7	1,127
Khulna	8.5	40.0	18.5	3.7	0.4	12.7	8.1	11.2	352
Rajshahi	8.4	41.1	16.3	4.1	1.2	7.1	11.9	11.5	402
Sylhet	12.2	33.7	14.6	3.2	0.9	5.1	20.9	13.5	253
Mother's education									
No education	8.6	47.3	10.3	3.8	0.7	3.8	11.9	14.3	941
Primary incomplete	8.0	42.2	12.2	4.1	1.1	6.6	11.8	16.2	471
Primary complete	10.7	39.9	16.9	2.2	1.1	5.7	11.6	13.9	285
Secondary+	9.8	22.8	24.5	2.2	1.2	18.4	18.3	6.3	1,052
Wealth index									
Lowest	8.2	50.3	10.5	3.4	0.6	2.1	8.5	18.3	475
Second	6.2	49.3	13.8	3.1	1.2	3.2	11.2	13.5	496
Middle	9.3	39.2	13.8	2.7	0.7	4.8	14.5	14.6	472
Fourth	12.8	36.7	19.5	3.6	0.5	7.3	13.9	8.7	560
Highest	9.0	16.6	22.5	2.8	1.7	25.0	20.2	6.1	747
Total	9.2	36.3	16.7	3.1	1.0	10.1	14.3	11.5	2,749

Note: Percentages may not sum to 100 percent because of multiple responses. Table excludes 8 cases with missing information on all complications.

Figure 5.4 **Source of Treatment for Perceived Life-Threatening Complications**



5.3.4 Number of Facilities Visited

Table 5.9 shows the number of facilities visited by women who attended a facility for treatment of complications, both life-threatening and non-life-threatening complications. For both groups, the vast majority (92 and 86 percent of those with life-threatening and non-life-threatening complications, respectively) sought treatment from only one place. Respondents with a perceived life-threatening complication were somewhat more likely than those with a non-life-threatening complication to have visited two or more places (14 versus 8 percent, respectively). Little variation in the propensity to seek treatment from multiple facilities was evident for other background characteristics (not shown).

Table 5.9 Number of places women went for treatment of complications

Among live births and stillbirths in the last three years for which the last complication occurred during pregnancy, during delivery, or after delivery and for which treatment was sought, percent distribution by number of places where treatment was sought, according to whether complication was perceived to be life-threatening or not, Bangladesh 2001

	Number of places women went for treatment					
Complication	One place only	Two places	More than two places	Missing	Total	Number
Life threatening	86.1	11.6	2.3	0.1	100.0	5,090
Non-life threatening[1]	91.9	7.3	0.8	0.0	100.0	1,439

[1] Includes missing

5.3.5 Reasons for Not Seeking Treatment

Table 5.10 and Figure 5.5 show the most commonly cited reasons for not seeking treatment for the most recent complication, for both perceived life-threatening and non-life-threatening complications. Among life-threatening reference complications, the most commonly cited reason for not seeking care was cost, mentioned by 44 percent of respondents. The second prominent reason why treatment was not sought was a perception that treatment was not necessary or the condition was not serious, cited by 39 percent of those not seeking care. Prohibition by family members (12 percent), transport and access issues (12 percent), and concerns over quality (6 percent) were all less frequently cited reasons for not seeking treatment. Cost barriers were most likely to be cited by respondents with the complications of high fever with discharge (60 percent) and excessive bleeding (56 percent); they were least likely to be cited among respondents reporting a retained placenta (30 percent) and malpresentation and prolonged/obstructed labor (39 percent). Issues of access/transport were most commonly cited for cases of retained placenta (20 percent).

Among respondents with non-life-threatening reference complications, the primary reason for not seeking treatment was a perception that treatment was not necessary or the condition was not serious (64 percent); cost considerations were also mentioned (28 percent), although less frequently than among respondents with a perceived life-threatening complication. All other reasons cited were of relatively minor importance.

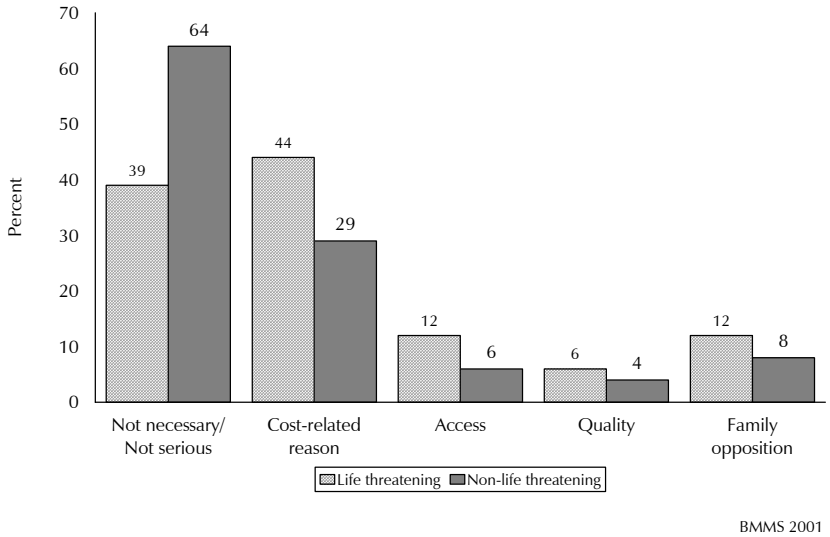
Table 5.10 Reasons for not seeking treatment for complications

Percentage of live births and stillbirths in the last three years for which the last complication occurred during pregnancy, during delivery, or after delivery and for which treatment was not sought, by type of complication and reason for not seeking treatment, Bangladesh 2001

	Reasons for not seeking treatment								
Type of complications	Not necessary, not serious	Cost too much, lack of money	Access problems[1]	Family did not allow	Poor quality, better care at home	Other	Not customary	Missing	Number of births
LIFE-THREATENING COMPLICATION									
One or more symptoms of preeclampsia	40.5	47.8	7.1	13.7	4.2	3.7	6.6	0.1	2,051
Excessive bleeding	39.8	56.3	8.4	15.6	3.2	3.5	4.6	0.1	926
High fever with discharge	28.6	59.5	9.3	16.6	3.8	7.9	1.3	0.0	99
Convulsions	34.5	51.6	13.8	8.9	4.8	8.4	1.4	0.6	228
Malpresentation and prolonged/obstructed labor	38.1	38.7	15.2	10.0	7.8	15.1	6.9	0.1	2,464
Retained placenta	41.2	30.3	19.9	5.5	9.7	17.4	4.0	0.2	767
Other	35.9	52.3	10.8	14.5	5.5	8.6	4.7	0.0	379
Total	39.0	44.3	12.1	11.6	6.0	9.7	5.8	0.1	6,914
NON-LIFE-THREATENING COMPLICATION									
One or more symptoms of preeclampsia	66.2	27.3	5.5	7.5	3.4	2.4	8.1	0.3	2,398
Excessive bleeding	56.3	40.2	6.6	8.5	2.1	2.5	9.1	0.4	367
High fever with discharge	51.7	51.2	4.6	9.6	3.5	2.8	4.7	2.2	58
Convulsions	56.8	28.6	13.6	4.9	14.3	10.5	3.5	0.0	37
Malpresentation and prolonged/obstructed labor	61.2	23.3	8.5	5.8	8.4	8.7	8.4	0.6	413
Retained placenta	65.2	20.2	7.3	7.4	6.8	10.3	4.5	0.0	103
Other	62.6	28.5	6.6	9.7	5.2	6.0	9.0	1.2	332
Total	63.6	28.5	6.2	7.5	4.2	3.9	8.0	0.4	3,769

[1] Access problems include "too far," "transport problem," "no one to accompany," "don't know how to go," and "don't know where to go."

Figure 5.5 **Reasons Cited for Not Seeking Treatment for Reference Complication**



5.4 DELAYS IN SEEKING TREATMENT FOR REPORTED COMPLICATIONS

Figure 5.6 provides a summary of responses from women who were asked questions in the BMMS regarding four specific delays in treatment-seeking behavior related to the reference complication: the delay in recognizing the complication, the delay in seeking treatment, travel time to the treatment facility, and waiting time at the facility. All respondents who had birth outcomes that involved one or more complications (N=24,618) were asked about the delay in initially recognizing the complication. Those respondents who sought treatment for complications (N=13,952) were asked additional questions concerning the delay in seeking treatment.[3] Finally, the subset of respondents who had birth outcomes with complications who sought treatment outside the home (N= 6,529) were asked additional questions concerning travel time to the facility/provider and waiting time at the facility/provider. Results are shown for reference complications that were perceived as life threatening and non-life threatening.

[3] The delay in seeking treatment was actually composed from two questions: the time between the onset of the complication and recognition that treatment was needed, and the time between when the decision to seek treatment was made and treatment was actually sought. Separate analysis (not shown) indicates that a very high proportion of women (90 percent) actually sought care soon after making the decision to do so. These two responses have been combined in this chapter.

Figure 5.6 **Summary of Responses of Women Who Were Asked About Specific Delays in Treatment for Reference Complication**

	Delay in recognizing complication	Delay in seeking treatment	Travel time to facility	Waiting time at facility
All birth outcomes with complications (N=24,618	X			
All birth outcomes with reference complications who sought treatment (N=13,952	X	X		
All birth outcomes with complications who sought treatment outside home (N=6,529)	X	X	X	X

5.4.1 Delay in Recognizing Complication

Tables 5.11.1 and 5.11.2 show the delays in recognizing reported complication by selected background characteristics. Twenty-six percent of respondents with perceived life-threatening conditions recognized the problem immediately, and 55 percent recognized the problem within 6 hours of onset (Table 5.11.1). There is wide variation across categories in the timely recognition of complications. While 90 percent of respondents report recognizing the complication of retained placenta within six hours, this figure declined to 66 percent for malpresentation and prolonged/obstructed labor, 59 percent for excessive bleeding, and 34 percent for symptoms of preeclampsia. Timely recognition of perceived life-threatening complications was slightly higher among the most highly educated women and women in wealthier households, although differentials were generally small. Not surprisingly, women with complications that were perceived as non-life threatening were less likely to recognize such complications early: 40 percent recognized them within six hours of onset (Table 5.11.2).

Table 5.11.1 Delay in recognizing life-threatening complications

Among live births and stillbirths in the last three years with last occurring life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by timing of recognition of the complication, according to type of complication and background characteristics, Bangladesh 2001

Type of complication/ Background characteristic	Delay in recognizing life-threatening complication							Total	Number	Median hours
	No delay/ Imme-diate	<6 hours	6-23 hours	1-2 days	3-6 days	3+ days	Don't know/ missing			
Grouped complications										
One or more symptoms of preeclampsia	22.5	11.0	1.0	10.7	14.6	35.8	4.4	100.0	4,621	72.4
Excessive bleeding	28.0	31.0	2.9	14.0	9.7	9.8	4.6	100.0	2,653	2.1
High fever with discharge	19.5	22.6	2.8	18.7	12.2	20.8	3.3	100.0	387	24.4
Convulsions	34.5	31.2	2.0	3.0	2.9	2.3	24.1	100.0	961	a
Malpresentation and prolonged/obstructed labor	23.7	42.0	14.5	11.4	2.1	1.0	5.2	100.0	5,711	2.6
Retained placenta	38.1	51.7	1.1	1.6	0.2	0.3	7.0	100.0	1,250	a
Other	28.5	18.0	2.6	13.6	10.6	23.4	3.2	100.0	2,533	12.1
Mother's age at birth										
<20	23.6	31.5	6.8	11.8	7.7	12.1	6.5	100.0	5,753	3.0
20-34	27.3	28.0	5.5	10.5	7.7	15.7	5.3	100.0	11,034	2.7
35+	28.1	24.4	4.7	10.4	7.9	18.6	6.0	100.0	1,330	3.1
Birth order										
1	23.2	32.0	7.8	12.1	7.4	11.1	6.4	100.0	5,492	3.2
2-3	27.3	28.1	5.1	10.5	7.6	16.3	5.1	100.0	6,641	2.7
4-5	26.7	26.0	5.0	10.4	8.6	17.9	5.4	100.0	3,144	3.0
6+	27.5	26.6	4.3	10.5	8.0	17.4	5.7	100.0	2,059	2.7
Residence										
Urban	26.6	28.7	6.5	11.0	7.5	14.5	5.3	100.0	3,181	2.6
Metropolitan/town	26.5	29.4	6.6	10.4	7.0	13.7	6.3	100.0	1,670	2.4
Other urban	26.7	28.0	6.4	11.6	8.0	15.2	4.1	100.0	1,511	2.9
Rural	26.1	28.9	5.7	10.9	7.8	14.8	5.8	100.0	14,936	2.9
Mother's education										
No education	25.3	27.5	5.0	11.1	8.3	16.0	6.8	100.0	7,758	3.0
Primary incomplete	25.4	28.0	5.6	11.2	7.9	16.1	5.7	100.0	3,514	3.0
Primary complete	24.9	30.3	6.6	11.5	7.8	14.6	4.4	100.0	1,916	2.9
Secondary+	28.5	30.9	7.1	10.3	6.7	11.9	4.6	100.0	4,929	2.4
Wealth quintile										
Lowest	24.2	27.7	4.7	11.7	8.5	16.3	7.0	100.0	4,512	3.2
Second	24.4	29.3	5.6	10.8	8.1	15.5	6.3	100.0	3,907	3.1
Middle	25.1	29.6	5.9	10.4	8.2	15.5	5.2	100.0	3,435	2.9
Fourth	27.5	28.9	6.9	11.2	7.5	13.4	4.7	100.0	3,133	2.7
Highest	30.9	29.0	6.8	10.4	5.9	12.1	4.8	100.0	3,130	2.1
Total	26.2	28.8	5.9	10.9	7.7	14.7	5.7	100.0	18,117	2.8

[a] Median not calculable and/or less than 6 hours.

Table 5.11.2 Delay in recognizing non-life-threatening complications

Among live births and stillbirths in the last three years with last occurring non-life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by timing of recognition of the complication, according to type of complication and background characteristics, Bangladesh 2001

Type of complication/ Background characteristic	Delay in recognizing non-life-threatening complication							Total	Number	Median hours
	No delay/ Imme-diate	<6 hours	6-23 hours	1-2 days	3-6 days	3+ days	Don't know/ missing			
Grouped complications										
One or more symptoms of preeclampsia	21.6	8.9	0.9	12.4	13.6	30.0	12.6	100.0	3,636	49.0
Excessive bleeding	28.7	26.6	1.8	12.1	9.2	7.4	14.1	100.0	595	1.7
High fever with discharge	21.3	13.3	5.5	18.0	10.9	21.0	10.0	100.0	129	24.7
Convulsions	32.9	28.6	2.7	3.2	2.0	1.9	28.8	100.0	91	a
Malpresentation and prolonged/obstructed labor	23.4	41.4	13.6	7.3	1.6	0.8	11.9	100.0	708	2.3
Retained placenta	34.7	51.8	1.5	2.0	0.5	0.0	9.4	100.0	129	a
Other	26.8	15.6	2.8	13.3	9.2	24.4	8.0	100.0	1,109	24.1
Missing	28.4	21.4	5.7	11.8	6.0	17.2	9.5	100.0	103	2.9
Mother's age at birth										
<20	22.5	16.9	2.9	12.0	11.7	21.1	12.9	100.0	2,241	24.2
20-34	24.6	16.4	2.9	11.7	10.0	22.8	11.5	100.0	3,874	24.1
35+	24.7	16.9	2.4	9.8	9.4	26.2	10.5	100.0	386	24.2
Birth order										
1	22.7	17.3	3.9	12.1	12.1	20.1	11.7	100.0	1,964	24.0
2-3	23.2	17.1	2.6	12.3	9.8	23.3	11.7	100.0	2,730	24.2
4-5	25.7	15.5	2.5	9.7	10.6	23.3	12.7	100.0	1,046	20.9
6+	25.6	15.2	2.0	10.8	9.1	25.8	11.6	100.0	613	24.3
Residence										
Urban	24.3	17.1	3.3	11.2	11.7	21.6	10.8	100.0	1,185	20.9
Metropolitan/town	23.8	17.4	3.2	12.4	11.1	20.1	12.1	100.0	688	14.7
Other urban	25.0	16.7	3.3	9.6	12.6	23.7	9.1	100.0	496	24.1
Rural	23.8	16.5	2.8	11.8	10.3	22.6	12.2	100.0	5,316	24.2
Mother's education										
No education	22.9	16.2	2.6	11.1	10.0	23.5	13.6	100.0	2,848	24.3
Primary incomplete	22.0	17.3	2.7	11.0	10.8	22.7	13.5	100.0	1,205	24.2
Primary complete	23.1	16.6	3.6	13.0	9.9	22.6	11.2	100.0	633	24.2
Secondary+	26.9	16.9	3.2	12.7	11.3	20.5	8.5	100.0	1,814	10.1
Wealth quintile										
Lowest	21.1	16.7	3.0	10.7	9.6	23.7	15.1	100.0	1,566	24.3
Second	24.7	15.6	2.7	11.7	9.7	23.2	12.4	100.0	1,386	24.1
Middle	21.7	17.0	2.5	12.5	13.1	21.8	11.3	100.0	1,196	24.6
Fourth	23.2	17.9	3.4	11.7	11.4	22.6	9.8	100.0	1,151	24.1
Highest	29.3	16.1	2.9	12.3	9.1	20.4	9.9	100.0	1,201	5.8
Total	23.9	16.6	2.9	11.7	10.5	22.4	11.9	100.0	6,501	24.1

[a] Median not calculable and/or less than 6 hours.

5.4.2 Delay in Seeking Treatment

Tables 5.12.1 and 5.12.2 show the delays between recognition of the complication and the decision to seek treatment, among women who ultimately sought treatment. For women with life threatening conditions, 45 percent made the decision to seek treatment immediately after recognizing the complication, and 64 percent decided within 6 hours (Table 5.12.1). Substantial variation in deciding to seek treatment was evident according to the type of perceived life-threatening complication: While 93 and 80 percent of women reported deciding to seek treatment within six hours of recognizing the problem for

retained placenta and prolonged/obstructed labor, respectively, only 67 percent of women recognizing excessive bleeding and 41 percent of women recognizing symptoms of preeclampsia sought treatment in a timely manner. Younger women, low parity women, women residing in metropolitan areas/towns, more educated women, and women in wealthier households are more likely to decide to seek treatment after recognizing a complication and to report lower median delays in deciding to seek treatment (Table 5.12.2).

Table 5.12.1 Delay between recognizing life-threatening complications and deciding to seek treatment

Among live births and stillbirths in the last three years for which women sought treatment for the last occurring life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by timing of making the decision to seek treatment for the complication, according to type of complication and background characteristics, Bangladesh 2001

Type of complicaton/ Background characteristic	Delay in making decision to seek treatment							Total	Number	Median hours
	No delay/ Imme-diate	<6 hours	6-23 hours	1-2 days	3-6 days	3+ days	Don't know/ missing			
Grouped complications										
One or more symptoms of preeclampsia	30.6	10.6	2.0	20.6	14.1	22.0	0.1	100.0	2,570	24.7
Excessive bleeding	47.9	19.5	3.7	16.7	6.3	5.9	0.0	100.0	1,727	1.3
High fever with discharge	31.5	16.5	3.7	22.4	11.2	14.3	0.4	100.0	288	11.1
Convulsions	67.9	18.5	3.7	6.1	1.0	2.0	0.8	100.0	737	a
Malpresentation and prolonged/obstructed labor	52.2	27.0	9.1	8.7	1.8	1.1	0.1	100.0	3,263	a
Retained placenta	75.5	17.5	2.1	2.5	0.7	1.1	0.6	100.0	483	a
Other	40.1	13.0	4.2	18.1	9.3	15.2	0.2	100.0	2,135	3.5
Mother's age at birth										
<20	48.1	19.3	5.6	13.0	6.2	7.6	0.2	100.0	3,527	1.2
20-34	44.9	17.7	4.6	15.1	7.1	10.4	0.2	100.0	6,870	1.7
35+	42.8	17.2	4.4	14.3	8.0	13.3	0.2	100.0	806	2.0
Birth order										
1	50.1	19.5	5.8	13.3	5.3	5.8	0.2	100.0	3,655	a
2-3	44.3	17.7	4.7	14.8	7.4	10.9	0.2	100.0	3,953	1.8
4-5	41.8	16.9	3.8	16.0	8.2	13.1	0.1	100.0	1,850	2.3
6+	41.0	16.2	3.3	15.8	9.2	14.3	0.2	100.0	1,182	2.7
Residence										
Urban	53.2	16.6	4.4	13.4	4.9	7.2	0.3	100.0	2,193	a
Metropolitan/town	57.5	15.3	4.2	12.0	4.0	6.4	0.5	100.0	1,241	a
Other urban	47.6	18.3	4.7	15.1	6.1	8.2	0.0	100.0	952	1.3
Rural	44.0	18.6	5.0	14.6	7.4	10.3	0.2	100.0	9,010	1.8
Mother's education										
No education	40.5	18.9	4.7	15.6	8.5	11.6	0.1	100.0	4,184	2.3
Primary incomplete	44.6	17.8	4.9	14.8	6.8	10.7	0.4	100.0	2,061	1.8
Primary complete	45.6	18.5	4.5	14.4	6.6	10.4	0.1	100.0	1,241	1.6
Secondary+	52.4	17.5	5.2	12.7	5.2	6.7	0.2	100.0	3,717	a
Wealth quintile										
Lowest	37.6	19.6	5.3	15.9	8.4	12.8	0.3	100.0	2,317	2.9
Second	41.0	19.8	4.3	15.0	9.3	10.5	0.2	100.0	2,190	2.1
Middle	45.3	17.9	5.0	14.5	7.1	10.1	0.1	100.0	2,108	1.6
Fourth	49.1	17.3	4.8	14.2	6.0	8.4	0.2	100.0	2,141	1.1
Highest	55.3	16.5	5.0	12.3	3.9	6.8	0.1	100.0	2,447	a
Total	45.8	18.2	4.9	14.4	6.9	9.7	0.2	100.0	11,203	1.6

[a] Median not calculable and/or less than 6 hours.

Table 5.12.2 Delay between recognizing non-life-threatening complications and deciding to seek treatment

Among live births and stillbirths in the last three years for which women sought treatment for the last occurring non-life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by timing of making the decision to seek treatment for the complication, according to type of complication and background characteristics, Bangladesh 2001

Type of complication/ Background characteristic	Delay in making decision to seek treatment							Total	Number	Median hours
	Imme-diate	<6 hours	6-23 hours	1-2 days	3-6 days	3+ days	Don't know/ missing			
Grouped complications										
One or more symptoms of preeclampsia	29.0	8.0	2.0	22.0	14.5	24.4	0.1	100.0	1,238	48.0
Excessive bleeding	42.7	17.3	6.0	20.4	5.1	8.6	0.0	100.0	228	2.4
High fever with discharge	30.3	6.0	3.6	33.6	11.7	14.8	0.0	100.0	71	24.5
Convulsions	62.2	21.3	2.5	9.7	2.6	1.7	0.0	100.0	54	a
Malpresentation and prolonged/obstructed labor	54.9	29.5	7.3	6.0	1.0	1.3	0.0	100.0	300	a
Retained placenta	76.7	14.6	3.7	0.0	0.0	5.0	0.0	100.0	26	a
Other	38.9	12.0	3.1	22.4	8.6	14.5	0.5	100.0	772	5.0
Missing	42.8	12.8	6.5	20.2	6.2	11.5	0.0	100.0	60	2.1
Mother's age at birth										
<20	35.0	15.0	4.3	19.5	9.8	16.1	0.3	100.0	901	5.9
20-34	39.0	11.1	3.0	20.6	9.5	16.7	0.2	100.0	1,710	5.8
35+	28.6	16.1	2.4	17.2	15.9	19.7	0.0	100.0	138	24.4
Birth order										
1	40.9	12.8	4.6	18.7	8.3	14.4	0.3	100.0	888	3.5
2-3	36.9	12.2	2.7	20.1	9.9	18.0	0.1	100.0	1,158	8.4
4-5	32.2	13.7	3.1	22.8	10.8	17.4	0.0	100.0	402	24.1
6+	31.6	14.0	1.2	20.2	15.3	17.3	0.5	100.0	240	24.3
Residence										
Urban	43.3	14.9	2.7	17.6	10.1	11.2	0.2	100.0	624	2.1
Metropolitan/town	47.7	12.0	2.7	17.5	8.0	11.8	0.4	100.0	395	1.4
Other urban	35.7	20.0	2.7	17.6	13.8	10.2	0.0	100.0	229	4.2
Rural	35.4	12.0	3.6	20.8	9.9	18.2	0.2	100.0	2,125	11.6
Mother's education										
No education	31.3	13.5	3.1	21.7	11.7	18.6	0.1	100.0	941	24.2
Primary incomplete	30.8	14.3	4.4	21.6	11.8	17.1	0.0	100.0	471	24.0
Primary complete	38.3	12.3	3.6	19.5	7.7	18.7	0.0	100.0	285	5.6
Secondary+	44.9	11.2	3.2	18.0	8.1	14.1	0.4	100.0	1,052	2.2
Wealth quintile										
Lowest	30.1	13.1	3.0	22.7	11.6	19.4	0.0	100.0	475	24.3
Second	28.4	14.5	4.0	22.4	11.1	19.4	0.3	100.0	496	24.2
Middle	35.2	13.5	4.5	19.0	9.6	18.2	0.0	100.0	472	7.4
Fourth	38.1	11.9	3.3	20.8	8.8	16.7	0.5	100.0	560	5.7
Highest	48.0	11.1	2.7	16.9	9.2	11.9	0.2	100.0	747	1.5
Total	37.2	12.6	3.4	20.0	9.9	16.6	0.2	100.0	2,749	6.2

[a] Median not calculable and/or less than 6 hours.

5.4.3 Travel Time To Facility

Table 5.13.1 and 5.13.2 show the reported travel times to health facilities for women who reported seeking treatment outside the home for the reference complication. For reported life-threatening complications, 34 percent of respondents reported traveling less than 30 minutes to a facility, and 73 percent reported traveling less than 60 minutes (Table 5.13.1). Only 7 percent reported traveling two hours or more to reach the facility.

Table 5.13.1 Travel time to facility for treatment of life-threatening complications

Among live births and stillbirths in the last three years for which women sought treatment for the last occurring life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by travel time to a health facility for treatment, according to type of complication and background characteristics, Bangladesh 2001

Type of complication/ Background characteristic	Travel time to facility					Total	Number
	<30 minutes	30-60 minutes	61-120 minutes	>120 minutes	Don't know/ missing		
Grouped complications							
One or more symptoms of preeclampsia	37.0	38.8	12.9	5.4	5.9	100.0	1,568
Excessive bleeding	31.6	39.3	12.9	8.1	8.2	100.0	531
High fever with discharge	41.6	40.1	10.1	5.1	3.1	100.0	140
Convulsions	25.0	39.0	17.3	7.4	11.4	100.0	257
Malpresentation and prolonged/obstructed labor	33.8	37.3	14.9	7.7	6.2	100.0	1,217
Retained placenta	22.3	31.7	24.4	8.4	13.1	100.0	131
Other	34.2	39.8	13.3	7.4	5.3	100.0	1,246
Mother's age at birth							
<20	30.5	40.4	14.9	7.4	6.8	100.0	1,533
20-34	36.6	37.2	13.5	6.6	6.1	100.0	3,231
35+	26.8	43.3	13.9	7.7	8.4	100.0	326
Birth order							
1	36.3	36.8	13.7	7.2	6.0	100.0	1,784
2-3	36.9	38.4	13.4	5.6	5.6	100.0	1,804
4-5	30.5	39.4	15.5	7.7	6.9	100.0	766
6+	27.3	43.3	12.4	6.7	10.2	100.0	435
Residence							
Urban	58.7	27.9	5.6	2.0	5.7	100.0	1,305
Metropolitan/town	64.0	24.9	4.1	1.4	5.6	100.0	814
Other urban	49.9	32.9	8.2	3.0	5.9	100.0	491
Rural	25.7	42.2	16.8	8.6	6.7	100.0	3,785
Mother's education							
No education	27.7	41.2	15.4	7.9	7.9	100.0	1,552
Primary incomplete	29.8	40.9	14.7	6.6	8.1	100.0	865
Primary complete	32.0	39.5	14.1	8.1	6.2	100.0	565
Secondary+	41.3	35.5	12.5	6.0	4.8	100.0	2,108
Wealth quintile							
Lowest	23.3	45.0	15.9	8.9	6.9	100.0	836
Second	25.2	42.2	16.1	7.5	9.0	100.0	838
Middle	29.2	41.4	14.8	7.1	7.5	100.0	853
Fourth	29.3	40.0	15.9	9.2	5.6	100.0	990
Highest	50.4	30.7	10.0	3.9	4.8	100.0	1,574
Total	34.1	38.6	13.9	6.9	6.4	100.0	5,090

The results of Table 5.13 show a strong urban-rural differential: 59 percent of urban respondents, but only 26 percent of rural respondents, reported traveling less than 30 minutes to reach a provider or facility. The most educated women (secondary school or higher) and women in the wealthiest households have substantially shorter travel times to reach a facility or provider. Travel times were even shorter for women with non-life-threatening complications, possibly because of differences in the type of provider/ facility sought for treatment (Table 5.13.2).

Table 5.13.2 Travel time to facility for treatment of non-life threatening complication

Among live births and stillbirths in the last three years for which women sought treatment for the last occurring non-life-threatening complication during pregnancy, during delivery, or after delivery, percent distribution by travel time to a health facility for treatment, according to type of complication and background characteristics, Bangladesh 2001

Type of complication/ Background characteristic	Travel time to facility					Total	Number
	<30 minutes	30-60 minutes	61-120 minutes	>120 minutes	Don't know/ missing		
Grouped complications							
One or more symptoms of preeclampsia	41.7	38.4	9.5	3.6	6.7	100.0	738
Excessive bleeding	48.3	33.3	10.3	1.8	6.2	100.0	70
High fever with discharge	27.3	36.0	17.6	9.5	9.6	100.0	33
Convulsions	21.9	42.8	7.0	7.0	21.3	100.0	18
Malpresentation and prolonged/obstructed labor	50.7	33.1	7.7	3.9	4.6	100.0	110
Retained placenta	19.1	42.9	16.6	0.0	21.4	100.0	8
Other	43.9	39.4	9.8	3.1	3.8	100.0	416
Missing	44.8	26.3	15.7	7.4	5.9	100.0	45
Mother's age at birth							
<20	40.9	37.9	9.3	4.7	7.2	100.0	456
20-34	44.2	38.0	9.5	3.1	5.1	100.0	915
35+	35.3	32.3	18.7	3.9	9.8	100.0	68
Birth order							
1	46.4	35.8	8.8	3.3	5.8	100.0	513
2-3	43.9	39.0	8.2	3.3	5.6	100.0	602
4-5	36.0	39.1	14.7	4.3	5.9	100.0	182
6+	33.8	36.3	16.7	4.9	8.2	100.0	99
Residence							
Urban	68.3	22.8	3.0	1.0	4.9	100.0	426
Metropolitan/town	70.3	21.4	2.7	0.9	4.7	100.0	298
Other urban	63.7	26.0	3.8	1.1	5.5	100.0	128
Rural	32.0	44.0	12.8	4.8	6.4	100.0	1,013
Mother's education							
No education	35.3	41.0	12.0	4.0	7.7	100.0	372
Primary incomplete	39.5	43.4	7.4	4.3	5.4	100.0	225
Primary complete	34.1	43.7	11.6	3.9	6.7	100.0	135
Secondary+	49.3	33.0	9.2	3.2	5.2	100.0	706
Wealth quintile							
Lowest	27.4	47.4	12.8	3.7	8.6	100.0	185
Second	31.9	46.0	10.2	6.6	5.2	100.0	209
Middle	35.9	38.9	14.2	4.2	6.8	100.0	223
Fourth	39.4	37.8	11.7	4.9	6.2	100.0	275
Highest	56.5	30.7	6.1	1.7	5.0	100.0	547
Total	42.7	37.7	9.9	3.7	6.0	100.0	1,439

5.4.4 Waiting Time at Facility

Table 5.14 shows the distribution of reported waiting times at health facilities for women who sought treatment at a facility for the reference complication. Almost two-thirds of women with perceived life-threatening complications reported being seen immediately at the facility; 85 percent of such women were seen within one hour of arrival at the facility. Similar results were evident for the smaller group of women with complications that were perceived as non-life threatening.

Table 5.14 Waiting time at facility

Among live births and stillbirths in the last three years for which women sought treatment for the last occurring complication during pregnancy, during delivery, or after delivery, percent distribution by waiting time at the health facility before treatment was received for the complication, according to background characteristics, Bangladesh 2001

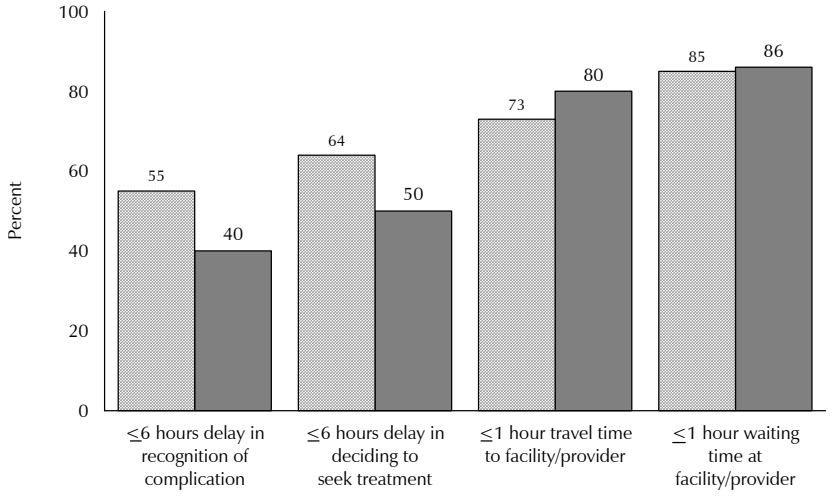
Background characteristic	Waiting time at facility: Seen immediately	1 hour	1-2 hours	More than 2 hours	Don't know/ missing	Total	Number of births
LIFE-THREATENING COMPLICATIONS							
Mother's age at birth							
<20	67.2	20.1	10.2	2.0	0.5	100.0	1,533
20-34	64.7	20.3	12.0	2.3	0.8	100.0	3,231
35+	61.5	19.1	17.1	2.3	0.0	100.0	326
Birth order							
1	67.9	19.5	9.9	2.1	0.6	100.0	1,784
2-3	63.4	20.5	13.1	2.2	0.8	100.0	1,804
4-5	61.0	22.6	13.6	2.6	0.2	100.0	766
6+	65.0	19.3	13.3	1.8	0.6	100.0	435
Residence							
Urban	66.5	19.7	10.5	2.3	0.9	100.0	1,305
Metropolitan/town	64.7	19.2	11.9	2.9	1.2	100.0	814
Other urban	69.4	20.6	8.2	1.4	0.4	100.0	491
Rural	64.8	20.3	12.2	2.1	0.6	100.0	3,785
Mother's education							
No education	65.7	18.2	13.6	1.9	0.6	100.0	1,552
Primary incomplete	63.8	20.6	12.5	2.5	0.7	100.0	865
Primary complete	65.6	22.2	9.1	2.1	0.9	100.0	565
Secondary+	65.3	20.8	10.8	2.3	0.7	100.0	2,108
Wealth quintile							
Lowest	66.7	19.0	11.3	2.0	1.1	100.0	836
Second	66.4	17.6	13.2	2.3	0.5	100.0	838
Middle	59.4	23.4	14.1	2.6	0.5	100.0	853
Fourth	65.6	20.6	11.3	2.0	0.4	100.0	990
Highest	66.6	20.1	10.3	2.2	0.8	100.0	1,574
Total	65.2	20.2	11.8	2.2	0.7	100.0	5,090
NON-LIFE-THREATENING COMPLICATIONS							
Mother's age at birth							
<20	62.0	24.3	11.2	2.3	0.3	100.0	456
20-34	60.5	25.9	11.2	1.7	0.6	100.0	915
35+	66.7	20.1	11.8	1.4	0.0	100.0	68
Birth order							
1	61.9	24.4	11.4	1.8	0.5	100.0	513
2-3	60.3	26.4	10.7	2.0	0.6	100.0	602
4-5	59.4	24.4	13.7	2.1	0.4	100.0	182
6+	66.9	23.2	8.0	1.9	0.0	100.0	99
Residence							
Urban	60.6	27.5	9.0	1.8	1.0	100.0	426
Metropolitan/town	61.1	26.5	9.6	1.7	1.2	100.0	298
Other urban	59.6	29.9	7.7	2.2	0.6	100.0	128
Rural	61.6	24.1	12.2	1.9	0.2	100.0	1,013
Mother's education							
No education	65.1	21.3	10.9	2.2	0.5	100.0	372
Primary incomplete	61.3	25.5	11.7	0.0	1.5	100.0	225
Primary complete	64.3	21.8	11.5	1.9	0.5	100.0	135
Secondary+	58.7	27.7	11.2	2.3	0.1	100.0	706
Wealth quintile							
Lowest	65.8	17.7	13.9	2.6	0.0	100.0	185
Second	65.8	23.0	9.4	1.5	0.3	100.0	209
Middle	63.2	23.5	11.5	1.0	0.9	100.0	223
Fourth	55.2	29.2	12.9	2.1	0.5	100.0	275
Highest	60.3	27.1	10.1	2.0	0.5	100.0	547
Total	61.3	25.1	11.2	1.9	0.5	100.0	1,439

There was little variation in waiting time at the facility/provider by type of life-threatening complications. For all categories of complications, between 82 and 90 percent of women waited less than one hour at a facility before being seen. Waiting time at the facility showed little variation by background characteristics.

Figure 5.7 summarizes the four major delays for women seeking treatment for reference complications (life-threatening complications and non-life-threatening complications). These estimates of delays are based on very different subsamples of women. Just over half of women (55 percent) with a life-threatening complication recognized the complication within six hours of onset; this percentage was lower among women with non-life-threatening complications (40 percent). Among the subsample of women who decided to seek treatment, the delay in deciding to seek treatment was six hours or less in almost two-thirds (64 percent) of cases but was lower among those with non-life-threatening complications (50 percent). For life-threatening cases in which women sought treatment outside the home, almost three-fourths (73 percent) reported traveling one hour or less to reach a health facility or provider; 80 percent of women with a non-life-threatening complication reported traveling one hour or less. A very high proportion of women with life-threatening complications and non-life-threatening complications (85 and 86 percent, respectively) reported having been seen by a provider within an hour of reaching the facility/provider.

It is important to emphasize that these findings may, to a considerable degree, reflect self-selection—only women who sought treatment outside the home are included in this analysis. Women residing closer to providers/facilities may be more likely to actually travel outside to seek care, and women for whom treatment is less accessible—not part of the present sample—may be less likely to seek treatment for their complication, mostly because of access constraints. Similarly, with respect to waiting times to see providers, clients may be more likely to avoid facilities known for having longer waiting times and, conversely, may be more likely to seek services from facilities with shorter waiting times.

Figure 5.7 **Summary of Delays in Treatment-Seeking Behavior for Reference Life-Threatening Complications**



BMMS 2001

5.5 DELIVERY EXPENDITURES

Table 5.15 shows the reported total household expenditures for all deliveries/complications during the three years preceding the survey (N=40,645). The median costs of delivery vary considerably by whether there were complications associated with the pregnancy and by the type of treatment sought. For pregnancies/deliveries without complications, 43 percent of cases involved no treatment costs, and median expenditures were only 26 taka (US$1.00 = 48 taka); however, median expenditures were substantial among the relatively small number of deliveries without complications that took place in either public or private facilities (1,001 or 2,501 taka, respectively).

Table 5.15 Treatment costs for deliveries

Among live births and stillbirths in the last three years, percent distribution by amount spent for delivery (in takas), according to type of delivery and treatment, Bangladesh 2001

	Amount spent for delivery (takas)									
Type of delivery	Nothing	<500	500-999	1,000-4,999	5,000 or more	Don't know/ missing	Total	Number	Mean	Median
Delivery without complications	43.2	39.8	7.1	6.1	1.7	2.0	100.0	16,022	403	26
Delivered at home	45.3	41.2	6.9	4.3	0.3	2.0	100.0	15,227	189	21
Delivered in facility	3.3	12.7	11.2	40.0	29.5	3.3	100.0	795	4,562	1,500
Public facility	3.8	17.0	14.6	40.2	20.8	3.7	100.0	520	3,191	1,001
Other facility	2.3	4.7	4.8	39.7	46.0	2.5	100.0	274	7,132	2,501
Delivery with complications	16.9	39.3	14.4	18.3	7.9	3.2	100.0	24,623	1,512	300
Did not seek treatment	35.3	46.5	8.4	6.2	1.2	2.4	100.0	10,656	357	51
Sought treatment, but not in a facility	3.7	45.7	21.4	22.1	2.7	4.3	100.0	7,423	857	401
Sought treatment in a facility	1.9	20.4	16.1	33.6	24.8	3.2	100.0	6,543	4,142	1,000
Public facility	2.3	16.1	15.0	37.9	25.7	3.1	100.0	3,043	3,967	1,001
Other facility	1.5	24.2	17.2	29.8	24.0	3.3	100.0	3,500	4,294	801
Total	27.3	39.5	11.5	13.5	5.5	2.8	100.0	40,645	1,072	151

Note: Table excludes 10 cases with missing information on complications and/or sought treatment and/or place of treatment.
US$1.00=48 taka

For pregnancies/deliveries with complications, median costs were substantially higher (overall median of 300 taka). Among the large proportion of pregnancies with complications where no treatment was sought, expenditures were low (median of 50 taka). Seeking treatment from a source other than a facility was associated with substantially higher expenditures (median of 401 taka); however, these expenditures remained substantially lower than those associated with seeking treatment for complications from a facility (median of 1,000 taka). Of particular interest, is the finding that median expenditures for deliveries with complications are actually higher in public facilities than in private facilities (1,001 taka and 800 taka, respectively), despite government policy that public services are free of charge. The expenditure data provide part of the explanation why a significant percentage of women opt for the private sector instead of the public sector for treatment of pregnancy-related complications.

5.6 SOURCE OF FUNDS FOR DELIVERY/TREATMENT OF COMPLICATIONS

Table 5.16 presents data on the source of funds for payment of delivery costs. For all deliveries, 83 percent of women cited existing family funds as the source of payment for delivery costs. An additional 16 percent mentioned money from relatives and 10 percent cited borrowing money as sources of funds. As might be expected, the percentage citing borrowing money or obtaining money from relatives increased among those with complications who sought treatment either in a facility or elsewhere.

Table 5.16 Source of funds for delivery costs

Among live births and stillbirths in the last three years for which payment was made for delivery, percentage for which women reported specific sources of money for delivery/treatment costs, by type of delivery and background characteristics, Bangladesh 2001

Type of delivery/ Background characteristic	Source of money for delivery costs								
	Family funds	Borrowed	Sold assets	From relatives	Mortgage	Other	Don't know	missing	Number
Type of delivery									
Delivery without complications	87.4	5.3	0.3	11.5	0.0	0.3	0.3	0.6	9,098
Delivery with complications									
Did not seek treatment	83.3	7.8	0.6	14.3	0.2	0.4	0.3	0.8	6,923
Sought treatment at a facility	83.3	15.1	2.2	20.1	0.7	0.7	0.1	0.2	6,406
Sought treatment, but not at a facility	78.0	13.7	1.1	20.5	0.2	0.4	0.3	0.3	7,147
Mother's age at birth									
<20	77.8	7.5	0.8	26.0	0.3	0.7	0.2	0.4	9,686
20-34	85.8	10.8	1.0	12.1	0.2	0.3	0.3	0.5	17,982
35+	87.5	16.0	1.9	4.9	0.5	0.3	0.3	0.4	1,905
Birth order									
1	77.4	7.3	0.8	27.9	0.2	0.7	0.2	0.3	9,186
2-3	86.3	8.4	0.8	12.9	0.2	0.3	0.2	0.5	11,817
4-5	86.9	13.5	0.9	7.2	0.1	0.2	0.4	0.6	4,759
6+	86.7	16.7	1.5	4.7	0.4	0.2	0.2	0.4	2,930
Residence									
Urban	86.2	8.7	0.6	14.8	0.2	0.5	0.2	0.4	5,605
Metropolitan/town	85.9	9.0	0.4	16.3	0.2	0.5	0.2	0.3	3,136
Other urban	86.7	8.3	1.0	12.9	0.3	0.5	0.2	0.4	2,469
Rural	82.6	10.3	1.1	16.5	0.3	0.4	0.3	0.5	23,968
Division									
Barisal	81.8	13.1	0.6	14.8	0.2	0.0	0.5	0.0	1,641
Chittagong	85.9	14.9	0.7	13.0	0.3	0.0	0.4	0.0	5,874
Dhaka	84.5	7.6	0.8	15.8	0.3	0.6	0.1	0.8	11,266
Khulna	78.6	8.3	1.5	21.9	0.2	1.4	0.3	0.9	3,323
Rajshahi	81.3	9.1	1.5	19.7	0.2	0.0	0.2	0.0	5,164
Sylhet	83.0	11.9	1.0	10.7	0.1	0.4	0.3	1.1	2,304
Mother's education									
No education	82.2	13.7	1.2	12.5	0.3	0.4	0.3	0.6	11,921
Primary incomplete	81.9	10.8	1.4	17.3	0.4	0.3	0.2	0.5	5,466
Primary complete	83.3	9.2	0.9	16.8	0.2	0.3	0.5	0.4	3,224
Secondary+	85.6	5.1	0.4	20.1	0.2	0.5	0.1	0.4	8,961
Wealth quintile									
Lowest	77.8	17.5	1.5	15.1	0.3	0.4	0.3	0.6	6,478
Second	81.2	11.9	1.3	16.2	0.3	0.4	0.2	0.5	6,088
Middle	82.8	9.1	1.0	17.2	0.3	0.4	0.4	0.5	5,558
Fourth	86.7	6.3	0.6	16.5	0.2	0.3	0.2	0.4	5,546
Highest	88.6	4.3	0.3	16.1	0.2	0.5	0.2	0.4	5,904
Total	83.3	10.0	1.0	16.2	0.3	0.4	0.3	0.5	29,573

REPRODUCTIVE AND CHILD HEALTH 6

Tulshi D. Saha and Kenneth Hill

The primary objective of the Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) was to obtain quantitative information about maternal health and mortality in Bangladesh. Previous chapters have described the major findings of the survey. For the measurement of maternal health and mortality, however, a substantial amount of related information had to be collected—specifically, it was necessary to collect a complete birth history (since births are the denominators of the maternal mortality ratio) and a recent pregnancy history (to ensure that all pregnancy completions were included). The birth history and pregnancy history information makes it possible to calculate measures of fertility and of perinatal, infant, and child mortality. These data are important in the overall study of reproductive health. This chapter presents the BMMS findings on fertility, current use of contraception, and childhood mortality. Information on reproductive behaviors and risks can be used to identify women who are at risk of maternal health problems and can provide information to assist in planning appropriate improvements in health and family planning services, access, and delivery.

6.1 FERTILITY

6.1.1 Introduction

Fertility is the most important component of population dynamics and plays a major role in determining the size and structure of the population of Bangladesh. Current fertility levels, trends, and differentials in fertility, cumulative fertility, birth intervals, and adolescent fertility are examined in this chapter.

Most of the fertility measures presented here are based on the complete birth histories collected from ever-married women age 13-49. Several measures and procedures were used to obtain complete and accurate reporting of births, deaths, and the timing of these events. Each woman was asked to provide information on the number of sons and daughters to whom she had given birth who were living with her, the number living elsewhere, and the number who had died. The women were then asked for a history of all their live births, including such information as name, month and year of birth, sex, and survival status. For children who had died, information on age at death was solicited. Interviewers were given extensive training in probing techniques designed to help respondents report this information accurately.

Despite the measures to improve data quality, BMMS information is subject to the same types of error that are inherent in all retrospective sample surveys, namely, the omission of some births (especially births of children who died at a young age) and the difficulty of determining the date of birth of each child accurately. These difficulties can bias estimates of fertility trends. Indicators of the quality of the BMMS fertility data appear in Appendix E, Table E.2 and suggest that such errors are minimal.

6.1.2 Current Fertility

The level of current fertility is one of the most important indicators for health and family planning policymakers and professionals in Bangladesh because of its direct relevance to population policy and programs. The most widely 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. Both of these measures are calculated using the birth history data for the three-year period before the survey and the age and sex distribution of the household population.

The results in Table 6.1 indicate that the total fertility rate for the three years before the survey (approximately 1998 through early 2001) is 3.2 children per woman age 15-49. The age-specific rates indicate a pattern of early childbearing, with a peak at age group 20-24. Three-fourths of childbearing occurs before age 30.

Table 6.1 Current fertility

Age-specific and cumulative fertility rates and crude birth rates for the three years preceding the survey, by urban-rural residence, Bangladesh 2001

	Residence				
Age group	All urban	Metro-politan/ town	Other urban	Rural	Total
13-14	11	12	10	17	16
15-19	105	100	112	141	134
20-24	158	157	159	193	185
25-29	136	127	149	152	149
30-34	86	83	90	99	97
35-39	39	30	50	57	53
40-44	12	8	18	22	20
45-49	2	2	3	7	6
TFR 13-49	2.72	2.55	2.92	3.39	3.25
TFR 15-49	2.69	2.53	2.90	3.36	3.22
TFR 15-44	2.68	2.52	2.89	3.32	3.19
GFR	103	98	109	126	122
CBR	26.0	26.0	25.8	28.9	28.4

Note: Rates are for the period 1-36 months preceding the survey. Rates for age group 45-49 may be slightly biased due to truncation.
TFR: Total fertility rate, expressed per woman
GFR: General fertility rate (births divided by number of women 15-44), expressed per 1,000 women
CBR: Crude birth rate, expressed per 1,000 population

The total fertility rate is higher in rural areas (3.4 children per woman) than in urban areas (2.7 children per woman). The difference in fertility is especially large at younger ages, which probably reflects later marriage of women in urban areas. Like the TFR, the GFR and CBR also vary by urban-rural

[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 them by the age (in five-year groups) of the mother at the time of 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. Since only women who had ever married were interviewed in the BMMS survey, the numbers of women in the denominators of the rates were inflated by factors calculated from information in the household questionnaire on proportions ever married in order to produce a count of all women. Never-married women are presumed not to have given birth.

residence. Thus, with a GFR of 126 per 1,000, the average annual number of births to rural women is about 25 percent higher than that for urban women (103 per 1,000). Similarly, the CBR in the rural areas (29 per 1,000) is also higher than the CBR in the urban areas (26 per 1,000).

6.1.3 Pregnancy Outcomes

In addition to a complete birth history, the BMMS collected a history of recent pregnancies. This history, for the three-year period before the interview, was collected using a calendar: respondents were asked to report the outcome of each pregnancy. The possible outcomes considered are live birth, stillbirth, miscarriage/abortion, and menstrual regulation (MR). Table 6.2 shows the percent distribution of pregnancy outcomes occurring during the three-year period preceding the survey (roughly 1998-2000). In Bangladesh, 90 percent of pregnancies result in a live birth, and 5 percent result in a miscarriage/abortion. Stillbirths and MRs compose another 5 percent of all pregnancy outcomes. Miscarriages and abortions occur at a higher rate among younger and older women.

Table 6.2 Pregnancy outcomes

Percent distribution of pregnancies that ended in the three years preceding the survey, by pregnancy outcome, according to age of mother at end of pregnancy, Bangladesh 2001

Age of mother at end of pregnancy	Pregnancy outcome				Total	Number of pregnancies
	Live birth	Still-birth	Mis-carriage/ abortion	Menstrual regulation		
13-14	87.6	3.8	7.3	1.3	100.0	1,281
15-19	90.9	3.1	4.6	1.4	100.0	12,844
20-24	91.8	2.0	4.2	2.0	100.0	13,027
25-29	90.2	2.2	4.6	3.0	100.0	9,267
30-34	88.3	2.3	5.5	3.8	100.0	5,140
35-39	85.5	2.6	7.3	4.6	100.0	2,364
40-44	83.1	4.3	8.1	4.6	100.0	722
45-49	80.4	1.5	11.7	6.3	100.0	119
Total	90.2	2.5	4.9	2.4	100.0	44,764

6.1.4 Fertility Differentials

Table 6.3 presents the current level of fertility by residence, division, level of education, and household wealth. The figures show large differences in the level of fertility among divisions. Fertility is lowest in Khulna (2.6) and Rajshahi (2.9) divisions and highest in Sylhet (4.3) and Chittagong (3.7) divisions. Dhaka and Barisal divisions have intermediate levels of fertility, with total fertility rates of about 3.2 children per woman. This pattern is similar to that found in the 1999-2000 BDHS (NIPORT et al., 2001) and the 1996-1997 BDHS (Mitra et al., 1997).

There is a strong association between fertility and education, with the TFR declining as the level of education increases. At current rates, a woman with no formal education will give birth to an average of 3.8 children in her lifetime, compared with 2.5 for a woman with at least some secondary education. Women with either incomplete primary or complete primary education have intermediate fertility rates.

Like education, household wealth is strongly related to fertility. Women in poorer households have more children than women in wealthier households. With a TFR of 4.2, women in the poorest households are likely to have about two children more than women in the wealthiest households (TFR of 2.4).

At the time of the survey, 5 percent of the women interviewed reported that they were pregnant. This proportion is probably an underestimate because some women who are early in the pregnancy do not yet know that they are pregnant, and some women may not want to declare that they are pregnant. Khulna division has the lowest proportion currently pregnant (5 percent), whereas the highest proportion pregnant is reported in Sylhet division (6 percent). Interestingly, the proportions pregnant by division and by wealth quintile track the TFR differentials closely, but the proportions pregnant by level of education show no clear pattern.

Table 6.3 Fertility by background characteristics

Total fertility rates for the three years preceding the survey, percentage of women currently pregnant, and mean number of children ever born to women age 40-49, by background characteristics, Bangladesh 2001

Background characteristic	Total fertility rate[1]	Percentage currently pregnant	Mean number of children ever born to women age 40-49
Residence			
All urban	2.7	4.8	4.8
Metropolitan/town	2.5	4.8	4.5
Other urban	2.9	4.8	5.2
Rural	3.4	5.5	5.6
Division			
Barisal	3.3	5.0	5.6
Chittagong	3.7	6.1	6.0
Dhaka	3.2	5.4	5.4
Khulna	2.6	4.6	5.0
Rajshahi	2.9	5.0	5.2
Sylhet	4.3	6.4	5.8
Education			
No education	3.8	5.3	5.6
Primary incomplete	3.4	5.2	5.6
Primary complete	3.2	6.0	5.5
Secondary+	2.5	5.4	4.3
Wealth quintile			
Lowest	4.2	6.5	5.4
Second	3.7	5.8	5.7
Middle	3.2	5.2	5.7
Fourth	2.9	5.3	5.6
Highest	2.4	4.4	4.8
Total	3.2	5.4	5.4

[1] Rate for women age 15-49 years

Table 6.3 also allows a crude assessment of differential trends in fertility over time among population subgroups. The mean number of children ever born to women by the end of their reproductive period, 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 with the total fertility rate suggests a decline of about two children per woman in Bangladesh over the past 10 to 15 years. There has been a substantial decline in urban and rural areas, in all divisions, and in the four education categories. Except in Sylhet division, the decline is more than two children per woman in all divisions. Fertility decline is also more pronounced for women from the wealthier households than for women from the poorer households. As fertility has declined, differentials on all dimensions have become more pronounced.

6.1.5 Fertility Trends

More direct evidence of the declining trend in fertility is obtained by looking at changes in age-specific fertility rates across the demographic surveys that were conducted in Bangladesh since the mid-1970s: the 1975 Bangladesh Fertility Survey, the 1989 Bangladesh Fertility Survey, the 1991 Contraceptive Prevalence Survey, and three Bangladesh Demographic Health Surveys (1993-1994, 1996-1997, and 1999-2000). The results shown in Table 6.4 describe the ongoing fertility transition in Bangladesh. The TFR has declined dramatically from 6.3 children per woman in 1971-1975 to 3.2 in 1998-2000, a decline of 49 percent over a 26-year period. The pace of fertility decline has slowed in the most recent period, compared with the rapid decline during the late 1980s and early 1990s. The total fertility rate dropped only marginally from 3.4 in 1991-1993 to 3.3 in 1994-1996, remained steady in 1997-1999, and then

Table 6.4 Trends in current fertility rates

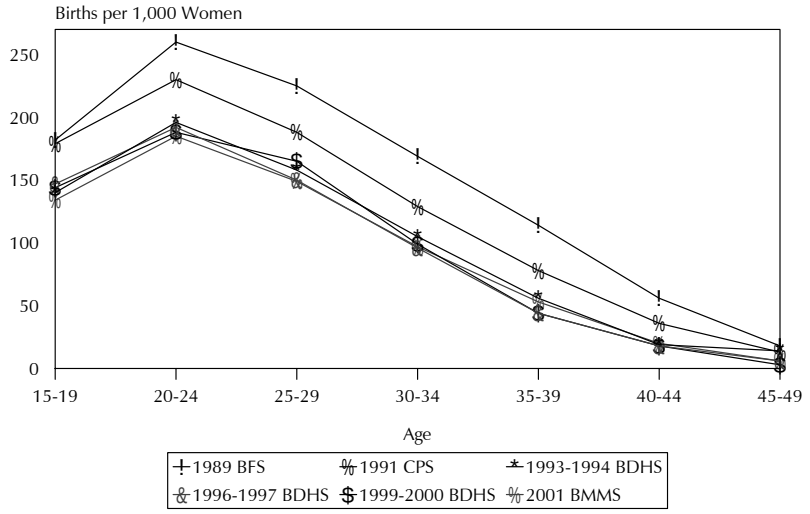
Age-specific and total fertility rates (TFR) among women age 15-49, selected sources, Bangladesh, 1975-2001

	Survey and approximate time period						
Age group	1975 BFS (1971-1975)	1989 BFS (1984-1988)	1991 CPS (1989-1991)	1993-1994 BDHS (1991-1993)	1996-1997 BDHS (1994-1996)	1999-2000 BDHS (1997-1999)	2001 BMMS (1998-2000)
15-19	109	182	179	140	147	144	134
20-24	289	260	230	196	192	188	185
25-29	291	225	188	158	150	165	149
30-34	250	169	129	105	96	99	97
35-39	185	114	78	56	44	44	53
40-44	107	56	36	19	18	18	20
45-49	35	18	13	14	6	3	6
TFR 15-49	6.3	5.1	4.3	3.4	3.3	3.3	3.2

Note: For the 1975 and 1989 BFS surveys, the rates refer to the five-year period preceding the survey; for the other surveys, the rates refer to the three-year period preceding the survey. The BFS and BDHS surveys utilized full birth histories, while the 1991 CPS used an eight-year truncated birth history.
Source: 1975 BFS (MHPC, 1978:73); 1989 BFS (Huq and Cleland, 1990:103); 1991 CPS (Mitra et al., 1993 :34); 1993-94 BDHS (Mitra et al., 1994: 24); 1996-97 BDHS (Mitra et al.,1997:30), 1999-2000 BDHS (NIPORT et al., 2001:33)

edged lower again to 3.2 in 1998-2000. Investigation of the age pattern of fertility shows no anomalies; as expected, the declines since the mid-1980s have been smallest for the youngest age groups and largest for the oldest age groups (Figure 6.1).

Figure 6.1 **Age-Specific Fertility Rates 1989 - 2001**



Note: The 1989 rates refer to the 5-year period preceding the survey; all others are 5-year rates.

6.1.6 Birth Intervals

Information on the length of birth intervals provides insight into birth spacing patterns. Research suggests 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.

The data show that birth intervals are generally long in Bangladesh. Among nonfirst births, only one in six children (16 percent) is born after a "too short" interval (less than 24 months). More than half (57 percent) of nonfirst births occur three or more years after the previous birth, while 27 percent of such births take place 24 to 35 months after the previous birth. The overall median length of birth interval is 38.8, the same as found in the 1999-2000 BDHS survey (NIPORT et al., 2001); however, this birth interval is slightly longer than the birth intervals reported in the 1993-1994 BDHS survey (35 months) (Mitra et al., 1994:34) and the birth interval reported in the 1996-1997 BDHS survey (37 months) (Mitra et al., 1997:38) (Table 6.5).

Table 6.5 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, Bangladesh 1993-2001

	Months since previous birth						Median number of months since previous previous birth
Survey	7-17	18-23	24-35	36-47	48+	Total	
1993-1994 BDHS	8.3	12.0	33.5	22.2	24.0	100.0	34.7
1996-1997 BDHS	7.1	10.6	30.3	23.1	28.9	100.0	36.6
1999-2000 BDHS	6.6	9.7	26.9	21.8	35.0	100.0	38.8
2001 BMMS	7.1	9.0	26.8	21.7	35.4	100.0	38.8

6.1.7 Age of Mothers at Their First Birth

One of the factors that determines the level of current fertility in a population is the age of women at first birth. 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 early in Bangladesh, with most women becoming mothers before age 20. The median age at first birth is 19 years for the youngest cohort for which a median could be computed (age 20-24) and varies between 17 and 18 for the older cohorts, indicating a modest rise in the median age at first birth during the most recent period (not shown).

Comparisons with data from other sources show that the age at which women in Bangladesh have their first child has increased steadily over time. For example, in 1975, the median age at first birth among women age 20-24 was 16.8, rising to 18.0 in 1991-1993, 18.4 in 1996-1997, and 18.7 in 1998-2000.

6.1.8 Adolescent Fertility and Motherhood

The issue of adolescent fertility is important for both health and social reasons. Children born to very young mothers may face an increased risk of illness and death. Adolescent mothers themselves may be more likely to experience adverse pregnancy outcomes and maternity-related mortality than more mature women, and they are more constrained in their ability to pursue educational opportunities than their counterparts who delay childbearing.

Table 6.6 shows the percentage of adolescent women (age 15-19) who are mothers or pregnant with their first child, by background characteristics. Almost 30 percent of adolescent women in Bangladesh are already mothers with at least one child, and 5 percent are currently pregnant, for a total of 34

percent who have started childbearing. The proportion of teenagers who have begun childbearing rises rapidly with age. Only about 13 percent of women age 15 have started childbearing, but by age 19, about 60 percent are pregnant or have had a baby.

In rural areas, 35 percent of the adolescents have begun childbearing, compared with 27 percent in urban areas. There are also divisional variations: 40 percent of the adolescents in Rajshahi or Khulna divisions are either mothers or are pregnant with their first child, compared with about 25 percent of their counterparts in Sylhet and Chittagong divisions. It is interesting to note that the divisions with the earliest childbearing are also the divisions with the lowest fertility, and those with the latest childbearing are those with the highest fertility.

Table 6.6 Adolescent fertility

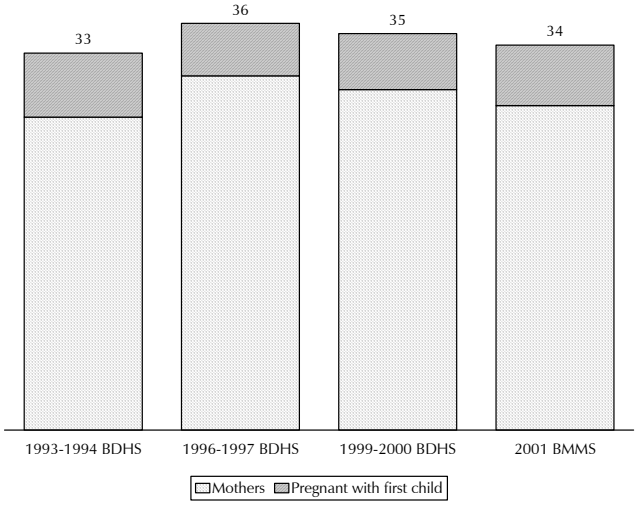
Percentage of women age 15-19 who are mothers or pregnant with their first child, by background characteristics, Bangladesh 2001

Background characteristic	Percentage who are: Mothers	Percentage who are: Pregnant with first child	Percentage who have begun childbearing	Number of women 15-19
Age				
15	8.5	4.8	13.3	6,938
16	17.7	5.8	23.4	6,853
17	31.3	6.0	37.3	5,973
18	38.9	5.4	44.3	6,796
19	54.6	4.3	58.9	4,733
Residence				
Urban	22.6	4.4	26.9	6,348
Metropolitan/town	22.3	4.6	26.9	3,136
Other urban	22.8	4.2	27.0	3,212
Rural	29.9	5.5	35.4	24,987
Division				
Barisal	27.5	5.0	32.5	2,114
Chittagong	20.8	4.9	25.7	6,420
Dhaka	29.0	5.5	34.6	10,597
Khulna	34.7	5.4	40.1	3,346
Rajshahi	33.9	5.7	39.7	6,816
Sylhet	20.6	4.0	24.6	2,085
Education				
No education	49.2	5.9	55.1	5,504
Primary incomplete	37.3	5.2	42.5	5,251
Primary complete	34.4	6.7	41.2	3,706
Secondary+	17.5	4.9	22.4	16,835
Wealth quintile				
Lowest	40.9	5.0	45.9	4,965
Second	37.0	5.7	42.8	5,685
Middle	30.1	5.8	35.9	6,434
Fourth	23.1	5.9	29.0	7,005
Highest	16.6	4.1	20.7	7,261
Total	28.4	5.3	33.7	31,293

A strong association between education and initiation of childbearing is clear from the survey results (Table 6.6). Whereas 55 percent of adolescents with no formal education have started childbearing, only 22 percent of their counterparts with secondary education or higher have done so. Like education, household socioeconomic status is strongly related to early childbearing. Adolescents in the poorest households are far more likely to have begun childbearing than those in the wealthiest households (46 and 21 percent, respectively).

There has been a slight decline in the proportion of teenage women who have begun childbearing since the 1996-1997 BDHS survey, which indicated that 36 percent of women age 15-19 had begun childbearing (Figure 6.2); however, the 1993-1994 BDHS reported a proportion (33 percent) lower than that of the 2001 BMMS (34 percent).

Figure 6.2 **Trends in Teenage Pregnancy and Motherhood among Women Age 15-19, 1993-2001**



6.2 FERTILITY REGULATION

In the 2001 BMMS, only information on the current use of contraception was collected. Although ever-married women age 13-49 were interviewed, only women who were currently married at the time of the survey were asked the questions on current use of family planning. Table 6.7 shows the percent distribution of currently married women interviewed in the 2001 BMMS survey by their current contraceptive use status, according to background characteristics.

The 2001 BMMS indicates that 50 percent of currently married women in Bangladesh are using a method of family planning. Modern methods are much more widely used (44 percent of married women) than traditional methods (6 percent). The increase in use of family planning from 8 percent of married women in the 1975 BFS to 54 percent in the 1999-2000 BDHS has declined to 50 percent in the 2001 BMMS (Figure 6.3). The decline in overall use is due entirely to a decline in traditional method use (from 10 to 6 percent). Modern method use has not changed since 1999-2000.

Table 6.7 Current use of contraception by background characteristics

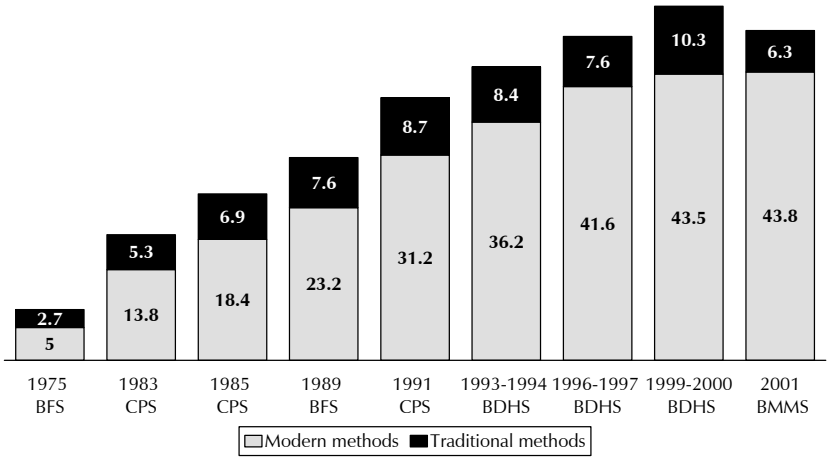
Percent distribution of currently married women by contraceptive method currently used, according to background characteristics, Bangladesh 2001

		Modern method								Traditional method						
Background characteristic	Using any method	Any modern method	Female sterilization	Male sterilization	Pill	IUD	Injectables	Norplant	Condom	Any traditional method	Periodic abstinence	Withdrawal	Folk methods	Not currently using	Total	Number of women
Age																
13-14	24.7	20.3	0.0	0.0	15.4	0.0	0.5	0.0	4.3	4.5	2.8	1.5	0.2	75.3	100.0	1,579
15-19	34.5	31.3	0.0	0.1	23.1	0.2	4.3	0.2	3.3	3.2	2.3	0.9	0.0	65.5	100.0	14,652
20-24	45.8	42.1	0.6	0.1	29.1	0.6	7.9	0.4	3.2	3.7	2.7	0.9	0.2	54.2	100.0	18,752
25-29	54.7	50.1	2.4	0.3	32.1	1.0	10.0	0.6	3.6	4.6	3.3	1.0	0.3	45.3	100.0	17,126
30-34	61.4	54.2	6.2	0.7	30.9	1.2	10.8	0.7	3.7	7.2	5.2	1.5	0.5	38.6	100.0	15,693
35-39	62.5	52.5	10.8	0.9	25.9	1.1	10.1	0.5	3.2	10.1	7.4	2.0	0.8	37.5	100.0	12,630
40-44	53.7	42.4	14.1	1.2	16.8	0.8	6.5	0.3	2.6	11.3	8.7	1.8	0.9	46.3	100.0	9,698
45-49	35.9	27.3	13.8	1.0	8.0	0.3	3.2	0.2	0.9	8.6	6.8	1.2	0.7	64.1	100.0	6,815
Residence																
Urban	56.2	47.9	5.5	0.5	27.2	1.2	6.1	0.5	6.9	8.3	5.9	2.1	0.3	43.8	100.0	18,355
Metropolitan/town	59.1	50.2	5.7	0.6	26.6	1.3	6.4	0.5	9.3	8.8	5.9	2.6	0.3	40.9	100.0	10,180
Other urban	52.6	45.0	5.4	0.3	28.0	1.1	5.8	0.5	3.8	7.7	5.8	1.5	0.3	47.4	100.0	8,175
Rural	48.7	42.9	5.3	0.5	25.3	0.7	8.3	0.4	2.3	5.8	4.3	1.1	0.4	51.3	100.0	78,590
Division																
Barisal	47.8	41.5	4.0	0.6	23.3	0.8	10.5	0.4	1.8	6.3	5.3	0.7	0.3	52.2	100.0	6,486
Chittagong	37.6	33.5	3.6	0.2	19.2	0.6	7.4	0.4	2.1	4.1	3.3	0.5	0.3	62.4	100.0	17,226
Dhaka	52.2	44.5	6.0	0.3	26.0	0.9	6.7	0.5	4.2	7.7	5.3	1.8	0.6	47.8	100.0	33,274
Khulna	61.7	52.2	5.9	0.9	29.7	1.1	10.0	0.5	4.2	9.6	6.2	2.9	0.6	38.3	100.0	11,454
Rajshahi	56.4	52.1	6.4	1.0	32.3	0.7	8.8	0.5	2.6	4.3	3.5	0.5	0.3	43.6	100.0	23,113
Sylhet	28.1	21.4	2.6	0.2	10.5	0.5	5.0	0.3	2.2	6.7	5.3	1.0	0.3	71.9	100.0	5,393
Education																
No education	48.8	43.0	7.9	0.8	22.5	0.7	9.5	0.5	1.0	5.7	4.4	0.8	0.6	51.2	100.0	43,670
Primary incomplete	50.7	44.2	4.8	0.5	26.4	0.8	9.1	0.6	2.0	6.5	4.6	1.5	0.4	49.3	100.0	17,554
Primary complete	49.0	42.7	3.2	0.3	28.0	0.7	7.5	0.4	2.5	6.3	4.8	1.2	0.3	51.0	100.0	10,329
Secondary+	52.5	45.3	2.1	0.2	29.6	0.9	4.4	0.3	7.9	7.2	5.0	2.0	0.2	47.5	100.0	25,392
Number of living children																
0	16.0	13.6	0.2	0.3	9.2	0.0	0.1	0.0	3.7	2.5	1.5	1.0	0.0	84.0	100.0	11,882
1	45.1	41.0	1.3	0.4	29.1	0.5	5.5	0.3	3.8	4.1	2.9	1.0	0.1	54.9	100.0	18,889
2	60.1	54.1	5.2	0.6	33.0	1.1	9.6	0.6	4.1	6.1	4.4	1.4	0.3	39.9	100.0	21,660
3-4	60.9	53.1	9.8	0.7	27.9	1.0	10.5	0.6	2.6	7.8	5.7	1.4	0.7	39.1	100.0	29,233
5+	48.0	38.4	6.0	0.4	19.5	0.7	9.5	0.5	1.7	9.6	7.5	1.3	0.9	52.0	100.0	15,281
Wealth quintile																
Lowest	43.3	38.7	6.2	0.8	20.6	0.6	9.2	0.6	0.7	4.6	3.4	0.7	0.5	56.7	100.0	19,159
Second	48.8	43.2	6.1	0.6	24.7	0.6	9.6	0.5	1.1	5.7	4.2	1.0	0.5	51.2	100.0	19,557
Middle	50.3	44.1	5.6	0.6	26.4	0.8	8.5	0.4	1.9	6.1	4.6	1.0	0.5	49.7	100.0	19,313
Fourth	50.3	43.7	4.4	0.4	27.3	0.7	7.4	0.5	3.0	6.6	5.0	1.2	0.3	49.7	100.0	19,260
Highest	57.8	49.2	4.4	0.2	29.3	1.1	4.8	0.4	9.0	8.5	5.9	2.4	0.2	42.2	100.0	19,657
Total	50.1	43.8	5.3	0.5	25.7	0.8	7.9	0.5	3.2	6.3	4.6	1.3	0.4	49.9	100.0	96,945

The pill continues to be by far the most popular method of contraception, used by 26 percent of women. Eight percent of currently married women are using injectables, 6 percent are using female or male sterilization, and 3 percent are using condoms. The most popular traditional method is periodic abstinence, used by 5 percent of women.

Current use varies by women's age and is lowest among currently married women age 13-19 and highest among women age 30-39. Use of modern methods is 54 percent among women age 30-34. There are also variations by age in the methods that women use. The pill is the most popular modern method among married women under age 20 as well as among women in their twenties and thirties. Injectables are the second most popular method among women age 15-34. With a gradual shift to long-term methods among older women, the popularity of female sterilization has increased, becoming second to the pill by age 35 39 and the most widely used method among women in their late forties.

Figure 6.3 **Trends in Contraceptive Use Among Currently Married Women under Age 50**



Differences in contraceptive use by socioeconomic characteristics are not large. Contraceptive use varies moderately by residence (urban-rural) but greatly by division. Contraceptive use is highest in Khulna division (62 percent), closely followed by Rajshahi and Dhaka divisions (56 and 52 percent, respectively), and lowest in Sylhet division (28 percent). Secondary education is correlated with greater use of family planning, although the differences are small. Use of any method differs by only four percentage points between currently married women with no education (49 percent) and those with secondary education or above (53 percent). By household wealth, contraceptive prevalence ranges from 43 percent among women living in the poorest households to 58 percent among women living in the wealthiest households.

There is a strong association between use of family planning and the number of living children a woman has. As expected, fewer women use a contraceptive method before having their first child. Contraceptive use increases sharply from 16 percent for women with no living children to 61 percent for women with three to four children and then falls to 48 percent for women with five or more living children. This latter decline is expected because age and number of living children are positively correlated, and contraceptive use declines as women reach the end of their fertile years.

6.3 CHILDHOOD MORTALITY

Infant and child mortality rates reflect a country's level of socioeconomic development and quality of life and are used for monitoring and evaluating population and health programs and policies. The BMMS asked all ever-married women age 13-49 to provide a complete history of their births 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 direct estimates of infant and child mortality.[2]

Neonatal mortality:	The probability of dying in the first month of life
Postneonatal mortality:	The probability that a child will die after the first month of life but before the first birthday
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

Neonatal, postneonatal, infant, child, and under-five mortality rates, by two-year and five-year periods preceding the survey, are shown in Table 6.8. Examining the most recent five-year period (0-4 years before the survey or 1996-2000), under-five mortality is estimated at 95 per 1,000 live births, and infant mortality is estimated at 72 per 1,000 live births. This means that 1 in every 14 children born in Bangladesh during 1996-2000 died within the first year of life, and 1 in every 10 children died before reaching age five. The age pattern of mortality shows that half of the deaths under-five occur during the neonatal period, while about one-quarter occur during the postneonatal period, and another one-quarter of deaths occur at age 1-4 years.

Evidence of a decline in childhood mortality comes from comparison of data from the BMMS with data from previous BDHS surveys (Figure 6.4). The strength of this comparison derives from the fact that these surveys used identical data collection instruments. The estimate for under-five mortality calculated from the 1993-1994 BDHS data (for the period 1989-1993) is 133 deaths per 1,000, compared with 85 per 1,000 from the 2001 BMMS (for the period 1999-2000). This represents a 36 percent decline, or nearly 5 percent per year during the 1990s. The internal data from the BMMS show that under-five mortality decreased by one-third from the period 1986-1990 to 1996-2000.

---

[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:

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

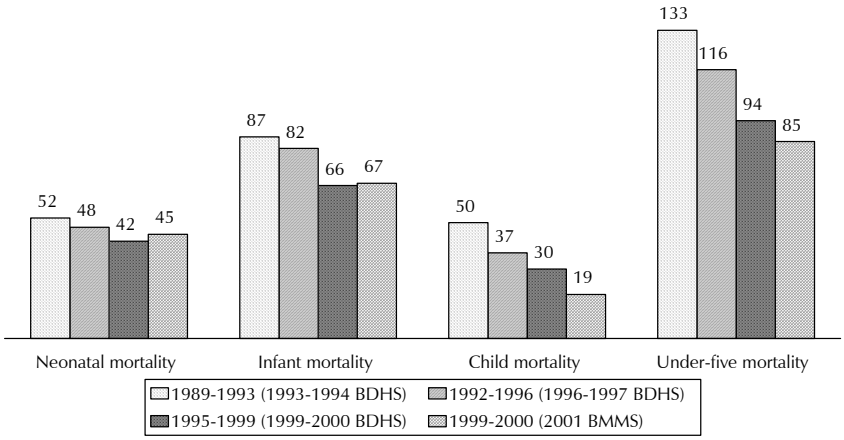
Table 6.8 Early childhood mortality rates

Neonatal, postneonatal, infant, child, and under-five mortality for two and five-year periods preceding the survey, Bangladesh 2001

Years preceding the survey	Approximate reference period	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
0-1	1999-2000	45.4	21.3	66.7	19.1	84.6
2-3	1997-1998	44.9	24.8	69.7	25.0	93.0
4-5	1995-1996	53.8	30.2	83.9	30.4	111.8
6-7	1993-1994	56.3	30.6	86.9	33.9	117.9
8-9	1991-1992	62.5	34.0	96.4	38.9	131.6
10-11	1989-1990	65.9	32.6	98.5	42.1	136.5
12-13	1987-1988	64.1	38.2	102.3	49.9	147.1
14-15	1985-1986	74.9	41.8	116.7	59.9	169.6
0-4	1996-2000	47.2	24.3	71.5	25.6	95.2
5-9	1991-1995	58.0	32.1	90.2	35.7	122.6
10-14	1986-1990	66.7	36.2	102.9	48.2	146.1

Note: Month of interview is excluded from the analysis.
[1] Computed as the difference between the infant and the neonatal mortality rates

Figure 6.4 **Trends in Infant and Childhood Mortality, 1989-2000**



6.3.2 Socioeconomic and Maternal Health Differentials in Childhood Mortality

Infant and child mortality is also related to demographic characteristics of mothers and children. Table 6.9 shows that male children experience higher neonatal and infant mortality than female children, whereas female children age 1-4 experience higher mortality than male children the same age. The pattern of gender differentials in neonatal mortality is expected because neonatal mortality (which reflects largely congenital conditions) tends to be higher for boys than girls in most populations. However, the pattern of higher female postneonatal and child mortality (which reflects largely behavioral and environmental conditions) is far from universal.

As expected, the relationship between maternal age at birth and childhood mortality is a U-shaped curve, being relatively higher among children born to the youngest and oldest mothers than among children whose mothers are in the prime reproductive ages. 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 tend to have a U-shaped pattern by birth order, with first births and high-order births having elevated mortality rates. For example, infant mortality for first births and births of order seven and higher is 85 deaths per 1,000 births and 88 per 1,000 births, respectively, compared with 61 deaths per 1,000 births to 70 per 1,000 births for second- to sixth-order births, respectively.

The variable most strongly associated with variation in under-five mortality is the length of the interval between births. As the birth interval gets shorter, the risk of child death increases. For example, the neonatal mortality rate for children born less than 24 months after a previous sibling is twice that for children born after 24 months or more (72 compared with 35). The differences in risk are even larger for child mortality (age 1-4).

Table 6.9 shows that infant and child survival is influenced by the socioeconomic characteristics of mothers. Almost all rural mortality rates are higher than urban mortality rates, though the differences are not large. Differences in mortality by division are more marked. Sylhet division has extremely high mortality rates: neonatal, postneonatal, infant, and under-five mortality in Sylhet is about 40 percent higher than the national average. Rajshahi and Dhaka divisions also have relatively high under-five mortality rates of about 100 deaths per 1,000 live births.

Maternal education is strongly related to mortality. 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 113 deaths per 1,000 live births for uneducated mothers to a low of 59 deaths per 1,000 live births for mothers who have some secondary education. Other mortality indicators also decline similarly with increasing mother's education. However, as expected, mother's education has a stronger negative effect on postneonatal and child mortality than on neonatal mortality (which is more strongly related to biological factors).

All indicators of infant and child mortality decline substantially as household wealth increases. For example, the under-five mortality rate for children in the wealthiest households is 58 deaths per 1,000 live births, whereas the corresponding rate for children in the poorest households is 122 deaths per 1,000 live births.

Table 6.9 Infant and child mortality by background characteristics

Neonatal, postneonatal, infant, child, and under-five mortality rates for the five-year period preceding the survey, by background characteristics, Bangladesh 2001

Background characteristic	Neonatal mortality (NN)	Postneonatal mortality[1] (PNN)	Infant mortality ($_1q_0$)	Child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Sex of child					
Male	52.4	23.0	75.4	22.5	96.2
Female	41.7	25.7	67.3	28.7	94.1
Mother's age at birth					
<20	63.6	25.8	89.4	23.1	110.4
20-29	38.6	21.3	59.9	24.5	82.9
30-39	41.5	28.8	70.2	32.1	100.1
40-49	47.3	40.1	87.4	36.1	120.4
Birth order					
1	60.9	23.7	84.6	18.3	101.4
2-3	41.3	19.2	60.5	22.8	81.9
4-6	41.0	28.6	69.6	33.0	100.3
7+	47.0	41.1	88.1	39.4	124.0
Previous birth interval					
< 2 years	71.9	40.0	111.8	40.4	147.8
2-3 years	34.8	24.2	59.0	30.8	87.9
4 years or more	34.5	17.3	51.8	16.2	67.2
Residence					
Urban	41.6	23.1	64.6	22.1	85.3
Metropolitan/town	38.8	21.2	60.0	21.1	79.9
Other urban	44.6	25.1	69.7	23.2	91.3
Rural	48.3	24.6	72.9	26.3	97.3
Division					
Barisal	39.5	22.3	61.8	31.2	91.0
Chittagong	34.8	20.1	54.9	29.9	83.1
Dhaka	48.9	26.9	75.8	26.5	100.3
Khulna	42.4	16.6	59.1	15.9	74.0
Rajshahi	54.4	24.4	78.8	20.0	97.1
Sylhet	65.9	35.5	101.4	33.0	131.1
Mother's education					
No education	52.5	30.3	82.7	33.3	113.3
Some primary	47.8	23.9	71.7	23.3	93.3
Completed primary	46.4	22.6	69.0	17.8	85.6
Secondary+	36.4	12.8	49.2	10.6	59.3
Wealth quintile					
Lowest	56.5	31.1	87.6	38.0	122.3
Second	52.1	28.7	80.9	29.2	107.7
Middle	48.1	24.7	72.8	21.1	92.4
Fourth	39.7	18.9	58.6	19.2	76.7
Highest	32.5	12.7	45.3	13.1	57.7
Total	47.2	24.3	71.5	25.6	95.2

6.4 PERINATAL MORTALITY

The 2001 BMMS survey asked women to report on pregnancy losses and the duration of the pregnancy for each loss, for all such pregnancies ending in the three years before the survey; this information was recorded in the calendar section of the women's questionnaire. 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) constitute perinatal 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. An important consideration in the evaluation is the quality or completeness of reports on still-

births, which are susceptible to omission, underreporting, or misclassification (as early neonatal deaths, though the misclassification may also go from early neonatal death to stillbirth). The distinction between a stillbirth and an early neonatal death may be a fine one, often depending on the observed presence or absence of some faint signs of life after delivery. The causes of stillbirths and early neonatal deaths are overlapping, and examining just one or the other can understate the true level of mortality around delivery. For this reason, it is suggested that both event types be combined and examined together.

Table 6.10 Perinatal mortality

Stillbirth rates, early neonatal death rates, and perinatal mortality rates for the three years preceding the survey, by background characteristics, Bangladesh 2001

Background characteristic	Stillbirth rate[1]	Early neonatal death rate[2]	Perinatal mortality rate[3]	Number of pregnancies of 7 or more months duration	Number of live births
Mother's age at birth					
<18	37	50	85	7,718	7,436
18-19	34	36	68	5,395	5,211
20-29	24	24	47	20,578	20,078
30-39	29	28	57	6,684	6,489
40-49	44	25	68	720	689
Previous pregnancy interval in months					
First pregnancy	44	46	88	11,263	10,767
<15	37	44	79	1,897	1,827
15-26	22	28	50	6,268	6,129
27-38	19	24	43	7,184	7,045
39+	24	22	46	14,482	14,134
Complications[4]					
No complication	12	22	34	16,103	15,901
Any complication	38	36	73	24,951	23,993
Did not seek care	29	31	60	10,787	10,470
Sought care at facility	53	43	94	6,625	6,274
Sought care elsewhere	38	38	75	7,539	7,249
Residence					
Urban	25	27	52	7,061	6,885
Metropolitan/town	23	25	47	3,719	3,632
Other urban	26	30	56	3,342	3,253
Rural	30	32	60	34,034	33,017
Division					
Barisal	22	27	48	2,694	2,635
Chittagong	24	24	48	8,535	8,329
Dhaka	33	30	62	14,134	13,669
Khulna	34	30	63	3,953	3,820
Rajshahi	25	38	62	8,650	8,434
Sylhet	36	39	74	3,129	3,015
Mother's education					
No education	28	32	59	18,379	17,858
Some primary	35	36	69	7,619	7,354
Completed primary	26	32	57	4,368	4,254
Secondary+	27	25	51	10,729	10,437
Total	29	31	59	41,095	39,903

[1] Stillbirths are fetal deaths occurring in pregnancies of seven or more months. The stillbirth rate is the number of stillbirths divided by the number of pregnancies of seven or more months' duration, expressed in thousands.
[2] Early neonatal deaths are deaths to live-born children at days 0 to 6 since birth. Early neonatal death rate is the number of early neonatal deaths divided by number of live births, expressed in thousands.
[3] The perinatal mortality rate is the sum of the number of stillbirths and early neonatal deaths divided by the number of pregnancies of seven or more months of duration, expressed in thousands.
[4] The complications background characteristic excludes cases with missing data on complications and 28 terminations with pregnancy duration of 7 or more months that were not coded as stillbirth in the calendar.

Table 6.10 shows stillbirth rates, early neonatal mortality rates, and perinatal mortality rates, according to demographic and socioeconomic characteristics. At the national level, the perinatal mortality rate is estimated to be 59 perinatal deaths per 1,000 qualifying pregnancies. Perinatal mortality displays the expected U-shaped pattern in relation to age of the mother, with the youngest and oldest women having the highest rates. First pregnancies and pregnancies with a short preceding interpregnancy interval are also at high perinatal risk. First pregnancies have a risk of 88 perinatal deaths per 1,000, and pregnancies with a interpregnancy interval of less than 15 months carry a risk of 79 perinatal deaths per 1,000, compared with a risk of just 46 per 1,000 for pregnancies with an interpregnancy interval of 39 months or more.

Perinatal mortality is higher in rural areas (60 deaths per 1,000 pregnancies) than in urban areas (52 per 1,000). At the divisional level, perinatal mortality rates range from 48 per 1,000 to 74 per 1,000 pregnancies. Perinatal mortality is the highest in Sylhet division (74 per 1,000 pregnancies) and the lowest in Barisal and Chittagong divisions (48 per 1,000). Perinatal mortality is higher for less educated women than for women with at least some secondary education. In general, differentials in perinatal mortality are smaller than those in neonatal mortality.

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 6.11 shows the percentages of live births in the five years preceding the survey that fall into different child survival risk categories, as well as the distribution of all currently married women across these categories. It also 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 infant and child 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, about one-third (32 percent) of births were not in any high-risk category. Thirteen percent were first births—considered an unavoidable risk category—while 42 percent were in single high-risk categories and 12 percent were in multiple high-risk categories. The most common single high-risk category was births 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 (6 percent).

Table 6.11 High-risk fertility behavior

Percent distribution of children born in the five years preceding the survey by category of elevated risk of dying and the risk ratio, and the percent distribution of currently married women by category of risk if they were to conceive a child at the time of the survey, Bangladesh 2001

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	32.1	1.00	28.4[a]
Unavoidable risk category: first birth	13.1	1.33	6.1
Single high-risk category			
Mother's age <18	17.2	1.85	5.3
Mother's age >34	0.4	1.53	3.3
Birth interval <24 months	4.8	1.91	7.5
Birth order >3	19.9	1.27	16.5
Subtotal	42.4	1.58	32.6
Multiple high-risk category			
Age <18 & birth interval <24 months[2]	.7	2.49	1.7
Age >34 & birth interval <24 months	0.0	1.87	0.1
Age >34 & birth order >3	5.7	1.58	23.0
Age >34 & birth interval <24 months & birth order >3	0.6	2.75	1.6
Birth interval <24 months & birth order >3	4.3	2.52	6.4
Subtotal	12.4	2.10	32.8
In any avoidable high-risk category	54.8	1.70	65.4
Total	100.0	na	100.0
Number of births	67,133	na	96,945

Note: Risk ratio is the ratio of the proportion dead of births in a specific high-risk category to the proportion dead of births *not in any high-risk category*.
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 occurred less than 15 months ago, or latest birth being of order 3 or higher.
[2] Includes the combined categories age <18 & BO >3
[a] Includes sterilized women

Risk ratios, which describe the relationship between a particular risk category and a reference category, are used to compare risk categories (Table 6.11). While the "not in any high-risk category" has a risk ratio of 1.00, the unavoidable risk category (first births) has a risk ratio of 1.33. Most risk ratios are higher for children in multiple high-risk categories than for those in single high-risk categories. The most vulnerable births are those to women age 35 and older, those with a birth interval less than 24 months, and those of birth order three or higher. These children are nearly 2.8 times more likely to die young than children not in any high-risk category. Fortunately, less than 1 percent of births are in this category. Four percent of births occur among women who have three or more children and a short preceding birth interval; these children are more than twice as likely to die as children who are not in any high-risk category. Another 6 percent of births occur among women over 35 with more than three births; these infants are also subject to more than twice the risk of dying of children who are not in any high-risk category.

POLICY IMPLICATIONS 7

Peter Kim Streatfield and Ahmed Al-Sabir

7.1 INTRODUCTION

Maternal mortality in Bangladesh is often depicted as among the highest in the world. This view is based partly on estimates from various non-national, local area studies conducted during the 1970s and 1980s, and partly on the WHO estimate for Bangladesh in 1990 (WHO, 1996). These sources produced a range of estimates of maternal mortality from 500 to 850 per 100,000 live births.

The findings of the nationally representative Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) show that maternal mortality is still relatively high at 320 per 100,000 live births. However, of the 171 countries included in a recent joint review of maternal mortality ratio (MMR) estimates for 2000 by WHO, UNICEF and UNFPA (2001), 51 countries (30 percent) had higher levels of maternal mortality than Bangladesh—some three to five times higher. The trend data also show an encouraging reduction of the MMR in Bangladesh of 22 percent over the past 12 years.

Because maternal deaths are a relatively rare event, the BMMS required a large sample—ten times larger than the BDHS sample—with associated high costs. Thus, this survey approach cannot be used for monitoring purposes to determine regular estimates of the maternal mortality ratio (MMR). It is important to examine these data to identify suitable proxy indicators that closely reflect the MMR, and are measurable by standard information systems for that purpose in future.

The Government of Bangladesh has reaffirmed its commitment to reducing maternal mortality in the recently finalized Poverty Reduction Strategy Paper (PRSP), which points to the slow decline in the MMR together with the decade-long plateau in fertility as having negative implications for poverty reduction. The study provides clear evidence of persisting disparities in health-seeking behavior by maternal education and wealth status, with less educated and poorer women being less likely to seek qualified preventive and emergency obstetric care. Greater efforts are needed to ensure that the poorest women have equitable access to high-quality safe motherhood services. The challenge is not only to reach poorer women, but also to reach the two million pregnant women each year who do not receive any antenatal care.

Safe motherhood services have to be designed and promoted differently from other health services. Providers need to recognize that childbirth is significantly different from other conditions that require preventive and curative services, although it includes elements of both. While childbirth is a natural process that most women go through, it has the potential for serious problems, and various service provision strategies have been developed over the decades to deal with the problems associated with childbirth.

Since the Nairobi Safe Motherhood Conference in 1987, when the world focused on the imperative of making childbearing safer, the philosophy of service provision has evolved from the “risk” approach to the “three delays” approach. The risk approach was useful at the public health level, but has been less useful for assessing risks for individual women.

Unlike the risk approach, which attempted to attach a risk estimate to individual pregnant women based on certain characteristics (e.g. young or old age, high parity, short stature, etc.), the three delays approach accepts that all pregnancies are potentially at risk of complications and that arrangements need to be set in place to ensure that those pregnancies that do develop complications receive appropriate care.

The childbirth process can be divided into three components in regard to the development of complications. First is the recognition by the pregnant woman and her family members or birth attendant that a complication has arisen, and a decision is made to take action. Some agencies are now subdividing this first delay into two sub-components: recognition and decisionmaking. Second, action is taken to transfer or transport the pregnant woman to a facility that can provide the necessary treatment. Third, the facility must manage the complication in an appropriate and timely manner to prevent consequent morbidity or death.

As a household-level survey, the BMMS focuses primarily on the first delay—decisionmaking within the household, although it also throws light on the second and third components (or delays) from the patient's perspective. This chapter will explore the policy implications of the BMMS findings in relation to the three delays, following the natural sequence of antenatal care, delivery care, and postnatal care. This constitutes the "demand" side of the safe motherhood equation, and where data are available from other sources, information on the "supply" side, or facility side, will be reviewed.

Other surveys have provided information on the sequence of steps in safe motherhood. For example, the three Bangladesh DHS surveys have provided data on antenatal care, place of delivery, delivery assistance, and limited information on postnatal care. One important limitation of this type of household survey information though, is that it is usually not possible to know if the respondents who utilized antenatal care (ANC) or institutional delivery services were the ones at risk of complications. Conversely, it cannot be known if the respondents who did not utilize safe motherhood facilities were at risk or not.

The BMMS provides additional information on women's knowledge of serious complications, on their experience with such complications, and on actions taken in response to that experience, as well as barriers to such actions. This greatly enriches the data, although further analysis beyond that presented in this report will be required to take full advantage of it. This will be particularly helpful in separating supply side issues (emergency obstetrics (EOC) facility construction and upgrading, service provider training, equipment and medicine logistics, etc.) from demand side issues (awareness of risk by pregnant women and their families, recognition of complications, the decisionmaking process, transportation issues, attitudes toward providers, ability to pay for services where applicable, etc.).

In the following section, the behavior of survey respondents through the sequential phases of pregnancy will be reviewed in the context of where future efforts to reduce maternal morbidity and mortality might be focused.

7.1.1 Maternal Mortality

Comparison of overall adult mortality in the BMMS with other sources of mortality data indicate that the survey produced reliable mortality estimates. The data suggest an adult mortality decline of one-third for females and one-fourth for males in the decade before the survey. These declines are considered extraordinary and require further examination. Certain aspects of the cause-specific mortality rates are also noteworthy. Suicide accounts for 10 percent of adult female deaths, and malignancies and circulatory diseases separately account for more deaths of women of reproductive age than infectious diseases. Maternal deaths remain the single most important cause of death among adult females, and the estimates appear robust because several different approaches (household survey, sisterhood, and verbal autopsy) have produced consistent results.

Trends: The survey shows that there was a gradual decline in maternal mortality during the late 1980s and early 1990s (around 1 percent annually). This decline accelerated in the late 1990s to around 3 percent per year (faster at decade end). The pattern parallels government efforts to increase the availabil-

ity of basic and comprehensive EOC facilities, in particular the maternal and child welfare centers (MCWCs) and district hospitals.

It was thought that some proportion of the decline in maternal mortality must be due to the dramatic fertility decline of the 1980s. The downward trend in fertility resulted in fewer high parity births among older women—both older age and high parity are well-documented risk factors for maternal complications. Unfortunately, birth rates amongst young (teenage) women have shown little change.

The pattern of maternal mortality by parity is a U-shaped curve, highest for first pregnancies, lowest for second pregnancies, and rising steadily thereafter. Fertility decline resulted in a change in the pattern of births. In the 1970s, first, second, third, fourth, and fifth births were almost equally distributed, each accounting for about one in seven of all births. The current low fertility pattern has first births accounting for 30 percent of total, second births 25 percent, third 20 percent, etc. Overall, this decline in fertility should produce a decline in the number of maternal deaths; however, the doubling of the proportion of high-risk first pregnancies may have neutralized the benefits of the reduction in higher order pregnancies. Further analysis can estimate the impact of the fertility decline on maternal mortality, but will have to take careful account of the maternal age changes as well as parity shifts in fertility over recent decades.

There is a paradox in maternal mortality patterns by maternal age and parity. The data show a monotonic increase in the risk of maternal death, as measured by the MMR, from women age 15-19 to women age 45-49. At the same time, first births have a high risk of maternal death—two and a half times higher than parity two births—and first births are concentrated among young married women. Teenage mothers, who might be expected to experience high mortality due to the high proportion of first births in this age group, actually show the lowest maternal mortality ratios. The pattern is seen for both the MMR and the MMRrate, so it is not simply a consequence of lower fertility among teenage women than among women in their twenties. Regarding future declines in the MMR, even with the current fertility patterns, if age at first birth is increased from the current 18 years, it is unclear what the impact would be on the current high MMR for first births.

Causes of maternal deaths: The patterns of age-specific deaths suggest that data quality for maternal deaths is good. The data on cause of death appear reasonable, with only 12 percent having no specific cause assigned. Among all causes of death for women of reproductive age, maternal deaths account for 20 percent, which is similar to the proportions found in the Matlab field site of the ICDDR,B.

Regarding specific causes of maternal death, the verbal autopsy analysis shows that hemorrhage (antepartum and postpartum) is the leading cause of death (29 percent), with eclampsia close behind (24 percent). Compared with data recently released by UMIS for deliveries at EOC facilities in the year through June 2003, the proportion of deaths due to hemorrhage is high, and the proportion due to eclampsia is low. The higher proportion of deaths due to hemorrhage is not surprising because many of these women never reach a facility; the problem can quickly become fatal. Eclampsia exerts its effect more slowly, and it is possible that eclampsia sufferers may be preferentially referred to an EOC facility, some of which may be unable to resolve the problem.

Other direct causes of maternal death account for smaller proportions—for prolonged/obstructed labor and puerperal sepsis the levels are similar to the national levels, and survey data for abortion-related deaths (one in twenty maternal deaths) is about half the national facility-based figure. Again, this may be because abortion-related deaths imply previous contact with a service provider of some kind (e.g., to carry out an MR) and that contact may result in preferential referral to a facility if complications arise. In addition to direct causes, 15 percent of maternal deaths are due to indirect causes, and another 16 percent are due to causes not yet classified.

It is possible that declines in abortion-related deaths (to the low level found in this study) may have contributed to the decline in maternal mortality. There is anecdotal evidence that numbers of patients admitted to facilities with incomplete or septic abortions have declined dramatically over the past two decades, presumably due to the expanded provision of safer and more accessible MR services.

Maternal deaths in relation to delivery: According to the verbal autopsy, two-thirds of maternal deaths occurred after delivery, only one in ten occurred during delivery, and the remaining one in five occurred before delivery. The timing would suggest that retained placenta, postpartum/puerperal sepsis, and postpartum hemorrhage are the major causes of maternal death and not eclampsia, preeclampsia, antepartum hemorrhage, ruptured uterus, etc. This pattern does not match well with the pattern of complications reported by respondents who survived childbirth. Thus, the pattern of complications experienced by nonsurvivors may differ from that of survivors.

The low proportion of deaths during delivery also does not match with the high proportion of women reporting malpresentation or prolonged/obstructed labour (22 percent) which could potentially be fatal. It may be that the rapidly increasing availability of C-sections is reducing the risk of death for women with this complication.

7.1.2 Antenatal Care

The national maternal health strategy recommends that all pregnant women should make three or more antenatal visits to a medically trained or skilled provider, and the first visit should take place within the first trimester of pregnancy.

Numbers and timing of visits: About half of all pregnant women now make at least one ANC visit. This is almost double the level in the early 1990s, and is encouraging because the increase has been concentrated in rural areas (especially Sylhet, Khulna, and Rajshahi). The improvement has generally been among women visiting nurse/midwife/family welfare visitor (FWV)/paramedics, except in Sylhet where it reflects more visits to doctors. The increase may partially reflect recent efforts to train more female service providers: for example, a limited number of FWVs have received six months of training.

To predict future levels of service utilization, it is necessary to examine differentials, especially education and socioeconomic differentials. There have always been sociodemographic differences, and these persist, but during the 1990s there was no improvement by age, parity, or mother's level of education. Even among wealthy, educated, and urban couples, one in four women was still not making even one ANC visit. This suggests that further improvements due to factors within the society, for example diffusion of progressive ideas from educated to uneducated couples, will be slow to occur.

External efforts will be needed to motivate and encourage couples to use the maternal health services. That the results of the Bangladesh Demographic and Health Survey (BDHS) show that more than four out of five women obtain tetanus toxoid (TT) vaccination to prevent maternal tetanus, indicates that the concept of protection against complications is not an unfamiliar concept. Perhaps ANC services could be promoted through the TT vaccination sites, usually satellite clinics that women visit for their TT vaccinations.

While it is encouraging that more women are now making at least one visit, there are two other areas of concern. Only one in seven women made their first ANC visit in the first trimester as recommended, the usual time being late second trimester (a median of 5.4 months). Also, only one in five women makes the recommended three ANC visits (the median is unchanged at 1.8 visits). Greater effort will be needed to ensure that women make their first ANC visit early in pregnancy, and that they complete at least three visits.

All three aspects of ANC require greater attention—half of pregnant women still do not receive any ANC; among those who do, the women start late in pregnancy; and few women complete the full (minimum) recommended number of visits.

Reasons for ANC visit: The ideal situation is that all pregnant women receive ANC regardless of whether they have a problem or not. This is to detect problems early, to give information about the danger signs of pregnancy, and to advise how the woman should respond if complications occur. Almost half of women experienced some problem, some potentially very serious, so if all women received ANC then it would be expected that half would report problems during a visit.

Since only half of the women made any ANC visits, it is difficult to interpret the observation that only one in four ANC visits was motivated by a specific problem. Nevertheless, efforts must be made to better understand why some women who experience problems do not visit any facility for assistance.

Reasons for not using ANC services: There were multiple reasons why women did not seek ANC, but the most common (three out of four) and most worrisome one is lack of perceived need for ANC, or the belief that ANC is "not customary." It is reassuring that service-related factors do not appear to be barriers to seeking ANC. Cost is mentioned in one in five cases, and transportation one in ten—the latter implying cost concerns also. Clearly, the major constraints to seeking ANC are in the household.

The "no need" response may reflect a lack of recognition of the potential dangers of the problem, or it could reflect ideas about the cause of the problem and the appropriate response. Such ideas may differ from modern allopathic medical views, thus making a visit to a health facility seem irrelevant or "unnecessary." Better understanding of this issue is needed because other evidence on treatment of complications suggests that unqualified providers (in the modern, allopathic sense) are the first choice for many women.

Procedures conducted during ANC visits: It is surprising and reassuring that so many ANC clients reported receiving a range of tests. This suggests that the service provision side is functioning as planned, although it is not possible to know if testing resulted in identification of possible complicated pregnancies, with appropriate actions (e.g., referral) being taken. It is not mentioned in the findings, but hopefully iron supplementation is also given to reduce the widespread problem of anemia. In addition to availability of safe blood transfusion facilities, this intervention (iron supplementation) could significantly reduce the number of deaths from hemorrhage.

The procedures that do not require laboratory equipment, e.g., measurement of weight, height, and blood pressure, are the most likely to be carried out. External physical checks such as abdominal examinations are common, but internal (pelvic) examinations much less so. Lab-based tests of urine and blood are moderately common, while ultrasound is not. The use of relatively costly lab-based tests is strongly linked to level of education and economic status, but is also associated with first pregnancies and urban residence.

It is likely that many ANC visits are made to lower-level facilities, such as family welfare centers (FWCs), that are not equipped to provide a full range of checks. Further research is needed to know what proportion of women could not obtain the full complement of ANC checks because these were not available from their nearest ANC facility. The choices are either to upgrade the lower-level facilities, which is not a current policy, or to ensure that ANC clients are referred to higher-level facilities when more comprehensive testing is required.

Information content of ANC visits: In terms of preparing women for possible complications during ANC visits, fewer than half of visiting women were told of the danger signs that may occur during pregnancy, and slightly more than half were told where to go if they experienced complications. These

are the two crucial items of information to be conveyed during ANC, and more effort is needed to ensure that all women receive such information.

The differentials in awareness of the danger signs during pregnancy suggest that younger women and women who are pregnant for the first time are not more likely than other women to receive such information, although they should be targeted. This information should be repeated at each opportunity, even if older women have heard it before. Typically, more educated women and women in wealthier households are much more likely to receive, or to recall receiving, such information. It may be that poorly educated women are given information in a form that they do not understand, and therefore do not remember and act upon.

Birth Planning: In addition to informing women and their family members about the danger signs of pregnancy, the most important advice that could be given during ANC visits is to plan for all contingencies during late pregnancy and childbirth—i.e., birth planning. As complications can arise quickly and without warning, it is wise to plan a response if such complications occur. This involves selecting possible service providers, planning transportation, ensuring sources of money for medical expenses, covering domestic duties, etc. Families could be more actively encouraged to maintain a savings program during the pregnancy to create a contingency fund in case of need during the pregnancy and delivery. But the national program could usefully give more thought to the provision of some form of health card or health insurance scheme for safe delivery, to reassure families that EOC treatment for severe complications will not plunge the family into poverty. These options have been discussed and piloted over many years, but have not been implemented on a large scale.

Many clients received some information during ANC visits, but on no subject did more than half of respondents report having received information or advice. About half received information on the location of a facility to go to if delivery complications occurred, one in three on hygiene, but only one in seven on making transport arrangements.

Planning for childbirth can of course take place independently of making ANC visits, though overall levels of planning are low. Among currently pregnant women (including those who did and did not make any ANC visits) two-thirds had not discussed delivery, nor made a decision about who they intended to seek assistance from. Among the few who did plan, most commonly it was to use an untrained traditional birth attendant (TBA) (22 percent) or less commonly a trained TBA (5 percent). The probability of having discussed the issue increased later in pregnancy, but even in the third trimester half of respondents had still not discussed delivery nor made a decision. Women in their first pregnancy were less likely to discuss delivery than those in a later pregnancy. Plans to use medically trained persons were more common for urban women, more educated women, and women in wealthier households.

This is a vital area for future policy. Women and their families must be encouraged to make contingency plans if complications arise, particularly as there are implications for household financial resources, and because time to respond may be short—in many cases an emergency. Safe motherhood information to raise awareness of the danger signs of pregnancy, treatment options, and the importance of birth planning can also be disseminated through the mass media. In addition to low cost and wide coverage, mass media campaigns have the added advantage that contact can be made specifically with the many pregnant women who are not coming into contact with ANC and related services.

If the husband can be motivated to take an interest and to share responsibility, particularly in first pregnancies, then preparedness could be greatly increased. Some avenue or mechanism to convey information to husbands is needed, either through village or Union Parishad council meetings, or through the media, or through community visits by male health assistants. Women pregnant for the first time must receive special attention with information and motivation, possibly through selective household visits by FWAs early in pregnancy.

7.1.3 Delivery Care

Annually in Bangladesh there are around 3.8 million births, and even more pregnancies. About 570,000 (15 percent) of these are expected to have complications requiring facility-based care: two-thirds will need basic EOC (B-EOC) and one-third will need comprehensive EOC (C-EOC) for life-threatening conditions, particularly C-sections or blood transfusions.

The recommended ratio of EOC facilities is one C-EOC plus four B-EOC facilities per 500,000 population, which translates in Bangladesh to 270 C-EOC and 1,080 B-EOC facilities. Bangladesh has progressed rapidly in building and upgrading facilities to basic and comprehensive EOC standards, but the latest ratios (provided by the Unified Management Information System (UMIS) and UNICEF) as percentages of the above targets are 54 percent for C-EOC (in 2003) and 60 percent for B-EOC (1999, status in 2003 not known) facilities compared with this goal. While current ratios for B-EOC are almost certainly higher than in 1999, the implication is that each EOC facility would need to deal with an average of about five complicated cases per working day, assuming all such cases attended the facilities. This is a heavy load, and has implications for drug and equipment supplies, and staff availability for providing other services.

Recent efforts in upgrading facilities must continue, especially at Upazila and levels below the district headquarters. This needs to be combined with strengthening the referral system so that screening occurs at lower levels and complicated cases with different degrees of severity are referred upwards to the appropriate level of facility.

Place of delivery: The data on place of delivery indicates a persisting problem with home delivery, which still account for 91 percent of all deliveries—unchanged during the 1990s. Among the 9 percent of deliveries in a facility (6 percent public sector, 3 percent private or NGO), it is not known how many were complicated cases. However, even if they were all complicated cases, the proportion of facility deliveries is still well below recommended levels.

Over the past decade there has been a strategy to upgrade EOC facilities. This strategy has focused on 59 district hospitals, 60 MCWCs, and a selection of the upazila health complexes— thus far about 42. There are encouraging signs from the Unified Management Information System (UMIS) of the Ministry of Health and Family Welfare (MOHFW) that complicated cases are being selectively referred to these upgraded EOC facilities. In 123 EOC facilities nationwide (59 DHs, plus 64 UHCs), the UMIS (with UNICEF support) shows that in the year through June 2002, the numbers of facility births has increased by 25 percent, but at the same time the number of complicated deliveries has increased 88 percent, and the number of C-sections has increased 44 percent.

This is the trend when so few deliveries take place in institutions, but no country with limited safe home delivery capacity can expect to substantially reduce maternal mortality with fewer than one in ten deliveries in a clinic or hospital. The low proportion of deliveries in EOC facilities raises the question as to why so many complicated cases do not deliver in a facility.

Reasons for not delivering in an EOC facility: Without further analysis it cannot be determined which responses about nonfacility deliveries relate to complicated cases and which to normal deliveries. Basically, three out of four cite “no need” or “not customary.” This implies that supply side issues such as cost (one in six cases) and access (one in sixteen cases) are not major barriers. It is encouraging that since most doctors are male (except the OB/GYNs in the MCWCs), reluctance to be examined by male doctors is not a significant barrier.

A number of conditions may require a C-section, but in fact only 3 percent of respondents reported C-section at delivery. While this figure is lower than the estimated 5 percent of life-threatening

complications requiring C-section, there are unmet obstetric need studies currently underway to review the evidence on which that estimate is based.

Of course not all cases with complications require a C-section; some may be resolved with simpler interventions. Some of the one in six cases of prolonged or obstructed labor, for example, may be dealt with by forceps delivery, but this only accounts for one in fifty of all deliveries, suggesting that more may be needed.

Delivery attendant: The data on who attended the delivery are limited to the highest-level provider (in terms of training and skills). During a long delivery a number of different people may come and go, so this may not give a complete picture of what took place, and how decisions were made. For example, a doctor may have visited early in the labor but not have been present at the actual birth; however, based on the criteria "highest skill level present at any time," the attendant would be listed as a doctor.

During the 1990s there was virtually no increase in the presence of skilled attendants at births (still only one in eight), but there was some increase in TBAs (mostly untrained) taking over delivery responsibilities from family members. The reliance on TBAs is probably preferable to family members alone, but the 1980s program that trained 42,000 TBAs was widely regarded as ineffective in raising standards for safe delivery, partly because of resistance to changing traditional (unhealthy) practices, and partly because of the difficulty of maintaining skill levels while doing few deliveries.

In addition to upgrading EOC facilities, there is a recent approach promoted by the Obstetrics and Gynaecology Society of Bangladesh (OGSB) based on the fact that most deliveries and most maternal deaths take place at home, and therefore it is logical to invest in an approach in which lower-level health workers are present for home deliveries.

The workers selected in the application of this approach are the 24,000 family welfare assistants (FWAs) and the 5,000 female health assistants (HA). Although these health workers used to make regular home visits (pre-HPSP), overall, they perform an average of only one delivery every four years. To take responsibility for a substantial proportion of the 3.5 million home deliveries annually, each FWA/HA would have to perform up to 110 or more deliveries annually (of course referring the complicated cases to higher levels). It is not clear how they will identify newly pregnant women in the communities unless they resume making household visits. This is expecting a great deal, and the program, which has so far trained 90 candidates from six upazilas, is likely to experience the same problems as the TBA training program in which the workers were unable to keep up sufficient numbers of deliveries to maintain their skill levels. It may be preferable for this cadre to focus on playing motivational and referral roles.

If this approach to training field-level workers is followed, it is imperative that they receive not only training, as is the case at present, but full back-up in terms of safe delivery kits, equipment to maintain proper hygiene (e.g., gloves), and most importantly, referral slips so that complications when identified can be transported from the home to be managed at the appropriate higher level. The experience from the Indonesian village midwife scheme indicates that continued supervision and support is necessary for this approach to maintain its effectiveness.

7.1.4 Postnatal Care

It is clear that postnatal care (PNC) is not considered routine by mothers, either for themselves or their babies. But since two-thirds of maternal deaths occur in this period, and three-quarters of neonatal deaths occur in the first three days after birth, it would be wise to encourage PNC checkups.

Only one in six mothers accessed such care for themselves, with strong differentials by region, education, and economic status. The strongest predictor of PNC use was the experience of problems dur-

ing pregnancy or delivery, but even among these women only around one in four sought postnatal care, and then they often visited an unqualified doctor. One in four mothers took their babies for PNC, half to qualified doctors and one-fourth to unqualified practitioners.

The primary reason for not seeking PNC was the perceived absence of need by the woman or family members—four out of five saying "not necessary," "unaware of need," "not customary," or "family did not allow," the latter possibly reflecting competing household duties. Cost was a significant obstacle mentioned by the remaining one in five respondents.

As with nonuse of ANC and facility-based delivery, absence of perceived need for PNC means that the majority of mothers did not receive a postnatal checkup for themselves or their child, even though a substantial proportion of childbearing problems arise at that time. Greater effort is needed to raise awareness that the danger period for childbirth is not over immediately after the baby is born. With such low use rates of facility delivery and PNC, it is not surprising that only one in twenty women used all three facility-based services—ANC, delivery, and PNC—and half did not use any.

This section has described the patterns of use of safe motherhood services, and highlighted where further efforts need to be made. The survey also provides a great deal of new information on awareness of complications, and experience of and responses to such complications. This will contribute to better understanding of how individual women and their families make preventive and curative care decisions in relation to childbearing.

7.1.5 Awareness of Complications

Awareness of the risks of certain conditions associated with childbearing plays a role in the decision to seek safe motherhood services, both preventative and curative. That awareness may reside with the woman herself or with those caring for the woman, who take responsibility for the delivery.

Awareness of the risks of specific complications may derive from personal experience, from the experience of other women, family members, neighbors, service providers, etc. It is possible to believe that a condition is potentially dangerous, but it is unlikely to "happen to me" for whatever reason. It is possible that a woman is aware that a particular condition is potentially dangerous, but the way to avoid it or manage it, may be through certain religious or spiritual rituals, or avoiding certain behaviors, foods, locations, persons, or times of day, rather than turning to modern, allopathic health services.

It should also be said that selected symptoms of certain complications can be present without being perceived as a danger, but with greater severity, or in combination with other symptoms, they may trigger awareness of a problem. In the case of preeclampsia, edema is an symptom where alone it may be widely regarded as a normal consequence of pregnancy, but together with severe headache and convulsions, will (hopefully) be seen as posing a serious threat.

The survey findings on awareness of specific conditions by the respondents do not appear to be closely tied to their personal experience of complications. The highest level of awareness—about one in two women—is about the dangers of tetanus, which is relatively rare these days, and prolonged or obstructed labor, which is more common. Retained placenta is seen as potentially life threatening by one in three women, and convulsions/eclampsia, and abnormal presentation by only one in four women. The latter levels of awareness are disturbingly low for such important danger signs.

The study findings also show that awareness cannot be readily used to predict whether a woman or her family will seek treatment, and if so, from which type of service provider. Further analysis of the survey data should look carefully at women's views and perceptions of dangerous conditions—i.e., their explanatory models—in the context of their actual experience.

Intervention programs should focus on raising awareness of the dangers of these conditions, particularly conditions requiring rapid management, because so many women are not delivering in a health facility.

7.1.6 Treatment for Complications

Of the 40,000 plus birth outcomes in the past three years, 60 percent had one or more complications. Of these 24,618 birth events, three-fourths (18,117) had what women considered a life-threatening complication, while the remainder (6,501) had a non-life threatening complication.

The survey presents information on treatment for both life-threatening and non-life-threatening complications. The patterns of treatment seeking are similar, although the levels are generally lower for the less dangerous conditions. Thus, to simplify the present discussion, only life-threatening conditions will be discussed. Seeking treatment can be inside or outside the home. If outside, it can be facility based, or non-facility based. If non-facility based, it can be with a qualified or an unqualified provider.

Among births for which women reported experiencing life-threatening complications, treatment was sought in six out of ten cases. Retained placenta was reported by four out of ten women, while three-fourths of women reported convulsions and high fever with discharge. Treatment was sought in half to two-thirds of cases for the following conditions: preeclampsia, malpresentation and prolonged/obstructed labor, and excessive bleeding.

Overall, the level of six out of ten seeking treatment for complications held for all subgroups, although more educated women and women in wealthier households were more likely to seek treatment. Only retained placenta was left untreated in more than half the cases.

While the majority of women seek treatment for complications, the source of treatment raises concern. In about half of the cases treatment was sought only within the home, in most cases (three out of four) from unqualified providers. Such home-based treatment may be the only option if the condition occurs as an emergency during a home-based delivery. But if the complication arises before or after delivery, then facility-based treatment by a qualified provider is the preferred option. In fact, for complications such as preeclampsia, or high fever with discharge, many women go to the private office of a doctor, but this is as likely to be an unqualified doctor as a qualified one.

Among the three out of ten women who sought treatment for complications outside the home, the vast majority (five out of six) did seek a qualified provider, the majority (four out of five) in a facility. It is encouraging that in first pregnancies, medically trained providers are most likely to be called upon, although the practice declines with later pregnancies. This pattern suggests that with so many home deliveries occurring, greater effort is needed to ensure that service providers, trained to acceptable levels of competence, will be available to visit homes and attend delivery emergencies.

Reasons for not seeking treatment: For conditions perceived as life-threatening, among the four out of ten women who did not seek treatment, it is difficult to explain that a major reason they gave for not seeking treatment (four out of ten) was that the condition was “not serious,” or treatment was “not necessary.” Women are equally likely to report this reason for life-threatening conditions such as excessive bleeding, malpresentation and prolonged/obstructed labor, and retained placenta, which elsewhere they have described as potentially very dangerous.

The only reason more commonly reported for not seeking treatment than lack of need is “cost too much” (or “lack of money”), especially for high fever with discharge, and excessive bleeding, possibly reflecting the anticipated high cost of treatment. Transport problems and lack of permission from family members are less important barriers (one in eight cases) to treatment overall. The relative importance of

each reason varies with the type of complication, transport being mentioned more often for delivery complications, and lack of permission from family being more common with complications during pregnancy and after delivery.

Decisionmakers: The participants in the decisionmaking process that takes place when an emergency occurs may be different from those involved prior to the complication, when the pregnant woman is more in control of her circumstances. In the case of life-threatening complications, the husband makes the decision in two out of three cases. Among younger, low-parity couples, the woman's parents also play an important role, less so parents-in-law and other family members. As couples become older, and have more children, the woman and her husband take on more decisionmaking responsibility, and family members have less responsibility. The fact that for first pregnancies, the woman's parents play as important a decisionmaking role as the husband, and much more than the woman herself, suggests that awareness raising should target these older community members.

7.1.7 Delays in Seeking Treatment for Complications

As mentioned at the beginning of this chapter, the first of the three delays has now been subdivided into (i) delay in recognizing complications, and (ii) delay in decision to seek treatment. This separation is practical, because the BMMS findings indicate that for one in three cases no decision was made to seek treatment after recognizing a complication—or conversely, a decision may have been made to not seek treatment.

Delay in recognizing complications: Taking all-life threatening complications together, recognition that a complication had occurred came quickly, after only 2.8 hours on average. Of course, some complications may be slow and insidious, e.g., preeclampsia or high fever, and may not have a distinct recognizable starting point. Prolonged labor may be defined differently by different attendants, based on experience or training. Other complications, such as convulsions, should be easily identified as having started.

Although the median time prior to recognition is short for many complications, some such as excessive bleeding have distributions with long "tails." The median duration was two hours for excessive bleeding, but in one-third of cases, the duration exceeded a day, which is a dangerous delay for a hemorrhaging woman. The term "excessive" may refer to either duration or volume of bleeding, and slow recognition may occur with long duration but small volumes of blood loss. For preeclampsia, almost two-thirds took at least one day for recognition, again the combination and severity of symptoms may vary with this condition. Also, a commonly occurring symptom such as edema may be recognized early as being present, but not recognized as a complication unless other symptoms are also present in combination with it.

It is surprising that the time delays in recognition of complications did not show the usual differentials, except for level of education and socioeconomic status. Neither age nor childbearing experience (birth order) had any significant impact on speed of recognition. This suggests that the characteristics of the woman may be less important than the type of attendant present in the household during labor and delivery, and more educated women and women in wealthier households are more likely to utilize medically trained attendants.

It cannot be determined from the existing data whether the immediate recognition of complications in one-fourth of cases, compared with delayed recognition of complications in the rest of the cases, occurred because of greater severity of these cases, better-developed recognition skills of those present, or other factors. Further analysis of the data may throw light on the question.

Delay in seeking treatment: This is the second subcomponent of the first delay. It is the time delay between recognizing a complication and deciding to seek treatment, among the two out of three women who ultimately sought treatment.

Among those who sought treatment for life-threatening conditions, almost half sought treatment immediately upon recognizing the problem, the average wait being less than two hours. Only in cases of preeclampsia and high fever with discharge did women wait a substantial length of time. Interestingly, there are marked differentials, indicating that age, parity, urban residence, maternal education, and economic status, all play a role in the speed of the decision to seek treatment.

This observation is consistent with the suggestion above that recognition of the occurrence of complications depends more on the recognition skills of the attendant than on those of a woman herself, but the decision to seek treatment is a matter for the individual patient and her family.

To minimize these two subcomponents of the first delay, interventions for improving recognition of complications would need to include provision of information about the symptoms of complications and greater effort to ensure that medically trained attendants are present throughout the delivery. Interventions to reduce the time delay in deciding to seek treatment are more complex, and presumably include allaying concerns about the potential financial burden of seeking care, about arranging transport, about covering the other domestic responsibilities of the women, etc. A number of these matters could be anticipated through birth planning during the pregnancy.

Travel time to facility: This refers to patients who recognized a complication, and decided to seek treatment outside the home, rather than in the home. Of those going outside the home, two-thirds went to a facility, and the remaining one-third went to nonfacility providers, qualified and nonqualified equally (Figure 5.3.1).

That for life-threatening conditions, three-fourths of women could reach a facility within one hour, and one-third within half an hour, suggests that access is good, but this can be misleading. It is quite possible that many women do not attempt to go outside the home precisely because access is not good. Also, if account is taken of the cumulative time spent in accessing inappropriate providers, and "healer shopping," sometimes never reaching an appropriate provider, then the contribution of the various delays to poor childbearing outcomes might be much more significant. Further analysis should explore the differences between women who go to a facility versus those who go to a nonfacility-based provider.

Waiting time at facility: It is striking that two-thirds of women who reached either a facility-based or nonfacility-based provider were seen immediately, and almost all were seen within one hour. It is also reassuring that there are almost no differentials by maternal education or wealth, suggesting that the poor and less educated are not subject to discrimination by service providers. Nonfacility-based, qualified and unqualified providers would be expected to involve little or no waiting time, compared with attendance at a busy facility. Further analysis is needed to determine if poorer women are more likely than wealthier women to go to unqualified providers.

A qualification here is that only one in four women who recognize a life-threatening complication go directly to a qualified provider. Some proportion of the other three out of four women may eventually reach a qualified provider, but only after trying various types of unqualified provider. This process of "healer shopping" constitutes a further delay due to selecting an inappropriate provider in the first instance. It would be useful to explore more about the "hierarchy of resort" in sequential use of different types of providers, but those data are not available in this survey.

The relative contributions of the various delays in obtaining treatment for life-threatening conditions are reviewed. In half the cases, patients recognized the complication within six hours. In two-thirds

of cases, they decided to seek treatment within six hours, on average much less than that. Having decided to seek treatment, three-fourths of women reached the service provider within one hour, and very few (one in seven) had to wait more than one hour to be treated.

Across the various phases then, it is clearly that the major delays take place at the household level, and these are more in the recognition of complications than in the decision to seek treatment. This pattern may be because family members do not have sufficient knowledge to recognize problems or, in the presence of attendants, family members may defer to the judgment of the "specialist." A deeper understanding of the decisionmaking process is needed.

It is necessary to reiterate an important feature of this analysis of time delays by pointing out that in a substantial proportion of cases, the families and attendants recognize the problem, but do not seek treatment from a qualified provider. The reasons for this inaction, or the choice of alternative action, may have a cultural or economic basis, but further analysis and qualitative research are needed to understand the barriers to women obtaining timely treatment for complications.

Of course these data on decisionmaking and subsequent behavior refer to "survivors" of childbirth. There are comparable data for women who experienced these complications but did not survive, and the behavior of these women may have been different. Further analysis of the patterns of behavior in the households of women who did not survive childbirth, and comparison with those who did survive, in particular the "near misses" if they can be identified, would be very informative.

7.2 Conclusions and Recommendations

Under HPSP 1998-2003 there was a target to increase the proportion of women receiving at least some ANC to 65 percent, but only a 48-percent level was achieved. Greater effort is needed to increase the proportion of women receiving ANC. This will require more intensive outreach by fieldworkers, particularly for women with first pregnancies. This outreach system should encourage pregnant women to make their first ANC visit as early as possible, certainly in the first trimester. Because more than four out of five women receive TT vaccinations, this could be an opportunity to encourage them to come for ANC, using the demonstrated effectiveness of the TT campaign in reducing maternal deaths as a motivational point.

In addition, the follow-up system must be strengthened to ensure that among those women who make a first ANC visit, as many as possible complete the recommended schedule of three or more visits. A follow-up system would benefit from a functioning MIS system for reminders at the outreach levels, but even a simple register system could be used effectively.

The follow-up system needs to ensure the full schedule of ANC visits, but also postnatal visits, which currently occur rarely although the majority of maternal deaths take place after delivery, and most neonatal deaths are concentrated in the first few days of life.

Because many women stated that there was "no need" for ANC, including women experiencing pregnancy complications, a better understanding is needed of what the women believe are the causes and appropriate responses to these complications. Also, functioning and effective ANC services need to be readily accessible, and this may require strengthening lower-level facilities such as union health and family welfare centers (UHFWCs).

It is encouraging that many ANC clients received a wide range of checkups, at least at higher-level facilities. Better understanding is needed of what services are available and offered at lower levels, e.g., UHFWCs and satellite clinics, where a number of women go for ANC.

Only half of women making ANC visits receive the necessary information on the danger signs of pregnancy, and the appropriate response to such signs. This represents a serious missed opportunity to convey essential information that can prepare women for complications. This knowledge forms a necessary basis for birth planning in case of later complications. ANC service providers need to be trained to be more proactive in recommending that women plan for transportation and financial and family support in case they require EOC services in late pregnancy.

Rapid dissemination of this type of safe motherhood information can be carried out through the mass media. While not every detail can be conveyed in this way, contact can be made with the many pregnant women who are not currently utilizing ANC and related services. This approach has been very effective in motivating mothers to bring their children to the National Immunization Days, and could be effective in this context as well.

The persistent low levels of facility delivery are cause for concern. The HPSP target was 30 percent of deliveries by skilled attendant, but achievement was less than half that. Although there are signs that the selective referral of complicated deliveries is beginning to happen, numbers are still far below what is necessary to ensure proper management of all complicated pregnancies. Continued efforts to upgrade facilities to offer EOC services, especially below the district headquarters level, are required. This means more than the current one in ten upazila health complexes needs to offer at least basic EOC. It may be time to consider the advantages of upgrading UHFWCs for selected B-EOC services, especially because FWVs posted at UHFWCs are currently being trained in safe delivery.

While every effort is needed to increase facility-based deliveries, many women will continue to deliver at home for some time. Ways must be found to ensure that properly trained service providers are present in the home throughout labor, delivery, and the postnatal period so that referrals to appropriate facilities take place in a timely manner. The trained service provider is unlikely to be a qualified doctor in most cases, so a female with some midwifery training is required. If the OGSB approach of training FWAs and female HAs is followed, then a mechanism to increase training capacity is needed. Efforts are currently being made in that regard. The issue of how these trained community-level service providers will be posted and will actually function also needs to be determined.

Well over half the (surviving) women in the study experienced pregnancy complications. The majority of these complications were perceived as life threatening by the women themselves. The analysis of the three (or four) delays to receiving treatment for complications indicates that the major barriers or delays occur in the household, not in travel to the provider, or waiting time at the service provider. What is of concern is that many women recognized life-threatening complications but did not seek treatment. And among those who sought treatment, many sought it from inappropriate service providers. Further analysis of the data is necessary to understand the underlying reasons for these decisions. In addition, qualitative studies will be needed to throw light on what the women and the community understand as the causes and appropriate responses to these complications.

From a positive perspective, it should be noted that among women who sought treatment for complications, each of the individual delays did not appear to be great. If account is taken of the cumulative time spent in accessing inappropriate providers, and "healer shopping," sometimes without ever reaching an appropriate provider, then the contribution of the various delays to poor childbearing outcomes might be very different.

A related issue is that those women who did not seek treatment may have decided that the cost or time barriers were too great for them to travel to the service provider.

It is clear that fear of high costs, possibly crippling for the family, is a barrier to seeking treatment for certain complications, even at government facilities. More thought is needed regarding the provision

of some form of health card or health insurance scheme for safe delivery, to reassure families that high-level EOC treatment for severe complications will not force the family into poverty. These options have been discussed and piloted over many years, but have not been implemented at any scale. Meanwhile families could be more actively encouraged to maintain a savings program during pregnancies to create a contingency fund in case of need during pregnancy, during delivery, or after delivery.

Hemorrhage and eclampsia account for over half of maternal deaths. The responses to these conditions differ, but both require some facility-based intervention provided quickly and skillfully. For hemorrhage, steps could be taken during ANC visits to assist and encourage women to identify potential compatible blood donors from the community who agree to be available at the time of delivery. The response to eclampsia may be more varied, but the identification of the condition is the critical step, backed up by access to a facility with the capacity to perform C-sections if the usual interventions are ineffective. As maternal deaths from this condition are more common among younger women, information about eclampsia symptoms and danger signs should be conveyed during ANC visits for the first pregnancy.

It is encouraging that abortion-related deaths are relatively low. This may be due to a combination of widespread use of family planning to prevent unwanted pregnancies, and better quality MR services than the high-risk traditional approaches used in the past. Further strengthening of the national family planning program has the potential to reduce the substantial number of unwanted pregnancies, which contribute to the need for this service.

Further analysis of the survey data could provide an insight on which proxy indicators of maternal mortality would be the most useful predictors for monitoring future progress in the national safe motherhood program. In addition, alternative sources of information on maternal health could be drawn upon. Maternal death audits could be instituted in district hospitals, MCWCs, and even upazila health complexes. Because maternal deaths are relatively rare in any single facility, the most complicated cases, sometimes called “near misses,” could also be audited.

REFERENCES

Abou Zahr, C. 1998. Chapters 4 and 7. In *Health dimensions of sex and reproduction: The global burden of sexually transmitted diseases, HIV, maternal -conditions, perinatal disorders, and congenital anomalies*, ed. C.J.L. Murray and A.D. Lopez. Cambridge, Massachusetts: The Harvard School of Public Health.

Akhter, H.H., M.I. Chowdhury, and A. Sen. 1996. *A cross sectional study on maternal mortality in Bangladesh.* Dhaka, Bangladesh: BIRPERHT.

Akhter, H.H., M.H. Rahman, I. Mannan, M.E. Chowdhury, and A.K. Khan. 1995. *Review of performance of trained TBAs.* Bangladesh Institute of Research for Promotion of Essential and Reproductive Health and Technologies [BIRPERHT], BIRPERHT Publication No. 10, Technical Report No. 53. Dhaka, Bangladesh.

Allison, C. et al. 1999. *End of project evaluation report: Fourth Population and Health Project.* Dhaka, Bangladesh.

Atrash, H., S. Alexander, and C. Berg. 1995. Maternal mortality in developed countries: Not just a concern of the past. *Obstetrics and Gynecolgy* 86(4 Pt.2): 700-705.

Bhatia, J.C. and J. Cleland. 1996. Obstetric morbidity in South India: Results from a community survey. *Social Science and Medicine* 43(10): 1507-1516.

Bouvier-Colle, M. et al. 1991. Reasons for the underreporting of maternal mortality in France, as indicated by a survey of all deaths among women of reproductive age. *International Journal of Epidemiology* 20(3): 717-721.

Brass, W. 1975. *Methods for estimating fertility and mortality from limited and defective data.* Chapel Hill, North Carolina: University of North Carolina Press.

Carroli, G., J. Villar, G. Piaggio, D. Khan-Neelofur, M. Gulmezoglu, M. Mugford, P. Lumbiganon, U. Farnot, P. Bersgjo, and WHO Antenatal Care Trial Research Group. 2001a. WHO systematic review of randomized controlled trials of routine antenatal care. *Lancet* 357(9268): 1565-1570.

Carroli, G., C. Rooney, and J. Villar. 2001b. How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. *Paediatric and Perinatal Epidemiology* 15(Suppl. 1): 1-42.

Chowdhury, A.M.R., A. Mahbub, A.S. Chowdhury. 2002. *Skilled attendance at delivery in Bangladesh: An ethnographic study.* Dhaka, Bangladesh: BRAC RED.

Cleland, J. and S. Harlow. 2003. The value of the imperfect: The contribution of interview surveys to the study of gynaecological ill health. In *Reproductive tract infections and other gynaecological disorders*, ed. S.J. Jejeebhoy, M.A. Koenig, and C. Elias. Cambridge: Cambridge University Press. 283-321.

Fortney, J.A., and J.B. Smith. 1999. Measuring maternal morbidity. In *Safe motherhood initiatives: Critical Issues*, ed. M. Berer and T.K. Sundari Ravindran. Special issue of *Reproductive Health Matters*. 43-50.

Graham, W., W. Brass, and R. Snow. 1989. Indirect estimation of maternal mortality: The sisterhood method. *Studies in Family Planning* 20(3): 125-135.

Graham, W.J., J.S. Bell, and C.H.W. Bullough. 2001. Can skilled attendance at delivery reduce maternal mortality in developing countries? In *Studies in health services organization and policy.* 97-129.

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

Hill, K., C. AbouZahr, and T. Wardlaw. 2001. Estimates of maternal mortality for 1995. *Bulletin of the World Health Organization* 79(3): 182-193.

Huq, M.N. and J. Cleland. 1990. *Bangladesh Fertility Survey 1989: Main report*. Dhaka: National Institute of Population Research and Training (NIPORT).

Jejeebhoy, S.J., M.A. Koenig, and C. Elias (eds). 2003. *Reproductive tract infections and other gynaecological disorders*. Cambridge: Cambridge University Press.

Ministry of Health and Family Welfare (MOHFW) [Bangladesh]. 2001. *Bangladesh National Strategy for Maternal Health.* Dhaka, Bangladesh: Ministry of Health and Family Welfare.

Ministry of Health and Population Control (MHPC) [Bangladesh]. 1978. *Bangladesh Fertility Survey, 1975-1976: First report*. Dhaka: Government of the People's Republic of Bangladesh and the World Fertility Survey.

Mitra, S.N., M.N. Ali, S. Islam, A.R. Cross, and T. Saha. 1994. *Bangladesh Demographic and Health Survey, 1993-1994*. Calverton, Maryland and Dhaka, Bangladesh: National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International Inc.

Mitra, S.N., A. Al-Sabir, A.R. Cross, and K. Jamil. 1997. *Bangladesh Demographic and Health Survey, 1996-1997.* Calverton, Maryland and Dhaka, Bangladesh: National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International Inc.

Mitra, S.N., C. Lerman, and S. Islam. 1993. *Bangladesh Contraceptive Prevalence Survey - 1991: Final report*. Dhaka: Mitra and Associates.

National Institute of Population Research and Training (NIPORT), Mitra and Associates (MA), and ORC Macro. 2001. *Bangladesh Demographic and Health Survey, 1999-2000.* Dhaka, Bangladesh and Calverton, Maryland: National Institute of Population Research and Training, Mitra and Associates, and ORC Macro.

Quaiyum, M.A., S. Ahmed, A. Islam, and P.A. Khanum. 1999. *Strategies for ensuring referral and linkage for essential obstetric care: A review.* ICDDR,B Special Publication No. 95. Dhaka, Bangladesh: ICDDR,B: Centre for Health and Population Research.

Rutenberg, N. and J. Sullivan. 1991. Direct and indirect estimation of maternal mortality from the sisterhood method. In *Proceedings of the Demographic and Health Surveys World Conference, Washington, D.C., August 5-7, 1991,* Vol. 3. Columbia, Maryland: IRD/Macro International. 1669-1695.

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.

Shahidullah, M. 1995. The sisterhood method of estimating maternal mortality: The Matlab experience. *Studies in Family Planning* 26(2): 101-106.

Sloan, N. et al. 2001. The etiology of maternal mortality in developing countries: What do verbal autopsies tell us? *Bulletin of the World Health Organization* 79(9): 805-810.

Stanton, C., N. Abderrahim, and K. Hill. 2000. An assessment of DHS maternal mortality indicators. *Studies in Family Planning* 31(2): 11-125.

Stanton, C., et al. 2001. Every death counts: Measurement of maternal mortality via a census. *Bulletin of the World Health Organization* 79(7): 657-664.

Stecklov, G. 1995. Maternal mortality estimation: Separating pregnancy-related and non-pregnancy-related risks. *Studies in Family Planning* 26(1): 33-38.

Unified Management Information System (UMIS). 2003. *Voice of UMIS*. Issue 3, DGHS. Dhaka, Bangladesh.

United Nations. 2002. *Methods for estimating adult mortality.* Working paper prepared by the Population Division, Department of Economic and Social Affairs, ESA/P/WP.175. New York: United Nations.

United Nations Development Program (UNDP). 2003. *Human development report – Millennium development goals: A compact among nations to end human poverty.* New York: Oxford University Press.

United Nations Population Fund (UNFPA). 2003. *Achieving the millennium development goals: Population and reproductive health as critical determinants.* Population and Development Strategies No. 10. New York: United Nations Population Fund.

World Health Organization (WHO). 1992. *International statistical classification of diseases and related health problems.* Tenth revision. Geneva: WHO.

World Health Organization (WHO). 1996. *Revised 1990 estimates of maternal mortality: A new approach by WHO and UNICEF*. Geneva: World Health Organization.

World Health Organization (WHO), UNICEF, and UNFPA. 2001. *Maternal mortality in 1995: Estimates developed by WHO and UNICEF*. Geneva: World Health Organization.

TABLES

Appendix A

Table A.1 Household population by age, residence, and sex

Percent distribution of the de facto household population by five-year age groups, according to urban-rural residence and sex, Bangladesh 2001

	All urban			Metropolitan/town			Other urban			Rural			Total		
Age group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	11.7	11.6	11.7	11.1	11.1	11.1	12.5	12.2	12.3	13.4	12.6	13.0	13.0	12.4	12.7
5-9	12.0	11.3	11.6	11.1	10.5	10.8	13.0	12.3	12.7	13.7	13.1	13.4	13.4	12.8	13.1
10-14	12.8	13.1	13.0	12.3	12.9	12.6	13.5	13.3	13.4	13.7	13.5	13.6	13.6	13.4	13.5
15-19	10.6	13.3	11.9	10.6	13.5	12.0	10.6	13.0	11.8	10.2	12.3	11.3	10.3	12.5	11.4
20-24	8.1	10.7	9.4	8.6	11.6	10.1	7.4	9.6	8.5	6.9	9.3	8.1	7.1	9.5	8.3
25-29	7.8	8.3	8.0	8.4	8.9	8.7	7.0	7.5	7.3	6.6	7.5	7.1	6.8	7.6	7.2
30-34	7.5	7.5	7.5	8.3	7.8	8.0	6.6	7.2	6.9	6.2	6.7	6.4	6.4	6.8	6.6
35-39	7.1	6.2	6.6	7.6	6.5	7.1	6.4	5.7	6.1	6.3	5.5	5.9	6.5	5.6	6.0
40-44	5.9	4.9	5.4	5.9	4.9	5.4	5.8	4.9	5.3	5.2	4.5	4.8	5.3	4.5	4.9
45-49	4.7	3.4	4.0	4.8	3.5	4.1	4.5	3.3	3.9	4.2	3.3	3.8	4.3	3.4	3.8
50-54	3.4	2.3	2.9	3.6	2.2	2.9	3.2	2.4	2.8	3.2	2.7	2.9	3.2	2.6	2.9
55-59	2.2	2.2	2.2	2.1	1.9	2.0	2.3	2.5	2.4	2.2	2.7	2.5	2.2	2.6	2.4
60-64	2.0	2.0	2.0	2.1	1.8	1.9	2.0	2.3	2.1	2.5	2.4	2.4	2.4	2.3	2.4
65-69	1.3	1.1	1.2	1.2	0.9	1.0	1.5	1.2	1.4	1.6	1.3	1.4	1.6	1.2	1.4
70-74	1.4	1.0	1.2	1.1	0.9	1.0	1.8	1.2	1.5	2.0	1.1	1.5	1.9	1.1	1.5
75-79	0.5	0.4	0.5	0.5	0.3	0.4	0.6	0.4	0.5	0.8	0.4	0.6	0.8	0.4	0.6
80 +	0.9	0.8	0.9	0.7	0.7	0.7	1.1	1.0	1.1	1.3	1.0	1.1	1.2	0.9	1.1
Missing / Don't know	0.1	0.1	0.1	0.0	0.0	0.0	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	100.0	100.0	100.0	100.0	100.0	100.0
Number	46,847	47,464	94,311	25,681	25,888	51,569	21,166	21,576	42,742	202,555	205,516	408,074	249,402	252,979	502,385

Table A.2 Level of education by background characteristics

Percent distribution of ever-married women by highest level of education attended, according to background characteristics, Bangladesh 2001

Background characteristic	Level of education: No education	Primary incomplete	Primary complete	Secondary or more	Don't know	Total	Number	Median years
FEMALE								
Age								
6-9	16.0	82.8	0.4	0.8	0.0	100.0	25,714	0.1
10-14	9.4	49.3	7.6	33.6	0.0	100.0	33,942	3.4
15-19	17.3	16.9	11.0	54.7	0.1	100.0	31,639	5.2
20-24	31.7	16.7	10.0	41.5	0.1	100.0	24,157	4.1
25-29	45.6	17.1	9.2	28.0	0.1	100.0	19,346	1.1
30-34	52.3	17.7	8.9	21.0	0.1	100.0	17,326	0.0
35-39	56.2	17.6	8.9	17.2	0.1	100.0	14,280	0.0
40-44	60.2	16.4	8.8	14.5	0.1	100.0	11,507	0.0
45-49	62.8	16.5	9.2	11.4	0.1	100.0	8,502	0.0
50-54	71.5	14.5	7.1	6.7	0.2	100.0	6,689	0.0
55-59	76.5	12.2	6.4	4.8	0.1	100.0	6,668	0.0
60-64	82.4	9.7	4.7	3.0	0.1	100.0	5,840	0.0
65+	86.7	7.6	3.2	2.3	0.1	100.0	9,209	0.0
Residence								
All urban	30.4	25.4	7.4	36.8	0.1	100.0	40,861	3.1
Metropolitan/town	26.9	23.1	7.4	42.5	0.1	100.0	22,484	4.0
Other urban	34.6	28.2	7.3	29.8	0.1	100.0	18,377	1.9
Rural	39.6	30.1	7.7	22.5	0.1	100.0	173,974	0.9
Division								
Barisal	28.8	34.1	12.4	24.7	0.0	100.0	14,833	2.3
Chittagong	36.0	27.7	8.3	28.0	0.0	100.0	42,577	1.8
Dhaka	37.9	29.4	6.8	25.7	0.1	100.0	72,390	1.1
Khulna	33.5	31.8	6.4	28.2	0.1	100.0	23,525	1.8
Rajshahi	42.4	27.6	6.9	23.0	0.0	100.0	47,825	0.6
Sylhet	45.1	27.5	9.7	17.5	0.2	100.0	13,684	0.0
Wealth quintile								
Lowest	60.4	30.3	4.3	4.9	0.1	100.0	41,704	0.0
Second	47.1	34.4	6.8	11.7	0.1	100.0	41,946	0.0
Middle	37.2	32.6	8.8	21.3	0.1	100.0	42,504	1.2
Fourth	27.5	28.2	9.9	34.4	0.1	100.0	43,800	3.3
Highest	19.0	21.0	8.3	51.6	0.1	100.0	44,881	4.9
Total	37.9	29.2	7.7	25.3	0.1	100.0	214,835	1.2
MALE								
Age								
6-9	18.1	80.9	0.4	0.6	0.0	100.0	26,459	0.1
10-14	12.9	53.3	7.7	26.0	0.1	100.0	33,837	2.9
15-19	16.7	19.7	10.5	53.0	0.2	100.0	25,643	5.0
20-24	22.4	15.8	10.4	51.1	0.2	100.0	17,765	4.9
25-29	31.9	15.4	9.3	43.0	0.4	100.0	17,025	4.2
30-34	37.2	14.7	8.2	39.5	0.4	100.0	16,066	3.5
35-39	41.1	15.7	8.0	34.8	0.4	100.0	16,089	2.3
40-44	42.6	15.1	8.4	33.4	0.5	100.0	13,259	2.0
45-49	40.7	15.1	8.0	35.8	0.4	100.0	10,758	2.6
50-54	44.1	14.9	8.2	32.2	0.6	100.0	8,040	1.7
55-59	42.6	16.2	9.1	31.5	0.6	100.0	5,422	1.9
60-64	50.3	15.6	8.9	24.7	0.6	100.0	6,045	0.0
65+	51.6	17.4	9.3	21.2	0.5	100.0	13,452	0.0
Residence								
All urban	21.0	25.4	7.0	46.2	0.4	100.0	40,154	4.4
Metropolitan/town	17.4	22.6	6.7	52.8	0.5	100.0	22,212	5.2
Other urban	25.6	28.9	7.3	38.0	0.3	100.0	17,942	3.3
Rural	31.1	31.6	8.0	29.0	0.3	100.0	169,727	2.0
Division								
Barisal	23.0	34.1	9.7	33.2	0.0	100.0	14,467	3.0
Chittagong	26.5	31.4	8.3	33.7	0.0	100.0	39,517	2.9
Dhaka	30.0	29.9	7.1	32.5	0.5	100.0	70,786	2.2
Khulna	26.0	31.5	6.2	35.8	0.5	100.0	23,656	2.9
Rajshahi	32.6	28.2	7.8	31.3	0.0	100.0	48,030	2.2
Sylhet	33.2	31.7	10.9	23.7	0.5	100.0	13,426	1.5
Wealth quintile								
Lowest	53.6	33.9	5.3	6.8	0.4	100.0	38,918	0.0
Second	40.0	36.3	7.9	15.5	0.2	100.0	40,944	0.3
Middle	27.9	34.2	9.5	28.2	0.3	100.0	42,772	2.3
Fourth	18.0	28.7	9.7	43.5	0.2	100.0	43,350	4.3
Highest	9.9	19.8	6.4	63.6	0.3	100.0	43,898	7.3
Total	29.2	30.4	7.8	32.3	0.3	100.0	209,882	2.4

Note: Educational attainment is missing for 16 females and 22 males.

DATA QUALITY

Appendix B

DATA QUALITY OF HOUSEHOLD DEATHS

Questions on household deaths suffer from a number of potential errors. First, deaths may be omitted. One type of death—a death in a household consisting of one person—will inevitably be omitted given the household-based data collection format. Deaths may also be omitted by misperception of the reference period: For example, a death that actually occurred in June 1998 may be thought to have occurred late in 1997 and, although reported, is thus excluded from the reference period. Another potential source of error arises from age misreporting: if age at death is systematically misreported, estimates of mortality rates based on age at death will be biased. For example, if the age at death of a person who died at age 70 is reported as 80, death rates will be underestimated. Evaluation of data is thus essential. Recent experience with this type of question in censuses and large surveys has, however, been encouraging regarding data quality.

There are a number of approaches to data evaluation. One set of approaches evaluates the completeness of death reporting relative to population recording by comparing the age pattern of deaths to the age pattern of the population. The most flexible of these approaches use age distributions from two or more sources (e.g., successive censuses or large surveys) to allow for true irregularities in the age distribution (United Nations, 2002). However, the age distribution from the 2001 Bangladesh Census is not yet available, so we have been unable to conduct this check. An alternative, that assumes a demographically stable (smooth) population age distribution, compares the age distribution of deaths to the age distribution of the population from the same source (Brass, 1975). Figures B.1 and B.2 show these comparisons for the BMMS for males and females. A straight line relationship with a slope of 1.0 would indicate equivalence between the death and population reporting; the observed points in Figures B.1 and B.2 do not lie close to a straight line, and the slope of the relationship is less than 1.0, indicating that deaths are more completely recorded than the population. However, because the age distribution of Bangladesh is not stable, this conclusion is not reliable.

Another approach to evaluation is to compare an observed series of age-specific death rates to a "gold standard" believed to be essentially correct. There is no national gold standard for adult mortality in Bangladesh, but data are available from the Health and Demographic Surveillance System (HDSS) in Matlab Thana, an intensive demographic surveillance system that has been in operation for over 30 years and has a reputation for excellent data. Mortality rates from the BMMS have been calculated by five-year age groups (<1, 1-4, <5) and sex, based on deaths of usual household members in the three years before the survey. The rates are calculated as events (deaths) divided by exposure time, obtained from the age distribution of the living population, plus the exposure time prior to death of the deceased. These rates are shown in Table 3.9 (chapter 3), and are compared on a log scale in Figures B.3 and B.4, with the corresponding rates for males and females from the HDSS in Matlab, averaged over the years 1998 to 2000. Although the rates from the BMMS show clear effects of age heaping (in the form of a saw-tooth pattern by age), particularly for males and after age 60, overall levels and patterns of mortality are similar, particularly for males. For females, the BMMS rates tend to be somewhat higher than the Matlab rates, perhaps because of the reproductive health interventions implemented in the Matlab area over the last 25 years. In terms of summary measures, the probability of dying between the age of 15 and 60 (${}_{45}q_{15}$) for males is 0.18 from the BMMS, compared with 0.19 from the HDSS. For females, the probability of dying is 0.15 compared with 0.11 from the HDSS. The graphical comparison suggests digital preference in the BMMS age at death reporting; further, the tendency for the BMMS rates to rise more slowly than the

Figure B.1 Brass "Growth Balance" Analysis of Completeness of Male Death Reporting in the BMMS

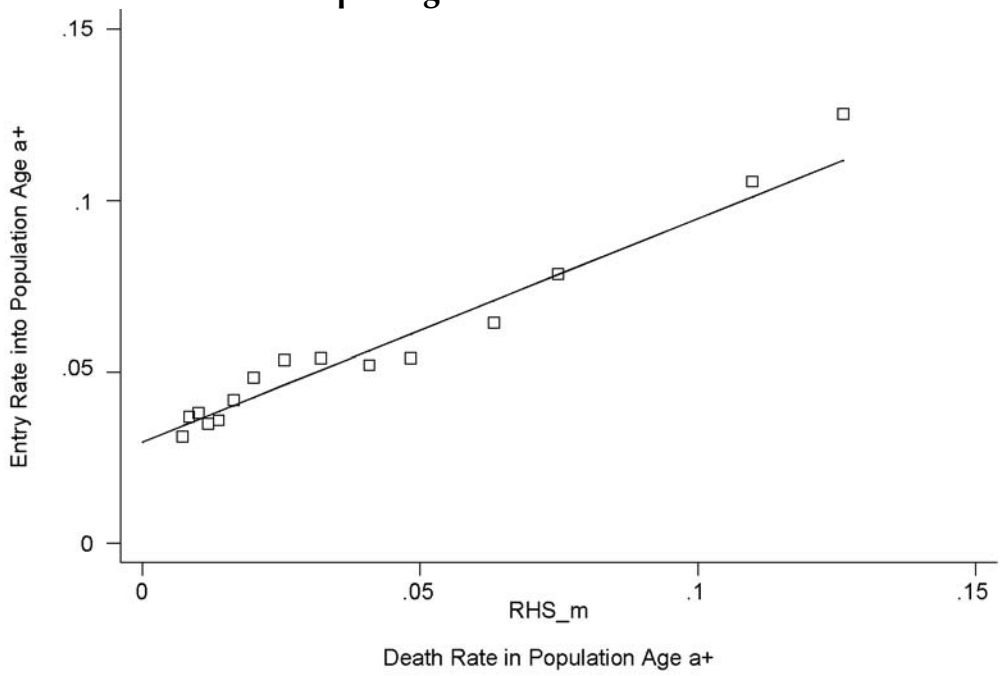


Figure B.2 Brass "Growth Balance" Analysis of Completeness of Female Death Reporting in the BMMS

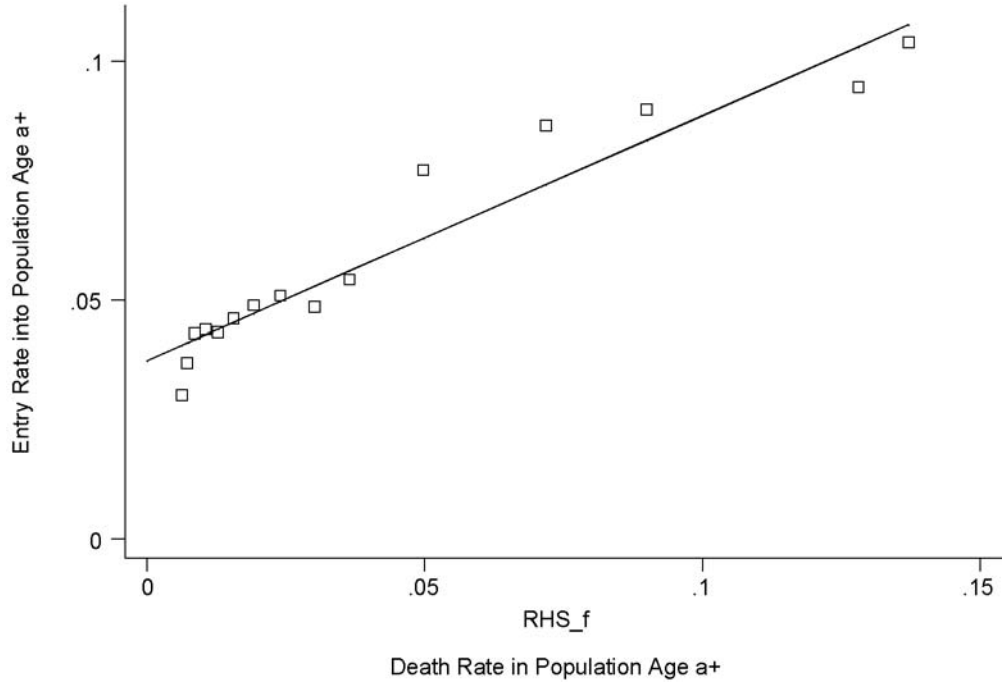


Figure B.3 Male Age-Specific Mortality Rates: BMMS and Matlab HDSS

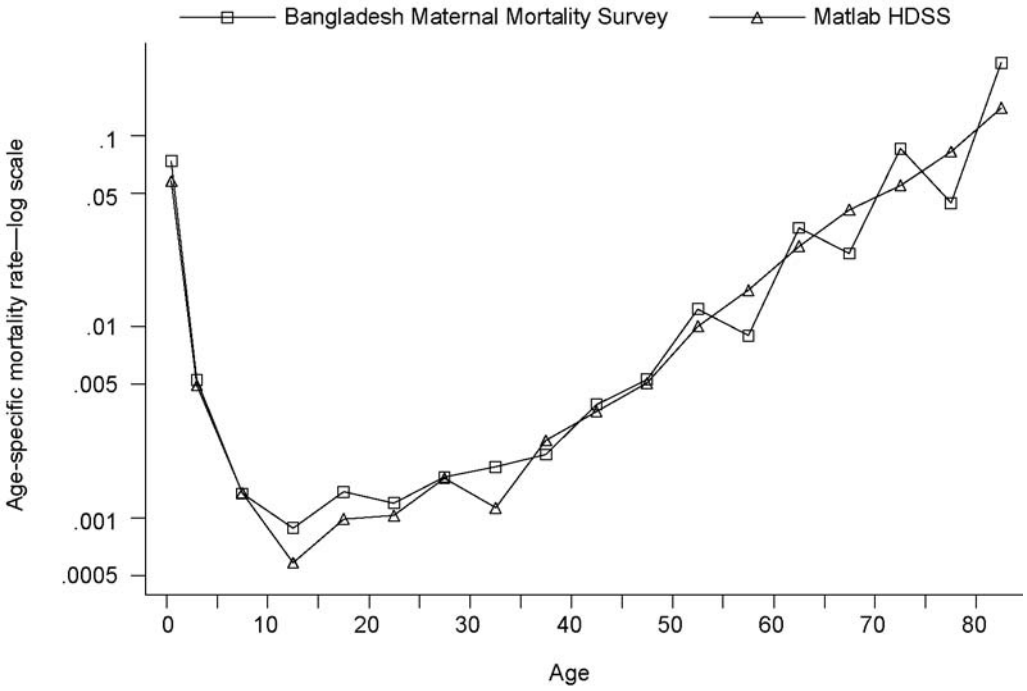
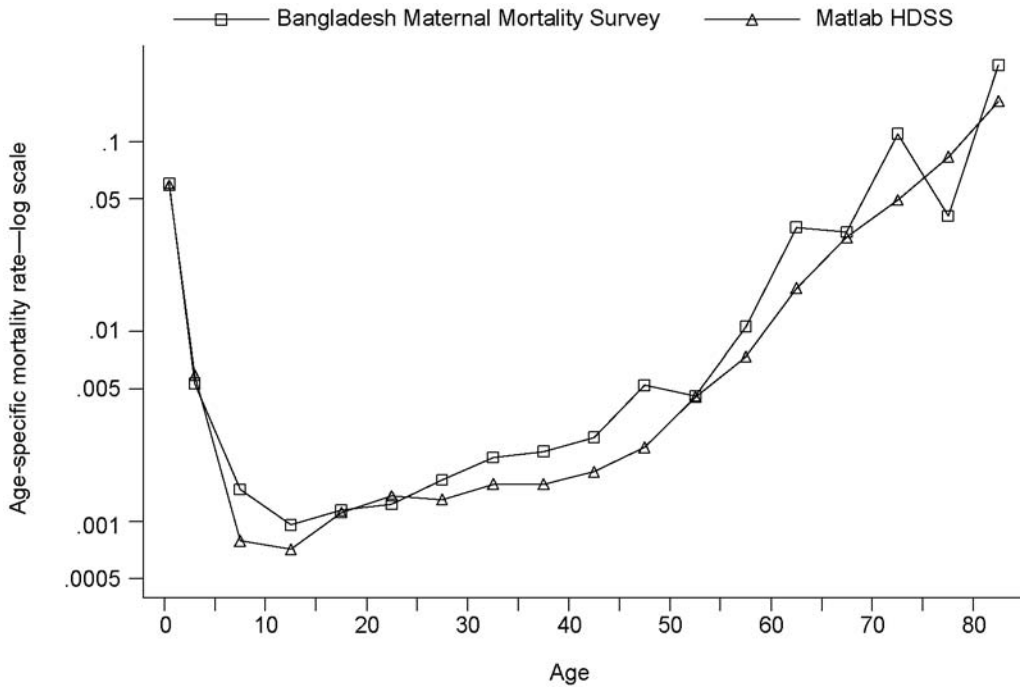


Figure B.4 Female Age-Specific Mortality Rates: BMMS and Matlab HDSS



HDSS rates after age 60 may suggest some exaggeration of age. However, the similarity of BMMS rates to HDSS rates (for males) or substantially higher BMMS rates than HDSS rates (for females) suggest no major problems of coverage in BMMS deaths. Of course, it must be recognized that the Matlab data come from one small part of the country and may not be representative, but it is reassuring that the BMMS levels are broadly consistent with the only available "gold standard."

Another consistency check is to compare childhood mortality estimates from household deaths with the estimates from birth histories reported in Chapter 6. The infant mortality rate (IMR) per 1,000 live births estimated from the household deaths (for the period 1998-2001) is 70 for males and 58 for females; the birth history estimates for the five years before the survey are 75 and 67, respectively. The probability of dying for children age 1-4 (${}_4q_1$) from the BMMS is 21 per 1,000 for both males and females, compared with 23 for males and 29 for females from birth histories for the five years preceding the survey. Thus, infant and child mortality estimates from household deaths for the three years preceding the survey are lower than the estimates from the birth histories for the five years preceding the survey. However, birth history estimates for the two-year period shown in Table 6.8 (chapter 6) indicate a very rapid decline in infant and child mortality immediately before the survey: infant and child mortality rates for the two years before the survey are 67 and 19, respectively, the latter value being lower than the household deaths estimate.

In summary, the BMMS data on household deaths appear to be of good quality. The only formal demographic analysis available indicates, if anything, that the deaths are overreported relative to population, but this analysis makes the inappropriate assumption of population stability. Comparisons of the BMMS mortality estimates with Matlab data are reassuring in terms of data quality, as are internal comparisons with child mortality estimates from the birth histories.

DATA QUALITY OF SIBLING HISTORIES

Data on sibling deaths suffer from many of the same potential errors as data on household deaths. First, deaths may be omitted; the equivalent to omission of deaths of persons in single-person households is the deaths of entire sibships. Omission may also occur as a result of the respondent being out of touch with family members. With sibling deaths, there is no omission as a result of misperception of the reference period used, because all sibling deaths are reported. However, because the age range of estimation is limited to persons under 50 years, an age at death reporting error that shifts a death to outside the age range (or from outside to inside) will bias mortality estimates. In addition, estimates of mortality for particular periods preceding the survey can be distorted by misreporting the length of time in the past the death occurred. As a result, both levels and age patterns of mortality can be distorted by misreporting age at death. Recent experience with sibling histories in the DHS surveys suggests systematic underreporting of mortality, particularly for the more distant past (Stanton et al., 2000).

No formal demographic evaluation techniques have been developed for mortality estimates from sibling histories. Therefore, sibling estimates of mortality are compared with those from other sources, specifically from the Matlab HDSS. Figures B.5 and B.6 compare the male and female age-specific rates from sibling histories for the period 1998-2001 to the Matlab rates for 1998-2000. Two summary measures for each sex can also be compared: the age-specific under-five mortality rate and the probability of dying between age 15 and 50 (${}_{35}q_{15}$). For males, the age-specific under-five mortality rate from the BMMS sibling histories is 12.4 per 1,000, compared with 16.2 from the HDSS; for females, the corresponding values are 14.0 from the BMMS and 16.8 from the HDSS. The sibling history estimates average about 20 percent lower than the HDSS values. Agreement is much closer for ${}_{35}q_{15}$: for males, the BMMS sibling history value is 0.073, compared with 0.077 from the HDSS, and for females, the BMMS value is also 0.073, compared with 0.055 from the HDSS. Thus, for males, the sibling estimate of adult mortality is only marginally below the HDSS value, and for females it is substantially higher. Interestingly, household deaths produce similar differentials, with higher adult mortality estimates for females

and slightly lower estimates for males relative to the HDSS estimates. This finding is again consistent with the conclusion that male adult mortality in the Matlab area may be very similar to the national level but that female adult mortality in the Matlab area appears to be considerably below the national average.

To the extent that it is possible to evaluate the quality of the sibling mortality data, it appears that the data are of good quality, at least after childhood.

Figure B.5 Male Age-Specific Mortality Rates: BMMS Sibling Histories and Matlab HDSS

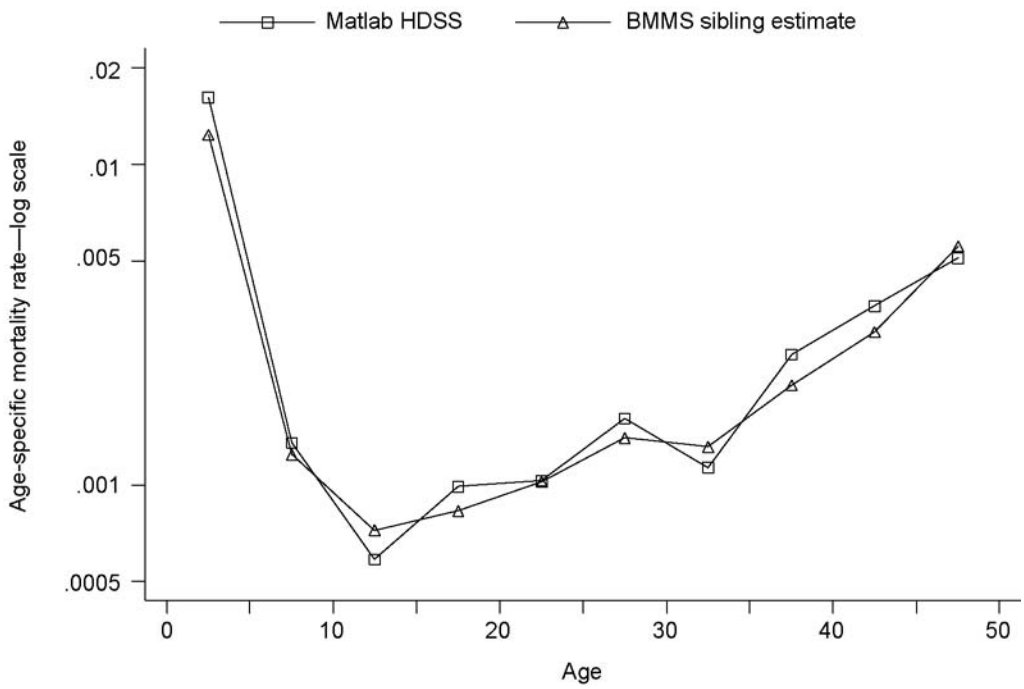
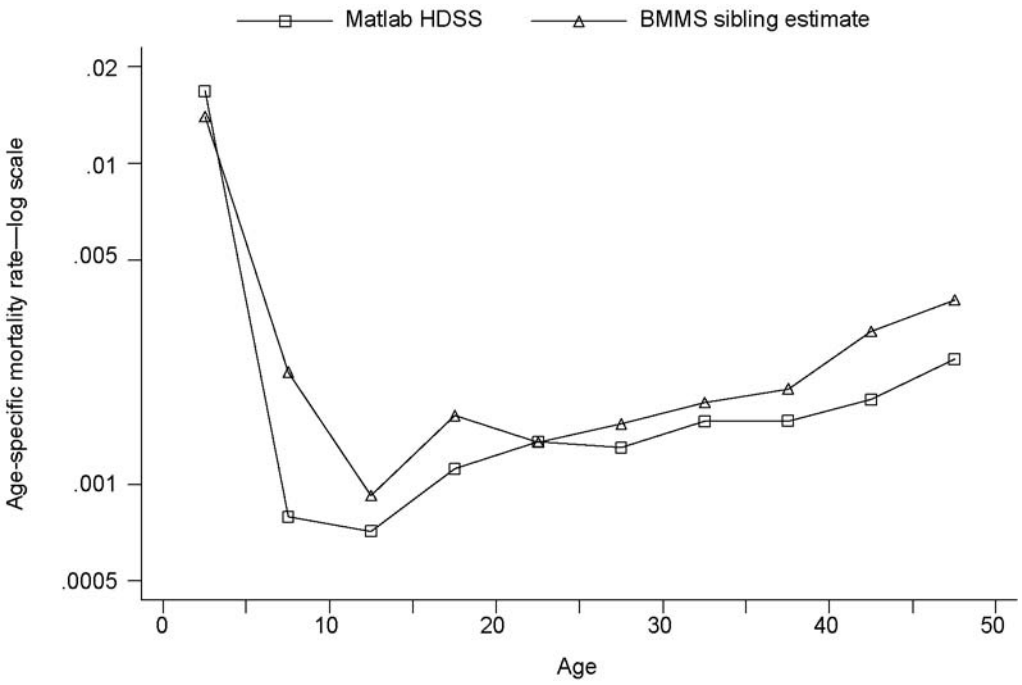


Figure B.6 Female Age-Specific Mortality Rates: BMMS Sibling Histories and Matlab HDSS



ASSESSMENT OF DATA QUALITY FOR CHILDHOOD MORTALITY

Appendix **C**

The quality of mortality estimates calculated from retrospective birth histories depends on the completeness and accuracy with which births and deaths are reported and recorded. The most potentially serious data quality problem is the selective omission from the birth histories of births that did not survive, which will lead to underestimation of mortality rates. Other potential problems include displacement of birth dates, which may cause a distortion of mortality trends, and misreporting of the age at death, which may distort the age pattern of mortality. When selective omission of childhood deaths occurs, it is usually most severe for deaths that occur very early in infancy. If early neonatal deaths were selectively underreported, the result would be an unusually low ratio of deaths under seven days to all neonatal deaths and an unusually low ratio of neonatal to infant mortality. Underreporting of early infant deaths is more commonly observed as the time interval between the birth and the survey increases; hence, it is useful to examine the ratios over time. Inspection of these ratios (shown in Tables C.5 and C.6) does not indicate that significant numbers of early infant deaths have been omitted in the 2001 BMMS survey. First, the proportion of neonatal deaths that occur in the first week of life is high (64 percent) and falls in the range of 60 to 70 percent over the 20 years before the survey. Second, the proportion of infant deaths that occur during the first month of life is entirely plausible (65 percent) and is stable over the 20 years before the survey (varying between 63 and 68 percent). This inspection of the mortality data reveals no evidence of selective underreporting or age at death misreporting that would significantly compromise the quality of the BMMS rates of childhood mortality.

However, another problem inherent in most retrospective surveys is heaping of age at death on certain digits (e.g., 6, 12, and 18 months). If the net result of misreporting is the transfer of deaths between age segments for which the rates are calculated, misreporting will bias estimates of the age pattern of mortality. For instance, an overestimate of child mortality relative to infant mortality will result if children dying during the first year of life are reported as having died at age one or older. Thus, heaping at 12 months can bias the mortality estimates because a certain fraction of these deaths, which are reported to have occurred after infancy (i.e., at age 12-23 months), may have actually occurred during infancy (i.e., at age 0-11 months). In such cases, heaping would bias infant mortality (${}_1q_0$) downward and child mortality (${}_4q_1$) upward.

In the 2001 BMMS survey, there appears to be a preference for reporting age at death at 3 days and at 7 days (Table C.5). An examination of the distribution of deaths under age two during the 15 years preceding the survey by month of death (Table C.6) indicates a slight heaping of deaths at 6 months and substantial heaping at 12 and 18 months of age. Heaping on 12 months is found despite the strong emphasis on this problem during the training of interviewers for BMMS fieldwork.[1] This could mean that the infant mortality rates are somewhat underestimated and childhood mortality rates are somewhat overestimated. However, the digit preference will not alter the under-five mortality rate.

It is seldom possible to establish mortality levels with confidence for a period of more than 15 years before a survey. Even within the recent 15-year period considered here, apparent trends in mortality rates should be interpreted with caution for several reasons. First, there may be differences in the completeness of death reporting related to the length of time before the survey. Second, the accuracy of reports of age at death and of date of birth may deteriorate with time. Third, sampling variability of mortality rates tends to be high, especially for groups with relatively few births. Fourth, mortality rates are truncated as they go back in time because women currently age 50 or older who were bearing children during

[1] Interviewers were trained to probe for the exact number of months lived by the child if the age at death was reported as "one year."

earlier periods were not included in the survey. This truncation affects mortality trends, in particular. For example, for the period 10-14 years before the survey, the rates do not include any births for women age 40-49 since these women were over age 50 at the time of the survey and not eligible to be interviewed. Since these excluded births to older women were likely to be at a somewhat greater risk of dying than were births to younger women, the mortality rates for the period may be slightly underestimated. Estimates for more recent periods are less affected by truncation bias since fewer older women are excluded. The extent of this bias depends both on the proportion of births omitted and the differentials in child mortality by age of mother.

Table C.1 Household age distribution

Single-year age distribution of the de facto household population by sex (weighted), Bangladesh 2001

	Males		Females	
Age	Number	Percent	Number	Percent
0	6,736	2.7	6,428	2.5
1	6,212	2.5	5,948	2.4
2	6,509	2.6	6,396	2.5
3	6,373	2.6	6,019	2.4
4	6,715	2.7	6,592	2.6
5	6,847	2.7	6,650	2.6
6	6,223	2.5	5,752	2.3
7	7,216	2.9	7,188	2.8
8	6,963	2.8	7,011	2.8
9	6,056	2.4	5,764	2.3
10	8,211	3.3	7,611	3.0
11	5,362	2.2	5,300	2.1
12	8,320	3.3	7,762	3.1
13	5,954	2.4	6,336	2.5
14	5,990	2.4	6,933	2.7
15	6,359	2.5	7,024	2.8
16	5,657	2.3	7,035	2.8
17	4,269	1.7	5,786	2.3
18	6,264	2.5	7,233	2.9
19	3,093	1.2	4,561	1.8
20	6,103	2.4	6,867	2.7
21	2,480	1.0	4,090	1.6
22	4,310	1.7	5,121	2.0
23	2,482	1.0	4,129	1.6
24	2,390	1.0	3,950	1.6
25	6,640	2.7	5,301	2.1
26	2,892	1.2	3,689	1.5
27	2,556	1.0	3,367	1.3
28	3,419	1.4	3,737	1.5
29	1,518	0.6	3,253	1.3
30	8,817	3.5	5,421	2.1
31	1,437	0.6	3,150	1.2
32	3,326	1.3	3,415	1.3
33	1,442	0.6	2,808	1.1
34	1,045	0.4	2,532	1.0
35	9,645	3.9	4,442	1.8
36	1,607	0.6	2,702	1.1
37	1,398	0.6	2,473	1.0
38	2,840	1.1	2,776	1.1
39	599	0.2	1,887	0.7
40	9,629	3.9	3,704	1.5
41	400	0.2	1,679	0.7
42	2,255	0.9	2,326	0.9
43	569	0.2	2,082	0.8
44	407	0.2	1,717	0.7
45	7,791	3.1	2,644	1.0
46	677	0.3	1,556	0.6
47	600	0.2	1,468	0.6
48	1,359	0.5	1,538	0.6
49	331	0.1	1,296	0.5
50	6,361	2.6	1,189	0.5
51	228	0.1	1,098	0.4
52	957	0.4	1,880	0.7
53	280	0.1	1,412	0.6
54	213	0.1	1,110	0.4
55	3,990	1.6	3,338	1.3
56	411	0.2	1,021	0.4
57	334	0.1	821	0.3
58	528	0.2	930	0.4
59	159	0.1	559	0.2
60	5,123	2.1	4,132	1.6
61	122	0.0	444	0.2
62	521	0.2	622	0.2
63	162	0.1	355	0.1
64	118	0.0	286	0.1
65	3,187	1.3	2,197	0.9
66	143	0.1	254	0.1
67	152	0.1	208	0.1
68	314	0.1	274	0.1
69	90	0.0	142	0.1
70+	9,566	3.8	6,133	2.4
Don't know/missing	151	0.1	128	0.1
Total	249,402	100.0	252,979	100.0

Note: The de facto population includes all residents and nonresidents who slept in the household the night before the interview.

Table C.2 Age distribution of eligible and interviewed women

De facto household population of women age 10-54, interviewed women aged 13-49, and percentage of eligible women who were interviewed (weighted), by five-year age groups, Bangladesh 2001

Age group	Household population of women age 13-54	Ever-married women age 13-54	Interviewed women age 13-49		Percentage of eligible women interviewed
			Number	Percent	
10-14	13,269	1,526	1,484	1.4	97.2
15-19	31,639	15,096	14,708	14.2	97.4
20-24	24,157	20,084	19,566	18.9	97.4
25-29	19,346	18,560	18,054	17.4	97.3
30-34	17,326	17,127	16,742	16.2	97.8
25-39	14,280	14,220	13,774	13.3	96.9
40-44	11,507	11,478	11,108	10.7	96.8
45-49	8,502	8,486	8,183	7.9	96.4
50-54	6,689	6,662	na	na	na
13-49	140,027	106,577	103,620	100.0	97.2

Note: The de facto population includes all residents and nonresidents who stayed in the household the night before 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 missing information for selected demographic and health questions (weighted), Bangladesh 2001

Subject	Reference group	Percentage of reference group with missing information	Number of cases
Birth date	Birth in last 15 years		
Month only		0.31	204,593
Month and year		0.01	204,593
Age at death	Deaths to births in last 15 years	0.23	23,954
Respondent's education	All respondents	0.03	103,796

Table C.4 Births by calendar years

Distribution of births by calendar years since birth for living, dead, and all children, according to completeness of birth dates, sex ratio at birth, and ratio of births by calendar year (weighted), Bangladesh 2001

	Number of births			Percentage with complete birth date[1]			Sex ratio at birth[2]			Calendar year ratio[3]		
Year	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total	Living	Dead	Total
2001	3,213	160	3,374	100.0	100.0	100.0	102.9	136.6	104.3	na	na	na
2000	13,008	885	13,894	100.0	99.9	100.0	103.2	133.4	104.9	na	na	na
1999	11,948	869	12,817	100.0	99.9	100.0	108.0	110.1	108.1	93.6	90.2	93.3
1998	12,526	1,041	13,567	100.0	100.0	100.0	101.0	113.8	101.9	105.2	103.3	105.0
1997	11,869	1,147	13,017	100.0	100.0	100.0	105.3	111.4	105.8	92.5	88.4	92.1
1996	13,139	1,555	14,695	99.8	99.4	99.7	103.7	104.3	103.8	108.3	114.3	108.9
1995	12,402	1,573	13,975	99.8	99.2	99.7	103.1	108.3	103.7	98.8	98.3	98.7
1994	11,966	1,647	13,613	99.7	99.3	99.6	105.2	108.4	105.6	93.4	100.5	94.2
1993	13,220	1,704	14,924	99.6	98.8	99.5	99.3	109.7	100.4	109.6	98.5	108.2
1992	12,150	1,813	13,963	99.7	99.1	99.6	102.7	108.8	103.5	97.8	101.9	98.3
1997-2001	52,565	4,103	56,668	100.0	100.0	100.0	104.2	117.0	105.1	na	na	na
1992-1996	62,877	8,292	71,169	99.7	99.1	99.7	102.7	108.0	103.3	na	na	na
1987-1991	57,717	9,953	67,670	99.6	98.7	99.5	105.6	104.5	105.4	na	na	na
1982-1986	44,894	10,467	55,362	99.4	98.5	99.2	103.9	103.4	103.8	na	na	na
< 1982	50,284	15,488	65,772	99.2	97.8	98.9	110.2	110.3	110.2	na	na	na
All	268,337	48,304	316,641	99.6	98.5	99.4	105.2	107.7	105.6	na	na	na

[1] Both year and month of birth given
[2] $(B_m/B_f)*100$, where B_m and B_f are the numbers of male and female births, respectively
[3] $[2B_x/(B_{x-1}+B_{x+1})]*100$, where B_x is the number births in calendar year x
na = Not applicable

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 five year periods of birth preceding the survey (weighted), Bangladesh 2001

Age at death (days)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1	814	949	1,005	828	3,595
1	531	643	594	487	2,254
2	156	229	214	170	768
3	333	398	370	298	1,400
4	111	146	165	147	568
5	126	206	227	241	800
6	98	121	227	218	663
7	162	263	399	453	1,277
8	76	102	178	141	496
9	57	96	117	115	385
10	63	65	81	79	288
11	32	52	66	60	212
12	57	92	95	77	322
13	45	58	72	49	224
14	42	60	89	74	266
15	76	115	131	111	433
16	21	36	20	34	110
17	36	35	47	33	151
18	37	41	56	79	214
19	26	25	28	28	106
20	36	41	60	50	187
21	34	66	65	66	232
22	35	47	47	43	172
23	15	19	16	9	59
24	18	15	22	10	65
25	34	41	30	30	135
26	10	9	12	11	42
27	6	12	8	10	37
28	13	21	17	10	61
29	11	16	21	18	67
30	5	15	10	7	37
Missing	1	0	2	1	4
Total 0-30	3,118	4,034	4,491	3,985	15,628
Percent early neonatal[1]	70	67	62	60	64
Percent early neonatal	67	65	62	59	63

[1] 0-6 days/0-30 days

Table C.6 Reporting of age at death in months

Distribution of reported deaths under one month of age by age at death in months and the percentage of neonatal deaths reported to occur under one month, for five-year periods of birth preceding the survey, Bangladesh 2001

Age at death (months)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1[1]	3,119	4,034	4,493	3,986	15,632
1	367	537	560	551	2,015
2	183	292	267	265	1,006
3	244	354	368	377	1,343
4	139	136	159	154	588
5	121	160	168	170	619
6	100	213	267	270	849
7	78	148	156	149	530
8	75	111	130	108	425
9	64	112	141	132	450
10	32	69	72	74	247
11	33	66	57	71	227
12	164	321	406	438	1,329
13	23	41	35	29	129
14	16	23	27	38	104
15	16	40	50	41	146
16	19	22	43	27	110
17	18	32	26	27	104
18	67	210	223	292	792
19	9	5	19	21	54
20	11	18	23	16	68
21	6	17	15	10	48
22	9	18	12	14	52
23	6	4	3	12	26
Missing	0	0	1	0	1
1 Year	0	0	0	3	3
Total 0-11	4,554	6,233	6,837	6,308	23,932
Percent neonatal[2]	68	65	66	63	65
Total 0-11	2,494	3,527	3,780	3,448	13,250
Percent neonatal	68	64	66	63	65

[1] <1 includes deaths under one month reported in days
[2] Percent neonatal = under one month/under one year

SAMPLE IMPLEMENTATION

Appendix ***D***

Table D.1 Sample implementation

Percent distribution of households and eligible women in the sample by results of the interview, and household, eligible women and overall response rates, according to residence and dividion, Bangladesh 2001

Result of interview and response rate	Residence				Division						
	Urban	Metro-politan/ town	Other urban	Rural	Barisal	Chitta-gong	Dhaka	Khulna	Rajshahi	Sylhet	Total
Selected households											
Completed (C)	94.3	93.2	95.6	95.3	92.1	93.1	96.7	97.4	93.8	96.6	95.1
Household present but no competent respondent at home (HP)	1.0	1.3	0.7	0.9	1.5	1.5	0.2	0.2	1.8	0.3	0.9
Postponed (P)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (R)	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Dwelling not found (DNF)	0.2	0.3	0.1	0.1	0.3	0.4	0.0	0.0	0.2	0.1	0.2
Household absent (HA)	2.2	2.5	1.9	2.3	4.1	3.2	1.2	1.3	3.0	1.2	2.3
Dwelling vacant/address not a dwelling (DV)	1.7	2.1	1.3	1.0	1.5	1.2	1.2	0.8	0.9	1.4	1.1
Dwelling destroy (DD)	0.3	0.4	0.3	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2
Other (O)	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of sampled households	17,294	9,169	8,125	87,029	10,948	19,121	27,086	16,380	20,176	10,612	104,323
Household response rate (HRR)	98.6	98.2	99.1	98.9	98.0	98.0	99.6	99.7	97.9	99.5	98.8
Eligible women											
Completed (EWC)	96.6	95.7	97.6	97.3	96.1	95.7	98.1	98.3	96.9	97.3	97.2
Not at home (EWNH)	3.0	3.9	2.0	2.3	3.5	3.9	1.5	1.4	2.8	2.1	2.4
Postponed (EWP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Refused (EWR)	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Partly completed (EWPC)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incapacitated (EWI)	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3
Other (EWO)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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
Number of women	17,943	9,502	8,441	88,846	10,615	19,473	28,100	17,370	19,920	11,311	106,789
Eligible women response rate (EWRR)	96.6	95.7	97.6	97.3	96.1	95.7	98.1	98.3	96.9	97.3	97.2
Overall response rate (ORR)	95.2	94.0	96.7	96.2	94.2	93.7	97.7	98.1	94.9	96.8	96.1

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

$$\frac{100 \times C}{C + HP + R + DNF}$$

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

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

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

$$ORR = HRR * EWRR/100$$

SAMPLING ERRORS

Appendix E

Table E.1 List of selected variables for sampling errors, Bangladesh 2001

Variable	Description	Base population
No education	Proportion	Ever-married women 13-49
With secondary education or higher	Proportion	Ever-married women 13-49
Currently married	Proportion	Ever-married women 13-49
Children ever born	Mean	Currently married women 15-49
Children surviving	Mean	Currently married women 15-49
Currently using any method	Proportion	Currently married women 13-49
Currently using a modern method	Proportion	Currently married women 13-49
Mothers received ANC from trained personnel	Proportion	Live births and stillbirths in the past 3 years
Mothers received medical care at birth	Proportion	Live births and stillbirths in the past 3 years
Mothers received PNC from trained personnel	Proportion	Live births and stillbirths in the past 3 years
One or more complications during pregnancy, delivery or after delivery	Proportion	Live births and stillbirths in the past 3 years
Total fertility rate (3 years)	Rate	Women-years of exposure to childbearing
Neonatal mortality rate	Rate	Number of births exposed to death
Postneonatal mortality rate	Rate	Number of births exposed to death
Infant mortality rate	Rate	Number of births exposed to death
Child mortality rate	Rate	Number of births exposed to death
Under-five mortality rate	Rate	Number of births exposed to death

Table E.2 Sampling errors for selected variables, National sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.465	0.003	103796	103796	1.953	0.007	0.459	0.471
With secondary education or higher	0.252	0.003	103796	103796	2.114	0.011	0.246	0.258
Currently married	0.934	0.001	103796	103796	1.183	0.001	0.932	0.936
Children ever born	3.107	0.010	95253	95366	1.305	0.003	3.088	3.127
Children surviving	2.645	0.008	95253	95366	1.244	0.003	2.630	2.661
Currently using any method	0.501	0.002	96805	96945	1.481	0.005	0.496	0.506
Currently using a modern method	0.438	0.002	96805	96945	1.433	0.005	0.434	0.443
Mothers received ANC from trained personnel	0.401	0.004	41272	40657	1.666	0.010	0.393	0.409
Mothers received medical care at birth	0.122	0.003	41272	40657	1.576	0.021	0.117	0.127
Mothers received PNC from trained personnel	0.105	0.002	41272	40657	1.306	0.019	0.101	0.109
One or more complications during pregnancy, delivery or after delivery	0.605	0.003	41272	40657	1.311	0.005	0.599	0.612
Total fertility rate (3 years)	3.222	0.028	na	na	1.736	0.009	3.165	3.278
Neonatal mortality rate	47.172	0.979	70293	69149	1.128	0.021	45.214	49.131
Postneonatal mortality rate	24.307	0.666	70416	69268	1.111	0.027	22.975	25.639
Infant mortality rate	71.479	1.205	70436	69288	1.157	0.017	69.068	73.890
Child mortality rate	25.556	0.693	71097	69914	1.104	0.027	24.170	26.942
Under-five mortality rate	95.208	1.395	71260	70073	1.187	0.015	92.418	97.999

na = Not applicable

Table E.3 Sampling errors for selected variables, Urban sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.359	0.008	17330	19896	2.251	0.023	0.343	0.376
With secondary education or higher	0.392	0.010	17330	19896	2.744	0.026	0.372	0.412
Currently married	0.923	0.003	17330	19896	1.267	0.003	0.917	0.928
Children ever born	3.107	0.010	95253	95366	1.305	0.003	3.088	3.127
Children surviving	2.433	0.018	15811	18163	1.283	0.007	2.397	2.469
Currently using any method	0.562	0.006	15981	18355	1.523	0.011	0.550	0.574
Currently using a modern method	0.479	0.006	15981	18355	1.407	0.012	0.468	0.490
Mothers received ANC from trained personnel	0.589	0.011	6127	6989	1.802	0.019	0.566	0.612
Mothers received medical care at birth	0.273	0.003	41272	40657	1.576	0.021	0.117	0.127
Mothers received PNC from trained personnel	0.199	0.008	6127	6989	1.525	0.039	0.184	0.215
One or more complications during pregnancy, delivery or after delivery	0.625	0.009	6127	6989	1.412	0.014	0.607	0.642
Total fertility rate (3 years)	2.695	0.055	na	na	1.649	0.020	2.584	2.805
Neonatal mortality rate	41.564	2.381	10393	11856	1.126	0.057	36.802	46.325
Postneonatal mortality rate	23.079	1.556	10406	11870	1.011	0.067	19.967	26.192
Infant mortality rate	64.643	2.895	10407	11872	1.116	0.045	58.853	70.434
Child mortality rate	22.089	1.601	10507	11985	1.095	0.072	18.886	25.292
Under-five mortality rate	85.304	3.320	10522	12001	1.140	0.039	78.664	91.944

na = Not applicable

Table E.4 Sampling errors for selected variables, Rural sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.490	0.003	86466	83900	1.863	0.006	0.483	0.496
With secondary education or higher	0.219	0.003	86466	83900	1.795	0.012	0.214	0.224
Currently married	0.937	0.001	86466	83900	1.142	0.001	0.935	0.939
Children ever born	3.178	0.011	79442	77203	1.283	0.003	3.156	3.199
Children surviving	2.695	0.008	79442	77203	1.238	0.003	2.678	2.712
Currently using any method	0.487	0.003	80824	78590	1.465	0.005	0.482	0.492
Currently using a modern method	0.429	0.002	80824	78590	1.434	0.006	0.424	0.434
Mothers received ANC from trained personnel	0.362	0.004	35145	33669	1.669	0.012	0.354	0.371
Mothers received medical care at birth	0.090	0.003	41272	40657	1.576	0.021	0.117	0.127
Mothers received PNC from trained personnel	0.086	0.002	35145	33669	1.213	0.021	0.082	0.090
One or more complications during pregnancy, delivery or after delivery	0.602	0.003	35145	33669	1.285	0.006	0.595	0.608
Total fertility rate (3 years)	3.355	0.032	na	na	1.726	0.010	3.292	3.419
Neonatal mortality rate	48.335	1.073	59900	57293	1.129	0.022	46.190	50.481
Postneonatal mortality rate	24.560	0.737	60010	57397	1.134	0.030	23.087	26.034
Infant mortality rate	72.896	1.323	60029	57416	1.166	0.018	70.249	75.542
Child mortality rate	26.270	0.766	60590	57929	1.106	0.029	24.737	27.802
Under-five mortality rate	97.250	1.531	60738	58071	1.194	0.016	94.188	100.312
No education	0.359	0.008	17330	19896	2.251	0.023	0.343	0.376

na = Not applicable

Table E.5 Sampling errors for selected variables, Barisol sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.305	0.007	10202	6839	1.454	0.022	0.292	0.319
With secondary education or higher	0.265	0.008	10202	6839	1.763	0.029	0.249	0.280
Currently married	0.948	0.003	10202	6839	1.161	0.003	0.943	0.953
Children ever born	3.204	0.032	9514	6376	1.342	0.010	3.140	3.268
Children surviving	2.709	0.025	9514	6376	1.289	0.009	2.660	2.758
Currently using any method	0.478	0.007	9680	6486	1.393	0.015	0.463	0.492
Currently using a modern method	0.415	0.007	9680	6486	1.397	0.017	0.401	0.429
Mothers received ANC from trained personnel	0.298	0.012	4015	2672	1.674	0.041	0.274	0.322
Mothers received medical care at birth	0.088	0.007	4015	2672	1.481	0.075	0.074	0.101
Mothers received PNC from trained personnel	0.053	0.005	4015	2672	1.398	0.093	0.043	0.063
One or more complications during pregnancy, delivery or after delivery	0.496	0.010	4015	2672	1.226	0.020	0.477	0.515
Total fertility rate (3 years)	3.316	0.079	na	na	1.483	0.024	3.157	3.475
Neonatal mortality rate	39.502	2.653	6858	4572	1.062	0.067	34.196	44.807
Postneonatal mortality rate	22.250	1.881	6875	4583	1.004	0.085	18.487	26.013
Infant mortality rate	61.752	3.201	6875	4583	1.038	0.052	55.351	68.154
Child mortality rate	31.194	2.288	6954	4636	1.052	0.073	26.619	35.770
Under-five mortality rate	91.020	3.607	6971	4647	0.998	0.040	83.805	98.235

na = Not applicable

Table E.6 Sampling errors for selected variables, Chittagong sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.432	0.006	18633	18275	1.711	0.014	0.420	0.445
With secondary education or higher	0.306	0.006	18633	18275	1.863	0.021	0.294	0.319
Currently married	0.943	0.002	18633	18275	1.210	0.002	0.938	0.947
Children ever born	3.413	0.021	17416	17078	1.134	0.006	3.370	3.455
Children surviving	2.963	0.017	17416	17078	1.077	0.006	2.930	2.997
Currently using any method	0.377	0.005	17569	17226	1.331	0.013	0.367	0.386
Currently using a modern method	0.336	0.005	17569	17226	1.357	0.014	0.326	0.345
Mothers received ANC from trained personnel	0.394	0.008	8639	8440	1.542	0.021	0.378	0.410
Mothers received medical care at birth	0.118	0.004	8639	8440	1.261	0.037	0.109	0.127
Mothers received PNC from trained personnel	0.075	0.003	8639	8440	1.231	0.047	0.068	0.082
One or more complications during pregnancy, delivery or after delivery	0.496	0.007	8639	8440	1.303	0.014	0.482	0.510
Total fertility rate (3 years)	3.736	0.063	na	na	1.598	0.017	3.610	3.862
Neonatal mortality rate	34.764	2.653	6858	4572	1.062	0.067	34.196	44.807
Postneonatal mortality rate	20.098	1.209	14694	14360	1.019	0.060	17.681	22.516
Infant mortality rate	54.862	2.042	14696	14362	1.025	0.037	50.779	58.945
Child mortality rate	29.925	1.642	14866	14528	1.145	0.055	26.641	33.208
Under-five mortality rate	83.145	2.591	14896	14557	1.094	0.031	77.963	88.328

na = Not applicable

Table E.7 Sampling errors for selected variables, Dhaka sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.471	0.007	27577	35848	2.228	0.014	0.457	0.484
With secondary education or higher	0.253	0.006	27577	35848	2.393	0.025	0.240	0.265
Currently married	0.928	0.002	27577	35848	1.176	0.002	0.925	0.932
Children ever born	3.123	0.021	25164	32705	1.437	0.007	3.081	3.165
Children surviving	2.624	0.016	25164	32705	1.374	0.006	2.591	2.656
Currently using any method	0.522	0.005	25604	33274	1.644	0.010	0.512	0.533
Currently using a modern method	0.445	0.005	25604	33274	1.568	0.011	0.436	0.455
Mothers received ANC from trained personnel	0.406	0.008	10773	13978	1.703	0.020	0.390	0.422
Mothers received medical care at birth	0.133	0.006	10773	13978	1.700	0.042	0.122	0.144
Mothers received PNC from trained personnel	0.140	0.005	10773	13978	1.369	0.033	0.131	0.149
One or more complications during pregnancy, delivery or after delivery	0.722	0.006	10773	13978	1.329	0.008	0.710	0.733
Total fertility rate (3 years)	3.220	0.050	na	na	1.616	0.016	3.120	3.320
Neonatal mortality rate	48.887	1.823	18209	23625	1.064	0.037	45.241	52.532
Postneonatal mortality rate	26.897	1.342	18240	23665	1.101	0.050	24.214	29.580
Infant mortality rate	75.784	2.261	18249	23677	1.090	0.030	71.261	80.306
Child mortality rate	26.539	1.325	18407	23881	1.044	0.050	23.889	29.188
Under-five mortality rate	100.311	2.679	18456	23945	1.147	0.027	94.953	105.669

na = Not applicable

Table E.8 Sampling errors for selected variables, Khulna sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.402	0.006	17079	12307	1.605	0.015	0.390	0.414
With secondary education or higher	0.282	0.006	17079	12307	1.869	0.023	0.269	0.295
Currently married	0.931	0.002	17079	12307	1.023	0.002	0.927	0.935
Children ever born	2.791	0.018	15598	11240	1.083	0.007	2.754	2.827
Children surviving	2.424	0.015	15598	11240	1.035	0.006	2.395	2.453
Currently using any method	0.618	0.005	15896	11454	1.291	0.008	0.608	0.628
Currently using a modern method	0.522	0.005	15896	11454	1.219	0.009	0.512	0.531
Mothers received ANC from trained personnel	0.480	0.009	5444	3919	1.330	0.019	0.462	0.498
Mothers received medical care at birth	0.169	0.007	5444	3919	1.302	0.039	0.156	0.182
Mothers received PNC from trained personnel	0.148	0.005	5444	3919	1.103	0.036	0.138	0.159
One or more complications during pregnancy, delivery or after delivery	0.746	0.006	5444	3919	1.057	0.008	0.733	0.758
Total fertility rate (3 years)	2.608	0.048	na	na	1.368	0.019	2.511	2.704
Neonatal mortality rate	42.445	2.378	9384	6752	1.080	0.056	37.688	47.202
Postneonatal mortality rate	16.646	1.428	9391	6757	1.060	0.086	13.791	19.502
Infant mortality rate	59.091	2.897	9395	6760	1.139	0.049	53.297	64.886
Child mortality rate	15.879	1.284	9450	6800	1.001	0.081	13.311	18.448
Under-five mortality rate	74.032	3.241	9465	6810	1.171	0.044	67.551	80.513

na = Not applicable

Table E.9 Sampling errors for selected variables, Rajshahi sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.527	0.005	19296	24495	1.516	0.010	0.516	0.538
With secondary education or higher	0.217	0.005	19296	24495	1.604	0.022	0.208	0.227
Currently married	0.944	0.002	19296	24495	1.064	0.002	0.940	0.947
Children ever born	2.866	0.017	17834	22639	1.087	0.006	2.831	2.900
Children surviving	2.455	0.014	17834	22639	1.034	0.006	2.428	2.482
Currently using any method	0.564	0.004	18209	23113	1.191	0.008	0.555	0.573
Currently using a modern method	0.521	0.004	18209	23113	1.140	0.008	0.513	0.530
Mothers received ANC from trained personnel	0.401	0.009	6750	8559	1.527	0.023	0.383	0.420
Mothers received medical care at birth	0.107	0.005	6750	8559	1.403	0.049	0.097	0.118
Mothers received PNC from trained personnel	0.050	0.003	6750	8559	1.013	0.054	0.045	0.056
One or more complications during pregnancy, delivery or after delivery	0.452	0.007	6750	8559	1.095	0.015	0.439	0.466
Total fertility rate (3 years)	2.854	0.051	na	na	1.439	0.018	2.752	2.957
Neonatal mortality rate	54.388	2.455	11500	14582	1.073	0.045	49.479	59.297
Postneonatal mortality rate	24.366	1.460	11519	14606	0.983	0.060	21.446	27.285
Infant mortality rate	78.754	2.931	11521	14609	1.093	0.037	72.892	84.615
Child mortality rate	19.953	1.361	11595	14703	1.016	0.068	17.231	22.676
Under-five mortality rate	97.135	3.199	11618	14732	1.094	0.033	90.737	103.534

na = Not applicable

Table E.10 Sampling errors for selected variables, Sylhet sample, Bangladesh 2001

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence intervals: Value-2SE (R-2SE)	Confidence intervals: Value+2SE (R+2SE)
No education	0.587	0.009	11009	6032	1.964	0.016	0.568	0.605
With secondary education or higher	0.149	0.006	11009	6032	1.716	0.039	0.138	0.161
Currently married	0.894	0.004	11009	6032	1.202	0.004	0.887	0.901
Children ever born	3.613	0.030	9727	5327	1.113	0.008	3.553	3.673
Children surviving	2.961	0.026	9727	5327	1.157	0.009	2.910	3.012
Currently using any method	0.281	0.007	9847	5393	1.576	0.025	0.266	0.295
Currently using a modern method	0.214	0.007	9847	5393	1.619	0.031	0.200	0.227
Mothers received ANC from trained personnel	0.386	0.010	5651	3088	1.583	0.027	0.366	0.407
Mothers received medical care at birth	0.090	0.005	5651	3088	1.338	0.057	0.080	0.100
Mothers received PNC from trained personnel	0.175	0.006	5651	3088	1.284	0.037	0.162	0.188
One or more complications during pregnancy, delivery or after delivery	0.719	0.008	5651	3088	1.319	0.011	0.703	0.735
Total fertility rate (3 years)	4.271	0.073	na	na	1.311	0.017	4.125	4.416
Neonatal mortality rate	65.904	3.002	9674	5284	1.074	0.046	59.901	71.908
Postneonatal mortality rate	35.538	2.272	9697	5296	1.192	0.064	30.993	40.083
Infant mortality rate	101.443	3.554	9700	5298	1.053	0.035	94.335	108.550
Child mortality rate	32.973	2.241	9825	5366	1.114	0.068	28.492	37.455
Under-five mortality rate	131.071	4.482	9854	5381	1.176	0.034	122.107	140.035

na = Not applicable

PERSONNEL INVOLVED IN BMMS 2001

Appendix ***F***

Technical Review Committee (TRC)

Mr. Lokman Hakim, Director General, NIPORT	Chairman
Dr. Ranjit Kumar Dey, Line Director (Planning and Research), Directorate of Health Services	Member
Dr. A.S.M. Kamal, Line Director (ESP-RH), Directorate of Family Planning	Member
Mr. Shaheruddin Mollah, Director (Planning), Directorate of Family Planning	Member
Director, Census Wing, Bangladesh Bureau of Statistics (BBS)	Member
Dr. Md. Bazlur Rahman, Director, PDEU, IME Division, Ministry of Planning	Member
Mr. Md. Mozammel Haque, Deputy Chief (Health), Ministry of Health and Family Welfare	Member
Mrs. Mobashera Begum, Director, BIRPERHT	Member
Dr. S.M. Asib Nasim, Deputy Team Leader, Program Coordination Cell (PCC)	Member
Dr. Enamul Karim, Consultant, Management Change Unit (MCU)	Member
Professor M. Kabir, Department of Statistics, Jahangeer Nagar University	Member
Professor M. Ataharul Islam, Department of Statistics, University of Dhaka	Member
Professor M. Sekander H. Khan, Institute of Statistical Research and Training, University of Dhaka	Member
Dr. Suniti Acharya, Country Representative, WHO	Member
Mr. J.S. Kang, Sr. Population Specialist, Social Sector Team, World Bank	Member
Ms. Janit E. Jackson, Deputy Representative, UNFPA-Bangladesh	Member
Dr. A.N. Zafar Ullah, Senior Program Monitor, CIDA-Bangladesh	Member
Dr. Peter Kim Streatfield, Head, Health and Demographic Surveillance Program, ICDDR,B	Member
Dr. M. Alauddin, Chief of Party, Rural Service Delivery Program, Pathfinder International	Member
Dr. Ahmed Al-Kabir, Chief of Party, Urban Family Health Partnership	Member
Mr. Mohammad Shahjahan, Director, Bangladesh Centre for Communication Program	Member
Dr. A.M.R. Chowdhury, Head, Research and Evaluation Division, BRAC	Member
Dr. Fahrat Hossain, Assistant Professor, Department of Obstetric and Gynaecology, DMCH	Member
Dr. Kanta Jamil, Program Coordinator for Research, PHN Team, USAID, Dhaka	Member
Dr. Yasmin Ali Haque, Project Officer, Health and Nutrition Section, UNICEF-Bangladesh	Member
Dr. Tulshi D. Saha, Demographer, ORC Macro, USA	Member
Professor Michael Koenig, Johns Hopkins University, USA	Member
Mr. S.N. Mitra, Executive Director, Mitra and Associates	Member
Mrs. Haidary Kamal, Executive Director, Associates for Community and Population Research	Member
Dr. Ahmed Al-Sabir, Director (Research), NIPORT	Member-Secretary

Technical Task Force(TTF)

Dr. Ahmed Al-Sabir, Director (Research), NIPORT - Chairman
Dr. Jafar Ahmed Hakim, Deputy Director (CS), ESP-RH, Directorate of Family Planning
Dr. Momena Khatun, Deputy Director (MCH), ESP-RH, Directorate of Family Planning
Dr. Peter Kim Streatfield, Head, Health and Demographic Surveillance Program, ICDDR,B
Dr. Kanta Jamil, Program Coordinator for Research, Population, Health and Nutrition Team, USAID, Dhaka
Dr. Tulshi D. Saha, Demographer, ORC Macro, USA
Dr. Shams-El-Arifeen, Head, Child Health Program, PHSD, ICDDR,B
Dr. Yasmin Ali Haque, Project Officer, Health and Nutrition Section, UNICEF-Bangladesh

NIPORT
Dr. Ahmed Al-Sabir, Country Coordinator
Mr. Subrata K. Bhadra
Mrs. Shahin Sultana

ORC Macro
Dr. Tulshi D. Saha
Ms. Anne Cross
Dr. Alfredo Aliaga
Mr. Han Raggers
Mr. Sushil Kumar
Dr. Sidney Moore
Kaye Mitchell

Associates for Community and Population Research (ACPR)
Dr. M. Sekandar H. Khan
Mr. A.P.M. Shafiur Rahman
Mrs. Tauhida Nasrin
Mr. Nitai Chakraborty

Mitra and Associates
Mr. S.N. Mitra
Mr. Shahidul Islam
Mr. S. Fuad Pasha

Johns Hopkins University
Prof. Kenneth Hill
Prof. Michael Koenig

ICDDR,B
Dr. Peter Kim Streatfield
Dr. Shams-El-Arifeen

USAID
Dr. Kanta Jamil

Others
Dr. Yasmin Ali Haque, UNICEF
Dr. Fahrat Hossain, Dhaka Medical College

QUESTIONNAIRES

Appendix **G**

BANGLADESH MATERNAL HEALTH SERVICES AND MATERNAL MORTALITY SURVEY 2001
HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION

DIVISION _____

DISTRICT _____

THANA_____

UNION/WARD_____

MOUZA/MOHALLA_____

VILLAGE/MOHALLA/BLOCK_____

SEGMENT NUMBER_____

TYPE OF ARE: Rural 1 Urban 2 Other Urban 3_____

CLUSTER NUMBER .....

HOUSEHOLD NUMBER .....

NAME OF THE HOUSEHOLD HEAD_____

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY MONTH YEAR
INTERVIEWER'S NAME	_____	_____	_____	INTV. CODE
RESULT*	_____	_____	_____	RESULT*
NEXT VISIT: DATE TIME				TOTAL NO. OF VISITS

*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 PERSONS IN HOUSEHOLD

TOTAL ELIGIBLE WOMEN

LINE NO. OF RESP. TO HOUSEHOLD SCHEDULE

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

INFORMED CONSENT

Hello

My name is _____. I have come from _____, a non- government research organization. Our office is located in Dhaka. We conduct different kind of socio-economic survey in Bangladesh. Currently, we are conducting a national level survey under National Institute of Population Research and training (NIPORT) of Ministry of Health and Family Welfare. For this reason, we are collecting health information for all women 13-49 years old from your household. This information will help Government to improve the maternal and child health services and reduce maternal mortality in Bangladesh. The information you will provide will keep secret and your household could not be identified from this survey.

The participation in this survey is voluntary and you have liberty not to answer any part of the question or full questionnaire. However, we hope that you will participate in this survey because your information in most important.

Now you can ask me any questions regarding this survey.

May I start the interview?

Signature of interviewer:_____ Date:_____

The respondent agreed to participate_____1

The respondent did not agree to participate_____2 ⟶END

HOUSEHOLD SCHEDULE

Now we would like some information about the people who usually live in your household or who are staying with you now.

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	MARITAL STATUS	WOMAN ELIGI-BILITY	EDUCATION IF AGE 5 YEARS OR OLDER		EMPLOYMENT IF AGE 5 YEARS OR OLDER	
	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.	What is the relationship of (NAME) to the head of the household?*	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) sleep here last night?	How old is (NAME)? WRITE '00' IF LESS THAN ONE.	FOR ALL AGED 13 OR ABOVE What is the current marital status of (NAME)?**	CIRCLE LINE NUMBER OF ALL EVER MARRIED WOMEN AGE 13-49 (Q4=2 & Q8=1 OR 2)	Has (NAME) ever attended school?	What is the highest level of school (NAME) has attended?*** What is the highest class (NAME) completed at that level?***	Is (NAME) currently working?	Does (NAME) receive wages/income in cash or kind?
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(13)	(14)
			M F	YES NO	YES NO	IN YEARS	CM FM NM		YES NO	LEVEL CLASS	YES NO	CASH KIND BOTH NONE
01			1 2	1 2	1 2		1 2 3	01	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
02			1 2	1 2	1 2		1 2 3	02	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
03			1 2	1 2	1 2		1 2 3	03	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
04			1 2	1 2	1 2		1 2 3	04	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
05			1 2	1 2	1 2		1 2 3	05	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
06			1 2	1 2	1 2		1 2 3	06	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
07			1 2	1 2	1 2		1 2 3	07	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
08			1 2	1 2	1 2		1 2 3	08	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
09			1 2	1 2	1 2		1 2 3	09	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4
10			1 2	1 2	1 2		1 2 3	10	1 2 GO TO 13		1 2 NEXT LINE	1 2 3 4

HOUSEHOLD SCHEDULE CONTINUED

(1)	(2)	(3)	(4)		(5)		(6)		(7)	(8)			(9)	(10)		(11)		(13)		(14)			
			M	F	YES	NO	YES	NO	IN YEARS	CM	FM	NM		YES	NO	LEVEL	CLASS	YES	NO	CASH	KIND	BOTH	NONE
11			1	2	1	2	1	2		1	2	3	11	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
12			1	2	1	2	1	2		1	2	3	12	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
13			1	2	1	2	1	2		1	2	3	13	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
14			1	2	1	2	1	2		1	2	3	14	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
15			1	2	1	2	1	2		1	2	3	15	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
16			1	2	1	2	1	2		1	2	3	16	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
17			1	2	1	2	1	2		1	2	3	17	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
18			1	2	1	2	1	2		1	2	3	18	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
19			1	2	1	2	1	2		1	2	3	19	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4
20			1	2	1	2	1	2		1	2	3	20	1	2 GO TO 13			1	2 NEXT LINE	1	2	3	4

TICK HERE IF CONTINUATION SHEET USED ☐

1) Are there any other persons such as small children or infants that we have not listed? YES ☐ → ENTER EACH IN TABLE ← ☐ NO

2) In addition, 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 ☐ → ENTER EACH IN TABLE ← ☐ NO

3) Are there any guests or temporary visitors staying here, or anyone else who slept here last night, who have not been listed? YES ☐ → ENTER EACH IN TABLE ☐ NO

15. TOTAL NUMBER OF ELIGIBLE WOMEN (CIRCLED IN COLUMN 9) ☐

* 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 = OTHER RELATIVE
10 = ADOPTED/FOSTER/ STEPCHILD
11 = NOT RELATED
98 = DON'T KNOW

** CODE FOR Q.8
MARITAL STATUS:
1 = CURRENTLY MARRIED (CM)
2 = FORMERLY MARRIED (DIVORCED/WIDOWED/SEPARATED/ DESERTED) (FM)
3 = NEVER MARRIED (NM)

***CODES FOR Q11
EDUCATION LEVEL:
1 = PRIMARY
2 = SECONDARY
3 = COLLEGE/UNIVERSITY
8 = DON'T KNOW
CLASS
00 = LOWER THAN FIRST GRADE
98 = DONOT KNOW

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
16	What kind of toilet facility does your household have?	SEPTIC TANK/MODERN TOILET .....11 WATER SEALED/SLAB LATRINE.....21 PIT LATRINE.....22 OPEN LATRINE .....23 HANGING LATRINE.....24 NO FACILITY .....31 OTHER _____ 96	→ 17
16A	Do you share this facility with other households?	YES .....1 NO 2	
17	Does your household (or any member of your household) have: Electricity? Almirah (wardrobe/showcase)? A table or chair? A bench? A watch or clock? A cot or bed? A radio that is working? A television that is working? A bicycle? A Motorcycle? A Sewing machine? Telephone?	YES NO ELECTRICITY .....1 2 ALMIRAH.....1 2 TABLE/CHAIR.....1 2 BENCH.....1 2 WATCH/CLOCK.....1 2 COT/BED.....1 2 RADIO .....1 2 TELEVISION .....1 2 BICYCLE .....1 2 MOTORCYCLE .....1 2 SEWING MACHINE .....1 2 TELEPHONE.....1 2	
18A	MAIN MATERIAL OF THE ROOF. RECORD OBSERVATION.	NATURAL ROOF KATCHA (BAMBOO/THATCH) .....11 RUDIMENTARY ROOF TIN.....21 TILE.....22 FINISHED ROOF (PUKKA) CEMENT/CONCRETE .....31 OTHER _____ 96 (SPECIFY)	
18B	MAIN MATERIAL OF THE WALLS. RECORD OBSERVATION.	NATURAL WALLS JUTE/BAMBOO/MUD (KATCHA).....11 RUDIMENTARY WALLS WOOD.....21 FINISHED WALLS BRICK/CEMENT .....31 TIN.....32 OTHER _____ 96 (SPECIFY)	
18C	MAIN MATERIAL OF THE FLOOR. RECORD OBSERVATION.	NATURAL FLOOR EARTH/BAMBOO (KATCHA).....11 RUDIMENTARY FLOOR WOOD.....21 FINISHED FLOOR (PUKKA) CEMENT/CONCRETE .....31 OTHER _____ 96 (SPECIFY)	
19	Does your household own any homestead? IF 'NO', PROBE: Does your household own homestead any other places?	YES .....1 NO 2	
20	Does your household own any land (other than the homestead land)?	YES .....1 NO 2	→ 22
20A	How much land does your household own (other than the homestead land)? AMOUNT _____ UNIT _____ (SPECIFY)	AMOUNT ☐☐ ☐☐ ACRES DECIMALS	
22	Did any usual resident of this household die since April 1997 or Baishak 1404?	YES .....1 NO 2	→ 37
23	How many persons died?	TOTAL PERSONS . .....☐	

I would like to know about the person died in your household since April 1997 (Baishak 1404). Please provide me the information first on recent death.

24	25	26	27	28	29	FOR 13-49 YEARS OLD WOMEN					
						30	31	32	33	34	35
What (was/were) the name(s) of the person(s) who died?	Was (NAME) a male or female?	How old was he/she when he/she died? RECORD DAYS IF LESS THAN ONE MONTH, MONTHS IF LESS THAN TWO YEARS, OR YEARS IF TWO OR MORE YEARS.	In what month and year did (NAME) die?	What did (NAME) die of?	CHECK 25 AND 26: DECEASED WAS FEMALE AGED 13-49 AT THE TIME OF DEATH.	Was (NAME) married?	Was (NAME) pregnant when she died?	Did (NAME) die during childbirth?	Did (NAME) die within six weeks after the end of a pregnancy or childbirth?	ELIGIBILITY FOR VERBAL AUTOPSY: IF CIRCLE '1' IN Q.29 THEN CIRCLE LINE NUMBER	Did (NAME) die at home or outside home?
01 (NAME)	MALE ..... 1 FEMALE..... 2	DAYS.....1 MONTHS...2 YEARS.....3	MONTH YEAR		YES.....1 NO .....2 (GO TO NEXT DEATH)	YES ..... 1 NO..... 2 (GO T0 34)	YES .....1 (GO TO 34) NO.....2	YES.....1 (GO TO 34) NO 2	YES ..... 1 NO 2	01	AT HOME ..... 1 OUT SIDE HOME 2
02 (NAME)	MALE ..... 1 FEMALE..... 2	DAYS.....1 MONTHS...2 YEARS.....3	MONTH YEAR		YES.....1 NO .....2 (GO TO NEXT DEATH)	YES ..... 1 NO..... 2 (GO T0 34)	YES .....1 (GO TO 34) NO.....2	YES.....1 (GO TO 34) NO 2	YES ..... 1 NO 2	02	AT HOME ..... 1 OUT SIDE HOME 2
03 (NAME)	MALE ..... 1 FEMALE..... 2	DAYS.....1 MONTHS...2 YEARS.....3	MONTH YEAR		YES.....1 NO .....2 (GO TO NEXT DEATH)	YES ..... 1 NO..... 2 (GO T0 34)	YES .....1 (GO TO 34) NO.....2	YES.....1 (GO TO 34) NO 2	YES ..... 1 NO 2	03	AT HOME ..... 1 OUT SIDE HOME 2

36	TOTAL NUMBER OF PERSONS CIRCLED IN Q.34 …….. ☐ (INTERVIEWERS: PLEASE INFORM YOUR SUPERVISOR ABOUT THE NUMBER OF ELIGIBLE VERBAL AUTOPSY CASES IN THIS HOUSEHOLD) SUPERVISOR: ATTEMPT VERBAL AUTOPSY OF NUMBER OF CASES WROTE IN Q.36
37	INTERVIEWERS: INTERVIEW ALL WOMEN MENTIONED IN Q.15 USING THE WOMEN QUESTIONNAIRE.

BANGLADESH MATERNAL HEALTH SERVICES AND MATERNAL MORTALITY SURVEY 2001

WOMAN'S QUESTIONNAIRE

IDENTIFICATION

DIVISION _____

DISTRICT _____

THANA _____

UNION/WARD _____

MOUZA/MOHALLA _____

VILLAGE/MOHALLA/BLOCK _____

SEGMENT NUMBER _____

TYPE OF AREA: Rural 1 Urban 2 Other Urban 3 _____

CLUSTER NUMBER .....

HOUSEHOLD NUMBER .....

NAME OF THE HOUSEHOLD HEAD _____

NAME AND LINE NUMBER OF ELIGIBLE WOMAN _____

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY MONTH YEAR
INTERVIEWER'S NAME	_____	_____	_____	INT. CODE
RESULT*	_____	_____	_____	RESULT*
NEXT VISIT: DATE	_____	_____		TOTAL NO. OF VISITS
TIME	_____	_____		

*RESULT CODES :

1	COMPLETED	4	REFUSED	7	OTHER _____ (SPECIFY)
2	NOT AT HOME	5	PARTLY COMPLETED		
3	POSTPONED	6	RESPONDENT INCAPACITATED		

**MONTH CODES

01	JANUARY	04	APRIL	07	JULY	10	OCTOBER
02	FEBRUARY	05	MAY	08	AUGUST	11	NOVEMBER
03	MARCH	06	JUNE	09	SEPTEMBER	12	DECEMBER

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

SECTION 1. BACKGROUND CHARACTERISTICS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME STARTED.	HOUR ..... [ ][ ] MINUTES ..... [ ][ ]	
102	First I would like to ask some questions about you. For most of the time until you were 12 years old, did you live in a city, in a town, or in the countryside?	CITY/TOWN ..... 1 VILLAGE 2	
103	How long have you been living continuously in (NAME OF CURRENT PLACE OF RESIDENCE)? WRITE '00' IF LESS THAN ONE YEAR	NUMBER OF YEARS ..... [ ][ ] ALWAYS ..... 95 VISITOR 96	105
104	Just before you moved here, did you live in a city, a town, or in the country side?	CITY/TOWN ..... 1 VILLAGE 2	
105	In what month and year were you born?	MONTH ..... [ ][ ] DON'T KNOW MONTH ..... 98 YEAR ..... [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
106	How old are you at your last birthday? COMPARE AND CORRECT 105 AND /OR 106 IF INCONSISTENT	AGE IN COMPLETED YEARS [ ][ ]	
107	Are you now married, widowed, separated, divorced or deserted?	CURRENTLY MARRIED ..... 1 SEPARATED ..... 2 DESERTED ..... 3 DIVORCED ..... 4 WIDOWED ..... 5 NEVER MARRIED 6	END
108	What is your religion?	ISLAM ..... 1 HINDUISM ..... 2 BUDDHISM ..... 3 CHRISTIANITY ..... 4 OTHER _____ 5	
109	Have you ever attended school?	YES ..... 1 NO 2	111
109A	What is the highest level of school you attended: primary, secondary, or higher?	PRIMARY ..... 1 SECONDARY ..... 2 COLLEGE/UNIVERSITY 3	
109B	What is the highest class you completed? WRITE '00' IF NOT COMPLETED ANY CLASS	CLASS ..... [ ][ ]	
110	CHECK 109A: PRIMARY [ ] SECONDARY OR HIGHER [ ]		112

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
111	Can you read and write a letter?	YES, EASILY ..... 1 YES, WITH DIFFICULTY ..... 2 NO..... 3	
112	Do you listen radio?	YES..... 1 NO..... 2	113
112A	How often do you listen to the radio: every day, at least once a week, less than once a week?	EVERY DAY .....1 AT LEAST ONCE A WEEK .....2 LESS THAN ONCE A WEEK 3	
113	Do you watch television?	YES .....1 NO 2	114
113A	How often do you watch television: every day, at least once a week, less than once a week?	EVERY DAY .....1 AT LEAST ONCE A WEEK .....2 LESS THAN ONCE A WEEK 3	
114	Do you belong to any of the following organizations? Grameen Bank? BRAC? BRDB? Mother's Club? Any other organization (such as micro credit)?	YES NO GRAMEEN BANK ..... 1 2 BRAC ..... 1 2 BRDB ..... 1 2 MOTHER'S CLUB..... 1 2 OTHER_____. 1 2 (SPECIFY)	
115	CHECK Q. 5 IN THE HOUSEHOLD SECTION: THE WOMAN INTERVIEWED IS NOT A USUAL RESIDENT ☐ ↓ THE WOMAN INTERVIEWED IS A USUSAL RESIDENT ☐ →		201
116	Now I would like to ask about the place in which you usually live. Do you usually live in a town, or in a village?	TOWN/ CITY.....1 VILLAGE.....2	
117	What kind of toilet facility does your household have?	SEPTIC TANK/MODERN TOILET..... 11 WATER SEALED/SLAB LATRINE ..... 21 PIT LATRINE ..... 22 OPEN LATRINE..... 23 HANGING LATRINE ..... 24 NO FACILITY ..... 31 OTHER _____ 96 (SPECIFY)	118
117A	Do you share this facility with other households?	YES..... 1 NO..... 2	
118	Does your household (or any member of your household) have: Electricity? Almirah (wardrobe/showcase)? A table or chair? A bench? A watch or clock? A cot or bed? A radio that is working? A television that is working? A bicycle? A motorcycle? A sewing machine? Telephone?	YES NO ELECTRICITY..... 1 2 ALMIRAH..... 1 2 TABLE/CHAIR ..... 1 2 BENCH ..... 1 2 WATCH/CLOCK ..... 1 2 COT/BED ..... 1 2 RADIO..... 1 2 TELEVISION..... 1 2 BICYCLE..... 1 2 MOTORCYCLE..... 1 2 SEWING MACHINE..... 1 2 TELEPHONE 1 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
119	What is the material of the roof of your house?	NATURAL ROOF KATCHA (BAMBOO/THATCH) ..... 11 RUDIMENTARY ROOF TIN ..... 21 TILE ..... 22 FINISHED ROOF (PUKKA) CEMENT/CONCRETE ..... 31 OTHER _____ 96 (SPECIFY)	
119A	What is the material of the walls of your house?	NATURAL WALLS JUTE/BAMBOO/MUD (KATCHA) ..... 11 RUDIMENTARY WALLS WOOD ..... 21 FINISHED WALLS BRICK/CEMENT ..... 31 TIN ..... 32 OTHER _____ 96 (SPECIFY)	
119B	What is the material of the floor of your house?	NATURAL FLOOR EARTH/BAMBOO (KATCHA) ..... 11 RUDIMENTARY FLOOR WOOD ..... 21 FINISHED FLOOR (PUKKA) CEMENT/CONCRETE ..... 31 OTHER _____ 96 (SPECIFY)	
120	Does your household own any homestead? IF 'NO', PROBE: Does your household own homestead any other places?	YES ..... 1 NO 2	
120A	Does your household own any land (other than the homestead land)?	YES ..... 1 NO 2	→ 201
120B	How much land does your household own (other than the homestead land)? AMOUNT _____ UNIT_____ (SPECIFY)	AMOUNT ☐☐ ☐☐ ACRES DECIMALS	

SECTION 2: MATERNAL MORTALITY (SISTERHOOD)

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	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.		
201A	How many children did your mother give birth to, including you?	NUMBER OF BIRTHS TO NATURAL MOTHER..... [ ][ ]	
202	CHECK 201A	TWO OR MORE BIRTHS [ ] ▼ ONLY ONE BIRTH (RESPONDENT ONLY) [ ] ▼ SKIP TO 301	
203	How many of these births did your mother have before you were born? (WRITE '00' IF NONE)	NUMBER OF BIRTHS..... [ ][ ]	
203A	How many of these births did your mother have after you were born? (WRITE '00' IF NONE)	NUMBER OF BIRTHS..... [ ][ ]	

204	What was the name given to your oldest (next oldest) brother or sister?	[1] _____	[2] _____	[3] _____	[4] _____	[5] _____	[6] _____
205	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
206	Is (NAME) still alive?	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [2]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [3]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [4]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [5]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [6]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [7]
207	How old is (NAME)?	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [2]	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [3]	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [4]	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [5]	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [6]	[ ][ ] IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [7]
208	How many years ago did (NAME) die? WRITE '00' IF LESS THAN 1 YEAR.	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
209	How old was (NAME) when he/she died? WRITE '00' IF LESS THAN 1 YEAR.	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [2] IF NO MORE SIBLING SKIP TO 301	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [3] IF NO MORE SIBLING SKIP TO 301	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [4] IF NO MORE SIBLING SKIP TO 301	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [5] IF NO MORE SIBLING SKIP TO 301	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [6] IF NO MORE SIBLING SKIP TO 301	[ ][ ] IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [7] IF NO MORE SIBLING SKIP TO 301
210	Was (NAME) pregnant when she died?	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2
211	Did (NAME) die during childbirth?	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2	YES.....1 GO TO 213<┘ NO.....2
212	Did (NAME) die within one and half months (six weeks) 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
213	How many live born children did (NAME) give birth during her lifetime (before this pregnancy)?	[ ][ ] NUMBER ▼	[ ][ ] NUMBER ▼	[ ][ ] NUMBER ▼	[ ][ ] NUMBER ▼	[ ][ ] NUMBER ▼	[ ][ ] NUMBER ▼
IF NO MORE BROTHERS OR SISTERS, GO TO 301							

204	What was name given to your oldest (next oldest) brother or sister?	[7] _____	[8] _____	[9] _____	[10] _____	[11] _____	[12] _____
205	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
206	Is (NAME) still alive?	YES..... 1 NO..... 2 └>GO TO 208 DK..... 8 └>GO TO [8]	YES..... 1 NO..... 2 └>GO TO 208 DK..... 8 └>GO TO [9]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [10]	YES .....1 NO .....2 └>GO TO 208 DK .....8 └>GO TO [11]	YES.....1 NO.....2 └>GO TO 208 DK.....8 └>GO TO [12]	YES .....1 NO .....2 └>GO TO 208 DK .....8 └>GO TO [13]
207	How old is (NAME)?	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [8]	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [9]	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [10]	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [11]	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [12]	☐☐ IF NO MORE SIBLING SKIP TO 301 OTHERWISE GO TO [13]
208	How many years ago did (NAME) die? WRITE '00' IF LESS THAN 1 YEAR.	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
209	How old was (NAME) when he/she died? WRITE '00' IF LESS THAN 1 YEAR.	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [8] IF NO MORE SIBLING SKIP TO 301	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [9] IF NO MORE SIBLING SKIP TO 301	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [10] IF NO MORE SIBLING SKIP TO 301	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [11] IF NO MORE SIBLING SKIP TO 301	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [12] IF NO MORE SIBLING SKIP TO 301	☐☐ IF MALE OR FEMALE DIED BEFORE AGE 13 OR AFTER AGE 49 GO TO [13] IF NO MORE SIBLING SKIP TO 301
210	Was (NAME) pregnant when she died?	YES..... 1 GO TO 213<┘ NO..... 2	YES..... 1 GO TO 213<┘ NO..... 2	YES.....1 GO TO 213<┘ NO..... 2	YES .....1 GO TO 213<┘ NO 2	YES.....1 GO TO 213<┘ NO..... 2	YES .....1 GO TO 213<┘ NO 2
211	Did (NAME) die during childbirth?	YES..... 1 GO TO 213<┘ NO..... 2	YES..... 1 GO TO 213<┘ NO..... 2	YES.....1 GO TO 213<┘ NO..... 2	YES .....1 GO TO 213<┘ NO 2	YES.....1 GO TO 213<┘ NO..... 2	YES .....1 GO TO 213<┘ NO 2
212	Did (NAME) die within one and half months (six weeks) 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
213	How many live born children did (NAME) give birth during her lifetime (before this pregnancy)?	☐☐ NUMBER ▼	☐☐ NUMBER ▼	☐☐ NUMBER ▼	☐☐ NUMBER ▼	☐☐ NUMBER ▼	☐☐ NUMBER ▼
IF NO MORE BROTHERS OR SISTERS, GO TO 301							

SECTION 3. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	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 →	306
302	Do you have any sons or daughters to whom you have given birth who are now living with you?	YES ..... 1 NO ..... 2 →	304
303	How many sons live with you? And how many daughters live with you? IF NONE, RECORD "00".	SONS AT HOME ..... [ ][ ] DAUGHTERS AT HOME ..... [ ][ ]	
304	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 →	306
305	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 ..... [ ][ ]	
306	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 survived only a few hours or days?	YES ..... 1 NO ..... 2 →	308
307	In all, how many boys have died? And how many girls have died? IF NONE, RECORD "00".	BOYS DEAD ..... [ ][ ] GIRLS DEAD ..... [ ][ ]	
308	SUM ANSWERS TO 303, 305 AND 307, AND ENTER TOTAL. IF NONE, RECORD "00".	TOTAL ..... [ ][ ]	
309	CHECK 308: Just to make sure that I have this right: you have had in TOTAL _____ births during your life. Is that correct? YES [ ] ↓ NO [ ] → PROBE AND CORRECT 301-308 AS NECESSARY		
310	CHECK 308: ONE OR MORE BIRTHS [ ] ↓ NO BIRTHS [ ] →		325

311 Now I would like to record the names of all your births, whether still alive or not, starting with the first one you had.
RECORD NAMES OF ALL THE BIRTHS IN 312 . IF NO NAME WAS GIVEN, RECORD 'NO NAME' IN 312. RECORD TWINS AND TRIPLETS ON SEPARATE LINES.

312 What name was given to your (first /next) baby? (NAME)	313 Were any of these births twins?	314 Is (NAME) a boy or a girls?	315 In what month and year was (NAME) born?	316 Is (NAME) still alive?	317 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLE-TED YEARS.	318 IF ALIVE: Is (NAME) living with you?	319 IF ALIVE: RECORD HOUSEHOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD)	320 IF 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.	321 Were there any other live births between (NAME OF PREVIOUS BIRTH) and (NAME)?
01	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (NEXT BIRTH)	DAYS.....1 MONTHS...2 YEARS.....3	
02	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
03	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
04	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
05	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
06	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
07	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
08	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2

312 What name was given to your next baby? NAME	313 Were any of these births twins?	314 Is (NAME) a boy or a girl?	315 In what month and year was (NAME) born? PROBE: What is his/her birthday?	316 Is (NAME) still alive?	317 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLE-TED YEARS.	318 IF ALIVE: Is (NAME) living with you?	319 IF ALIVE: RECORD HOUSEHOLD LINE NUMBER OF CHILD (RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD)	320 IF 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.	321 Were there any other live births between (NAME OF PREVIOUS BIRTH) and (NAME)?
09	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
10	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
11	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2
12	YES .....1 NO…… 2	BOY. .. 1 GIRL.... 2	MONTH YEAR	YES. 1 NO..... 2 320	AGE IN YEARS	YES. .. 1 NO..... 2	LINE NUMBER (GO TO 321)	DAYS.....1 MONTHS...2 YEARS.....3	YES. .. 1 NO..... 2

322	Have you had any live birth since the birth of (NAME OF LAST BIRTH)?	YES.....1 NO.....2
323	COMPARE 308 WITH NUMBER OF BIRTHS IN HISTORY ABOVE AND MARK: NUMBERS ARE SAME NUMBERS ARE DIFFERENT (PROBE AND RECONCILE 312-321) CHECK: FOR EACH BIRTH: YEAR OF BIRTH IS RECORDED (CHECK 315). FOR EACH LIVING CHILD: CURRENT AGE IS RECORDED (CHECK 317). FOR EACH DEAD CHILD: AGE AT DEATH IS RECORDED (CHECK 320). FOR AGE AT DEATH 12 MONTHS OR 1 YR.: PROBE TO DETERMINE EXACT NUMBER OF MONTHS (CHECK 320)	
324	CHECK 315 AND ENTER THE NUMBER OF BIRTHS SINCE APRIL 1997 (BAISHAK 1404). IF NONE, RECORD '0'.	
324A	AFTER CHECKING 315, FOR EACH BIRTH SINCE APRIL 1997 (BAISHAK 1404) ENTER 'B' IN THE MONTH OF BIRTH IN COLUMN 1 OF THE CALENDAR AND 'P' IN EACH OF THE 8 PRECEDING MONTHS. WRITE NAME TO THE LEFT OF THE 'B' CODE. WRITE THE NAME OF THE OLDER ONE IN CASE OF TWIN.	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
325	Are you pregnant now?	YES.....1 NO .....2 UNSURE.....8	326
325A	How many months pregnant are you? (RECORD NUMBER OF COMPLETED MONTHS.) ENTER 'P' IN COLUMN 1 OF CALENDAR IN MONTH OF INTERVIEW AND IN EACH RECORDING MONTH PREGNANT.	MONTHS..... [ ]	
325B	Has decision been made regarding who will assist in your delivery?	YES.....1 NO .....2 ONLY DISCUSSED 8	325F
325C	Who will assist in the delivery that was decided or discussed?	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS).....01 NURSE/MIDWIFE/PARAMEDIC....02 FAMILY WELFARE VISITOR .....03 MO/SACMO.....04 HEALTH ASST (HA).....05 FIELD WELFARE ASST (FWA)....06 OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) .....07 UNTRAINED TBA (DAI) .....08 UNQUALIFIED DOCTOR .....09 RELATIVES .....10 NEIGHBOUR/FRIEND .....11 OTHER_____96 (SPECIFY)	
325D	CHECK 325B YES [ ] ONLY DISCUSSED [ ]		325F
325E	Who mainly made the decision?	RESPONDENT..... 01 HUSBAND..... 02 IN-LAWS ..... 03 PARENTS ..... 04 SISTER/SISTER-IN-LAW..... 05 OTHER MEMBER IN HUSBAND FAMILY..... 06 OTHER MEMBER IN RESPONDENT FAMILY..... 07 RELATIVES..... 08 FRIEND/NEIGHBOUR ..... 09 TBA/FIELD WORKER/DAI ..... 10 OTHER _____ _____ 96 (SPECIFY)	
325F	Has decision been made regarding where will you have your delivery?	YES.....1 NO .....2 ONLY DISCUSSED 8	326
325G	Where will you have your delivery that was decided or discussed?	HOME.....11 PUBLIC SECTOR GOVT. HOSPITAL.....21 THANA HEALTH COMPLEX.....22 MATERNAL AND CHILD WELFARE CENTER (MCWC)....23 UNION FAMILY WELFARE CENTER (UHFWC).....24 NGO SECTOR NGO STATIC CLINIC.....31 NGO HOSPITAL.....32 PRIVATE SECTOR PVT. HOSPITAL.....41 PVT. CLINIC.....42 OTHER _____96 (SPECIFY)	
325H	CHECK 325F YES [ ] ONLY DISCUSSED [ ]		326
325I	Who mainly made the decision?	RESPONDENT..... 01 HUSBAND..... 02 IN-LAWS ..... 03 PARENTS ..... 04 SISTER/SISTER-IN-LAW..... 05 OTHER MEMBER IN HUSBAND	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		FAMILY..... 06 OTHER MEMBER IN RESPONDENT FAMILY..... 07 RELATIVES..... 08 FRIEND/NEIGHBOUR ..... 09 TBA/FIELD WORKER/DAI ..... 10 OTHER _____ _____ 96 (SPECIFY)	
326	ASK QUESTIONS SEPARATELY FOR PREGNANCY, DELIVERY AND AFTER DELIVERY BUT RECORD RESPONSES IN SAME CODING CATEGORY. What are the problems at the time of pregnancy which are life threatening? What are the problems at the time of delivery which are life threatening? What are the problems after the delivery which are life threatening?	SEVERE HEADACHE /BLURRY VISION/ HIGH BLOOD PRESSURE ..... A PRE-ECLAMSIA..... B CONVULSION/ECLAMSIA..... C EXCESSIVE VAGINAL BLEEDING ..... D FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... E JAUNDICE ..... F TETANUS..... G BABY'S HAND OR FEET COME/ BABY IN BAD POSITION ..... H PROLONG LABOR ..... I OBSTRUCTED LABOR..... J RETAINED PLACENTA ..... K TORNED UTEROUS..... L OTHER_____ X (SPECIFY) DON'T KNOW ..... Y	
327	Do you think that women should have a medical checkup when they are pregnant even though they are not sick?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
328	CHECK 107 CURRENTLY MARRIED ☐ ↓	SEPARATED/WIDOWED/DIVORCED ☐	▶330
328A	CHECK 325 NO/NOT SURE ☐ ↓	YES (PREGNANT) ☐	▶330
329	Are you currently doing something or using any family planning method to delay or avoid getting pregnant?	YES ..... 1 NO 2	▶ 330
329A	Which method are you using?	FEMALE STERILIZATION ..... 01 MALE STERILIZATION ..... 02 PILL ..... 03 IUD ..... 04 INJECTIONS ..... 05 IMPLANTS/NORPLANTS..... 06 CONDOM ..... 07 PERIODIC ABSTINENCE ..... 08 WITHDRAWAL..... 09 LACT. AMEN. METHOD ..... 10 OTHER_____ 96 (SPECIFY)	
330	Have you ever hand a pregnancy that was miscarried, aborted, or ended in a stillbirth or have you ever done a MR?	YES..... 1 NO..... 2	▶ 337A
331	When did the last such pregnancy end?	MONTH ..... ☐☐ YEAR ..... ☐☐☐☐	
332	CHECK 331: LAST PREGNANCY ENDED SINCE BAISHAK 1404 OR APRIL 1997 ☐ ↓	LAST PREGNANCY ENDED BEFORE BAISHAK 1404 OR APRIL 1997 ☐	▶337A
333	Was that a stillbirth, a miscarriage/abortion, or you had a menstrual regulation?	STILLBIRTH..... 1 MISCARRIAGE/ABORTION ..... 2 MENSTRUAL REGULATION..... 3	
334	How many months pregnant were you when the pregnancy ended? (RECORD IN FULL MONTH) ENTER 'S' FOR STILL BIRTH, 'A' FOR MISCARRIAGE OR ABORTION, 'M' FOR MENUSTRUAL REGULATION IN COLUMN 1	MONTHS..... ☐	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	OF CALENDAR IN THE MONTH THAT THE PREGNANCY TERMINATED, AND 'P' IN EACH PRECEDING MONTH PREGNANT.		

335	Did you ever have any other such pregnancies that did not end with live birth?	YES ..... 1 NO 2	→337A

336 ASK FOR DATES AND DURATIONS OF ANY OTHERS PREGNANCIES BACK TO 1404 BAISAK/1997 APRIL

ENTER 'S' FOR STILL BIRTH, 'A' FOR MISCARRIAGE OR ABORTION, 'M' FOR MENUSTRUAL REGULATION IN COLUMN 1 OF CALENDAR IN THE MONTH THAT THE PREGNANCY TERMINATED, AND 'P' IN EACH PRECEDING MONTH PREGNANT.

INSTRUCTIONS:

ONLY ONE CODE SHOULD APPEAR IN COLUMN 1.

337A: LIVE BIRTHS
FOR EACH BIRTH SINCE APRIL 1997 (BAISHAK 1404) ENTER 'B' IN THE MONTH OF BIRTH IN COLUMN 1 OF THE CALENDAR AND 'P' IN EACH OF THE 8 PRECEDING MONTHS.

337B: OUTCOME OF PREGNANCY OTHER THAN LIVE BIRTHS: ENTER 'S' FOR STILL BIRTH, 'A' FOR MISCARRIAGE OR ABORTION, 'M' FOR MENUSTRUAL REGULATION IN COLUMN 1 OF CALENDAR IN THE MONTH THAT THE PREGNANCY TERMINATED, AND 'P' IN EACH PRECEDING MONTH PREGNANT.

COLUMN 2: 337C:
FOR EACH LIVE BIRTH (B) AND STILL BIRTH (S) SINCE APRIL 1997 (BAISHAK 1404), ENTER THE SERIAL NUMBER 1,2 …… IN COLUMN 2 STARTING WITH LAST PREGNANCY. FOR STILL BIRTH, RESPONDENT SHOULD HAVE ATLEAST 7 MONTH OF PREGNANT.FOR OTHER THAN LIVE AND STILL BIRTH, THERE IS NO NEED TO GIVE THE SERIAL NUMBER.

			1	2			
1	04 SRABAN	01			01	07 JUL	2
4	03 ASHAR	02			02	06 JUN	0
0	02 JAISTHA	03			03	05 MAY	0
8	01 BAISHAK	04			04	04 APR	1
	12 CHOITRA	05			05	03 MAR	
	11 FALGUN	00			00	02 FEB	
	10 MAGH	07			07	01 JAN	
	09 POUSH	08			08	12 DEC	
	08 AGRAHAYAN	09			09	11 NOV	
1	07 KARTIK	10			10	10 OCT	
4	06 ASHWIN	11			11	09 SEP	2
0	05 BADHRA	12			12	08 AUG	0
7	04 SRABAN	13			13	07 JUL	0
	03 ASHAR	14			14	06 JUN	0
	02 JAISTHA	15			15	05 MAY	
	01 BAISHAK	16			16	04 APR	
	12 CHOITRA	17			17	03 MAR	
	11 FALGUN	18			18	02 FEB	
	10 MAGH	19			19	01 JAN	
	09 POUSH	20			20	12 DEC	
	08 AGRAHAYAN	21			21	11 NOV	1
1	07 KARTIK	22			22	10 OCT	9
4	06 ASHWIN	23			23	09 SEP	9
0	05 BADHRA	24			24	08 AUG	9
6	04 SRABAN	25			25	07 JUL	
	03 ASHAR	26			26	06 JUN	
	02 JAISTHA	27			27	05 MAY	
	01 BAISHAK	28			28	04 APR	
	12 CHOITRA	29			29	03 MAR	
	11 FALGUN	30			30	02 FEB	
	10 MAGH	31			31	01 JAN	
	09 POUSH	32			32	12 DEC	
	08 AGRAHAYAN	33			33	11 NOV	
1	07 KARTIK	34			34	10 OCT	
4	06 ASHWIN	35			35	09 SEP	1
0	05 BADHRA	36			36	08 AUG	9
5	04 SRABAN	37			37	07 JUL	9
	03 ASHAR	38			38	06 JUN	8
	02 JAISTHA	39			39	05 MAY	
	01 BAISHAK	40			40	04 APR	
	12 CHOITRA	41			41	03 MAR	
	11 FALGUN	42			42	02 FEB	
	10 MAGH	43			43	01 JAN	
	09 POUSH	44			44	12 DEC	
	08 AGRAHAYAN	45			45	11 NOV	
1	07 KARTIK	46			46	10 OCT	1
4	06 ASHWIN	47			47	09 SEP	9
0	05 BADHRA	48			48	08 AUG	9
4	04 SRABAN	49			49	07 JUL	7
	03 ASHAR	50			50	06 JUN	
	02 JAISTHA	51			51	05 MAY	
	01 BAISHAK	52			52	04 APR	

SECTION 4. PRE AND POSTNATAL CARE

401	CHECK CALENDAR:	ONE OR MORE LIVE BIRTHS/ STILL BIRTH SINCE APRIL 1997 (BAISHAK 1404) ☐	NO LIVE BIRTH OR STILL BIRTHS SINCE APRIL 1997 (BAISHAK 1401) ☐ → 430
401A	ENTER IN THE TABLE THE LINE NUMBER AND NAME OF EACH BIRTH SINCE APRIL 1997 OR BAISHAK 1404. FOR STILL BIRTH WRITE '00' IN THE LINE NUMBER. ASK THE QUESTIONS ABOUT ALL OF THESE PREGNANCIES. BEGIN WITH THE LAST PREGNANCY. MENTION NAME FOR ALL CHILDREN IF THEY ARE ALIVE. (IF THERE ARE MORE THAN 2 PREGNANCIES, USE LAST COLUMN OF ADDITIONAL QUESTIONNAIRES).		
402	Now I would like to ask you some questions about your health during all pregnancies since Baishak 1404 or April 1997. I will ask first for last pregnancy and then next-to-last pregnancy.		

		LAST PREGNANCY	NEXT-TO-LAST PREGNANCY
403	CHECK CALENDAR AND WRITE THE SERIAL NUMBER	SERIAL NUMBER.. ..... ☐	SERIAL NUMBER .. .. ☐
403A	WRITE NAME AND LINE NUMBER FROM Q312. FOR STILL BIRTH WRITE '00'	LINE NUMBER ..... ☐☐ NAME.....	LINE NUMBER ..... ☐☐ NAME .....
404	When you were pregnant with (NAME), did you see anyone for antenatal care (pregnancy checkup)?	YES ..... 1 NO ..... 2 (SKIP TO 405)	YES ..... 1 NO ..... 2 (SKIP TO 405)
404A	Whom did you see? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASSISTANT(HA) ..... E FAMILY WELFARE ASST(FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER_____ X (SPECIFY) (SKIP TO 406)	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASSISTANT(HA) ..... E FAMILY WELFARE ASST(FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER_____ X (SPECIFY) (SKIP TO 406)
405	Why did you not see anyone? Any other reason? RECORD ALL MENTIONED.	NOT NEEDED ..... A NOT CUSTOMERY ..... B EXPENSIVE ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORTATION PROBLEM ..... F NO ONE TO ACCOMPANY ..... G GOOD SERVICE UNAVAILABLE ..... H NOT PERMITTED FROM FAMILY ..... I BETTER SERVICE AT HOME ..... J DID NOT KNOW HOW TO GO ..... K NO TIME TO TAKE SERVICE ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANTED SERVICE FROM MALE DOCTOR ..... N INCONVENIENT SERVICE HOUR ..... O LACK OF PRIVACY ..... P FEAR ..... Q INADEQUATE DRUG SUPPLY ..... R LONG WAITING TIME ..... S RELIGIOUS REASONS ..... T DID NOT KNOW THE NEED FOR SERVICE ..... U OTHER_____ X (SPECIFY) (SKIP TO 407E)	NOT NEEDED ..... A NOT CUSTOMERY ..... B EXPENSIVE ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORTATION PROBLEM ..... F NO ONE TO ACCOMPANY ..... G GOOD SERVICE UNAVAILABLE ..... H NOT PERMITTED FROM FAMILY ..... I BETTER SERVICE AT HOME ..... J DID NOT KNOW HOW TO GO ..... K NO TIME TO TAKE SERVICE ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANTED SERVICE FROM MALE DOCTOR ..... N INCONVENIENT SERVICE HOUR ..... O LACK OF PRIVACY ..... P FEAR ..... Q INADEQUATE DRUG SUPPLY ..... R LONG WAITING TIME ..... S RELIGIOUS REASONS ..... T DID NOT KNOW THE NEED FOR SERVICE ..... U OTHER_____ X (SPECIFY) (SKIP TO 407E)
406	When you were pregnant with (NAME), the first time you go for antenatal care, did you go for just to checkup or you had a problem?	BECAUSE OF PROBLEM ..... 1 FOR CHECKUP ONLY ..... 2 (SKIP TO 407)	BECAUSE OF PROBLEM ..... 1 FOR CHECKUP ONLY ..... 2 (SKIP TO 407)

		LAST PREGNANCY SERIAL NUMBER..... [ ] LINE NUMBER..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER..... [ ] LINE NUMBER..... [ ][ ]
406A	For what problem did you first go for antenatal care?	HEADACHE/BLURRY VISION HIGH BLOOD PRESSURE ..... A EDEMA/PRE-ECLAMSIA..... B VAGINAL BLEEDING..... C CONVULSION/ECLAMSIA ..... D TETANUS..... E FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... F LOWER ABDOMINAL PAIN..... G FELL DOWN ..... H BABY MOVEMENT WAS LOW..... I VARICUS VEIN ..... J EXCESSIVE VOMITING ..... K OTHER_____X (SPECIFY)	HEADACHE/BLURRY VISION HIGH BLOOD PRESSURE ..... A EDEMA/PRE-ECLAMSIA..... B VAGINAL BLEEDING..... C CONVULSION/ECLAMSIA ..... D TETANUS..... E FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... F LOWER ABDOMINAL PAIN..... G FELL DOWN ..... H BABY MOVEMENT WAS LOW..... I VARICUS VEIN ..... J EXCESSIVE VOMITING ..... K OTHER_____X (SPECIFY)
407	How many months pregnant were you when you first received medical checkup i.e., antenatal care for this pregnancy?	MONTHS..... [ ][ ] DON'T KNOW..... 98	MONTHS..... [ ][ ] DON'T KNOW..... 98
407A	How many times did you receive medical checkup during this pregnancy?	NO. OF TIMES..... [ ][ ] DON'T KNOW..... 98	NO. OF TIMES..... [ ][ ] DON'T KNOW..... 98

407B	When you were pregnant with (NAME), did you receive advice on any of the following during at least one of your antenatal check-ups for this pregnancy: (READ ALL)	YES NO	YES NO
	Advise about diet?	DIET..... 1 2	DIET..... 1 2
	Talked about danger sign of pregnancy?	DANGER SIGN..... 1 2	DANGER SIGN..... 1 2
	Told where to go for complications?	COMPLICATIONS..... 1 2	COMPLICATIONS..... 1 2
407C	When you were pregnant with (NAME), were you or your husband/relatives told about the following birth planning items: (MENTION ALL)	YES NO	YES NO
	The place where you would like to have delivery	DELIVERY PLACE..... 1 2	DELIVERY PLACE..... 1 2
	The person who will delivery your baby.	DELIVERY PERSON..... 1 2	DELIVERY PERSON..... 1 2
	The hospital /clinic you can go if you have delivery complication.	HOSPITAL..... 1 2	HOSPITAL..... 1 2
	Arrangement for transport	TRANSPORT..... 1 2	TRANSPORT..... 1 2
	Arrangement for money for delivery	MONEY..... 1 2	MONEY..... 1 2
	Arrangement for safe delivery kit for delivery at home	SAFE DELIVERY KIT..... 1 2	SAFE DELIVERY KIT..... 1 2
	Complication during pregnancy and delivery	COMPLICATIONS..... 1 2	COMPLICATIONS..... 1 2
407D	When you were pregnant with (NAME), were you or your husband/relatives told about safe delivery such as:	YES NO	YES NO
	Dai (delivery person) should wash hands or use gloves	USING GLOVES..... 1 2	USING GLOVES..... 1 2
	Using of new and cleaned blade.	STERLIED BLADE..... 1 2	STERLIED BLADE..... 1 2
	Using clean thread to tie cod.	CLEANED THREAD..... 1 2	CLEANED THREAD..... 1 2
	Using savlon/dettle	SAVLON/DETTLE..... 1 2	SAVLON/DETTLE..... 1 2
	Keeping safe delivery kit at home.	SAFE DELIVERY KIT..... 1 2	SAFE DELIVERY KIT..... 1 2

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
407E	During this pregnancy, did you have the following::	YES NO DK	YES NO DK
	Weight measured?	WEIGHT 1 2 8	WEIGHT 1 2 8
	Height measured?	HEIGHT 1 2 8	HEIGHT 1 2 8
	Blood pressure checked?	BLOOD PRESSURE 1 2 8	BLOOD PRESSURE 1 2 8
	Blood test?	BLOOD TEST 1 2 8	BLOOD TEST 1 2 8
	Urine test?	URINE TEST 1 2 8	URINE TEST 1 2 8
	Abdomen examined?	ABDOMEN EXAMINED 1 2 8	ABDOMEN EXAMINED 1 2 8
	Internal exam?	INTERNAL EXAM 1 2 8	INTERNAL EXAM 1 2 8
	Sonogram or ultrasound?	SONOGRAM 1 2 8	SONOGRAM 1 2 8
408	Who assisted with the delivery of (NAME)? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS ASSISTING.	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASST (HA) ..... E FIELD WELFARE ASST (FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA (DAI) ..... H UNQUALIFIED DOCTOR ..... I RELATIVES ..... J NEIGHBOURS/FRIENDS ..... K OTHER _____ X (SPECIFY) NO ONE ..... Y	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASST (HA) ..... E FIELD WELFARE ASST (FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA (DAI) ..... H UNQUALIFIED DOCTOR ..... I RELATIVES ..... J NEIGHBOURS/FRIENDS ..... K OTHER _____ X (SPECIFY) NO ONE ..... Y
408A	Where did you give birth (NAME)?	HOME ..... 11 PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UHFWC) ..... 24 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 OTHER _____ 96 (SPECIFY) (SKIP TO 410)	HOME ..... 11 PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UHFWC) ..... 24 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 OTHER _____ 96 (SPECIFY) (SKIP TO 410)

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
409	What are the reasons you did not go to a health facility for delivery?	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GET SERVICES ..... L NOT KNOWN WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N FOR FEAR ..... Q CLINIC/HOSPITAL INSIST FOR CISAREAN ..... V OTHER _____ X (SPECIFY) (SKIP 411)	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GET SERVICES ..... L NOT KNOWN WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N FOR FEAR ..... Q CLINIC/HOSPITAL INSIST FOR CISAREAN ..... V OTHER _____ X (SPECIFY) (SKIP 411)
410	Why did you choose to deliver at the hospital/health center?	FIRST CHILD WAS CAESARIAN ..... A CUSTOMERY ..... B MODERN FACILITY/DOCTOR ..... C DELIVERY/HEALTH RELATED PROBLEM ..... D BABY OVERDUE ..... E DOCTOR/HEALTH WORKER TOLD ..... F FOR SAFE DELIVERY ..... G OTHER _____ X (SPECIFY)	FIRST CHILD WAS CAESARIAN ..... A CUSTOMERY ..... B MODERN FACILITY/DOCTOR ..... C DELIVERY /HEALTH RELATED PROBLEM ..... D BABY OVERDUE ..... E DOCTOR/HEALTH WORKER TOLD ..... F FOR SAFE DELIVERY ..... G OTHER _____ X (SPECIFY)
411	Were any of the following procedures performed at the time of delivery? a. Instruments to used to get the baby out (FORCEP) b. You had an abdominal operation to get the baby out (C-SECTION) c. Received blood transfusion d. Received intravenous fluid	YES NO DK FORCEP ..... 1 2 8 ABDOMINAL OPERATION/ C-SECTION ..... 1 2 8 BLOOD TRANSFUSION ..... 1 2 8 INTRAVENOUS 1 2 8	YES NO DK FORCEP ..... 1 2 8 ABDOMINAL OPERATION/ C-SECTION ..... 1 2 8 BLOOD TRANSFUSION ..... 1 2 8 INTRAVENOUS 1 2 8

		LAST PREGNANCY SERIAL NUMBER ..... ☐ LINE NUMBER ..... ☐☐	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... ☐ LINE NUMBER ..... ☐☐
412	Did you experience any of the following problems at any time of pregnancy (pregnant with NAME), delivery or after delivery? CIRCLE ALL RESPONDENT MENTIONED.	(P=PREGNANCY, D=AT THE TIME OF DELIVERY, AD=AFTER DELIVERY)	(P=PREGNANCY, D=AT THE TIME OF DELIVERY, AD=AFTER DELIVERY)
		P D AD	P D AD
	Had headache, blurred vision and high blood pressure?	HEADACHE A1 A2 A3	HEADACHE A1 A2 A3
	Edema/Pre-eclamsia?	PREECLAMSIA B1 B2 B3	PREECLAMSIA B1 B2 B3
	Excessive bleeding was so much which wet your clothes that you feared it was life threatening?	EXCESSIVE BLEEDING .. C1 C2 C3	EXCESSIVE BLEEDING... C1 C2 C3
	A high fever with bad smelling vaginal discharge?	HIGH FEVER D1 D2 D3	HIGH FEVER D1 D2 D3
	Convulsions/eclamsia?	CONVULSIONS E1 E2 E3	CONVULSIONS E1 E2 E3
	Baby's hands and feet came first during delivery?	HANDS AND FEET ..... -- F2 --	HANDS AND FEET ..... -- F2 --
	Prolong labor?	LONG LABOR -- G2 --	LONG LABOR -- G2 --
	Tetanus?	TETANUS H1 H2 H3	TETANUS H1 H2 H3
	Placenta previa/retained placenta?	PLACENTA ..... -- I2 I3	PLACENTA ..... -- I2 I3
	Torned uterus?	TORNED UTERUS ..... -- J2 -	TORNED UTERUS ..... -- J2 -
	Obstructed labor?	OBSTRUCTED LABOR -- K2 -	OBSTRUCTED LABOR -- K2 -
	Other?	OTHER X1 X2 X3	OTHER X1 X2 X3
	Nothing happened.	NONE Y1 Y2 Y3	NONE Y1 Y2 Y3
412A	CHECK 412 : CODE G2 (PROLONG LABOR)	CIRCLE 'G2' ☐ ↓ NOT CIRCLE 'G2' ☐ ↓ (SKIP TO 413)	CIRCLE 'G2' ☐ ↓ NOT CIRCLE 'G2' ☐ ↓ (SKIP TO 413)
412B	How many hours was the labor? WRITE '00' IF LESS THAN AN HOUR	HOURS ..... ☐☐ DON'T KNOW 98	HOURS ..... ☐☐ DON'T KNOW 98
413	Who can tell us about the circumstances around the delivery?	RESPONDENT ..... A HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY)	RESPONDENT ..... A HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY)

		LAST PREGNANCY SERIAL NUMBER ..... ☐ LINE NUMBER ..... ☐☐	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... ☐ LINE NUMBER ..... ☐☐
413A	**TAKE HELP FROM PEOPLE MENTIONED IN 413.** CIRCLE THE CODE FOR PRESONS PRESENCE AT THE TIME OF INTERVIEW.	RESPONDENT ..... A HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY)	RESPONDENT ..... A HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY)
414	CHECK 412 AND CHECK IN WRIGHT BOX.	EXCEPT Y1, Y2, Y3 CIRCLE ONE ☐ EXCEPT Y1, Y2, Y3 CIRCLE MORE THAN ONE ☐ SKIP TO 416 CIRCLE ONLY Y1, Y2, Y3 ☐ SKIP TO 428	EXCEPT Y1, Y2, Y3 CIRCLE ONE ☐ EXCEPT Y1, Y2, Y3 CIRCLE MORE THAN ONE ☐ SKIP TO 416 CIRCLE ONLY Y1, Y2, Y3 ☐ SKIP TO 428
415	Do you think that (RESPONSE FROM Q.412) was potentially dangerous or life threatening?	YES ..... 1 NO ..... 2 DONOT KNOW ..... 8 (SKIP TO 418B)	YES ..... 1 NO ..... 2 DONOT KNOW ..... 8 (SKIP TO 418B)
416	You have just mentioned that you had (RESPONSE FROM Q412) complications. Was there any complication potentially dangerous or life threatening? IF YES: Which complication(s) was/were life threatening?	HEADACHE/HIGH BLOOD PRSR ..... A EDEMA/PREECLAMSIA ..... B EXCESSIVE BLEEDING ..... C FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... D CONVULSIONS/ECLAMSIA ..... E HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... F PRO LONG LABOR ..... G TETANUS ..... H RETAINED PLACENTA ..... I TORNED UTERUS ..... J OBSTRUCTED LABOR ..... K OTHER _____ X (SPECIFY) NONE/DON'T KNOW ..... Y	HEADACHE/HIGH BLOOD PRSR ..... A EDEMA/PREECLAMSIA ..... B EXCESSIVE BLEEDING ..... C FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... D CONVULSIONS/ECLAMSIA ..... E HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... F PRO LONG LABOR ..... G TETANUS ..... H RETAINED PLACENTA ..... I TORNED UTERUS ..... J OBSTRUCTED LABOR ..... K OTHER _____ X (SPECIFY) NONE/DON'T KNOW ..... Y

		LAST PREGNANCY	NEXT-TO-LAST PREGNANCY
		SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
417	CHECK 416.	EXCEPT 'Y' MORE THAN ONE CIRCLE [ ] ONLY 'Y' CIRCLE [ ] SKIP TO 418A EXCEPT 'Y' ONLY ONE CIRCLE [ ] SKIP TO 418B	EXCEPT 'Y' MORE THAN ONE CIRCLE [ ] ONLY 'Y' CIRCLE [ ] SKIP TO 418A EXCEPT 'Y' ONLY ONE CIRCLE [ ] SKIP TO 418B
418	Which complication (FROM Q. 416) was occurred last?	HEADACHE/HIGH BLOOD PRSR ..... 01 EDEMA/PREECLAMSIA ..... 02 EXCESSIVE BLEEDING ..... 03 FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... 04 CONVULSIONS/ECLAMSIA ..... 05 HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... 06 PRO LONG LABOR ..... 07 TETANUS ..... 08 RETAINED PLACENTA ..... 09 TORNED UTERUS ..... 10 OBSTRUCTED LABOR ..... 11 OTHER _____ 96 (SPECIFY) (SKIP TO 418B)	HEADACHE/HIGH BLOOD PRSR ..... 01 EDEMA/PREECLAMSIA ..... 02 EXCESSIVE BLEEDING ..... 03 FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... 04 CONVULSIONS/ECLAMSIA ..... 05 HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... 06 PRO LONG LABOR ..... 07 TETANUS ..... 08 RETAINED PLACENTA ..... 09 TORNED UTERUS ..... 10 OBSTRUCTED LABOR ..... 11 OTHER _____ 96 (SPECIFY) (SKIP TO 418B)
418A	Which complication (FROM Q. 412) was occurred last?	HEADACHE/HIGH BLOOD PRSR ..... 01 EDEMA/PREECLAMSIA ..... 02 EXCESSIVE BLEEDING ..... 03 FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... 04 CONVULSIONS/ECLAMSIA ..... 05 HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... 06 PRO LONG LABOR ..... 07 TETANUS ..... 08 RETAINED PLACENTA ..... 09 TORNED UTERUS ..... 10 OBSTRUCTED LABOR ..... 11 OTHER _____ 96 (SPECIFY)	HEADACHE/HIGH BLOOD PRSR ..... 01 EDEMA/PREECLAMSIA ..... 02 EXCESSIVE BLEEDING ..... 03 FOUL-SMELLING DISCHARGE WITH HIGH FEVER ..... 04 CONVULSIONS/ECLAMSIA ..... 05 HANDS AND FEET CAME OUT /BABY'S WRONG POSITION ..... 06 PRO LONG LABOR ..... 07 TETANUS ..... 08 RETAINED PLACENTA ..... 09 TORNED UTERUS ..... 10 OBSTRUCTED LABOR ..... 11 OTHER _____ 96 (SPECIFY)
418B	After how much time from the beginning of this complication you recognize that you were having problem?	HOURS ..... 1 [ ][ ] DAYS ..... 2 [ ][ ] MONTHS ..... 3 [ ][ ] IMMEDIATELY .... 000 DON'T KNOW 998	HOURS ..... 1 [ ][ ] DAYS ..... 2 [ ][ ] MONTHS ..... 3 [ ][ ] IMMEDIATELY .... 000 DON'T KNOW 998

		LAST PREGNANC SERIAL NUMBER ..... LINE NUMBER	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER
418C	When you had this complication, did any member of your household become concerned about the condition? IF YES: Who?	HUSBAND B PARENT-IN-LAW C PARENT D SISTER/SISTER-IN-LAW E OTHER MEMBER OF HUSBAND FAMILY F OTHER MEMBER OF RESPONDENT FAMILY G RELATIVES H CHILDREN K OTHER X (SPECIFY) NONE Y	HUSBAND B PARENT-IN-LAW C PARENT D SISTER/SISTER-IN-LAW E OTHER MEMBER OF HUSBAND FAMILY F OTHER MEMBER OF RESPONDENT FAMILY G RELATIVES H CHILDREN K OTHER X (SPECIFY) NONE Y
418D	Did you see seek any assistance for this complication?	YES 1 (SKIP TO 418G) NO 2	YES 1 (SKIP TO 418G) NO 2
418E	Why you did not seek treatment? Any other reason? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	NOT NECESSARY A NOT CUSTOMERY B COST TOO MUCH C LACK OF MONEY D TOO FAR E TRANSPORT PROBLEM F NO ONE TO ACCOMPANY G POOR QUALITY SERVICE H FAMILY DID NOT ALLOW I BETTER CARE AT HOME J NOT KNOWN HOW TO GO K NO TIME TO GET SERVICES L NOT KNOWN WHERE TO GO M NOT WANT SERVICE FROM MALE DOCTOR N DID NOT THINK OF SERIOUSNESS OF COMPLICATION W OTHER X (SPECIFY)	NOT NECESSARY A NOT CUSTOMERY B COST TOO MUCH C LACK OF MONEY D TOO FAR E TRANSPORT PROBLEM F NO ONE TO ACCOMPANY G POOR QUALITY SERVICE H FAMILY DID NOT ALLOW I BETTER CARE AT HOME J NOT KNOWN HOW TO GO K NO TIME TO GET SERVICES L NOT KNOWN WHERE TO GO M NOT WANT SERVICE FROM MALE DOCTOR N DID NOT THINK OF SERIOUSNESS OF COMPLICATION W OTHER X (SPECIFY)
418F	Who took the decision that you should not seek treatment? Anyone else?	RESPONDENT A HUSBAND B PARENT-IN-LAW C PARENT D SISTER/SISTER-IN-LAW E OTHER MEMBER OF HUSBAND FAMILY F OTHER MEMBER OF RESPONDENT FAMILY G RELATIVES H NEIGHBOUR/FRIEND I TBA/FIELD WORKER/DAI J OTHER X (SPECIFY) NONE Y (SKIP TO 428)	RESPONDENT A HUSBAND B PARENT-IN-LAW C PARENT D SISTER/SISTER-IN-LAW E OTHER MEMBER OF HUSBAND FAMILY F OTHER MEMBER OF RESPONDENT FAMILY G RELATIVES H NEIGHBOUR/FRIEND I TBA/FIELD WORKER/DAI J OTHER X (SPECIFY) NONE Y (SKIP TO 428)

		LAST PREGNANCY SERIAL NUMBER..... ☐ LINE NUMBER..... ☐☐	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... ☐ LINE NUMBER..... ☐☐
418G	Whom did you see? Anyone else?	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS)..... A NURSE/MIDWIFE/PARAMEDIC.... B FAMILY WELFARE VISITOR..... C MA/SACMO ..... D HEALTH ASST (HA)..... E FIELD WELFARE ASST (FWA)..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER_____ X (SPECIFY)	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS)..... A NURSE/MIDWIFE/PARAMEDIC.... B FAMILY WELFARE VISITOR..... C MA/SACMO ..... D HEALTH ASST (HA)..... E FIELD WELFARE ASST (FWA)..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER_____ X (SPECIFY)
418H	Where did you receive treatment? Any other places?	HOME..... A PUBLIC SECTOR GOVT. HOSPITAL..... B THANA HEALTH COMPLEX..... C MATERNAL AND CHILD WELFARE CENTER (MCWC).... D UNION FAMILY WELFARE CENTER (UFWC)..... E SATELITTE /EPI OUTREACH..... F COMMUNITY CLINIC..... G NGO SECTOR NGO STATIC CLINIC..... H NGO HOSPITAL..... I NGO SATELITTE CLINIC..... J PRIVATE SECTOR PVT. HOSPITAL ..... K PVT. CLINIC..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY..... N OTHER _____ X (SPECIFY)	HOME..... A PUBLIC SECTOR GOVT. HOSPITAL..... B THANA HEALTH COMPLEX..... C MATERNAL AND CHILD WELFARE CENTER (MCWC).... D UNION FAMILY WELFARE CENTER (UFWC)..... E SATELITTE /EPI OUTREACH..... F COMMUNITY CLINIC..... G NGO SECTOR NGO STATIC CLINIC..... H NGO HOSPITAL..... I NGO SATELITTE CLINIC..... J PRIVATE SECTOR PVT. HOSPITAL ..... K PVT. CLINIC..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY..... N OTHER _____ X (SPECIFY)
419	Who took the decision that you should seek treatment?	RESPONDENT..... A HUSBAND..... B PARENT-IN-LAW..... C PARENT..... D SISTER/SISTER-IN-LAW..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES..... H NEIGHBOUR/FRIEND..... I TBA/FIELD WORKER/DAI..... J OTHER_____ X (SPECIFY) NONE..... Y DON'T KNOW..... Z	RESPONDENT..... A HUSBAND..... B PARENT-IN-LAW..... C PARENT..... D SISTER/SISTER-IN-LAW..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES..... H NEIGHBOUR/FRIEND..... I TBA/FIELD WORKER/DAI..... J OTHER_____ X (SPECIFY) NONE..... Y DON'T KNOW..... Z
419A	After how much time from the beginning of this complication it was decided that you need treatment? IF IMMEDIATELY, WRITE '00' IN HOURS BOX, WRITE IN HOURS IF LESS THAN A DAY AND WRITE IN MONTH IF MORE THAN 30 DAYS.	HOURS.....1 ☐☐ DAYS .....2 ☐☐ MONTHS .....3 ☐☐	HOURS.....1 ☐☐ DAYS .....2 ☐☐ MONTHS .....3 ☐☐

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
419B	Did you seek treatment soon after the decision made?	YES ..... 1 (SKIP TO 420) NO, LATE ..... 2 DON'T KNOW ..... 8 (SKIP TO 420)	YES ..... 1 (SKIP TO 420) NO, LATE ..... 2 DON'T KNOW ..... 8 (SKIP TO 420)
419C	Why the treatment was not sought immediately?	HOSPITAL TOO FAR ..... A DID NOT THINK SERIOUSLY ..... B LACK OF MONEY ..... C NOT WANT SERVICE FROM MALE DOCTOR ..... D OTHER _____ X (SPECIFY)	HOSPITAL TOO FAR ..... A DID NOT THINK SERIOUSLY ..... B LACK OF MONEY ..... C NOT WANT SERVICE FROM MALE DOCTOR ..... D OTHER _____ X (SPECIFY)
419D	How much time after a decision was made, was the treatment sought? WRITE '00' IF LESS THAN AN HOUR.	HOURS…… ..... [ ][ ] DON'T KNOW…… 98	HOURS…… ..... [ ][ ] DON'T KNOW…… 98
420	How many hospital/clinic/dispensary did you visit for this treatment? .	NUMBERS…… ..... [ ] DID NOT GO ANY PLACE ..... 0 (SKIP TO 428)	NUMBERS…… ..... [ ] DID NOT GO ANY PLACE ..... 0 (SKIP TO 428)
420A	**INTERVIEWER: Qs. 421-423 ARE APPLICABLE FOR FIRST TREATMENT FACILITY**		
421	Where did you go first to seek treatment?	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATELITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATELITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98
421A	Who accompanied you to go the treatment center (NAME FROM 421)? CIRCLE ALL THE PERSONS ACCOMPANIED	HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY) NONE ..... Y	HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY) NONE ..... Y

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
421B	How far is hospital/health center/clinic (treatment center) from your house/house you were present? WRITE '00' IF LESS THAN A MILE	MILE…… ..... [ ][ ] OUTSIDE UPAZILA/TOWN……95 DON'T KNOW..... 98	MILE…… ..... [ ][ ] OUTSIDE UPAZILA/TOWN……95 DON'T KNOW..... 98
421C	How did you go to the hospital/health center?	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D BOAT ..... E ENGINE BOAT ..... F OX CART ..... G RICKSHAW/VAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER _____ X (SPECIFY) (SKIP TO 421E)	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D BOAT ..... E ENGINE BOAT ..... F OX CART ..... G RICKSHAW/VAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER _____ X (SPECIFY) (SKIP TO 421E)
421D	Did you have difficulty in obtaining _____transportation?	VERY MUCH ..... 1 SOMEWHAT ..... 2 NOT AT ALL ..... 3 DON'T KNOW 8	VERY MUCH ..... 1 SOMEWHAT ..... 2 NOT AT ALL ..... 3 DON'T KNOW 8
421E	How long did it take to reach there?	[ ][ ] [ ][ ] HOURS MINUTES DON'T KNOW..... 9998	[ ][ ] [ ][ ] HOURS MINUTES DON'T KNOW..... 9998
421F	How long did you wait between the time you first arrived at the hospital/clinic and the time you were examined by a health care provider (doctor/nurse/health worker)?	[ ][ ] [ ][ ] HOURS MINUTES IMMEDIATELY 0000	[ ][ ] [ ][ ] HOURS MINUTES IMMEDIATELY 0000
421G	Did your condition improve after treatment in this place, or did it stay the same?	NO CHANGE ..... 1 IMPROVED ..... 2 WORSNED ..... 3 DON'T KNOW 8	NO CHANGE ..... 1 IMPROVED ..... 2 WORSNED ..... 3 DON'T KNOW 8
422	Were you referred or told to go any other place for treatment/advice?	YES..... 1 NO ..... 2 (SKIP TO 424)	YES..... 1 NO ..... 2 (SKIP TO 424)
422A	Where were you told to go?	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATEITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATEITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER..... [ ][ ]
422B	How long after you reached the place (PLACE IN 421), were you told to go the place (PLACE in 422A)?	[ ][ ] [ ][ ] HOURS MINUTES IMMEDIATELY 0000	[ ][ ] [ ][ ] HOURS MINUTES IMMEDIATELY 0000
422C	Why were you told to seek treatment/advice to another place?	NO SURGERY EQUIPMENT..... A HIGH BLOOD PRESSURE..... B FOR BETTER TREATMENT..... C DOCTOR UNAVAILABLE..... D NO ARRANGEMENT FOR BLOOD TRANSFUSION..... E DID NOT HAVE NECESSARY ARRANGEMENT TO SOLVE PROBLEM..... F BABY'S UPWARD POSITION..... G SOME PART OF BABY CAME OUT..... H BABY URINATED INSIDE..... I UTERUS DID NOT OPEN..... J OTHER_____ X	NO SURGERY EQUIPMENT..... A HIGH BLOOD PRESSURE..... B FOR BETTER TREATMENT..... C DOCTOR UNAVAILABLE..... D NO ARRANGEMENT FOR BLOOD TRANSFUSION..... E DID NOT HAVE NECESSARY ARRANGEMENT TO SOLVE PROBLEM..... F BABY'S UPWARD POSITION..... G SOME PART OF BABY CAME OUT..... H BABY URINATED INSIDE..... I UTERUS DID NOT OPEN..... J OTHER_____ X
422D	Did you go the place where you were referred or told to go?	YES..... 1 (SKIP TO 424) ◄ NO 2	YES..... 1 (SKIP TO 424) ◄ NO 2
423	Why you did not go the referred place? Any other reason? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	NOT NECESSARY..... A NOT CUSTOMERY..... B COST TOO MUCH..... C LACK OF MONEY..... D TOO FAR..... E TRANSPORT PROBLEM..... F NO ONE TO ACCOMPANY..... G POOR QUALITY SERVICE..... H FAMILY DID NOT ALLOW..... I BETTER CARE AT HOME..... J NOT KNOWN HOW TO GO..... K NO TIME TO GET SERVICE..... L NOT WANT SERVICE FROM MALE DOCTOR..... N DID NOT THINK OF SERIOUSNESS OF COMPLICATION..... W OTHER_____ X (SPECIFY)	NOT NECESSARY..... A NOT CUSTOMERY..... B COST TOO MUCH..... C LACK OF MONEY..... D TOO FAR..... E TRANSPORT PROBLEM..... F NO ONE TO ACCOMPANY..... G POOR QUALITY SERVICE..... H FAMILY DID NOT ALLOW..... I BETTER CARE AT HOME..... J NOT KNOWN HOW TO GO..... K NO TIME TO GET SERVICE..... L NOT WANT SERVICE FROM MALE DOCTOR..... N DID NOT THINK OF SERIOUSNESS OF COMPLICATION..... W OTHER_____ X (SPECIFY)
424	CHECK 420	WENT MORE THAN ONE PLACES..... 1 WENT ONLY ONE PLACE..... 2 (SKIP TO 427) ◄	WENT MORE THAN ONE PLACES..... 1 WENT ONLY ONE PLACE..... 2 (SKIP TO 427) ◄
424A	**INTERVIEWER: Qs. 425-426E ARE APPLICABLE FOR THE LAST TREATMENT FACILITY**		

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
425	Where did you go at last?	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATEITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	PUBLIC SECTOR GOVT. HOSPITAL ..... 21 THANA HEALTH COMPLEX ..... 22 MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... 23 UNION FAMILY WELFARE CENTER (UFWC) ..... 24 SATELITTE/EPI OUTREACH ..... 25 COMMUNITY CLINIC ..... 26 NGO SECTOR NGO STATIC CLINIC ..... 31 NGO HOSPITAL ..... 32 NGO SATEITTE CLINIC ..... 33 PRIVATE SECTOR PVT. HOSPITAL ..... 41 PVT. CLINIC ..... 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ..... 43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR ..... 44 OTHER _____ 96 (SPECIFY) DON'T KNOW 98
425A	Who accompanied you to go the treatment center (NAME FROM 425? CIRCLE ALL THE PERSONS ACCOMPANIED	HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY) NONE ..... Y	HUSBAND ..... B PARENT-IN-LAW ..... C PARENT ..... D SISTER/SISTER-IN-LAW ..... E OTHER MEMBER OF HUSBAND FAMILY ..... F OTHER MEMBER OF RESPONDENT FAMILY ..... G RELATIVES ..... H NEIGHBOUR/FRIEND ..... I TBA/FIELD WORKER/DAI ..... J OTHER _____ X (SPECIFY) NONE ..... Y
425B	How did you get to the hospital/health center?	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D BOAT ..... E ENGINE BOAT ..... F OX CART ..... G RICKSHAWVAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER _____ X (SPECIFY) (SKIP TO 425D)	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D BOAT ..... E ENGINE BOAT ..... F OX CART ..... G RICKSHAWVAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER _____ X (SPECIFY) (SKIP TO 425D)
425C	Did you have difficulty in obtaining transportation?	VERY MUCH ..... 1 SOMEWHAT ..... 2 NOT AT ALL ..... 3 DON'T KNOW 8	VERY MUCH ..... 1 SOMEWHAT ..... 2 NOT AT ALL ..... 3 DON'T KNOW 8
425D	How long did you wait between the time you arrived at the hospital/clinic and the time you were examined by a health care provider (doctor/health worker)?	[ ][ ] HOURS [ ][ ] MINUTES IMMEDIATELY ..... 0000 DON'T KNOW 9998	[ ][ ] HOURS [ ][ ] MINUTES IMMEDIATELY ..... 0000 DON'T KNOW 9998

		LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER.....	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER.....
425E	Did your condition improve after treatment in this place, or did it stay the same?	NO CHANGE.....1 IMPROVED.....2 WORSNED.....3 DON'T KNOW.....8	NO CHANGE.....1 IMPROVED.....2 WORSNED.....3 DON'T KNOW.....8
426	Were you told to go any other place after this last place?	YES.....1 NO .....2 (SKIP TO 426E)	YES.....1 NO.....2 (SKIP TO 426E)
426A	Where were you told to go?	PUBLIC SECTOR GOVT. HOSPITAL.....21 THANA HEALTH COMPLEX.....22 MATERNAL AND CHILD WELFARE CENTER (MCWC).....23 UNION FAMILY WELFARE CENTER (UFWC).....24 SATELITTE/EPI OUTREACH.....25 COMMUNITY CLINIC.....26 NGO SECTOR NGO STATIC CLINIC.....31 NGO HOSPITAL.....32 NGO SATEITTE CLINIC.....33 PRIVATE SECTOR PVT. HOSPITAL.....41 PVT. CLINIC.....42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR.....43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR.....44 OTHER _____96 (SPECIFY) DON'T KNOW.....98	PUBLIC SECTOR GOVT. HOSPITAL.....21 THANA HEALTH COMPLEX.....22 MATERNAL AND CHILD WELFARE CENTER (MCWC).....23 UNION FAMILY WELFARE CENTER (UFWC).....24 SATELITTE/EPI OUTREACH.....25 COMMUNITY CLINIC.....26 NGO SECTOR NGO STATIC CLINIC.....31 NGO HOSPITAL.....32 NGO SATEITTE CLINIC.....33 PRIVATE SECTOR PVT. HOSPITAL.....41 PVT. CLINIC.....42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR.....43 CHAMBER/PHARMACY OF TRADITIONAL DOCTOR.....44 OTHER _____96 (SPECIFY) DON'T KNOW.....98
426B	Why were you told to seek treatment/advice to another place?	NO SURGERY EQUIPMENT.....A HIGH BLOOD PRESSURE.....B FOR BETTER TREATMENT.....C DOCTOR UNAVAILABLE.....D NO ARRANGEMENT FOR BLOOD TRANSFUSION.....E DID NOT HAVE NECESSARY ARRANGEMENT TO SOLVE PROBLEM.....F BABY'S UPWARD POSITION.....G SOME PART OF BABY CAME OUT.....H BABY URINATED.....I UTERUS DID NOT OPEN.....J OTHER_____X	NO SURGERY EQUIPMENT.....A HIGH BLOOD PRESSURE.....B FOR BETTER TREATMENT.....C DOCTOR UNAVAILABLE.....D NO ARRANGEMENT FOR BLOOD TRANSFUSION.....E DID NOT HAVE NECESSARY ARRANGEMENT TO SOLVE PROBLEM.....F BABY'S UPWARD POSITION.....G SOME PART OF BABY CAME OUT.....H BABY URINATED.....I UTERUS DID NOT OPEN.....J OTHER_____X
426C	Did you go the referred place?	YES.....1 NO.....2	YES.....1 NO.....2
426C1	CHECK 426C	NO ☐ ↓ YES ☐ ↓ TO GET THE INFORMATION FOR LAST TREATMENT, REPEAT Q425 TO 425E	NO ☐ ↓ YES ☐ ↓ TO GET THE INFORMATION FOR LAST TREATMENT, REPEAT Q425 TO 425E

		LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER.....	NEXT-TO-LAST PREGNANCY SERIAL NUMBER..... LINE NUMBER.....
426D	Why you did not go the referred place? Any other reason? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	NOT NECESSARY.....A NOT CUSTOMERY.....B COST TOO MUCH.....C LACK OF MONEY.....D TOO FAR.....E TRANSPORT PROBLEM.....F NO ONE TO ACCOMPANY.....G POOR QUALITY SERVICE.....H FAMILY DID NOT ALLOW.....I BETTER CARE AT HOME.....J NOT KNOWN HOW TO GO.....K NO TIME TO GET SERVICE.....L NOT WANT SERVICE FROM MALE DOCTOR.....N DID NOT THINK OF SERIOUSNESS OF COMPLICATION.....W OTHER.....X (SPECIFY)	NOT NECESSARY.....A NOT CUSTOMERY.....B COST TOO MUCH.....C LACK OF MONEY.....D TOO FAR.....E TRANSPORT PROBLEM.....F NO ONE TO ACCOMPANY.....G POOR QUALITY SERVICE.....H FAMILY DID NOT ALLOW.....I BETTER CARE AT HOME.....J NOT KNOWN HOW TO GO.....K NO TIME TO GET SERVICE.....L NOT WANT SERVICE FROM MALE DOCTOR.....N DID NOT THINK OF SERIOUSNESS OF COMPLICATION.....W OTHER.....X (SPECIFY)
426E	When did you go to this place (PLACE IN 425), after you left the place (PLACE IN 421?	HOURS.....1 DAYS.....2 DON'T KNOW.....998	HOURS.....1 DAYS.....2 DON'T KNOW.....998
427	Will you refer to any of your known pregnant woman to go for delivery in this (last) place?	YES.....1 NO.....2	YES.....1 NO.....2
428	How much total did you spend for this complication/delivery? (EXPLAIN : TOTAL COST FROM STARTING TO END OF THE DELIVERY/TREATMENT)	TAKA NOTHING.....00000 SKIP TO 429) DON'T KNOW.....99998	TAKA NOTHING.....00000 SKIP TO 429) DON'T KNOW.....99998
428A	How did you get this money for treatment?	FAMILY FUNDS.....A BORROWED.....B SOLD ASSETS.....C FROM RELATIVES.....D MORTGAGE.....E OTHER.....X DON'T KNOW.....Y	FAMILY FUNDS.....A BORROWED.....B SOLD ASSETS.....C FROM RELATIVES.....D MORTGAGE.....E OTHER.....X DON'T KNOW.....Y
429	Did you check your health two months after the delivery?	YES.....1 NO.....2 (SKIP TO 429C)	YES.....1 NO.....2 (SKIP TO 429C)
429A	Whom did you see? Anyone else? PROBE FOR THE TYPE OF PERSON AND RECORD ALL PERSONS SEEN.	HEALTH PROFESSIONAL QUALIFIED DOCTOR.....A NURSE/MIDWIFE/PARAMEDIC.....B FAMILY WELFARE VISITOR.....C MA/SACMO.....D HEALTH ASST (HA).....E FIELD WELFARE ASST (FWA).....F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA).....G UNTRAINED TBA.....H UNQUALIFIED DOCTOR.....I OTHER.....X (SPECIFY)	HEALTH PROFESSIONAL QUALIFIED DOCTOR.....A NURSE/MIDWIFE/PARAMEDIC.....B FAMILY WELFARE VISITOR.....C MA/SACMO.....D HEALTH ASST (HA).....E FIELD WELFARE ASST (FWA).....F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA).....G UNTRAINED TBA.....H UNQUALIFIED DOCTOR.....I OTHER.....X (SPECIFY)

		LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... [ ] LINE NUMBER ..... [ ][ ]
429B	Where did you receive checkup? Any other places?	HOME ..... A **PUBLIC SECTOR** GOVT. HOSPITAL ..... B THANA HEALTH COMPLEX ..... C MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... D UNION FAMILY WELFARE CENTER (UFWC) ..... E SATELITTE /EPI OUTREACH ..... F COMMUNITY CLINIC ..... G **NGO SECTOR** NGO STATIC CLINIC ..... H NGO HOSPITAL ..... I NGO SATELITTE CLINIC ..... J **PRIVATE SECTOR** PVT. HOSPITAL ..... K PVT. CLINIC ..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY ..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY ..... N OTHER ..... X (SPECIFY) (SKIP TO 429D)	HOME ..... A **PUBLIC SECTOR** GOVT. HOSPITAL ..... B THANA HEALTH COMPLEX ..... C MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... D UNION FAMILY WELFARE CENTER (UFWC) ..... E SATELITTE /EPI OUTREACH ..... F COMMUNITY CLINIC ..... G **NGO SECTOR** NGO STATIC CLINIC ..... H NGO HOSPITAL ..... I NGO SATELITTE CLINIC ..... J **PRIVATE SECTOR** PVT. HOSPITAL ..... K PVT. CLINIC ..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY ..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY ..... N OTHER ..... X (SPECIFY) (SKIP TO 429D)
429C	Why you did not check your health?	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GET SERVICE ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N DID NOT KNOW NEEDTO CHECK ..... U OTHER _____ X (SPECIFY)	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GET SERVICE ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N DID NOT KNOW NEEDTO CHECK ..... U OTHER _____ X (SPECIFY)
429D	Did you check your baby's health two months after the delivery?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 (SKIP TO 429G)	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 (SKIP TO 429G)

		LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER	NEXT-TO-LAST PREGNANCY SERIAL NUMBER ..... LINE NUMBER .....
429E	Whom did you see for baby's health checkup? Anyone else?	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASST (HA) ..... E FIELD WELFARE ASST (FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER _____ X (SPECIFY)	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ..... A NURSE/MIDWIFE/PARAMEDIC ..... B FAMILY WELFARE VISITOR ..... C MA/SACMO ..... D HEALTH ASST (HA) ..... E FIELD WELFARE ASST (FWA) ..... F OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT (TTBA) ..... G UNTRAINED TBA ..... H UNQUALIFIED DOCTOR ..... I OTHER _____ X (SPECIFY)
429F	Where did you receive baby's checkup? Any other places?	OWN HOME ..... A PUBLIC SECTOR GOVT. HOSPITAL ..... B THANA HEALTH COMPLEX ..... C MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... D UNION FAMILY WELFARE CENTER (UFWC) ..... E SATELITE/EPI CLINIC ..... F COMMUNITY CLINIC ..... G NGO SECTOR NGO STATIC CLINIC ..... H NGO HOSPITAL ..... I NGO SATELITTE CLINIC ..... J PRIVATE SECTOR PVT. HOSPITAL ..... K PVT. CLINIC ..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY ..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY ..... N OTHER _____ X (SPECIFY) (SKIP TO 430)	OWN HOME ..... A PUBLIC SECTOR GOVT. HOSPITAL ..... B THANA HEALTH COMPLEX ..... C MATERNAL AND CHILD WELFARE CENTER (MCWC) ..... D UNION FAMILY WELFARE CENTER (UFWC) ..... E SATELITE/EPI CLINIC ..... F COMMUNITY CLINIC ..... G NGO SECTOR NGO STATIC CLINIC ..... H NGO HOSPITAL ..... I NGO SATELITTE CLINIC ..... J PRIVATE SECTOR PVT. HOSPITAL ..... K PVT. CLINIC ..... L QUALITFIED DOCTOR'S CHAMBER /PHARMACY ..... M TRADITIONAL DOCTOR'S CHAMBER /PHARMACY ..... N OTHER _____ X (SPECIFY) (SKIP TO 430)
429G	What are the reasons that you did not check your baby's health?	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GO ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N DID NOT KNOW NEEDTO CHECK ..... U OTHER _____ X (SPECIFY)	NOT NECESSARY ..... A NOT CUSTOMERY ..... B COST TOO MUCH ..... C LACK OF MONEY ..... D TOO FAR ..... E TRANSPORT PROBLEM ..... F NO ONE TO ACCOMPANY ..... G POOR QUALITY SERVICE ..... H FAMILY DID NOT ALLOW ..... I BETTER CARE AT HOME ..... J NOT KNOWN HOW TO GO ..... K NO TIME TO GO ..... L DID NOT KNOW WHERE TO GO ..... M NOT WANT SERVICE FROM MALE DOCTOR ..... N DID NOT KNOW NEEDTO CHECK ..... U OTHER _____ X (SPECIFY)

430. GIVE THANKS FOR THE INTERVIEW

431	RECORD THE TIME	HOURS.....	MINUTES.....

BANGLADESH MATERNAL HEALTH SERVICES AND MATERNAL MORTALITY SURVEY 2001

VERBAL AUTOPSY QUESTIONNAIRE

IDENTIFICATION	
DIVISION _____	
DISTRICT _____	
THANA _____	
UNION/WARD _____	
MOUZA/MAHALLA _____	
VILLAGE/MOHALLA/BLOCK _____	
SEGMENT NUMBER _____	
TYPE OF AREA: RURAL=1, URBAN=2, OTHER URBAN=3 _____	
HOUSEHOLD NUMBER _____	
CLUSTER NUMBER _____	
NAME OF RESPONDENT _____	
NAME OF DECEASED _____	

INTERVIEWER VISITS				
	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY MONTH* YEAR
INTERVIEWER'S NAME	_____	_____	_____	CODE
RESULT*	_____	_____	_____	RESULT**
NEXT VISIT: DATE	_____	_____		TOTAL NO. OF VISITS
TIME	_____	_____		

**RESULT CODES:

1	COMPLETED	4	REFUSED	7	OTHER _____ (SPECIFY)
2	NOT AT HOME	5	PARTLY COMPLETED		
3	POSTPONED	6	RESPONDENT INCAPACITATED		

*MONTH CODES

01	JANUARY	04	APRIL	07	JULY	10	OCTOBER
02	FEBRUARY	05	MAY	08	AUGUST	11	NOVEMBER
03	MARCH	06	JUNE	09	SEPTEMBER	12	DECEMBER

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

SECTION 1. SELECTION OF PEOPLE TO BE INTERVIEWED

101. Who were around during the woman's last illness and at the time of the woman's death?

101A	101B	101C	101D	101E	101F	101G	101H
Relationship to woman and name		**Was _____ (column 1) present during last illness of _____ (NAME)?**	**Was _____ (column 1) present at the time of death of _____ (NAME)?**	**Of those who know about the cause of her death and last illness record 1, 2, 3,... in this column to indicate the relative degree of their knowledge. The same number can be used for 2 persons to indicate same knowledge**	**Does _____ (column 1) live in this household?** ***If 1 is circled then ask about next person***	**Is this person's house in your union?** ***Those circled 2 if absent at the time of interview will not be eligible as a respondent***	***Circle 1 for those in column 1 who were present during the interview***
Name	Relationship						
1	2	3	4	5	6	7	8
		Yes 1 No 2 NA 7	Yes 1 No 2		Yes 1 No 2	Yes 1 No 2	Yes 1 No 2
		Yes 1 No 2 NA 7	Yes 1 No 2		Yes 1 No 2	Yes 1 No 2	Yes 1 No 2
		Yes 1 No 2 NA 7	Yes 1 No 2		Yes 1 No 2	Yes 1 No 2	Yes 1 No 2
		Yes 1 No 2 NA 7	Yes 1 No 2		Yes 1 No 2	Yes 1 No 2	Yes 1 No 2
		Yes 1 No 2 NA 7	Yes 1 No 2		Yes 1 No 2	Yes 1 No 2	Yes 1 No 2

Husband=01 Co-wife=02	Mother=03 Father=04	Father-in-law=05 Mother-in-law=06	Sister=07 Brother=08	Sister in law=09 Brother in law=10	Son=11 Daughter=12	Grand-mother=13 Grand-father=14	FWA=15 TBA/Dai =16 Neighbour/Friend=17	Non-relative=18 Other relative _____=19 (specify)

Interview must be conducted with those who know the most about the woman's last illness and her death (101E) and who are available for the interview. During the interview, others in the list above may be present and their help may be sought

Record the full address of the selected best respondent if he/she lives in another house but in the same union, so that he/she can be located later according to the address for conducting the interview

Address:

SECTION 2. BACKGROUND INFORMATION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
201	Time of starting interview:	|____|____| hrs |____|____| mins	
202	How old was _____(NAME) at the time of her death? *(write in completed years)*	|____|____| years	
203	Did _____(NAME) ever study in a school or madrassah?	YES .....1 NO .....2 DON'T KNOW 8	 204 204
203A	How many years of schooling did she complete?	Class ..... |___|___| years DON'T KNOW 98	
204	Did _____(NAME) do any work, other than her own household chores?	YES .....1 NO .....2 DON'T KNOW 8	 205 205
204A	Did _____ receive any payment or things for the work, or did she receive nothing?	RECEIVED NOTHING .....0 RECEIVED CASH .....1 RECEIVED OTHER THINGS .....3 RECEIVED CASH AND OTHER THINGS .....4 DON'T KNOW/UNSURE 8	
205	What was her marital status?	MARRIED .....1 SEPARATED .....2 DESERTED .....3 DIVORCED .....4 WIDOWED .....5 NEVER MARRIED 6	 208 208 208 208 301
206	How old was her husband/you when _____ died?	Years .....|___|___| DON'T KNOW 98	
207	Did her husband/you ever study in a school or madrassah?	YES .....1 NO .....2 DON'T KNOW 8	 208 208
207A	How many years of schooling did he/you complete?	Class ..... |___|___| years DON'T KNOW 98	
208	Did _____(NAME) have any children?	YES .....1 NO .....2 DON'T KNOW 8	 208F 208F
208A	How many live births did she have? *(If none, write =00)*	Number of live births .....|___|___| DON'T KNOW 98	
208B	How many still births did she have? *(If none, write =00)*	Number of still births .....|___|___| DON'T KNOW 98	
208C	How many of the live births were still alive at the time of her death? *(If none, write =00)*	Number still alive .....|___|___| DON'T KNOW 98	
208D	Did she ever have any complication in a previous pregnancy?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
208E	Did she have a cesarean section in a previous pregnancy?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
208F	Did _____(NAME) ever have any miscarriages/abortions/ MRs? If yes, how many? *(If none, write =0)*	Times ..... |___| DON'T KNOW 8	

SECTION 3. GENERAL INFORMATION ABOUT EVENTS PRECEDING DEATH

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	In what month and year did she die?	YEAR |___|___|___|___| DON'T KNOW YEAR.....9998 MONTH ..... |___|___| DON'T KNOW MONTH 98	
302	Was the deceased woman ill before death or did she have any health problem before death?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	 304 304
303	For how many days was she ill or did she have the health problem before she died? *(If less than 1 day write 00)*	DAYS.....1 |_____|_____| MONTHS.....2 |_____|_____| DON'T KNOW/UNSURE 98	
304	Where did she die?	HUSBAND'S HOME.....1 HER PARENT'S HOME .....2 HOSPITAL /CLINIC.....3 IN-TRANSIT .....4 OTHERS 7	307 307 307 307
305	What is the name of hospital/clinic where she died?	NAME OF HOSPITAL /CLINIC _____	
306	Did anyone from the hospital/clinic tell you why she died?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	 307 307
306A	What was/were the reason(s) given by the hospital/clinic as to why she died? Tell us the two main reasons. _____ _____	|_____|_____| |_____|_____|	
307	What do you think is the cause(s) of her death? Tell us the two main reasons. CAUSE (1)_____ CAUSE (2)_____	|_____|_____| |_____|_____|	
308	Did any doctor/health care provider ever tell you or _____(NAME) that she had _____:	**YES NO DK**	
	Hypertension?	HYPERTENSION.....1 2 8	
	Diabetes?	DIABETES.....1 2 8	
	Epilepsy?	EPILEPSY 1 2 8	
	TB?	TB.....1 2 8	
	Heart disease?	HEART DISEASE.....1 2 8	
	Disease of the blood?	DISEASE OF BLOOD.....1 2 8	
	Asthma?	ASTHMA.....1 2 8	
	Cancer (Please specify_____)	CANCER _____.....1 2 8	
	HIV/AIDS?	HIV/AIDS.....1 2 8	
	Other chronic illness (Please specify_____)	OTHER CHRONIC DISEASE_____.1 2 8	
309	Was she ever hospitalized?	YES .....1 NO .....2 DON'T KNOW 8	 311 311

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
309A	How long (day/month) before her death was she last hospitalized? *If time is less than 1 day than write 00 days. If time is less than 1 month than write in completed days. If time is less than 1 year than write in completed months. If time is 12 months or more than write in completed years.*	DAYS ..... 1 |_____|_____| MONTHS ..... 2 |_____|_____| YEARS ..... 3 |_____|_____| DON'T KNOW/UNSURE 98	
309B	Why was she last hospitalized? Verbatim: _____ _____	|_____|_____| |_____|_____| DON'T KNOW/UNSURE 98	
310	Did she have any operation/surgery before death?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 311 311
310A	How long before her death did she have the last operation? *If time is less than 1 day than write 00 days. If time is less than 1 month than write in completed days. If time is less than 1 year than write in completed months. If time is 12 months or more than write in completed years.*	DAYS ..... 1 |_____|_____| MONTHS ..... 2 |_____|_____| YEARS ..... 3 |_____|_____| DON'T KNOW/UNSURE 98	
310B	Why did she have the operation/surgery? Verbatim: _____ _____	|_____|_____| |_____|_____| DON'T KNOW/UNSURE 98	
311	Was the woman pregnant at the time of death?	YES ..... 1 NO ..... 2 PROBABLY YES ..... 3 DON'T KNOW 8	 313 313
311A	How many months was she pregnant at the time of death?	MONTH ..... |_____|_____| DON'T KNOW 98	
312	Did the woman die before labour pain began or did she die after labour pain began	MOTHER DIED BEFORE LABOUR BEGAN .. 1 MOTHER DIED AFTER LABOUR BEGAN BUT BEFORE BIRTH OF CHILD ..... 2 DON'T KNOW/UNSURE 8	401 401 401
313	Was _____(NAME) ever pregnant while still alive?	YES ..... 1 NO 2	 401
Interviewer: Compare response to Q313 with that of Q208 and Q208F. If inconsistent, then probe and correct the responses.			
313A	What was the outcome of her last pregnancy?	LIVE BIRTH ..... 1 STILL BIRTH ..... 2 ABORTION/MISCARRIAGE/MR ..... 3 DON'T KNOW/UNSURE 8	 313E 313E 313E
313B	Is the child from this pregnancy still alive?	YES ..... 1 NO 2	313D
313C	At what age did that child die? *If age is less than 1 month than write in completed days. If time is less than 1 year than write in completed months. If time is 12 months or more than write in completed years.*	DAYS ..... 1 |_____|_____| MONTHS ..... 2 |_____|_____| YEARS ..... 3 |_____|_____| DON'T KNOW/UNSURE 98	313E 313E 313E 313E

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
313D	How old is this child now? *If age is less than 1 month than write in completed days. If time is less than 1 year than write in completed months. If time is 12 months or more than write in completed years.*	DAYS ..... 1 |_____|_____| MONTHS ..... 2 |_____|_____| YEARS ..... 3 |_____|_____| DON'T KNOW/UNSURE 98	
313E	How long after her delivery/last birth/still birth/abortion/miscarriage/MR did she die? *If time is less than 1 day than write 00 days. If time is less than 60 days then write in completed days, if more then write in completed months. If time is 12 months or more than write in completed years.*	DAYS ..... 1 |_____|_____| MONTHS ..... 2 |_____|_____| YEARS ..... 3 |_____|_____| DON'T KNOW/UNSURE 98	

SECTION 4. DESCRIPTIVE REPORT OF ILLNESS AND EVENTS THAT LED TO THE DEATH

401. Explain to the respondent that we would like to hear the details about everything that happened during the last illness before _____ death starting from the beginning of the ilness and also about what happened during the final hours of the woman's death.

Verbatim:

SUMMARY OF SYMPTOMS AND SIGNS OBSERVED DURING THE LAST ILLNESS BEFORE DEATH AS REPORTED BY RESPONDENT. PLEASE LIST IN THE ORDER THEY APPEARED

Symptoms	Duration	Severity
1.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
2.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
3.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
4.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
5.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
6.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
7.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
8.		VERY SEVERE.....1 MODERATE.....2 MILD.....3
9.		VERY SEVERE.....1 MODERATE.....2 MILD.....3

SECTION 5
MODULE 1. GENERAL ILLNESS LEADING TO DEATH
SPECIFIC QUESTIONS TO ELICIT SYMPTOMS AND SIGNS OF THE LAST ILLNESS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	Did _____(NAME) have fever during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 502 502
501A	How many days/months before her death did the fever start and end?	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DIED WITH FEVER .....9995 DON'T KNOW/UNSURE.....9998	
501B	How was the fever like?	HIGH..... 1 MILD ..... 2 DON'T KNOW/UNSURE..... 8	
501C	Was the fever continuous or on and off?	CONTINUOUS..... 1 AFTER EVERY 1 - 2 DAYS..... 2 AT NIGHT ONLY ..... 3 OTHER_____ ..... 7 DON'T KNOW/UNSURE..... 8	
501D	Did the fever come with severe chills?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
502	Did she have a reddish rash at anytime during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
503	Was she losing weight before death?	YES.....1 NO .....2 DON'T KNOW.....8	 504 504
503A	Was the loss of weight severe or moderate?	SEVERE ..... 1 MODERATE ..... 2 DON'T KNOW/UNSURE..... 8	
504	Did she have poor appetite at anytime during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
505	Did she have swelling around ankles during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 506 506
505A	How many days/months before her death did the swelling around her ankles start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
506	Did she have puffiness of the face during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
507	Did she have a swelling in the neck during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
508	Did she have any other swelling on her body? *(Probe)*	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 509 509
508A	Where was the swelling on her body?	HEAD ---------- A FACE ---------- B MOUTH ---------- C NECK ---------- D UPPER ARM ---------- E LOWER ARM ---------- F AXILLA ---------- G HANDS ---------- H CHEST ---------- I ABDOMEN ---------- J UPPER BACK ---------- K LOWER BACK ---------- L BUTTOCKS ---------- M GROIN ---------- N GENITALS ---------- O THIGHS ---------- P LEGS ---------- Q FEET ---------- R OTHER_____ ---------- X	
509	Did the colour of her eye change to yellow (jaundice) during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
510	Did she have itching of skin at anytime during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
511	Did her eyes, face or palms look pale (anaemic) during her last illness?	**YES NO DK** PALE EYES ---------- 1 ------- 2 ------- 8 PALE FACE ---------- 1 ------- 2 ------- 8 PALE PALM ---------- 1 ------- 2 ------- 8	
512	Did she have any ulcers on her body during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 513 513

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
512A	Where were the ulcers on her body? Anywhere else? *(Do not probe)*	HEAD ---------- A FACE ---------- B MOUTH ---------- C NECK ---------- D UPPER ARM ---------- E LOWER ARM ---------- F AXILLA ---------- G HANDS ---------- H CHEST ---------- I ABDOMEN ---------- J UPPER BACK ---------- K LOWER BACK ---------- L BUTTOCKS ---------- M GROIN ---------- N GENITALS ---------- O THIGHS ---------- P LEGS ---------- Q FEET ---------- R OTHER_____ ---------- X	
513	Did she have a cough during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 514 514
513A	How many days or months before her death did the cough start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE 9998	
513B	Did the cough produce sputum?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
513C	Did she cough blood?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
514	Did she have difficulty in breathing during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 515 515
514A	Was the difficulty in breathing continuous or on and off?	CONTINUOUS..... 1 ON AND OFF..... 2 DON'T KNOW/UNSURE..... 8	
514B	How many days/months before her death did the difficulty in breathing start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DID NOT IMPROVE .....9995 DON'T KNOW/UNSURE.....9998	
515	Was she breathless even on light work? *(Except what is normally seen in late pregnancy, if applicable)*	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
516	Was she breathless on lying on her back? *(Except what is normally seen in late pregnancy, if applicable)*	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
517	Was there pain in the chest with breathing?	YES.....1 NO .....2 DON'T KNOW.....8	
518	Did she have palpitations during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
519	Did she have chest pain during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 520 520
519A	Was the pain mild, moderate or severe?	SEVERE ..... 1 MODERATE ..... 2 MILD ..... 3 DON'T KNOW/UNSURE..... 8	
519B	Did the pain start suddenly or gradually?	SUDDENLY ..... 1 GRADUALLY ..... 2 DON'T KNOW/UNSURE..... 8	
519C	Was the pain continuous or on and off?	CONTINUOUS..... 1 ON AND OFF..... 2 DON'T KNOW/UNSURE..... 8	
519D	How many days/months before her death did the pain start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DID NOT IMPROVE .....9995 DON'T KNOW/UNSURE.....9998	
519E	When she had the chest pain, did she also have pain elsewhere in her body? If, yes, where else did she have pain at the same time?	SHOULDER ----------A NECK----------B ARMS----------C NO PAIN ANYWHERE----------D OTHER_____ ----------X	
520	Did she have loose motion or diarrhoea before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 521 521
520A	How many days/months before her death did the loose motion or diarrhoea start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DIED WITH FEVER .....9995 DON'T KNOW/UNSURE.....9998	
520B	When the diarrhoea was severe, how many times did she pass stool in a day?	NUMBER OF TIMES ---------|_____|_____| DON'T KNOW/UNSURE..... 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
520C	What did the stool look like?	WATERY ..... 1 LOOSE BUT NOT WATERY ..... 2 OTHER_____ ..... 7 DON'T KNOW/UNSURE..... 8	
520D	Did she pass blood in the stool?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
521	Did she have vomiting during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 522 522
521A	How many days/months before her death did the vomiting start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DID NOT STOP .....9995 DON'T KNOW/UNSURE.....9998	
521B	When the vomiting was severe, how many times did she vomit in a day?	NUMBER OF TIMES.....|_____|_____| DON'T KNOW/UNSURE..... 98	
521C	What did the vomits look like most of the time?	WATERY FLUID ..... 1 YELLOWISH FLUID ..... 2 DARK BROWN COLOURED FLUID ..... 3 LIKE BLOOD ..... 4 FAECAL LOOKING & SMELLING..... 5 OTHER_____ ..... 7 DON'T KNOW/UNSURE..... 8	
522	Did she have abdominal pain before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 523 523
522A	What was the type of pain?	CRAMPS ..... 1 DULL ACHE..... 2 BURNING PAIN..... 3 OTHERS _____..... 7 DON'T KNOW/UNSURE..... 8	
522B	How many days/months before her death did the abdominal pain start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DID NOT IMPROVE .....9995 DON'T KNOW/UNSURE.....9998	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
522C	Where exactly was the pain?	LOWER ABDOMEN .....1 UPPER ABDOMEN .....2 CENTRAL ABDOMEN (around umbilicus) .....3 ALL OVER THE ABDOMEN.....4 DON'T KNOW/UNSURE.....8	
522D	Was the pain mild, moderate or severe?	SEVERE .....1 MODERATE .....2 MILD .....3 SOMETHIMES MILD/SOMETIMES MORE....4 DON'T KNOW/UNSURE.....8	
523	Was she unable to pass stool for some days before death?	YES.....1 NO .....2 DON'T KNOW/UNSURE.....8	
524	Did she have distension of abdomen before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 525 525
524A	How many days/months before her death did the distension of abdomen start and end? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days END |_____|_____| |_____|_____| mons days DID NOT IMPROVE .....9995 DON'T KNOW/UNSURE.....9998	
524B	Did the distension develop rapidly within days or slowly over weeks?	RAPIDLY .....1 SLOWLY.....2 DON'T KNOW/UNSURE.....8	
525	Did she have any hard mass in the abdomen before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 526 526
525A	Where exactly was the mass?	RIGHT UPPER ABDOMEN.....1 LEFT UPPER ABDOMEN .....2 LOWER ABDOMEN .....3 CENTRAL ABDOMEN (around umbilicus) .....4 DON'T KNOW/UNSURE.....8	
525B	How long before her death did the mass in the abdomen start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
526	Did she have headache during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 527 527
526A	Was the headache continuous or on and off?	CONTINUOUS..... 1 ON AND OFF..... 2 DON'T KNOW/UNSURE..... 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
526B	How was the headache?	SEVERE ..... 1 MODERATE ..... 2 MILD ..... 3 SOMETIMES MILD AND SOMETIMES SEVERE..... 4 DON'T KNOW/UNSURE..... 8	
527	Did she have stiff neck during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 528 528
527A	How many days/months before her death did the stiff neck start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
528	Did she have any loss of consciousness during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 529 529
528A	Did she become unconscious suddenly or gradually?	SUDDENLY ..... 1 GRADUALLY ..... 2 DON'T KNOW/UNSURE..... 8	
529	Did she become mentally confused during her last illness?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
530	Did she have fits (convulsions) during her last illness?	YES.....1 NO .....2 DON'T KNOW.....8	 531 531
530A	How many days/months before her death did the fits start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
530B	Can you describe the nature of fits?	REPETITIVE JERKING OF WHOLE BODY..... 1 JERKING OF 1 OR 2 PARTS OF THE BODY . 2 OTHER_____..... 7 DON'T KNOW/UNSURE..... 8	
530C	When fits were most frequent, how many times did she fit in a day?	NUMBER OF TIMES ---------|_____|_____| DIED AFTER FITS STARTED..... 95 DON'T KNOW/UNSURE..... 98	
530D	Was she awake between fits?	YES, ALWAYS..... 1 YES, SOMETIMES ..... 2 NO ..... 3 DON'T KNOW/UNSURE..... 8	
531	Did she have difficulty in opening the mouth during her last illness?	ABLE TO OPEN MOUTH .....1 UNABLE TO OPEN MOUTH .....2 DON'T KNOW.....8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
532	Did she have stiffness of the whole body before death?	YES.....1 NO .....2 DON'T KNOW.....8	 533 533
532A	How many days/months before her death did the stiffness start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
533	Did she become paralyzed on one or both sides of the body before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 534 534
533A	Which part of the body was paralyzed?	LOWER LIMBS.....1 ARMS .....2 ONE SIDE OF BODY .....3 WHOLE BODY .....4 OTHER_____ ....7 DON'T KNOW.....8	
533B	How many days/months before her death did the paralysis start? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
534	Was there any change in the color of her urine before death?	YES.....1 NO .....2 DON'T KNOW.....8	 534C 534C
534A	What color did the urine become?	LIGHT YELLOW ..... 1 DARK YELLOW..... 2 CHUNER PANI (CLOUDY)..... 3 BHATER MAAR (THICK-WHITE)..... 4 BLOOD STAINED/RED ..... 5 OTHER_____ ... 7 DON'T KNOW/UNSURE..... 8	
534B	Since how many days/months before her death did her urine become _____ (ANSWER TO Q534A)? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
534C	Was there any change in her daily frequency of urine before her death?	YES.....1 NO .....2 DON'T KNOW.....8	 534F 534F
534D	Compared to before, how many times was she passing urine in a day - more than before, less than before, or no urine at all?	MORE THAN BEFORE ..... 1 LESS THAN BEFORE ..... 2 NO URINE AT ALL ..... 3 DON'T KNOW/UNSURE..... 8	
534E	Since how many days/months before her death did she start to pass urine _____ (ANSWER TO Q534D)? *(Write in months and days. If less than 1 month, then write 00 for months and only write in days)*	START |_____|_____| |_____|_____| mons days DON'T KNOW/UNSURE.....9998	
534F	Did she have difficulty in passing urine during her last illness?	YES.....1 NO .....2 DON'T KNOW/UNSURE 8	 535 535

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
534G	What type of difficulty did she have: Unable to pass urine? Continuous dribbling of urine? Burning sensation while passing urine? Others?	**YES NO** UNABLE TO PASS ----------1-------- 2 DRIBBLING OF URINE----------1-------- 2 BURNING SENSATION ----------1-------- 2 OTHER_____ ---1-------- 2	
535	Did she have a swelling in the breast before her death?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 536 536
535A	Was there pain in the breast along with the swelling?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
536	Did she have an ulcer in the breast before her death?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 537 537
536A	Was there pain in the breast along with the ulcer?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	
537	Did _____(name) receive any injury or was there any untoward or violent event leading to death?	YES..... 1 NO ..... 2 DON'T KNOW/UNSURE..... 8	 541 541
537A	Can you describe what happened exactly? *(PROBE and ASK: anything else)* Verbatim_____ _____ _____ _____ _____ _____ _____ _____		
538	*Who else contributed to the information given in Q537-537A?*	NEIGHBOURS ---------- A FAMILY FRIENDS ---------- B DECEASED'S FAMILY MEMBERS ---------- C OTHER_____ ---------- X	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
539	*To the interviewer: Please review the response to Q537A and Code accordingly*	**Yes** **No** Dog/animal bite ..... 1 ..... 2 Snake bite ..... 1 ..... 2 Drowned as a consequence of epilepsy ..... 1 ..... 2 ***Intentionally self-inflicted*** ***Intentionally caused by other*** ***Accidental*** ***No*** Train/road accident .....1 ..... 2 .....3 .....4 Drowning .....1 ..... 2 .....3 .....4 Burn .....1 ..... 2 .....3 .....4 Fall .....1 ..... 2 .....3 .....4 Cut .....1 ..... 2 .....3 .....4 Suffocation .....1 ..... 2 .....3 .....4 Punches, kicks, blows... xxxx..... 2 .....3 .....4 Rape ..... xxxx..... 2 ..... xxxx.....4 Poisoning .....1 ..... 2 .....3 .....4 Acid burn .....1 ..... 2 .....3 .....4 Other .....1 ..... 2 .....3 .....4 _____	

If the interviewer has any suspicion regarding the accuracy of the information given in Q537-537A then additional information may be collected from neighbours, family friends, members of the parent's family of the deceased.

540	*To the interviewer: What is your judgement of the quality of the information gathered on the violent events surrounding the woman's death?*	Dependable .....1 (Yes) ..... 2 (Partly) .....3 (No) Complete .....1 (Yes) ..... 2 (Partly) .....3 (No)	
541	***Interviewer: Check Q312, 313, Q313A and Q313E and circle the appropriate code:***	**Q312 IS CODED EITHER 1 OR 8 ..... 1** **Q312 IS CODED 2..... 2** **Q313 IS CODED 2..... 3** **Q313 IS CODED 1 AND Q313E IS 1 YEAR OR MORE ..... 4** **Q313A IS CODED 1 OR 2 OR 8 AND Q313E IS 11 MONTHS OR LESS..... 5** **Q313A IS CODED 3 AND Q313E IS 11 MONTHS OR LESS..... 6**	**601** **701** **801** **801** **701** **601A**

SECTION 6

MODULE 2. FOR DEATHS DURING PREGNANCY PRIOR TO ONSET OF LABOUR OR WITHIN 1 YEAR OF ABORTION/MISCARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
601	Did _____(NAME) ever go for antenatal care during that pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	601B 604A 604A
601A	Did _____(NAME) ever go for antenatal care during the last pregnancy before she died?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 604A 604A
601B	From whom did she receive the antenatal care when she was pregnant? *(Anybody else)* *(Probe for each type of health professional and circle all who provided antenatal care)*	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC --------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I OTHER_____--------- X	
602	Did she first seek antenatal care because she had a problem or just to check everything was fine?	BECAUSE OF PROBLEM..... 1 TO CHECK ONLY ..... 2 DON'T KNOW 8	 603 603
602A	For what problem did she first seek antenatal care? Verbatim_____ _____	|_____|_____| |_____|_____| DON'T KNOW/UNSURE ---------- 98	
603	How many months pregnant was she at the time of her first antenatal check-up?	MONTHS.----------|_____|_____| DON'T KNOW/UNSURE ---------- 98	
604	How many times did she get antenatal care?	NUMBER OF TIMES.----------|_____|_____| DON'T KNOW/UNSURE ---------- 98	
604A	Did she have swelling around ankles during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
604B	Did she have puffiness of the face during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW/UNSURE 8	
605	Did she complain of blurred vision during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
606	Did she have her blood pressure measured during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 607 607

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
606A	Do you know whether her blood pressure was normal or high or low?	NORMAL ..... 1 HIGH ..... 2 LOW ..... 3 DON'T KNOW 8	
607	During her last illness, was she bleeding from the vagina?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 608 608
607A	Did the bleeding stain her clothes, the bed or the floor?	YES NO DK CLOTHES----------1----------2----------8 BED----------1----------2----------8 FLOOR----------1----------2----------8	
607B	Was she in pain while bleeding?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
608	Did she have other episodes of bleeding during this pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 609 609
608A	Were those episodes of bleeding painful?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
609	Did she have a vaginal examination during her illness?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 610 610
609A	Did the vaginal examination increase the bleeding?	YES ..... 1 NO ..... 2 NOT APPLICABLE (no bleeding) ..... 7 DON'T KNOW 8	
610	Was any attempt made during her pregnancy to induce abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 801 801
610A	Whose help did she seek to induce abortion?	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC ---------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I HERBAL DOCTOR (kobiraj) ----------J HOMEOPATH ---------- K SPIRITUAL HEALER ----------L SELF ---------- M OTHER_____---------- X DON'T KNOW/UNSURE ---------- Y	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
610B	Was any foreign object inserted inside the woman to induce abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 610D 610D
610C	What object was inserted?	STICK ..... 1 TUBES ..... 2 SYRINGES ..... 3 OTHERS_____ ..... 7 DON'T KNOW 8	
610D	Did the woman take any drugs or injections, or eat anything to induce abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 611 611
610E	What drugs did she take? Verbatim_____ _____	|_____|_____| |_____|_____| DON'T KNOW/UNSURE ---------- 98	
611	Did the woman do MR to induce abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 612 612
611A	To whom did did she go for MR?	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC --------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I OTHER_____--------- X	
612	Did she have foul-smelling discharge from the vagina after inducing abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
613	Did she have fever after inducing abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
614	Did she have abdominal distention after inducing abortion?	YES ..... 1 NO ..... 2 DON'T KNOW 8	801 801 801

SECTION 7

MODULE 3. FOR DEATHS DURING LABOUR, DELIVERY OR AFTER DELIVERY

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
701	Did _____(NAME) ever go for antenatal care during the last pregnancy before she died?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 702 702
701A	From whom did she receive the antenatal care when she was pregnant? *(Anybody else)* *(Probe for each type of health professional and circle all who provided antenatal care)*	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC --------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I OTHER_____--------- X	
701B	Did she first seek antenatal care because she had a problem or just to check everything was fine?	BECAUSE OF PROBLEM..... 1 TO CHECK ONLY ..... 2 DON'T KNOW 8	 701D 701D
701C	For what problem did she first seek antenatal care? Verbatim_____ _____	|_____|_____| |_____|_____| DON'T KNOW/UNSURE ---------- 98	
701D	How many months pregnant was she at the time of her first antenatal check-up?	MONTHS.----------|_____|_____| DON'T KNOW/UNSURE ---------- 98	
701E	How many times did she get antenatal care?	NUMBER OF TIMES----------|_____|_____| DON'T KNOW/UNSURE ---------- 98	
702	Did she have swelling around ankles during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
703	Did she have puffiness of the face during her pregnancy?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
704	Did she complain of blurred vision during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
705	Did she have her blood pressure measured during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 706 706
705A	Do you know whether her blood pressure was normal or high or low?	NORMAL ..... 1 HIGH ..... 2 LOW ..... 3 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
706	Did she have bleeding from the vagina during her last pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 707 707
706A	Did the bleeding stain her clothes, the bed or the floor?	YES NO DK CLOTHES ---------- 1 ---------- 2 ---------- 8 BED ---------- 1 ---------- 2 ---------- 8 FLOOR ---------- 1 ---------- 2 ---------- 8	
706B	Did the bleeding start before the birth of the child?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
706C	Was she in pain while bleeding (not menses)?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 707 707
706D	Did the pain start before the labour pains started?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
707	Did she have other episodes of bleeding during this pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 708 708
707A	Were those episodes of bleeding painful?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
708	Did she have a vaginal examination during her last pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 709 709
708A	Did the vaginal examination increase the bleeding?	YES ..... 1 NO ..... 2 NOT APPLICABLE (no bleeding) ..... 7 DON'T KNOW 8	
709	Where did she give birth?	HOME ---------- 11 GOVT SECTOR HOSPITAL ---------- 21 UPAZILA HEALTH COMPLEX ---------- 23 MATERNAL AND CHILD WELFARE CENTRE (MCWC) ---------- 24 UNION HEALTH AND FAMILY WELFARE CENTRE ---------- 25 NGO SECTOR NGO CLINIC ---------- 31 NGO HOSPITAL ---------- 32 PRIVATE SECTOR PRIVATE HOSPITAL ---------- 41 PRIVATE CLINIC ---------- 42 OTHER_____ ---------- 96 DID NOT DELIVER ---------- 51	 712

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
710	Who assisted with the delivery? *(Anyone else?)*	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC --------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I RELATIVES ----------J NEIGHBOURS/FRIENDS ---------- K OTHER_____---------- X NOBODY ----------Z	
711	During the delivery, were/was _____ *(topic)*: a. Instruments used to help the baby out (forceps) b. An operation done to get the baby out (cesarean section) c. A blood transfusion given d. A saline infusion given	**YES** **NO** DK FORCEPS/VACUUM ---------- 1 --------- 2 ------- 8 CESAREAN SECTION -------- 1 --------- 2 ------- 8 BLOOD TRANSFUSION ------ 1 --------- 2 ------- 8 SALINE INFUSION ---------- 1 --------- 2 ------- 8	
712	How long was she in labour for? *(if less than 1 hour write 00)*	|_____|_____| HOURS NEVER IN LABOUR (C-SECTION) -------- 95 DON'T KNOW---------- 98	 714B 714
713	Do you think she had prolonged labour?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
714	Did she have too much bleeding during labour?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	 714B 714B
714A	Did the bleeding stain her clothes, the bed or the floor?	YES NO DK CLOTHES----------1----------2----------8 BED----------1----------2----------8 FLOOR----------1----------2----------8	 715
714B	Did she have too much bleeding before delivering the baby?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	 715 715
714C	Did the bleeding stain her clothes, the bed or the floor?	YES NO DK CLOTHES----------1----------2----------8 BED----------1----------2----------8 FLOOR----------1----------2----------8	
715	Were any drugs used just before or during the labour?	YES .....1 NO .....2 NOT APPLICABLE (no bleeding).....7 DON'T KNOW/UNSURE 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
716	How many days or months before her death did she deliver? *(If less than 1 day then write in hours, if less than 30 days write in days and if more, then in completed months)*	HOURS ..... 1 |_____|_____| DAYS..... 2 |_____|_____| MONTHS..... 3 |_____|_____| NEVER DELIVERED..... 997 DON'T KNOW/UNSURE 998	 724 724
717	Did she have difficulty in delivering the baby?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
718	What part of the baby came out first?	HEAD .....1 LEGS .....2 SHOULDER .....3 ARMS .....4 CESAREAN SECTION.....5 DON'T KNOW 8	 720
719	Was the placenta delivered?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 720 720
719A	How long after the birth of the child was the placenta delivered? *(If less than 1 hour write 00)*	|_____|_____| HOURS	
719B	Did she have difficulty in delivering the placenta?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	
719C	Was the placenta delivered completely or partially?	COMPLETELY ..... 1 PARTIALLY ..... 2 DON'T KNOW 8	
720	Did she have too much bleeding after the baby was born?	YES .....1 NO .....2 DON'T KNOW/UNSURE 8	 721 721
720A	Did the bleeding stain her clothes, the bed or the floor?	YES NO DK CLOTHES----------1----------2----------8 BED----------1----------2----------8 FLOOR----------1----------2----------8	
721	Did she have foul-smelling discharge from the vagina after the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
722	Did she have pain in the legs after the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
723	Did she have fever after the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
724	Did she have fits (convulsions) during her pregnancy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 725 725
724A	Did the fits stop after the baby was born?	YES ..... 1 NO ..... 2 NEVER DELIVERED..... 3 DON'T KNOW 8	 726 801 726
725	Did she develop fits (convulsions) after the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
726	Was the colour of her eyes yellow after the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW/UNSURE 8	 801 801
726A	How many days after delivery did her eyes become yellow?	|_____|_____|_____| DAYS DON'T KNOW/UNSURE 998	

MODULE 4. GENERAL CARE SEEKING

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
801	During her last illness, after how much time from the beginning of symptoms did you recognize that she was having a problem or illness? *[Write in days if less than one month]*	AFTER HOURS..... 1 |_____|_____| AFTER DAYS..... 2 |_____|_____| AFTER MONTHS..... 3 |_____|_____| IMMEDIATELY---------- 000 DON'T KNOW---------- 998 DIED IMMEDIATELY---------- 995	 815 815
802	How serious did you/your family perceive this complication or problem to be?	NOT SERIOUS..... 1 SOMEWHAT SERIOUS..... 2 VERY SERIOUS..... 3 LIFE THREATENING..... 4	 803
802A	Did you/your family think that she could have died because of her problem or illness?	YES..... 1 NO..... 2	
803	During _____*(name)* last illness/problem, did she or anyone seek treatment for her illness?	YES..... 1 NO..... 2 DON'T KNOW..... 8	 803C 803C
803A	From whom did she receive treatment? *(Anyone else?)*	HEALTH PROFESSIONAL QUALIFIED DOCTOR (MBBS) ---------- A NURSE/MIDWIFE/PARAMEDIC --------- B FAMILY WELFARE VISITOR ---------- C MA/SACMO ---------- D HEALTH ASSISTANT ---------- E FAMILY WELFARE ASSISTANT----------F OTHER PERSON TRAINED TBA---------- G UNTRAINED TBA ---------- H UNQUALIFIED DOCTOR ---------- I OTHER_____---------- X	
803B	Where did she receive care/medical treatment? *(Anywhere else?)*	HOME ---------- A GOVT SECTOR HOSPITAL---------- B UPAZILA HEALTH COMPLEX---------- C MATERNAL AND CHILD WELFARE CENTRE (MCWC) ---------- D UNION HEALTH AND FAMILY WELFARE CENTRE---------- E SATELLITE/EPI OUTREACH SITE--------F COMMUNITY CLINIC ---------- G NGO SECTOR NGO CLINIC ---------- H NGO HOSPITAL ---------- I NGO SATELLITE CLINIC ----------J PRIVATE SECTOR PRIVATE HOSPITAL ---------- K PRIVATE CLINIC ----------L CHAMBER/ PHARMACY OF QUALIFIED DOCTOR---------- M CHAMBER/ PHARMACY OF UNQUALIFIED DOCTOR ---------- N OTHER_____---------- X	805

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
803C	Why did you not take her to see anyone for treatment? *(Any other reason?)*	NO TREATMENT NECESSARY ---------- A NOT CUSTOMERY ---------- B COST TOO MUCH ---------- C LACK OF FUNDS ---------- D TO FAR ---------- E TRANSPORTATION NOT EASY ---------- F NO ONE AVAILABLE TO ACCOMPANY ------- G GOOD QUALITY CARE NOT AVAILABLE ---- H FAMILY DID NOT ALLOW ---------- I BETTER CARE AT HOME ---------- J DID NOT KNOW HOW TO GO THERE -------- K NO TIME TO GO FOR CARE/ADVICE --------- L DID NOT KNOW WHERE TO GO ---------- M HAVE TO GO TO A MALE DOCTOR ---------- N DID NOT REALIZE IT WAS SERIOUS --------- W OTHER_____ ---------- X DON'T KNOW/UNSURE ---------- Y	804 804 804 804 804 804 804 804 804 804 804 804 815 815 815 815 804
803D	Please specify "other" reason for not seeking care. Verbatim_____ _____	|_____|_____| |_____|_____|	
804	Who was involved in making the decision that _____ *(name)* should NOT go for seek treatment?	DECEASED HERSELF ---------- A HUSBAND ---------- B MOTHER -IN-LAW /FATHER -IN-LAW ------- C MOTHER/FATHER ---------- D SISTER/ SISTER -IN-LAW ---------- E OTHER FAMILY MEMBERS (husband's) -----F DECEASED'S FAMILY MEMBERS ---------- G RELATIVES ---------- H FRIENDS/NEIGHBOURS ---------- I TBA/FIELD WORKER ----------J OTHER_____ ---------- X NO ONE ---------- Y DON'T KNOW/UNSURE ----------Z	815
805	Who was involved in making the decision that _____ *(name)* SHOULD go for or seek treatment?	DECEASED HERSELF ---------- A HUSBAND ---------- B MOTHER -IN-LAW /FATHER -IN-LAW ------- C MOTHER/FATHER ---------- D SISTER/ SISTER -IN-LAW ---------- E OTHER FAMILY MEMBERS (husband's) -----F DECEASED'S FAMILY MEMBERS ---------- G RELATIVES ---------- H FRIENDS/NEIGHBOURS ---------- I TBA/FIELD WORKER ----------J OTHER_____ ---------- X NO ONE ---------- Y DON'T KNOW/UNSURE ----------Z	
805A	What symptoms made you decide to go for treatment? Verbatim_____ _____	|_____|_____| |_____|_____|	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
806	How much time after the problem was recognized, was it decided that she/you should go for care? *(If immediately then write 00 in hours, if less than 1 day then write in hours, if less than 30 days then write in days, if more then write in months)*	HOURS AFTER RECG .....1 |_____|_____| DAYS AFTER RECG .....2 |_____|_____| MOS. AFTER RECG .....3 |_____|_____| DON'T KNOW 998	
806A	Once you decided to go for care, did you try for treatment immediately?	YES .....1 NO, WENT LATER.....2 DON'T KNOW 8	807 807
806B	Why did she/you not try immediately?	HOSPITAL TO FAR ---------- A DID NOT REALIZE SERIOUSNESS ---------- B LACK OF FUNDS ---------- C HAVE TO GO TO A MALE DOCTOR ---------- D OTHER_____ ---------- X	
806C	How long after the decision did she/you actually try for treatment? *(If less than 1 hour then write 00)*	HOURS AFTER..... |_____|_____| DON'T KNOW 98	
807	**CHECK Q803B: Was care only received from HOME?**	**Q803B IS ONLY CODED "A".....1** **Q803B IS CODED BETWEEN "B" TO "X" WITH OR WITHOUT "A" 2**	**814**
807A	How many hospitals/clinics/care providers did _____*(name)* actually go for the treatment of her last illness?	NUMBER ---------- |_____| DID NOT GO ANYWHERE ---------- 0 DON'T KNOW/UNSURE ---------- 8	 814
THE FOLLOWING QUESTIONS [Q808-810] APPLY TO THE FIRST HOSPITAL/CLINIC/DOCTOR SHE WENT FOR CARE			
808	Where did she go first for care/medical treatment for her last illness?	GOVT SECTOR HOSPITAL ----------21 UPAZILA HEALTH COMPLEX ----------22 MATERNAL AND CHILD WELFARE CENTRE (MCWC) ----------23 UNION HEALTH AND FAMILY WELFARE CENTRE ----------24 SATELLITE/EPI OUTREACH SITE -------25 COMMUNITY CLINIC ----------26 NGO SECTOR NGO CLINIC ----------31 NGO HOSPITAL ----------32 NGO SATELLITE CLINIC ----------33 PRIVATE SECTOR PRIVATE HOSPITAL ----------41 PRIVATE CLINIC ----------42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ----------43 CHAMBER/ PHARMACY OF UNQUALIFIED DOCTOR ----------44 OTHER_____ ----------96 DON'T KNOW/UNSURE ----------98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
808A	Who accompanied her when she went to _____*(name of hospital/clinic/care provider)* for treatment? *(Record all persons who accompanied)*	HUSBAND ---------- B MOTHER -IN-LAW /FATHER -IN-LAW ------- C MOTHER/FATHER ---------- D SISTER/ SISTER -IN-LAW ---------- E OTHER FAMILY MEMBERS (husband's) -----F DECEASED'S FAMILY MEMBERS ---------- G RELATIVES ---------- H FRIENDS/NEIGHBOURS ---------- I TBA/FIELD WORKER ----------J OTHER_____ ---------- X NO ONE ---------- Y	
808B	How far is the hospital/clinic/care provider from her residence/or where she was staying? *(If less than 1 mile then write 00)*	MILES..... |_____|_____| OUTSIDE TOWN OR UPAZILA ..... 95 DON'T KNOW 98	
808C	How did she go to the hospital/clinic/care provider	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D COUNTRY BOAT ..... E MECHANIZED WATER VEHICLE ..... F CART/BULLOCK CART ..... G RICKSHAW /RICKSHAW VAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER_____ ..... X DON'T KNOW ..... Y	 808E 808E
808D	Was it difficult to find/get the _____*(name of transport)*	VERY MUCH .....1 SOMEWHAT .....2 NO PROBLEM .....3 DON'T KNOW/UNSURE 8	
808E	How much time did it take to go there?	|_____|_____| |_____|_____| HOURS MINUTES DON'T KNOW---------- 9998	
808F	How long did she wait between the time she first arrived at the hospital/clinic/care provider and the time she was examined by a health care provider/doctor? *(If less than 1 hour then write in minutes)*	|_____|_____| |_____|_____| HOURS MINUTES IMMEDIATELY---------- 0000 DON'T KNOW---------- 9998	
808G	Who first examined/treated her?	NURSE .....1 DOCTOR .....2 OTHER_____ .....7 DON'T KNOW/UNSURE 8	
808H	What treatment was given her? 1._____ 2._____ 3._____	|_____|_____| |_____|_____| |_____|_____|	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
808I	Did the woman's condition improve after treatment in this place, or did it stay the same or worsen?	NO CHANGE ---------- 1 IMPROVED ---------- 2 WORSENED ---------- 3 DIED ---------- 4 DON'T KNOW ---------- 8	809 809 809 809
808J	*(If she died in the hospital/clinic)* How long after she got there did she die?	DAY ..... 1 |_____|_____| MONTH..... 2 |_____|_____| DON'T KNOW---------- 998	814 814 814
809	Did the hospital/clinic/care provider refer her to another hospital/clinic/care provider for care?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 810 810
809A	Where was she referred?	GOVT SECTOR HOSPITAL ---------- 21 UPAZILA HEALTH COMPLEX ---------- 22 MATERNAL AND CHILD WELFARE CENTRE (MCWC) ---------- 23 UNION HEALTH AND FAMILY WELFARE CENTRE ---------- 24 SATELLITE/EPI OUTREACH SITE ------- 25 COMMUNITY CLINIC ---------- 26 NGO SECTOR NGO CLINIC ---------- 31 NGO HOSPITAL ---------- 32 NGO SATELLITE CLINIC ---------- 33 PRIVATE SECTOR PRIVATE HOSPITAL ---------- 41 PRIVATE CLINIC ---------- 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ---------- 43 CHAMBER/ PHARMACY OF UNQUALIFIED DOCTOR ---------- 44 OTHER_____ ---------- 96 DON'T KNOW/UNSURE ---------- 98	
809B	How long did after she arrived at _____*(hospital/clinic/care provider in 808)* was _____*(name)* asked to go to _____*(hospital/clinic/care provider in 809A)*?	|_____|_____| |_____|_____| HOURS MINUTES IMMEDIATELY---------- 0000 DON'T KNOW---------- 9998	
809C	What was the reason given for the referral?	NO EQUIPMENT FOR OPERATION ---------- A HIGH BLOOD PRESSURE---------- B TO GET BETTER CARE ---------- C NO DOCTOR WAS AVAILABLE---------- D NO ARRANGEMENTS FOR GIVING BLOOD---------- E NO PROPER ARRANGEMENTS FOR RESOLVING PROBLEM ----------F BABY WENT HIGHER---------- G PART OF BABY CAME OUT ---------- H BABY PASSED STOOL INSIDE UTERUS---- I CERVIX DID NOT OPEN ----------J OTHER_____ ---------- X DON'T KNOW---------- Y	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
809D	Did she go to the place referred?	YES ..... 1 NO ..... 2 DON'T KNOW 8	810 810
809E	Why did she not go there for treatment?	NO TREATMENT NECESSARY---------- A NOT CUSTOMERY---------- B COST TOO MUCH ---------- C LACK OF FUNDS---------- D TO FAR ---------- E TRANSPORTATION NOT EASY ---------- F NO ONE AVAILABLE TO ACCOMPANY------- G GOOD QUALITY CARE NOT AVAILABLE ---- H FAMILY DID NOT ALLOW ----------I BETTER CARE AT HOME ---------- J DID NOT KNOW HOW TO GO THERE -------- K NO TIME TO GO FOR CARE/ADVICE --------- L HAVE TO GO TO A MALE DOCTOR ---------- N DID NOT REALIZE IT WAS SERIOUS ---------W OTHER_____---------- X DON'T KNOW/UNSURE ---------- Y	
810	***Check Q807a and code appropriately***	**RECEIVED CARE FROM MORE THAN ONE HOSPITAL/CLINIC/CARE PROVIDER..... 1** **RECEIVED CARE FROM ONLY ONE HOSPITAL/CLINIC/CARE PROVIDER 2**	 **814**
THE FOLLOWING QUESTIONS [Q811-812D] APPLY TO THE LAST PLACE SHE WENT FOR CARE			
811	Where did she go last for care/medical treatment?	GOVT SECTOR HOSPITAL ---------- 21 UPAZILA HEALTH COMPLEX ---------- 22 MATERNAL AND CHILD WELFARE CENTRE (MCWC) ---------- 23 UNION HEALTH AND FAMILY WELFARE CENTRE ---------- 24 SATELLITE/EPI OUTREACH SITE------- 25 COMMUNITY CLINIC ---------- 26 NGO SECTOR NGO CLINIC ---------- 31 NGO HOSPITAL ---------- 32 NGO SATELLITE CLINIC ---------- 33 PRIVATE SECTOR PRIVATE HOSPITAL ---------- 41 PRIVATE CLINIC ---------- 42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ---------- 43 CHAMBER/ PHARMACY OF UNQUALIFIED DOCTOR ---------- 44 OTHER_____---------- 96 DON'T KNOW/UNSURE ---------- 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
811A	Who accompanied her when she went for treatment to _____*(name of hospital/clinic/care provider)*? *(Record all persons who accompanied)*	HUSBAND ---------- B MOTHER -IN-LAW /FATHER -IN-LAW ------- C MOTHER/FATHER ---------- D SISTER/ SISTER -IN-LAW ---------- E OTHER FAMILY MEMBERS (husband's) -----F DECEASED'S FAMILY MEMBERS ---------- G RELATIVES ---------- H FRIENDS/NEIGHBOURS ---------- I TBA/FIELD WORKER ----------J OTHER_____ ---------- X NO ONE ---------- Y	
811B	How did she go to the hospital/clinic/care provider	CAR ..... A BUS ..... B TRAIN ..... C AMBULANCE ..... D COUNTRY BOAT ..... E MECHANIZED WATER VEHICLE ..... F CART/BULLOCK CART ..... G RICKSHAW /RICKSHAW VAN ..... H BABY TAXI/TEMPO ..... I ON FOOT ..... J OTHER_____ ..... X DON'T KNOW ..... Y	 811D 811D
811C	Was it difficult to find/get the _____*(name of transport)*	VERY MUCH .....1 SOMEWHAT .....2 NO PROBLEM .....3 DON'T KNOW/UNSURE 8	
811D	How long did she wait between the time she first arrived at the last hospital/clinic/care provider and the time she was examined by a health care provider/doctor? *(If less than 1 hour then write in minutes)*	|____|____| |____|____| HOURS MINUTES IMMEDIATELY ---------- 0000 DON'T KNOW ---------- 9998	
811E	Who initially examined/treated she?	NURSE .....1 DOCTOR .....2 OTHER_____ .....7 DON'T KNOW/UNSURE 8	
811F	What treatment was given her? 1._____ 2._____ 3._____	|____|____| |____|____| |____|____| DON'T KNOW 98	
811G	Did the woman's condition improve after treatment in this place, or did it stay the same or worsen?	NO CHANGE ..... 1 IMPROVED ..... 2 WORSENED ..... 3 DIED ..... 4 DON'T KNOW 8	812 812 812 812

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
811H	*(If she died in the hospital/clinic)* How long after she got there did she die?	DAY .....1 |_____|_____| MONTH.....2 |_____|_____| DON'T KNOW---------- 998	813 813 813
812	Did the last hospital/clinic/care provider refer her to another hospital/clinic/care provider for care?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 813 813
812A	Where was she referred?	GOVT SECTOR HOSPITAL ----------21 UPAZILA HEALTH COMPLEX----------22 MATERNAL AND CHILD WELFARE CENTRE (MCWC) ----------23 UNION HEALTH AND FAMILY WELFARE CENTRE ----------24 SATELLITE/EPI OUTREACH SITE-------25 COMMUNITY CLINIC ----------26 NGO SECTOR NGO CLINIC ----------31 NGO HOSPITAL ----------32 NGO SATELLITE CLINIC ----------33 PRIVATE SECTOR PRIVATE HOSPITAL ----------41 PRIVATE CLINIC ----------42 CHAMBER/PHARMACY OF QUALIFIED DOCTOR ----------43 CHAMBER/ PHARMACY OF UNQUALIFIED DOCTOR ----------44 OTHER_____ ----------96 DON'T KNOW/UNSURE ----------98	
812B	What was the reason given for the referral?	NO EQUIPMENT FOR OPERATION---------- A HIGH BLOOD PRESSURE---------- B TO GET BETTER CARE---------- C NO DOCTOR WAS AVAILABLE---------- D NO ARRANGEMENTS FOR GIVING BLOOD---------- E NO PROPER ARRANGEMENTS FOR RESOLVING PROBLEM----------F BABY WENT HIGHER---------- G PART OF BABY CAME OUT ---------- H BABY PASSED STOOL INSIDE UTERUS---- I CERVIX DID NOT OPEN ----------J OTHER_____ ---------- X DON'T KNOW---------- Y	
812C	Did she go to the place referred?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
812C1	Check 812C and tick the correct box	No/Don't Know circled ☐ ↓ Yes circled ☐ ↓ *(Ask 811 to 811H again and correct information given about last provider)*	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
812D	Why did she not go to the referral site?	NO TREATMENT NECESSARY---------- A NOT CUSTOMERY---------- B COST TOO MUCH ---------- C LACK OF FUNDS---------- D TO FAR ---------- E TRANSPORTATION NOT EASY ---------- F NO ONE AVAILABLE TO ACCOMPANY------- G GOOD QUALITY CARE NOT AVAILABLE ---- H FAMILY DID NOT ALLOW ----------I BETTER CARE AT HOME ---------- J DID NOT KNOW HOW TO GO THERE -------- K NO TIME TO GO FOR CARE/ADVICE --------- L HAVE TO GO TO A MALE DOCTOR ---------- N DID NOT REALIZE IT WAS SERIOUS ---------W OTHER_____---------- X DON'T KNOW/UNSURE ---------- Y	
813	How many hours/days after leaving _____ *(the first hospital/clinic/care provider)* did she/you reach _____ *(the last hospital/clinic/care provider)*?	DAY .....1 |_____|_____| MONTH.....2 |_____|_____| DON'T KNOW---------- 998	
814	How much did it cost in total for the treatment of her last illness? *(Explain that you want expenses of all hospitals/clinics/care providers combined and including transportation, overnight stays, food, etc)*	TAKA .... |_____|_____|_____|_____|_____|_____| NO FUNDS WERE SPENT.....00000 DON'T KNOW/UNSURE 99998	815
814A	From where did you/she get the funds for her to go for treatment?	FAMILY FUNDS ..... A BORROWED..... B SOLD ASSETS ..... C GIVEN BY RELATIVES/FRIENDS..... D MORTGAGED PROPERTY ..... E OTHER_____..... X DON'T KNOW ..... Y	
815	**Thank the respondent(s) and finish the interview**		
816	Time of ending interview:	|_____|_____| hrs |_____|_____| mins	

INTERVIEWER'S COMMENTS AND OBSERVATION

INTERVIEWER'S ASSESSMENT OF CAUSE OF DEATH