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Demographic and Maternal and Child Health Survey 1991/1992

Central Statistical Organization

Pan Arab Project for Child Development

Demographic and Health Surveys
Macro International Inc.

REPUBLIC OF YEMEN

Yemen Demographic and Maternal and Child Health Survey 1991/1992

Central Statistical Organization
Sana'a, Yemen

Pan Arab Project for Child Development
Cairo, Egypt

Macro International Inc.
Calverton, Maryland USA

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This report presents the findings of the 1991/1992 Yemen Demographic and Maternal and Child Health Survey (YDMCHS) conducted by the Central Statistical Organization, in cooperation with the Ministry of Public Health. Macro International Inc. and Pan Arab Project for Child Development (PAPCHILD) provided technical assistance. Funding was provided by the U.S. Agency for International Development, the Arab Gulf Program for the United Nations Development Organization (AGFUND), UNFPA, UNICEF, and the Republic of Yemen.

The YDMCHS is part of the worldwide Demographic and Health Surveys (DHS) program and also the PAPCHILD program which concentrates on the Arab region. Both the DHS and PAPCHILD programs are designed to collect data on fertility, family planning, and maternal and child health. Additional information on the Yemen survey may be obtained from the Central Statistical Organization (CSO), Sana'a, Yemen. Additional information about the DHS program may be obtained by writing to: DHS, Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705, USA (Telephone 301-572-0200; and Fax 301-572-0999). Additional information about the PAPCHILD program may be obtained by writing to: Pan American Project for Child Development - League of Arab States, 22 A Taha Hussein Street, Zamalek, Cairo, Egypt (Telephone 3404306; and Fax 3401422).

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FOREWORD

The publication of this final report on the Demographic, Maternal and Child Health Survey in the Republic of Yemen is considered a great achievement and is part of the Central Statistical Organization's plan to establish a comprehensive statistical and informational database on population, health, and the socioeconomic status of the Yemeni people. Such a demographic database will help planners, decisionmakers, and researchers in putting forward realistic regional, sectoral, and comprehensive development plans for execution throughout the country. The success of these development plans is dependent on the accuracy of the socioeconomic and health indicators obtained from the survey data.

This report focuses mainly on issues related to maternal and child health and the circumstances which directly and indirectly affect the lives of mothers and children, a wide sector of Yemeni society.

The Central Statistical Organization carried out the Demographic, Maternal and Child Health Survey and prepared this final report in collaboration with the Ministry of Public Health, PAPCHILD, the Arabian Gulf Program, UNFPA, UNICEF, the UN Statistical Division, Macro International Inc., and USAID in Yemen.

The execution of the survey and the preparation of this report have gone through several phases, starting November 16, 1991 and ending with the publication of this report in February 1994. These phases included the preparation for the survey, field operations, data processing and tabulation, publication of the preliminary report in August 1992, analysis of the survey data, preparation of the chapters for this report, and publication and distribution of the report.

The importance of the achievement of this survey lies in it being the first statistical, scientific research project executed after the unification of the country on May 22, 1990. The survey data represent all the governorates, both urban and rural. The results will be a major factor complementing and supporting the efforts of the government (all sector and agencies) to execute a population policy, especially since the National Population Council came into being in July 1992 and the General Secretariat was established in January 1993. The General Secretariat will be responsible for implementation of the plan of action emerging from the National Population Strategy and the proceedings of the First National Population Conference held in Sana'a during October 26-29, 1991.

It gives us great pleasure to present this report to all scholars, researchers and concerned users. This report, which is a detailed and accurate representation of the final survey results, deals with and touches upon important aspects of maternal and child health in unified Yemen. It also emphasizes the important role played by statistical work in planning, development and scientific research in our country.

A word of thanks and gratitude are in order here for all the persons who participated in the execution of this survey and the preparation of this report, especially the project's administrative staff, the General Department of Population Studies and Research Center in the Central Statistical Organization, the Ministry of Public Health, PAPCHILD, and the Demographic and Health Surveys (DHS) program at Macro International Inc. (USA) for their help and important role in producing this report.

Finally, we hope that this research study meets the stated objectives of the survey and will serve all researchers, planners and decisionmakers.

Abdoraboh Ahmed Gradah

Chairman
Central Statistical Organization
and Survey Committee

PREFACE

The Yemen Demographic and Maternal Child Health Survey (YDMCHS) was carried out by the Central Statistical Organization with the aim of providing detailed information on the factors affecting maternal and child health and survival: demographic, social, economic and environmental variables. The YDMCHS was designed to respond to the needs of the Republic of Yemen and to provide internationally comparable data. The survey was carried out using the most scientific and accurate survey methods available.

The successful implementation of the YDMCHS was made possible by the active support and dedicated efforts of a large number of individuals from the Central Statistical Organization and the Ministy of Public Health in Sana'a, Yemen, Macro International Inc. in Calverton, Maryland USA, and the Pan Arab Project for Child Development (PAPCHILD) in Cairo, Egypt. Funds from the U.S. Agency for International Development (USAID) in Washington and Sana'a and the support of the Mission Director and Dr. Raga Uqba of USAID in Yemen are gratefully acknowledged.

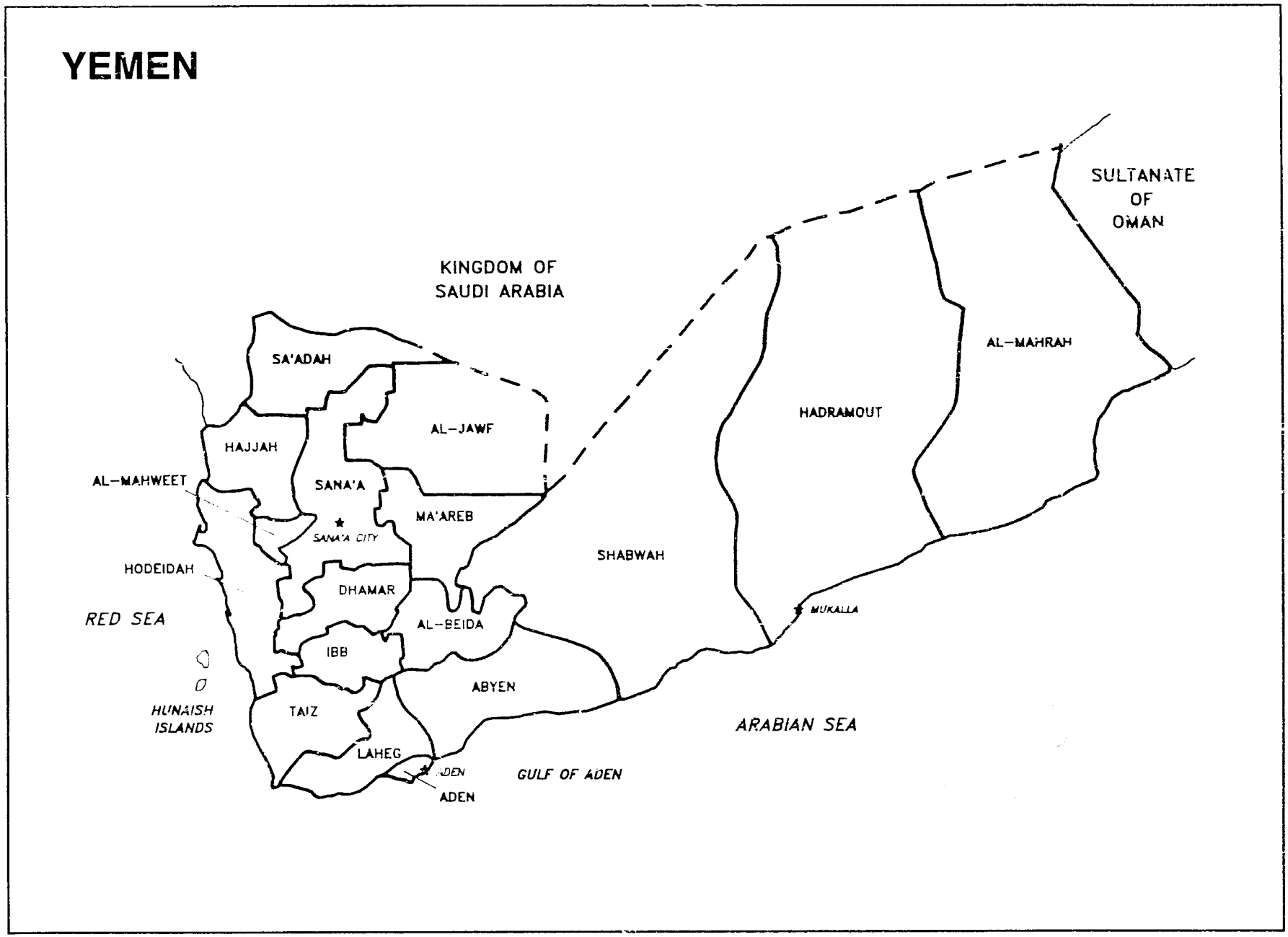
I wish to thank Dr. Mohamed Ayad, Regional Coordinator, Macro International, for his support and encouragement throughout all phases of the survey. I would also like to express my thanks to other staff at Macro International who contributed to the survey: Dr. J. Ties Boerma for the questionnaire and survey design, Dr. Alfredo Aliaga for the sample design, Ms. Jeanne Cushing for her assistance in data processing, Mr. Noureddine Abderrahim for data tabulations, Dr. Ann Way and Dr. Jeremiah Sullivan for reviewing two chapters of the report, and Mr. Jonathan Dammons and Mr. Robert Wolf for preparing graphs for the report. Special thanks go to Ms. Kaye Mitchell for word processing support and to Dr. Sidney Moore for editing the report. I also wish to record my special thanks to Mr. Sushil Kumar, the DHS Country Monitor for the YDMCHS for his dedicated efforts throughout all phases of the survey, especially his valuable contribution to the final report.

I wish to express my thanks to the League of Arab States (LAS) and the staff of PAPCHILD for the valuable and significant support they provided throughout the various stages of this survey. In particular, I would like to thank Mr. Mahdi El Hadi, LAS Under-secretary for Social Affairs and PAPCHILD Programme Director, Dr. Atef Khalifa (former), PAPCHILD Manager, Dr. Hoda Rashad, PAPCHILD Manager, Dr. Ahmed Abdul Moniem, Country Monitor for the YDMCHS, and other PAPCHILD experts: Mrs. Samia Charchour, Mr. Hafedh Chakir, Mr. Ahmed El Baz, and Dr. Laila El Zeiny. Special thanks are also due to Dr. Nabil Khorazaty for his contribution to the scientific editing.

International support from AGFUND, UNFPA, UNICEF, WHO and UNSTAT and other funders of PAPCHILD, is also highly appreciated. We are deeply indebted and grateful to Dr. Farida Allaghi (AGFUND), Mr. Abdul Monem Abu Nawar, Mr. Hédi Jemai (UNFPA), Dr. Fatih El Samani (UNICEF), and Mr. M. Ouakrim (WHO), for the valuable support they have provided throughout the survey.

March 1994

Amin Marouf al Janad
Project Director


YEMEN
KINGDOM OF
SAUDI ARABIA
SULTANATE
OF
OMAN
SA'ADAH
AL-JAWF
HAJJAH
AL-MAHWEET
SANA'A
SANA'A CITY
MA'AREB
HODEIDAH
DHAMAR
RED SEA
AL-BEIDA
IBB
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ISLANDS
TAIZ
ABYEN
LAHEG
ADEN
ADEN
GULF OF ADEN
SHABWAH
HADRAMOUT
AL-MAHRAH
MUKALLA
ARABIAN SEA

CHAPTER 1

THE SETTING

This chapter presents a short review of the geography, history, natural resources, and population of the Republic of Yemen, and the socioeconomic and political conditions prevailing in the Republic. The purpose is to provide the reader with a comprehensive background on the country and the condition of the Yemeni community. The chapter also includes a description of the organization of the Yemen Demographic and Maternal and Child Health Survey (YDMCHS) and the implementation of the different phases of the survey.

1.1 GEOGRAPHY

The Republic of Yemen is located in the southern part of the Arabian Peninsula between 12° and 20° north latitude and 41° and 54° east longitude. The total area, excluding Al-Rub Al-Khali desert, is 555,000 square kilometers.

The boundaries of the Republic of Yemen are the Kingdom of Saudi Arabia in the north, the Arabian Sea and Gulf of Aden in the south, the Sultanate of Oman in the east, and the Red Sea in the west. The Bab Al-Mandab strait lies off the southwestern tip of Yemen. Mayoun, a Yemeni island in the middle of the strait, controls passage into and out of the Red Sea.

There are about 112 Yemeni islands in the Red Sea and Arabian Sea. The largest is Sucotra, which has an area of 3650 square kilometers and lies 510 kilometers southeast of the Yemeni seaport of Mukalla. The other major islands, in order of size, are Kamaran, Hunaish Al-Kubra, Hunaish Al-Sughra, Zaqar Al-Zubair, and Al-Tair (Central Statistical Organization, 1991a).

1.2 HISTORY

In ancient times, geographical location and favorable natural conditions played an important role in population settlement and the development of civilizations in the territory now occupied by the Republic of Yemen. This was particularly true regarding the valleys toward the Al-Rub al-Khali desert in the east, the Arabian Sea in the south, and the Red Sea in the west.

The eras of Mae'en Hadramout and Saba'a (Sheba) are considered to be the first organized political entities in Yemen before the birth of Christ. The Hemyar era flourished later and ended with the Ethiopian invasion in 525 A.D.

The most important activities of these regimes were agriculture and trade. They invented agricultural terracing on the mountains and established dams, the most famous of which was Ma'areb dam. They also controlled caravans, which transported commodities from India and East Africa across the Arabian Peninsula to areas around the Mediterranean Sea (Al-Zoabi, 1990).

Yemeni Civilization flourished in those years, and Yemen was called *Arabia Felix* (Arabia the "happy") by the Greeks. By the end of the Hamiarite era, however, Yemen was dominated first by the Ethiopians and then by the Persians. This lasted until the emergence of Islam, when the Yemenis embraced the Islamic religion and Yemen became part of the central Islamic state. This period lasted from 628 A.D. until 824 A.D. Thereafter, small independent states emerged, leaving Yemen weak and divided. The Turks

occupied Yemen from the sixteenth century until the beginning of the seventeenth century, while the British occupied Aden in 1839. The Turks invaded the northern part of Yemen again in 1872, and continued their occupation until the outbreak of World War II, when Yemen came under the rule of the Hameed Al-Deen family in the north. This lasted until the revolution, 26 September 1962. The British remained in the south until the outbreak of the 14 October Revolution, which resulted in independence 30 November 1967 (Mustafa, 1984).

With the success of the two revolutions, Yemen entered a new era of economic, social, cultural, and political change. The latest of these changes was the unification of the two parts of Yemen (north and south) on 22 May 1990. This led to democratic changes and the establishment of political parties. Parliamentary elections were held 27 April 1993, resulting in the first Parliamentary Council, which in turn elected the Presidential Council to abide by the unified country's legislation.

1.3 NATURAL RESOURCES

Yemen is divided into five regions:

Mountain Area

This area consists of two mountain ranges: the first is the North-South mountain range, parallel to the Red Sea; the second is West-East mountain range, parallel to the Gulf of Aden. The height of these mountains varies between 1,000 and 3,600 meters. The highest peak on Nabi Shuaib Mountain is 3,666 meters above sea level. It is the highest peak in the Arabian Peninsula and in the Arab region.

The water from these mountains drains in all directions, forming valleys with basins and plains suitable for agriculture.

Hill Area

The hill area is to the east and north of the mountainous area parallel to it. The hill area becomes wider toward the Al-Rub Al-Khali region on the north. The highest peak is 1,000 meters. The boundaries of this region are contiguous with the Al-Rub Al-Khali region, which extends deep into the Arabian Peninsula and comprises one-quarter of its area.

The Coastal Area

The coastal area includes all areas adjacent to the Red Sea, Gulf of Aden, and the Arabian Sea. It is continuous, forming a coastal strip stretching from the Omani border in the east to Bab Al-Mandab Strait in the west, and north to the border of Saudi Arabia, a distance of approximately 2,000 kilometers. The coastal area varies in width from 30 to 60 kilometers.

Al-Rub Al-Khali Area

This area is part of the Yemeni desert and contains some desert plants, particularly in the outermost areas; it is contiguous with the hill area. As one goes deeper into the Al-Rub Al-Khali desert, there are fewer plants and the sand dunes increase.

The Yemeni Islands

These islands are scattered in the Yemeni territorial waters of the Red Sea and the Arabian Sea. Most of the islands are in the Red Sea, parallel to the Yemeni coast. The biggest and the most important island in the Red Sea is Kamaran, which is densely populated. In the Arabian Sea, the Yemeni islands are close together. The most famous island is Sucotra, on which are found ormosia, dracena draco and pterocarpus draco trees, from which gum, various medicine, incense, and pigments are obtained.

1.4 POPULATION

Population Size and Distribution

The latest two census of the population in the Republic of Yemen were conducted in 1986 and 1988. The 1986 Census was conducted in the northern governorates (then called the Yemen Arab Republic, Y.A.R), while the 1988 Census was conducted in the southern governorates (then called the People's Democratic Republic of Yemen, P.D.R.Y.). According to these censuses, the resident population size in the northern governorates was about 7.8 million and the resident population size in the southern governorates was about 1.8 million.

The resident population size in the Republic of Yemen was estimated at approximately 11.3 million in 1990. (Central Statistical Organization, 1991b).

At the national level, population density is about 21.4 persons per square kilometer (1990), distributed among 17 governorates and the Capital Mayorship (Sana'a City). The governorates include 238 directorates or districts (Public Survey Authority, 1990).

The population is distributed between rural and urban areas. In 1990, 21.4 percent of the population lived in urban areas. The most densely populated cities are Sana'a, Aden, Taiz, Hudaidah, and Mukalla.

Population Growth

Improvements in the living and health conditions in Yemeni society following the revolution had a significant impact on population growth. The growth rate increased slightly as a result of stable birth rates coupled with decreasing death rates.

In 1988, the crude birth rate in Yemen was 52.6 per thousand, while the crude death rate was 21.8 per thousand. Accordingly, the annual rate of population growth is 3.1 percent. The total fertility rate, which is the total number of live births per woman by the end of the reproductive years, is 8.2 births per woman. Therefore, among developing countries, the Republic of Yemen is considered to have one of the highest rates of population growth and highest fertility rates.

It is worth mentioning, that mortality in Yemen is still high, particularly among children. In 1988 the infant mortality rate was 130 per thousand (Central Statistical Organization, 1992a). Life expectancy at birth is moderate compared to many countries. In 1988 it was estimated at 46.3 years for both sexes. In the last decade there was a clear improvement in the standard of living and health conditions, which was reflected in the continuing increase in life expectancy.

1.5 SOCIOECONOMIC CONDITIONS

Education

Education is one of the most important measures of social and economic development. Hence, the State has paid great attention to education since the revolution in the early sixties. Illiteracy among Yemenis was the highest among Arab and other developing countries. At the time of the revolution, there was not one secondary school in the country. Only Aden, being under the British occupation, was an exception.

Statistics show that considerable progress has been achieved in this area. Almost 2 million students were enrolled in over 12,000 schools in 1990/91, while Sana'a and Aden universities had an enrollment of about 35,000 students in 1989/90 (Ganin and Mutahar, 1992). These figures confirm that there has been a great improvement in the education sector in Yemen, especially when compared to the previous Imami and Colonial regimes.

Despite these efforts, figures show that more than half of the population is still illiterate. The 1986 and 1988 censuses in both the northern and southern governorates show that illiteracy is about 67 percent and is higher among females than males. Figures also show that enrollment in basic education is about 57.4 percent for the population aged 6-15 years (Ganin and Mutahar, 1992).

These figures indicate that Yemen needs to expend more resources to increase basic education, especially considering the high rate of population growth.

Health

Health conditions in any community are the result of various social, economic, cultural, and environmental factors. Yemen witnessed many changes in the period following the revolution. This is reflected in the improved level of health of the population, and in the increased coverage of health services. As a result, infant mortality has declined, while life expectancy has increased. For example, the infant mortality rate decreased from 171 per thousand live births in 1975 in the northern and western governorates to 130 per thousand in 1990 (Central Statistical Organization, 1992a).

The efficiency of health services has increased. In 1990, the number of hospitals reached 74, in addition to 94 health centers. These facilities have a capacity of 9,891 beds, with a staff of 2,854 doctors, 2,004 of whom are nationals (Central Statistical Organization, 1991a; 1992a)

Despite progress in the health sector, health services cover only 40 percent of the population and are concentrated in urban areas. Rural areas are to some extent deprived of such services, especially in remote areas, which are difficult to reach.

Population Activities

According to 1990 population estimates, the labor force—all persons age 15-64 years—represents 44.3 percent of the population. Additionally, children under 15 years make up 53.5 percent, and 3.3 percent are elderly persons (65 years or more). Thus, the dependency ratio in Yemen is high: 126 persons in the non-productive age groups for every 100 persons aged 15-64 years. This is a result of the large number of children under 15 years, which is common in developing countries.

Most of the Yemeni labor force (62.2 percent) is involved in agriculture and fishing, while the rest are distributed among other sectors (Saif et al., 1992).

There are approximately 5.1 million acres of arable land in Yemen, 9.5 percent of the total land area. Only 1.1 million acres are under cultivation (Hashem et al., 1992).

Agriculture depends mainly on rain water. Eighty percent of the arable land receives rain water. Thus, production is subject to climatic conditions. Locally-grown fruits and vegetables are sufficient to meet the needs of the population; however, some essential food stuffs are imported, such as wheat, two-thirds of which is imported (Hashem et al., 1992).

There are indications that Yemen has considerable unused mineral wealth, such as oil. The Yemeni government pays great attention to oil exploration operations, which have increased greatly since unification. It is likely that in the coming years Yemen will be an oil exporting country, exporting oil in large quantities.

1.6 POPULATION POLICY AND STRATEGY

In 1984, the National Committee for Population and Family Planning (NCPFP) was established to strengthen the government capacity to implement population policy in North Yemen. After the achievement of Yemeni unity in May 1990, the government drafted a national population strategy which, after revision, was adopted as national policy at the National Population Conference in October 1991. The National Population Council was established to oversee implementation of the policy. The overall objectives of the National Population Strategy for the year 2000 are (Central Statistical Organization, 1992a):

1. Reduce the infant mortality rate from 130 to 60 deaths per thousand live births;

2. Reduce the mortality rate for children age 1-4 years by 50 percent;

3. Increase immunization coverage for children under one year of age to 85 percent or more, and to expand tetanus immunization among women of reproductive age;

4. Reduce by 50 percent, compared with 1990 levels, the number of deaths among children due to diarrhea.

The objectives of the family planning strategy are:

1. Increase the use of contraception to 35 percent among women of reproductive age, and expand family planning services to men;

2. Make family planning a free choice for couples, a basic human right, as well as a factor for social change. Family planning must also include the right to treatment of infertility (Central Statistical Organization, 1992a).

1.7 OBJECTIVES OF THE SURVEY

The General Department for the Population Studies and Research Center, with the cooperation of the Ministry of Public Health, the Pan Arab Project for Child Development (PAPCHILD), the Demographic Health Surveys (DHS), and the U.S. Agency for International Development (USAID), has implemented the various phases of the 1991-92 Yemen Demographic and Maternal and Child Health Survey (YDMCHS). The survey was carried out as a part of the DHS program and also the PAPCHILD program. The DHS program is assisting governments and private agencies in the implementation of household surveys in developing countries; PAPCHILD has similar goals for developing countries in the Arab League. The main objectives of the DHS project are to: (a) provide decisionmakers with a data base and analyses useful for informed

policy choices, (b) expand the international population and health data base, (c) advance survey methodology, and (d) develop skills and resources necessary to conduct high quality demographic and health surveys in the participating countries.

The YDMCHS was specifically aimed at furnishing information on basic population and household characteristics, maternal and child health, fertility, family planning, and infant and child mortality in Yemen. The survey also presents information on breastfeeding practices and the nutritional status of children under age five. The survey will provide policymakers and planners with important information for use in formulating programs and policies regarding maternal and child health, child mortality, and reproductive behavior.

1.8 ORGANIZATION OF THE SURVEY

The Yemen Demographic and Maternal and Child Health Survey (YDMCHS) is the first national survey conducted in Yemen since unification of the country. It was designed to collect data on households, ever-married women of reproductive age, and children under age five. The subjects covered in the household survey were: characteristics of households, housing and living conditions, school enrolment, labor force participation, general mortality, disability, fertility, and child survival. The areas covered in the survey of women of reproductive age were: demographic and socioeconomic characteristics, marriage and reproductive history, fertility regulation and preferences, antenatal care, breastfeeding, and child care. For children under five in the survey, the topics included diarrheal and other morbidity, nutritional supplementation, accidents, vaccination, and nutritional status.

Sample Design and Implementation

The YDMCHS sample was designed to enable data analysis for Yemen as a whole, and separately for urban and rural areas, and for two regions: (1) the northern and western governorates, and (2) the southern and eastern governorates. The target sample was set at completed interviews for about 12,000 households with about 6,000 eligible women. No target number was fixed for children under five, for whom information was to be collected for *all* children in each household that was selected for the women's interview. In half of the selected households, only the Household Questionnaire was administered; in the other half, in addition to administering the Household Questionnaire, all eligible women were interviewed and information on eligible children was collected.

The YDMCHS covered the entire country, except for nomadic peoples and those living on hard-to-reach Yemeni islands. The survey adopted a stratified, multi-stage sampling design. The sample was stratified by urban and rural areas in the two regions. In this report, the northern and western governorates region includes: Sana'a City and the governorates of Sana'a, Taiz, Hodeidah, Ibb, Dhamar, Hajjah, Al-Beida, Sa'adah, Al-Mahweet, Ma'areb, and Al-Jawf. The southern and eastern governorates region consists of Aden, Laheg, Abyen, Shabwah, Hadramout, and Al-Mahrah governorates. In the first stage, sampling units or clusters were selected; the second stage involved selection of households. The initial objective of having a self-weighted sample was compromised in order to have reliable estimates for urban and rural areas within each region. Sana'a City, the urban (not rural) areas of Aden, and the rural areas of Laheg were oversampled.

For the survey, 258 sampling units were selected, which contained 13,712 households. In half of the selected households, only the Household and Housing Characteristics Questionnaires were administered. In the other half, the Women's and Child's Questionnaires were also administered to all eligible women and children. The sample design is described in more detail in Appendix B. A discussion of sampling errors is presented in Appendix C, along with the sampling errors calculated for the entire sample, urban and rural samples, and regional samples.

1.9 IMPLEMENTATION OF THE SURVEY

Preparation Stage

Preparatory steps for the DHS survey project began in 1989 (before unification) at the Population Research Center of the Central Statistical Organization, in Sana'a. At the time, the Pan Arab Project for Child Development (PAPCHILD) was also involved in planning a survey in South Yemen. These efforts continued after unification and included both the DHS project and the PAPCHILD project in planning for the first national survey. The Prime Minister's Resolution No. 9, issued in 1991, initiated the survey and led to the formation of the Supreme Committee for the Yemen Demographic and Maternal and Child Health Survey. A technical committee was also formed and charged with preparation, organization, planning and implementation of the YDMCHS project, including all the technical and operational requirements (see Appendix A for the names of the members of the Supreme Committee and the Technical Committee, and other persons involved in the YDMCHS).

Questionnaires

Design, preparation and revision of questionnaires. The YDMCHS survey includes the following questionnaires:

- Household Questionnaire
- Housing Characteristics Questionnaire
- Reproductive Health Questionnaire (also called the Women's Questionnaire
- Child Health Questionnaire (also called the Children's Questionnaire)
- Community Questionnaire

The items included in these questionnaires were selected after reviewing similar surveys such as those carried out by the Pan Arab Project for Child Development (PAPCHILD), which was sponsored by the Arab League Organization, and the model questionnaires of the Demographic and Health Surveys (DHS) in Calverton, Maryland, USA. The final YDMCHS questionnaires were mainly based on PAPCHILD's model questionnaires. The questionnaires were modified to suit the conditions of Yemeni society and to meet the information requirements of the country. A large number of questions were included in the YDMCHS questionnaires in order to obtain as much information as possible on demographic and population dynamics, health and environmental issues, other indicators of standards of living, housing conditions, maternal and child health, and characteristics of local communities regarding provision of health services. English versions of the questionnaires (except the Community Questionnaire) are reproduced in Appendix E.

The Household Questionnaire consists of a household roster, including questions on orphanhood, education level and economic activity of household members. It also collects information on general mortality, disability and, for ever-married women under age 55, information on fertility and child survival.

The Housing Characteristics Questionnaire, was administered as part of the household survey. It includes eight sections: housing, cooking, water, lighting, sanitation, waste disposal, ownership of objects and assets, and drainage.

The YDMCHS Women's Questionnaire or Reproductive Health Questionnaire consists of nine sections:

- Respondent's background
- Marriage and co-residence

- Reproduction and child survival
- Antenatal care: current pregnancy
- Maternal care: the last five years
- Child feeding
- Cause of death for children who died
- Family planning and childbearing attitudes
- Husband's background

The Child Health Questionnaire, which is also referred to as Children's Questionnaire, consists of six sections:

- General child care
- Morbidity: diarrhea
- Morbidity: other illnesses
- Immunization
- Weight and height[1]

Preparation of interviewer's instructions and training booklets. After completion of the design stage, interviewer's manuals containing instructions on interviewing techniques and on procedures for completing questionnaires were prepared for each questionnaire. The manuals provided simple, clear descriptions of each question as well as of basic terminology used in the survey (e.g., household, live birth).

Survey Pretest and Printing of Documents

Training of supervisors and female field editors. Twenty men were trained as supervisors for the survey fieldwork and 6 women were trained as interviewers for the pretest and as field editors for the main survey. All were trained in the theoretical aspects of survey research and the practical aspects of completing questionnaires, i.e., understanding the purpose of each question, understanding the instructions for completing the questionnaires, and learning techniques to obtain specific and accurate answers from the respondents.

Practical training. The pretest field practice followed the theoretical training. Trainees interviewed selected households (that were not included in the main survey) as well as eligible women and eligible children in those households in both Sana'a City and rural areas around the capital. The pretest field practice lasted for 15 days from 25 August until 10 September 1991.

Revision of basic survey documents. Based on the experience of the pretest interviewing and pretest field operations, the survey documents, questionnaires and instruction manuals were evaluated for appropriateness and adequacy for implementing the YDMCHS. As a number of problems were identified in the documents, some questions and instructions were revised accordingly.

Printing of documents and questionnaires. After finalizing the questionnaires and fieldwork manuals, the basic survey documents and other forms to be used in the field for monitoring fieldwork operations and checking quality control were printed. The number of questionnaires printed was as follows:

Household Questionnaire (16,500 copies),
Housing Characteristics Questionnaire (15,000 copies),
Reproductive Health Questionnaire (8,500 copies),

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[1]The analysis of nutritional status is not included in this report. It will be published in a separate report covering a thorough assessment and detailed analysis of height/weight data.

Child Health Questionnaire (6,000 copies),
Community Questionnaire (350 copies).

In addition to the questionnaires, 250 copies of the interviewer's manual were printed to guide interviewers, field editors and supervisors during the training and fieldwork.

Training of Female Interviewers

From past experience, it was known that survey fieldwork would be difficult to implement. The Technical Committee felt that, in the context of Yemeni culture, female interviewers would not be able to work away from home for long periods. Therefore, it was decided that fieldwork in all parts of Yemen should be finished within two months. This meant cutting the duration of fieldwork drastically and doubling the number of field teams originally planned. In order for interviewers to be representative of the whole country, every attempt was made to recruit interviewers for the YDMCHS from all the governorates.

Because the number of interviewers to be trained was doubled, the training was conducted simultaneously at two sites: Sana'a in the north and Aden in the south. The Sana'a group included 75 persons (interviewers, editors and supervisors) who later formed nine field teams, which worked in the northern and western governorates. The other group, trained in Aden, included 45 persons (interviewers, editors and supervisors) who later formed seven teams covering the southern and western governorates.

The experience of pretest training and interviewing was useful in preparation for the training of interviewers for the main fieldwork. Intense theoretical and practical training for both groups was conducted for three weeks by professional trainers who were specialists in survey methodology, statistics and public health. Practical training for anthropometric measurements, that is, use of scales for weighing children and boards for measuring children's height (or recumbent length), followed completion of classroom training for the questionnaires. Female trainees spent one week completing practice interviews on selected households that were not included in the main survey. The fieldwork practice provided an opportunity for interviewers to become familiar with the process and problems of interviewing in the field, and for trainers to evaluate interviewer-trainees on their competence to carry out fieldwork. After the selection of interviewers, 16 teams were formed to implement the main survey fieldwork.

Main Survey Fieldwork

A plan was drawn up to use 16 teams to implement the main fieldwork. Each team included one field supervisor, one male or female field editor, and four or five interviewers.

The data collection started on 16 November 1991 when the teams were dispatched to different governorates to begin fieldwork. The teams returned from the field on different dates because of differences in workloads and distances from Sana'a to the assigned areas. The last team returned from the field on 15 January 1992. All teams completed their work successfully.

During the fieldwork period, the teams were encouraged to call the project's technical staff in Sana'a to keep the survey operations desk informed about the progress of the work and any problems requiring assistance. The senior project staff from Sana'a and Aden also visited teams to monitor the quality of fieldwork and to solve any technical or field problems the teams encountered. Whenever possible, the monitoring staff returned to Sana'a with completed questionnaires so that data preparation and data processing could be carried out simultaneously with fieldwork. On receipt of the questionnaires at the central office, the process of revising, editing, coding and processing the data was carried out.

On average, an interviewer completed 4 to 6 household interviews daily and 2 or 3 interviews with eligible women. The overall duration of fieldwork was affected by travel time from one area to another. Travel time was often substantial because many of the household clusters were far apart or not linked by roads. The number of interviews completed by individual teams varied due to a number of factors including: the distance between households in rural areas, the number of persons in the households, and the need for repeat visits to households in urban areas to complete interviews with eligible respondents.

Data collection was completed on schedule despite difficulties such as rough terrain and poor roads, inadequate accommodations for the field teams, and widely scattered households in some areas. The difficulties were overcome by the efforts and dedication of the supervisors and interviewers. Their enthusiasm and the survey officials' understanding of the nature of this undertaking had a great impact on solving many of the difficulties the field teams faced. The survey operations desk in Sana'a maintained regular contact by phone with field supervisors. The supervisor called to report their progress, to ask technical questions they were not sure of or could not solve, and to discuss problems encountered in the field for which they needed assistance.

Preparation of Data

Editing and coding. Data preparation began one week after the start of fieldwork and continued simultaneously with the fieldwork activities. Field editors checked the questionnaires for completeness and consistency. Field supervisors also checked completed questionnaires on a sample basis. Completed questionnaires were then sent to the central office in Sana'a or brought by staff when they returned after visiting the teams. In the central office in Sana'a the questionnaires were edited again, and open-ended and other questions requiring coding were coded. This stage started on 22 November 1991 and was completed by the end of January 1992.

Data Entry. Data entry was carried out using microcomputers and continued from January until the end of February 1992. The process of data entry, editing and cleaning was done with ISSA (Integrated System for Survey Analysis) programs specially designed for the DHS surveys.

Data consistency checks and production of tables. Consistency checks and data cleaning started on 1 March 1992 and were completed by the end of June 1992. During July 1992 preliminary reports on the Yemen Demographic and Maternal and Child Health Survey were prepared, one in English by Macro International and one in Arabic by PAPCHILD. Both reports were published in August 1992. After the publication of the preliminary report, tabulations for the final report were carried out by both Macro International and PAPCHILD.

1.10 RESULTS OF THE HOUSEHOLD AND WOMEN'S INTERVIEWS

Table 1.1 is a summary of the results from the household and women's interviews by urban-rural residence. Of the 13,712 households selected for inclusion in the survey, 13,206 were found and 12,836, or 97 percent, were successfully interviewed. In all, 6,150 ever-married women age 15-49 years were identified in the households selected for individual interviews. Of these, 5,687 women were successfully interviewed and information was collected for 6,715 of 7,022 eligible children under five. The response rates for eligible women and children are 93 and 96 percent, respectively. The response rates for urban and rural areas are almost the same. The main reason for not completing some household interviews was that the dwellings were vacant at the time of fieldwork, although they were occupied when the household listing was carried out. The principal reason for nonresponse in the case of eligible women was that respondents were not at home despite repeated visits by interviewers to the selected households.

Table 1.1 Results from the household, women's and children's questionnaires

Number of households, eligible women, and eligible children, and response rates, Yemen 1991/92

Result	Residence		
	Urban	Rural	Total
Household interviews			
Households sampled	3333	10379	13712
Households found	3171	10035	13206
Households interviewed	3077	9759	12836
Household response rate	97.0	97.2	97.2
Individual interviews			
Number of eligible women	1568	4582	6150
Number of eligible women interviewed	1453	4234	5687
Eligible woman response rate	92.7	92.4	92.5
Children's questionnaires			
Number of eligible children	1561	5461	7022
Number of eligible children for whom quest. completed	1474	5241	6715
Eligible children response rate	94.4	96.0	95.6

CHAPTER 2

BACKGROUND CHARACTERISTICS: HOUSEHOLDS, RESPONDENTS, AND CHILDREN

Throughout this report, nuptiality, fertility behavior and regulation, health of mothers and children, and infant and child mortality are examined in terms of the different subgroups of the population. One purpose of this chapter is to profile these subgroups and to describe the environment in which women and children live. First, the results of the household questionnaire are summarized. The general characteristics of the population are presented, including: housing characteristics (such as type of dwelling, water supply, sanitation facilities, and use of electricity), socioeconomic indicators measured by presence of durable goods in the household; age-sex structure, household arrangement (head of household, size of household) and literacy and educational level of household members. The data are presented by urban-rural residence to highlight where many of the indicators differ.

The second purpose of the chapter is to provide a summary of the characteristics of women and children under five for whom data were collected in the YDMCHS. For the sample of women, percent distributions are shown for various demographic and socioeconomic characteristics, such as age, marital status, residence, and educational level. For children under five, age distribution, sex of child, place of residence and mother's educational level (for those whose mothers were interviewed) are presented.

2.1 HOUSING CHARACTERISTICS

Table 2.1 summarizes the data obtained from questions in the YDMCHS on housing characteristics: type of dwelling, household congestion (number of persons per room) quality of housing, source of lighting and water, type of sanitation facilities, manner of garbage disposal, etc. Over 85 percent of the households reside in some type of house; 5 percent live in an apartment. Apartment living is more common in urban (18 percent) than in rural areas (2 percent). The quality of housing is better in urban areas; one-half of urban households live in dwellings with cement or tile floors. More than two-thirds of rural households, on the other hand, live in structures with earth or stone/mud floors. Residential congestion is common throughout Yemen, due to the large size of households and limited space for living and sleeping. One-fifth of households have a density of 2 persons per room and another fifth have a density of 3 persons per room. One-fifth of households have 4 persons per room, while one-third have a density of 5 or more persons per room. Residential congestion is also evident from the figures for sleeping density (i.e., person per sleeping room). On average, sleeping density is 3.9 persons per sleeping room. Congestion in terms of sleeping space is slightly greater in rural than in urban areas. The congested living condition also accommodates farm animals in many cases. More than 61 percent of households in rural areas and 15 percent in urban areas keep animals in the dwelling.

There are large differences between urban and rural areas in other socioeconomic indicators (see Table 2.1). Use of electricity is nearly universal (over 90 percent) in urban areas, while only one-third of households in rural areas have electricity. Almost three of five rural households use kerosene lamps or candles for lighting. Nine of 10 households in urban areas have piped water, whereas in rural areas, half of the households obtain water from a well (half of these with a pump and half without a pump); 1 in 5 rural housholds obtains water from a stream, the second most important source of water in rural areas. Flush toilets are present in half of the households in urban areas, while more than half of the rural household have no sanitation facilities at all. In urban areas, the majority of households (69 percent) dispose of garbage by putting it in a special place (dump); one-fourth throw it in the street. In rural areas, the overwhelming majority (9 of 10 households) throw garbage directly into the street.

Table 2.1 Housing characteristics

Percent distribution of households by housing characteristics, according to urban-rural residence, Yemen 1991/92

Characteristic	Urban	Rural	Total
Type of dwelling			
House or villa	74.1	89.3	86.6
Apartment	17.8	1.9	4.7
Hut	3.8	7.1	6.5
Sandaka	3.8	0.9	1.4
Cave	0.0	0.1	0.1
Tent or hut	0.0	0.2	0.1
Temporary shelter	0.0	0.1	0.1
Other	0.3	0.2	0.2
Missing	0.1	0.2	0.2
Total	100.0	100.0	100.0
Flooring			
Earth	10.2	41.4	35.9
Tiles/Cement	49.6	27.6	31.5
Stone/Mud	12.6	28.5	25.7
Gypsum	3.3	0.6	1.0
Tile	22.2	0.7	4.5
Wood	0.4	0.0	0.1
Marble	0.1	0.0	0.0
Other	0.9	0.2	0.3
Missing	0.8	1.0	0.9
Total	100.0	100.0	100.0
No. persons per room			
<2	7.1	7.0	7.0
2	23.5	18.7	19.5
3	24.5	22.0	22.4
4	18.9	18.1	18.2
5	10.0	12.7	12.3
6	6.1	7.4	7.2
7	3.2	5.3	4.9
8	2.2	3.3	3.1
9	1.3	2.3	2.1
10	2.3	0.5	2.5
Missing	0.9	0.6	0.7
Total	100.0	100.0	100.0
Persons per sleeping room			
<3	40.7	33.4	34.7
3-4	36.9	36.5	36.6
5-6	12.9	16.5	15.9
7+	8.6	13.0	12.2
Missing	0.9	0.6	0.7
Total	100.0	100.0	100.0
Mean persons/ sleeping room	3.6	4.0	3.9
Farm animal in dwelling			
Yes	14.9	60.9	52.8
No	82.2	36.5	44.5
Missing	2.9	2.6	2.7
Total	100.0	100.0	100.0

Characteristic	Urban	Rural	Total
Source of drinking water			
Government project	75.3	7.3	19.3
Cooperative project	5.9	11.6	10.6
Private project	6.0	4.8	5.0
Well with pump	2.1	23.7	19.9
Well	3.3	25.6	21.7
Stream	1.8	18.6	15.6
Covered pool	0.9	2.9	2.5
Uncovered pool	0.2	2.7	2.2
Other	4.5	2.9	3.2
Missing	0.1	0.0	0.0
Total	100.0	100.0	100.0
Source of lighting			
Government electric	85.0	9.4	22.7
Cooperative electric	2.6	6.5	5.8
Private electric	2.8	14.9	12.8
Own generator	0.8	3.2	2.7
Gas	0.1	2.1	1.8
Kerosene/lamp/candle	7.0	58.6	49.5
Other	0.1	0.8	0.7
None	1.3	4.1	3.6
Missing	0.4	0.4	0.4
Total	100.0	100.0	100.0
Sanitation facilities			
Flush toilet with sewer	38.1	0.5	7.1
Flush toilet without sewer	15.5	1.6	4.1
Bucket	19.8	15.5	16.3
Pit	17.0	18.8	18.5
Toilet connected to open drainage	1.9	7.2	6.3
Latrine shared	0.5	0.9	0.8
Street toilet	0.4	0.5	0.5
Open air	5.9	52.4	44.2
Other	0.8	2.6	2.2
Missing	0.1	0.0	0.0
Total	100.0	100.0	100.0
Garbage disposal			
Garbage collector	4.0	0.2	0.8
Dumping (special place)	68.5	5.0	16.2
Burning	0.8	1.6	1.4
Thrown in street	23.5	89.9	78.2
Other	2.5	3.0	2.9
Missing	0.8	0.4	0.5
Total	100.0	100.0	100.0
Number of households	2265	10571	12836

2.2 PRESENCE OF DURABLE GOODS IN THE HOUSEHOLD

Table 2.2 shows the percentage of households with specific durable consumer goods by urban-rural residence. Overall, two-thirds of households have a radio/cassette recorder, one-half have a television, and very few (6 percent) own a video player/recorder. One-third of households have a gas or electric stove, less than one-fifth have a refrigerator, and even smaller proportions of surveyed households have other appliances such as a sewing machine, washing machine, vacuum cleaner, electric fan, or blender. Regarding ownership of a means of transportation, 12 percent of households have a car, 4 percent have a taxi, 4 percent have a bicycle, and 2 percent have a motorcycle.

Table 2.2 Household durable goods

Percentage of households possessing various durable consumer goods, by urban-rural residence, Yemen 1991/92

Characteristic	Urban	Rural	Total
Radio/Cassette recorder	81.8	62.6	66.0
B&W television	33.9	31.0	31.5
Color television	62.9	13.3	22.1
Any television	86.5	41.0	49.0
Video player/recorder	26.4	1.7	6.1
Refrigerator	62.8	7.2	17.0
Gas/electric cooking stove	75.6	23.9	33.0
Water heater	23.2	1.3	5.1
Sewing machine	33.5	9.3	13.6
Electric fan	40.6	4.6	11.0
Washing machine	58.9	4.1	13.7
Telephone	24.8	0.3	4.7
Air conditioner	10.2	0.4	2.1
Vacuum cleaner	22.7	1.0	4.8
Blender	50.8	4.6	12.8
Bicycle	10.6	2.2	3.7
Motorcycle	3.2	1.8	2.1
Private car	20.0	10.6	12.3
Taxi	4.8	3.6	3.8
Number of households	2265	10571	12836

Ownership of durable consumer goods varies greatly by residence. As expected, the proportion of households where the specific items are present is much lower in rural areas than in urban areas. This urban-rural differential is particularly strong for video player/recorders, color televisions, refrigerators and other electrical appliances, reflecting the fact that urban households usually have more purchasing power and are three times as likely to have electricity as households in the rural areas.

2.3 HOUSEHOLD POPULATION BY AGE

In many developing countries, data on age are affected by errors such as misstatements and preference for or avoidance of certain numberical digits. In order to improve age reporting in cases where age was not given, interviewers were instructed to estimate age using a specially designed historical calendar, with reference to other members of the household whose ages might be reasonably guessed, or based on physiological or sociological factors.

Table 2.3 shows the percent distribution of the household population and the sex ratio for five-year age groups, according to urban-rural residence and sex.[1] The table and the population pyramid in Figure 2.1 show a young population, a pattern typical of countries with high fertility and high mortality. The median age for the de jure population (i.e., usual residents) is 14.1 years, which means that half of the total population is under this age. The median age is lower (more than one year) for males than for females. Also half of the rural population is under 13.6 years, while half of the urban populaion is under 16.1 years. The proportion of the population under age five is lower, compared to the next older cohort (5-9 years) for all subgroups in the table. With no reason to believe that fertility has declined recently, this "inversion" indicates a possible shifting of children by interviewers from the lowest to the next higher age category to avoid asking a long series of questions about children under five. Another indication of intentional age shifting by interviewers (to lessen workload), is the higher proportion of females in age group 55-59, the age group just outside the age boundary for eligibility for the individual interviewing, than in age group 50-54 years in both urban and rural areas.[2] The sex ratios (number of males per female) below age 25 are uniform, then, through age 54, they are irregular, but slightly higher for urban populations. The latter is probably due to the migration of men from rural to urban areas or emigration of men to neighboring countries. However, the higher sex ratios

Table 2.3 Household population by age, residence and sex

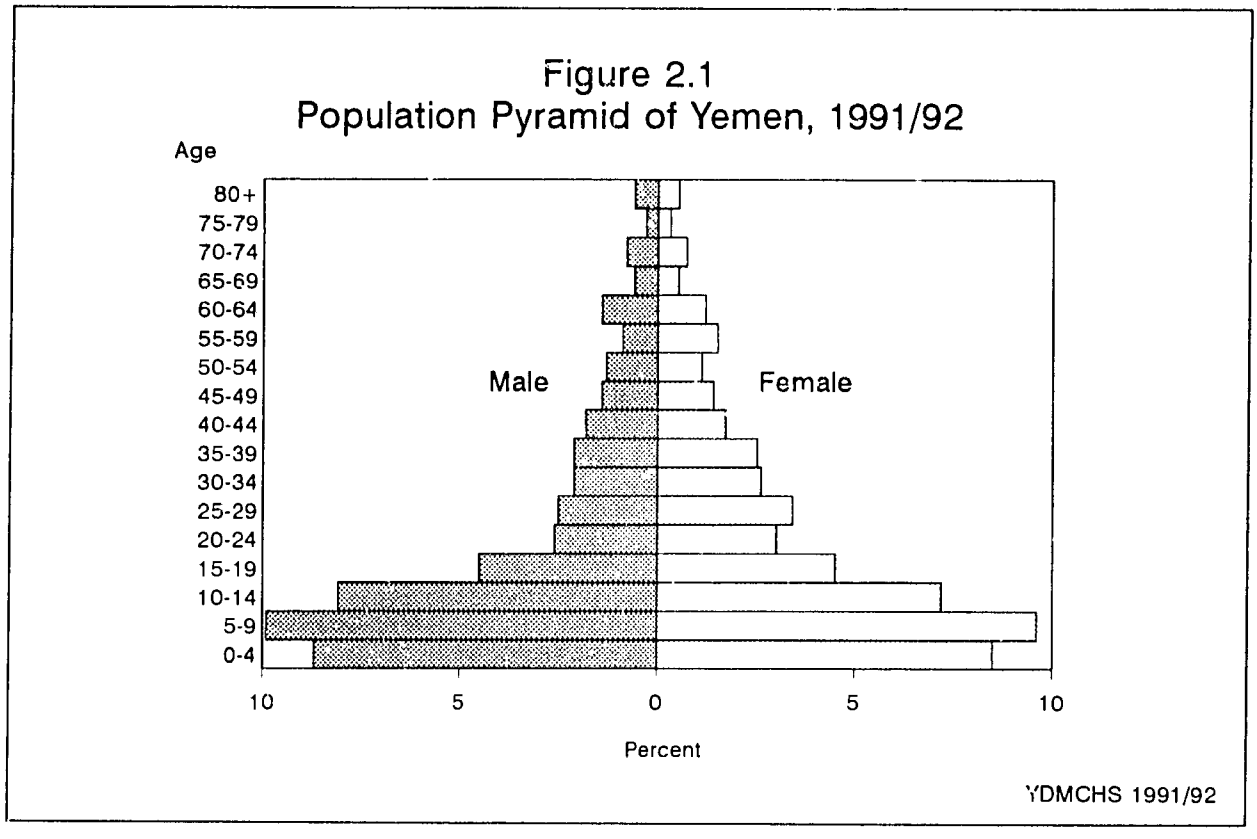
Percent distribution of the de jure housechold population by five-year age groups, according to urban-rural residence, sex, and sex ratio, Yemen 1991/92

Age group	Urban				Rural				Total			
	Male	Female	Total	Sex ratio	Male	Female	Total	Sex ratio	Male	Female	Total	Sex ratio
0-4	15.2	14.9	15.0	1.0	18.2	17.4	17.8	1.0	17.6	16.9	17.2	1.0
5-9	16.9	17.3	17.1	1.0	20.7	19.7	20.2	1.0	20.0	19.2	19.6	1.0
10-14	15.3	14.8	15.0	1.1	16.5	14.3	15.4	1.1	16.2	14.4	15.3	1.1
15-19	11.2	11.0	11.1	1.1	8.4	8.5	8.5	1.0	9.0	9.0	9.0	1.0
20-24	7.9	8.1	8.0	1.0	4.5	5.4	5.0	0.8	5.2	5.9	5.6	0.9
25-29	6.5	7.6	7.1	0.9	4.7	6.6	5.7	0.7	5.1	6.8	5.9	0.7
30-34	5.3	5.4	5.4	1.0	4.0	5.2	4.6	0.7	4.2	5.2	4.7	0.8
35-39	4.6	4.8	4.7	1.0	4.0	5.0	4.5	0.8	4.1	5.0	4.6	0.8
40-44	3.9	3.2	3.6	1.3	3.6	3.5	3.5	1.0	3.6	3.4	3.5	1.1
45-49	3.2	2.5	2.8	1.3	2.8	2.9	2.8	0.9	2.8	2.8	2.8	1.0
50-54	2.2	2.2	2.2	1.0	2.8	2.1	2.4	1.3	2.7	2.1	2.4	1.3
55-59	1.8	3.0	2.4	0.6	1.8	2.9	2.4	0.6	1.8	2.9	2.4	0.6
60-64	2.2	2.0	2.1	1.1	2.9	2.5	2.7	1.1	2.7	2.4	2.6	1.1
65-69	1.0	0.9	0.9	1.2	1.3	1.0	1.1	1.2	1.2	1.0	1.1	1.2
70-74	1.3	1.1	1.2	1.2	1.8	1.4	1.6	1.3	1.7	1.3	1.5	1.3
75-79	0.5	0.4	0.4	1.2	0.6	0.5	0.6	1.2	0.6	0.5	0.5	1.2
80 +	0.8	0.7	0.8	1.3	1.3	1.0	1.1	1.3	1.2	0.9	1.1	1.3
Missing/Don't know	0.1	0.3	0.2	0.4	0.2	0.2	0.2	1.0	0.2	0.2	0.2	0.9
Total	100.0	100.0	100.0	1.03	100.0	100.0	100.0	0.98	100.0	100.0	100.0	0.99
Number	8369	8147	16516	NA	34350	34970	69321	NA	42719	43117	85836	NA
Median	16.0	16.2	16.1	NA	13.0	14.4	13.6	NA	13.5	14.8	14.1	NA

Note: Table is based on de jure members; i.e., usual residents. Sex ratio is the number of males per female.
NA = Not applicable

[1]The total number of households in urban and rural areas in Table 1.1 and Table 2.3 are different because Chapter 1 presents unweighted data and Chapter 2 presents weighted data. Sana'a City, the urban areas of Aden governorate and rural areas of Lahej governorate were oversampled.

[2]In the YDMCHS all ever-married women age 10-54 were considered eligible and were interviewed. However, in this report analyses are based on data for ever-married women 15-49 only.



for ages 45-49 and 50-54 and the very low sex ratio (0.6) for age group 55-59 indicates artificial "aging" of women who were eligible for the individual interview (i.e., under 55 years of age). It is likely that interviewers were reporting some women as older than 54 so they could reduce their workload.

Table 2.4 shows the age distribution of the Yemeni population by larger age groups. More than half of the population is under age 15, and around 7 percent are 60 and over. Forty-one percent are in the economically active age category 15-59. Thus, the dependency ratio for Yemen is 144.[3] This extremely high dependency ratio is due to the large proportion of the population under age 15. As no national census has been done in Yemen and no other national survey has been implemented since unification, the only age distribution data with which the YDMCHS can be compared are the 1990 UN estimates (see Table 2.4) (United Nations, 1993). According to the 1990 UN estimates, almost half of the population is under 15 and 4 percent is over 59.

Table 2.4 Population by age from selected sources

Percent distribution of the population by age group, UN estimates and YDMCHS, Yemen

Age group	UN[1] 1990	YDMCHS 1991/92
<15	49.6	52.1
15-59	46.4	40.8
60+	4.0	6.9
Missing/don't know	-	0.2
Total	100.0	100.0
Median age	U	14.1

Note: Toals may not add to 100 due to rounding.
U = Unknown
[1]United Nations, 1993

[3]The dependency ratio is 100 times the population under age 15 plus the population 60 and over (persons economically "dependent") divided by the population in the economically active ages, persons 15 to 59. Dependency ratios for selected Near Eastern countries are: Tunisia 1988: 86; Morocco 1992: 89, Jordan 1990: 94; and Sudan 1989/90: 95.

2.4 HOUSEHOLD COMPOSITION

Table 2.5 presents information on household composition according to urban-rural residence for the de jure population (i.e., usual residents). Eighty-eight percent of the households covered in Yemen are headed by men, while about 12 percent have female heads. There is a difference between urban and rural areas in the proportion of households headed by men and women. Less than 10 percent of households are headed by women in urban areas, whereas in rural areas 13 percent of households have a woman as the head. In terms of household size, large households are common in Yemen. The average number of members in a household is 6.7 for the country as a whole, while urban households are larger than those in rural areas (7.3 and 6.6, respectively). One-third of urban households compared with one-fourth of rural households are composed of nine or more members.

Joint and extended family living arrangements are the norm in Yemen. Single adult households are rare. About half of the households have three or more related adults, while almost 38 percent have two related adults of the opposite sex. Joint and extended families are more common in urban than in rural areas.

Table 2.5 Household composition

Percent distribution of households by sex of head of household, household size, and relationship structure, according to urban-rural residence, Yemen 1991/92

Characteristic	Urban	Rural	Total
Household headship			
Male	90.5	87.2	87.8
Female	9.5	12.8	12.2
Total	100.0	100.0	100.0
Number of usual members			
1	3.4	3.1	3.2
2	5.9	8.1	7.7
3	6.2	8.2	7.8
4	9.0	9.0	9.0
5	9.5	11.8	11.4
6	11.5	11.8	11.7
7	11.6	12.4	12.2
8	10.7	10.5	10.6
9+	32.2	25.1	26.3
Total	100.0	100.0	100.0
Mean size	7.3	6.6	6.7
Relationship structure			
One adult	4.9	8.2	7.6
Two related adults:			
Of opposite sex	30.3	39.5	37.9
Of same sex	1.9	2.2	2.2
Three or more related adults	58.9	49.0	50.7
Other	4.0	1.1	1.6
Total	100.0	100.0	100.0
Number of households	2265	10571	12836

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

2.5 EDUCATIONAL STATUS OF HOUSEHOLD POPULATION

In the YDMCHS, for all household members 10 years and older, questions were asked to determine literacy and educational status: illiterate, can read only, literate (can both read and write), *completed* primary, *completed* preparatory, secondary, post-secondary school or university. For each household member who was reported to have had no schooling or who had attended school but had not completed primary school, interviewers probed to determine the member's ability to read and write or his/her literacy status and then marked the appropriate level of literacy.

Tables 2.6.1 and 2.6.2 show the percent distribution of the male population and the female population age 10 and over by level of education or literacy according to age, residence, and region. Almost one-third of men (see Table 2.6.1) in the YDMCHS household sample are illiterate, 15 percent can read (11 percent also can write) but have no schooling or have not completed the primary level, 38 percent have completed the primary level of school, and 15 percent have completed more than primary education. A substantial improvement in educational attainment over time can be seen in the fact that younger men have attained higher levels of education than older men. With increasing age, the proportion of men who cannot read increases and the proportion who have completed more than primary school decreases. As expected, urban men tend to be more educated than their rural counterparts. For example, illiteracy in rural areas is more than double that in urban areas; and, urban men are three times as likely to have attained more than primary

Table 2.6.1 Educational level of the male household population

Percent distribution of the de jure male household populations age 10 and over by highest level of education completed, according to selected background characteristics, Yemen 1991/92

Background characteristic	Illiterate	Read only	Literate	Primary	More than primary	Missing	Total	Number of males
Age								
10-14	6.4	5.1	0.1	85.8	1.8	0.8	100.0	6930
15 19	7.8	1.2	0.3	56.9	33.3	0.5	100.0	3830
20-24	14.0	1.1	1.6	35.6	47.3	0.4	100.0	2215
25-29	29.6	2.5	7.5	32.4	27.6	0.3	100.0	2176
30-34	38.5	3.4	17.2	19.2	20.9	0.7	100.0	1814
35-39	44.9	4.6	28.1	7.3	14.6	0.6	100.0	1760
40-44	55.1	3.5	29.2	3.7	8.0	0.5	100.0	1558
45-49	59.7	4.5	26.7	3.0	5.7	0.6	100.0	1216
50-54	64.1	4.4	25.6	1.5	3.1	1.3	100.0	1154
55-59	63.9	5.3	27.1	0.9	2.2	0.6	100.0	774
60-64	71.6	5.1	21.6	0.6	0.4	0.6	100.0	1173
65+	73.9	4.4	19.2	0.2	0.7	1.6	100.0	2005
Missing/Don't know	87.2	7.8	0.0	0.0	0.0	5.0	100.0	24
Residence								
Urban	16.3	3.3	10.5	38.4	30.8	0.6	100.0	5674
Rural	35.4	3.8	11.2	38.4	10.5	0.7	100.0	20955
Region								
North./West.	34.2	3.9	11.5	38.0	11.8	0.6	100.0	21661
South./East.	18.8	2.6	9.0	40.1	28.2	1.2	100.0	4968
Total	31.4	3.7	11.1	38.4	14.8	0.7	100.0	26629

Table 2.6.2 Educational level of the female household population

Percent distribution of the de facto female household populations age 10 and over by highest level of education completed, according to selected background characteristics, Yemen 1991/92

Background characteristic	Illiterate	Read only	Literate	Primary	More than primary	Missing	Total	Number of females
Age								
10-14	54.3	4.0	0.5	39.8	0.3	1.1	100.0	6202
15-19	60.4	1.9	1.1	26.5	9.2	0.9	100.0	3881
20-24	70.1	2.0	0.8	16.1	10.5	0.3	100.0	2556
25-29	81.6	2.2	0.7	9.4	5.8	0.4	100.0	2914
30-34	88.5	1.6	2.5	3.2	3.7	0.4	100.0	2262
35-39	91.3	1.4	3.2	1.1	2.2	0.8	100.0	2149
40-44	95.9	0.9	1.6	0.2	0.6	0.8	100.0	1467
45-49	97.1	0.3	1.3	0.2	0.4	0.7	100.0	1210
50-54	96.4	1.1	1.3	0.0	0.1	1.0	100.0	903
55-59	97.6	0.3	0.7	0.1	0.2	1.2	100.0	1270
60-64	96.6	0.4	0.3	0.0	0.3	2.3	100.0	1032
65+	97.2	0.3	0.1	0.0	0.0	2.5	100.0	1612
Missing/Don't know	96.1	0.0	0.0	0.0	0.0	3.9	100.0	32
Residence								
Urban	45.9	3.1	2.8	33.9	13.7	0.6	100.0	5509
Rural	84.6	1.7	0.7	11.0	1.0	1.0	100.0	21980
Region								
North./West.	81.0	1.9	0.7	13.7	1.8	0.9	100.0	22378
South./East.	58.6	2.4	2.8	23.9	11.0	1.3	100.0	5111
Total	76.9	2.0	1.1	15.6	3.5	0.9	100.0	27489

education as men residing in rural areas. Regionally, there are marked variations in the educational status of men. In the northern and western governorates 34 percent of men are illiterate, compared to 19 percent in the southern and eastern governorates. Likewise, whereas 70 percent of men in the southern and eastern governorates have completed primary or post-primary eduation, only 50 percent of men in the northern and western governorates have attained this level.

Women in Yemen have much less education than men but there has been more dramatic improvement in women's than men's educational attainment in recent years. More than three-quarters of women age 10 and over in the YDMCHS household sample are illiterate, 3 percent can read (1 percent can also write), 16 percent have completed primary school, and 4 percent have completed preparatory school or higher (see Table 2.6.2). The recent improvement in female education is indicated by the fact that only 54 percent of women in age 10-14 are completely illiterate, compared to 89 to 98 percent of women over 30. The percentage of women with more than primary education increases steadily in each successively younger age group. Not surprisingly, women who reside in urban areas have considerably more education than those living in rural areas. Eighty-five percent of rural women are illiterate, compared to 46 percent of urban women, and the proportion who have primary education is three times as high in urban as in rural areas. One percent of rural women have attained post-primary education while 14 percent of the urban women have completed preparatory or higher education. As with men, educational attainment for women in the southern and eastern governorates is higher than for women in the northern and western governorates. One-third of women in the southern and eastern governorates, or twice the proportion in the northern and western governorates, have completed primary or post-primary education.

2.6 SCHOOL ENROLLMENT

The Household Questionnaire for the YDMCHS asked about the current status of school attendance for all persons in the household between the ages of 6 and 30 years. Table 2.7 indicates that 57 percent of school age children (6-15 years) are enrolled in school. The education of females lags far behind the education of males in Yemen.[4] Eight in 10 of school age males attend school compared to only about 3 in

Table 2.7 School enrollment

Percentage of the de jure household population age 6-29 years enrolled in school, by age group, sex, and urban-rural residence, Yemen 1991/92

	Male			Female			Total		
Age group	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
6-10	79.7	70.0	71.6	75.0	26.3	34.5	77.4	48.8	53.6
11-15	94.8	89.1	90.2	81.0	21.2	33.0	88.1	56.7	62.8
6-15	86.6	77.9	79.4	77.7	24.2	33.9	82.3	52.0	57.4
16-20	66.5	58.7	60.7	38.4	6.3	14.0	52.6	31.5	36.8
21-24	36.1	25.0	29.0	10.1	1.8	4.2	23.3	12.0	15.7
25-29	11.6	7.8	8.8	3.6	0.9	1.5	7.3	3.8	4.6

[4] For example, according to the DHS survey in Jordan (Zou'bi et al., 1992), attendance of children 6-15 years is almost universal (95 percent), and enrollment of boys over girls is higher by only 1 percent nationally and by less than 4 percent in rural areas. Compared with the Morocco DHS survey (Azelmat et al., 1993), overall school enrollment for children 6-15 years in Yemen is higher (57 percent versus 47 percent) and gender enrollment ratios—that is, the proportion of girls to the proportion of boys enrolled in school—do not differ for children in urban areas in the two countries. However, enrollment ratios in rural areas are 49 percent in Morocco and only 31 percent in Yemen.

10 females. The difference in enrollment of school age children by gender is mainly due to the strikingly lower school attendance of girls in rural areas (24 percent) compared to boys (78 percent). The proportion of boys and girls attending schools in urban areas varies by less than 10 percentage points in favor of boys.

More than one-third of the population age 16 to 20 attends school, but by age 21 to 24, a much smaller proportion is still in school. Relatively higher proportions of males than females and urban children than rural children remain in school in these two age groups. Less than 5 percent in the population age 25 to 29 is in school.

2.7 BACKGROUND CHARACTERISTICS OF WOMEN

Age

The low level of individual awareness of exact age in Yemen increased the likelihood of the occurrence of age misreporting. Age misreporting was also caused by estimating women's ages when they could not give their exact age. In some cases, age was not known at all and the interviewers had to estimate it by various means (see section 2.3).

Table 2.8 Background characteristics of respondents

Percent distribution of ever-married women by selected background characteristics, Yemen 1991/92

Background characteristic	Weighted percent	Number of women: Weighted	Number of women: Un-weighted
Age			
15-19	7.5	427	430
20-24	14.3	815	832
25-29	22.8	1295	1297
30-34	17.5	995	986
35-39	17.1	972	970
40-44	11.5	653	648
45-49	9.3	529	524
Marital status			
Married	94.2	5355	5336
Widowed	2.9	164	167
Divorced	2.6	150	168
Separated	0.3	18	16
Residence			
Urban	18.5	1054	1453
Rural	81.5	4633	4234
Region			
North./West.	82.8	4708	4010
South./East.	17.2	979	1677
Education			
Illiterate	89.2	5075	4808
Literate	1.1	61	87
Primary	5.6	316	406
More than primary	4.1	235	386
Total	100.0	5687	5687

Table 2.8 shows the percent distribution of respondents by age group and various background characteristics. Nearly one-fifth of ever-married women interviewed in the survey are under age 25, slightly more than one-fifth are in their late twenties, and one-third are in their thirties. More than one-fifth are in their forties, concentrating in the early forties.

Current Marital Status

Except for 3 percent of women who were widowed and 3 percent who were divorced, all women 15-49 who had ever married were currently married at the time of the survey.

Place of Residence

Less than one in five (18.5 percent) of the women in the sample reside in urban areas with the remainder (81.5 percent) living in rural areas. More than four of five women surveyed live in the northern and western governorates and less than one-fifth reside in the southern and eastern governorates.

Literacy and Level of Education

As can be seen in Table 2.8, an overwhelming majority of women surveyed in Yemen have received little or no formal education and are illiterate. Among ever-married women, only 6 percent have *completed* primary school and 4 percent have *completed* preparatory or higher schooling; 89 percent of Yemeni women are illiterate, irrespective of whether they had attended primary school or not.

Table 2.9 examines variations in the educational attainment of women by age, residence, and region. As mentioned earlier, education is negatively associated with age; that is, older women are generally less educated than younger women. For example, whereas three-fourths of women age 15-19 are illiterate, more than 90 percent of women age 30-34 and 99 percent of women 45-49 are illiterate. The increase in the proportion of ever-married women who have completed primary school is most noticeable since the 1966 revolution.[5]

Table 2.9 Level of education

Percent distribution of ever-married women by the highest level of education completed, according to selected background characteristics, Yemen 1991/92

Background characteristic	Level of education				Total	Number of women
	Illiterate	Literate	Primary	More than primary		
Age						
15-19	74.4	2.2	16.2	7.3	100.0	427
20-24	79.4	1.2	11.7	7.7	100.0	815
25-29	87.9	0.8	6.0	5.3	100.0	1295
30-34	91.2	1.2	3.9	3.7	100.0	995
35-39	93.2	1.5	2.6	2.7	100.0	972
40-44	97.3	0.6	1.1	1.0	100.0	653
45-49	98.6	0.3	0.5	0.6	100.0	529
Residence						
Urban	66.2	2.7	14.8	16.3	100.0	1054
Rural	94.5	0.7	3.5	1.4	100.0	4633
Region						
North./West.	93.5	0.6	4.0	1.8	100.0	4708
South./East.	68.6	3.5	12.8	15.1	100.0	979
Total	89.2	1.1	5.6	4.1	100.0	5687

Women who reside in urban areas have a lower level of illiteracy and a higher level of education than those living in rural areas. The proportion of ever-married women who cannot read and write is substantially higher in rural (95 percent) than in urban areas (66 percent). Conversely, the percentage who have post-primary education is more than ten times greater in urban areas than in rural. Regarding differentials by region, educational attainment is much higher in the southern and eastern governorates where more than one-fourth of ever-married women have completed at least primary school compared with only 6 percent of women in the northern and western governorates.

[5] The progress in female education is more obvious in Table 2.6.2 which indicates that among women 15-19, 60 percent are illiterate compared to 74 percent of ever-married women in Table 2.9. The longer women stay in school, the later they will marry, thereby raising age at marriage and lowering fertility.

Exposure to Mass Media

Table 2.10 shows the percentage of ever-married women who are exposed to mass media, i.e., newspapers/magazines, television, and radio, according to selected background characteristics. The respondents were asked if they watched television or listened to radio (without reference to how often they were exposed to these media). Reading newspapers/magazines at least once a week was considered the measure of exposure to this medium. Less than 10 percent read a newspaper or magazine at least once a week, one-third listen to radio, and a slightly higher proportion watch television. Exposure to all media decreases with age; this is especially true for the print medium because the percentage of women who are literate decreases in the older age cohorts.

Table 2.10 Exposure to mass media

Percentage of ever-married women who usually read a newspaper once a week, watch television, or listen to radio, by selected background characteristics, Yemen 1991/92

Background characteristic	Read newspaper weekly	Watch televisi	Listen to radio	Number of women
Age				
15-19	17.8	45.9	46.1	427
20-24	15.8	44.2	42.8	815
25-29	8.7	39.2	36.3	1295
30-34	7.0	33.9	32.9	995
35-39	5.6	36.1	30.0	972
40-44	2.7	31.1	25.9	653
45-49	1.1	29.7	24.1	529
Residence				
Urban	28.4	82.6	57.7	1054
Rural	3.6	26.8	28.6	4633
Region				
North./West.	4.8	31.9	31.7	4708
South./East.	24.2	62.4	44.9	979
Education				
Illiterate	0.5	31.9	29.9	5075
Literate	55.7	77.6	70.7	61
Primary	67.6	76.4	65.8	316
More than primary	80.8	86.2	70.6	235
Total	8.2	37.1	34.0	5687

The data on exposure to mass media also indicate a positive relationship between education and reading newspapers/magazines. Eighty percent of women with post-primary schooling read newspapers, compared with 56 percent of women who are just literate (can read and write).[6] Level of education, which may also signify socioeconomic level, is related to exposure to radio and television. Only 3 in 10 illiterate women watch television or listen to radio, whereas 66 to 86 percent of educated women are exposed to television and radio. Women who are literate are slightly more likely to listen to radio than those who have completed primary school; however, there is practically no difference among these two subgroups in the proportion of women who watch television.

[6]It should be noted that women who claim to be able to read but cannot write are classified as illiterate in Table 2.10.

Because of the higher levels of literacy in urban compared to rural areas, more than one-quarter of urban women read the newspaper compared to less than 4 percent of rural women. As expected, exposure to other media is also related to residence; 83 and 58 percent of urban women watch television and listen to radio, respectively, compared to 27 and 29 percent of rural women, respectively. There are also substantial regional differences: 5 percent of women in the northern and western governorates and 24 percent of women in the southern and eastern governorates read newspapers or magazines. It is twice as likely for women in the southern and eastern governorates to watch television as in northern and western governorates. The same proportion of women listen to radio and watch television in the northern and western governorates (32 percent), but in the southern and eastern governorates while two-thirds of women watch television (62 percent) less than one-half listen to radio.

Table 2.11 Background characteristics of children

Percent distribution of children by selected background characteristics, Yemen 1991/92

Background characteristic	Weighted percent	Number of children: Weighted	Number of children: Un-weighted
Child's age (months)			
0-5	10.7	718	723
6-11	12.0	802	796
12-17	9.3	627	634
18-23	9.4	628	621
24-29	11.0	735	752
30-35	10.3	694	683
36-41	10.8	724	722
42-47	8.9	597	588
48-53	10.0	673	684
54-59	7.7	515	512
Sex of child			
Male	51.0	3427	3431
Female	49.0	3288	3284
Residence			
Urban	16.6	1113	1474
Rural	83.4	5602	5241
Region			
North./West.	86.3	5793	5094
South./East.	13.7	922	1621
Mother's education			
Illiterate	88.4	5939	5692
Literate	0.9	58	80
Primary	4.6	306	403
More than primary	3.1	211	343
Information not collected	3.0	202	197
Total	100.0	6715	6715

2.8 CHARACTERISTICS OF CHILDREN

In the YDMCHS, information about births in the five-year period preceding the survey was collected in the Women's Questionnaire, and a separate questionnaire, the Child's Questionnaire, was used to collect information about children under five living in the household. The characteristics of children are presented in Table 2.11. It is apparent from the table that some misdating of births has taken place. For example, the small proportion of children 54-59 months compared to other age categories indicates that some children age 54-59 months were moved into the next older age group by interviewers. It is likely that this was done intentionally in some instances to reduce the workload. Questions about children under five in the Women's Questionnaire would not have to be asked and the Child's Questionnaire would not have to be completed.

Fifty-one percent of living children are males and 49 percent are females. The proportion of children residing in urban areas is 17 percent; 14 percent of children for whom the Child's Questionnaire was completed reside in southern and eastern governorates and 86 percent live in northern and western governorates. The educational level of mothers of children under five is similar to that of ever-married women. Information on mother's educational level is not available because they were not included in the survey. Later in the report, it is shown as, "Information not collected."

CHAPTER 3

FERTILITY

A major objective of the 1991/92 YDMCHS is to examine a number of important issues related to fertility and childbearing. This chapter briefly covers a number of substantive issues such as fertility levels, trends and differentials, indicators of future fertility, age at which women initiate childbearing, birth intervals, and adolescent fertility. The fertility estimates reported below are based on reported information collected from birth histories of ever-married women age 15-49. Although the YDMCHS collected birth histories for ever-married women only, it is possible to calculate fertility measures for *all* women. To do this, the assumption is made that single women and never-married women have had no children. While some births undoubtedly occur outside of marriage, most observers agree that the level of non-marital fertility in Yemen is negligible.

Current, past and future fertility estimates are based on carefully collected data. First, a series of questions about live births were asked to know the number of children each ever-married woman had in her lifetime. To encourage complete reporting, the respondents were asked about the number of sons and the number of daughters who (a) were living at home, (b) were living elsewhere, and (c) died after birth. Each respondent was also probed by the interviewer to verify if the sum of live births recorded in these categories agreed with the total number of births the woman had. Second, a full birth history was collected from each woman, including the name, sex and date (year and month or season) of each birth, and age at death for children who died. It was also noted in the birth history if year of birth was checked with, or derived from, a document such as birth certificate. Third, the number of stillbirths and miscarriages or abortions reported by respondents were noted. Fourth, as an indicator of future fertility, all currently women were also asked if they were pregnant at the time of the interview.

Despite efforts to minimize errors in collecting data on births, the YDMCHS is subject to the same type of errors that are typical of retrospective surveys. The birth histories are affected by underreporting of the number of children ever born and mistiming of births. The main reason for not getting accurate information on number of births (which includes underreporting of children) is the omission of children who died in infancy or who married and left the parental or maternal home. Also, some women with no surviving children may report themselves as childless. Problems of this type more often occur in surveys in countries where the level of female literacy is low. A check on the data quality of the YDMCHS confirms that some omission of births in the five-year period preceding the survey, and the displacement of births out of this period has taken place. The apparent reason for these errors is that interviewers were trying to avoid completing the Child's Questionnaire in some households with children under five. Typically, births are displaced more often than tney are omitted.

3.1 LEVELS AND DIFFERENTIAL IN FERTILITY

Table 3.1 presents the age-specific fertility rates and various summary measures such as the crude birth rate (CBR), the general fertility rate (GFR) and the total fertility rate (TFR), calculated from survey data, according to urban-rural residence. The *crude birth rate* is the number of births per 1,000 population; it is the least refined measure of fertility, but it is the most commonly used and easily understood. The *general fertility rate* is the annual number of live births per 1,000 women; it is calculated by dividing the number of births occurring during a specified period of time by the total number of women of reproductive age (15-49 years). The *age-specific fertility rate* is defined as the number of births to women of a given age group per 1,000 women in that age group. The *total fertility rate* (TFR) is a summary measure that indicates the number of children a women would bear during her reproductive years if she were to experience the age-specific

fertility rates prevailing for the specified period. Mathematically, the TFR for women 15-49 is five times the sum of the age-specific fertility rates for the seven age groups.

The crude birth rate (CBR) in Yemen, which is centered on the year 1990, is 40 births per thousand population. It is substantially higher in rural areas (42) than in urban areas (34). The general fertility rate (GFR), estimated from the survey data for the country as whole, is 238 births per thousand women aged 15-49; it is also much higher in rural areas (254) than in urban areas (176). The TFR for Yemen for the three years preceding the survey is 7.7 births per woman, which is one of the highest total fertility rates in the world.[1] With respect to urban-rural differentials, the total fertility rate for urban areas (5.6)[2] is, as expected, much lower than the TFR for rural areas (8.2).

The age-specific fertility rates for the three years preceding the survey indicate that the prime childbearing years in Yemen are ages 20-39 (see also Figure 3.1). However, a substantial amount of childbearing is evident even among older women. Age-specific fertility rates increase with age from 102 births per 1,000 women in age group 15-19 to 315 births per 1,000 in age group 25-29, and then decline to 120 births per 1,000 in age group 45-49. Age-specific fertility rates for rural areas are substantially higher than those for urban areas, and follow the same pattern (except that women age 45-49 in urban areas report lower fertility than women age 15-19). Another way of looking at age-specific rates is to say that if current rates remained unchanged, the average woman in Yemen would have almost two children (1.9 children) by the time she reached age 25; she would have three more children during the next 10 years (between age 25 and 34), by her fortieth birthday she would have given birth to more than six children; and at the end of her reproductive years she would have had an average of more than 7.5 children.

Table 3.1 Current fertility

Age-specific and cumulative fertility rates and the crude birth rate for the three years preceding the survey, by urban-rural residence, Yemen 1991/92

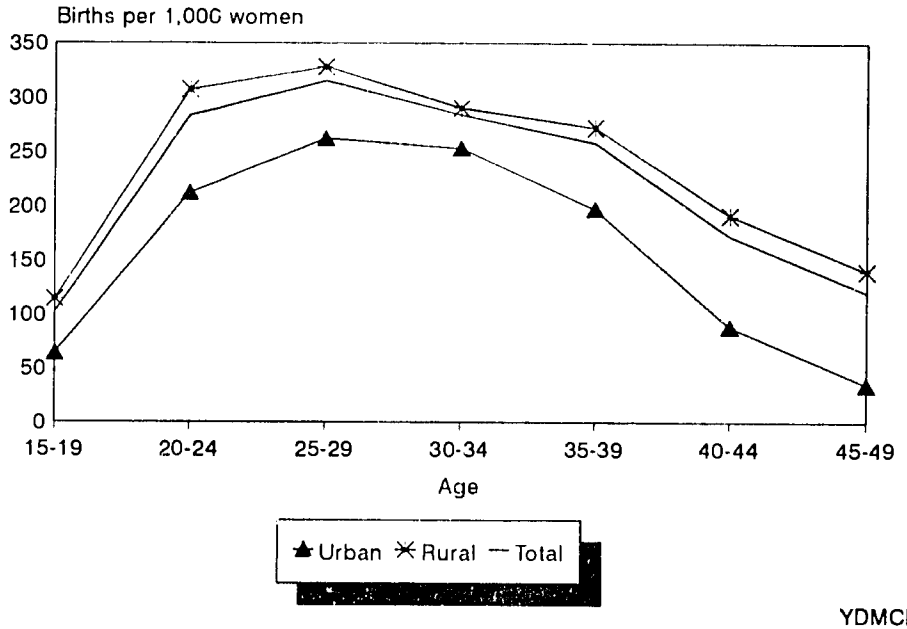
Age group	Urban	Rural	Total
15-19	64	114	102
20-24	212	307	283
25-29	262	328	315
30-34	253	290	284
35-39	197	272	258
40-44	88	191	172
45-49	[35]	[140]	[120]
TFR 15-49	5.6	8.2	7.7
TFR 15-44	5.4	7.5	7.1
GFR	176	254	238
CBR	34	42	40

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.

[1]The total fertility rates for five Arab countries in which DHS surveys have been implemented are: Egypt 1992: 3.9 (El-Zanaty et al., 1993), Morocco 1992: 4.0 (Azelmat et al., 1993), Tunisia 1988: 4.4 (Aloui et al., 1989), Sudan 1989/90: 5.0 (DOS and IRD, 1991), and Jordan 1990: 5.9 (Zou'bi et al., 1992).

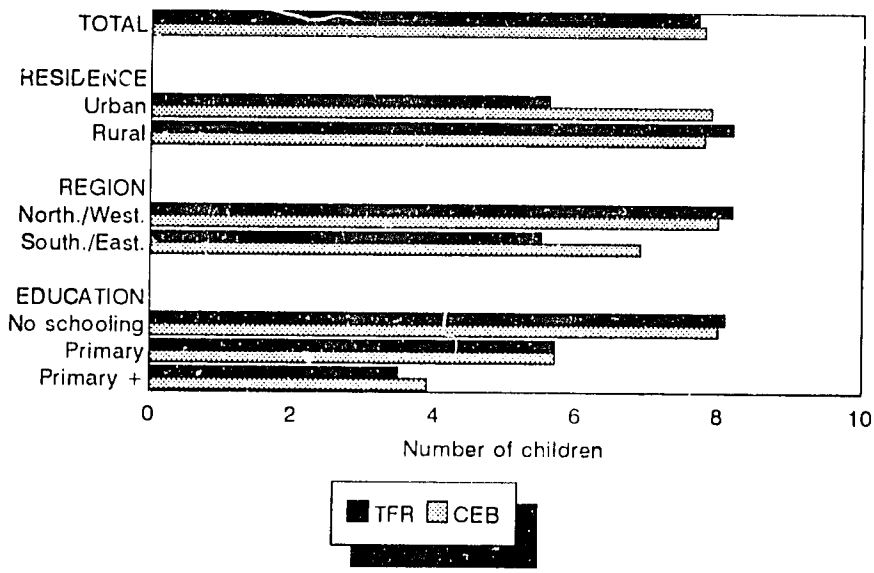
[2]The TFR for small urban areas in Jordan is the same as the TFR for urban areas in Yemen. The TFRs for urban women in other Arab countries range from 2.5 in the Morocco 1992 survey (Azelmat et al., 1993) and 2.9 in the Egypt 1992 survey (El-Zanaty et al., 1993) to 3.4 in the Tunisia 1988 survey (Aloui et al., 1989) and 4.1 in the Sudan 1989/90 survey (DOS and IRD, 1991).

Figure 3.1
Age-specific Fertility Rates by Urban-rural Residence



YDMCHS 1991/92

Figure 3.2
Total Fertility Rate (TFR) and Mean Number of Children Ever Born (CEB) to Women 40-49



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Differentials in fertility by urban-rural residence and level of education are shown in Table 3.2 and Figure 3.2. It has been pointed out that rural areas have higher TFRs than urban areas. Regionally, the difference in the TFRs is even greater. The TFR for the northern and western governorates (8.2 children per woman) is almost 50 percent higher than the TFR for the southern and eastern governorates (5.5). Fertility rates are related not only to the geographical area in which a woman resides but also to her level of education. Women who have received no formal education have a TFR of 8.1, 2.4 children higher than for women who have received primary education (5.7), and 4.6 children higher than for women who have received more than primary education (3.5).

Table 3.2 Fertility by background characteristics

Total fertility rate for the three years preceding the survey and mean number of children ever born to women age 40-49, by selected background characteristics, Yemen 1991/92

Background characteristic	Total fertility rate[1]	Mean number of children ever born to women age 40-49
Residence		
Urban	5.6	7.9
Rural	8.2	7.8
Region		
North./West.	8.2	8.0
South/East	5.5	6.9
Education		
No schooling	8.1	8.0
Primary	5.7	5.7
More than primary	3.5	3.9
Total	7.7	7.8

[1]Rate for women age 15-49 years

Table 3.2 also shows the mean number of children ever born (CEB) to women age 40-49. This is a measure of completed fertility; i.e., the cumulative fertility of women of reproductive age, who are approaching the end of their childbearing years. A comparison of the cumulative measure of childbearing, CEB, with the TFR gives a rough indication of the trend in fertility over the recent decades. For all women, the mean number of children ever born is 7.8, which is very close to the TFR for the country as whole. Together, these figures indicate that overall fertility has remained virtually unchanged in Yemen. Fertility has increased slightly in some subgroups and decreased in others. A slight rise in fertility occurred among women in rural areas, those residing in the northern and western governorates and those who had no formal education; this is inferred from the higher TFRs compared with the CEBs. On the other hand, there is some indication that fertility may be declining in urban areas, in the southern and eastern governorates, and among women who have more than a primary level of education.

3.2 TRENDS IN FERTILITY

The fertility indicators presented in Table 3.2 suggest that, overall, there has been almost no decline in fertility in recent years. Although there are no estimates from other sources with which to study trends in fertility, data from the birth histories collected in the YDMCHS make it possible to analyze fertility trends directly.

Table 3.3 shows age-specific fertility rates for successive four-year periods during the 20 years preceding the survey. Four-year periods were used instead of the customary five-year periods[3] in order to avoid the effects of displacement of births from five years preceding the survey to six years before the survey. It should be noted that some of the fertility rates shown in the table are truncated; this is due to the fact that

[3]An examination of the same table for five-year periods shows that fertility levels peaked at 5 to 9 years before the survey, indicating age displacement of births has taken place. The apparent reason for displacement is that interviewers may have tried to avoid (1) a set of questions about children included in the Woman's Questionnaire, (2) the Child Health questionnaire itself, and (3) the additional burden of measuring height and weight of children born during the five years preceding the survey.

the data on which these rates are based pertain only to women who were under 50 years of age at the time of the survey. Information presented in the table should be treated with caution due to the possible omission or incorrect dating of events, especially by older women, for the more distant time periods.

Table 3.3 indicates that fertility peaked in Yemen between 8 and 15 years preceding the survey (approximately 1976-83). An extremely sharp rise in the period 12-15 years before the survey (approximately 1976-79), does not seem plausible. The large increase in fertility may be partially explained by the difficulty older women have in recalling birth dates and/or births that occurred a long time ago.

Table 3.3 Age-specific fertility rates

Age-specific fertility rates for four-year periods preceding the survey, by mother's age at the time of birth, Yemen 1991/92

Mother's age	Number of years preceding the survey				
	0-3	4-7	8-11	12-15	16-19
15-19	104	184	198	201	158
20-24	286	347	380	356	271
25-29	313	388	414	400	[300]
30-34	284	376	379	[374]	[311]
35-39	251	317	[350]	[358]	
40-44	174	201	[243]		
45-49	[113]	[309]			

Note: Age-specific fertility rates are per 1,000 women. Estimates enclosed in brackets are truncated.

Table 3.4 shows the pattern of fertility by marital duration, i.e., the number of years since first marriage; the pattern is similar to that observed in Table 3.3. Fertility peaks among women who were first married 8 to 11 years before the survey, and is lowest among women who were first married 0 to 3 years before the survey. Women who had been married for more than 15 years reported lower fertility than women with shorter marriage durations. Again, this is probably due to recall problems of births which occurred a long time ago.

Table 3.4 Fertility by marital duration

Fertility rates for ever-married women by duration since first marriage in years, for four-year periods preceding the survey, Yemen 1991/92

Marriage duration at birth	Number of years preceding the survey				
	0-3	4-7	8-11	12-15	16-19
0-4	328	356	330	307	222
5-9	350	413	409	398	316
10-14	328	404	436	414	317
15-19	289	354	386	372	[316]
20-24	233	296	[335]	[386]	
25-29	156	[216]	[283]		

Note: Duration-specific fertility rates are per 1,000 women. Estimates enclosed in brackets are truncated.

Another indicator that may be used to measure fertility within marriage is *total marital fertility rate* (TMFR). This measure is calculated in the same way as the total fertility rate except that the denominator for calculating age-specific marital fertility rate (ASMFR) is married women instead of all women in the specific-age range. Table 3.5 shows the age-specific and total marital fertility rates for 0-2 years, 0-4 years,

Table 3.5 Marital fertility

Age-specific marital fertility rates (per 1,000 women) and total marital fertility rates for different periods preceding the survey, Yemen 1991/92

Maternal age at birth	Number of years preceding the survey			
	0-2	0-4	5-9	10-14
15-19	315	295	359	322
20-24	365	354	435	404
25-29	338	327	429	429
30-34	289	291	407	372
35-39	260	254	344	[351]
40-44	172	171	[237]	
45-49	[120]	[120]		
TMFR 15-44	8.7	8.5		
TMFR 15-49	9.3	9.1		

TMFR = Total marital fertility rate, expressed per woman.
Note: Estimates enclosed in brackets are truncated.

5-9 years, and 10-14 years before the survey. The pattern of age-specific marital fertility rates for the three years preceding the survey is similar to that observed for age-specific fertility rates. The total marital fertility rate for the three years preceding the survey is 9.3. The ASMFR rates for the three years before the survey compared with rates for the period 10-14[4] years preceding the survey, have declined for women in their twenties and thirties, but have remained unchanged for women under 20. Thus, no reduction has taken place in teenage fertility, and there has been no decrease in these elevated-risk births.

3.3 CURRENT PREGNANCY

Another indicator of current fertility is the proportion of women who are currently pregnant. This measure represents, in a sense, the most current level of fertility since it anticipates fertility over the next few months. However, as a measure of current fertility, it should be treated with caution because it is an underestimate. Some women in the early stages of pregnancy may be unaware or uncertain that they are pregnant; others may deliberately avoid mentioning current conception due to local customs or traditions.

Overall, 18 percent of currently married women[5] (see Table 3.6) and 13 percent of all women reported being pregnant (not shown). By age, the highest pregnancy rate is reported for currently married women age 20-24 (23 percent), although one-fifth of women in the next older and next younger age groups reported pregnancies at the time of the survey. Urban-rural differentials by age show an interesting pattern; urban women under 25 reported much higher pregnancy rates than rural women, but a higher proportion of

[4]The ASMFRs for the three years preceding the survey are considered for the reason mentioned earlier for ASFRs. Comparison with rates 10-14 years before the survey is more appropriate since the rates for 5-9 years before the survey are probably "inflated" by age displacement of children under five.

[5]The 1991 Egypt Maternal and Child Health Survey (Abdel-Azeem et al., 1993) reported that only 11 percent of currently married women were pregnant at the time of the survey.

Table 3.6 Currently pregnant women

Percentage of currently married women who reported a current pregnancy, by age and selected background characteristics, Yemen 1991/92

Background characteristic	Age of woman							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Residence								
Urban	27.6	26.2	16.0	17.2	12.8	6.9	6.4	16.5
Rural	19.7	21.5	21.2	20.4	19.5	15.6	8.3	18.8
Region								
North./West.	22.7	22.4	21.2	20.3	19.4	15.1	8.6	19.2
South/East	13.1	22.7	15.2	17.5	13.2	9.1	5.2	14.7
Children ever born								
0	24.2	30.8	15.3	(14.6)	*	*	*	23.7
1	17.9	19.3	23.0	(20.6)	*	*	*	18.8
2	(15.5)	23.6	27.3	12.8	(14.7)	*	*	21.6
3	*	23.4	18.9	19.9	20.0	*	*	19.4
4	16.6	15.8	15.2	19.7	17.5	(16.3)	(5.3)	16.0
5+	NA	(9.9)	20.9	20.5	18.5	14.9	8.8	17.1
Total	21.0	22.5	20.2	19.8	18.4	14.1	8.0	18.4

Note: Figures in parentheses are based on 25-49 cases; an asterisk indicates that figure is based on fewer than 25 cases and has been suppressed.
NA = Not applicable

rural women were currently pregnant in the age group 25 and over. Regional differentials were more marked; higher proportion of women were pregnant in the northern and western governorates than in the southern and eastern governorates (19 percent and 15 percent, respectively). For age group 20-24, there is practically no difference between the regions, but for all other age groups the proportions of pregnant women was higher in the northern and western governorates. There was no observable pattern in the pregnancy rate by number of children ever born; high rates were observed even among women with 5 or more children (17 percent).

3.4 CHILDREN EVER BORN

Information on the number of children ever born (CEB) is presented in Table 3.7 for all women and for currently married women. (As noted earlier, it is assumed that never-married women had no births.) These data, which reflect cumulative births over time, indicate that all women have had an average of 3.7 children, while currently married women had 4.9 children. About one-fourth of currently married women have had eight or more births, and one in 10 has had at least 10 births. The difference in CEB between all women and currently married women is mainly due to the marital status of women under 25; a large proportion of teenagers and a substantial proportion of women 20-24 have never-married. The mean number of children ever born increases with age, reflecting the natural family building process. For example, among all women, the average number of live births for age group 25-29 is 3.3, for age group 30-34 it is 5.3, and for women 35-39 the average is 6.7 children. At the end of the reproductive years, at age 45-49, the mean number of children ever born for all women is 8. The high fertility of Yemeni women is evident from the substantial proportion of currently married women in their forties who have large families; one-fourth of women 40-44 and one-third of those age 45-49 have given birth to 10 or more children.

The results in Table 3.7 show that early childbearing is uncommon but not rare; almost 11 percent of teenagers (15-19) have had a child, compared to 56 percent of women 20-24. Teenage childbearing is examined in section 3.7.

The proportion of women over 40 who have never given birth can be taken as a measure of primary sterility. Less than 2 percent of currently married women 40-49 are childless and have never given birth. Compared to other countries in the region and the developing world as a whole, primary infertility is very low in Yemen.

The last column in Table 3.7 shows the mean number of children still living. Differences in the mean number of children ever born and children surviving are small for currently married women under age 30 but are notable after age 30.

Table 3.7 Children ever born and living

Percent distribution of all women and of currently married women by number of children ever born (CEB) and mean number ever born and living, according to five-year age groups, Yemen 1991/92

Age group	Number of children ever born											Total	Number of women	Mean no. of CEB	Mean no. of living children
	0	1	2	3	4	5	6	7	8	9	10+				
ALL WOMEN															
15-19	89.1	6.7	3.1	0.6	0.4	--	--	--	--	--	--	100.0	1729	0.19	0.15
20-24	44.0	19.1	13.7	12.5	6.9	2.6	0.8	0.2	0.2	--	--	100.0	1135	1.33	1.16
25-29	16.1	8.3	13.1	15.7	15.5	12.8	8.6	5.8	2.6	1.2	0.3	100.0	1425	3.34	2.90
30-34	5.6	4.3	4.9	10.9	12.1	13.8	15.5	14.3	7.6	6.1	5.0	100.0	1021	5.27	4.41
35-39	3.5	2.1	3.1	5.0	6.4	10.4	14.9	15.2	14.5	8.6	16.2	100.0	982	6.71	5.53
40-44	2.2	2.1	3.0	3.7	4.9	6.2	9.0	12.5	15.7	14.6	26.1	100.0	654	7.66	6.17
45-49	0.7	2.1	2.7	2.5	6.5	6.5	10.4	11.6	12.2	12.3	32.5	100.0	529	8.05	6.11
Total	31.8	7.2	6.8	7.7	7.5	7.1	7.4	7.0	5.7	4.3	7.4	100.0	7475	3.72	3.07
CURRENTLY MARRIED WOMEN															
15-19	55.9	28.1	11.7	2.5	1.8	--	--	--	--	--	--	100.0	406	0.67	0.61
20-24	21.4	26.5	19.4	17.4	9.9	3.5	1.2	0.3	0.3	--	--	100.0	788	1.87	1.63
25-29	7.6	8.2	13.6	17.5	17.6	14.4	9.8	6.6	2.9	1.4	0.4	100.0	1229	3.75	3.26
30-34	2.5	3.8	4.8	11.0	12.2	14.7	16.0	15.2	7.9	6.6	5.4	100.0	933	5.53	4.63
35-39	2.4	1.4	2.9	4.6	6.2	10.7	15.0	15.6	15.0	9.3	16.9	100.0	909	6.90	5.71
40-44	1.8	1.7	2.6	3.4	5.1	6.4	9.1	12.9	15.9	14.7	26.6	100.0	615	7.75	6.27
45-49	0.6	1.5	2.5	1.9	6.9	5.3	9.1	12.5	12.8	12.8	34.2	100.0	476	8.25	6.28
Total	10.2	9.1	8.7	10.0	10.0	9.4	9.6	9.4	7.6	5.9	10.0	100.0	5355	4.94	4.09

-- Less than 0.05 percent

3.5 BIRTH INTERVALS

A *birth interval* is the period of time between two successive live births. A short interval between births affects the health of mothers, and the survival chances of children. The risk of a child dying is high if the interval between the child's birth and a previous or next birth is less than 24 months. Table 3.8 examines the birth intervals of children born in the five years before the survey by number of month since previous birth. In Yemen, more than 4 in 10 births have birth intervals of less than 24 months and one-fourth of births occurred after an interval of less than 18 months. About one-third of birth intervals are between 24

Table 3.8 Birth intervals

Percent distribution of births in the five years preceding the survey by number of months since previous birth, according to demographic and socioeconomic characteristics, Yemen 1991/92

Characteristic	Number of months since previous birth					Total	Number of births	Median number of months since previous birth
	7-17	18-23	24-35	36-47	48+			
Age of mother								
15-19	44.1	14.8	34.1	5.7	1.3	100.0	96	20.3
20-29	25.3	21.5	30.8	13.2	9.2	100.0	2502	24.8
30-39	21.5	17.3	31.4	13.9	15.9	100.0	2781	28.2
40 +	20.6	14.4	28.4	16.4	20.1	100.0	1110	31.3
Birth order								
2-3	25.3	20.2	30.4	12.0	12.1	100.0	1790	25.2
4-6	21.0	17.8	31.0	15.1	15.1	100.0	2471	28.0
7 +	23.9	17.8	30.6	14.2	13.6	100.0	2317	26.7
Sex of prior birth								
Male	22.8	18.6	30.8	13.9	13.9	100.0	3387	26.9
Female	23.6	18.3	30.5	14.0	13.6	100.0	3191	26.5
Survival of prior birth								
Living	21.8	18.3	31.5	14.5	13.9	100.0	5732	27.2
Dead	32.8	19.4	24.9	10.3	12.4	100.0	847	23.1
Residence								
Urban	21.8	19.7	30.7	12.5	15.3	100.0	1046	26.4
Rural	23.4	18.2	30.7	14.2	13.4	100.0	5533	26.7
Region								
North./West.	23.6	18.5	31.1	14.0	12.9	100.0	5738	26.5
South/East	20.6	18.2	28.0	13.6	19.6	100.0	841	28.4
Education								
Illiterate	23.4	18.3	30.8	14.1	13.5	100.0	6115	26.6
Literate	12.7	14.4	38.3	11.2	23.4	100.0	53	32.7
Primary	21.0	19.5	29.6	14.5	15.5	100.0	256	27.4
More than primary	22.6	23.2	26.6	9.8	17.7	100.0	155	25.7
Total	23.2	18.4	30.7	14.0	13.7	100.0	6579	26.7

Note: First-order births are excluded. The interval for multiple births is the number of months since the preceding pregnancy that ended in a live birth.

and 35 months, and about one-fourth are three years or more apart. Fifty percent of births occur within 27 months of a previous birth (the median birth interval). The shortest median birth intervals are reported for women 15-19 years, and for births that occurred following the death of a child (20 months and 23 months, respectively). The short birth interval following a child who died reflects shortening of the period of postpartum amenorrhea due to cessation of breastfeeding at the death of the child. With increasing age of the mother, birth intervals also increase; birth intervals are longest for women in their forties (31 months). The median birth interval is even higher for women who are literate but have not completed primary education (33 months). For other background characteristics presented in Table 3.8, the medians vary little and range from a low of 24 to a high of 28 months.

3.6 AGE AT FIRST BIRTH

The age at which women start childbearing has important demographic and health consequences. For example, the magnitude of teenage pregnancy is a major concern of health professionals. Women are at greater risk of dying from the complications of pregnancy and delivery under the age of 20 and after age 34. Also, early childbearing usually results in women having larger families, which can have a negative effect on their socioeconomic status and participation in the labor force.

Table 3.9 presents the percentage distribution of women by age at first birth according to their current age. The quality of data on age at first birth is affected by reporting errors, such as misreporting the woman's age, underreporting of first births, and misreporting the first child's date of birth. Such errors are usually more pronounced in reporting by older women and illiterate women. A large proportion of Yemeni women age 20-49[6] had their first birth before age 20, ranging from one third in age group 40-44 to more than one-half in age groups 25-29 and 30-34. Among women 25-49, the proportion of first births after age 24 increases with age—from 5 percent to 38 percent. These results indicate that a trend toward early childbearing continues in Yemen.

Table 3.9 Age at first birth

Percent distribution of women 15-49 by age at first birth, according to current age, Yemen 1991/92

Current age	Women with no births	Age at first birth						Total	Number of women	Median age at first birth
		<15	15-17	18-19	20-21	22-24	25+			
15-19	89.1	2.2	6.4	2.3	NA	NA	NA	100.0	1729	a
20-24	44.0	5.9	21.1	14.0	10.9	4.1	NA	100.0	1135	a
25-29	16.1	7.0	25.4	18.5	15.2	12.6	5.1	100.0	1425	19.9
30-34	5.6	7.0	28.3	18.9	14.7	16.5	9.0	100.0	1021	19.5
35-39	3.5	4.6	20.3	17.7	18.5	19.0	16.3	100.0	982	20.8
40-44	2.2	6.3	16.4	12.4	14.3	19.2	29.3	100.0	654	22.1
45-49	0.7	5.4	17.6	15.1	9.2	14.0	37.9	100.0	529	22.7

NA = Not applicable

[a]Medians were not calculated for these cohorts because less than 50 percent of the women in the age group *x* to *x+4* have had a birth by age *x*.

Table 3.9 shows the median age at first birth for the different age cohorts. The medians are not defined for cohorts in which at least 50 percent of the women did not have a birth. The trend across age cohorts suggests a steady decrease in the median age at first birth from the oldest to the youngest cohorts. Indeed, the median age at first birth is 22.7 years for women age 45-49, 20.8 for age 35-39, and continues to decline to a median age of 19.5 for those 30-34 before rising slightly to 19.9 years for younger women. Although it is possible that childbearing is starting at younger ages than in the past, it should be noted, as mentioned earlier, that the data may suffer because of incorrect birthdates both for the mother and for her first birth. The problem of omission of births or misdating particularly affects data on older women who may have memory lapses or find it difficult to remember the dates of their first births. These women have a tendency to push birth dates closer to the date of survey, thereby making themselves older at first birth than they actually were.

[6]Only women 20-49 are considered because women under 20 can still have a birth before reaching age 20.

Table 3.10 presents the median age at first birth by current age and selected background characteristics. Overall, the median age at first birth is 20.4 years for women aged 25-49. For most variables, the median age at first birth differs by around one year: the median age is higher for women who live in rural areas than urban areas (misreporting of data may be a factor), higher in the southern and eastern governorates than in northern and western governorates, and higher for women with no schooling compared with those who have only primary education. The differences in the median age at first birth are particularly striking between women with more than primary education and those with no education or those with primary education; the median age at first birth for the most educated women is more than four to five years higher.

Table 3.10 Median age at first birth

Median age at first birth among women age 25-49 years, by current age and selected background characteristics, Yemen 1991/92

Background characteristic	Current age					Women age 25-49
	25-29	30-34	35-39	40-44	45-49	
Residence						
Urban	20.6	18.9	19.8	20.0	19.9	19.8
Rural	19.8	19.7	21.0	22.5	23.7	20.6
Region						
North./West.	19.4	19.3	20.7	22.3	23.4	20.3
South/East	22.1	20.1	21.2	20.8	20.9	21.2
Education						
No schooling	19.5	19.4	20.8	22.2	22.7	20.3
Primary	19.8	18.7	18.5	17.8	25.6	19.1
More than primary	a	24.6	23.1	21.9	23.2	24.7
Total	19.9	19.5	20.8	22.1	22.7	20.4

Note: The medians for cohort 15-19 and cohort 20-24 could not be determined because half the women in each cohort have not yet had a birth.
[a]The median was not calculated for this cohort because less than 50 percent of women in the age group x to $x+4$ have had a birth by age x.

3.7 TEENAGE FERTILITY

Concerns about the health of teenagers and the mortality risks of births to teenagers (women 15-19 years) were mentioned earlier in this report. It was also noted that 11 percent of women aged 15-19 have given birth (see Table 3.7). Table 3.11 examines in more detail the level of pregnancies and births among teenagers in Yemen. The sum of the percentage of ever-married women 15-19 years who are mothers and the percentage who are pregnant with their first child represents the proportion of teenage women who have begun childbearing. One in seven (14 percent)[7] are mothers or are currently pregnant with their first child. Only 1.2 percent of women age 15 have become mothers and the same proportion are pregnant for the first time. The percentage of women who have become mothers is 4.7 percent for women age 16; from then on the proportion almost doubles with each single-year increase in age to over 35 percent among women age 19. The proportion of teenagers who have started childbearing is substantially higher in rural areas than in urban areas (15 percent and 11 percent, respectively). Childbearing among teenagers is twice as common in the

[7]The proportion of teenagers who have had one or more births or are pregnant is much higher in Yemen than in Jordan. According to the Jordan DHS survey, 5.3 percent of teenagers had become mothers and another 2.1 percent were pregnant for the first time.

Table 3.11 Teenage pregnancy and motherhood

Percentage of teenagers 15-19 who are mothers or pregnant with their first child, by selected background characteristics, Yemen 1991/92

Background characteristic	Percentage who are: Mothers	Pregnant with first child	Percentage who have begun child-bearing	Number of teenagers
Age				
15	1.2	1.3	2.6	506
16	4.7	1.2	5.9	348
17	7.9	5.6	13.5	276
18	16.9	5.3	22.2	370
19	35.5	4.4	39.9	228
Residence				
Urban	8.0	2.8	10.8	446
Rural	11.6	3.3	14.9	1316
Region				
North./West.	12.5	3.5	15.9	1353
South/East	5.0	2.3	7.3	384
Education				
No schooling	13.3	3.7	17.0	1077
Primary	7.2	2.3	9.5	420
More than primary	5.5	2.5	8.0	256
Total	10.9	3.2	14.1	1729

northern and western governorates (16 percent) as in the southern and eastern governorates (7 percent). The proportion of teenage women without schooling who had begun childbearing is more than double that of teenage women who have more than primary education (17 percent and 8 percent, respectively).

Table 3.12 shows that among teenagers under 18 years of age who had given birth, only a few had more than one child. Although only a small proportion of women age 18 have had two children (7 percent), almost one-fifth of 19-year-olds have had two or more children. The likelihood that a teenage mother will have had more than one birth reaches a level of over 50 percent among nineteen-year-olds.

Table 3.12 Children born to teenagers

Percent distribution of teenagers 15-19 by number of children ever born (CEB), Yemen 1991/92

Age	Number of children ever born: 0	1	2+	Total	Mean number of CEB	Number of teenagers
15	98.8	1.2	0.0	100.0	0.0	506
16	95.3	4.3	0.4	100.0	0.1	348
17	92.1	7.4	0.5	100.0	0.1	276
18	83.1	10.1	6.8	100.0	0.3	370
19	64.5	16.4	19.1	100.0	0.6	228
Total	89.1	6.7	4.1	100.0	0.2	1729

CHAPTER 4

FAMILY PLANNING

Information on contraceptive use is of particular interest to policymakers, program managers, and researchers in the areas of population and family planning. Family planning is a powerful tool for improving the health of mothers and children as well as for reducing the levels of infant and maternal mortality. Providing easy access to reliable and safe methods of family planning increases women's control over their own fertility. This chapter describes women's knowledge of family planning methods and sources where they can be obtained, and use of contraception in Yemen. Differentials in knowledge and use are also discussed. In addition, problems with current methods, reasons for first use and current use, and reasons for not intending to use in future are included in this chapter.

4.1 KNOWLEDGE OF FAMILY PLANNING METHODS AND SOURCES

Familiarity with contraceptive methods and sources for methods are among the prerequisites for the adoption of fertility regulation. Knowledge of methods is a necessary but not always sufficient condition for use. The Yemen Demographic and Maternal Child Health Survey (YDMCHS) provides information on the level of knowledge of family planning methods and providers of family planning services. Data on knowledge of contraceptive methods were collected in the Woman's Questionnaire. Each respondent was asked to name the methods or ways a couple could use to avoid or postpone pregnancy. The interviewer then read the names of specific methods (without any description), omitting those that the respondent had already mentioned, and asked whether the respondent had ever heard of the method. The questionnaire included seven specific modern methods: the pill, IUD, injection, vaginal methods (diaphragm/jelly/ foam), condom, female sterilization, and male sterilization. Three traditional methods, safe period (rhythm/periodic abstinence), withdrawal, and prolonged breastfeeding,[1] were included. Any other methods mentioned by respondents, such as herbs were also recorded. To determine knowledge of sources of modern contraceptive methods except sterilizations, for each method the respondent recognized, she was asked if she knew any source for obtaining the method.

Table 4.1 indicates that 60 percent of currently married women[2] have heard of at least one family planning method. The most widely known method is the pill, which is known to more than half of currently married women; almost all women who know of a modern method (53 percent) have heard of the pill.[3] About one-third of the women know about the IUD and injection, and one-fourth have heard of female sterilization. Knowledge of other modern methods is much lower: male sterilization (13 percent), condom (10 percent), and vaginal methods (7 percent). Four in 10 women know of a traditional method, mainly breastfeeding (38 percent), while safe period and withdrawal were known by much smaller proportions of respondents.

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[1]Yemen, Jordan, and Egypt are the only DHS countries that included prolonged breastfeeding in the list of family planning methods on which respondents were prompted.

[2]The results for ever-married and currently married women are almost the same.

[3]Contraceptive knowledge in Mauritania is almost the same as in Yemen, according to a 1990/91 PAPCHILD survey. In Mauritania, 61 percent of currently married women know a family planning method, and 48 percent know a modern method.

Table 4.1 Knowledge of contraceptive methods and source for methods

Percentage of ever-married women and currently married women who know a specific contraceptive method and who know a source for services, by specific methods, Yemen 1991/92

Contraceptive method	Know method		Know a source	
	Ever-married women	Currently married women	Ever-married women	Currently married women
Any method	60.3	60.2	27.2	27.0
Modern method	53.5	53.2	27.2	27.0
Pill	51.7	51.3	24.9	24.5
IUD	34.2	33.5	15.7	15.3
Injection	32.1	31.9	12.8	12.8
Diaphragm/foam/jelly	7.2	7.0	3.5	3.3
Condom	10.4	10.3	5.2	5.0
Female sterilization	24.1	24.0	NA	NA
Male sterilization	13.6	13.4	NA	NA
Any traditional method	39.7	39.7	NA	NA
Safe period	13.2	13.1	NA	NA
Withdrawal	8.6	8.5	NA	NA
Prolonged breastfeeding	37.7	37.7	NA	NA
Other traditional methods	1.1	1.1	NA	NA
Number of women	5687	5355	5687	5355

NA = Not applicable

The results presented in Table 4.1 show that only 27 percent of married women know where to go to get a modern method of contraception (the YDMCHS did not include a question on sources for female and male sterilization). Knowledge of sources for specific methods shows that one-fourth of married women know a source for the pill. Only 15 and 13 percent, respectively, know a source for the IUD and injection; sources for other methods are even less well known.

The percentage of married women who know at least one modern contraceptive method and know a source for the method, by various background characteristics, is presented in Table 4.2. Only small differences by age exist in knowledge of modern methods among women 15-44: 54-58 percent of women 20-44, and almost half of the women 15-19 are aware of a modern method of family planning. Older women, 45-49, are the least knowledgeable (42 percent).

There is a greater variability in the level of contraceptive knowledge by residence and region. About 9 in 10 urban women are aware of at least one modern method, compared with less than half of rural women. Knowledge of modern methods is much higher in the southern and eastern governorates (over 70 percent), while only half of women in the northern and western governorates know a modern method. Differentials in knowledge by education are even more striking. Among illiterate women, only half know a modern method, compared with 86 percent of women who have completed primary education, and an overwhelming majority of women with higher education (94 percent). The differences in knowledge of family planning by

education may account, in large part, for the greater knowledge of family planning in urban areas and in the southern and eastern governorates, since a greater proportion of educated women live in those areas.

Differentials in knowledge of service providers show relatively more variability than differentials in knowledge of modern methods (see Table 4.2). By age groups, between 24 and 31 percent of married women age 15-44 know a source for a modern contraceptive method. The differences are much greater by residence. Sixty-seven percent of urban women know a source compared to only 18 percent of rural women. Regionally, it is twice as likely for a woman in the southern and eastern governorates (46 percent) to know a contraceptive source as a woman who lives in the northern and western governorates. The most striking difference in knowledge of service providers is by educational level. Only 22 percent of illiterate women know a source. Among women who are literate or have completed primary school, knowledge of service providers is almost three times that of illiterate women, or approximately 40 percentage points higher, while knowledge of a source is 60 percentage points higher among women who have completed more than primary school.

Table 4.2 Knowledge of modern contraceptive methods and source for methods, by selected background characteristics

Percentage of currently married women who know any contraceptive method and a modern method and who know a source for services, by selected background characteristics, Yemen 1991/92

Background characteristic	Know any method	Know a modern method[1]	Know a source for modern method[2]	Number of women
Age				
15-19	55.4	50.7	23.7	406
20-24	63.7	57.7	27.9	788
25-29	62.1	54.3	27.6	1229
30-34	60.6	54.1	31.4	933
35-39	60.9	53.5	27.4	909
40-44	60.7	53.5	26.0	615
45-49	50.3	42.1	18.4	476
Residence				
Urban	88.8	86.2	67.3	951
Rural	54.0	46.0	18.3	4404
Region				
North./West.	57.3	49.3	23.2	4458
South./East.	74.3	72.4	45.8	897
Education				
Illiterate	56.6	48.9	22.0	4792
Literate	91.8	91.8	60.5	57
Primary	87.8	86.0	60.8	291
More than primary	95.0	93.6	84.3	216
Total	60.2	53.2	27.0	5355

[1]Includes pill, IUD, injection, vaginal methods (diaphragm/foam/jelly), condom, female sterilization, and male sterilization.
[2]Source for female and male sterilization not asked.

4.2 EVER USE OF CONTRACEPTION

In the YDMCHS, all respondents were asked if they had ever used the methods they reported knowledge of. As shown in Table 4.3, almost one-fifth of ever-married women have used a method to regulate their fertility at some point in their lives. Thirteen percent have used a modern method and 10 percent a traditional method (including prolonged breastfeeding); thus, the majority of ever-users have had experience with a modern method, and some have used more than one method. Currently married women have about the same level of ever-use experience as ever-married women.

The age differentials for ever-use among currently married women show that the rate for women 15-19 is only 8 percent, it doubles for women 20-24, and increases to 20 percent among women 25-29; ever-use peaks at around 25 percent among women in their thirties before declining among older women (19 percent and 15 percent for women 40-44 and 45-49, respectively).

Two methods, the pill (11 percent) and prolonged breastfeeding (8 percent), are used most commonly. At the most, 3 percent of currently married women have ever used any other method— IUD (3 percent), injection and safe period (2 percent each), and female sterilization (1 percent).

Table 4.3 Ever use of contraception

Among ever-married women and currently married women, the percentage who have ever used a contraceptive method, by specific method and age, Yemen 1991/92

		Modern method								Traditional method					
Age	Any method	Any modern method	Pill	IUD	Injection	Diaphragm/ foam/ jelly	Condom	Female sterilization	Male sterilization	Any trad. method	Safe period	Withdrawal	Prolonged breastfeeding	Other	Number of women
EVER-MARRIED WOMEN															
15-19	8.0	3.0	2.6	0.1	0.3	--	0.1	--	--	6.0	0.8	0.3	5.7	--	427
20-24	16.1	9.1	7.2	1.8	1.1	--	0.6	--	--	9.3	1.9	0.9	7.2	0.2	815
25-29	19.1	13.5	9.8	3.2	2.6	0.6	1.2	0.2	--	9.2	2.1	2.0	7.1	0.2	1295
30-34	25.3	17.8	14.8	3.2	1.7	0.6	1.4	0.7	0.1	12.2	3.0	3.0	9.1	0.1	995
35-39	24.2	17.3	13.9	3.4	1.6	0.4	0.9	1.6	0.3	12.9	2.3	1.7	10.5	0.3	972
40-44	19.3	15.0	11.3	1.6	2.8	0.4	1.7	2.1	0.6	9.7	1.6	1.6	8.0	0.2	653
45-49	15.1	11.1	7.8	1.2	1.5	0.0	0.8	1.4	0.3	6.3	1.0	2.0	5.3	0.5	529
Total	19.5	13.4	10.4	2.4	1.8	0.4	1.0	0.8	0.2	9.9	2.0	1.8	7.9	0.2	5687
CURRENTLY MARRIED WOMEN															
15-19	7.6	2.7	2.2	0.2	--	--	0.1	--	--	6.0	0.5	0.4	5.7	--	406
20-24	16.2	8.9	7.0	1.9	1.1	--	0.6	--	--	9.6	2.0	1.0	7.5	0.2	788
25-29	19.6	13.9	10.1	3.4	2.7	0.6	1.3	0.2	--	9.4	2.1	2.0	7.3	0.2	1229
30-34	25.9	18.4	15.3	3.4	1.7	0.4	1.4	0.8	0.2	12.4	3.1	2.8	9.3	0.1	933
35-39	25.1	17.9	14.3	3.4	1.7	0.4	0.9	1.7	0.3	13.4	2.5	1.8	10.9	0.3	909
40-44	19.2	15.0	11.1	1.6	2.9	0.3	1.8	2.1	0.6	9.3	1.7	1.4	7.8	0.2	615
45-49	15.2	11.5	7.9	1.4	1.7	--	0.9	1.6	0.3	6.1	1.0	2.0	5.2	0.3	476
Total	19.8	13.7	10.6	2.5	1.9	0.3	1.1	0.8	0.2	10.1	2.1	1.8	8.0	0.2	5355

-- Less than 0.05 percent

4.3 NUMBER OF CHILDREN AT FIRST USE

Table 4.4 shows the percent distribution of ever-married women by the number of living children at the time they first used contraception. It is interesting to note that 5 percent of women, or one-fourth of ever-users, started using contraception before having their second child. This tendency to start contraception early, probably for the purpose of spacing births, is most noticeable among younger women, i.e., women under 35 years of age. For example, more than three-quarters of women 20-24 who had experience with contraception had initially started using a method before they had three children.

Table 4.4 Number of children at first use of contraception

Percent distribution of ever-married women, by number of living children at the time of first use of contraception, according to current age, Yemen 1991/92

Current age	Never used contraception	Number of living children at time of first use of contraception					Missing	Total	Number of women
		0	1	2	3	4+			
15-19	92.0	1.4	5.5	0.7	0.3	0.0	0.1	100.0	427
20-24	83.9	0.9	8.0	3.6	2.2	0.8	0.5	100.0	815
25-29	80.9	0.2	5.9	3.3	3.8	5.8	0.1	100.0	1295
30-34	74.7	0.7	4.6	4.1	3.7	11.6	0.6	100.0	995
35-39	75.8	0.3	2.9	3.3	2.9	14.2	0.7	100.0	972
40-44	80.7	0.3	2.5	1.1	2.1	13.3	0.0	100.0	653
45-49	84.9	0.2	2.0	0.9	1.2	10.7	0.1	100.0	529
Total	80.5	0.5	4.7	2.8	2.7	8.4	0.3	100.0	5687

4.4 REASON FOR FIRST USE

Women were asked about their reproductive intentions when they first began using family planning. Table 4.5 shows among ever-married women who ever used contraception (20 percent), more than half (11 percent) had first used family planning for spacing births because they wanted more children later. Seven percent of ever-users wanted to stop childbearing at the time they began using a method. The majority of women 40 and over started using contraception in order to limit family size. Proportionally, ever-users who adopted a family planning method for the first time for purposes of spacing births rather than for limiting family size were higher among urban women than rural women, and higher among more educated women than among those with primary education or those who are illiterate.

Table 4.5 Reproductive intentions at first use of contraception

Percent distribution of ever-married women by reproductive intentions at the time of first use of contraception by selected background characteristics, Yemen 1991/92

Background characteristic	Never used contra-ception	Wanted child later	Wanted no more children	Other/ Missing	Total	Number of women
Age						
15-19	92.0	5.0	2.7	0.4	100.0	427
20-24	83.9	11.0	4.1	1.0	100.0	815
25-29	80.9	12.9	5.5	0.7	100.0	1295
30-34	74.7	15.0	8.9	1.4	100.0	995
35-39	75.8	12.1	10.6	1.5	100.0	972
40-44	80.7	8.9	10.4	0.1	100.0	653
45-49	84.9	6.6	8.2	0.3	100.0	529
Residence						
Urban	50.8	30.4	17.1	1.8	100.0	1054
Rural	87.3	6.9	5.2	0.7	100.0	4633
Region						
North./West.	83.3	8.8	7.1	0.8	100.0	4708
South./East.	67.2	22.7	8.9	1.2	100.0	979
Education						
Illiterate	84.2	8.4	6.6	0.8	100.0	5075
Literate	47.2	36.1	16.7	0.0	100.0	61
Primary	57.2	27.1	13.5	2.2	100.0	316
More than primary	41.3	44.5	13.1	1.0	100.0	235
Total	80.5	11.2	7.4	0.9	100.0	5687

4.5 CURRENT USE OF CONTRACEPTION

Only nonpregnant currently married women were asked if they were using any contraceptive method at the time of the survey. Including prolonged breastfeeding as a method, the contraceptive prevalence rate in Yemen for *all* currently married women (pregnant and nonpregnant) is 10 percent. It is 7 percent if breastfeeding is not included (see Table 4.6). Although the contraceptive prevalence in Yemen is low compared with many other Arab countries,[4] it is much higher than the one percent prevalence rate reported in 1979 by the Yemen Arab Republic, which, in this report is referred to as the northern and western governorates and has a prevalence rate of 8 percent. The pill, the most popular method, is used by 3 percent of women and accounts for more than half of the modern method use in Yemen. The other modern methods—IUD and female sterilization—are each used by one percent of women. Prolonged breastfeeding is the most frequently used traditional method and the second most popular method overall (2 percent). Around one-half of one percent of married women rely on the safe period or withdrawal. Table 4.6 also shows the percent distribution of currently married women by contraceptive method currently used, according to age. The pattern of differentials in current use by age is similar to the pattern for ever-use of contraception, i.e., women in their thirties have the highest levels of use. An extremely large difference in prevalence is observed between urban and rural areas.[5] At the time of survey, 28 percent of urban women were using a contraceptive method compared

[4]For example, in countries in North Africa and the Middle East where a PAPCHILD survey and the DHS surveys have been conducted, the contraceptive prevalence rates range from a low of 4 percent in a PAPCHILD survey in Mauritania (1990/91) and 9 percent in Sudan (1989/90), to a high of 50 percent in Tunisia (1988). The prevalence rates are 35 percent in Jordan (1990), 42 percent in Morocco (1992), and 47 percent in Egypt (1992).

[5]Contraceptive rates are higher in urban areas than in rural areas in all of the North African and Middle Eastern countries in which DHS surveys have been conducted. In terms of absolute percent differences between urban and rural women, the difference is greatest in Tunisia (1988) where the rates are 60 and 35 percent in urban and rural areas, respectively. However, relatively speaking, the ratio (over 4 times) of urban to rural use of contraception is highest in Yemen and Sudan (1989/90), and lowest (1.5 times) in Egypt (1992).

Table 4.6 Current use of contraception by age

Percent distribution of currently married women by contraceptive method currently used, according to age, Yemen 1991/92

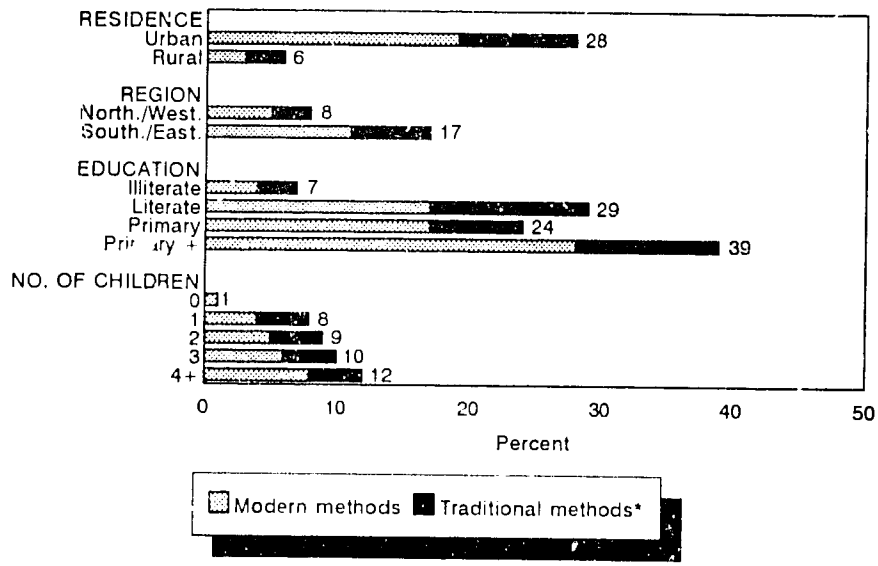
		Modern method							Traditional method						
Background characteristic	Any method	All modern methods[1]	Pill	IUD	Injection	Condom	Female sterilization	Male sterilization	All trad. methods[2]	Safe period	Withdrawal	Prolonged breastfeeding	Not currently using	Total	Number of women
15-19	5.1	1.3	1.1	0.2	--	--	--	--	3.8	--	0.1	3.7	94.9	100.0	406
20-24	8.5	4.3	2.8	1.0	0.4	--	--	--	4.2	0.2	0.5	3.5	91.5	100.0	788
25-29	10.5	7.2	3.8	2.2	0.9	0.1	0.2	--	3.3	0.6	0.6	2.0	89.5	100.0	1229
30-34	11.7	6.8	3.7	1.0	0.7	0.3	0.8	0.1	4.9	0.5	0.6	3.8	88.3	100.0	933
35-39	12.5	8.3	4.4	1.3	0.6	--	1.7	0.3	4.2	0.6	0.6	2.7	87.5	100.0	909
40-44	8.8	6.4	2.4	0.9	0.7	--	2.0	0.4	2.4	0.6	0.6	1.1	91.2	100.0	615
45-49	5.1	4.1	1.5	0.6	0.3	0.1	1.6	0.1	1.0	0.3	0.6	0.2	94.9	100.0	476
Total	9.7	6.1	3.2	1.2	0.6	0.1	0.8	0.1	3.6	0.5	0.6	2.5	90.3	100.0	5355

-- Less than 0.05 percent
[1]Includes users of vaginal methods
[2]Includes users of other traditional methods

with only 6 percent of rural women (see Figure 4.1 and Table 4.7). Rural women are also relatively more likely than urban women to rely on prolonged breastfeeding.

Figure 4.1 highlights the differentials in contraceptive prevalence by region, educational level and current family size. The prevalence rate in the southern and eastern governorates is twice as high in the northern and western governorates, but the ratios of preference, of modern to traditional methods, are almost

Figure 4.1
Contraceptive Prevalence by
Selected Background Characteristics



* Includes prolonged breastfeeding.

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Table 4.7 Current use of contraception by background characteristics

Percent distribution of currently married women by contraceptive method currently used, according to selected background characteristics, Yemen 1991/92

		Modern method							Traditional method						
Background characteristic	Any method	All modern methods[1]	Pill	IUD	Injection	Condom	Female sterilization	Male sterilization	All trad. methods[2]	Safe period	With drawal	Prolonged breast-feeding	Not currently using	Total	Number of women
Residence															
Urban	28.2	18.8	9.8	4.6	0.5	0.4	2.7	0.6	9.5	1.7	2.5	5.2	71.8	100.0	951
Rural	5.7	3.3	1.8	0.5	0.6	--	0.4	--	2.3	0.2	0.1	1.9	94.3	100.0	4404
Region															
North/West.	8.3	5.1	2.2	1.3	0.7	--	0.8	--	3.2	0.3	0.3	2.4	91.7	100.0	4458
South-East	16.7	11.1	8.2	1.1	0.1	0.2	0.8	0.7	5.6	1.1	1.6	2.9	83.3	100.0	897
Education															
Illiterate	7.2	4.3	2.0	0.8	0.7	--	0.8	0.1	2.9	0.3	0.4	2.2	92.8	100.0	4792
Literate	29.1	16.7	11.6	3.3	--	--	0.7	1.1	12.4	3.6	1.1	7.7	70.9	100.0	57
Primary	24.3	16.8	11.2	4.2	--	0.6	0.6	0.3	7.5	0.8	1.1	5.5	75.7	100.0	291
More than primary	38.3	27.7	16.8	7.3	0.2	1.0	1.4	0.9	10.7	2.7	3.8	4.2	61.5	100.0	216
No. of living children															
0	0.7	0.7	0.5	0.1	--	--	0.1	--	--	--	--	--	99.3	100.0	611
1	7.7	4.2	3.6	0.5	--	0.1	--	--	3.6	0.2	0.3	3.1	92.3	100.0	560
2	9.2	4.8	3.0	1.1	0.2	0.1	0.3	0.1	4.4	0.5	0.8	3.1	90.8	100.0	568
3	9.8	5.7	3.2	1.1	0.8	0.2	0.[illegible]	0.2	4.1	0.4	0.7	2.9	90.2	100.0	672
4+	11.9	7.9	3.7	1.7	0.9	0.1	1.3	0.2	4.1	0.6	0.6	2.7	88.1	100.0	2945
Total	9.7	6.1	3.2	1.2	0.6	0.1	0.8	0.1	3.6	0.5	0.6	2.5	90.3	100.0	5355

-- Less than 0.05 percent
[1]Includes users of vaginal methods
[2]Includes users of other traditional methods

the same in both regions (see Table 4.7). Pronounced differences in current use exist by level of education. The proportion of married women using contraception increases dramatically from 7 percent among illiterate women to 24 percent among those with primary school completed, and then jumps to 39 percent for women with postprimary education. Contraceptive use varies slightly with the number of living children. Current use is negligible among women who have yet to start childbearing and is 8 percent among women with a single child. The prevalence rate increases to around 10 percent among those with 2-3 children, and is slightly higher among women who have four or more children.

4.6 REASON FOR CURRENT USE

Table 4.8 indicates that the major reason for using of family planning in Yemen is to limit family size (51 percent) rather than to space births (32 percent). A small proportion (18 percent) of currently married women are using contraception for "other" reasons. Among rural women, less than half are using to limit the number of children, and only one-third practice family planning to space births. On the other hand, those with more than primary education are more likely to be using contraception for spacing than for limiting purposes. The table also shows that for various background characteristics, the proportion of women using contraceptive method for limiting purposes varies only slightly, from 51 to 54 percent.

Table 4.8 Reasons for current use of contraception

Percent distribution of currently married women who are using contraception by reason for use, according to selected background characteristics, Yemen 1991/92

Background characteristic	Want child later	Want no more children	Other reason	Total	Number of users
Residence					
Urban	29.6	53.6	16.8	100.0	268
Rural	34.0	47.3	18.6	100.0	249
Region					
North./West.	31.8	50.1	18.1	100.0	368
South./East.	31.6	51.8	16.6	100.0	150
Education					
Illiterate	27.7	53.3	19.0	100.0	347
Literate	*	*	*	100.0	17
Primary	37.1	51.0	11.8	100.0	71
More than primary	44.3	38.3	17.5	100.0	83
Total	31.7	50.6	17.7	100.0	518

Note: An asterisk (*) indicates that the figure is based on fewer than 25 cases and has been suppressed.

4.7 PROBLEMS WITH THE CURRENT METHOD OF CONTRACEPTION

Women who were using any contraceptive method except sterilization were asked if they had experienced any problems with their current method. Few contraceptive users reported any problems. None of the women who relied on withdrawal and only a small proportion of those using the safe period (10 percent) or prolonged breastfeeding (8 percent) reported any problems (see Table 4.9). Half of IUD and injection users, and over 60 percent of pill users said they experienced no problems with their method. When

Table 4.9 Problems with current method of contraception

Percent distribution of currently married women who are using contraception by the main problem with current method, Yemen 1991/92

Main problem	Pill	IUD	Injection[1]	Safe period[1]	Withdrawal[1]	Breastfeeding
No problem	62.5	51.1	51.4	89.7	100.0	92.5
Health concerns	26.4	32.3	19.1	4.5	0.0	5.6
Method failed	0.5	0.0	0.0	1.6	0.0	0.5
Access/availability	0.2	0.0	0.0	0.0	0.0	0.0
Cost	0.0	0.0	3.9	0.0	0.0	0.0
Inconvenient to use	0.5	3.3	8.0	4.1	0.0	0.0
Other	1.5	1.9	2.0	0.0	0.0	0.0
Missing	8.3	11.4	15.7	0.0	0.0	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	171	66	32	25	30	136

Note: Excludes users of vaginal methods, condoms and other traditional methods (fewer than 25 cases). No questions were asked about current use of female/male sterilization.
[1]Figures are based on fewer than 50 cases.

problems were mentioned, health concerns were cited most frequently. One-third of IUD users, one-fourth of pill users, one-fifth of injection users, and a small proportion of women using other methods reported experiencing health problem. It should be pointed out that information for 8-16 percent of users of modern methods on the question of problems with contraception was not available.

4.8 SOURCE OF CURRENT CONTRACEPTIVE METHOD

The identification of sources of contraceptive methods for current users is important for evaluating the role played by various providers of family planning services and supplies in the public and private sectors. Women using modern methods at the time of survey were asked where they obtained the method last time. Their responses are summarized in Table 4.10.

Table 4.10 Source of supply for modern contraceptive methods

Percent distribution of currently married women who are using modern contraceptive methods by most recent source of supply, according to specific methods, Yemen 1991/92

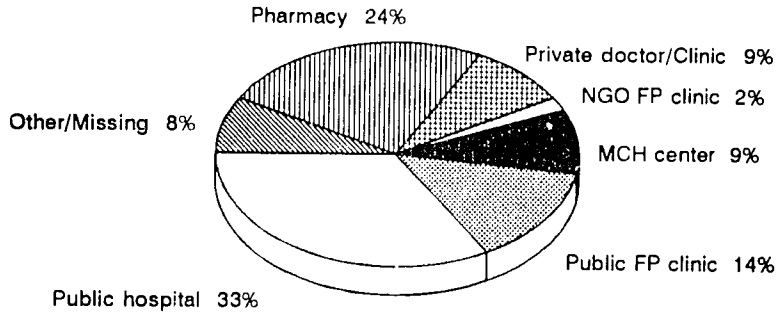
Source of supply	Pill	IUD	Injection[1]	Female sterilization[1]	All modern methods[2]
Public hospital	19.4	27.1	54.5	77.1	33.2
Public family planning clinic	18.4	18.6	3.6	1.4	14.2
Private family planning clinic	0.5	4.4	3.9	4.3	2.2
MCH center	12.4	11.2	6.0	0.0	9.4
Private medical doctor/clinic	2.2	31.8	1.5	8.0	8.8
Pharmacy	37.5	1.4	26.5	0.0	24.2
Other	3.5	3.7	3.9	0.9	3.1
Don't know/missing	6.2	1.7	0.0	8.3	4.9
Total	100.0	100.0	100.0	100.0	100.0
Number	171	66	32	44	325

[1]Figures are based on fewer than 50 cases.
[2]Includes vaginal methods, condom, and male sterilization.

The public sector, including nongovernmental organizations (NGOs), is a major provider of family planning in Yemen. It provides methods to 6 out of every 10 users of modern methods (57 percent in government sources, and 2 percent in private family planning clinics), while the private sector serves almost 3 in 10 users. In the private sector, pharmacies are the major source of contraceptive methods; they serve one-fourth of all modern method users (see Figure 4.2).

As for sources of specific methods, Table 4.10 shows that the main source for pill users is the public sector: government hospitals (19 percent), public family planning clinics (18 percent) and Maternal and Child Health centers (12 percent). Pharmacies supply a substantial proportion of pills users (38 percent). For IUD users, private doctors and clinics are the largest single source. One-third of IUDs were obtained from these private sources; however, public hospitals (27 percent) and family planning clinics (19 percent) together with maternal and child health centers (11 percent) are the largest source of this method. More than half of injection users go to public hospitals and one-fourth to private doctors. Among women who had chosen voluntary female sterilization as their family planning method, three-fourths had their operations done in government hospitals; only a small proportion went to a private doctors and family planning clinic.

Figure 4.2
Source of Family Planning Supply
Current Users of Modern Methods



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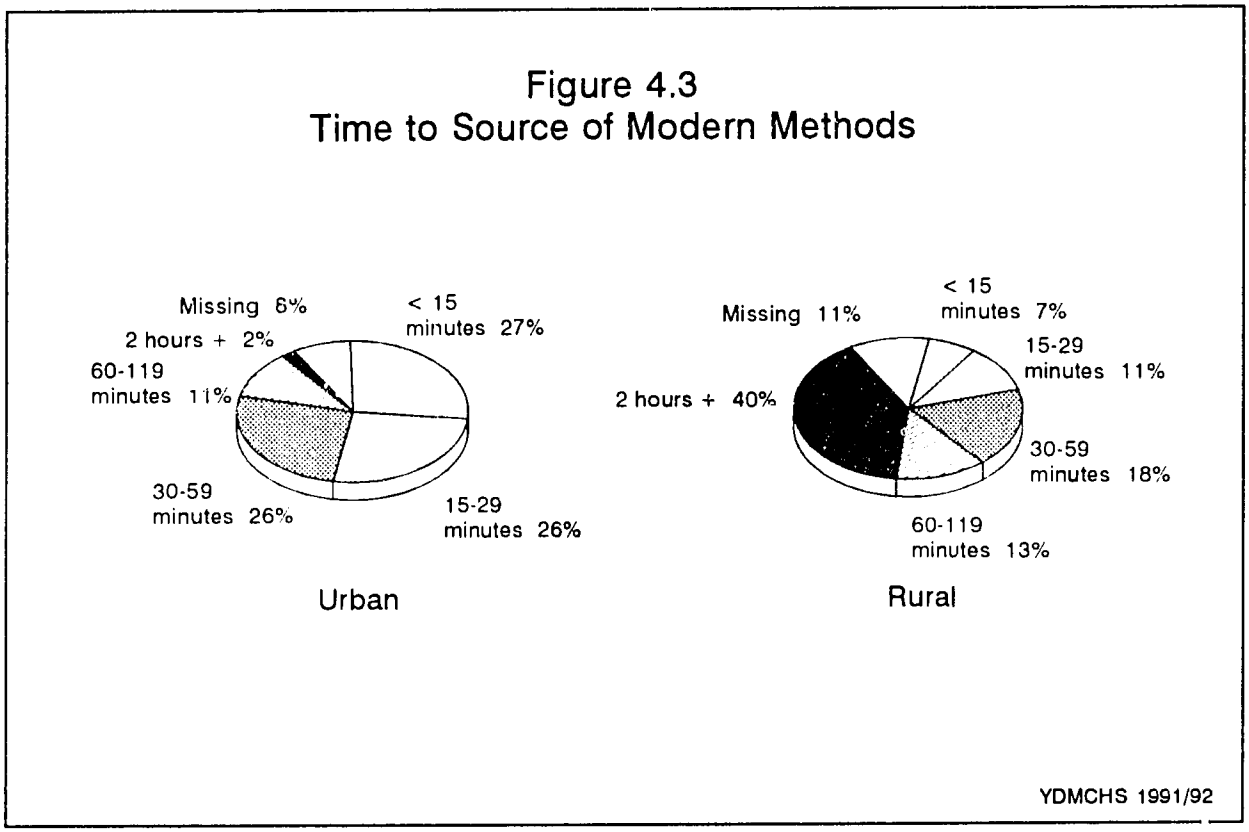
4.9 TIME TO SOURCE OF CONTRACEPTIVE METHOD

Women who were using a modern contraceptive method were asked about the time it takes to go to their method source. The answers, summarized in Table 4.11, show time to source of contraceptive method by urban-rural residence. One-fifth of current users of modern methods can reach their source in less than 15 minutes, one-fifth reach it in 15-29 minutes, and an additional one-fifth take between one-half and one hour to arrive at the source they last used. A substantial proportion of users, almost one-fifth have to spend more than two hours in travel to go to the place where they obtain the family planning method they use. As expected, urban women have easier access to family planning than those living in rural areas (see Figure 4.3). The median travel time for urban users is just 16 minutes, whereas the median for rural users is over one hour; 40 percent of rural users spend more than 2 hours traveling to their source of contraceptive methods.

Table 4.11 Time to source of supply for modern contraceptive methods

Percent distribution of currently married women who are using a modern contraceptive method by time to reach a source of supply, according to urban-rural residence, Yemen 1991/92

Minutes to source	Urban	Rural	Total
0-14	26.8	7.2	18.0
15-29	26.2	10.8	19.2
30-59	26.1	18.2	22.6
60-119	10.5	12.6	11.5
120-239	1.4	33.1	15.7
4 hours or more	0.6	6.8	3.4
Not stated	8.3	11.1	9.5
Total	100.0	100.0	100.0
Median time to source	16.0	60.9	30.4
Number of women	178	147	325



4.10 INTENTION TO USE CONTRACEPTION IN THE FUTURE

Women who were not using any contraceptive method at the time of the survey were asked if they would use a family planning method in the future. Those who responded in the affirmative were also asked how long they would wait to use a method and what method they would prefer to use.

Table 4.12 shows the distribution of currently married women who were not using contraception, by their intention to use in the future. The results in the table are presented according to the number of living children (including a current pregnancy) and past experience with contraception. Eighty-three percent of currently married women who were not using any method indicated that they did not intend to use a contraceptive method in the future. Only 16 percent expressed a desire to use some method—6 percent in the next 12 months and 2 percent after 12 months; 8 percent were unsure about when they would use a method. Surprisingly, of the women who had used a method in the past, more that half (6 percent) reported that they did not intend to use any method in the future.

Table 4.12 Future use of contraception

Percent distribution of currently married women who are not using a contraceptive method by past experience with contraception and intention to use in the future, according to number of living children, Yemen 1991/92

Past experience with contraception and future intentions	Number of living children[1]					Total
	0	1	2	3	4+	
Never used contraception						
Intend to use in next 12 months	0.2	3.2	2.8	3.5	4.1	3.4
Intend to use later	1.2	3.1	1.6	0.7	1.5	1.5
Unsure as to timing	9.9	7.3	5.1	4.8	6.1	6.3
Unsure as to intention	0.0	0.0	0.0	0.0	0.0	0.0
Do not intend to use	86.3	82.8	80.0	80.5	72.5	76.8
Missing	0.9	0.2	1.1	1.2	0.6	0.7
Previously used contraception						
Intend to use in next 12 months	0.0	0.5	2.2	0.9	3.1	2.2
Intend to use later	0.4	0.5	1.3	1.0	0.9	0.9
Unsure as to timing	0.0	0.8	1.9	2.1	2.7	2.1
Unsure as to intention	0.0	0.0	0.0	0.0	0.0	0.0
Do not intend to use	1.2	1.7	3.9	5.3	8.4	6.1
Missing	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
All currently married nonusers						
Intend to use in next 12 months	0.2	3.7	5.0	4.4	7.3	5.6
Intend to use later	1.6	3.6	2.9	1.7	2.4	2.4
Unsure as to timing	9.9	8.1	7.0	6.9	8.8	8.4
Unsure as to intention	0.0	0.0	0.0	0.0	0.0	0.0
Do not intend to use	87.5	84.5	83.9	85.8	80.9	82.9
Missing	0.9	0.2	1.1	1.2	0.7	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	459	558	495	624	2701	4838

[1]Includes current pregnancy

Method preferences of potential future users are shown in Table 4.13. The pill is by far the most popular choice (44 percent). Injection is a distant second (13 percent), followed by the IUD (12 percent). Female sterilization is the preferred method for 5 percent of women, but none of the women selected male methods—condoms, withdrawal, and male sterilization. Women's preferences for methods differ by the time in which they intend to use contraception (in the next 12 months or later). However, the pill, the IUD, and injection are the most popular methods regardless of timing. The pill and female sterilization are preferred more by those who intend to use a family planning method after 12 months, while the IUD and prolonged breastfeeding are more often chosen by those who want to use family planning sooner. Compared to women who intend to use in the next 12 months, those who plan to use later show a slightly stronger preference for the pill and slightly weaker preference for prolonged breastfeeding.

Table 4.13 Preferred method of contraception for future use

Percent distribution of currently married women who are not using a contraceptive method but who intend to use in the future by preferred method, according to whether they intend to use in the next 12 months or later, Yemen 1991/92

Preferred method of contraception	Intend to use: In next 12 months	After 12 months	Unsure as to timing	Total
Pill	41.1	56.7	42.3	43.8
IUD	15.5	10.3	9.7	11.7
Injection	12.3	11.5	14.2	13.1
Diaphragm/Foam/Jelly	1.1	0.4	1.0	0.9
Condom	0.6	0.0	0.1	0.3
Female sterilization	4.9	7.4	4.6	5.1
Male sterilization	0.2	0.0	0.7	0.4
Safe period	3.4	7.7	4.1	4.4
Withdrawal	0.9	0.0	0.4	0.5
Prolonged breastfeeding	10.0	4.7	7.5	7.9
Other	9.5	1.2	14.6	10.8
Don't know	0.5	0.0	0.5	0.4
Missing	0.0	0.0	0.3	0.5
Total	100.0	100.0	100.0	100.0
Number	271	117	405	796

4.11 REASON FOR NONUSE OF CONTRACEPTION

Currently married non-pregnant women who had indicated that they would not use any method in the future were asked the reason for not planning to use family planning. The percent distribution of these women by reason proffered for not intending to use any method are presented in Table 4.14. The results in the table are shown by (a) broad age groups, and (b) fertility intentions, according to past experience or no experience with contraception. "Other" is a residual category and includes women who could not be assigned to the categories "want more" or "want to limit."

The expressed reasons for not intending to use family planning can be broadly grouped into the following categories: reasons related to contraceptive methods; attitude toward family planning, fatalistic attitude and "other" reasons. The reasons that are related to contraceptive method are: lack of knowledge, side effects, inconvenience of use, and difficulty obtaining method. About one-fourth of nonusers said they would not use any method because they lacked knowledge of contraceptive methods. One in 10 women had no plan to use contraception because of fear of side effects, 3 percent considered the methods inconvenient to use, and 1 percent mentioned difficulty in obtaining methods. One-third of women gave attitudinal reasons: although only 2 percent were personally opposed to family planning, the remaining were split equally between religious prohibition (15 percent) and disapproval of husbands (16 percent). Ten percent of women were fatalistic as far as family size was concerned and implied there was little they can do to control their fertility. Only 3 percent of women were menopausal; 13 percent gave "other" reason for nonuse.

Table 4.14 Reasons for not intending to use contraception

Percent distribution of women who are not using a contraceptive method and who do not intend to use in the future by main reason for not intending to use, according to age, fertility intentions and ever use of contraception, Yemen 1991/92

Reason for not intending to use contraception	Age		Fertility intentions					
			Want more		Want to limit			
	15-29	30-49	Used method	Never used method	Used method	Never used method	Other[1]	Total
Religious prohibitions	13.9	16.4	9.8	14.8	4.6	17.6	16.3	15.3
Opposed to family planning	2.3	1.0	3.4	2.3	0.0	0.9	0.5	1.6
Husband disapproves	18.2	14.1	13.4	17.1	9.1	15.9	14.2	15.9
Relatives disapprove	0.4	0.0	0.7	0.3	0.0	0.1	0.2	0.2
Side effects	8.9	10.2	29.9	5.6	46.1	11.0	6.6	9.6
Lack of knowledge	22.1	24.3	3.6	23.9	0.2	23.4	31.8	23.3
Difficult to obtain	0.6	1.5	0.7	0.7	1.6	2.1	0.5	1.1
Costs too much	0.2	0.8	0.0	0.3	0.9	1.2	0.3	0.5
Inconvenient to use	2.5	3.3	3.4	2.6	8.6	3.0	2.1	2.9
Fatalistic	8.6	10.5	12.8	8.8	11.4	8.9	13.5	9.7
Menopausal/subfecund	0.5	5.1	1.3	0.7	7.0	7.9	0.5	3.0
Other	17.5	8.8	19.3	19.0	6.5	4.7	6.7	12.7
Unsure/Don't know	4.2	3.9	1.6	3.9	4.0	3.3	6.6	4.0
Missing	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1786	2223	101	2027	166	1183	532	4009

[1]Answers other than "want more" or "want no more" to the question on future reproductive intentions.

The major differences in reasons by age were attitudinal reasons, religious prohibitions and disapproval of husbands. Religious prohibition was mentioned more often by women over 30 than by those who were younger, and disapproval of husbands was cited by a greater proportion of younger women. The reason mentioned most often by those who had never used a method was lack of contraceptive knowledge. Among those who had some experience with contraception, the major reason for not intending to use was the side effects associated with contraceptive use. Thirty percent of women who want more children and 46 percent of those who want to limit their family size gave this reason. Religious prohibition and husband's opposition to using family planning are mentioned by a substantial proportion of women whether or not they want more children in the future. It is surprising that, irrespective of reproductive intentions, a slightly higher proportion of women who have used a family planning method than those who have not used a method are fatalistic.

4.12 SPOUSAL COMMUNICATION AND APPROVAL OF FAMILY PLANNING

An indication of the acceptability of family planning is the extent to which couples discuss the subject with each other. The YDMCHS included a number of questions on attitudes of spouses. Respondents who were not using any method at the time of survey were asked, "In your opinion, in general, does your husband approve or disapprove of couples using a family planning method?" Respondents were also asked if they had ever talked with their spouses about family planning. Respondents who had previously given "husband's disapproval" as the major reason for not intending to use contraception in the future were not asked these

questions. It was assumed that they had already talked with their husbands about family planning. Table 4.15 presents a cross tabulation of the responses on spousal communication and approval of family planning given by currently married women who know of a contraceptive method (includes assumed answers). Of 2,705 women included in the table, 1,225, or 45 percent have talked about family planning with their husbands. Among women who talked with their husbands, 51 percent said that their husbands approved, 3 percent said their husbands approved conditionally, and 44 percent said that their husbands disapproved of family planning. In contrast, one-tenth of those who had not talked about family planning believed that their husbands approved of couples using a method of family planning. However, understandably, most of the women who had not talked with their spouses did not know about their husband's attitude toward family planning (55 percent).

Table 4.15 Communication with husband and husband's opinion

Percent distribution of currently married women who know a contraceptive method and are currently not using any method by their husband's attitude toward family planning, according to whether they discussed family planning with their spouse, Yemen 1991/92

Husband's opinion	Discussed with spouse		Not stated	Total
	Yes[1]	No		
Husband approves	50.6	10.6	0.0	28.5
Husband conditionally approves	3.0	0.6	0.0	1.7
Husband disapproves	44.3	33.6	2.3	37.9
Don't know	2.1	55.2	97.7	31.9
Total	100.0	100.0	100.0	100.0
Number	1225	1432	48	2705

[1]Includes women who were not asked if they ever talked with their husbands about family planning because they cited husband's disapproval as reason for not planning to use a contraceptive method in the future.

CHAPTER 5

NUPTIALITY AND EXPOSURE TO RISK OF PREGNANCY

This chapter presents results on the principal factors other than contraception which affect a woman's risk of pregnancy, i.e., nuptiality, postpartum amenorrhea, and secondary infertility.

The marital structure of a population directly affects population dynamics. Marriage, divorce, and widowhood are demographic events that influence exposure to pregnancy and thereby affect fertility. Marriage and fertility are closely linked in Yemen because, like most Arab countries, marriage is a primary indicator of women's exposure to risk of pregnancy and almost no childbearing takes place outside the context of marriage. Also, the traditional social structure of the country supports a natural fertility regime in which the majority of women do not use any means of fertility regulation. Since marriage is the primary indicator of exposure to the risk of pregnancy, and the length of time women are married directly affects overall fertility, the study of marriage patterns is essential to the understanding of fertility. Of equal significance for examining the levels and trends in fertility are duration of postpartum amenorrhea, which leads to temporary insusceptibility to the risk of pregnancy, and the onset of menopause and terminal infertility.

5.1 CURRENT MARITAL STATUS

In the household questionnaire, information was collected on the marital status of females and males 10 years of age and older. Table 5.1 presents the distribution of women 15-49 by current marital status. By age 50, almost all Yemeni women have entered into a marital union. At the time of the survey, among all women 15-49 about three in four women had married: 72 percent currently married, 2 percent widowed, and another 2 percent divorced or separated. In comparison with the five other Arab countries in North Africa and the Middle East where the DHS surveys have been implemented, the proportion of women 15-49 who have ever married is highest in Yemen.[1]

Table 5.1 Current marital status

Percent distribution of all women by current marital status, according to age, Yemen 1991/92

	Marital status						
Age	Never married	Married	Widowed	Divorced	Separated	Total	Number of women
15-19	75.3	23.5	0.2	0.8	0.2	100.0	1729
20-24	28.2	69.4	0.5	1.5	0.3	100.0	1135
25-29	9.1	86.2	1.2	3.1	0.3	100.0	1425
30-34	2.5	91.4	2.8	2.7	0.6	100.0	1021
35-39	1.0	92.5	4.0	2.5	0.0	100.0	982
40-44	0.2	94.1	4.4	1.3	0.0	100.0	654
45-49	0.0	90.0	7.4	2.6	0.0	100.0	529
Total	23.9	71.6	2.2	2.0	0.2	100.0	7475

[1]The proportion of women 15-49 who have ever married: Egypt 1992: 70 percent (El-Zanaty et al., 1993); Morocco 1992: 60 percent (Azelmet et al., 1993); Sudan 1989/90: 60 percent (DOS and IRD, 1991); Tunisia 1988: 60 percent (Aloui et al., 1989); and Jordan 1990: 56 percent (Zou'bi et al., 1992).

Although in age group 15-19 only one in four women has married, the overwhelming majority of women 20-24 have married (72 percent), and among those 30 years and older almost no women are single. The proportion of women widowed increases with age from less than 1 percent for the youngest women to 7 percent for oldest women. There was no clear pattern for marriages dissolved by divorce.

Marriage is not as stable in Yemen as it might appear from the small proportion of women who are divorced or widowed; remarriage is relatively common (see Table 5.2). However, a large proportion of women have married only once (89 percent); 11 percent of women have married more than once.

Table 5.2 Remarriage

Percentage of ever-married women who had married only once by current age and selected background characteristics, Yemen 1991/92

Background characteristic	Current age							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Residence								
Urban	99.1	94.0	90.9	89.3	81.7	78.2	87.0	88.3
Rural	98.8	95.1	91.1	89.0	85.2	82.4	80.1	88.8
Region								
North./West.	98.8	94.6	90.4	88.7	84.1	81.5	80.2	88.3
South./East.	99.1	96.1	94.7	91.4	86.8	81.7	86.0	91.1
Education								
Illiterate	98.6	94.1	90.6	88.7	84.5	81.8	81.4	88.1
Literate	100.0	100.0	100.0	96.6	91.4	89.5	100.0	96.6
Primary	99.1	97.2	90.6	90.9	80.7	60.5	54.9	92.7
More than primary	100.0	98.7	98.2	95.0	88.1	81.4	65.5	96.0
Total	98.8	94.9	91.1	89.1	84.6	81.6	81.2	88.7

The proportion of women who have married more than once increases with age. Five percent of women age 20-24 have remarried. The proportion of women who have married at least twice increases to 10 percent in age groups 25-29 and 30-34, and peaks at 20 percent among women in their forties. Dissolution of the first marriage is as likely to occur among women in urban areas as in rural areas. Regionally, women in each age group have a higher proportion of undissolved marriages in the southern and eastern governorates compared to those in northern and western governorates region; although the differences are very small. Illiterate women are more likely (12 percent) to be married more than once than those who are literate or who have completed at least primary school (3-7 percent). These differences may be due to lack of education among older women who have longer exposure to marriage and hence a greater probability of dissolution of their first marriage due to divorce or death of a spouse.

5.2 AGE AT FIRST MARRIAGE

Table 5.3 shows the percentage of women who were first married by specified ages and the median age at first marriage by current age. For each age cohort the accumulated percentages stop at the lower age boundary of the cohort to avoid censoring problems. For instance, for the cohort currently age 20-24, accumulation stops with percentage married by exact age 20.

Table 5.3 Age at first marriage

Percentage of women who were first married by exact age 15, 18, 20, 22, and 25, and median age at first marriage, according to current age, Yemen 1991/92

Current age	Percentage of women who were first married by exact age: 15	18	20	22	25	Percentage who had never married	Number of women	Median age at first marriage
15-19	8.7	NA	NA	NA	NA	75.3	1729	a
20-24	20.4	49.2	62.6	NA	NA	28.2	1135	18.1
25-29	28.7	65.4	76.6	82.7	89.0	9.1	1425	16.2
30-34	33.1	72.5	82.4	89.1	94.4	2.5	1021	15.7
35-39	31.4	69.2	79.8	90.5	94.9	1.0	982	15.7
40-44	31.6	71.3	79.8	89.5	92.4	0.2	654	15.7
45-49	31.7	70.6	79.3	85.4	89.9	0.0	529	15.7
20-49	28.9	65.2	76.0	83.5	88.1	8.5	5746	16.0
25-49	31.0	69.2	79.3	87.1	92.1	3.6	4611	15.8

NA = Not applicable
[a]The median age was not calculated because less than 50 percent of the women in the age group x to $x+4$ were first married by age x.

Early marriage (by age 15), once prevalent in Yemen, is now on a decline. Almost one-third of women 30 and over had married by age 15, while in younger age groups the proportion married by this age has steadily decreased to less than 10 percent among teenagers. The proportion of women married by exact age 20 is also lower among women 20-24, than among older women. A similar pattern is seen for median age at first marriage. Overall, the median age at marriage for women 25-49 is 16 years; it is slightly lower for women 30-49 (15.7 years) and slightly higher for women 25-29 (16.2 years). One-half of women in age group 20-24 marry after their eighteenth birthday or more than two years later than the national average. These results indicate that age at marriage may be rising as early marriages become less common.

Table 5.4[2] presents differentials in the median age at marriage for various groups of women. Because more than 50 percent of women in age group 20-24 are single for certain categories of background characteristics, median age at marriage in the following discussion is confined to women age 25-49. The median age at marriage in urban areas is almost the same as in rural areas, but in the two regions median age at marriage differs by more than one year. Women in the southern and eastern governorates marry later than women in the northern and western governorates. While there are only minor differences in age at first marriage by residence and region, education plays an important role in determining women's entry into marriage. Improvements in educational opportunities for women have resulted in their staying in school longer, thus pushing the age at marriage upward. The difference in age at marriage is more than seven years between women with no formal education (median 15.7 years) and those who have attained more than primary schooling (median 22.9 years). Overall differences in the median age at marriage for various background characteristics, mainly due to variation in the age at marriage among younger women (i.e., under 35 years); age at marriage differs little among older women.

[2]Because the number of Yemeni women who can read and write is small, and in order to make the results presented in this table comparable with those presented in tables in Chapter 3 (Fertility), the education categories in this table are the same as those in Chapter 3.

Table 5.4 Median age at first marriage

Median age at first marriage among women age 20-49 years, by current age and selected background characteristics, Yemen 1991/92

Background characteristic	Current age						Women age 20-49	Women age 25-49
	20-24	25-29	30-34	35-39	40-44	45-49		
Residence								
Urban	a	17.6	16.1	15.6	15.3	15.6	16.9	16.0
Rural	17.6	15.9	15.7	15.8	15.7	15.7	15.9	15.8
Region								
North./West.	17.3	15.8	15.6	15.6	15.7	15.7	15.8	15.7
South./East.	a	19.2	17.0	16.7	15.8	15.8	18.0	17.0
Education								
No schooling	17.3	15.9		15.7	15.7	15.7	15.8	15.7
Primary	18.8	17.3	[illegible]	15.5	15.3	22.7	17.6	16.7
More than primary	a	23.[illegible]	25.3	20.8	20.5	20.1	a	22.9
Total	18.1	1[illegible]	15.7	15.7	15.7	15.7	16.0	15.8

Note: Medians are not shown for women 15-19 because less than 50 percent have married by age 15 in all subgroups shown in the table.
[a]The median age was not calculated because less than 50 percent of the women in the age group were first married by age 20.

Differences in Ages of Husbands and Wives

Using the ages of husbands and wives from the Women's Questionnaire, the difference between husband's age and wife's age was calculated by subtracting wife's age from that of the husband. Table 5.5 presents the difference in couple's ages by age of wife. It is clear that Yemeni men rarely marry women older than themselves. In one-third of marriages, husbands were either the same age as their wives or at most four years older than their spouses; in another one-third, they were 5-9 years older. Six percent of women had married men who were 15-19 years older than they were. Furthermore, in 6 percent of couples this difference was 20 years or more. The average difference in age between wives and their spouses was 7 years—6 years for younger women (under age 30) and 8 years for older women. In considering the differences in ages of wives and husbands in the regions—7.3 in the northern and western governorates and 7.0 in the southern and eastern governorates—it should be noted that in the southern and eastern governorates husband's age was not reported for a relatively high proportion of wives.

Ideal Age at Marriage

All women surveyed in the YDMCHS were asked: "In your opinion, what is the most suitable age for (your daughter/a girl) to marry?" Before considering the results, it should be noted that almost 1 in 10 respondents gave non-numeric answers. However, two ages, 15 years and 20 years[3] were most often mentioned as the most suitable ages for girls to marry (see Table 5.6). More than half of respondents gave these responses. One in four ever-married women said the ideal age at marriage was 20-21 (actually, age 20);

[3]Although the age category 20-21 includes both ages 20 and 21, an examination of the data indicate that less than one percent of women reported 21 years as the ideal age at marriage; the rest reported 20 years.

Table 5.5 Age difference between spouses

Percent distribution of currently married couples by age difference between spouses and mean age difference, according to wife's age and region, Yemen 1991/92

Wife's age/ region	Wife older	Number of years by which husband is older					Husband's age missing	Total	Number of women	Mean age difference (years)
		0-4	5-9	10-14	15-19	20+				
Wife's age										
15-19	0.0	43.6	35.0	13.8	4.1	1.7	1.7	100.0	406	6.0
20-24	1.9	37.7	39.3	12.6	3.6	3.1	1.8	100.0	788	6.3
25-29	2.3	40.4	31.6	14.5	5.4	3.9	1.7	100.0	1229	6.4
30-34	4.3	26.2	33.2	21.0	6.3	6.6	2.4	100.0	933	7.9
35-39	4.0	31.1	30.3	18.2	7.6	7.5	1.4	100.0	909	7.7
40-44	3.9	26.4	27.6	23.4	6.5	9.6	2.6	100.0	615	8.4
45-49	5.4	25.0	31.3	15.8	11.1	9.0	2.3	100.0	476	8.4
Region										
North./West.	3.1	33.3	32.7	17.3	6.4	6.1	0.9	100.0	4458	7.3
South./East.	3.3	32.7	31.8	16.0	5.1	4.2	6.8	100.0	897	7.0
Total	3.2	33.2	32.6	17.1	6.2	5.8	1.9	100.0	5355	7.2

Note: Mean age difference is calculated by subtracting the mean age of wives from the mean age of husbands.

Table 5.6 Ideal age at marriage for women

Percent distribution of ever-married women by age at first marriage considered suitable most for daughter/girl, according to woman's current age and age at first marriage, Yemen 1991/92

Current age/ Age at first marriage	Age at first marriage considered most suitable for daughter/girl							Non-numerical response	Missing	Total	Median age at first marriage	Number of women
	<15	15	16-17	18-19	20-21	22-23	24+					
Current age												
15-19	4.0	30.8	12.2	11.4	26.1	1.5	6.5	6.0	1.4	100.0	17.8	427
20-24	6.8	26.9	11.6	8.6	27.4	1.4	8.6	7.4	1.3	100.0	18.1	815
25-29	6.1	31.0	12.0	7.8	23.7	1.7	7.9	8.8	1.0	100.0	17.2	1295
30-34	6.2	29.0	14.1	6.2	24.8	1.5	7.9	9.5	0.7	100.0	17.1	995
35-39	5.6	29.2	13.3	8.0	22.5	1.1	9.1	10.8	0.6	100.0	17.3	972
40-44	7.1	30.4	11.1	7.2	24.7	1.6	6.4	10.7	0.8	100.0	17.0	653
45-49	7.6	26.6	12.9	9.6	20.7	1.0	8.8	11.8	0.9	100.0	17.1	529
Age at first marriage												
< 15	9.2	32.6	10.0	7.0	21.7	1.8	6.8	10.0	0.9	100.0	16.4	1810
15	5.1	37.3	14.0	6.3	21.1	0.8	5.4	9.3	0.6	100.0	16.4	1321
16-17	3.6	26.0	19.0	9.5	26.0	1.0	4.9	8.8	1.3	100.0	17.5	999
18-19	6.4	22.3	10.8	10.7	28.5	1.5	9.3	9.5	1.1	100.0	18.7	665
20-21	4.7	17.6	11.0	7.6	32.8	1.6	14.1	9.8	0.8	100.0	20.1	430
22-23	5.9	22.3	9.6	10.2	24.0	3.3	15.5	8.9	0.2	100.0	18.9	191
24+	4.0	20.2	7.5	10.1	25.9	1.8	22.0	6.7	1.7	100.0	20.2	270
Total	6.2	29.3	12.5	8.0	24.2	1.4	8.0	9.3	0.9	100.0	17.4	5687

a slightly higher proportion mentioned age 15 as the ideal age. More than one-third of women were of the opinion that it was "best" if a girl/daughter married at age 15 or younger. Twenty-one percent mentioned ages between 16-19 years, and only 9 percent thought that ideal time for a girl to marry was after completing 22 years.

There is a close association between the age at which a woman marries and the age she considers ideal for marriage. A majority of women who had first married before age 20-21 considered the ideal age for marriage either the same as or later than the age at which they themselves had married. But a majority of those who first married after age 21 consider their own age at marriage as the maximum age by which a girl should be married. The median ideal age at marriage in Yemen is 17.4 years. The median for women under 25, (18 years) is higher than for women 25 and older (17 years).

Marriage Between Relatives

In Yemen, as in many Arab countries, marriage between blood relatives (consanguineous marriages), usually occurs between first cousins. Table 5.7 presents data on first marriages between relatives for ever-married women. One in three women in Yemen has married her first cousin, mostly on the father's side, 5 percent have married other relatives, and 63 percent were not related to their husbands before marriage. Marriage to first cousins is also prevalent among women whose previous marriage was dissolved by widowhood or divorce. The last marriage of 1 in 5 women who had remarried was to her first cousin (data not shown).

It appears from Table 5.7 that cousin marriages are increasing in Yemen as indicated by the higher proportion of women marrying first cousins among younger women (under age 25) and also among women who have first married within the last 10 years. Consanguineous marriages are more prevalent in rural (23 percent) than in urban areas (18 percent). This is probably because most women whose educational level is above primary, who are less likely to be married to relatives, live in urban areas. The difference by region is small: in the southern and eastern governorates, women are slightly more likely to be married to a relative.

5.3 POLYGYNY

As a Muslim country, Yemen considers polygyny legal. Islam permits a man to have up to four wives at a time, provided the husband treats all of them equally. In order to collect information on the practice of polygyny, all currently married women in the survey were asked whether their husbands had other wives. Table 5.8 shows the percentage of currently married women in polygynous unions by age and selected background characteristics. Only six percent[4] of currently married women live in a polygynous union, with no difference in urban and rural areas. Although the overall difference in prevalence of polygynous marriages in urban and rural areas is negligible, urban women of all ages except those in age groups 30-34 and 45-49 are more likely to be in polygynous marriages than women living in rural areas. The most noticeable difference in the prevalence of polygyny is between regions. Less than 3 percent of currently married women have one or more co-wives in the southern and eastern governorates, whereas, in the northern and western governorates the rate of polygynous marriage is more than double. Women's education has an inverse impact on polygyny. Women who have completed primary or higher education are less likely to be in a polygynous marriage.

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[4]The prevalence of polygyny is almost the same in Morocco (5 percent) (Azelmet et al., 1993) as in Yemen, but much higher in Sudan (20 percent) (DOS and IRD, 1991). Polygyny is illegal in Tunisia. The question on number of co-wives was not included in the Individual Questionnaire in the 1990 DHS survey in Jordan; but in the Household Questionnaire information was collected on the number of wives each married man had. Of *all* married men listed, 5 percent had more than one wife (special tabulation June 14, 1993).

Table 5.7 Consanguinity

Percent distribution of ever-married women by relationship to their first husband, according to selected background characteristics, Yemen 1991/92

Background characteristic	First cousin: Father's side	First cousin: Mother's side	Other relative	Not related	Missing	Total	Number of women
Age							
15-19	29.1	12.8	5.9	51.7	0.5	100.0	427
20-24	25.0	10.2	5.2	59.3	0.3	100.0	815
25-29	23.3	10.2	5.5	60.7	0.3	100.0	1295
30-34	19.9	7.7	5.8	66.4	0.2	100.0	995
35-39	21.8	6.4	5.5	65.9	0.4	100.0	972
40-44	19.9	6.4	3.5	69.5	0.7	100.0	653
45-49	19.1	7.7	3.2	69.5	0.4	100.0	529
Age at first marriage							
< 15	23.7	8.9	4.6	62.5	0.4	100.0	1810
15	22.6	7.5	5.4	63.9	0.5	100.0	1321
16-17	21.0	9.3	5.0	64.4	0.2	100.0	999
18-19	22.1	10.5	6.6	60.5	0.4	100.0	665
20-21	21.9	9.1	5.2	63.8	0.0	100.0	430
22-23	21.3	9.1	5.8	63.9	0.0	100.0	191
24+	19.3	4.5	3.1	72.5	0.6	100.0	270
Years since first marriage							
< 5	24.6	9.9	4.8	60.5	0.2	100.0	852
5-9	23.8	10.7	5.8	59.2	0.5	100.0	929
10-14	21.8	9.9	5.6	62.5	0.2	100.0	1119
15-19	22.7	7.3	6.2	63.5	0.3	100.0	1046
20-24	22.6	6.6	4.4	66.0	0.4	100.0	825
25+	18.9	7.2	3.5	69.9	0.6	100.0	916
Residence							
Urban	18.4	7.8	7.5	66.1	0.3	100.0	1054
Rural	23.3	8.8	4.6	62.9	0.4	100.0	4633
Region							
North./West.	22.2	8.4	5.0	64.1	0.4	100.0	4708
South./East.	23.2	9.8	5.8	60.8	0.3	100.0	979
Education							
Illiterate	22.6	8.3	4.8	63.8	0.4	100.0	5075
Literate	25.4	12.5	8.2	53.9	0.0	100.0	61
Primary	25.4	10.5	5.8	58.4	0.0	100.0	316
More than primary	12.5	12.1	9.2	66.2	0.0	100.0	235
Total	22.4	8.6	5.1	63.5	0.4	100.0	5687

Table 5.8 Polygyny

Percentage of currently married women in a polygynous marriage by age and selected background characteristics, Yemen 1991/92

Background characteristic	Age of woman							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Residence								
Urban	3.7	2.9	6.8	3.6	9.7	8.4	6.5	6.0
Rural	2.9	1.9	4.5	6.2	7.8	8.1	10.4	5.8
Region								
North./West.	3.5	2.4	5.9	6.3	8.6	8.9	10.7	6.5
South./East.	0.6	0.9	0.4	3.0	5.3	4.1	5.4	2.6
Education								
Illiterate	3.1	2.3	5.1	6.0	7.9	8.2	9.9	6.1
Literate	0.0	0.0	6.1	6.3	11.0	0.0	0.0	4.6
Primary	1.9	1.3	5.2	4.4	9.4	10.7	0.0	3.5
More than primary	6.2	2.1	2.0	1.2	14.7	0.0	0.0	3.8
Total	3.0	2.1	5.0	5.8	8.1	8.1	9.8	5.9

Polygynous marriages are most prevalent among women 35 and over (8-10 percent); they are less common among women 25 to 34 (5-6 percent); and are least prevalent among women under 25 (2-3 percent). In general, for most demographic variables, the same pattern exists of increasing prevalence of polygynous unions with increasing age (see Table 5.8). Nonetheless, it is not possible to say whether the decrease in prevalence of polygyny among younger couples reflects a trend away from the custom or whether it merely shows the effects of the life-cycle process.

Table 5.9 shows that only 1 percent of currently married women had two or more co-wives, 5 percent had one and 94 percent had no co-wife. The most striking finding on multiple co-wives pertains to women 20-24. Although only 2 percent of these women are in polygynous union, a high proportion (around 40 percent) of these women reported that their husbands had three or four wives.

Table 5.9 Number of co-wives

Percent distribution of currently married women by number of co-wives, according to selected background characteristics, Yemen 1991/92

Background characteristic	Number of co-wives			Missing	Total	Number of women
	0	1	2+			
Age						
15-19	96.8	2.7	0.3	0.2	100.0	406
20-24	97.8	1.3	0.8	0.1	100.0	788
25-29	94.3	4.3	0.7	0.7	100.0	1229
30-34	93.5	5.2	0.5	0.8	100.0	933
35-39	91.6	7.0	1.1	0.3	100.0	909
40-44	91.1	7.1	1.0	0.8	100.0	615
45-49	89.9	9.2	0.7	0.3	100.0	476
Residence						
Urban	93.9	5.3	0.7	0.1	100.0	951
Rural	93.6	5.1	0.8	0.6	100.0	4404
Region						
North./West.	93.1	5.7	0.8	0.4	100.0	4458
South./East.	96.4	2.2	0.4	1.0	100.0	897
Education						
Illiterate	93.4	5.3	0.8	0.5	100.0	4792
Literate	94.6	4.6	0.0	0.8	100.0	57
Primary	96.0	3.3	0.2	0.5	100.0	291
More than primary	96.2	3.4	0.4	0.0	100.0	216
Total	93.6	5.1	0.8	0.5	100.0	5355

5.4 POSTPARTUM AMENORRHEA AND INSUSCEPTIBILITY

The risk of pregnancy, hence level of fertility, is affected by the period of insusceptibility following childbirth. After childbirth, until a woman resumes sexual activity or the return of mensuration, the period called postpartum amenorrhea, a woman is not at risk of pregnancy. In the YDMCHS, information was collected on the duration of postpartum amenorrhea following each birth in the last five years. However, due to cultural sensitivities, the question on the length of postpartum sexual abstinence was not asked. In Yemen, as in many Arab countries, women generally abstain from sexual relations during *Nifath*, a period of 40 days following childbirth.[5] In this chapter *insusceptibility* and postpartum amenorrhea are used interchangeably.[6]

[5]Islam prescribes a 40-day period of postpartum abstinence. According to the Yemen Fertility Survey which was conducted in the northern and western governorates of Yemen in 1979, the mean duration of postpartum abstinence in the last closed pregnancy interval was 2.0 to 3.4 months for different age groups. Also, 61 percent of respondents stated that they abstained from sexual relations for 40 days.

[6]It should be noted that in other DHS surveys, the proportion insusceptible is higher than the proportion amenorrheic. Therefore, the data given in Table 5.10 and Figure 5.1 should be considered the lower range of estimates of the proportion of women who are insusceptible.

Estimates for postpartum amenorrhea for births in the 36 months preceding the survey are presented in Table 5.10. These estimates are based on current status measures, that is, the proportion of births occurring *x* months before the survey for which the mothers are still amenorrheic at the time of survey. The data are grouped by two-month intervals for greater stability. The analysis shows that 26 percent of the mothers had not resumed menstruating and were insusceptible. The average duration of postpartum amenorrhea is 9 months; the median duration of insusceptibility is 6 months. Interestingly, these estimates are similar to the results obtained in the 1990/91 Pakistan DHS survey (NIPS and IRD, 1992).

Mothers of 90 percent of the births in the 36 months preceding the survey were still amenorrheic two months after childbirth. The proportion drops sharply to 71 and 58 percent for mothers who had births 2-3 months and 4-5 months before the survey, respectively. One in four mothers of children born 14-15 months before the survey were amenorrheic while less than 10 percent were still amenorrheic 20-21 months after the birth of the child.

Differentials in the median duration of postpartum amenorrhea by selected background characteristics are examined in Figure 5.1. The median duration of postpartum amenorrhea is one month longer for women over age 30 than those younger, and longer for women in the northern and western governorates compared to the southern and eastern governorates. The differences in the median duration of insusceptibility are much higher by area of residence and level of education. The median duration of postpartum amenorrhea for women living in urban areas and those who have some education are much shorter probably because of shorter duration of breastfeeding.

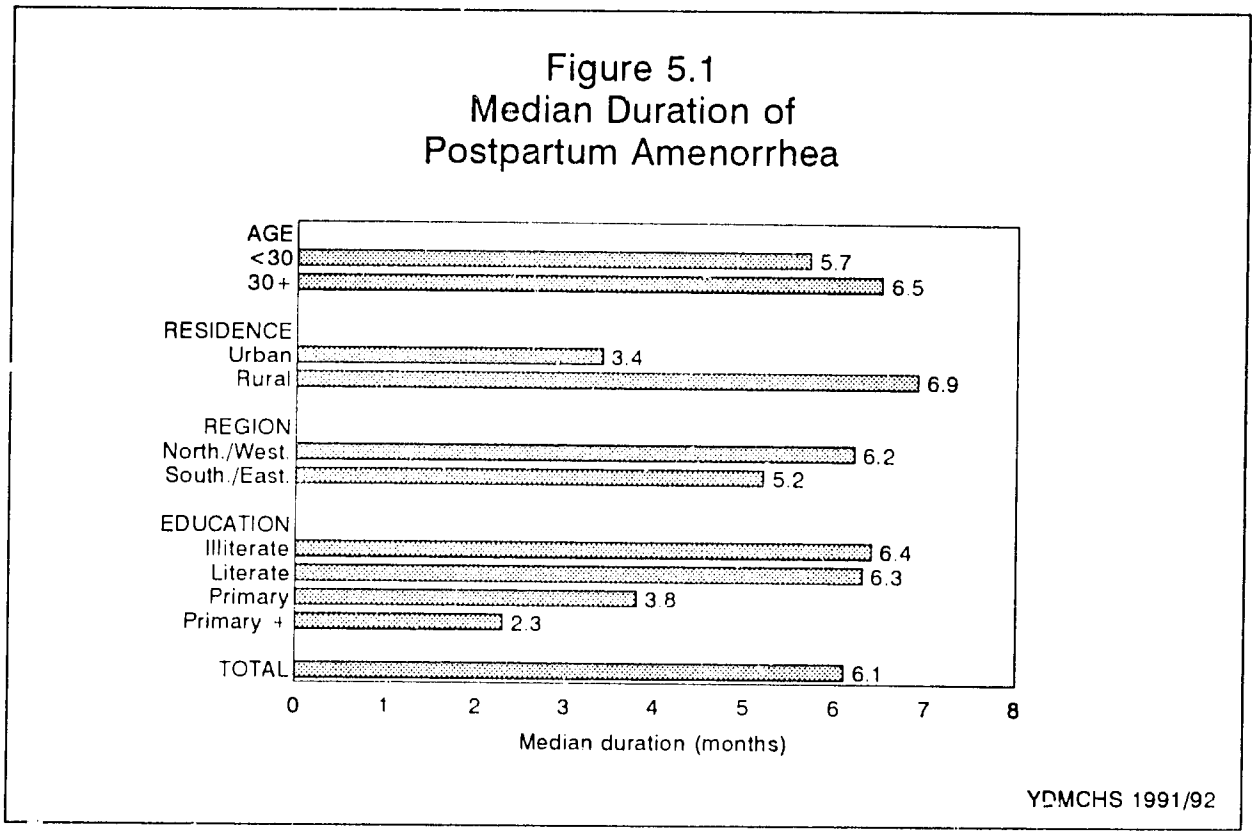
Table 5.10 Postpartum amenorrhea

Percentage of births whose mothers are postpartum amenorrheic by number of months since birth, and median and mean durations, Yemen 1991/92

Months since birth	Amenor-rheic	Number of births
< 2	89.8	216
2-3	71.3	275
4-5	57.7	285
6-7	49.2	281
8-9	36.6	314
10-11	36.6	281
12-13	24.6	284
14-15	24.6	222
16-17	12.5	198
18-19	13.1	348
20-21	9.3	183
22-23	6.7	180
24-25	4.0	323
26-27	4.3	237
28-29	3.3	232
30-31	2.4	314
32-33	2.9	241
34-35	2.9	211
Total	25.6	4624
Median	6.1	-
Mean	9.3	-
Prevalence/ Incidence mean	9.1	-

5.5 TERMINATION OF EXPOSURE

After age 30, exposure to the risk of pregnancy declines with age. Two indicators of the termination of exposure to the risk of childbearing are considered in this section. The first indicator concerns infecundity as measured by evidence of menopause. The absence of the menstrual period for six months among women who are neither pregnant nor postpartum amenorrheic is taken as evidence of menopause and, therefore, infecundity. Table 5.11 indicates that menopause is relatively rare for women in their thirties; only about 4 percent of women 30-39 are menopausal. The incidence of menopause increases rapidly after 40. By age 44-45, nearly one-quarter of women have reached menopause, and the proportion increases to one-third among older women.



The second indicator of termination of exposure is a crude measure of infertility based on demonstrated lack of fertility during the five years preceding the survey. It includes women who meet all of the following three conditions: (a) are not pregnant at the time of survey; (b) have had no births in the five years preceding the survey; and (c) have not used contraception. Since the YDMCHS survey did not provide information about whether a woman had been continuously married for five years, the figures in column 2 of Table 5.11 are based on currently married women age 30-49 who had been married to their first husbands for at least five years.

The figures indicate that infertility is high in Yemen. Even among women in their late thirties, 16 percent are estimated to be infertile. After age 40 infertility rises dramatically from 21 to 62 percent.

Table 5.11 Termination of exposure to the risk of pregnancy

Indicators of menopause and terminal infertility among currently married women age 30-49, by age, Yemen 1991/92

Age	Menopause[1]	Terminal infertility[2]
30-34	3.6	13.0
35-39	3.8	15.7
40-41	9.0	20.7
42-43	12.1	32.2
44-45	23.6	45.1
46-47	36.4	43.8
48-49	74.9	62.0
Total	10.4	22.3

[1]Percentage of nonpregnant, nonamenorrheic currently married women whose last menstrual period occurred six or more months preceding the survey or who report that they are menopausal.
[2]Percentage of women continuously married and not using contraception during the five years preceding the survey who did not have a birth during the period and who are not pregnant.

CHAPTER 6

FERTILITY PREFERENCES

The focus of this chapter is respondents' childbearing attitudes such as desire for more children in the future, the ideal number of children they would like to have, and their perception of the ideal number of children their husbands would like to have. Based on desired ideal family size and birth history information total wanted fertility rates are also calculated.

Measuring childbearing attitudes by means of survey questions has often been the subject of criticism. One criticism concerns the reliability of answers given by respondents. It is suggested that the responses may be misleading because they reflect unformed, ephemeral views, which some respondents may hold with little or no conviction. It is also argued that the questions on ideal family size do not take into consideration the effects of social pressure such as the attitudes of the husband or other family members on a woman's reproductive decisionmaking. To some extent, these two criticisms are valid in the case of Yemen. Yemen is a very traditional society and fertility control may not be perceived as feasible or permitted by religion. The level of women's education is low, as is the level of contraceptive use (see Chapters 2 and 4).

In the YDMCHS survey women were asked if they would like to have another/a child or would prefer not to have more (any) children. The women who were pregnant at the time of the survey were asked if they would like to have another child after the one they were expecting. The data collected in the survey do not permit any estimation of desire for spacing or the desired birth interval for next birth because the women who wanted more children were not asked how long they would prefer to wait before having the next child.

6.1 DESIRE FOR CHILDREN

Women's reproductive preferences regarding future childbearing serves as an indicator of future fertility. Table 6.1 shows fertility preferences of women by number of living children,[1] family composition, current age, and duration since first marriage. Large families are favored in Yemen. Only one-third of currently married women want no more children; about one-half (48 percent) want to have more children, while 1 in 10 women is undecided about her reproductive intentions (see Figure 6.1). Almost one-half (46 percent) of the women with four children, and one-third of those who have five children have no desire to limit their families. One-fourth of women who already have six children and a smaller proportion of those with more than six children (16 percent) would like to continue childbearing.

Women's fertility preferences and current family composition show some interesting relationships. A woman who has only boys is twice as likely to want to stop childbearing as a woman whose children are all girls. The two subgroups of mothers who have more children of one sex than the other, (i.e., unbalanced-gender families) differ only slightly in desiring more children or wanting to stop childbearing. About half of the women in both groups desire no more children. Women who have gender-balanced family composition (i.e., the number of boys and number of girls are the same), on the other hand, are more likely to want another child than those who have unbalanced-gender families.

[1]A current pregnancy is counted as a living child.

Table 6.1 Fertility preferences by selected background characteristics

Percent distribution of currently married women by desire for children, according to selected background characteristics, Yemen 1991/92

Background characteristic	Fertility preference: Have another	Undecided	Want no more	Sterilized	Declared infecund	Missing	Total	Number of women
Number of living children[1]								
0	89.0	4.5	1.6	0.1	3.3	1.5	100.0	464
1	86.3	4.6	6.3	0.0	1.8	1.1	100.0	602
2	68.4	7.5	18.2	0.3	3.0	2.5	100.0	547
3	59.2	9.9	25.1	0.5	3.6	1.7	100.0	690
4	46.0	15.3	31.5	1.1	4.1	2.0	100.0	647
5	34.2	13.0	45.1	0.8	5.6	1.2	100.0	598
6	25.8	12.2	53.5	0.9	4.8	2.8	100.0	615
7+	16.4	11.7	63.1	2.2	4.9	1.6	100.0	1193
Current family composition								
No living children	88.3	4.8	3.0	0.1	2.5	1.3	100.0	611
All boys	66.0	7.5	21.7	0.6	2.9	1.3	100.0	602
All girls	78.8	7.8	10.0	0.0	2.0	1.4	100.0	574
Boys = girls	40.8	12.0	38.4	1.1	5.4	2.4	100.0	823
Boys > girls	29.3	11.6	50.8	1.5	4.8	1.9	100.0	1421
Boys < girls	32.4	12.6	47.6	1.3	4.4	1.8	100.0	1324
Current age								
15-19	86.5	5.6	6.2	0.0	0.3	1.4	100.0	406
20-24	74.6	5.0	17.7	0.0	0.8	1.9	100.0	788
25-29	57.4	9.9	29.8	0.2	0.5	2.2	100.0	1229
30-34	43.1	12.4	39.9	0.9	1.8	2.0	100.0	933
35-39	33.1	13.5	46.6	1.9	3.0	1.7	100.0	909
40-44	23.6	12.8	52.4	2.5	7.4	1.3	100.0	615
45-49	16.2	10.2	47.5	1.6	23.3	1.2	100.0	476
Years since first marriage								
< 5	85.2	4.7	8.1	0.0	0.5	1.5	100.0	823
5-9	65.3	7.4	24.6	0.1	0.9	1.7	100.0	876
10-14	52.0	10.8	33.9	0.4	0.7	2.2	100.0	1060
15-19	37.4	13.3	44.2	1.0	2.0	2.1	100.0	986
20-24	28.5	12.0	51.2	2.1	4.5	1.6	100.0	774
25+	18.8	12.9	47.9	2.4	16.8	1.3	100.0	837
Total	48.0	10.3	35.0	0.9	4.0	1.8	100.0	5355

[1]Includes current pregnancy

Women's age and the number of children they have are closely related. A similar pattern is apparent in Table 6.1 for women's age and fertility preferences. Among women in their early thirties, 43 percent want to have more children. This decreases to 33 percent among women 35-39 and 24 percent among women 40-44. Half of the women age 40 and over either do not want more children or cannot have them. Almost one-fourth of the oldest group (women 45-49) stated that they cannot have children.

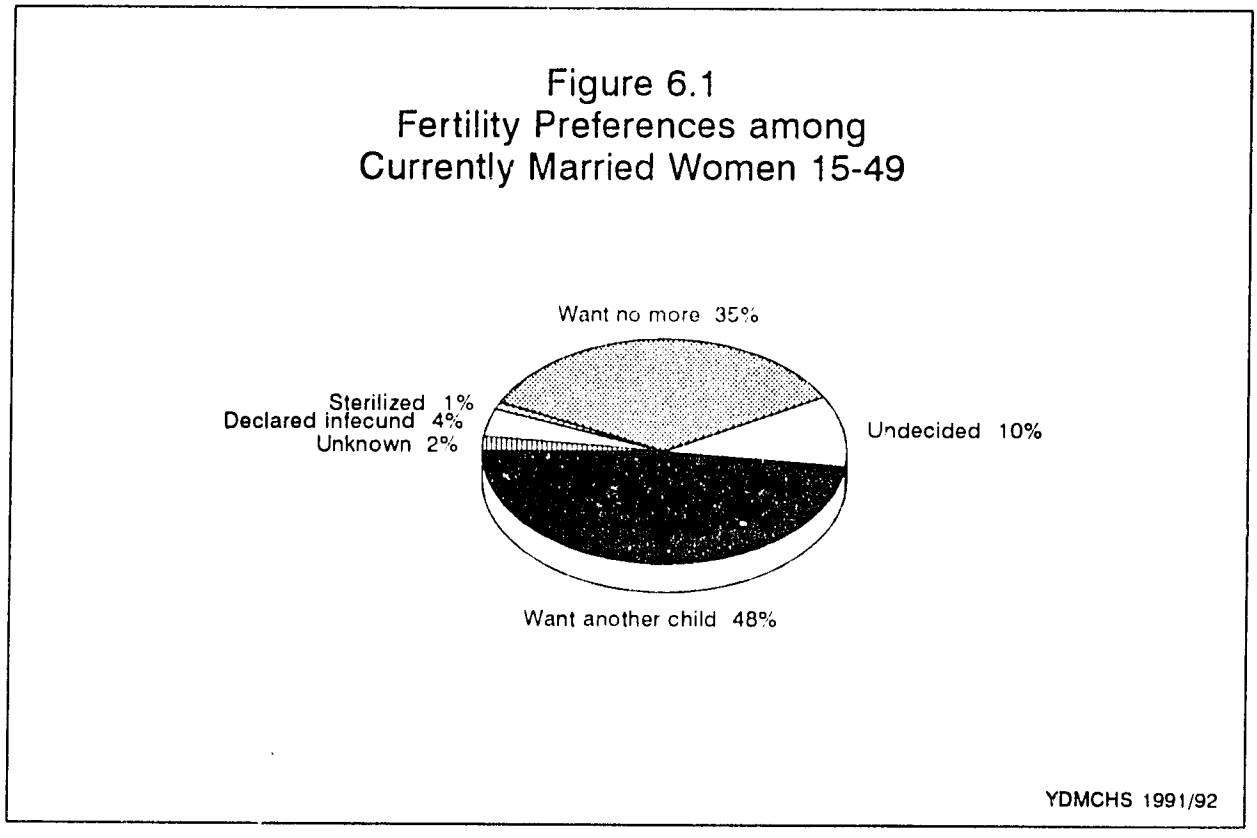


Figure 6.1
Fertility Preferences among
Currently Married Women 15-49

The data on duration of marriage and desire for more children confirm the tradition of large families in Yemeni society. Even among women who had first married more than 25 years ago, around one in five desires children in the future. The proportions wanting children among those married 20-24 and 15-19 years are much higher, approaching 30 and 40 percent, respectively.

Differentials in the stated desire to terminate childbearing are presented in Table 6.2. Women who proclaim themselves unable to bear children (infecund) and those who have chosen voluntary sterilization—even if they express a desire for having more children—have no impact on future fertility. For this reason these women are considered to want no more children.

Overall, the largest difference in the proportion of currently married women who want no more children is between urban and rural residents. One-third of women in rural areas do not want any more children compared to almost one-half of urban women. Regionally, women living in the northern and western governorates are slightly more likely to want cessation of childbearing than those living in the southern and eastern governorates. These differences hold across all family sizes. There are negligible differences due to women's educational level. However, it should be noted that for parities below five, less educated women are more likely to evince a desire for additional children than those who are more educated.

Table 6.2 Desire to limit childbearing

Percentage of currently married women who want no more children, by number of living children and selected background characteristics, Yemen 1991/92

Background characteristic	Number of living children[1]								Total
	0	1	2	3	4	5	6	7+	
Residence									
Urban	4.3	9.6	28.7	38.4	56.1	59.8	64.2	77.9	47.4
Rural	1.1	5.6	16.0	23.1	27.6	43.1	52.6	62.5	33.5
Region									
North./West.	1.2	5.7	15.8	24.9	33.3	46.6	56.7	66.8	37.0
South./East.	3.4	8.9	29.7	29.1	29.2	42.7	38.4	56.6	30.6
Education									
Illiterate	1.5	5.6	16.2	24.3	29.7	44.6	53.6	64.8	36.2
Literate	*	*	*	*	*	*	*		45.5
Primary	3.8	7.0	20.4	27.3	(61.1)	(59.2)	(70.2)	(82.5)	31.2
More than primary	--	11.2	38.8	46.7	(80.5)	*	*	*	35.0
Total	1.7	6.3	18.5	25.6	32.6	46.0	54.4	65.4	35.9

Note: Women who have been sterilized are considered to want no more children. Figures in parentheses are based on 25-49 unweighted cases, and an asterisk (*) indicates that the figure is based on fewer than 25 cases and has been suppressed.
-- Less than 0.05 percent
[1]Includes current pregnancy

6.2 SEX PREFERENCES FOR CHILDREN

In the YDMCHS non-pregnant currently married women who desired to have more children were asked whether they would like their next child to be a boy or a girl. It should be remembered that Yemeni society is traditional and many women consider that their own reproductive desires matter little, if at all, and the number and sex composition of their families is "up to Allah." The results presented in Table 6.3 show that for the majority of respondents, irrespective of current family size, it would not matter if the next child they want to have is a boy or a girl. Only one-third of women indicated a specific gender preference for the next child. A moderate preference for a son rather than a daughter (20 percent versus 13 percent) exists for the country as whole. Among childless women, two-thirds have no gender preference for their very first child, 1 in 10 wants a daughter, and twice that proportion would prefer that their firstborn be a boy.

The proportion of mothers with one child who want to have a balanced family is almost the same as for those who currently have either a boy or a girl (around 60 percent). A similar preference is also seen in women who have all-boy or all-girl families and are desirous of achieving a mixed family, i.e., one with at least a boy and a girl. About three-quarters of women who have the same number of boys and girls show no gender preference; a similar proportion of women whose families include at least one child of each sex also show no gender preference.

Table 6.3 Preferred sex of next child

Percent distribution of currently married, nonpregnant women who want another child, by gender preference of next child, according to number of living children and sons, Yemen 1991/92

Number of children and sons	Gender preference					Number of women
	Son	Daughter	No preference	Missing	Total	
No children	22.6	10.0	66.2	1.2	100.0	412
One child	21.4	18.3	57.4	2.8	100.0	392
No sons	37.1	2.8	58.2	1.9	100.0	201
1 son	5.0	34.7	56.6	3.8	100.0	191
Two children	21.3	14.3	61.4	3.0	100.0	295
No sons	51.2	0.0	44.4	4.4	100.0	84
1 son	11.5	8.0	77.1	3.4	100.0	138
2 sons	5.6	42.7	51.1	0.6	100.0	73
Three children	21.7	15.5	59.2	3.6	100.0	331
No sons	44.2	4.3	43.9	7.6	100.0	58
1 son	30.0	1.0	63.8	5.1	100.0	126
2 sons	8.2	24.1	66.7	1.1	100.0	105
3 sons	(0.0)	(52.4)	(47.6)	(0.0)	100.0	43
Four children	18.8	16.3	64.4	0.5	100.0	234
No sons	(73.1)	(0.0)	(18.7)	(8.1)	100.0	16
1 son	29.6	2.2	68.2	0.0	100.0	55
2 sons	14.9	12.4	72.8	0.0	100.0	83
3 sons	4.1	25.5	70.3	0.0	100.0	60
4 sons	*	*	*	*	100.0	20
Five children	15.6	7.7	74.6	2.0	100.0	161
No sons	*	*	*	*	100.0	5
1 son	(27.6)	(1.3)	(71.0)	(0.0)	100.0	31
2 sons	16.1	3.3	75.9	4.7	100.0	53
3 sons	(7.3)	(7.5)	(83.6)	(1.6)	100.0	48
4 sons	*	*	*	*	*	22
5 sons	*	*	*	*	*	4
Six or more children	15.9	9.7	69.3	5.2	100.0	257
< 2 sons	*	*	*	*	*	22
2-3 sons	19.3	2.9	72.7	5.1	100.0	113
4-6 sons	4.7	16.4	72.3	6.7	100.0	113
7+ sons	*	*	*	*	*	10
Family composition						
No living children	22.6	10.0	66.2	1.2	100.0	412
All boys	4.5	40.3	52.9	2.3	100.0	333
All girls	43.7	2.2	50.6	3.6	100.0	371
Boys = Girls	12.7	9.1	76.2	2.0	100.0	269
Boys > Girls	6.1	20.3	71.1	2.4	100.0	336
Boys < Girls	26.8	1.6	67.3	4.2	100.0	361
Total	20.3	13.6	63.6	2.6	100.0	2082

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

6.3 IDEAL NUMBER OF CHILDREN

Another attitudinal dimension of childbearing considered in the YDMCHS is the total number of children a woman would ideally like to have, if it were entirely up to her. To ascertain the number of children a woman considers most desirable, she was asked: "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" The question was slightly modified for women who had no children. To answer the question, a woman must undertake the difficult task of considering in the abstract, and independent of her actual family size, the number of children she would choose if she did start over again.

Typically, there is a correlation between actual family size and the ideal number of children women desire. Women who want larger families tend to achieve larger families; also, women are inclined to adjust their ideal family size upwards as the number of children they have borne—even if some are undesired—increases. Despite the likelihood that some rationalization occurs in the determination of ideal family size, it is often found (even in countries with high fertility) that respondents' stated ideal family sizes are smaller than the actual number of surviving children. It has generally been accepted that information on ideal family size and trends in the number of children desired can be useful for modifying policy strategy and instruments that aim at altering the patterns and course of fertility.

Regarding the relationship between ideal family size and actual family size Yemeni women may be assigned to three groups (see Table 6.4): first are those whose ideal family size converges with their actual family size; that is, their ideal and actual family sizes are the same. These women are represented by the diagonal figures starting from the upper left corner of the table;[2] second are women who have yet to reach their ideal family size, i.e., whose number of living children is less than their ideal family size. They are represented in the table by the figures *below* the diagonal; third are women whose current family size has exceeded the ideal number of children they want. These are shown by the figures *above* the diagonal. The last group is of particular interest because births of parity higher than the ideal number—that occur within a specified period preceding the survey—may be considered "unwanted" and their impact on total fertility rates can provide useful insights on fertility behavior (see section 6.4 for a discussion of total wanted fertility rates).

Table 6.4 indicates that a fairly large proportion of women (29 percent) gave non-numeric responses to the question on ideal family size (almost the same proportion as in the Jordan DHS survey). One-fourth of ever-married women with less than four children and one-third of women with four or more children gave non-numeric responses. The failure to give a definite numerical answer suggests either an absence of conscious consideration about family size, or a belief that God or fate determines for a couple the number of children they would have.

Overall, the figures in Table 6.4 indicate that more than half of Yemeni women want to have four or more children (including women who gave non-numeric response). One in four reported four or five children as their ideal family size, and the same proportion desired six or more children. Less than 10 percent of ever-married women reported two children as the ideal family size.

[2]For ideal number of children, the percentages for 7 through 10+ cannot be summed for comparison with figures for 7+ living children.

Table 6.4 Ideal number of children

Percent distribution of ever-married women by ideal number of children and mean ideal number of children for ever-married women and for currently married women, according to number of living children, Yemen 1991/92

Ideal number of children	Number of living children[1]								Total
	0	1	2	3	4	5	6	7+	
0	***0.2***	0.0	0.6	0.2	0.4	0.2	0.6	0.3	0.3
1	4.8	***4.8***	0.9	2.0	0.5	0.7	0.8	1.6	1.9
2	14.4	12.1	***14.3***	5.9	6.8	5.1	7.6	6.8	8.7
3	4.7	7.1	7.4	***12.7***	2.9	2.9	3.7	3.8	5.6
4	22.2	25.5	21.5	20.0	***20.7***	10.1	10.9	11.9	17.2
5	10.6	9.9	12.0	10.6	8.9	***20.2***	8.5	8.6	10.9
6	7.2	6.1	8.9	8.4	9.4	9.4	***15.5***	5.3	8.4
7	1.5	2.2	2.3	4.4	4.4	5.3	5.3	***8.2***	4.7
8	0.7	1.5	2.8	2.6	3.7	3.1	3.0	5.7	3.2
9	0.7	0.4	0.4	0.6	0.6	1.2	1.0	3.8	1.4
10+	8.3	5.6	5.5	5.8	10.2	9.3	10.6	12.7	8.9
Non-numeric response	24.7	24.7	23.5	26.8	31.4	32.5	32.5	31.5	28.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	513	665	591	734	679	634	639	1232	5687
Mean ideal: ever-married women	4.6	4.5	4.6	4.9	5.6	5.9	5.9	6.4	5.4
Number of ever-married women	386	501	452	537	466	428	432	844	4046
Mean ideal: currently married women	4.6	4.6	4.7	4.9	5.6	5.9	5.9	6.4	5.4
Number of currently married women	356	465	420	506	444	409	417	818	3835

Note: Means are calculated excluding women who gave non-numerical responses.
[1]Includes current pregnancy

Nationally, the mean ideal number desired by both ever-married and currently married women is 5.4. The desired number of children increases with family size. Women with 2 or less children want around 4.5 children; those with 4 desire 5.6 children. A mean family size of around 6 is considered ideal by those who have 5 or 6 children whereas 6.4 children are desired by women who currently have 6 or more children. As reported in Chapter 3, the TFR for Yemen is 7.7; thus, the TFR exceeds the mean ideal number of children by more than two children (2.3). This suggests that there may be considerable motivation for limiting fertility in Yemen.

Table 6.5 shows the mean ideal number of children by age according to selected demographic characteristics. The ideal family size increases steadily with age from less than 5 children for those under 25 years to over 6 children for women in their forties. Rural women want more children than urban women. The difference by residence, is more than one child. The regions differ less markedly (0.6 children), but by level of education the differences are substantial. Women with more than primary education, on the average, desire 3.8 children while illiterate women want 5.6 children, or almost two children more. Ideal family size increases with increasing age for all the variables presented in Table 6.5.

Table 6.5 Mean ideal number of children by background characteristics

Mean ideal number of children for all women, by age and selected background characteristics, Yemen 1991/92

Background characteristic	Age of woman							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Residence								
Urban	4.2	3.8	4.1	4.1	4.9	5.1	5.7	4.4
Rural	4.8	4.9	5.3	5.9	5.9	6.3	6.6	5.6
Region								
North./West.	4.8	4.8	5.1	5.6	5.8	6.2	6.6	5.5
South./East.	4.3	4.1	4.7	5.1	5.3	5.7	5.9	4.9
Education								
Illiterate	4.8	4.9	5.3	5.7	5.9	6.1	6.5	5.6
Literate	*	*	*	*	*	*	*	4.5
Primary	4.4	4.0	3.8	(4.4)	*	*	*	4.2
More than primary	(4.4)	3.7	4.0	4.1	(3.2)	*	*	3.8
Total	4.7	4.7	5.1	5.5	5.8	6.1	6.5	5.4

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

Wife's Perception of Husband's Ideal Family Size

Currently married women in the YDMCHS were also asked about their husbands' ideal family size. It should be understood that in most cases the ideal number given may be more an expression of woman's *perception* than the husband's actual ideal family size. Table 6.6 presents the ideal family size of women and their spouses. Almost half of the married women gave non-numeric responses, including those who did not know how many children their husbands wanted. The average ideal family size for husbands, based only on numeric responses given by women about their perception of their husbands' ideal family size, is 6.4 children or one child more than the average for currently married women (data not shown). According to wives, the number of children their husbands desire is (in descending order of proportions of women responding): 10 or more (13 percent of women), 4 (11 percent of women), 5 (7 percent of women), 6 (5 percent of women), and 2 (5 percent of women).

Table 6.7 presents a comparison of desired family size of wives and husbands by broad age groups of wives, according to selected background characteristics. Six of 10 women in all age groups believe that they and their husbands desire the same number of children. Around 3 of 10 women believe their husbands want more children than they do. Sixteen percent of urban women think their ideal family size is greater than that of their husbands; and among women under age 25, an even larger proportion (21 percent) report a larger ideal family size than that of their husbands. The differences in women's perceptions by other background characteristics are minimal.

Table 6.6 Ideal family size

Percent distribution of currently married women by ideal family size according to their perception of their husband's ideal family size, Yemen 1991/92

Wife's ideal family size	Husband's ideal family size											Non-numeric response	Total	Number of women
	0	1	2	3	4	5	6	7	8	9	10+			
1	1.2	24.5	10.7	5.9	5.6	7.6	3.3	1.4	1.4	1.4	7.7	20.5	100.0	90
2	0.2	3.3	34.6	4.1	6.8	2.6	3.0	0.5	1.4	0.4	9.0	34.1	100.0	452
3	0.0	2.1	4.9	32.1	7.5	4.5	1.6	1.0	1.2	1.7	8.7	34.9	100.0	298
4	0.2	0.6	2.8	1.6	43.9	5.9	4.0	1.5	1.3	0.4	7.9	30.0	100.0	937
5	0.0	0.1	1.0	1.1	6.2	37.4	4.7	3.4	1.9	1.8	8.0	34.4	100.0	594
6	0.0	0.2	1.7	1.0	3.6	2.6	37.7	1.9	3.0	0.8	12.3	35.1	100.0	456
7	0.0	0.0	0.2	0.4	4.1	5.3	2.5	48.0	2.8	1.9	9.0	25.7	100.0	254
8	0.0	0.0	0.2	0.0	2.[illegible]	2.8	2.1	0.9	34.0	1.0	13.2	43.0	100.0	177
9	0.0	1.2	0.0	1.5	6.8	0.0	1.7	3.3	0.0	28.9	13.6	43.0	100.0	76
10+	0.0	0.1	1.3	1.2	1.4	0.4	0.7	0.8	0.7	0.3	58.9	34.2	100.0	482
Non-numeric response	0.1	0.5	1.0	0.9	1.2	0.7	0.7	1.1	1.0	0.5	7.2	85.0	100.0	1521
Total[1]	0.1	1.1	4.5	3.1	10.6	6.6	5.4	3.7	2.5	1.2	13.1	48.0	100.0	5355

[1]Total includes fewer than 25 women whose ideal family size was zero children.

Table 6.7 Wife's ideal family size compared to her husband's

Percent distribution of currently married women by their ideal family size compared to husband's ideal family size, by age and selected background characteristics, Yemen 1991/92

	Compared to ideal number of children husband wants												
	Wife 15-24 wants:			Wife 25-34 wants:			Wife 35-49 wants:			Wife 15-49 wants:			
	More	Same	Less	More	Same	Less	More	Same	Less	More	Same	Less	Total
Residence													
Urban	21.2	51.1	27.7	13.9	52.7	33.4	13.0	57.2	29.8	15.6	53.7	30.7	463
Rural	10.2	62.2	27.6	8.5	63.9	27.7	9.9	62.8	27.3	9.4	63.1	27.5	2095
Region													
North./West.	13.5	58.2	28.3	9.1	61.9	28.9	9.6	63.2	27.2	10.3	61.5	28.1	2112
South./East.	7.8	67.8	24.5	11.2	60.9	28.0	14.6	54.9	30.5	11.4	60.6	27.9	446
Literacy status													
Illiterate	12.5	59.0	28.5	9.0	62.5	28.4	10.4	61.9	27.7	10.3	61.6	28.2	2222
Literate	12.1	63.0	24.9	12.7	56.5	30.8	(10.8)	(61.4)	(27.8)	12.2	60.2	27.6	336
Total	12.4	60.0	27.6	9.5	61.7	28.8	10.4	61.9	27.7	10.5	61.4	28.1	2558

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

Table 6.8 presents the differences in the mean ideal family size of wives and husbands. The negative numbers in the table indicate that the mean number of children the wives want is less than that of their husbands, or that the husbands' mean desired family size is greater than that of their wives. When women's ideal family size is greater it exceeds their spouses' ideal family size by 2.0 to 2.8 children, while the differences range from 3.2 to 3.7 children when women desire fewer children than their husbands. The results by various background characteristics show only slight variations in the magnitude of the differences in ideal family size between husbands and wives.

Table 6.8 Mean difference in wife's and husband's ideal family size

Mean difference between wife's and husband's ideal family size by wife's age and her desire for more or less children than her husband, according to selected background characteristics, Yemen 1991/92

Background characteristic	Wife 15-24 wants:		Wife 25-34 wants:		Wife 35-49 wants:		Wife 15-49 wants:	
	More	Less	More	Less	More	Less	More	Less
Residence								
Urban	(2.5)	(-3.4)	(2.0)	-3.[illegible]	(2.4)	-3.2	2.3	-3.4
Rural	(2.3)	-3.6	2.2	-3.7	2.8	-3.5	2.4	-3.6
Region								
North./West.	2.4	-3.6	2.1	-3.8	2.7	-3.6	2.4	-3.7
South./East.	*	-3.2	(2.3)	-3.0	(2.6)	-3.0	2.4	-3.0
Literacy status								
Illiterate	2.4	-3.6	2.1	-3.8	2.7	-3.5	2.4	-3.6
Literate	(2.3)	-3.4	(2.4)	-2.9	*	*	2.4	-3.2
Total	2.4	-3.6	2.1	-3.7	2.7	-3.5	2.4	-3.6

Note: Mean difference is calculated by subtracting the mean ideal family size for husbands from the mean ideal family size for curently married women. Figures in parentheses are based on 25-49 cases; an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

6.4 WANTED FERTILITY

Because the YDMCHS did not include questions on the planning status of births, estimates cannot be made of the proportion of births that, (a) were wanted and occurred at the time when they were wanted, (b) were wanted later, and (c) were not wanted at all. However, using the information collected on ideal family size and birth histories, total wanted fertility rates can still be estimated.[3] Wanted fertility rates are calculated in the same manner as conventional age-specific fertility rates (see Chapter 3), except that births classified as unwanted are omitted from the numerator. A birth is considered wanted if the number of living children at the time of conception was less than the current ideal number of children reported by the respondent, otherwise the birth is considered unwanted.

[3]Wanted fertility rates can also be calculated by using husbands' desired family size, however, these would be biased because a large proportion of women gave non-numeric responses to the question on their perception of their spouse's ideal family size.

Table 6.9 presents the total wanted fertility rates and total fertility rates by background characteristics. Wanted fertility rates express the level of fertility that theoretically would result if all unwanted births were prevented. The total wanted fertility rate provides another indicator of fertility aspirations and may be interpreted as the number of wanted births that a woman would bear by age 50, if she experienced the wanted fertility rates observed for the past three years. In Yemen, the total wanted fertility rate is 6.0, or 1.7 births less than the total fertility rate observed for the three years preceding the survey.[4] The total wanted fertility rate is between the women's ideal family size of 5.4 children and the husbands' ideal family size of 6.4. For all background characteristics examined in Table 6.9, observed fertility is at least 25 percent greater than wanted fertility and, for two educational groups, observed fertility is substantially higher (see Figure 6.2). Observed fertility rates are 35 and 40 percent higher than the wanted fertility rates for women with primary and more than primary education, respectively, and are fully 50 percent higher for women living in urban areas.

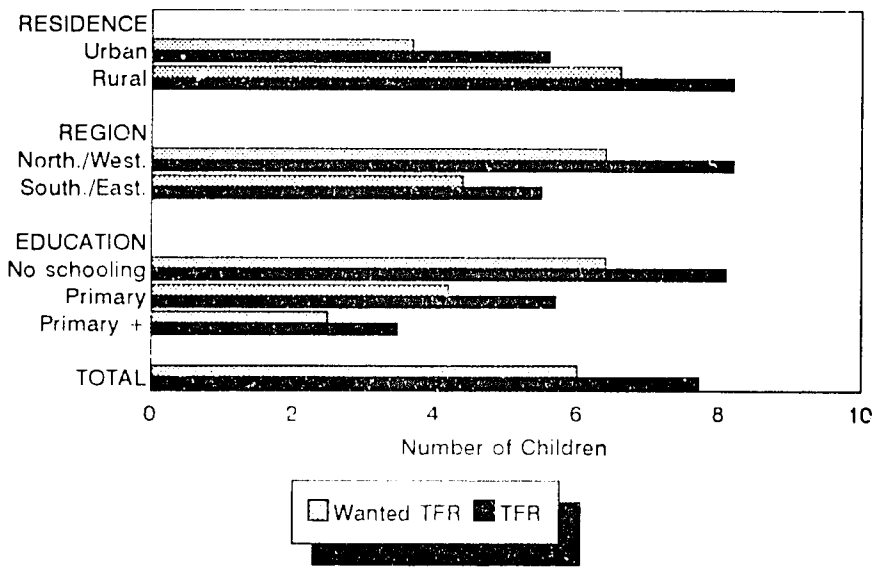
Table 6.9 Wanted fertility rates

Total wanted fertility rates and total fertility rates for the three years preceding the survey, by selected background characteristics, Yemen 1991/92

Background characteristic	Total wanted fertility rate	Total fertility rate
Residence		
Urban	3.7	5.6
Rural	6.6	8.2
Region		
North./West.	6.4	8.2
South./East.	4.4	5.5
Education		
No schooling	6.4	8.1
Primary	4.2	5.7
More than primary	2.5	3.5
Total	6.0	7.7

Note: Rates are based on births to women 15-49 in the period 1-36 months preceding the survey. The total fertility rates are the same as those presented in Table 3.2.

Figure 6.2
Total Wanted Fertility Rates and Total Fertility Rates



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[4]The total wanted fertility rates will probably be higher if husbands' ideal family sizes are used.

CHAPTER 7

MATERNAL HEALTH CARE

Maternal health care includes the care a mother receives during pregnancy, at delivery and in the postnatal period. Regular antenatal care (ANC) can mitigate, if not avoid altogether, those complications of pregnancy and delivery which may jeopardize both the mother's and the infant's chances of survival. Ensuring a mother's nutritional preparedness for pregnancy and childbirth provides an infant with adequate resources in the antenatal period for optimal development both before and after birth. It also helps provide a mother with the resources she requires to compensate for the depletion associated with pregnancy, childbirth, breastfeeding, and caring for a young infant. Postnatal care (PNC) helps in a mother's full physical recovery and ensures her preparedness for a subsequent pregnancy as well as her ability to care for her children. Thus, adequate care before, during, and after childbirth are crucial in reducing the risks of infant and maternal mortality, for promoting maternal and infant health and development, and, indirectly, for promoting the health and development of other living children as well as those yet to be born.

In the YDMCHS, a series of questions pertaining to maternal health care were asked regarding any current pregnancy and each of the live births that occurred during the five-year period preceding the survey.

This chapter focuses on the YDMCHS findings relating to the utilization of maternal care and the quality of maternal care in the Republic of Yemen. It examines a number of indicators of the care mothers receive during the antenatal, delivery, and postnatal periods for all live births that occurred in the five years preceding the interview.

7.1 ANTENATAL CARE

Antenatal care (ANC) can be more effective when it is sought early in the pregnancy, and continues to parturition. Obstetricians generally recommend that ANC visits be made on a monthly basis to the seventh month, fortnightly to the eighth month, and then weekly until delivery. Regular visits allow proper monitoring of the mother and child throughout the pregnancy. If the first ANC visit is made in the third month of pregnancy, this schedule translates to a total of about 12 visits during the pregnancy.

Information based on live births in the five years preceding the interview relates to the remote past and is, therefore, liable to recall errors. However, it provides the best indicator of service provision and of deficiencies therein. Most importantly, it is a guide to the timing of maternal care, a crucial component in determining its effectiveness. Antenatal care results from the YDMCHS, namely, extent of antenatal care, sources of antenatal care, personal reasons for having or not having antenatal care, and extent of tetanus toxoid vaccinations, are discussed below.

Extent of Antenatal Care

Table 7.1 shows the proportion of births who received any antenatal care according to maternal and background characteristics. Interviewers were instructed to record only the provider with the highest qualifications. For about one-fourth of all births, mothers received ANC from a physician, trained nurse, or midwife. For three-fourths of births, mothers received no ANC at all.

Antenatal care declines with the increase of mother's age and in higher birth orders, and increases with the increase in mother's level of education. Greater antenatal care utilization is observed in urban areas and in the southern and eastern governorates than in rural areas and in the northern and western governorates.

Table 7.1 Antenatal care

Percent distribution of births in the five years preceding the survey by source of antenatal care during pregnancy, according to selected background characteristics, Yemen 1991/92

Background characteristic	Antenatal care provider[1]					Number of births
	Doctor	Trained nurse/ Midwife	Traditional birth attendant	No one/ Missing	Total	
Mother's age at birth						
< 20	23.9	3.3	0.3	72.5	100.0	755
20-34	23.3	3.6	0.1	73.0	100.0	5157
35+	18.7	2.6	0.1	78.6	100.0	1509
Birth order						
1	27.2	4.7	0.3	67.7	100.0	885
2-3	22.4	3.9	0.1	73.6	100.0	1784
4-5	21.5	2.7	0.0	75.7	100.0	1660
6+	21.5	3.0	0.1	75.2	100.0	3091
Residence						
Urban	47.3	9.8	0.0	43.0	100.0	1200
Rural	17.6	2.1	0.2	80.1	100.0	6220
Region						
North./West.	21.9	1.5	0.0	76.5	100.0	6423
South./East.	25.6	15.1	0.7	58.6	100.0	998
Mother's education						
Illiterate	20.0	2.3	0.1	77.6	100.0	6791
Literate	33.4	24.4	2.4	39.8	100.0	62
Primary	45.3	10.3	0.4	43.9	100.0	335
More than primary	57.9	17.9	0.3	23.9	100.0	233
All births	22.4	3.4	0.1	74.0	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey.
[1]If the respondent mentioned more than one provider, only the most qualified provider is considered.

Smaller differences in antenatal care utilization exist by demographic characteristics. While about 27 percent of births to mothers under 20 years of age and mothers age 20-34 received ANC from a doctor, trained nurse, or midwife, 21 percent of mothers age 35 years or more did so. Similarly, small differences in ANC utilization exist by birth order. First births are more likely to receive ANC (32 percent) than second or higher order births (24-26 percent).

There are marked differences in antenatal care utilization for births in urban and rural areas. In the five-year period preceding the survey, 4 of 5 births in rural areas did not receive any ANC, compared to only 2 in 5 births in urban areas. Similarly, mothers in the southern and eastern governorates (41 percent) are more likely than mothers in the northern and western governorates (23 percent) to receive antenatal care. Pronounced differentials in ANC are exhibited by mother's level of education. While only 22 percent of births to illiterate mothers received ANC, 56 percent of births to women with primary education, and 76 percent of births to mothers who have attained more than primary education received antenatal care.

Sources of Antenatal Care

Table 7.1 also shows proportion of births for which each provider was consulted for antenatal care by current age of mother, child's birth order, place and region of residence, and mother's level of education. The YDMCHS findings indicate that for women with a live birth in the five years preceding the survey who had antenatal care visits during pregnancies, about 7 in 8 mothers consulted a doctor, while only 1 in 8 consulted a nurse or midwife.

Mother's age and child's birth order do not affect the selection of the medical professional consulted for the pregnancy. For all live births in urban areas in the five-year period preceding the interview 47 percent of the mothers consulted doctors and 10 percent nurses/midwives, or a ratio of 5:1 of doctors to nurses/midwives. The percentage of doctors and nurses/midwives providing ANC services for rural women is 18 and 2 percent, respectively, or a ratio of 9:1. The lower a mother's level of education, the more likely it is she will be seen by a doctor rather than a nurse/midwife. While the ratio of doctors to nurses/midwives is less than 4:1 for women with more than primary education, it is 10:1 for illiterate mothers. The reasons for having antenatal care may explain the greater preference for doctors among certain groups of women.

Reasons for Having or Not Having Antenatal Care

The primary reason women go for an antenatal care visit is complaints during pregnancy. Among women who made one or more ANC visits, 76 percent said they did so because they had a complaint; only 22 percent said they went because it was a routine checkup (see Figure 7.1). With only one-fourth of women receiving antenatal care, it is appropriate to investigate the reasons for not having an ANC visit during pregnancy; these are presented in Figure 7.1. Responses by attenders and non-attenders indicate that a large proportion of women in Yemen consider ANC necessary only when problems occur during pregnancy. Almost one-third of the mothers did not go for ANC because there was no complaint during pregnancy.

Figure 7.1 also suggests that no accessibility, or limited accessibility, in terms of distance or cost, is an important reason for low attendance. One in four births did not receive ANC because the place of care was too far away, while 14 percent did not receive care because services were not available. For almost 10 percent of births cost of services was mentioned as the main reason for not attending antenatal care. Sociocultural reasons, such as the predominance of male doctors as ANC providers, may also contribute to the low utilization of ANC services, but the YDMCHS did not collect information on this issue.

Accessibility of Antenatal Care

The means of transport, the time to reach the antenatal care facility, and waiting time at the facility are three measures of accessibility of services. The data used for measuring ANC accessibility pertains to currently pregnant women who were at least three months pregnant at the time of the interview and who had attended antenatal care. Health facilities and antenatal care clinics are not generally in close proximity to the population using these facilities. Motorized transport is used by almost three-quarters of the mothers, while the remainder walk to the clinics (see Figure 7.2).

Almost one-third of ANC clinic users are able to reach the clinic within 30 minutes, and two-thirds can reach it within two hours. About 29 percent of the pregnant women have to travel at least two hours to receive ANC. The waiting time for those who received ANC in a clinic is less than half an hour for 45 percent of mothers, and less than one hour for 78 percent of mothers. One in 10 mothers had to wait more than two hours to receive antenatal services.

Figure 7.1
Reasons for Attending and Not Attending Antenatal Care

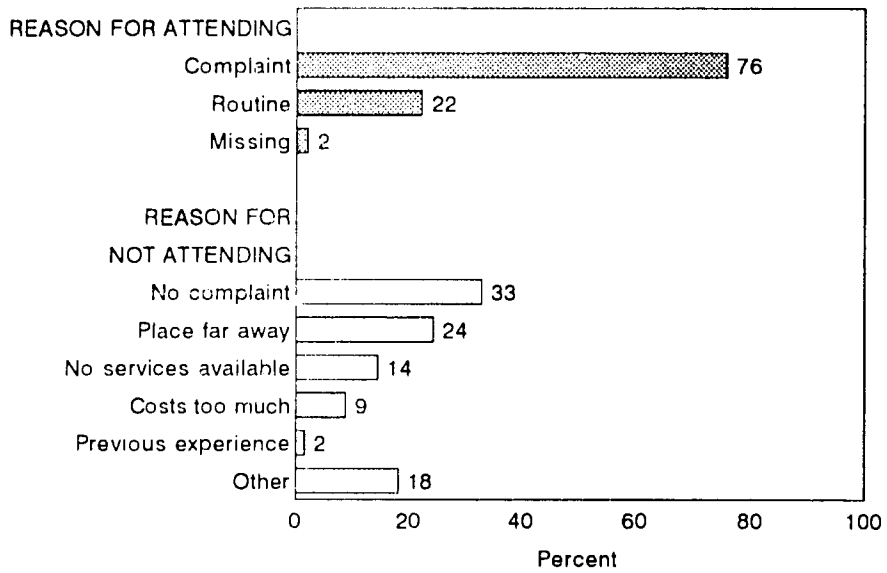

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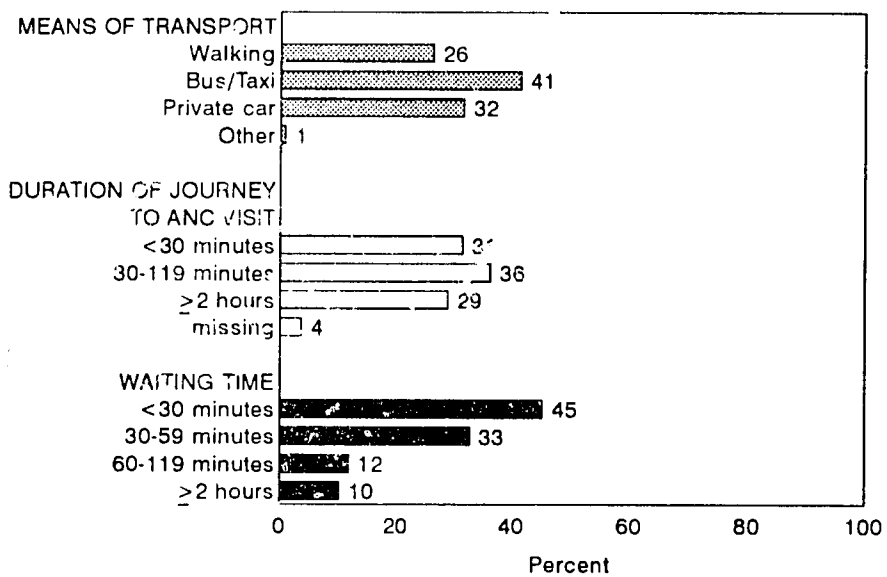
Figure 7.2
Accessibility of Antenatal Care among Currently Pregnant Women



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Health Conditions during Pregnancy

The health complaints reported by women who were pregnant for at least three months at the time of the interview by selected background characteristics are presented in Table 7.2. The table indicates that three of five currently pregnant women have experienced various health problems/conditions during their pregnancy. Twenty-three percent reported swollen ankles and fingers, 47 percent had persistent headaches, 15 percent had high blood pressure, 6 percent had bleeding, and 30 percent had convulsions.

This pattern of health conditions during pregnancy occurs regardless of whether the pregnant woman resides in urban or rural areas or has attended antenatal care. However, health conditions were less common in certain subgroups of women: younger women, women in their first pregnancy, women in the southern and eastern governorates, and more educated women. Most of the pregnant women were not taking any medication. Vitamins were taken by 10 percent, while other medications were taken by 9 percent (data not shown).

Table 7.2 Health conditions during pregnancy

Percentage of women who were pregnant for at least three months at the time of the survey who have specific health conditions associated with their current pregnancy, by selected background characteristics, Yemen 1991/92

Background characteristic	Health condition						Number of women
	Swollen ankles/ fingers	Persistent headaches	High blood pressure	Bleeding	Convul-sions (fits)	No condition	
Age							
< 20	10.6	34.7	5.4	7.2	21.0	56.3	65
20-34	21.8	47.8	15.0	5.5	30.4	39.1	501
35 or older	29.4	48.1	18.9	6.4	32.0	37.5	247
Previous births							
0	9.3	40.5	8.5	8.3	24.4	51.6	100
1-4	21.9	43.5	14.2	4.4	24.2	44.2	313
5+	27.7	51.0	18.1	6.5	36.1	33.8	400
Residence							
Urban	15.4	48.7	12.7	4.8	24.1	39.9	119
Rural	24.5	46.5	15.9	6.1	31.1	40.0	695
Region							
North./West.	25.3	49.3	17.1	6.4	32.6	36.7	714
South./East.	8.1	29.5	3.5	2.7	12.3	63.9	99
Education							
Illiterate	25.0	46.4	16.4	5.9	30.8	39.8	736
Literate	*	*	*	*	*	*	4
Primary	3.0	57.5	6.1	11.5	22.7	38.3	41
More than primary	10.4	39.0	7.8	0.0	26.1	50.1	32
Antenatal care received							
Yes	23.8	45.7	15.0	4.9	28.1	42.5	638
No	21.1	50.9	17.1	9.5	37.3	30.7	175
Total	23.2	46.8	15.4	5.9	30.1	40.0	813

Note: An asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

Tetanus Toxoid Vaccination

Women were asked if they had received a tetanus toxoid vaccination for each of their children born in the five years preceding the survey. Immunity against tetanus is passed on to the baby and protects the child from neonatal tetanus, a common cause of neonatal mortality in developing countries. For full protection, a pregnant woman should receive two doses of the tetanus toxoid during their first pregnancy, a third dose at least a year later or during the subsequent pregnancy, a fourth dose at least a year later or during the subsequent pregnancy, and a fifth dose is thought to provide lifelong protection (World Health Organization, 1987).

For all births in the five years preceding the interview, only 15 percent of mothers received one or more toxoid tetanus injections. Table 7.3 shows that while 10 percent of the births were protected by two or more doses of tetanus toxoid during gestation, 5 percent received the limited protection of just one dose.

Table 7.3 Tetanus toxoid vaccination

Percent distribution of births in the five years preceding the survey, by number of tetanus toxoid injections given to the mother during pregnancy, according to selected background characteristics, Yemen 1991/92

Background characteristic	Number of tetanus toxoid injections					Number of births
	None	One dose	Two doses or more	Don't know/ Missing	Total	
Mother's age at birth						
< 20	82.8	4.8	12.3	0.1	100.0	755
20-34	83.9	5.2	10.5	0.4	100.0	5157
35+	87.6	5.2	7.2	0.0	100.0	1509
Birth order						
1	79.8	5.7	14.3	0.2	100.0	885
2-3	82.5	5.1	12.1	0.3	100.0	1784
4-5	86.2	5.3	8.3	0.2	100.0	1660
6+	86.2	5.0	8.4	0.4	100.0	3091
Residence						
Urban	66.1	10.3	23.1	0.4	100.0	1200
Rural	88.1	4.2	7.4	0.3	100.0	6220
Region						
North./West.	88.1	4.1	7.5	0.2	100.0	6423
South./East.	61.7	12.0	25.8	0.5	100.0	998
Mother's education						
Illiterate	86.9	4.7	8.1	0.3	100.0	6791
Literate	58.6	14.3	27.1	0.0	100.0	62
Primary	67.3	9.1	23.7	0.0	100.0	335
More than primary	48.4	11.7	39.4	0.4	100.0	233
All births	84.5	5.2	10.0	0.3	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey.

Differentials in tetanus toxoid coverage are substantial by mother's age at birth, child's birth order, place of residence, region, and mother's level of education. About 17 percent of younger mothers, under 20 years of age, received at least one dose of tetanus toxoid vaccine, compared to 12 percent of older women age 35 years and above. While 1 in 5 births of parity one were protected by tetanus toxoid immunization, only 1 in 7 children of parity six or higher were protected.

Urban coverage for tetanus toxoid (at least two doses) was three times higher than rural coverage (23 and 7 percent, respectively). The mothers of births in the southern and eastern governorates (26 percent) were more than three times as likely to receive two or more doses of tetanus toxoid during pregnancy than were mothers in the northern and western governorates (8 percent).

The relationship between mother's level of education and immunization with tetanus toxoid vaccine is striking. The YDMCHS findings indicate that more educated women are more likely to receive tetanus toxoid injections than less educated or illiterate women. For all births in the preceding five years, 1 in 3 mothers with primary education, 1 in 2 mothers with more than primary education had received at least one dose of tetanus toxoid, compared to only 1 in 8 of the illiterate mothers. Educated women may have greater accessibility to modern medical care (proximity of services, fewer cultural barriers), or may have a greater understanding of the need and health benefits of vaccinations, or are more able to utilize the services provided.

7.2 DELIVERY CARE

This section examines various aspects of care during labor and delivery. The YDMCHS results include: place of delivery, assistance at delivery, complications during delivery, reasons for not delivering at a health facility, plans for assistance at next delivery, and treatment of umbilical cord and cord stump.

Place of Delivery

Mothers were asked about the place where they had given birth to children born during the five-year period before the survey. The YDMCHS findings indicate that the majority of births (83 percent) occur in the mother's home or in someone else's home. Only 12 percent of deliveries take place in health facilities.

Although the majority of births occur at home, there are noticeable differences between subgroups. Table 7.4 shows that in rural areas, seven in eight deliveries (87 percent) take place at home, compared with 3 in 5 deliveries (62 percent) in urban areas.

Other differentials by age of mother, birth order, region, level of education of the mother, and number of antenatal care visits are observed. Younger women, educated women, and women residing in the southern and eastern governorates are more likely to deliver in health facilities. The proportion of deliveries taking place in health facilities increases with mother's level of education. For example, 56 percent of births to women with more than primary education occur in health facilities, compared to 39 percent at home. Births to illiterate women, on the other hand, are almost ten times more likely to occur at home than in a health facility (86 percent versus 9 percent). First births are twice as likely to be delivered in a health facility as higher order births.

Table 7.4 also indicates that the younger the mother, the more likely it is that the delivery will take place in a health facility. Overall, 13 percent of births to mothers under 20 years occur in health facilities, compared to only 10 percent to births to mothers age 35 years or over. Births to women residing in the southern and eastern governorates also tend to occur more often in health facilities (25 percent) than births to women residing in the northern and western governorates (10 percent).

Table 7.4 Place of delivery

Percent distribution of births in the five years preceding the survey by place of delivery, according to selected background characteristics, Yemen 1991/92

Background characteristic	Public health facility	At home	Other	Missing	Total	Number of births
Mother's age at birth						
< 20	13.4	81.6	0.9	4.0	100.0	755
20-34	11.6	83.3	0.5	4.6	100.0	5157
35+	10.7	83.7	0.7	4.9	100.0	1509
Birth order						
1	20.7	73.6	1.0	4.8	100.0	885
2-3	10.6	84.6	0.5	4.3	100.0	1784
4-5	10.0	84.6	0.7	4.7	100.0	1660
6+	10.5	84.3	0.5	4.6	100.0	3091
Residence						
Urban	33.2	62.2	0.3	4.3	100.0	1200
Rural	7.5	87.2	0.7	4.6	100.0	6220
Region						
North./West.	9.6	85.3	0.6	4.6	100.0	6423
South./East.	24.9	69.8	0.8	4.5	100.0	998
Mother's education						
Illiterate	9.0	85.6	0.6	4.7	100.0	6791
Literate	27.3	71.0	0.0	1.7	100.0	62
Primary	30.7	56.4	0.4	2.5	100.0	335
More than primary	56.0	38.9	0.0	5.1	100.0	233
Antenatal care visits						
None	5.2	88.1	0.6	6.1	100.0	5487
1-3 visits	19.9	79.0	0.9	0.1	100.0	1188
4 or more visits	46.4	52.8	0.3	0.5	100.0	645
Don't know/Missing	39.8	59.7	0.5	0.0	100.0	100
All births	11.6	83.2	0.6	4.6	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey

Women who had contact with health professionals during pregnancy, i.e., received antenatal care, are more likely to deliver at a health facility, compared to women who had no such contact. About 46 percent of births to women who had four or more antenatal care visits were delivered in health facilities, compared to only 5 percent of births to women who had no ANC visits.

Assistance at Delivery

The type of assistance a woman receives during the birth of her child depends on the place of delivery. Women in Yemen are even less likely to have medical assistance for delivery than they are to receive medical care during pregnancy. Table 7.5 shows that births are more likely to be delivered with the assistance of a relative. Almost three-fourths of deliveries in Yemen are assisted by relatives (53 percent) or by *dayas* or traditional birth attendants (19 percent). Data also indicate that births that take place at home are more likely to be delivered without assistance from anyone, whereas, births delivered at health facilities are more likely to be delivered by trained medical personnel (data not shown).

Table 7.5 Assistance during delivery

Percent distribution of births in the five years preceding the survey by type of assistance during delivery, according to selected background characteristics, Yemen 1991/92

Background characteristic	Attendant assisting during delivery[1]							
	Doctor	Trained nurse/ Midwife	Traditional birth attendant	Relative/ Other	No one	Don't know/ Missing	Total	Number of births
Mother's age at birth								
< 20	14.1	5.6	18.4	53.5	4.6	3.8	100.0	755
20-34	10.6	5.2	17.9	54.1	7.6	4.7	100.0	5157
35+	11.0	3.5	20.9	50.2	9.2	5.1	100.0	1509
Birth order								
1	18.9	7.8	17.3	47.0	4.3	4.7	100.0	885
2-3	8.5	5.7	17.8	56.6	6.9	4.5	100.0	1784
4-5	9.3	4.1	19.5	55.3	7.1	4.8	100.0	1660
6+	11.1	4.0	19.0	52.0	9.2	4.8	100.0	3091
Residence								
Urban	28.6	17.5	14.6	30.2	4.6	4.4	100.0	1200
Rural	7.6	2.4	19.3	57.7	8.2	4.7	100.0	6220
Region								
North./West.	10.5	3.2	18.0	55.9	7.7	4.7	100.0	6423
South./East.	14.1	15.4	22.6	35.9	7.0	4.9	100.0	998
Mother's education								
Illiterate	9.5	3.0	18.7	55.6	8.2	4.9	100.0	6791
Literate	16.2	22.6	13.3	44.7	1.5	1.7	100.0	62
Primary	22.3	17.8	21.6	34.9	0.7	2.7	100.0	335
More than primary	36.9	35.3	11.7	11.3	1.3	3.5	100.0	233
Antenatal care visits								
None	5.3	2.1	19.1	58.0	9.1	6.3	100.0	5487
1-3 visits	21.5	7.1	19.8	48.0	3.6	0.0	100.0	1188
4 or more visits	38.1	21.4	13.1	25.3	2.1	0.1	100.0	645
Don't know/Missing	22.8	22.7	9.9	36.1	8.5	0.0	100.0	100
Total	11.0	4.9	18.6	53.2	7.6	4.7	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey

[1]If the respondent mentioned more than one attendant, only the most qualified attendant is considered.

Overall, only 16 percent of births that occurred in the last five years were assisted by medical professionals. This proportion is somewhat higher than the proportion of babies delivered in health facilities (12 percent), which suggests that it is not uncommon for medical professionals to attend deliveries in the home. Doctors attended 11 percent of births, and trained nurses or midwives attended 5 percent.

Eight percent of births were delivered without any assistance. Births to rural women, births to older women, higher order births, births to women with no education, and births to women who had no antenatal care visits are more likely to be delivered without any type of assistance. These characteristics identify women who are at greater risk of dying due to complications occurring during pregnancy and delivery.

Complications during Delivery

Only one percent of births in the five years prior to the survey were delivered by caesarean section. Higher proportions are reported among younger women, educated women, and women residing in urban areas or in the southern and eastern governorates (data not shown).

Table 7.6 indicates that 15 percent of deliveries have complications. The proportion of deliveries with complications increases if the delivery occurs in a health facility or with the assistance of a doctor. One in 4 births in health facilities had complications, and 1 in 3 births assisted by doctors had complications. This seeming anomaly is most likely due to the health care behavior of Yemeni women: they generally seek modern delivery care only if there is a medical problem. Complications are also more frequently reported for first births and by women residing in the northern and western governorates (data not shown).

Table 7.6 Type of delivery

Percent distribution of births in the five years preceding the survey by type of delivery, according to place of delivery and assistance at delivery, Yemen 1991/92

Place of delivery/ Assistance at delivery	Normal	Complicated	Not stated	Total	Number of births
Place of delivery					
Public health	72.3	26.8	0.9	100.0	772
Private health service	70.2	28.4	1.4	100.0	90
At home	84.2	13.8	1.9	100.0	5878
Another home	81.0	17.3	1.7	100.0	294
Other	(78.4)	(21.6)	(0.0)	(100.0)	45
Missing	1.6	0.0	98.4	100.0	341
Assistance at delivery					
Doctor	64.8	34.7	0.5	100.0	818
Trained nurse/midwife	81.4	16.4	2.2	100.0	362
Traditional midwife	87.0	11.6	1.5	100.0	1379
Relative/friend	84.0	14.6	1.5	100.0	2414
Other	84.4	13.3	2.4	100.0	1536
No one	87.7	8.4	3.9	100.0	563
Not stated	3.0	0.1	96.9	100.0	348
Total	78.9	14.9	6.2	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey. Figures in parentheses are based on 25-49 cases.

Reasons for Having Delivery at Home

The YDMCHS collected information on women's reasons for not delivering in a health facility. Table 7.7 presents the reasons given for not delivering at public hospitals or private clinics for births in the five years preceding the survey, by selected background characteristics. The preference for delivering at home is the leading reason (37 percent) for not having delivery in a health facility. Other reasons are: service too far away (24 percent), service not available (10 percent), high cost of delivering in a health facility (9 percent), and premature/sudden delivery (4 percent).

Table 7.7 Reason for not delivering at health facility

Percent distribution of births in the five years preceding the survey that were not delivered at a health facility by reason for not using a health facility, according to selected background characteristics, Yemen 1991/92

Background characteristic	Service not available	Service too far	Costs too much	Premature/ Sudden delivery	Home is better	Other	Missing	Total	Number of births
Mother's age									
< 20	11.9	23.0	4.8	6.1	39.4	10.6	4.3	100.0	653
20-34	9.3	23.4	9.0	4.1	37.4	10.9	5.8	100.0	4557
35+	11.7	25.0	10.4	3.3	34.5	8.8	6.5	100.0	1348
Birth order									
1	10.8	24.3	5.9	6.1	37.9	9.0	6.0	100.0	702
2-3	9.7	23.6	8.0	5.0	37.8	10.6	5.3	100.0	1596
4-5	10.0	24.4	9.6	3.5	36.5	10.6	5.4	100.0	1495
6+	10.1	23.2	9.8	3.5	36.6	10.6	6.1	100.0	2766
Residence									
Urban	7.1	5.3	2.5	9.7	54.0	14.0	7.5	100.0	802
Rural	10.5	26.3	9.8	3.4	34.6	9.9	5.5	100.0	5756
Region									
North./West.	10.2	25.1	10.0	4.2	34.3	10.5	5.6	100.0	5809
South./East.	9.2	12.6	0.1	3.5	57.6	9.5	7.5	100.0	749
Education									
Illiterate	10.3	24.4	9.2	3.8	36.0	10.4	5.8	100.0	6179
Literate	(5.5)	(14.4)	(11.3)	(13.3)	(47.0)	(6.1)	(2.3)	(100.0)	45
Primary	7.3	13.7	1.5	8.8	51.8	11.9	5.0	100.0	232
More than primary	5.8	6.9	3.6	7.5	58.7	8.7	8.8	100.0	102
Total	10.1	23.7	8.9	4.1	37.0	10.4	5.8	100.0	6558

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

"Home is better," was the number one reason women gave for not having delivery in a health facility, for all background characteristics. The preference for birthing at home was the reason stated in more than half of births in urban areas (54 percent) and in the southern and eastern governorates (58 percent); it was also cited for one-third of births in rural areas and in the northern and western governorates (34 percent). There are, however, some findings by residence and region that are expected. Notably, the distance to the health facility or unavailability of services was mentioned for more rural than urban births (37 and 12 percent, respectively). Service availability or accessibility problems were mentioned for one-third of births in the northern and western governorates, and for one-fifth of births in the southern and eastern governorates. Distance was more often mentioned by illiterate mothers than by those who are literate or educated. One in 3 illiterate mothers mentioned distance or unavailability as the reason for not delivering in a health facility, compared to 1 of 5 mothers with primary education and 1 in 8 mothers with more than primary education.

Expected Assistance at Next Delivery

Do women repeat the same maternity care behavior for subsequent pregnancies? In the YDMCHS, a series of questions ascertained the maternal expectations and intentions of currently pregnant women in relation to their impending delivery.

Among women whose last birth in the five-year period before the survey had been attended by a medical professional, 48 percent said they intended to deliver with the assistance of a medical professional.

If the last birth had been attended by a traditional birth attendant, 88 percent said they expected to deliver with the assistance of a traditional birth attendant again (data not shown).

Cutting of Umbilical Cord and Treatment of Cord Stump

Neonatal tetanus is generally caused by unsterile cord- cutting practices or by applying infectious dressings to the umbilical stump. The YDMCHS included questions about cord-cutting practices for babies not born in health facilities. The results indicate that, for births delivered at home, the most widespread method for cutting the umbilical cord is to use a razor or a knife (62 percent of births), followed by an ordinary pair of scissors (27 percent), a medical instrument (3 percent), and other methods (1 percent). For 8 percent of births, respondents did not know how the cord was cut. It is difficult to assess to what extent these instruments may have been contaminated with the tetanus micro-organism. A new razor blade, which was bought for the cutting of the cord and was unpacked just before cutting the cord, is less likely to be infectious than an unsterilized knife or pair of scissors.

A wide range of dressings were used on the cord stump (see Table 7.8). Most common is a hot iron (22 percent); other methods include the application of *kohl* (16 percent), boiled oil (6 percent), and putting a cotton dressing on the stump (4 percent). The practice of covering the stump with mud, potentially the most dangerous practice in terms of the risk of tetanus infection, was rarely mentioned (1 in 500 births).

Differentials in treatment of the cord stump by place of residence, region, and level of education are substantial. Practices in the southern and eastern governorates vary a great deal from those in the northern and western governorates. While the use of a hot iron is the most common method in the northern and

Table 7.8 Treatment of cord stump

Percent distribution of births in the five years preceding the survey that were not delivered at a health facility by type of treatment of cord stump, according to selected background characteristics, Yemen 1991/92

Background characteristic	Cotton	Ground coffee	Cover with flour	Cover with mud	Use hot iron	Boiled oil	Cover with egg	Kohl	Other	Don't know/ Missing	Total	Number of births
Mother's age												
< 20	5.3	0.1	0.0	0.4	15.0	8.8	0.2	18.8	42.8	8.5	100.0	653
20-34	4.6	0.0	0.1	0.3	21.1	6.1	0.2	15.8	44.0	7.9	100.0	4557
35+	3.2	0.1	0.1	0.4	26.6	5.2	0.3	17.0	38.6	8.6	100.0	1348
Birth order												
1	6.0	0.1	0.1	0.5	19.2	6.9	0.3	16.2	42.2	8.5	100.0	702
2-3	4.2	0.0	0.0	0.2	20.5	6.1	0.3	15.9	44.4	8.2	100.0	1596
4-5	3.5	0.0	0.0	0.0	21.9	5.9	0.2	17.6	42.8	8.0	100.0	1495
6+	4.5	0.0	0.1	0.4	22.8	6.1	0.1	16.1	41.9	8.0	100.0	2766
Residence												
Urban	14.4	0.1	0.0	0.6	10.7	5.5	0.0	9.0	51.1	8.6	100.0	802
Rural	3.0	0.0	0.1	0.2	23.2	6.2	0.2	17.4	41.6	8.1	100.0	5756
Region												
North./West.	4.0	0.0	0.0	0.3	23.8	5.5	0.1	16.5	41.6	8.1	100.0	5809
South./East.	7.1	0.3	0.4	0.1	4.9	10.9	0.8	15.7	51.8	8.0	100.0	749
Mother's education												
Illiterate	3.5	0.0	0.1	0.3	22.3	6.1	0.1	16.8	42.5	8.3	100.0	6179
Literate	8.8	0.0	0.0	0.0	16.0	7.6	0.0	9.0	56.3	2.3	100.0	45
Primary	16.7	0.0	0.4	0.0	11.6	4.4	1.2	12.3	48.2	5.2	100.0	232
More than primary	27.7	0.0	0.0	0.0	8.8	11.1	0.0	5.7	38.8	7.9	100.0	102
Total	4.4	0.0	0.1	0.3	21.6	6.2	0.2	16.4	42.8	8.1	100.0	6558

western governorates (24 percent), it was used for only a fraction of births in the southern and eastern governorates (5 percent). Kohl was used for the same proportion of births in both regions (16 percent), while boiled oil (11 percent), and cotton dressings (7 percent) were more common in the southern and eastern governorates. Urban mothers use cotton for treating the cord stump more often than rural mothers, while rural mothers use a hot iron, kohl, and boiled oil more often than urban mothers.

Educated women use cotton more often than women with less education. The proportion using cotton for dressing the cord stump increases from only 3 percent of births to illiterate women, to 28 percent of births to women with primary education or more. The practice of using a hot iron is more prevalent among illiterate women (22 percent) and decreases to 9 percent as the level of education increases. No differentials in treatment of the cord stump by age of the woman or birth order were observed.

7.3 POSTNATAL CARE

This section examines the type of postnatal care received by women who had births in the five years preceding the survey. Postnatal care usually includes a health checkup for the mother and may be combined with a pediatric checkup for the baby. The findings of the YDMCHS on postnatal care are presented in Table 7.9. Only about 6 percent of Yemeni mothers receive postnatal care; most of these women obtain their care from a doctor.

Table 7.9 Postnatal care

Percent distribution of births in the five years preceding the survey by source of postnatal care, according to selected background characteristics, Yemen 1991/92

	Postnatal care provider[1]							
Background characteristic	Doctor	Trained nurse/ Midwife	Traditional birth attendant	Other	No one	Missing	Total	Number of births
Mother's age at birth								
< 20	4.0	0.6	0.9	0.5	89.1	4.9	100.0	755
20-34	4.5	0.6	0.3	0.8	87.5	6.3	100.0	5157
35+	4.6	0.4	0.4	0.0	85.8	8.7	100.0	1509
Birth order								
1	5.1	1.1	0.6	0.6	86.3	6.3	100.0	885
2-3	3.3	0.8	0.8	1.1	87.8	6.2	100.0	1784
4-5	4.3	0.3	0.2	0.7	87.9	6.6	100.0	1660
6+	5.1	0.4	0.2	0.3	87.0	7.1	100.0	3091
Residence								
Urban	12.2	1.3	0.6	0.3	80.6	5.0	100.0	1200
Rural	3.0	0.4	0.4	0.7	88.6	7.0	100.0	6220
Region								
North./West.	4.5	0.4	0.2	0.6	87.6	6.7	100.0	6423
South./East.	4.5	1.6	1.6	0.4	85.6	6.2	100.0	998
Mother's education								
Illiterate	3.8	0.4	0.3	0.6	87.9	6.9	100.0	6791
Literate	12.9	2.0	2.4	0.0	81.0	1.7	100.0	62
Primary	10.4	1.6	1.3	0.3	81.8	4.7	100.0	335
More than primary	13.2	3.3	0.0	0.2	79.3	4.0	100.0	233
Total	4.5	0.6	0.4	0.6	87.3	6.7	100.0	7421

Note: Figures are for births in the period 1-59 months preceding the survey.
[1]If the respondent mentioned more than one provider, only the most qualified provider is considered.

CHAPTER 8

CHILD FEEDING AND WEANING PRACTICES

Both mother and child are affected by infant feeding. The frequency, duration and amount of feeding affect the child's nutritional status, which in turn influences child survival. The breastfed baby may itself become vulnerable when it is weaned, especially if weaning is abrupt and occurs in circumstances where the supplementation that is provided is inadequate or unsuitable. As mentioned in Chapter 5, through postpartum amenorrhea, breastfeeding also affects the mother's risk of pregnancy; thus, breastfeeding is an important factor in spacing births in societies where use of contraception is uncommon.

This chapter examines infant feeding practices for children born in the five years preceding the survey to women interviewed for the YDMCHS. Children whose mothers were not interviewed are not included in these analyses. A number of topics related to infant feeding and weaning practices are considered, including: prevalence, pattern, and duration of breastfeeding, introduction of supplemental foods, use of a bottle with a nipple for feeding liquids or semisolid foods, age at weaning, manner in which weaning takes place, and the reason for weaning.

8.1 PREVALENCE OF BREASTFEEDING

As in most societies, breastfeeding is widely practiced in Yemen: 94 percent of last births and 91 percent of all births in the five years preceding the survey were breastfed (see Table 8.1). No notable differences in breastfeeding practices are observed, according to mother's age or urban-rural residence, and uniformly high proportions of mothers initiate breastfeeding regardless of level of education.

Table 8.2 presents the differentials in breastfeeding for last births and all births by mother's age and birth order. Among all births, 87 percent of first births and 91-92 percent of higher order births are breastfed. Among last births, a slightly higher proportion are breastfed (92-97 percent).

The tendency for a slightly lower proportion of first births to be breastfed is seen in the two age groups for which comparisons can be made for all births. For example, for mothers under 25, the proportion of first births who were breastfed is 88 percent. For second order births, the proportion breastfed is 93 percent, and for third and fourth order births it is 95 percent. For last births to women under 25, the breastfeeding rates are 92 percent for first order births and 96-97 percent for higher order births.

8.2 REASONS FOR NOT BREASTFEEDING

Table 8.3 indicates that the main reasons for not breastfeeding children are similar for last births and all births in the total sample of children (see columns 5 and 6). The death of a child is the most important single reason for not breastfeeding a child among all births and last births (28 percent). But, mother being sick (18-19 percent) and mother having no milk or insufficient milk (21-23 percent) together account for around 40 percent of the reasons cited for not breastfeeding a child. Five percent of children were not breastfed because of breast or nipple problems.

Table 8.1 Prevalence of breastfeeding by background characteristics

Among children born in the five years preceding the survey, the percentage of last births and all births who were breasfed, by age of mother and selected background characteristics, Yemen 1991/92

Background characteristic	Mother's age					Total	Number of births
	15-19	20-24	25-29	30-39	40-49		
LAST BIRTHS							
Residence							
Urban	93.0	96.8	92.5	92.9	90.7	93.2	694
Rural	96.1	94.0	95.5	94.5	92.8	94.5	3460
Mother's education							
Illiterate	95.0	94.9	94.9	94.1	92.5	94.2	3756
Literate	*	*	*	*	*	(99.0)	40
Primary	95.5	93.0	95.3	95.7	*	94.7	205
More than primary	100.0	(91.1)	95.9	(94.9)	*	94.8	153
Total	95.5	94.5	95.0	94.2	92.6	94.3	4154
ALL BIRTHS							
Residence							
Urban	89.6	92.7	90.8	89.5	85.4	90.1	1200
Rural	94.6	90.7	91.9	90.7	90.1	91.1	6220
Mother's education							
Illiterate	93.5	91.2	91.5	90.4	89.6	90.8	6791
Literate	*	*	(100.0)	(92.3)	*	(95.7)	62
Primary	92.5	92.0	93.1	93.0	*	92.7	335
More than primary	*	85.4	93.1	93.7	*	91.6	233
Total	93.6	91.1	91.7	90.6	89.6	90.9	7421

Note: Table is based on children born 0-59 months before the survey whether living or dead at the time of interview. Figures in parentheses are based on 25-49 cases; an asterisk (*) indicates fewer than 25 cases and has been suppressed.

Table 8.2 Prevalence of breastfeeding by birth order

Among children born in the five years preceding the survey, the percentage of last births and all births who were breastfed, by age of mother and birth order, Yemen 1991/92

Birth order	Age of mother 15-24	25-34	35-44	45-49	Total	Number
LAST BIRTHS						
1	91.9	90.4	*	NA	91.6	449
2	96.8	96.0	*	*	96.6	425
3-4	96.4	95.9	92.4	*	95.4	954
5-6	(96.9)	95.2	95.1	(88.1)	95.0	873
7+	*	93.6	93.3	91.7	93.2	1453
Total	94.8	94.8	93.7	90.6	94.3	4154
ALL BIRTHS						
1	88.3	85.8	*	NA	87.3	886
2	92.8	90.0	(86.1)	*	91.1	879
3-4	95.3	92.6	86.1	*	92.2	1761
5-6	(93.4)	92.4	91.6	85.5	91.9	1600
7+	*	91.3	90.6	89.6	90.7	2294
Total	91.6	91.4	90.2	88.3	90.9	7421

Note: Table is based on children born 0-59 months before the survey whether living or dead at the time of interview. Last twins are considered of the same birth order.
Figures in parentheses are based on 25-49 cases; an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.
NA = Not applicable

Table 8.3 Reasons for not breastfeeding

Percent distribution of last births and all births in the five years preceding the survey who were not breastfed by reason for not breastfeeding, according to place of residence, Yemen 1991/92

Reason for not breastfeeding	Urban Last births[1]	Urban All births	Rural Last births	Rural All births	Total Last births	Total All births
Child sick	7.8	8.9	5.0	3.0	5.5	4.9
Child died	12.6	22.5	32.0	29.5	28.2	28.3
Child refused	20.6	18.6	11.3	13.7	13.1	14.6
Mother sick	18.8	11.5	19.3	19.3	19.2	17.9
No/insufficient milk	20.1	21.3	23.2	21.0	22.6	21.0
Breast/nipple problem	3.6	4.5	4.7	5.3	4.5	5.1
Other	12.2	8.3	1.1	1.6	3.3	2.8
Not stated	4.4	4.5	3.4	5.7	3.6	5.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of never-breastfed children	29	65	116	295	144	360

[1]Figures are based on fewer than 50 cases

8.3 BREASTFEEDING PATTERNS

Prevalence of breastfeeding represents only one facet of the nutritional, health, and fertility equation. Another facet includes the pattern of breastfeeding. Breastfeeding reduces the likelihood of conception during the extended period of amenorrhea which follows delivery. Mothers with children under five who were not yet weaned, were asked about the frequency of breastfeeding during the daylight hours and between sunset and sunrise. Another question asked about general feeding practices was whether the child was breastfed whenever he/she wanted or according to a fixed schedule. Demand feeding is assumed to result in more frequent sucking than scheduled feeding, thereby affecting duration of amenorrhea (see current status and postpartum amenorrhea in section 8.5).

Table 8.4 shows the percent distribution of children who are still breastfed by feeding pattern (on demand or according to a fixed schedule). Almost all children under five who were not weaned at the time of the survey were breastfed on demand (94 percent on demand only plus 4 percent on both demand and schedule) and only 1 percent exclusively on schedule. Except for differences by mother's education, the differentials by area of residence and region are small. Over 90 percent of children whose mothers have no formal education or only primary education were fed on demand only but approximately 80 percent of children whose mothers have more than primary education were fed on demand only. Eight percent of children of mothers with more than primary education were breastfed at fixed times only, or according to a schedule, while 13 percent had breastfeeding on demand as well as on schedule -- probably scheduled feeding during the day and feeding on demand at night. Since only one percent of all children who were breastfed were breastfed on a fixed schedule, the number of cases are not enough to meaningfully analyze the daytime and nighttime feeding patterns separately.[1]

Table 8.4 Breastfeeding patterns

Percent distribution of last births in the five years preceding the survey who are currently being breastfed by feeding pattern, according to selected background characteristics, Yemen 1991/92

Background characteristic	Breastfeeding pattern: On demand	On schedule	Both	Missing	Total	Number of births
Residence						
Urban	93.0	2.2	4.3	0.6	100.0	310
Rural	94.3	1.0	3.9	0.8	100.0	1917
Region						
North./West.	94.3	1.1	4.1	0.5	100.0	1957
South./East.	92.6	1.6	3.2	2.6	100.0	270
Mother's education						
No schooling	94.7	0.9	3.7	0.7	100.0	2064
Primary	90.4	3.2	5.1	1.3	100.0	114
More than primary	78.6	8.3	13.1	0.0	100.0	50
Total	94.1	1.2	4.0	0.7	100.0	2227

[1]For only one in seven children a numerical response was given to the question on number of feedings during the day (night). The mean number of feedings is 4 for daytime and 3.6 for nighttime, respectively. The mean varied little by residence, region or education (daytime means: 3.9 to 4.2; the nighttime mean for children of women with more than primary education was 3.3, the means for other categories of education, residence and regions ranged between 3.5 and 4.0). The average number of feedings for 24 hours ranged between 6.1 to 6.9 by various background characteristics, with an overall mean of 6.7.

8.4 SUPPLEMENTATION PRACTICES

Supplementation practices are examined in two ways. First, the age at which various supplementary foods are introduced is studied. Second, supplementation practices among children who are currently breastfed are analyzed.

Initiation of Supplementation

After 4-6 months of age, breast milk only is not sufficient for a child and the introduction of supplementary food is required. The questions on supplementation in the YDMCHS pertain to three kinds of food: powdered milk, animal milk (cow, goat, etc.), and solid or mushy food. Each woman who had a child in the five years preceding the survey was asked if she ever gave each of the three supplementary foods to her child on a regular basis. If she had; she was further asked, "How old was the child when you started giving it on a regular basis?" These questions were not asked about children who died before breastfeeding could be started. The questions on supplementation are retrospective and provide information about age at which each food was started (if started). It should be noted that supplementation are not mutually exclusive, that is, some infants may be given more than one supplement at any stage of their childhood.

Table 8.5 shows the proportion of children under five who were given powdered milk, animal milk, or solid and mushy food; and the percent distribution of those who were given these foods by age at which they started receiving supplementation. The analysis pertains not only to births who were breastfed, but also to those who were not breastfed for reasons other than the child's death. Less than half (44 percent) of children received powdered milk, one-fourth received animal milk, and almost two-thirds were fed solid or mushy food on a regular basis. Other milk is introduced early as supplementation. Almost one-third of births were given powdered milk and almost 1 in 7 children were given animal milk before 4 months of age. Animal milk or powdered milk is rarely introduced after six months of age. Almost 4 in 10 children were given solid food by six months of age, and another 17 percent were initially fed solid food at age 7-11 months.

Table 8.5 Starting age for supplementary food

Percentage of children born in the five years preceding the survey who were given powdered milk, animal milk, solid or mushy food by age of the child when supplementation was started, Yemen 1991/92

	Age of child when supplementation was started								
Supplementation	0-3	4-6	7-11	12-17	18-23	24-59	Food not given[1]	Total	Number of children
Powdered milk	31.2	7.6	2.6	1.8	0.3	0.2	56.3	100.0	7308
Animal milk	14.6	4.7	1.4	1.7	0.3	0.4	77.0	100.0	7308
Solid or mushy food	7.2	30.1	17.4	8.9	0.9	0.9	34.7	100.0	7308

Note: Table is based on children born 0-59 months before the survey but excludes children who were not breastfed because child died before breastfeeding could begin.
[1]Includes cases for which information was missing.

Current Supplementation

In addition to collecting information on the age at which powdered milk, animal milk, and solid or mushy food were first given, respondents were asked, for each child under five, if the child was being given various types of foods and drinks. In this analysis, information on currently breastfed children is used and the supplementary foods included separately in the questionnaire are grouped into five broad categories: *plain water; milk* (fresh full cream milk, pasteurized bottle milk, canned/powdered milk); *other liquids* (juices, sugar water, rice water, herbal drinks); *baby food* (homemade or preserved): and *food made for the family*.

Table 8.6 shows the percentage of currently breastfed children who receive various categories of supplementation, by area of residence. The children who died, who were not breastfed, and those who have been weaned are excluded from this analysis. The supplementation categories are not exclusive. For example, a child who is given milk may also be receiving baby food.

Over ninety percent of children over the age of three months are given water. Examining supplementation of breast milk by other types of liquids and foods after the age of three months in the table, it can be noted that almost half of the children are given milk, 3 in 10 receive other liquids, and one-fifth are fed baby food. Family food is generally introduced after six months of age; half of children 7-11 months and over four-fifths of children 12-17 receive breast milk and family food. As children grow older, family food is given to an even higher proportion of children (83-87 percent).

Table 8.6 Food supplementation

Percentage of children born in the five years preceding the survey who were being breastfed and given specific types of liquids and food by current age and place of residence, Yemen 1991/92

Supplementation/ residence	Age of child (months)						Total percent
	0-3	4-6	7-11	12-17	18-23	24-59	
Water							
Urban	81.6	94.7	99.1	96.2	100.0	96.3	93.9
Rural	74.7	91.6	96.5	97.5	97.0	99.4	91.9
Total	75.7	92.0	96.8	97.3	97.3	99.0	92.2
Milk							
Urban	44.0	52.4	50.0	51.1	46.0	54.7	49.5
Rural	36.6	46.7	55.5	51.5	49.4	48.0	48.1
Total	37.7	47.5	54.7	51.5	49.0	49.0	48.3
Other liquids							
Urban	46.7	61.4	64.1	47.3	49.8	77.9	56.8
Rural	17.7	23.4	28.7	33.3	33.3	32.3	27.4
Total	22.0	28.7	33.6	35.4	35.0	38.6	31.5
Baby food							
Urban	15.9	42.7	61.5	43.8	37.7	45.8	41.4
Rural	4.0	15.6	22.2	21.9	19.6	17.4	16.7
Total	5.7	19.4	27.6	25.3	21.5	21.4	20.1
Family food							
Urban	0.0	19.6	61.8	82.7	85.6	87.3	50.5
Rural	4.2	15.1	50.2	76.3	82.6	86.4	47.5
Total	3.6	15.7	51.8	77.3	82.9	86.5	47.9

The major difference in feeding practices of children by area of residence is the introduction of liquids (other than water) and baby food. Around two-thirds of children over three months are given other liquids in urban areas while in rural areas only one-fourth receive juice, sugar water, rice water, or herbal drink. Also, it is much more common in urban areas to supplement breast milk with baby food at an early age (4-6 months); 6 of 10 children age 7-11 are given baby food. As children grow older, and family food is given more often, the proportion receiving baby food decreases. Baby food is less common in rural areas, where at most 2 in 10 breastfed children are also given baby food.

Bottlefeeding

Supplementary food may be given to a child with a spoon, fed by hand or given in a bottle with nipple. Bottlefed infants are at a disadvantage compared to the breastfed children, even when conditions are otherwise favorable. Bottlefeeding provides some nutritional benefits to children, but in circumstances in which sanitary conditions are poor, for example, when clean water is not consistently available or the feeding bottle and nipple are not properly sterilized, bottlefeeding brings the added risk of contracting diarrhea or other diseases.

Table 8.7 shows the percentage of children under five who were ever bottlefed (including those currently bottlefed) and also the percent distribution of those who were ever bottlefed by age at which bottlefeeding was initiated. Differentials in bottlefeeding are also present in the table. The use of a bottle with a nipple is quite popular in Yemen. More than half (52 percent) of children under five are bottlefed. The proportion of bottlefed children is higher in urban areas and in the southern and eastern governorates (around two-thirds of children) than in rural areas or the northern and western governorates (almost one-half). The practice of using a bottle with a nipple for feeding children increases with increase in mother's education. One-half of children whose mothers have no formal education are bottlefed, whereas 6 in 10 and 7 in 10 of those whose mothers have primary and more than primary education, respectively, are bottlefed.

Table 8.7 Bottlefeeding

Percentage of living children under five years who were fed with a bottle with a nipple and the percent distribution of bottlefed children by age at which bottlefeeding was initiated, according to selected background characteristics, Yemen 1991/92

Background characteristic	Percentage bottlefed	Age at which bottlefeeding was initiated (months)				Missing age/ Don't know	Total
		0-2	3-5	6-11	12-59		
Residence							
Urban	64.7	65.9	16.1	12.4	4.2	1.3	100.0
Rural	49.2	67.0	15.7	10.2	5.7	1.4	100.0
Region							
North./West.	49.2	64.1	17.0	11.6	5.8	1.4	100.0
South./East.	67.9	78.7	10.0	6.4	3.6	1.4	100.0
Mother's education							
No schooling	50.4	66.8	15.9	10.6	5.2	1.5	100.0
Primary	60.8	65.4	14.5	11.3	8.4	0.3	100.0
More than primary	72.7	68.4	14.6	10.3	4.4	2.3	100.0
Total	51.8	66.8	15.8	10.7	5.4	1.4	100.0

Bottlefeeding starts early in Yemen. Of the children bottlefed, around two-thirds started feeding from a bottle before reaching the age of three months, and around 16 percent started bottlefeeding between three and five months of age. The proportion of children who were first given a bottle after the first year, is very low (5 percent).

Although there are some differences in the practice of bottlefeeding by background characteristics, the major difference for introduction of a bottle before three months of age is between the regions. Not only is the proportion of children who are bottlefed higher in the southern and eastern governorates than in the northern and western governorates, but the proportion of children who are bottlefed before three months of age is also higher for this group (around 80 percent).

8.5 DURATION OF BREASTFEEDING

Mean and Median Duration of Breastfeeding

To estimate duration of breastfeeding, the P/I (prevalence/incidence ratio) method has been used. The total number of women still breastfeeding (prevalence) is divided by the average number of births per month over the month period (incidence). This ratio can be used for estimating mean duration of breastfeeding by assuming a constant number of births occurring per month over the three years preceding the survey. Table 8.8 shows that the mean duration of breastfeeding among Yemeni women, 16.8 months, varies little by mother's age and shows no discernable pattern. The mean duration of breastfeeding varies by 2.0 and 2.5 months between regions and between urban and rural areas, respectively. The means are lowest for women in the southern and eastern governorates (15.1) and in urban areas (14.6) as shown in Figure 8.1.

Table 8.8 Duration of breastfeeding

For births in the five years preceding the survey, the mean, median, quartiles and trimean of duration of breastfeeding, by selected background characteristics, Yemen 1991/92

Background characteristic	Mean	First quartile	Median	Third quartile	Trimean	Number of children
Mother's age						
< 20	17.3	5.2	14.4	18.0	12.5	216
20-24	16.6	8.1	13.6	21.4	14.4	783
25-29	16.4	8.7	15.2	21.9	15.3	1333
30-34	17.2	11.0	18.5	23.4	17.6	895
35-39	17.1	8.4	18.4	23.6	16.8	796
40-49	16.6	6.3	16.1	24.8	15.7	629
Residence						
Urban	14.6	5.5	13.7	20.8	13.3	744
Rural	17.2	9.1	16.2	23.1	16.1	3908
Region						
North./West.	17.0	8.6	16.4	23.2	16.0	4027
South./East.	15.1	7.5	13.4	20.4	13.7	625
Total	16.8	8.4	15.9	22.8	15.7	4652

Note: The mean is calculated using the prevalence incidence method and births in 0-35 months period preceding the survey.

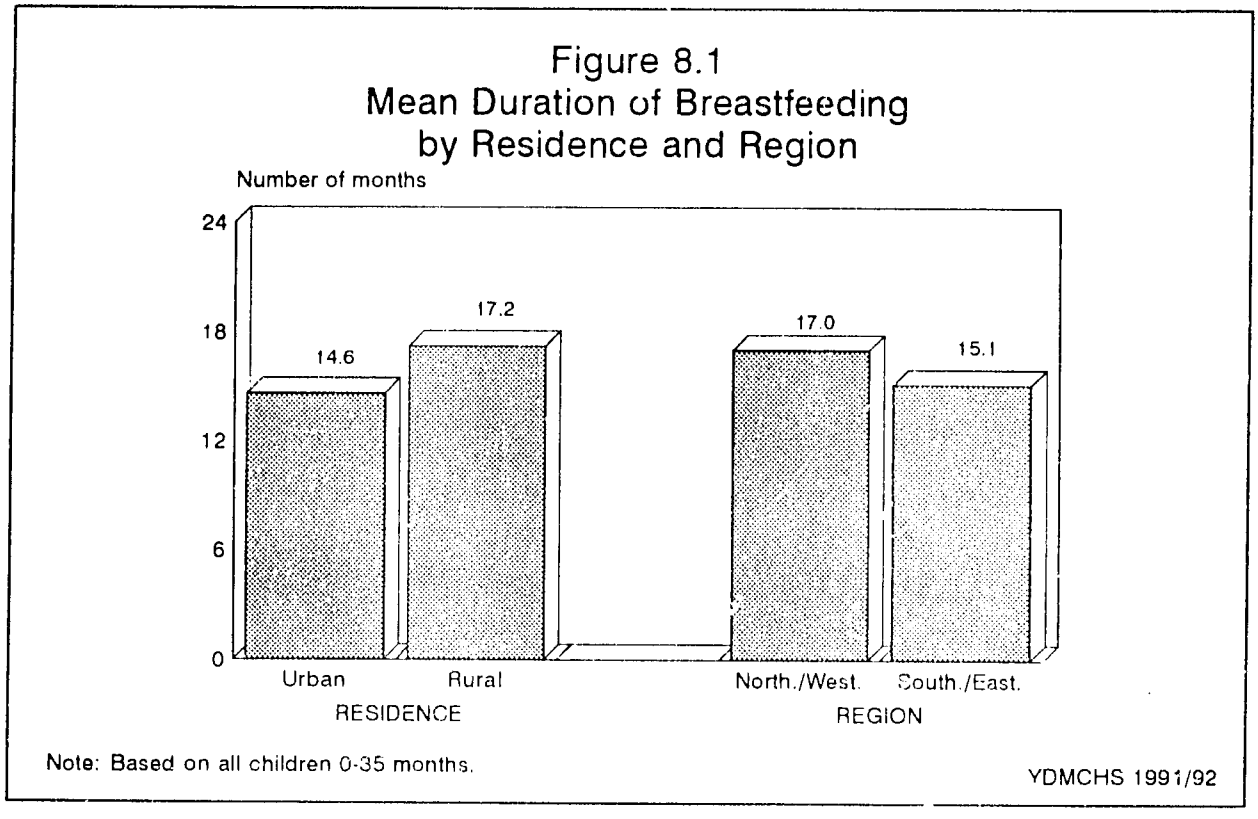


Figure 8.1
Mean Duration of Breastfeeding
by Residence and Region

The median duration of breastfeeding may be estimated using the current status method (Ferry, 1981). In this method the proportion of surviving last births who are still breastfed are tabulated by current age of child. The values corresponding to the first, second (which is the median), and third quartiles and the trimean (the average of the three quartiles) are also provided in Table 8.8.

The results in the table indicate that by age 8.4 months one-quarter (first quartile) of births stopped receiving mother's milk and 75 percent (third quartile) had been breastfed for less than 23 months. The median duration of breastfeeding is 15.9 months, that is, almost one month less than the mean calculated by the P/I method. The median duration of breastfeeding is higher for children in rural areas and in the northern and western governorates. Differentials in the median duration of breastfeeding are very similar to differentials in the mean duration of breastfeeding.

Current Status and Postpartum Amenorrhea

Table 8.9 presents the proportions of births for which the mothers were still breastfeeding at the time of the survey. The table shows that 71 percent of children in the age group 10-11 months were still being breastfed, and almost one-third of those approaching their second birthday continued to be breastfed.

Table 8.9 Breastfeeding and amenorrhea

Percentage of births for which the mothers are breastfeeding and are postpartum amenorrheic by number of months since birth, Yemen 1991/92

Months since birth	Breast-feeding	Amenor rheic	Number of births
< 2	89.7	89.8	216
2-3	90.5	71.5	274
4-5	84.7	57.7	285
6-7	80.7	49.2	281
8-9	73.3	36.6	314
10-11	70.6	36.6	281
12-13	63.2	24.6	284
14-15	58.4	24.6	222
16-17	43.5	12.7	195
18-19	42.8	13.1	348
20-21	35.3	9.3	183
22-23	31.3	6.7	180
24-25	17.9	4.0	323
26-27	15.0	4.3	236
28-29	6.9	3.4	231
30-31	9.5	2.4	312
32-33	9.4	2.9	241
34-35	11.4	2.9	211
36+	1.4	0.5	2745
Total	30.3	16.3	7362
Median	15.9	6.1	-
Mean	17.0	9.4	-
Prevalence/ Incidence Mean	10.7	5.8	-

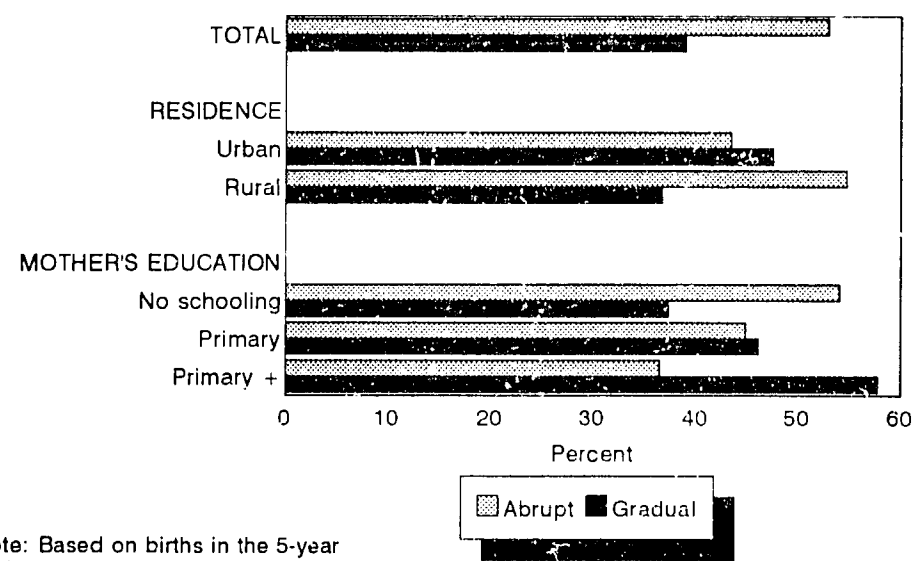
Postpartum amenorrhea, as a factor in the insusceptibility of woman to pregnancy, has been discussed in Chapter 5. It was shown that around 90 percent of mothers are amenorrheic until the second month after delivery (see also Table 8.9). The proportion who are amenorrheic remains high (37 percent), even for mothers who delivered 19-11 months preceding the survey. Table 8.9 presents data on both breastfeeding and amenorrhea and shows a positive association between them: breastfeeding tends to suppress the return of menstruation following a birth. Breastfeeding, however, does not provide reliable protection against conception after the first few months. For example, the proportion of children whose mothers are amenorrheic is only half that of children who are being breastfed at 10-11 months and is less than one-quarter of the proportion still being breastfed at 20-21 months.

8.6 WEANING OF CHILDREN

Weaning Practices

Respondents were asked, for children born and weaned in the five years preceding the survey, whether the child was weaned abruptly or gradually. For children who were breastfed until they died, the question was not asked because weaning did not occur. Figure 8.2 shows the pattern of weaning of all births and indicates that, for the majority of children (58 percent), weaning occurs abruptly. The manner of stopping breastfeeding differs by mother's educational level and place of residence. Educated mothers are more likely to wean their children gradually than less educated mothers; 4 of 10 children whose mother had a primary level of education were weaned in an abrupt manner, while 6 of 10 children whose mothers were illiterate were weaned abruptly (see Figure 8.2). The difference by area of residence is less pronounced. The proportion of children who were weaned abruptly is 48 percent in urban areas and 60 percent in rural areas.

Figure 8.2
Pattern of Weaning
by Selected Background Characteristics



Note: Based on births in the 5-year period preceding the interview.

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Weaning by Third Month and Sixth Month

Are there differences in early weaning of children? Early weaning is examined here as weaning by the third or sixth month after birth. Table 8.10 shows the proportion of all births and of last births who were weaned by three months and by six months. The analysis does not include children who were breastfed until they died. Table 8.10 shows that 10 percent of last births were weaned by three months (23 percent by six months). Most children in Yemen are breastfed for more than three months; only 8 percent of all births were weaned by three months and 21 percent by six months.

Weaning of children within the first three months of life differs by mother's age and whether all or last live births are considered. For births to women age 15-24, the proportion of all births who were breastfed for less than three months is around 10 percent and around 15 percent for last births; thereafter, as age of mother increases, these proportions drop. For example, around 7 percent of children were weaned by three months by mothers age 30-39, indicating earlier weaning among younger mothers.

Table 8.10 Age at weaning

Among children born in the five years preceding the survey who were breastfed and weaned the percentage of children weaned under 3 months and under 6 months of age, according to selected background characteristics, Yemen 1991/92

	Weaned < 3 months		Weaned < 6 months	
Background characteristic	Last birth	All births	Last birth	All births
Mother's age				
15-19	14.4	11.4	29.7	28.2
20-24	14.7	9.5	33.0	26.1
25-29	12.8	9.8	28.2	24.0
30-39	6.8	7.3	18.1	17.7
40-49	7.4	6.2	15.4	15.5
Birth order				
1	20.1	13.8	36.7	30.3
2	9.5	8.2	21.9	20.9
3-4	8.9	7.7	22.5	20.3
5-6	10.3	7.7	23.2	18.6
7+	6.9	7.1	18.0	18.6
Residence				
Urban	12.8	11.3	32.0	29.5
Rural	9.1	7.7	20.3	18.9
Mother's education				
No schooling	8.6	7.6	20.2	19.1
Primary	14.9	11.3	33.9	31.2
More than primary	21.2	21.1	43.6	41.9
Total	9.8	8.3	22.7	20.7

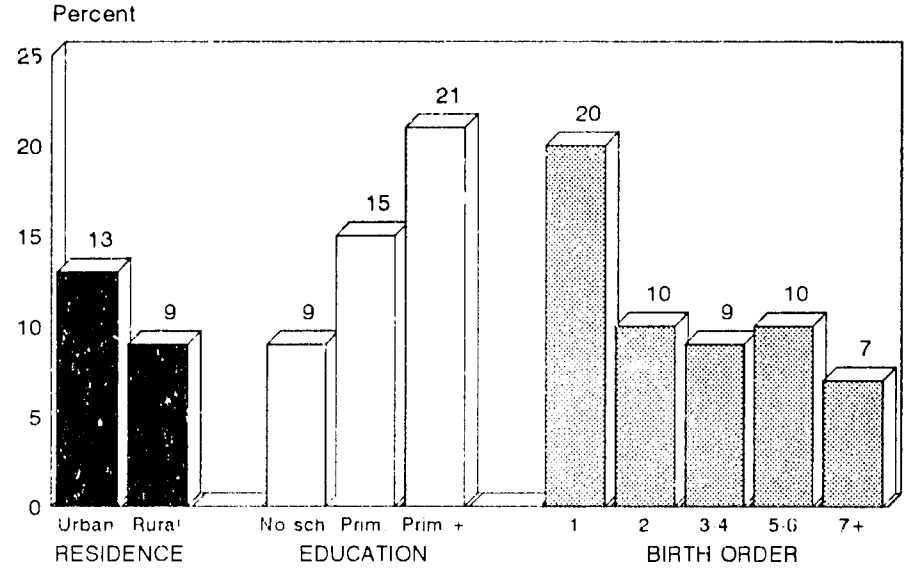
Note: Excludes children who were not breastfed and who were breastfed until they died.

The differentials in weaning under three months for both last and all births can be seen in Table 8.10. Differentials in early weaning by birth order for last births are also shown in Figure 8.3. First order births are more likely to be weaned early. Twenty percent of all first order births and 14 percent of first order births among last births were breastfed for only up to three months. These proportions drop precipitously, to around 10 percent for all second order births, and to 8 percent for last births.

Table 8.10 also shows that a slightly higher proportion of children stop receiving mothers' milk within three months after birth in urban areas (13 percent of all births and 11 percent of last births), compared to rural areas (9 percent for all births and 8 percent for last births). Differentials in weaning during the first three months are more noticeable by mother's level of education. The proportion of children for whom breastfeeding was stopped increases with mother's level of education. For last births, a birth to a mother with more than primary education is twice as likely to be weaned in the first three months as a birth to an illiterate mother. The difference in weaning of births of illiterate mothers and mothers with primary education is less striking for all births, but still substantial. However, for all births and last births, more than one-fifth of births to women with more than primary education, who were once breastfed, were getting nutrition from food other than mother's milk before three months of age.

Weaning by six months is slightly less prevalent among all births than last births. The differentials in weaning by six months by background characteristics follow closely the pattern that was observed in the differentials for weaning by three months.

Figure 8.3
Weaning of Last Birth Under 3 Months
by Selected Background Characteristics



Note: Based on births in the 5-year period preceding the interview

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Reason for Weaning

Only one-fifth of children who were weaned were weaned because they reached the "weaning age" (see Table 8.11). As noted earlier, children who were breastfed till they died are not considered to have been

weaned.[2] Three-fourths of children were weaned for reason connected with the mother or the child. One of the most important reasons for stopping breastfeeding is another pregnancy. The onset of a new pregnancy forces the mother to wean a child who otherwise would have continued to breastfeed for a longer period. Such a pregnancy accounts for weaning of almost 4 of 10 births in the five years preceding the survey who were breastfed. Two reasons for weaning associated with the mother prevent her from continuing breastfeeding and account for 1 in 5 weanings. These are: no milk or insufficient milk (15 percent) and mother being sick and unable to continue breastfeeding her child (5 percent). Reasons for weaning associated with the child—other than that the child reached weaning age—are: child refused to breastfeed (11 percent) and child was sick (2 percent).

The importance of various reasons for weaning differs by the age at which children are weaned. However, from one-quarter to one-half of children were weaned because the mother became pregnant. Breastfeeding does not protect a substantial minority (27 percent) of women from getting pregnant, even for six months after the birth of a child (see Table 8.11, column 1). However, for children weaned before the age of six months, the main reason for weaning is lack of or insufficiency of mother's milk (30 percent). The child's refusal to be breastfed was mentioned for 1 in 5 children who had been weaned within six months of birth.

In contrast, among children who were weaned at 12-17 months, more than half were weaned because their mothers got pregnant again (53 percent); only 15 percent of children were considered to have reached the right age for weaning. As for children who were breastfed for two years or more, one-fourth were weaned because their mothers conceived again; the majority were weaned because they had reached an age considered by their mothers as the right age for weaning (59 percent).

Table 8.11 Reason for weaning

Percent distribution of children born in the five years preceding the survey who were breastfed and weaned by reason for weaning, according to age at weaning, Yemen 1991/92

Reason for weaning	Age at weaning						
	<6 months	6-11 months	12-17 months	18-23 months	24+ months	Other/ Missing	Total
Reached weaning age	3.1	4.4	14.9	23.1	59.3	1.9	19.9
Child sick	4.5	3.3	1.2	0.7	0.3	0.0	2.0
Child refused	20.5	14.0	10.1	3.2	3.4	1.0	10.5
Mother sick	9.4	5.0	4.5	4.3	1.7	0.0	4.8
No/insufficient milk	29.8	17.8	10.6	9.8	6.2	2.0	14.5
Pregnant	26.5	50.6	53.4	53.5	25.6	1.2	39.3
Other	5.3	4.0	3.3	4.8	2.5	1.5	3.8
Missing/Inconsistent	1.0	1.0	2.0	0.5	1.0	92.4	5.3
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of children	882	776	1107	427	874	190	4257

Note: Based on children born in 0-59 months before the survey. Excludes children who were breastfed until they died.

[2]If children who were breastfed until they died were included in Table 8.11, they would represent 6 percent of all children for whom breastfeeding was stopped. However, among all children weaned under six months, the children who were breastfed until they died would represent 17 percent of children.

CHAPTER 9

PREVENTIVE MEASURES: CHILD VACCINATIONS

It is in the very early years of life that a child is most vulnerable to the long-term debilitating or even fatal consequences of contracting one of the infectious diseases of childhood. There is a complex and compounding interplay among the infectious diseases and between them and nutritional status. All infections are nutritional setbacks. Often, the climb back to normal weight and growth takes several weeks. Vaccination against the six major communicable diseases of childhood—tuberculosis, diphtheria, pertussis (whooping cough), tetanus, poliomyelitis (polio), and measles—is one of the primary mechanisms for improving child survival. These childhood diseases, along with mumps, rubella (German measles), and a type of meningitis caused by hemophilus influenza, can cripple or kill a child. Vaccination against the six main infectious diseases of childhood is therefore a partial vaccination against undernutrition itself. Because immunization strikes against both infection and undernutrition, it is one of the best tools for breaking the cycle, as well as for reducing the severity and frequency of setbacks to normal development in a child's most formative years. One dose of BCG and measles vaccines and three doses of polio and DPT vaccines are needed to establish immunity to the major childhood diseases.

Until the early 1980s, the rate of vaccination coverage in Yemen was extremely low. It did not exceed 10 percent in the most favorable conditions. In 1990, the goal of immunization for all was announced and national strategies for increasing vaccination coverage were adopted. As a result, Yemen could achieve an 80 percent rate of vaccination coverage for most vaccines. However, due to difficult times in the period 1991-92, relapses occurred in immunization coverage.

All living children under five for whom information was collected in the Child's Questionnaire are included in this analysis regardless of whether mothers of these children were administered the Women's Questionnaire or the Reproductive Health Questionnaire. Information on each child under five was collected from some member of the household (usually the mother). For percent distributions of the major characteristics of children, that is, age distribution, place of residence, and mother's education[1] (for those whose mothers were interviewed), the reader may refer to section 2.8 of Chapter 2. It should be noted that there is no information on mother's education for three percent of children. Also, instead of using the awkward phrase "mothers/respondents" the term "mothers" is used interchangeably with "mothers or other respondents to the Child's Questionnaire" in this and other chapters covering topics related to *all* living children under five on whom information was collected.

Information on child vaccinations that was collected in the Child's Questionnaire pertains to all children under five living in the households selected for the Women's and the Child's Questionnaires. Information on the vaccination status of children in the 1991/92 Yemen Demographic and Maternal and Child Health Survey was obtained by asking respondents to the Child's Questionnaire whether there was a vaccination card for each child under five years of age. If there was, the interviewer requested the respondent to show her the card. For children whose card was seen, the interviewer recorded the dates of immunization directly from the card. For children whose card was not seen, as well as children for whom a card was seen but not all vaccinations were marked, respondents were asked questions about the child's vaccinations. The questions pertained to vaccination drops, how many times drops were given, and whether the child was ever

[1]Mother's educational status is reported as "no information collected" for children who had no mother in the household, or whose mother was not eligible for the Women's Questionnaire, or whose mothers were not included in the survey for other reasons.

given an injection to protect him/her from diseases. Reasons for not vaccinating children at all or for not completing the vaccination schedule were also collected.

The following sections examine the availability of child vaccination cards in the household, disease-specific and full vaccination coverage among all children under five and among children 12-23 months, and reasons for not vaccinating at all or not fully vaccinating children under five. Differentials in having and presenting vaccination cards, vaccination coverage, and reasons for not vaccinating children are also presented.

9.1 VACCINATION CARD COVERAGE AND AVAILABILITY

Vaccination cards usually provide the most complete and reliable information on children's immunizations. A distinction is made between children with vaccination cards which were *presented or available* at the time of the interview and children who were reported to *have received* a vaccination card, whether it was seen by the interviewer or not.

Table 9.1 provides information on vaccination card coverage and the availability of cards for children under five years of age. Sixty-three percent of children were reported to have received a vaccination card; 37 percent never received a card. The proportion of children who had a vaccination card increases with age. The proportion never receiving a vaccination card is much higher for the youngest age cohort. About two-thirds (66 percent) of children under six months of age do not have a vaccination card. Vaccination card coverage increases slowly in older age cohorts. However, the proportion of children with no card remains quite high (3 of 10 children) even for the oldest age group (24-59 months). The increasing proportion of children in the youngest age cohorts who never had a vaccination card reflects a decline in vaccination coverage in Yemen. It may also indicate that mothers either are not aware of or do not care about the need for immunizing children—BCG vaccine and the first dose of DPT and polio vaccine—by three months of age.

Table 9.1 Health card

Percentage of children under five who were reported to have been issued a vaccination card and the percentage whose card was seen, and among children under five, the percentage for whom a vaccination card was seen, by selected background characteristics, Yemen 1991/92

Background characteristic	Children who were issued a vaccination card: Total	Children who were issued a vaccination card: Card seen	Children for whom vaccination card seen	Number of children
Child's age (months)				
< 6	34.3	55.6	19.1	718
6-11	51.6	51.1	26.4	802
12-17	63.9	43.2	27.6	627
18-23	65.3	40.3	26.3	628
24-59	70.2	28.0	19.7	3939
Sex of child				
Male	65.2	35.1	22.9	3427
Female	60.9	33.9	20.6	3288
Residence				
Urban	86.9	48.0	41.7	1113
Rural	58.4	30.5	17.8	5602
Region				
North./West.	59.8	32.5	19.5	5793
South./East.	83.8	43.3	36.3	922
Mother's education				
No schooling	60.6	34.0	20.6	5836
Primary	86.4	40.1	34.6	383
More than primary	92.1	50.6	46.6	211
Information not collected	64.9	13.9	9.1	202
Total	63.1	34.5	21.8	6715

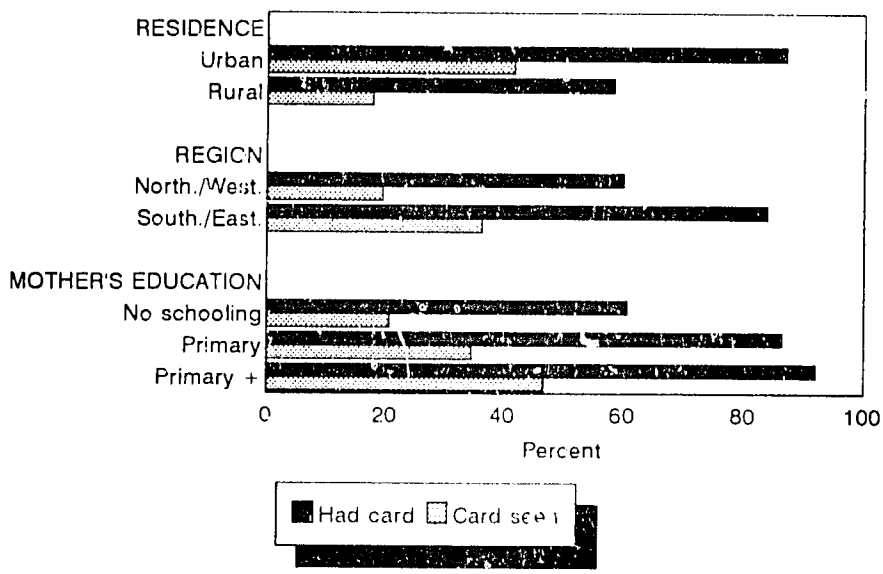
Vaccination cards were seen by interviewers for only 22 percent of children under five in Yemen; in other words, cards were presented for only one-third of children who were reported to have received them. The low percentage of cards seen by interviewers, even for young children, mainly reflects the interviewer's lack of effort to persuade respondents to look for them. To some extent, it may also reflect the respondent's reluctance to search for the cards. Table 9.1 indicates that even though the proportion of children who have

cards increases with age, among those who ever received cards the proportion whose cards were seen declines as age increases; this is because, as the years pass, vaccination cards tend to get lost. The results do not indicate any sex differentials in the possession or availability of vaccination cards.

Residential and regional differentials in possession and availability of vaccination cards are quite pronounced (also Figure 9.1). The percentage of children who do not have a vaccination card in rural areas (42 percent) is more than three times that of children in urban areas (13 percent). Two of 5 children residing in the northern and western governorates do not have a card, compared to less than 1 of 5 children in the southern and eastern governorates. These differentials are indicative of differentials in health care practices by area and of residence. Among those who had cards, vaccination cards were seen for 48 percent of the children in urban areas, compared to only 31 percent of children in rural areas, and for 32 and 43 percent of children in the northern and western governorates and the southern and eastern governorates, respectively.

In general, the percentage of children with no vaccination cards decreases with mother's level of education, from 40 percent for children of illiterate mothers to only 8 percent for children whose mothers had completed more than primary certificate. In addition, the ratio of cards seen to cards (claimed to have been) issued increases with education, from 34 percent for illiterate mothers to 50 percent for mothers with more than primary education.

Figure 9.1
Children Under 5 with Health Cards and
Card Availability by Selected Background Characteristics



YDMCHS 1991/92

9.2 VACCINATION COVERAGE

This section examines the level of vaccination coverage for all children under five and for children 12-23 months, whether or not the vaccination card was seen. As mentioned earlier, interviewers asked mothers or other respondents to the Child's Questionnaire to show them the vaccination card. The dates

indicated on the card for immunizations were copied onto the questionnaire. If no card was presented at the time of the interview, or when children were not fully immunized, mothers were asked general questions designed to determine if their children had received "drops" (and how many times), and if they were ever given "vaccination injections." Unfortunately, the estimation of coverage from these questions is not straightforward, particularly for measles vaccination. The estimation procedure for each vaccination is described below:

BCG Vaccination. The proportion of children immunized with BCG vaccine is computed as the sum of: (1) the proportion with BCG on the vaccination card among children with card presented, and (2) the estimated proportion immunized among those children for whom questions were asked. Among children with no card (irrespective of whether a card was reported to have been issued) the proportion with BCG is the product of the card coverage rate and the percentage that said their child had ever received a vaccination by injection. For example, if the card was seen for 30 percent of children, and 90 percent of these children had BCG, and 80 percent of the remaining children (70 percent of the sample) for whom no card was seen reported receiving an injection, 70 percent x 80 percent = 56 percent of the total sample have received an injection. The BCG coverage rate for all children can be calculated by assuming the same proportion of children with injection have received BCG vaccine as children for whom the card was seen (90 percent in this example). BCG coverage for the whole sample then equals *coverage for card seen:* 30 percent x 90 percent = 27 percent, plus *coverage for card not seen:* 56 percent (children who received injection) x 90 percent (BCG coverage rate for card seen = 50.40 percent. Coverage for the whole sample is 27 percent + 50.40 percent or 77.40 percent.

Polio Coverage. The proportion of children immunized with one, two or three doses of polio is derived from: (1) the proportion with first, second and third doses of polio among children with a card presented, and, (2) the proportion of children with first, second and third doses of polio reported by mothers/respondents among children with no card seen. If the number of doses reported by the mother is more than the number of doses on the card, the estimate includes the additional recall doses. These doses are regarded as card coverage.

DPT Coverage. Since DPT vaccine is usually given simultaneously with polio vaccine, DPT coverage is derived from the polio data.

Measles Coverage. Measles coverage is the most difficult to estimate from the available data, and is based on: (1) the proportion of children with measles on the vaccination card among those with a card presented; and (2) the ratio of measles on cards to second dose of polio on cards. The decision to use proportion of children receiving two doses, instead of using first or third doses of polio, according to the recall information for children with no card, was based on an analysis of surveys in eight DHS countries The data on (ever) receipt of an injection could not be used for measles coverage because it was not possible to find out if the injection was for measles.

Immunization of All Children Under five

Table 9.2 shows immunization coverage estimates for all children under five whether or not a card was seen. Among all children under five, 6 of 10 had received BCG vaccine and the first dose of polio (polio1) and DPT (DPT1), more than half had received the second dose of polio (polio2) and DPT (DPT2), and 45 percent had received three doses of polio (polio3) and DPT (DPT3). One-half of the children had received a measles vaccination and 4 of 10 had all the recommended childhood vaccinations (fully vaccinated). Comparison of BCG and DPT1 vaccinations by age groups, indicates that children under six months have half the level of coverage of children over 12 months. This apparent decline in vaccinations will have a negative effect on efforts to reduce infant and child mortality rates in Yemen. The dramatic decline

Table 9.2 Immunization of children under five

Percentage of children under five who had received specific vaccines by the time of the survey (according to the vaccination report or report of mother/respondent to the Child's Questionnaire), by selected background characteristics, Yemen 1991/92

Background characteristic	Percentage of children who received:										Number of children
		DPT			Polio						
	BCG	1	2	3+	1	2	3+	Measles	All[1]	None	
Child's age (months)											
< 6	29.2	28.9	18.6	9.6	28.9	18.6	9.6	13.5	7.6	68.0	718
6-11	47.3	48.6	42.8	30.9	48.6	42.8	30.9	34.8	25.1	49.6	802
12-17	58.8	60.3	56.3	48.7	60.3	56.3	48.7	51.4	45.9	37.3	627
18-23	61.9	62.4	54.6	45.8	62.4	54.6	45.8	51.6	44.0	35.8	628
24-59	66.6	65.8	61.3	53.3	65.9	61.3	53.3	58.5	50.8	30.4	3939
Sex of child											
Male	61.3	61.1	55.8	46.7	61.1	55.8	46.7	51.8	43.7	35.6	3427
Female	56.8	56.7	50.9	42.9	56.8	51.0	42.9	47.2	40.3	40.2	3288
Residence											
Urban	81.3	81.1	76.5	68.1	81.2	76.6	68.1	70.3	63.0	14.9	1113
Rural	54.7	54.6	48.8	40.2	54.6	48.8	40.2	45.4	37.9	42.4	5602
Region											
North./West.	55.8	56.4	50.6	42.0	56.4	50.6	42.0	46.9	39.3	41.0	5793
South./East.	79.6	75.4	71.1	62.4	75.4	71.1	62.4	66.5	59.4	18.3	922
Mother's education											
No education	56.5	56.6	51.0	42.5	56.6	51.0	42.5	47.1	39.8	40.4	5836
Primary	84.2	81.8	77.8	69.2	81.8	77.8	69.2	73.4	65.1	14.6	383
More than primary	89.1	87.3	83.8	75.2	87.3	83.8	75.2	80.5	72.2	7.9	211
Information not collected	59.3	57.3	49.8	37.1	57.3	49.8	37.1	47.6	35.0	36.6	202
Total	59.1	59.0	53.4	44.8	59.0	53.4	44.8	49.6	42.0	37.9	6715

Note: The DPT coverage rate for children without a written record is assumed to be the same as that for polio vaccine since mothers were specifically asked whether the child had received polio vaccine. For children whose information was based on the mother's report, the proportion of vaccinations given during the first year of life was assumed to be the same as for children with a written record of vaccination.

[1]Children who are fully vaccinated (i.e., those who have received BCG, measles and three doses of DPT and polio).

is also noticeable among children 6-11 months. Differentials by age for children over 12 months are minor. Children 24-59 months have a slight edge over the next younger age group.

Not surprisingly, urban children are 50 percent more likely to be vaccinated for the major childhood diseases than children in rural areas. For example, the proportions of children vaccinated against measles are 45 and 70 percent in rural and urban areas, respectively. The proportion of children receiving each of the other vaccines is 20 percentage points higher for children residing in the southern and eastern governorates than for children in the northern and western governorates. For example, 47 percent of children are protected against measles in the northern and western governorates whereas 67 percent are protected in the southern and eastern governorates. As expected, an increase in mother's education is associated with increased likelihood of children being vaccinated. The proportion of children who are fully vaccinated increases from 40 percent among children of mothers with no education to 65 percent for children of mothers who have primary education. Vaccination rates are similar for children of illiterate mothers and children for whom there was no information on the mother's education.

Immunization of Children 12-23 months

Table 9.3 presents data on immunization coverage and differentials for children 12-23 months. This age group is important because the objective of the vaccination program in Yemen is to vaccinate all children by their first birthday. Among children 12-23 months, around 60 percent had received BCG, polio1 and DPT1, 56 percent had received polio2 and DPT2, and less than half had received three doses of polio and DPT vaccines. One-half of the children were inoculated against measles and a little less than that (45 percent) had received all the major childhood vaccinations (fully vaccinated). The table shows small but consistent gender differences. Male children are slightly more likely to be immunized. Differentials in immunization rates are more marked for children 12-23 months than for all children under five. The immunization rates in urban areas and in the southern and eastern governorates are at least 30 percentage points higher than the immunization rates in rural areas and in the northern and western governorates (see Figure 9.2). The proportion of children in urban areas who are immunized against various diseases ranges from three-fourths to almost 90 percent. More than 7 of 10 children are fully immunized against childhood diseases in urban areas and in the southern and eastern governorates, compared to only 4 of 10 in rural areas and in the northern and western governorates.

Table 9.3 Immunization of children 12-23 months

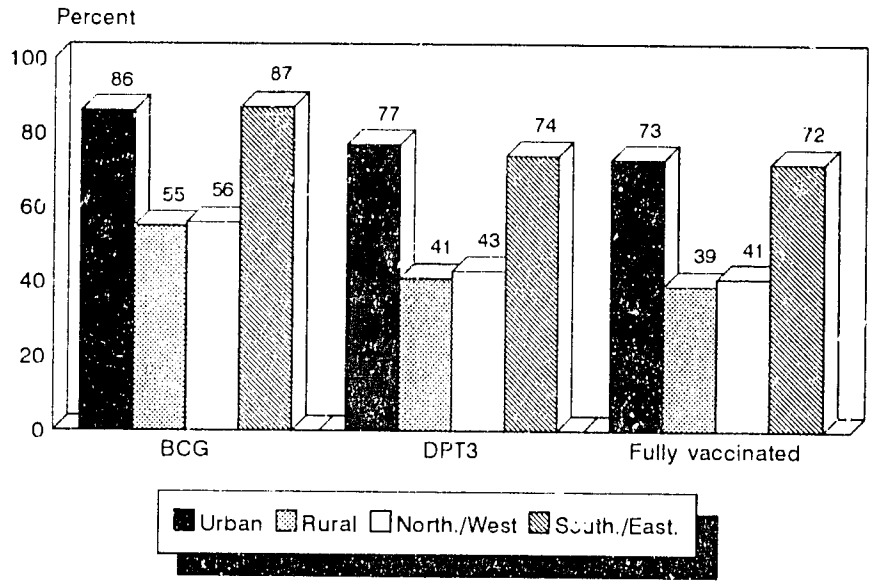
Percentage of children 12-23 months who had received specific vaccines by the time of the survey (according to the vaccination card or report of mother/respondent to the Child's Questionnnaire), by selected background characteristics, Yemen 1991/92

Background characteristic	Percentage of children who received:										Number of children
		DPT			Polio						
	BCG	1	2	3+	1	2	3+	Measles	All[1]	None	
Child's age (months)											
12-17	58.8	60.3	56.3	48.7	60.3	56.3	48.7	51.4	45.9	37.3	627
18-23	61.9	62.4	54.6	45.8	62.4	54.6	45.8	51.6	44.0	35.8	628
Sex of child											
Male	62.1	62.6	57.7	48.8	62.6	57.7	48.8	53.6	46.5	35.3	652
Female	58.5	59.9	53.0	45.6	59.9	53.0	45.6	49.2	43.3	37.9	604
Residence											
Urban	85.9	88.3	83.5	76.5	88.3	83.5	76.5	77.8	72.5	8.9	220
Rural	55.0	55.6	49.5	41.0	55.6	49.5	41.0	45.9	39.1	42.4	1036
Region											
North./West.	56.2	57.6	51.5	43.1	57.6	51.5	43.1	47.5	40.9	40.5	1089
South./East.	87.4	85.5	81.5	74.0	85.5	81.5	74.0	77.2	71.5	11.1	167
Mother's education											
No schooling	57.1	57.8	51.7	44.1	57.8	51.7	44.1	47.8	42.0	40.0	1084
Primary	88.9	88.5	82.2	73.1	88.5	82.2	73.1	78.0	69.0	10.3	76
More than primary	94.5	96.4	94.5	82.6	96.4	94.5	82.6	91.3	79.4	1.1	51
Information not collected	(55.0)	(64.0)	(56.0)	(39.9)	(64.0)	(56.0)	(39.9)	(50.8)	(34.7)	(36.0)	30
Total	60.4	61.3	55.5	47.3	61.3	55.5	47.3	51.5	45.0	36.6	1256

Note: The DPT coverage rate for children without a written record is assumed to be the same as that for polio vaccine since mothers were specifically asked whether the child had received polio vaccine. For children whose information was based on the mother's report, the proportion of vaccinations given during the first year of life was assumed to be the same as for children with a written record of vaccination.

[1]Children who are fully vaccinated (i.e., those who have received BCG, measles and three doses of DPT and polio).

Figure 9.2
Immunization Coverage for Children 12-23 Months
(BCG, DPT3 and Fully Vaccinated) by Residence and Region



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9.3 REASONS FOR NOT HAVING CHILDREN VACCINATED

The final section in this chapter examines the distribution of children under five years of age who are not immunized or not fully immunized by reasons for failure to have them (fully) immunized.

Table 9.4 indicates that the main reason children are not (fully) immunized is accessibility; the places where children can be vaccinated are far away (31 percent) or not known (2 percent) to the respondents. Lack of awareness of the need for immunization and belief that the "child is too young" were the next most frequently cited reasons (14 percent each). When combined, these reasons account for 6 of 10 children who were either not vaccinated at all or not fully vaccinated. This fact pinpoints two major deficiencies in the health system: (1) health services are not provided within easy access of the target population, and (2) not enough effort is made to educate the population about the need for immunizations, especially BCG immunization at an early age and first doses of DPT and polio vaccine at three months of age.

Differentials in reasons for failure to have children (fully) immunized show that belief that the child is "too young" for vaccination is the main reason reported by mothers/respondents for children under six months (50 percent). For mothers of older children, the place of vaccination being far away was the leading reason mentioned, followed by the reason that respondents were unaware for the need for vaccination.

For children in rural areas and children residing in the northern and western governorates, the distance to the place of vaccination is the main reason for not receiving vaccinations or for not completing the vaccination schedule (one-third of children). For children living in urban areas or in the southern and eastern governorates, the reason cited most often was that the child was too young (23 percent).

Differentials by mother's level of education indicate that for children whose mothers had no schooling the place of vaccination being too far away is the major reason for failing to have children (fully) vaccinated. This reason is less likely to be cited by mothers as their level of education increases. Educated mothers are more likely to cite fear of side effects of the vaccines or the child being too young as reasons for not having their children (fully) vaccinated.

Table 9.4 Reasons for children not being vaccinated

Percent distribution of children under five who were either not vaccinated or were not fully vaccinated by reasons for not receiving vaccinations, according to selected background characteristics, Yemen 1991/92

	Reason child not vaccinated or not fully vaccinated													
Background characteristic	Child too young	Unaware of need for immuni-zation	Unaware of need to return for other doses	Place/ Time of immuni-zation not known	Fear of reac-tions to vaccine	Intend to go for vacci-nation	Child ill	Vaccine not avail-able	Place far away	Bad treat-ment	Other	Missing	Total	Number of children
Child's age (months)														
< 6	49.5	4.8	0.2	2.1	1.6	8.4	2.1	1.0	17.4	0.4	11.0	1.5	100.0	554
6-11	20.4	9.3	1.0	2.1	4.0	5.2	1.6	2.6	30.1	0.7	18.1	4.9	100.0	473
12-17	6.5	13.6	1.7	2.6	5.0	3.1	0.8	6.0	35.1	0.6	18.7	6.5	100.0	278
18-23	3.9	17.2	1.9	2.2	3.7	1.6	2.0	4.2	34.8	0.0	23.6	5.0	100.0	253
24-59	0.8	17.9	1.7	1.8	4.9	1.9	0.8	4.3	34.4	0.6	20.5	10.5	100.0	1420
Sex of child														
Male	13.9	13.4	0.9	2.5	4.1	3.5	1.4	4.0	30.5	0.5	17.8	7.5	100.0	1448
Female	13.5	13.9	1.7	1.5	4.0	3.9	1.1	3.2	30.8	0.6	19.0	6.6	100.0	1530
Residence														
Urban	23.5	8.9	2.0	2.3	7.6	5.0	3.7	0.3	8.5	0.0	20.5	17.8	100.0	258
Rural	12.8	14.1	1.3	2.0	3.7	3.6	1.0	3.9	32.7	0.6	18.3	6.1	100.0	2720
Region														
North./West.	13.0	14.1	1.3	2.1	3.3	3.1	1.3	3.8	32.4	0.5	18.9	6.2	100.0	2750
South./East.	22.8	7.6	1.5	0.4	13.4	10.8	1.4	0.9	9.8	1.4	12.6	17.3	100.0	228
Mother's education														
No schooling	13.4	13.7	1.4	2.0	3.9	3.7	1.3	3.7	31.8	0.5	18.1	6.4	100.0	2734
Primary	28.8	6.6	1.5	1.7	8.4	5.5	0.7	0.8	9.4	1.1	22.2	13.2	100.0	83
More than primary	(29.7)	(14.1)	(0.0)	(0.0)	(15.5)	(4.1)	(1.4)	(0.0)	(1.4)	(0.0)	(9.0)	(24.9)	100.0	28
Information not collected	11.1	18.5	0.5	1.3	0.4	4.4	0.0	0.0	26.7	0.0	22.9	14.0	100.0	88
Total	13.7	13.6	1.3	2.0	4.0	3.7	1.3	3.6	30.6	0.5	18.5	7.1	100.0	2978

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

CHAPTER 10

MORBIDITY AND ACCIDENTS IN CHILDREN

Morbidity in a population is a manifestation of disease processes among survivors. Higher levels of morbidity reflect poor health and imply high risks of mortality. Morbidity is affected by two factors: immunity and exposure to infection agents. First, resistance to infection, or immunity, is reduced by factors such as premature birth, low birth weight, inadequate or improper feeding, etc. Also resistance to specific diseases may be increased by immunization. Second, exposure to disease is influenced by environmental and socioeconomic conditions.

This chapter examines the prevalence of major childhood illnesses and diseases and the occurrence of various type of accidents among children under five. The YDMCHS questionnaire includes questions on diarrhea, acute respiratory infection, fever, measles, pus from ears and eyes. In addition, children's involvement in serious accidents since birth is also considered.

Diarrheal diseases and acute respiratory infection in children constitute major health problems in Yemen. Official statistics indicate that 30 percent of deaths in infants and about 14 percent of deaths in children under five years are due to diarrhea. This means that about 63 thousand children die before their fifth birthday as a result of diarrhea infections. Moreover, the same sources indicate that child mortality due to acute respiratory infection (ARI) is about 26 percent among infants and 12 percent among children under the age of five. Thus, the combined mortality due to diarrhea and ARI is about 120 thousand children annually. In other words, 330 children die daily as a result of just these two illnesses (Ministry of Health, 1989).

No official statistics with respect to occurrence of illnesses and the prevalence of diarrheal diseases, respiratory infections, measles and accidents exist. The Ministry of Public Health has no specific system for providing health information on child morbidity. Information from other sources is not reliable. These facts make the YDMCHS very important as a source of much needed information on childhood illnesses/diseases. The survey information on treatment practices of diarrheal and other illnesses is discussed in Chapter 11.

All living children under five are included in this analysis of child morbidity, whether mothers of these children were administered the Women's Questionnaire or the Reproductive Health Questionnaire. The information on each child under five was collected from some member of the household (usually the mother). For percent distributions of the major characteristics of children, that is, age, place of residence, and mother's education[1] (for those whose mothers were interviewed), the reader may refer to section 2.8 of Chapter 2. It should be noted that only three percent of children have no information on mother's education.

10.1 DIARRHEAL DISEASES

Diarrheal diseases are one of the most important public health problems in Yemen. They are among the leading causes of infant and childhood deaths in developing countries. Diarrheal episodes diminish nutritional status and render a child susceptible to undernutrition and to the worst consequences of other infectious diseases. The practice of withholding food during diarrheal episodes and the recurrent nature of diarrhea greatly increase the debilitating health risks of such episodes. The fact that diarrhea is usually

[1]Mother's educational status is shown as "no information collected" for children who had no mothers in the household, or whose mothers were not eligible for Women's Questionnaire in the household or whose mothers are not included in the survey for any reason.

amenable to treatment by oral rehydration therapy (ORT), makes diarrheal morbidity a major concern for child health programs and services.

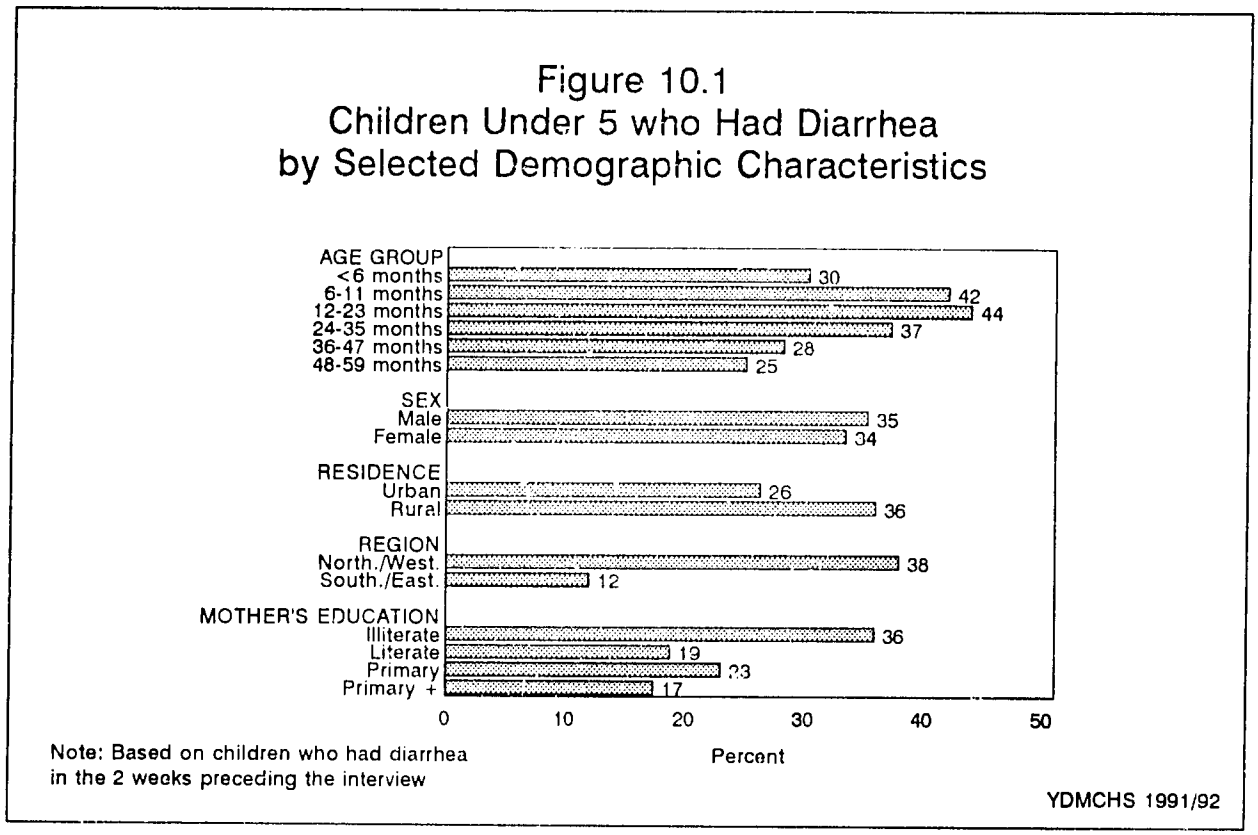
In the YDMCHS, mothers (or other respondents to the Child's Questionnaire) of children under five years were asked if the child had diarrhea in the 24 hours or in the two weeks preceding the survey. The results, summarized in Table 10.1 (differentials are also presented in Figure 10.1), show that 17 percent of children under five suffered from diarrhea during the 24 hours preceding the interview, and twice that proportion (34 percent) had diarrhea in the preceding two weeks. Children are more susceptible to diarrhea after weaning because they are exposed to more infections and no longer have the protection that is provided by breast milk. This is confirmed by the highest proportion of children age 12-23 months with diarrhea (44 percent). The prevalence of diarrhea among male and female children does not vary, but there are noticeable differences in the prevalence of diarrhea by place of residence, region and mother's education. Diarrhea is much more common in rural areas (36 percent) than in urban areas (26 percent). As shown in the table and Figure 10.1, differentials by region and education are even more pronounced; the incidence of diarrheal disease in the northern and western governorates is three times that in the southern and eastern governorates. Proportionally, for each child sick among children whose mothers have more than primary education, there are almost two children sick with diarrhea among those whose mothers are illiterate.

Table 10.1 Prevalence of diarrhea

Percentage of children under five years who had diarrhea in the preceding two weeks and in the past 24 hours, by selected background characteristics, Yemen 1991/92

Background characteristic	Diarrhea episode: Preceding 2 weeks[1]	Diarrhea episode: Preceding 24 hours	Number of children
Child's age (months)			
< 6	30.1	17.3	718
6-11	42.3	21.1	802
12-23	44.0	21.9	1256
24-35	37.3	19.2	1429
36-47	28.2	12.6	1321
48-59	25.1	11.3	1188
Sex			
Male	35.3	18.0	3427
Female	33.5	16.0	3288
Residence			
Urban	26.3	12.2	1113
Rural	36.0	18.0	5602
Region			
North./West.	38.0	19.0	5793
South./East.	12.1	4.5	922
Mother's education			
Illiterate	35.9	17.8	5939
Literate	18.8	9.6	58
Primary	23.0	11.3	306
More than primary	17.4	8.2	211
Information not collected	29.0	13.7	202
Total	34.4	17.0	6715

[1]Includes diarrhea in the past 24 hours



Symptoms and Signs Associated with Diarrhea

Diarrhea may be acute, lasting hours or days, or persistent lasting for two weeks or longer, and sometimes for months. Dysenteric diarrhea is usually bloody. Prolonged diarrhea and diarrhea with other symptoms can have even serious effects on health, nutritional status, and child survival.

Table 10.2 shows the percentage of children reported as having certain signs and symptoms associated with diarrhea—blood or mucus in the stool, dehydration, fever, and vomiting—among children who had diarrhea in the two weeks preceding the survey. Almost one-fourth of children who had diarrhea also had blood or mucus in the stool, while dehydration was experienced by more than one-third of children. Three-fourths of children had fever, while one-half experienced vomiting. Although each symptom is considered separately, some children had more than one symptom accompanying diarrhea.

Differentials in the occurrence symptoms associated with diarrhea by urban-rural residence, mother's education, and region in Table 10.2 show the same pattern as for the occurrence of diarrhea. Gender of the children appears to have no significant effect on the presence of symptoms. The youngest children are least likely to experience dehydration or have blood or mucus in the stool. Subgroups that have the highest rates of diarrhea also show the highest proportions of children with symptoms. Symptoms are greatest in rural areas, children of illiterate mothers, and those residing in the northern and western governorates.

Table 10.2 Signs and symptoms of diarrhea

Among children under five who had diarrhea in the two weeks preceding the survey, the percentage reported as having specific signs and symptoms of diarrhea, according to selected background characteristics, Yemen 1991/92

Background characteristic	Signs and symptoms				Number of children
	Blood/ mucus in stool	Dehy-dration	Fever	Vomiting	
Child's age (months)					
< 6	11.3	28.7	67.9	53.4	216
6-11	19.0	41.3	79.7	61.6	340
12-23	20.7	36.2	77.5	56.1	553
24-35	26.3	34.4	73.7	47.1	532
36-47	24.9	36.3	74.7	52.5	372
48-59	30.7	41.9	77.0	50.1	298
Sex					
Male	23.8	35.8	74.9	53.2	1210
Female	21.8	37.4	76.2	53.2	1101
Residence					
Urban	16.4	25.3	61.1	41.2	293
Rural	23.8	38.2	77.6	55.0	2018
Region					
North./West.	23.4	37.5	77.0	54.2	2200
South./East.	11.8	17.8	47.0	33.4	111
Mother's education					
Illiterate	23.7	37.2	76.2	54.0	2134
Literate	*	*	*	*	11
Primary	11.3	20.8	61.7	44.6	70
More than primary	(5.7)	(13.8)	(46.3)	(25.3)	37
Information not collected	21.3	50.1	86.2	52.5	59
Total	22.8	36.6	75.5	53.2	2311

Note: Figures in parentheses are based on 25-49 cases; an asterisk indicates that the figure is based on fewer than 25 cases and has been suppressed.

Intensity of Diarrhea

The mothers of children who had diarrhea were asked to characterize the last episode of the child's diarrhea as "mild" or "severe." Table 10.3 presents the percent distribution of children with diarrhea according to respondent's perception of the intensity of the child's last diarrheal episode. About half of children under five who had diarrheal disease were reported to have severe diarrhea. The intensity of diarrhea did not change significantly or systematically with age of child or sex of child, except that the illness of less than half of the children under six months was characterized as mild. However, severe diarrhea is more common in rural areas (52 percent) than urban areas (41 percent), and more common among children whose mothers cannot read or write (52 percent) than among those whose mothers have primary education (36 percent). Diarrheal episodes were more often termed mild for children whose mothers have primary or higher education, for children who live in urban areas, and for those who reside in the southern and eastern governorates. These differences may reflect more favorable social and economic conditions or differences in the criteria used by respondents to evaluate the intensity of the episode.

Table 10.3 Severity of diarrhea

Percent distribution of children under five who had diarrhea in the two weeks preceding the survey by severity of illness, according to selected background characteristics, Yemen 1991/92

Background characteristic	Severity of diarrhea				Total	Number of children
	Mild	Severe	Don't know	Not stated		
Child's age (months)						
< 6	53.0	44.6	0.8	1.6	100.0	216
6-11	44.7	52.5	1.1	1.7	100.0	340
12-23	47.0	51.5	0.8	0.7	100.0	553
24-35	46.0	51.3	1.4	1.2	100.0	532
36-47	47.9	49.3	0.6	2.1	100.0	372
48-59	42.8	53.1	1.7	2.4	100.0	298
Sex						
Male	47.8	49.4	1.3	1.5	100.0	1210
Female	45.3	52.4	0.8	1.5	100.0	1101
Residence						
Urban	57.2	41.1	1.0	0.7	100.0	293
Rural	45.1	52.3	1.1	1.6	100.0	2018
Region						
North./West.	45.9	51.8	0.9	1.4	100.0	2200
South./East.	61.1	31.4	5.0	2.5	100.0	111
Mother's education						
Illiterate	45.7	51.8	1.1	1.5	100.0	2134
Literate	*	*	*	*	100.0	11
Primary	61.2	36.2	0.9	1.7	100.0	70
More than primary	(75.9)	(22.0)	(2.1)	(0.0)	100.0	37
Information not collected	39.1	55.2	1.6	4.1	100.0	59
Total	46.6	50.8	1.1	1.5	100.0	2311

Note: Figures in parentheses are based on 25-49 cases; an asterisk indicates that the figure is based on fewer than 25 cases and has been suppressed.

10.2 ACUTE RESPIRATORY INFECTION

Respiratory illness is another important public health problem which affects child survival. As in the case of diarrhea, acute respiratory infection (ARI) is caused by a wide variety of disease agents. These include four of the vaccine-preventable target diseases: tuberculosis, diphtheria, pertussis, and measles. Acute lower respiratory tract infection is the major cause of childhood mortality. The symptoms of respiratory infection in children are presence of cough or cough accompanied by difficult breathing.

In the YDMCHS, information was collected on whether children had been sick with cough in the two weeks preceding the survey. Table 10.4 shows that about half of children under five years of age had a cough in the last two weeks. Children between 6 and 23 months appear to be more susceptible to respiratory infections, while there are no differences according to gender. Children living in rural areas are slightly more likely to have a cough as children in urban areas. Children who reside in the northern and western governorates are more than twice as likely (53 percent) to have a cough as children residing in the southern

Table 10.4 Prevalence of acute respiratory infection

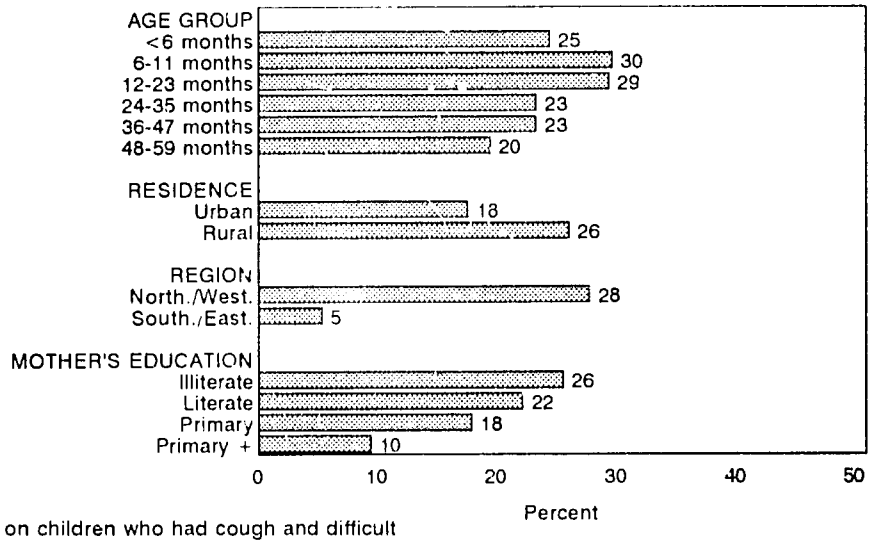
Percentage of children under five with cough and cough with difficult breathing in the two weeks preceding the survey, by selected background characteristics, Yemen 1991/92

Background characteristic	Cough	Cough and difficult breathing	Number of children
Child's age (months)			
< 6	43.6	24.5	718
6-11	54.3	29.7	802
12-23	54.5	29.4	1256
24-35	48.3	23.4	1429
36-47	47.1	23.4	1321
48-59	44.8	19.6	1188
Sex			
Male	49.1	25.8	3427
Female	48.5	23.6	3288
Residence			
Urban	42.2	17.7	1113
Rural	50.1	26.1	5602
Region			
North./West.	53.0	27.8	5793
South./East.	22.7	5.4	922
Mother's education			
Illiterate	49.7	25.6	5939
Literate	46.4	22.3	58
Primary	40.8	18.0	306
More than primary	37.0	9.5	211
Information not collected	47.9	26.6	202
Total	48.8	24.7	6715

and eastern governorates. Climate may partially account for the regional differences. Mother's education affects the probability of a child having or not having a cough. A child whose mother has at least primary education is less susceptible to having a cough than one whose mother is illiterate.

In the YDMCHS, information was also collected on whether the child experienced difficulty in breathing (i.e., difficult and/or rapid breathing) when he/she had a cough. It is recognized that this information may be affected by problems of recall and differences in the mother's perception of cough and difficulty in breathing. Table 10.4 shows that 1 in 4 children under five or about half of the children who had cough also had breathing difficulty. The prevalence of a cough and difficult breathing is higher among children living in the northern and western governorates than among children living in the southern and eastern governorates, and higher among rural than urban children. The proportion of children who also had difficulty in breathing among those who had a cough varies (see Figure 10.2). About half of children of illiterate mothers but only one-fourth of children of mothers with more than primary education as well as those who live in the southern and eastern governorates who had cough also experienced difficult breathing.

Figure 10.2
Children Under 5 Who Had Cough and Difficult Breathing by Selected Demographic Characteristics



Note: Based on children who had cough and difficult breathing in the 2 weeks preceding the interview.

YDMCHS 1991/92

10.3 ILLNESSES OTHER THAN DIARRHEA

Measles

Measles can be a serious health problem and is a major cause of death among young children in Yemen. Vaccination programs have achieved moderate success in immunizing children against measles: half of children under five years have been vaccinated against measles (see Chapter 9). However, these programs have not achieved their measles coverage goal because of certain obstacles. Either the people in some areas of the country are not inclined to immunize their children or vaccination services are not provided in some areas in a regular manner, or both. Fifteen percent of children under five were reported to have contracted measles (see Table 10.5). However, this figure may not reflect the actual occurrence of measles in Yemen since some children may have died as a result of the disease, and some mothers and respondents to the Child's Questionnaire may not be able to recognize when a child has measles.

For children who were reported to have had measles, the age of the child at illness was also ascertained. Only a small percentage of infants (5 percent) have had measles (see Table 10.5 and Figure 10.3); the percentage doubles for those 12-23 months (11 percent) and doubles again for children 48-59 months (24 percent). Since measles is a once-only disease, the incidence of measles is cumulative by age; that is, the longer a child lives the more likely it is that he/she is exposed to the disease. Prevalence of measles is approximately the same in urban and rural areas, and slightly higher in the northern and western governorates than in the southern and eastern governorates. However, children of illiterate mothers are less afflicted by this disease (14 percent) than those whose mothers have primary level of education (18 percent); children whose mother have more than primary are least likely to get measles. Table 10.5 also shows that among those who have had measles, one-fourth had it before their first birthday, 4 in 10 had measles between 12-23 months, and one-fifth got measles when they were 24-35 months.

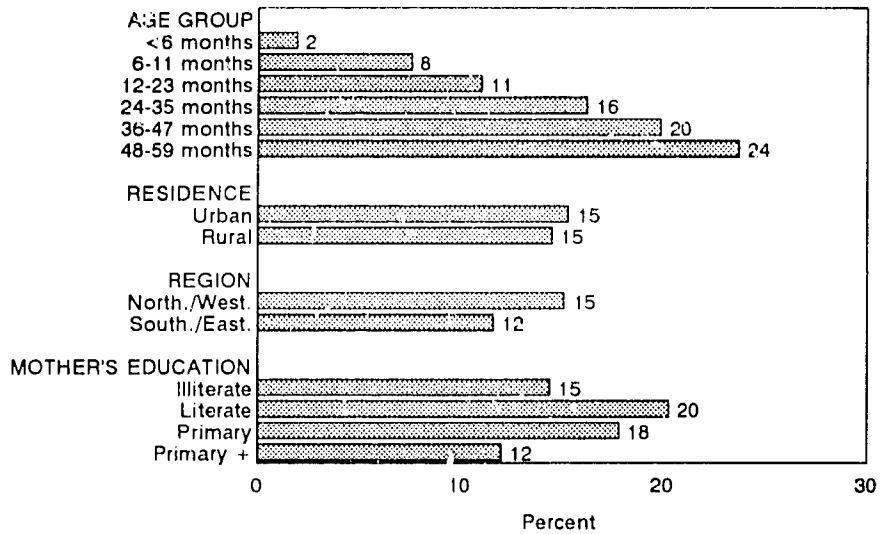
Table 10.5 Incidence of measles

Percentage of children under 5 who had measles, and the age at which had measles, according to selected demographic characteristics, Yemen 1991/92

Background characteristic	Percentage who had measles	Age at which had measles					Don't know/ Missing	Total	Number of children with measles
		<1 year	1	2	3	4			
Child's age (months)									
< 6	1.9	*	0.0	0.0	0.0	0.0	0.0	100.0	14
6-11	7.6	100.0	0.0	0.0	0.0	0.0	0.0	100.0	61
12-23	11.1	39.3	47.8	0.0	0.0	0.0	12.9	100.0	139
24-35	16.3	20.8	53.2	19.3	0.0	0.0	6.7	100.0	233
36-47	19.9	13.1	40.2	28.7	12.1	0.0	5.8	100.0	262
48-59	23.7	13.9	30.8	24.9	16.6	8.0	5.8	100.0	282
Sex of child									
Male	14.2	25.2	40.1	17.5	7.6	2.0	7.5	100.0	487
Female	15.3	25.5	37.2	20.9	8.3	2.5	5.7	100.0	504
Residence									
Urban	15.4	23.4	43.2	17.1	6.2	4.1	6.1	100.0	172
Rural	14.6	25.7	37.7	19.7	8.3	1.9	6.7	100.0	819
Region									
North./West.	15.2	26.6	37.5	19.6	8.3	2.6	5.5	100.0	883
South./East.	11.7	15.0	48.4	16.5	5.0	0.0	15.1	100.0	108
Mother's education									
Illiterate	14.5	25.1	39.4	19.0	7.2	2.4	6.8	100.0	864
Literate	20.3	26.7	30.9	29.0	7.3	0.0	6.1	100.0	12
Primary	17.9	34.9	30.8	11.7	15.7	1.1	5.6	100.0	55
More than primary	12.1	28.3	29.2	26.4	7.4	0.0	8.7	100.0	26
Information not collected	17.4	13.5	41.0	28.5	13.5	3.4	0.0	100.0	35
Total	14.8	25.3	38.6	19.2	7.9	2.3	6.6	100.0	991

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

Figure 10.3
Children Under 5 Who Had Measles
by Selected Demographic Characteristics



Note: Based on children who ever had measles.

YDMCHS 1991/92

Fever

Fever in children under five is a symptom of a variety of diseases. Mothers were asked whether their child was sick with fever in the two weeks preceding the survey. Table 10.6, shows that 46 percent of all children under five years had a high temperature during the reference period. As shown in Figure 10.4, differences in the proportion of children who had fever by area of residence and mother's education have the same patterns as were observed for diarrheal and cough infections. It should be noted that a much higher proportion of children had fever in the northern and western governorates (51 percent) than in the southern and eastern governorates (19 percent).

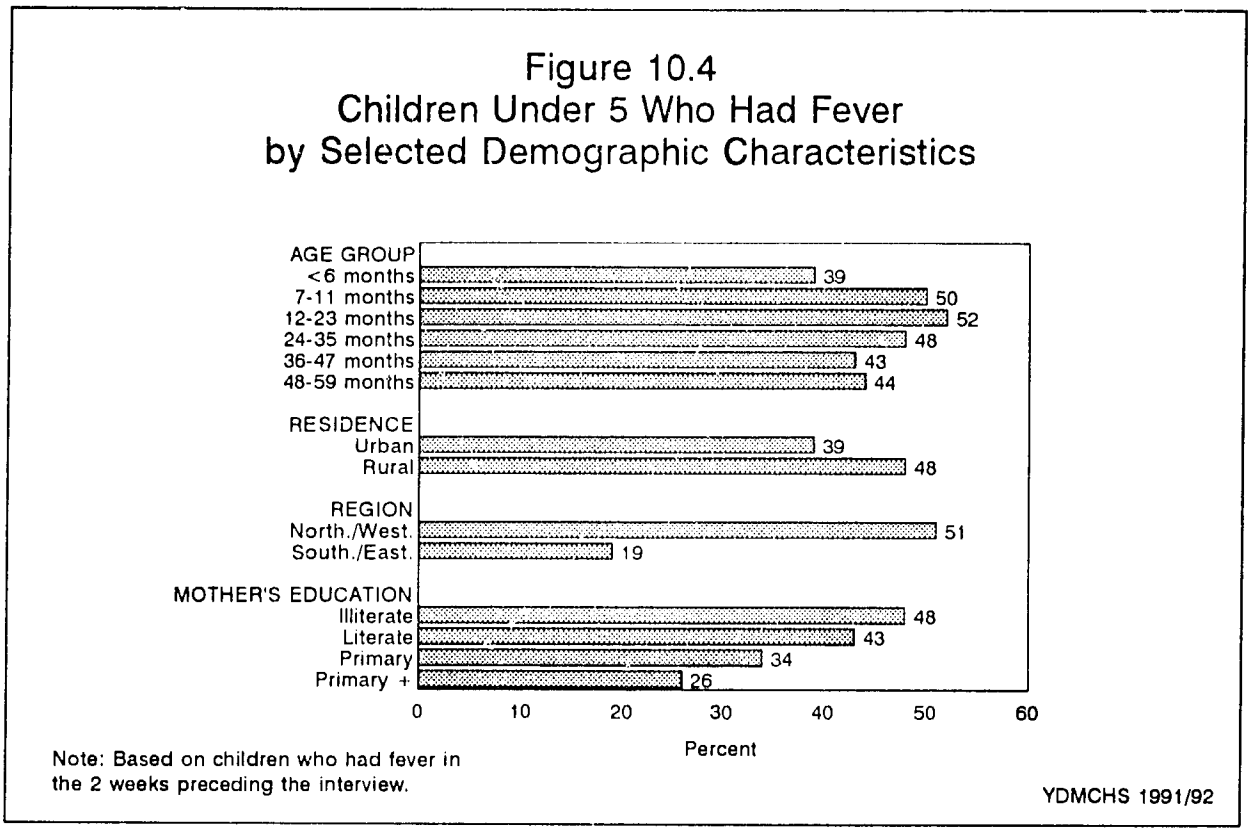
Ear and Eye Infections and "Other" Illnesses

Trachoma, serious inflammatory eye disease, and otitis or inner ear infection are common among children in Yemen. Respondents to the Child's Questionnaire were asked questions about whether there was a discharge of pus from the child's ears or eyes during the two weeks preceding the survey. Results shown in Table 10.6 indicate that 21 percent of all children had a pus discharge from their eyes and 14 percent had a pus discharge from their ears. The 6-11 months group had the highest percentage of children with a pus discharge from the eyes. Children in age group 12-23 months are more susceptible to pus discharges, whether from eyes or ears, than other children. The prevalence of these diseases is highest in children whose mothers are illiterate, those who live in rural areas, and those who reside in the northern and western governorates. Three percent of children were reported to have had "some other illness" during the two weeks preceding the interview.

Table 10.6 Prevalence of fever and other infections

The percentage of children under five who had fever, pus from eyes, pus from ears, or other illness, in the two weeks preceding the survey, by selected background characteristics, Yemen 1991/92

Background characteristic	Percentage of children who had: Fever	Eye infection	Ear infection	Other illness	Number of children
Child's age (months)					
< 6	39.3	18.0	8.0	2.5	718
6-11	50.4	25.4	14.6	3.1	802
12-23	51.5	23.6	17.7	3.2	1256
24-35	47.5	20.8	14.9	4.6	1429
36-47	43.3	18.4	13.3	3.4	1321
48-59	43.5	18.9	14.4	3.2	1188
Sex of child					
Male	46.9	21.4	14.9	3.7	3427
Female	45.4	20.0	13.6	3.2	3288
Residence					
Urban	38.8	16.3	11.2	3.7	1113
Rural	47.6	21.6	14.8	3.4	5602
Region					
North./West.	50.5	22.9	15.8	3.7	5793
South./East.	19.1	7.2	4.6	1.9	922
Mother's education					
Illiterate	47.5	22.2	15.0	3.4	5939
Literate	43.3	2.1	4.1	0.7	58
Primary	34.2	15.0	8.1	5.5	306
More than primary	25.9	6.4	6.0	3.8	211
Information not collected	48.2	7.1	12.9	1.1	202
Total	46.2	20.7	14.2	3.4	6715



10.4 SERIOUS ACCIDENTS

As modern technologies are increasingly used by people, accidents in young children are increasing, particularly in circumstances where attention is not given to necessary safeguards on equipment and to instructions for their proper use. Absence of various safeguards coupled with the family's lack of complete care and attention to children (often because of too many young children) are the factors that make children more susceptible to accidents. The data on serious accidents, namely, burns, fractures, wounds, and poisoning were collected by the time of occurrence of the accident, i.e., in last 12 months or more than 12 months ago. Table 10.7 indicates that 7 of 1,000 or a total of 49 of 6,715 children under five have had some accident. The rate of accidents increase with increasing age, except that no accidents were reported for children under one year of age. Male children are more prone than female children to have serious accidents. Children in urban areas compared to children in rural areas are four times more likely to get hurt in accidents. It appears that children in the northern and western governorates are half as likely to have accidents as children in the southern and eastern governorates. The distribution of accidents by type is as follows: burns (30 percent), fractures (17 percent), wounds (13 percent), and poisoning (6 percent); 18 percent reported other types of accidents (data not shown).

Table 10.7 Prevalence of accidents among children under five

Percent distribution of children under five who had a serious accident less than 12 months ago (per 1,000 children), according to selected background characteristics, Yemen 1991/92

Background characteristic	Percentage with accident: Less than 12 months ago	Percentage with accident: 12 months or more ago	Not stated	Total with accidents	Number of children
Age of child (months)					
< 6	0.0	0.0	0.5	0.5	718
6-11	0.0	0.0	1.5	1.5	802
12-23	4.2	0.5	1.8	6.5	1256
24-35	6.7	2.3	1.9	11.0	1429
36-47	4.8	1.1	2.9	8.8	1321
48-59	4.1	2.9	3.1	10.1	1188
Sex of child					
Male	5.0	1.4	2.0	8.4	3427
Female	2.7	1.3	2.2	6.1	3288
Residence					
Urban	9.1	4.9	3.8	17.8	1113
Rural	2.8	0.6	1.8	5.2	5602
Region					
North./West.	3.7	1.2	1.6	6.5	5793
South./East.	5.3	2.2	4.9	12.5	922
Mother's education					
Illiterate	4.0	1.1	2.0	7.1	5939
Literate	0.0	10.7	0.0	10.7	58
Primary	7.4	4.0	5.9	17.3	306
More than primary	0.0	2.9	1.9	4.8	211
Information not collected	0.0	0.0	0.0	0.0	202
Total	3.9	1.3	2.1	7.3	6715

CHAPTER 11

CURATIVE MEASURES: TREATMENT OF CHILD ILLNESS

To reduce morbidity and the negative consequences of illness in young children, the first step is to address the factors responsible for the high susceptibility of children to exposure to infection agents. Vaccination practices were discussed in Chapter 9; environmental conditions will be discussed in Chapter 12.

This chapter focuses on the curative measures taken to treat three childhood illnesses that are common in developing countries: diarrhea, acute respiratory infection, and fever. The recurrent nature of these illnesses and the practice of inappropriate or no treatment causes the children of respondents to be subject to repetitive cycles of infection and undernutrition. The occurrence of diarrhea, cough and fever is relatively high in Yemen. For children under five, the two-week prevalence rates are 34, 49, and 46 percent, respectively (see Chapter 10).

The selection of appropriate treatment when illness strikes depends, in the first instance, on the mother's recognition of the severity of the symptoms warranting treatment, her knowledge of appropriate treatment, the availability of resources to obtain treatment, and the mother's skills and motivation to utilize treatment effectively. In this chapter, these four aspects of curative measures will be discussed for each of the three illnesses considered.

11.1 DIARRHEA

Diarrhea has received increasing attention in Yemen. The development of oral rehydration therapy (ORT),[1] a simple treatment for dehydration due to diarrhea, and the recognition of the importance of proper dietary practices during diarrhea provide the focus for an examination of the curative measures practiced during bouts of childhood diarrhea.

KNOWLEDGE AND USE OF ORS

Knowledge of ORS

All respondents[2] to the Child's Questionnaire were asked if they were aware of ORS packets (oral rehydration salts). Those who had heard of ORS were asked to name sources from which they could obtain the packets; they were also asked if they had ever used ORS. In addition, information was collected on the type and quantity of water used when ORS solution was prepared the last time.

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[1]Oral rehydration therapy includes solution prepared from ORS packets and recommended home fluids such as sugar-salt-water solution.

[2]The Child's Questionnaire was designed to record information for up to four children under age five in the household. In general, there was only one respondent for each questionnaire, but sometimes there was more than one. The information on knowledge and use of ORS refers to the respondent for the youngest child in the household. The results presented in section 11.1 are weighted by the sampling weight of the youngest child in the household and not by all the children for whom the respondent provided information.

Table 11.1 presents data on mother's knowledge (or knowledge of the person who provided information about child)[3] of ORS and ever use of ORS solution. Over half of respondents have heard of ORS (57 percent). Figure 11.1 compares differentials in awareness of ORS by various demographic characteristics. Differentials in knowledge of ORS by area of residence are quite substantial; only 51 percent in rural areas have heard of ORS packets, compared to 90 percent in urban areas. Differentials by level of education are similar to those by area of residence. While only 55 percent of illiterate respondents know about ORS, 85 and 93 percent of respondents with primary and more than primary education, respectively, know about ORS packets. Greater awareness of ORS is also observed for the southern and eastern governorates (72 percent), compared to the northern and western governorates (55 percent).

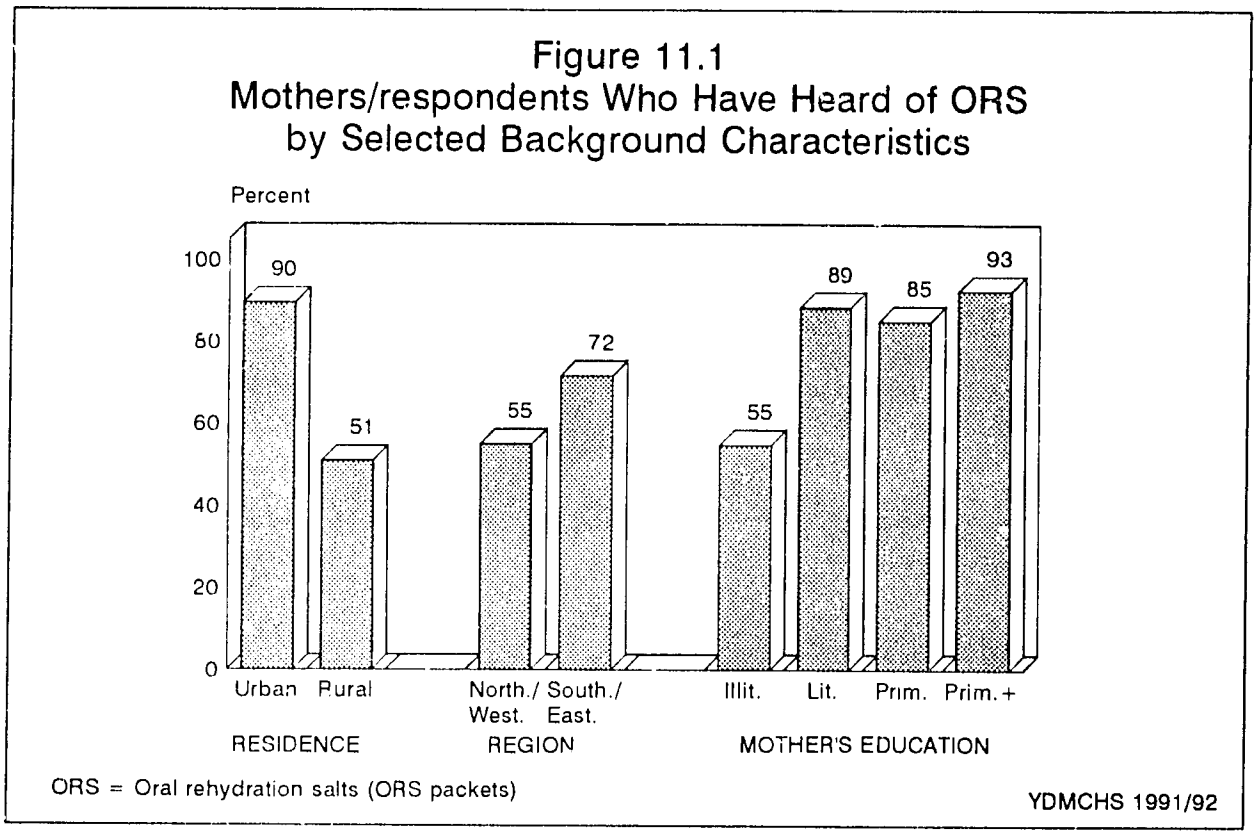
Table 11.1 Knowledge and use of ORS packets

Among mothers/respondents reporting on children under five, the percentage who had heard about ORS packets and of these the percentage who ever used ORS packets, and the percentage of all mothers/respondents who ever used ORS, by selected background characteristics, Yemen 1991/92

Background characteristic	Mothers/respondents who heard about ORS: Total	Mothers/respondents who heard about ORS: Percent ever used ORS	Mothers/ respondents who ever used ORS	Number of mothers/ respondents
Child's age (months)				
< 6	53.7	58.1	31.2	711
6-11	60.4	69.9	42.2	791
12-17	61.9	68.8	42.6	583
18-23	58.8	68.6	40.3	521
24-59	55.3	60.8	33.7	1450
Residence				
Urban	89.5	69.9	62.5	687
Rural	50.9	62.6	31.8	3369
Region				
North./West.	55.0	63.1	34.7	3470
South./East.	71.7	71.0	50.9	586
Mother's education				
Illiterate	54.8	64.0	35.1	3532
Literate	88.[illegible]	73.1	64.6	39
Primary	85.1	65.8	56.0	194
More than primary	92.5	70.0	64.7	144
Information not collected	40.5	61.3	24.8	146
Total	57.4	64.5	37.0	4056

Note: "Mothers/respondents" includes all respondents to the Child's Questionnaire. See text footnotes 2 and 3.
ORS = Oral rehydration salts

[3]As around 97 percent of respondents who provided information on children were mothers, the word "mother" is used herein to denote respondent.



Ever Use of ORS

Respondents who have heard about ORS were asked whether they had ever prepared ORT solution using an ORS packet. Table 11.1 indicates that about two-thirds of those who have heard of ORS, or 37 percent of all respondents have had experience in preparing ORS solution. Among those who know about ORS, differentials in the proportion of respondents who have ever used ORS by age, urban-rural residence, and mother's level of education are not substantial. However, respondents residing in urban areas and in the southern and eastern governorates have an ever-use rate that is almost 8 percentage points higher than that of rural areas and the northern and western governorates (see column 2 of Table 11.1). The figures for ORS awareness and usage indicate that among those who have knowledge of ORS most have also had experience in its use.

Knowledge of Sources of ORS

Table 11.2 shows the percentage of respondents who know about ORS who mentioned specific sources from which ORS packets can be obtained. Pharmacies are the most mentioned source for obtaining ORS. Almost half of respondents mentioned private pharmacies as a source of the ORS packets. Public health facilities is the second most popular source (39 percent). Other sources, namely, cooperative health establishments, field workers, and private doctors or hospitals, were mentioned by less than 5 percent of the respondents. Although one-third of the respondents who know about ORS have had no experience in preparing the solution, almost all those who have heard of ORS know where to obtain it. Only 8 percent did not know of any source for obtaining ORS.

Table 11.2 Knowledge of sources for ORS packets

Percentage of mothers/respondents who had heard about ORS packets, by knowledge of specific sources from which ORS packets can be obtained and selected background characteristics, Yemen 1991/92

Background characteristic	Public health establish-ment	Cooperative health establish-ment	Field worker	Private doctor/ hospital	Pharmacy	Other places	Don't know	Number of mothers/ respondents
Residence								
Urban	45.5	6.2	0.7	2.5	51.7	3.7	1.9	615
Rural	36.8	3.7	1.9	2.7	47.9	5.5	9.6	1714
Region								
North./West.	30.1	5.2	1.5	2.7	53.4	5.7	8.7	1909
South./East.	80.0	0.2	2.0	2.3	28.3	1.9	2.2	420
Total	39.1	4.3	1.6	2.7	48.9	5.0	7.5	2329

Note: "Mothers/respondents" includes all respondents to the Child's Questionnaire. See text footnotes 2 and 3.

Almost the same proportion (one-half) of rural as urban respondents mentioned pharmacies as a source for ORS packets; a slightly lower proportion of rural respondents named public health establishments. About 10 percent of rural respondents did not know any source for obtaining ORS, compared to only 2 percent among urban respondents. The most important observation from the table is that pharmacies are the most frequently mentioned source for every subgroup except the southern and eastern governorates. An overwhelming majority of residents of the southern and eastern governorates (80 percent) named public health facilities as a source for ORS, whereas less than one-third of residents of the northern and western governorates (30 percent) named that source.

Effective Preparation of ORS

If selection of ORS as the appropriate therapy for diarrhea depends on the mother's recognition of the severity of the illness and her knowledge of ORS and a place where it can be obtained, then her skills in effective use of this therapy is the next important step in treatment of child's diarrhea. An ORS packet requires a specific quantity of water to prepare the solution for treatment of diarrhea. The use of clean water in preparing the rehydration solution is important to avoid the complications that may result from using contaminated water.

Two kinds of ORS packets are available in Yemen; one should be mixed with 750 milliliters (3/4 liter) of water, while the other requires one liter. The packets requiring 750 milliliters of water are common in the northern and western governorates; the other ones, which require one liter of water, are available in the southern and eastern governorates. Table 11.3 shows the percent distribution of respondents by the various quantities of water that they reported using to prepare ORS solution. Differentials by some background variables are also presented. The results presented in the table do not permit exact determination of the extent to which the correct quantity of water was used for preparing ORS solution. In the Child's Questionnaire, of the four options that were included for specific quantities of water, none was for 750 milliliters or 3/4 liter of water. Therefore, when the respondents stated that they used 750 milliliters of water, the "other" choice had to be marked.

Table 11.3 Quantity of water used to prepare ORS packets

Percent distribution of mothers/respondents who had ever used ORS packets by quantity of water used to prepare ORS solution, according to selected background characteristics, Yemen 1991/92

Background characteristic	Quantity of water							Total	Number of mothers/ respondents
	0.5 liter	1 liter	1.5 liters	2 liters	Other	Don't know	Not stated		
Child's age (months)									
< 6	31.5	18.8	1.6	0.5	45.2	2.0	0.5	100.0	222
6-11	28.9	20.1	2.1	1.5	46.0	0.9	0.5	100.0	334
12-17	24.1	24.9	3.4	0.2	45.2	1.7	0.5	100.0	248
18-23	26.9	22.9	3.1	0.0	47.0	0.0	0.0	100.0	210
24-59	28.7	27.1	3.2	0.2	38.6	1.6	0.5	100.0	488
Sex of child									
Male	27.6	23.6	2.5	0.4	44.3	1.0	0.6	100.0	772
Female	28.8	23.1	2.9	0.6	42.6	1.6	0.3	100.0	730
Residence									
Urban	22.9	34.3	4.0	0.4	37.2	1.1	0.1	100.0	430
Rural	30.3	19.0	2.2	0.6	46.0	1.4	0.6	100.0	1072
Region									
North./West.	32.9	16.9	1.5	0.6	46.4	1.2	0.5	100.0	1204
South./East.	8.9	49.3	7.7	0.5	31.5	1.7	0.4	100.0	298
Mother's education									
Illiterate	30.1	20.9	2.2	0.5	44.6	1.2	0.5	100.0	1239
Literate	(20.8)	(26.0)	(15.9)	(0.0)	(37.3)	(0.0)	(0.0)	100.0	25
Primary	22.9	28.7	2.3	1.1	43.5	1.4	0.0	100.0	109
More than primary	8.1	47.6	8.1	0.7	34.4	1.2	0.0	100.0	93
Information not collected	(35.7)	(27.7)	(0.0)	(0.0)	(32.6)	(3.9)	(0.0)	100.0	36
Total	28.2	23.3	2.7	0.5	43.5	1.3	0.5	100.0	1502

Note: "Mothers/respondents" includes all respondents to the Child's Questonnaire. See text footnotes 2 and 3. Figures in parentheses are based on 25-49 cases.

There is considerable variation in the quantity of water used in preparing rehydration solution. One-fourth of respondents used one liter of water or the correct amount of water.[4] Among those who prepared ORS in the southern and eastern governorates, about one-half of the respondents used the correct amount of water (one liter) to prepare the solution. Higher proportions of mothers in urban areas and more educated women used one liter of water than mothers in rural areas and illiterate women and women with less education.

The table shows that a fairly high proportion of responses fall in the "other" category. The responses in the "other" category may be partially ascribed to respondents' use of packets requiring 3/4 liter of water. A high percentage of women residing in the southern and eastern governorates (32 percent) used a quantity of water that had to be marked in the "other" category, although packets requiring one liter of water are mostly available in the region. For the total sample, 28 percent of the women used half a liter of water, which means they used less water than they should have because both packets require more than that quantity of water. On the other hand, only 3 percent used too much water (i.e., more than one liter), thereby diluting the

[4]It is possible that respondents who used the 750 milliliter packets may have used one liter of water, but it is assumed that the number of such cases is negligible.

solution more than it should have been. There are no differentials by age and sex of child regarding use of incorrect quantities of water.

Use of clean, pure water is advised for preparing rehydration solution. In the survey, a question was asked to find out if respondent used bottled or boiled water in preparing ORS solution. Table 11.4 shows that almost everyone used clean, pure water: 59 percent used bottled water and an additional 39 percent used boiled water. Regional differentials in the proportion using boiled or bottled water are quite pronounced. About 95 percent of respondents from the southern and eastern governorates mixed the ORS packet in boiled water compared to only 25 percent of respondents in the northern and western governorates. This regional difference in the type of water used may be due to the advice received from the place where the ORS packets were obtained, or to the availability of safe drinking water, or both.

The likelihood of using boiled water for preparing ORS solution increases with the increase in the mother's level of education. The proportion of illiterate respondents who used bottled water (63 percent) greatly exceeds the proportion of respondents who had more than primary education who used bottled water (29 percent). More educated women reside mostly in urban areas where pipe water, which is considered safe water, is available, and they do not see any necessity of buying bottled water. Nonetheless, most urban respondents boil water for preparing ORS solution anyway.

Table 11.4 Type of water used to prepare ORS packets

Percent distribution of mother/respondents who have ever used ORS packets, by type of water used to prepare ORS solution, according to selected background characteristics, Yemen 1991/92

Background characteristic	Type of water used for ORS: Boiled water	Bottled water	Other	Don't know	Not stated	Total	Number of mothers/ respondents
Child's age (months)							
< 6	36.2	62.3	1.0	0.0	0.5	100.0	222
6-11	35.8	60.7	2.4	0.3	0.7	100.0	334
12-17	39.4	60.0	0.6	0.0	0.0	100.0	248
18-23	37.4	62.1	0.6	0.0	0.0	100.0	210
24-59	41.7	55.6	1.8	0.3	0.6	100.0	488
Sex of child							
Male	37.5	60.9	1.1	0.0	0.4	100.0	772
Female	39.7	57.7	1.9	0.4	0.4	100.0	730
Residence							
Urban	39.9	58.0	1.5	0.0	0.5	100.0	430
Rural	38.0	59.9	1.5	0.3	0.4	100.0	1072
Region							
North./West.	24.7	73.3	1.3	0.2	0.5	100.0	1204
South./East	94.5	3.1	2.1	0.2	0.2	100.0	298
Mother's education							
Illiterate	35.2	62.9	1.4	0.1	0.4	100.0	1239
Literate	(49.8)	(50.2)	(0.0)	(0.0)	(0.0)	100.0	25
Primary	50.5	46.6	2.9	0.0	0.0	100.0	109
More than primary	68.6	29.3	2.1	0.0	0.0	100.0	93
Information not collected	(32.8)	(60.8)	(0.0)	(3.1)	(3.3)	100.0	36
Total	38.6	59.3	1.5	0.2	0.4	100.0	1502

Note: "Mothers/respondents" includes all respondents to the Child's Questionnaire. See text footnotes 2 and 3. Figures in parentheses are based on 25-49 cases.

11.2 TREATMENT OF THE LAST EPISODE OF DIARRHEA

Diarrhea, like other illnesses affecting children, may motivate mothers to administer medicines they know about, or to seek treatment for their children who are sick. The YDMCHS asked mothers whether any oral rehydration therapy (ORT), i.e., solution made from ORS packets or a homemade sugar-salt-water solution, was given to the child when he/she had diarrhea in two-week period preceding the survey. Mothers were also asked if the child was taken for treatment to any facility or person. Those who had consulted a treatment facility, were asked what treatment the child received from the treatment source(s) in the last visit.

Use of ORS

Table 11.5 presents the percent distribution of children by type of oral rehydration therapy (ORT) received for treatment of diarrheal illness. Twenty-six percent of children were given only ORS solution,

Table 11.5 Use of oral rehydration therapy

Percent distribution of children under five who had diarrhea in the two weeks preceding the survey by type of oral rehydration therapy (ORT) given, according to selected background characteristics, Yemen 1991/92

Background characteristic	Oral rehydration therapy (ORT)					Total	Number of children
	Home-made solution	ORS packets	Both solution and ORS	Neither solution nor ORS	Not stated		
Child's age (months)							
< 6	4.8	19.1	1.1	73.4	1.6	100.0	216
6-11	1.5	34.6	1.4	61.9	0.7	100.0	340
12-17	3.8	34.2	0.9	59.9	1.2	100.0	280
18-23	3.3	30.7	2.2	63.8	0.0	100.0	273
24-59	2.0	22.7	0.9	72.6	1.8	100.0	1202
Sex of child							
Male	2.7	27.8	1.2	67.0	1.3	100.0	1210
Female	2.4	24.9	1.1	70.2	1.5	100.0	1101
Residence							
Urban	1.3	44.2	1.5	53.1	0.0	100.0	293
Rural	2.7	23.8	1.1	70.8	1.6	100.0	2018
Region							
North./West.	2.5	26.1	1.1	68.9	1.3	100.0	2200
South./East.	4.1	32.6	1.5	60.2	1.7	100.0	111
Mother's education							
Illiterate	2.7	26.1	1.1	68.8	1.3	100.0	2134
Literate	*	*	*	*	*	100.0	11
Primary	0.6	33.3	1.7	62.8	1.7	100.0	70
More than primary	(2.1)	(31.7)	(0.0)	(66.2)	(0.0)	100.0	37
Information not collected	1.9	20.8	2.1	71.1	4.1	100.0	59
Knowledge of ORS							
Don't know	1.1	5.1	0.4	90.8	2.7	100.0	967
Know	3.6	41.8	1.7	52.5	0.4	100.0	1344
Severity of diarrhea							
Mild	2.3	22.1	1.0	74.4	0.2	100.0	1077
Severe	2.8	31.2	1.3	64.5	0.1	100.0	1175
Don't know	(4.6)	(20.2)	(0.0)	(75.3)	(0.0)	100.0	25
Not stated	(0.0)	(3.6)	(0.0)	(15.7)	(80.7)	100.0	35
Total	2.6	26.4	1.1	68.5	1.4	100.0	2311

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

3 percent were given only homemade sugar-salt-water solution and 1 percent were given both types of ORT. More than two-thirds of children with diarrhea received no rehydration solution. The proportion of children who received solution prepared from ORS packets, is almost half the proportion of respondents who have heard of ORS packets. A higher proportion of children who had diarrhea were treated with ORS in urban areas (44 percent) than in rural areas (24 percent). Also, ORS solution was given to a higher proportion of children who were older than six months, and those that live in the southern and eastern governorates. Variation in mother's education[5] seems to have little effect on a child's chances of being treated for diarrhea with rehydration solution.

Effects of ORS on Diarrheal Illness

Mothers were asked, regarding the last time their child was given ORS, if the child's condition was better, worse, or the same. The results indicate the rehydration solutions used for diarrheal treatment are very effective. After treatment with ORS solution, 85 percent of children improved, 9 percent showed no improvement, and the condition of 4 percent worsened. The severity of the illness was a factor in the efficacy of the ORS treatment. More than 80 percent of children with severe diarrhea and 90 percent of children with mild diarrhea improved after treatment with ORS.

Type of Diarrhea Treatment

Diarrhea can be treated by ORT and/or by consulting a medical facility or person or seeking some other advice and using the treatment suggested by the source consulted. Table 11.6 presents the percent distribution of children with diarrhea by the type of treatment received. Medical or other advice was sought for one-third of children, 6 percent were given ORT (solution made with ORS packets or homemade sugar-salt-water solution) without any advice, and 6 of 10 children received no treatment for their illness. Half the children 12-23 months and almost two-thirds of those in the youngest and oldest age categories were not treated in any way for the last episode of diarrhea. Differentials are observed by residence, education and region. Table 11.6 and Figure 11.2 show that one-third of children in urban areas and in the southern and eastern governorates, and 4 in 10 children whose mother have primary education did not receive any kind of treatment. In contrast, 6 of 10 children living in rural areas, or in the northern and western governorates, or whose mothers were illiterate were not treated for diarrhea in any way. The most important finding is that more than half of the children with severe diarrhea were not treated; for 4 of 10 children some advice (mostly medical advice) was sought, and 8 percent were given ORT by mothers without consulting any health facility or anyone (see Figure 11.3).

[5]Mother's educational status is shown as "Information not collected" for children who had no mothers in the household, or whose mothers were not eligible for the Women's Questionnaire in the household or whose mothers were not included in the survey for any reason.

Table 11.6 Treatment of diarrhea

Percent distribution of children under five who had diarrhea during the two weeks preceding the survey by type of treatment received, according to selected background characteristics, Yemen 1991/92

Background characteristic	Type of treatment received: Sought advice	ORT given[1]	No treat-ment	Total	Number of children
Child's age (months)					
< 6	29.2	5.8	65.0	100.0	216
6-11	41.4	5.3	53.2	100.0	340
12-17	40.4	8.3	51.2	100.0	280
18-23	38.0	7.9	54.1	100.0	273
24-59	31.3	5.3	63.4	100.0	1202
Sex					
Male	36.3	6.5	57.2	100.0	1210
Female	32.5	5.5	62.1	100.0	1101
Residence					
Urban	58.9	6.4	34.7	100.0	293
Rural	30.9	6.0	63.1	100.0	2018
Region					
North./West.	33.4	5.9	60.8	100.0	2200
South./East.	56.7	8.8	34.5	100.0	111
Mother's education					
Illiterate	33.8	6.0	60.1	100.0	2134
Literate	*	*	*	100.0	11
Primary	45.7	11.5	42.8	100.0	70
More than primary	(46.7)	(3.2)	(50.1)	100.0	37
Information not collected	33.0	0.0	67.0	100.0	59
Severity of diarrhea					
Mild	30.4	4.4	65.2	100.0	1077
Severe	38.8	7.9	53.3	100.0	1175
Don't know	(38.5)	(0.0)	(61.5)	100.0	25
Not stated	(9.4)	(0.0)	(90.6)	100.0	35
Total	34.5	6.0	59.5	100.0	2311

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.
[1]Without seeking any advice.

Figure 11.2
Children Under 5 with Diarrhea who Received No Treatment by Selected Background Characteristics

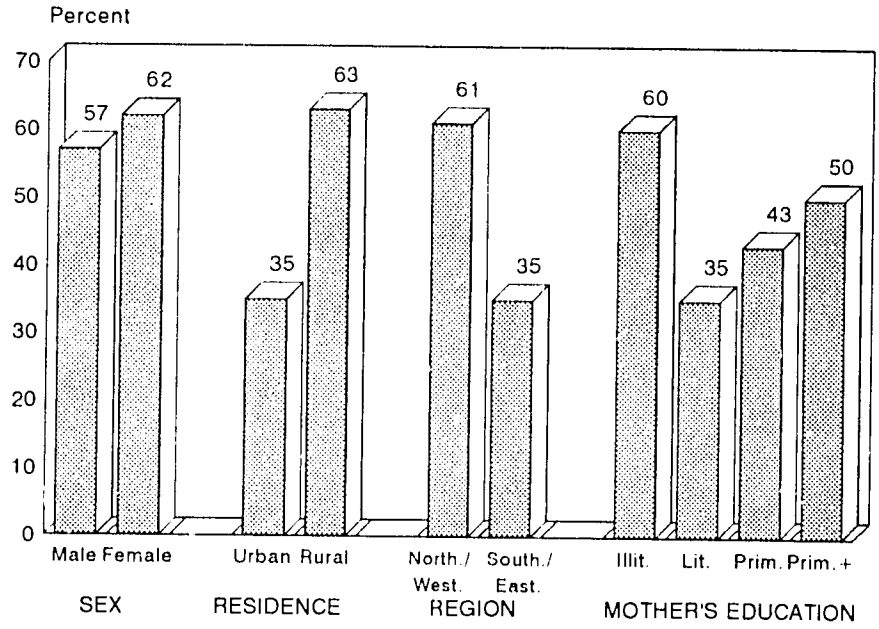


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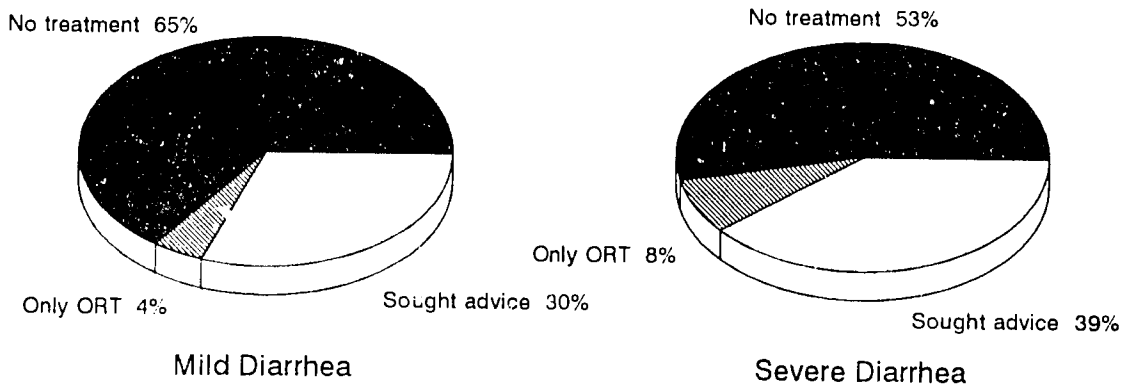
Figure 11.3
Treatment of Mild and Severe Diarrhea among Children Under 5



Note: Children who had diarrhea in the 2 weeks preceding the survey.
ORT = Oral rehydration therapy

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Place of Advice

The source from which advice is sought has a significant effect on the appropriateness of treatment. Table 11.7 presents the percentage of children for whom medical advice was sought by source of advice and selected background variables. Public health facilities are the major source for advice about diarrhea. Public health facilities were consulted for one-fifth of children, compared to pharmacies for 6 percent, private doctors for 5 percent, and cooperative health facilities for 4 percent. Traditional practitioners were consulted for diarrhea treatment for only a very small proportion of children. Differentials in not seeking any medical advice are similar to those described above for not having any treatment for diarrhea.

Table 11.7 Sources of treatment for diarrhea

Among children under five who had diarrhea in the two weeks preceding the survey, the percentage for whom medical advice was sought, and the sources from which treatment was sought, by selected background characteristics, Yemen 1991/92

		Treatment sought from:[1]							
Background characteristic	Medical advice sought	Public health establish-ment	Cooperative health establish-ment	Private doctor	Pharmacy	Daya or grand-mother	Other person	No advice sought	Number of children
Child's age (months)									
< 6	27.2	18.3	2.9	4.1	3.2	0.4	2.5	70.8	216
6-11	40.2	25.7	4.1	6.1	7.1	0.4	1.3	58.6	340
12-17	39.9	25.9	4.8	6.4	6.9	0.0	0.6	59.6	280
18-23	37.2	22.7	5.3	4.8	6.7	0.0	1.2	62.0	273
24-59	30.0	18.4	2.7	5.0	5.4	0.4	0.9	68.7	1202
Sex of child									
Male	35.0	22.7	3.5	5.4	5.7	0.4	1.2	63.7	1210
Female	31.4	18.9	3.4	5.1	5.9	0.2	1.0	67.5	1101
Residence									
Urban	58.3	33.1	10.0	9.0	12.1	0.0	0.8	41.1	293
Rural	29.7	19.1	2.5	4.7	4.9	0.3	1.2	69.1	2018
Region									
North./West.	32.2	20.1	3.6	5.0	5.4	0.3	1.0	66.6	2200
South./East.	54.6	37.0	0.8	9.2	14.1	0.8	2.4	43.3	111
Mother's education									
Illiterate	32.6	20.4	3.4	5.1	5.7	0.3	1.1	66.2	2134
Literate	*	*	*	*	*	*	*	*	11
Primary	45.2	30.2	3.3	9.7	5.1	0.0	1.1	54.3	70
More than primary	(44.4)	(28.1)	(7.1)	(9.3)	(10.0)	(0.0)	(2.3)	(53.3)	37
Information not collected	33.0	21.0	1.5	4.1	6.4	0.0	0.0	67.0	59
Severity of diarrhea									
Mild	29.4	16.8	4.0	4.1	6.1	0.3	0.9	69.6	1077
Severe	37.8	25.5	3.0	6.3	5.6	0.1	1.3	61.2	1175
Don't know	(24.1)	(11.3)	(2.5)	(3.1)	(10.3)	(9.8)	(4.6)	(61.5)	25
Not stated	(9.4)	(0.0)	(3.6)	(3.2)	(2.6)	(0.0)	(0.0)	(90.6)	35
Total	33.3	20.9	3.5	5.2	5.8	0.3	1.1	65.5	2311

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.
[1]Multiple responses permitted

Diarrheal Treatment Given at Place Consulted

Mothers who sought advice from a facility or person during their child's last episode of diarrhea were asked about the type of treatment received in the last visit. Multiple answers were acceptable. Table 11.8 shows the percent distribution of children by type of treatment received when an external source was consulted for treatment of diarrhea.

Table 11.8 shows that most children are given ORS solution or some kind of liquid medication when an external source is consulted. In addition, more than 10 percent of the children were treated by intravenous injection, 18 percent with other injections, 6 percent with tablets/pills, and 7 percent with other remedies. Since intravenous injection is used mainly in severe cases, it indicates that diarrhea was severe in those cases. Severe cases of diarrhea are most common among infants under six months. The proportion of children treated with intravenous injection in the northern and western governorates (12 percent) is more than twice that in the southern and eastern governorates; and it is much higher for children of illiterate mothers than for children whose mothers have completed at least primary school. No significant or consistent differences are found by sex of child, or urban-rural residence.

Table 11.8 Treatment for diarrhea

Percentage of children under five who had diarrhea in the two weeks preceding the survey and for whom advice or treatment was sought, by treatment received and selected background characteristics, Yemen 1991/92

	Treatment received:[1]								
Background characteristic	Intra-venous injec-tion	Other injec-tions	Tablets or pills	Liquid medicine	ORS packets	Other	Nothing given	Don't know	Number of children
Child's age (months)									
< 6	14.3	10.3	1.9	48.5	55.2	8.5	0.0	0.0	63
6-11	8.5	18.7	4.4	55.5	72.6	6.2	0.8	0.0	141
12-17	9.6	24.2	8.1	57.8	67.3	10.0	0.4	1.0	113
18-23	10.9	19.3	8.4	64.5	67.4	4.7	1.1	0.0	104
24-59	12.0	16.4	6.1	54.5	59.4	6.4	0.8	0.0	376
Sex of child									
Male	11.5	16.5	6.7	57.2	61.7	5.9	0.8	0.0	439
Female	10.5	19.5	5.3	54.5	65.9	8.0	0.6	0.3	357
Residence									
Urban	9.7	12.9	3.3	56.0	66.1	15.4	0.4	0.0	173
Rural	11.5	19.1	6.8	56.0	62.9	4.4	0.8	0.2	624
Region									
North./West.	11.6	18.5	6.0	55.2	65.1	6.6	0.7	0.2	734
South./East.	5.0	9.9	7.0	64.9	45.2	9.8	0.7	0.0	63
Mother's education									
Illiterate	11.6	17.7	6.1	56.1	64.0	6.3	0.8	0.2	722
Literate	*	*	*	*	*	*	*	*	6
Primary	(0.0)	(11.3)	(3.9)	(64.7)	(52.7)	(7.0)	(0.0)	(0.0)	32
More than primary	*	*	*	*	*	*	*	*	17
Information not collected	*	*	*	*	*	*	*	*	19
Total	11.1	17.8	6.1	56.0	63.6	6.8	0.7	0.1	797

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.
[1]Multiple responses permitted

Child Feeding Practices during Diarrhea

Curing diarrhea involves administering rehydration solution (either ORS or homemade solution) at the onset of the diarrheal attack as well as maintenance of feeding during the episode. The rationale for this is that oral rehydration therapy (ORT) corrects dehydration and maintenance of feeding prevents undernutrition. Thus, both ORT and ongoing feeding are essential for treating diarrhea. Breast milk, in particular, is critically important in breastfeeding children who suffer from diarrhea. The YDMCHS included questions on feeding regarding fluids and solid foods in the Child's Questionnaire.

Table 11.9 presents the feeding modes for fluids and solid foods during diarrheal illness for children under five. About 74 percent of children either continued to receive the same quantity (41 percent) or an increased quantity (36 percent), while almost one-fourth of children received less than usual quantity of fluids. Educated mothers more than illiterate mothers are more aware of the necessity of giving at least the same quantity of fluids to children during diarrheal episodes. Children residing in the northern and western governorates received more fluids (37 percent) than children residing in the southern and eastern governorates (23 percent).

Table 11.9 Feeding modes during diarrhea

Percent distribution of children under five who had diarrhea in the two weeks preceding the survey by feeding modes during illness, according to selected background characteristics, Yemen 1991/92

Background characteristic	Feeding mode: Fluids				Feeding mode: Solid foods[1]			
	Same	More	Less	No. of children	Same	More	Less	No. of children
Child's age (months)								
< 6	56.2	24.5	19.3	202	67.5	3.5	28.9	64
6-11	41.6	34.9	23.5	325	46.1	3.9	50.1	231
12-17	38.7	36.5	24.8	272	32.8	4.1	63.1	238
18-23	36.6	36.6	26.7	265	43.3	3.2	53.5	233
24-59	38.8	38.6	22.6	1142	44.0	4.0	52.0	1059
Sex of child								
Male	41.1	36.1	22.8	1151	43.1	4.0	53.0	959
Female	39.9	36.4	23.7	1055	44.0	3.8	52.2	866
Residence								
Urban	38.9	38.1	23.0	289	41.3	7.8	50.9	253
Rural	40.8	36.0	23.2	1917	43.9	3.3	52.9	1572
Region								
North./West.	40.1	36.9	22.9	2101	43.5	3.7	52.8	1751
South./East.	48.5	23.0	28.6	105	44.6	8.1	47.4	74
Mother's education								
Illiterate	39.9	36.5	23.6	2037	43.0	3.5	53.5	1675
Literate	*	*	*	11	*	*	*	10
Primary	55.4	33.2	11.4	68	50.8	8.4	40.8	60
More than primary	(44.4)	(42.4)	(13.2)	37	(50.9)	(20.1)	(29.1)	32
Information not collected	44.8	29.7	25.4	53	(52.2)	(2.0)	(45.9)	48
Total	40.5	36.3	23.2	2206	43.5	3.9	52.6	1825

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed. The missing responses are not shown.
[1]Excludes children who have not started eating solid foods.

With regard to feeding solid foods, the data are analyzed only for children who had already been receiving solid food as a part of their daily intake. Table 11.9 shows that more than half of children were fed less solid food during the diarrheal illness than before. Only 4 percent of children were given more solid food, while 44 percent received the same amount of food. The only notable differentials are by mother's education: more than half of illiterate mothers reduced the amount of solid food given to their children with diarrhea while only about 4 in 10 mothers who had primary education did so.

The question on breastfeeding of children was asked in the Woman's Questionnaire to every woman who had not yet weaned her youngest child. The question was asked as follows: "When (NAME OF THE CHILD" has diarrhea, what do you do with breastfeeding? ... Do you continue without change, increase it, decrease it, or stop it?" The responses refer to the usual breastfeeding practices during diarrheal illness and may not necessarily correspond to how the children who had diarrhea in the two weeks preceding the survey were fed. Still, the responses should give a fair idea of what mothers would have done if asked about breastfeeding practices during the last episode of their child's diarrhea. Table 11.10 presents the child breastfeeding practices of women who had not yet weaned their youngest child; it excludes mothers whose children had never been ill with diarrhea. The results show that 8 in 10 mothers maintained the usual breastfeeding, 5 percent increased breastfeeding, 7 percent decreased breastfeeding, and 2 percent stopped breastfeeding. Women who have more than primary education are more likely to increase or maintain breastfeeding of children with diarrhea than other women.

Table 11.10 Breastfeeding practices during diarrhea

Percent distribution of mothers by breastfeeding practices observed for the youngest child not yet weaned when child has diarrhea, by selected background characteristics, Yemen 1991/92

Background characteristic	Breastfeeding practices during diarrhea						Total	Number of mothers
	No change	Increased	Decreased	Stopped	Don't know	Not stated		
Residence								
Urban	78.0	7.9	7.9	3.9	1.9	0.5	100.0	255
Rural	79.2	3.9	7.1	1.8	7.6	0.4	100.0	1490
Region								
North./West.	79.2	4.2	7.0	1.9	7.4	0.3	100.0	1547
South./East.	78.0	6.7	8.7	3.4	1.4	1.9	100.0	197
Mother's education								
Illiterate	79.0	4.2	7.1	2.1	7.2	0.4	100.0	1620
Literate	*	*	*	*	*	*	100.0	21
Primary	77.3	7.6	10.6	2.8	1.8	0.0	100.0	68
More than primary	(82.0)	(10.5)	(7.4)	(0.0)	(0.0)	(0.0)	100.0	37
Total	79.0	4.5	7.2	2.1	6.8	0.5	100.0	1745

Note: Based on mothers reports of usual breastfeeding practice followed in case child has diarrhea; does not pertain to children who had diarrhea in the two weeks preceding the survey. Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.

Reasons for Not Seeking Any Medical Advice

Two-thirds of children who had diarrhea in the two weeks prior to the interview were not taken to any person or place for treatment. Mothers were asked the reasons for not taking their children somewhere for treatment. The major reason for not seeking medical assistance for children, as shown in Table 11.11, was the lack of facilities (29 percent). For 18 percent of children, mothers considered the child's illness mild, and for 7 percent of children mothers were busy and did not have time to seek treatment. For over 2 in 5 children "other" reasons were mentioned.

Variations by sex or age of child were not significant. However, differentials by place of residence and mother's education are quite substantial. Mothers in urban areas did not seek advice for children with diarrhea because child's illness was considered mild (48 percent). However, for children in the rural areas no medical advice was sought because there were no facilities (31 percent) or because of "other" reasons (42 percent).

Table 11.11 Reasons for not taking child with diarrhea for treatment

Percent distribution of children who had diarrhea in the two weeks preceding the survey and for whom no advice was sought, by reasons for not taking child for treatment, according to selected background characteristics, Yemen 1991/92

Background characteristic	Reason for not taking child for treatment: Illness was mild	Mother too busy	No facility	Other	Not stated	Total	Number of children
Child's age (months)							
< 6	18.1	4.4	24.5	47.3	5.7	100.0	154
6-11	19.9	10.2	24.3	40.8	4.8	100.0	199
12-17	15.9	3.3	31.8	46.3	2.7	100.0	168
18-23	16.2	10.7	30.8	39.6	2.7	100.0	169
24-59	17.7	7.4	30.0	39.3	5.6	100.0	832
Sex of child							
Male	17.8	6.6	29.7	41.2	4.7	100.0	775
Female	17.6	8.2	28.2	41.0	5.0	100.0	747
Residence							
Urban	47.9	7.1	5.6	33.9	5.4	100.0	120
Rural	15.1	7.4	31.0	41.7	4.8	100.0	1401
Region							
North./West.	17.0	7.2	29.4	41.5	4.9	100.0	1473
South./East.	(37.9)	(12.0)	(14.8)	(29.5)	(5.8)	100.0	49
Mother's education							
Illiterate	16.9	7.2	29.0	41.9	5.0	100.0	1419
Literate	*	*	*	*	*	100.0	5
Primary	(39.3)	(10.7)	(15.2)	(31.8)	(3.1)	100.0	38
More than primary	*	*	*	*	*	100.0	20
Information not collected	(4.0)	(7.2)	(60.8)	(21.9)	(6.2)	100.0	39
Total	17.7	7.4	29.0	41.1	4.9	100.0	1522

Note: Figures in parentheses are based on 25-49 cases and an asterisk (indicates that figure is based on fewer than 25 cases and has been suppressed.

11.3 ACUTE RESPIRATORY INFECTION

A substantial number of child deaths in Yemen are preceded by illness in which the child suffers from coughing and difficult breathing, symptoms of acute respiratory tract infection (ARI), mostly pneumonia. The YDMCHS collected detailed information on the occurrence of cough and difficult breathing at any time during the two weeks prior to the interview, type of treatment given to the child, whether any advice was sought on how to treat the cough, and the source of advice. Two aspects of treatment of acute respiratory infections are analyzed in this section: type of treatment and source of advice on treatment.

Treatment of Cough and Difficult Breathing

About half of the children surveyed had cough during the two weeks preceding the interview. Table 11.12 shows that for more than 60 percent of children with ARI no one was consulted. Public health services are the main source of consultation for ARI (17 percent). For 1 in 10 children pharmacies provided treatment advice (probably medicines also) and for 5 percent of children doctors were consulted. It is not surprising

Table 11.12 Sources of treatment for acute respiratory infection (ARI)

Percentage of children under five who had experienced cough and difficult breathing (ARI) in the two weeks preceding the survey, by sources consulted for advice or treatment and selected background characteristics, Yemen 1991/92

	Source consulted for advice or treatement of ARI[1]									
Background characteristic	Public health establish-ment	Cooperative health establish-ment	Private doctor	Pharmacy	Tradi-tional midwife	Tradi-tional herbalist	Relatives/ friends	Other person	No one	Number of children
Child's age (months)										
<6	17.4	3.4	2.9	7.4	0.0	0.0	2.1	1.1	68.8	176
6-11	17.8	5.5	6.9	11.0	1.2	0.0	1.0	0.9	58.6	239
12-17	24.0	2.3	4.6	11.2	0.7	0.7	2.5	3.8	56.6	164
18-23	22.7	1.8	5.1	13.3	0.0	1.1	0.0	0.6	56.9	205
24-59	14.8	2.9	4.2	9.9	0.2	0.3	0.2	1.5	66.8	876
Sex of child										
Male	19.2	3.1	4.5	9.4	0.5	0.5	0.8	1.5	62.9	884
Female	15.3	3.2	4.7	11.4	0.2	0.1	0.6	1.6	64.4	776
Residence										
Urban	42.4	5.8	6.8	17.3	0.6	0.0	2.9	1.6	29.0	197
Rural	14.0	2.8	4.3	9.4	0.3	0.4	0.4	1.5	68.2	1462
Region										
North./West.	16.8	3.2	4.5	9.7	0.4	0.4	0.6	1.5	64.6	1610
South./East.	37.1	0.0	7.2	31.2	0.0	0.0	3.7	2.5	29.1	50
Mother's education										
Illiterate	16.4	2.8	4.3	10.2	0.4	0.4	0.7	1.6	65.0	1518
Literate	*	*	*	*	*	*	*	*	*	13
Primary	39.5	5.6	7.9	14.6	0.0	0.0	0.0	0.7	35.4	55
More than primary	(29.4)	(6.1)	(29.4)	(16.1)	(0.0)	(0.0)	(8.3)	(0.0)	(27.2)	20
Information not collected	12.3	6.7	0.0	6.9	0.0	0.0	0.0	0.0	74.0	54
Total	17.4	3.1	4.6	10.3	0.4	0.3	0.7	1.5	63.6	1660

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fwer then 25 cases and has been suppressed.
[1]Multiple responses permitted

that for children with respiratory problems the public health facilities (42 percent), pharmacies (17 percent), and private doctors (7 percent) are consulted far more in urban areas than in rural areas. Differentials in seeking advice for ARI from health professionals and facilities by region are similar to the differentials in consulting health facilities for diarrheal treatment.

Table 11.13 shows the different forms of treatment given to children who had cough as well as difficult breathing. About 56 percent of children with respiratory illness received no treatment. Cough mixture came at the head of the list of treatments reported; 37 percent of children were treated with cough mixture, followed by injection (8 percent) and antibiotics as capsules or syrup (4 percent).

Table 11.13 Treatment of acute respiratory infection (ARI)

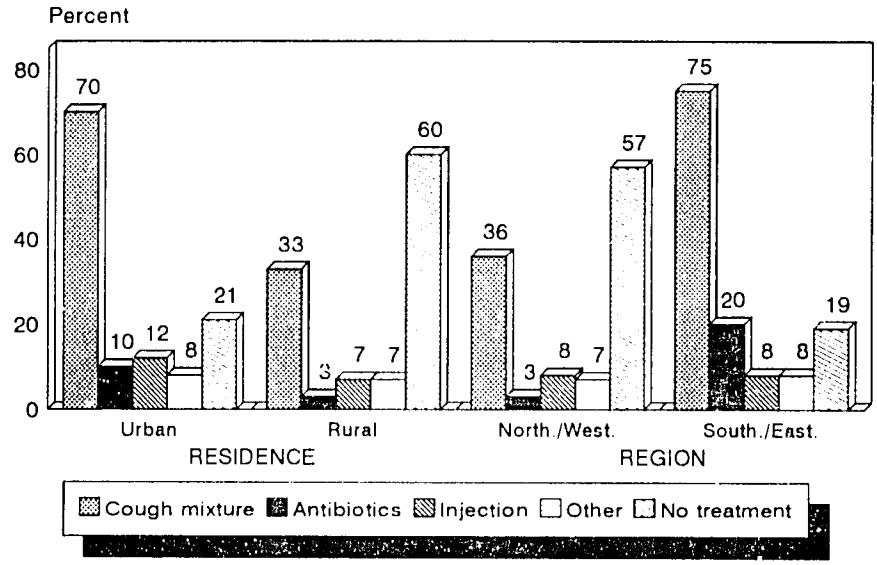
Percentage of children under five who had experienced cough and difficult breathing (ARI), by treatment received and selected background characteristics, Yemen 1991/92

	Treatment received:[1]							
Background characteristic	Cough mixture	Tablets	Antibiotics (capsules/ syrup)	Injection	Other	Nothing	Don't know	Number of children
Child's age (months)								
< 6	29.0	0.6	1.8	6.3	6.2	63.7	0.0	176
6-11	40.4	1.5	3.1	8.8	8.7	50.1	0.0	239
12-17	45.8	2.2	2.0	6.1	5.3	47.6	0.0	164
18-23	44.1	0.6	5.1	13.1	4.6	48.6	1.1	205
24-59	34.7	1.2	4.1	7.1	4.9	58.7	0.1	876
Sex of child								
Male	37.6	1.2	3.7	9.4	5.8	54.6	0.1	884
Female	36.7	1.3	3.5	6.2	5.3	56.8	0.3	776
Residence								
Urban	69.5	1.0	10.1	11.5	6.9	20.5	0.0	197
Rural	32.8	1.2	2.7	7.4	5.4	60.4	0.2	1462
Region								
North./West.	36.0	1.2	3.1	7.9	5.5	56.8	0.2	1610
South./East.	75.3	1.7	19.7	7.8	6.4	18.9	0.0	50
Mother's education								
Illiterate	35.3	1.2	3.0	7.6	5.3	57.5	0.2	1518
Literate	*	*	*	*	*	*	*	13
Primary	72.3	0.0	14.4	11.7	6.7	18.4	0.0	55
More than primary	(77.9)	(2.0)	(21.4)	(19.8)	(14.2)	(18.1)	(0.0)	20
Information not collected	34.4	0.0	0.0	0.0	8.9	61.2	0.0	54
Total	37.2	1.2	3.6	7.9	5.6	55.7	0.2	1660

Note: Figures in parentheses are based on 25-49 cases and an asterisk (*) indicates that figure is based on fewer than 25 cases and has been suppressed.
[1]Multiple responses permitted

Infants are less likely to be treated for ARI than children over six months, and the differentials by place of residence and mother's education are substantial. The ARI of children of less educated women and of residents of rural areas is more likely to go untreated (see Figure 11.4). Higher proportion of children in urban areas and in the southern and eastern governorates received cough mixtures and antibiotics (capsules or syrup) for treatment of ARI (3 in 4 children were given cough mixture and 1 or 2 in 10 received some form of antibiotics), compared to children in rural areas and in the northern and western governorates (1 in 3 were given cough mixture and less than 3 percent received some form of antibiotics).

Figure 11.4
Treatment of Cough and Difficult Breathing Among Children Under 5 by Selected Background Characteristics



Note: Children who had cough and difficult breathing in the 2 weeks preceding the survey.

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11.4 FEVER

All mothers whose children had fever were asked whether the child had been taken to any one for treatment of fever. While 46 percent of children under five had fever during the two weeks preceding the interview, only 58 percent received some medication. Urban-rural differentials shown in Table 11.14 indicate that a higher proportion of children were given medications for fever in urban areas (91 percent), compared to rural areas (53 percent). More than 4 of 10 children with fever did not receive any treatment in the northern and western governorates, compared to 1 in 10 in the southern and eastern governorates. The most common treatment given for fever was temperature relief—aspirin (39 percent) and cold water applications (12 percent). Five percent were given antibiotics, 4 percent injection, and 4 percent non-antibiotic mixtures.

Table 11.14 Treatment of fever

Percentage of children under five who had fever by treatment received and selected background characteristics, Yemen 1991/92

Background characteristic	Treatment received:[1] Aspirin	Anti-malarial tablets	Anti-biotic (capsule/ syrup)	Other syrup/ mixture	Injec-tion	Supposi-tory	Cold water appli-cation	Other	Nothing	Don't know	Number of children
Child's age (months)											
< 6	27.2	0.0	3.2	3.3	2.2	0.6	9.1	6.7	51.5	0.0	282
6-11	41.3	0.3	5.2	5.9	2.9	0.9	11.5	5.6	38.3	0.3	405
12-17	40.4	0.0	4.4	4.2	2.9	0.8	16.2	1.5	39.2	0.0	315
18-23	39.6	0.0	6.4	4.4	6.7	0.2	15.4	2.6	38.6	0.0	331
24-59	40.0	0.4	4.2	3.0	4.3	0.7	11.5	3.8	41.8	0.1	1768
Sex of child											
Male	40.4	0.2	4.9	3.8	5.0	0.7	12.9	3.4	39.2	0.1	1608
Female	37.5	0.3	4.1	3.6	3.0	0.7	11.4	4.6	44.3	0.1	1493
Residence											
Urban	72.9	0.0	6.8	3.4	3.7	2.6	14.4	1.7	9.3	0.3	432
Rural	33.5	0.3	4.1	3.7	4.1	0.4	11.8	4.3	46.9	0.1	2669
Region											
North./West.	37.8	0.2	4.2	3.0	3.8	0.7	12.2	3.9	43.5	0.1	2925
South./East.	59.4	0.8	10.1	15.4	9.0	0.7	12.3	4.4	10.1	0.0	176
Mother's education											
Illiterate	37.9	0.2	4.3	3.3	3.8	0.4	11.6	4.0	43.4	0.1	2820
Literate	(46.1)	(0.0)	(9.4)	(6.6)	(6.6)	(2.5)	(33.0)	(0.0)	(17.7)	(0.0)	25
Primary	61.2	0.0	4.9	7.0	5.3	6.6	16.4	6.6	16.8	0.0	105
More than primary	66.4	0.0	12.5	16.5	7.5	2.6	22.2	2.3	1.9	0.0	54
Information not collected	29.4	3.2	3.8	3.3	7.1	0.0	12.9	2.5	45.6	0.0	97
Total	39.0	0.3	4.5	3.7	4.1	0.7	12.2	4.0	41.6	0.1	3101

Note: Figures in parentheses are based on 25-49 cases.
[1]Multiple responses permitted

CHAPTER 12

INFANT AND CHILD MORTALITY

The estimation of levels, differentials and recent trends in infant and child mortality is a primary objective of both the DHS and PAPCHILD programs, as they represent key indicators of the health and living conditions in a country. These indicators measure the end result of the interaction of a complex web of factors that include macro structural variables (e.g., basic health services and food security) and household and individual-level characteristics. Further, identification of the direction and magnitude of infant and child mortality is an essential first step toward an understanding of the determinants of child survival and well-being.

Interest in infant and child mortality is twofold. First, it is a key indicator of health and living conditions; the level of mortality is one of the yardsticks used to measure the effectiveness of primary health care programs and of socioeconomic and environmental policies. Even when mortality is high, there are generally substantial variations in survival chances according to economic, environmental, and geographic criteria. As mortality declines, differences in knowledge of and access to the means of survival reflect the persistence of societal inequalities, despite socioeconomic policies designed to promote the welfare of all equally.

The second interest in mortality relates to the fertility implications of increasing or decreasing mortality. The transition from a traditional pattern of family building is usually marked by increased motivation and the ability to decide on the timing of births and the ultimate size of families. The traditional stereotype for developing countries is one in which children are inevitable, though some pregnancies are delayed by factors such as prolonged breastfeeding, and some are terminated, often under circumstances involving considerable risk to the woman's health. When a child is born, its survival is by no means certain and the experience of losing a child through death is common to many women. Important in the concept of controlled fertility is the raised confidence in the survival of each child induced by a decline in mortality. At the same time, the practical aspects of coping with more surviving children, along with raised economic aspirations for the parents, can stimulate a desire to regulate fertility and control family size and a demand for effective means to do so.

The conditions which lead to mortality reduction also result in improved maternal health and nutritional status. A consequence of this may be an increase in the number of full-term pregnancies ending in a live birth. This would tend to stimulate a desire to control fertility. Thus, it is important that information about mortality be included in any study of fertility change, regulation and differentials.

The data collected in the 1991/92 Yemen Demographic and Maternal and Child Health Survey (YDMCHS) permit the direct and indirect estimation of infant and child mortality. This chapter presents information dealing with: assessment of data quality, prevalence of child loss; levels and trends in infant and child mortality; differentials in infant and child mortality; reproductive factors and infant and child mortality; environmental factors; and causes of death.

12.1 ASSESSMENT OF DATA QUALITY

The reliability of infant and childhood mortality estimates depends on the completeness and accuracy of reporting of births and deaths. Omission of births and deaths directly affects mortality estimates, and displacement of dates has an impact on mortality trends. To determine the quality of data collected in the

YDMCHS, the distribution of all children by calendar year of birth and of dead children by age at death was examined (see Appendix D, Tables D.4 and D.6). Table D.4 indicates the presence of a slight deficit of births in the fifth year prior to the survey, and an excess of births in the sixth year preceding the survey.

The most common source of error in the reporting of child's age at death is the tendency of mothers to report age at death in multiples of six months. Partly to minimize this error, interviewers were instructed to record deaths under one month in days, and under two years of age in months. Although misreporting of age at death can result in biased estimates of infant and childhood mortality, a study using DHS data from a number of countries indicates that heaping of age at death at 12 months would bias the estimates by no more than 5 percent (Sullivan, et al, 1990). Thus, the rates presented in this report are unadjusted, i.e., no efforts were made to average out the heaping present in the data as shown in Appendix Tables D.5 and D.6.

12.2 PREVALENCE OF CHILD LOSS

In societies that have achieved very low levels of mortality, which is generally accompanied by low fertility, a woman's present family size (measured by the number of surviving children) and the number of children ever born are practically synonymous. However, in many populations the death of a child remains a common feature of the family building process, with the result that there is a sizeable disparity between the number of children who are born and the number who survive to adulthood. Most of this loss occurs early in life.

The impact of infant and child mortality in the family building process is analyzed in this section in two ways. First, the differences are examined between lifetime fertility, defined as the mean number of live births per woman, and family size, defined as the mean number of children at the time of the survey. Table 12.1 shows mean number of children ever born and the proportion dead among children ever born by current

Table 12.1 Mean number of children ever born and proportion dead

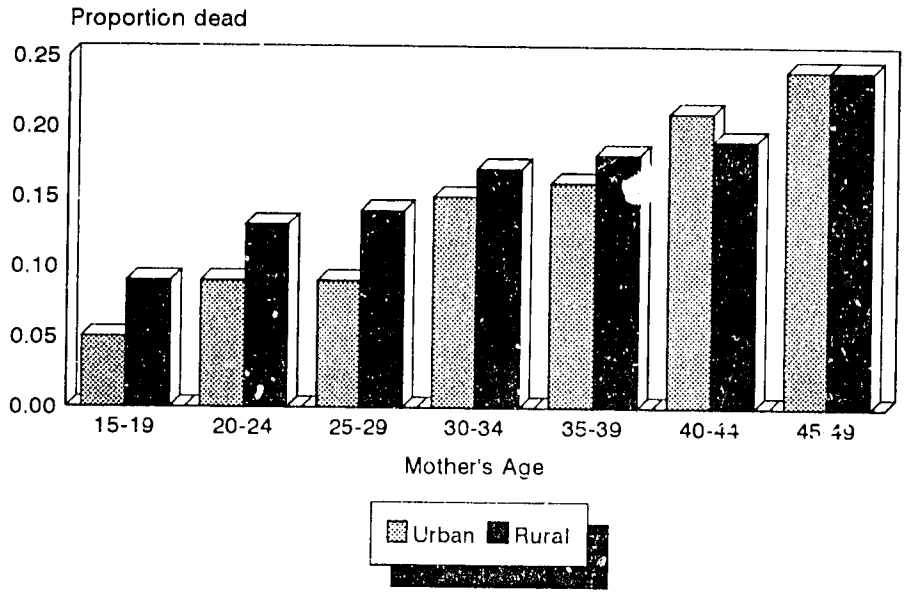
Mean number of children ever born to ever-married women and the proportion dead, by current age of mother and duration in years since first marriage, according to urban-rural residence, Yemen 1991/92

	Urban		Rural		Total	
Background characteristic	Mean number	Proportion dead	Mean number	Proportion dead	Mean number	Proportion dead
Mother's age						
15-19	0.74	0.05	0.65	0.09	0.67	0.09
20-24	1.93	0.09	1.83	0.13	1.85	0.12
25-29	3.63	0.09	3.69	0.14	3.68	0.13
30-34	5.78	0.15	5.32	0.17	5.41	0.16
35-39	6.80	0.16	6.78	0.18	6.78	0.18
40-44	8.00	0.21	7.60	0.19	7.68	0.20
45-49	.99	0.24	8.06	0.24	8.05	0.24
Duration since first marriage (years)						
< 5	0.81	0.07	0.68	0.11	0.71	0.10
5-9	2.58	0.06	2.55	0.12	2.56	0.11
10-14	4.65	0.11	4.38	0.16	4.43	0.15
15-19	6.31	0.15	6.04	0.16	6.08	0.16
20-24	7.61	0.18	7.21	0.19	7.28	0.18
25-29	8.08	0.20	7.90	0.20	7.94	0.20
30+	8.52	0.27	8.53	0.26	8.53	0.26
Total	4.93	0.16	4.88	0.18	4.89	0.18

age of mother and duration since first marriage, according to urban-rural residence. These data are used to examine the prevalence of child loss over the lifetime of the women interviewed in the survey. The accuracy of such data is affected by underreporting of dead children, especially by older women as a result of recall problems.

The YDMCHS results presented in Table 12.1 show that more than 1 in 6 children born to ever-married women 15-49 years have died, indicating that child mortality levels have generally been high during the period in which these women have been bearing children. As shown in Figure 12.1, the proportion dead among children ever born increases steadily with the age of the mother, from less than 1 in 10 among ever-married women in the age group 15-19, to almost 1 in 4 among women age 45-49.

Figure 12.1
Proportion of Children Dead by Age of Mother and Residence



YDMCHS 1991/92

Differentials in the proportion dying among children ever born by mother's current place of residence are presented in Table 12.1. About 18 percent of children ever born to ever-married women age 15-49 years living in rural areas have died, compared with only 16 percent among women in urban areas. Table 12.1 presents a similar comparison for duration since first marriage. The proportion dying among children ever born decreases with decreasing age of the mother and with shorter durations of marriage.

Second, the distribution of the experience of losing a child through death according to number of children ever born is examined. This analysis shows the extent to which the death of a child has been a common feature of women's childbearing experience. Table 12.2 shows the percent distribution of ever-married women by the number of living children and number of children ever born. The results indicate that as the number of children ever born increases, the likelihood that all of them are still surviving decreases. Ever-married women with seven live births have only a 39 percent chance that all are surviving and there has been no child loss, while women with eight live births have only a 27 percent chance that all births are

Table 12.2 Number of children ever born by number of living children

Percent distribution of ever-married women by number of living children, according to number of children ever born, Yemen 1991/92

Number of children ever born	Number of living children										Total	Number of women
	0	1	2	3	4	5	6	7	8	9+		
0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	592
1	9.4	90.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	541
2	2.4	18.2	79.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	511
3	0.8	4.5	22.7	72.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	572
4	0.0	1.8	7.0	29.3	61.9	0.0	0.0	0.0	0.0	0.0	100.0	569
5	0.1	0.5	4.0	12.0	27.3	56.1	0.0	0.0	0.0	0.0	100.0	529
6	0.0	0.4	1.3	6.2	16.5	26.3	49.3	0.0	0.0	0.0	100.0	556
7	0.0	0.2	0.4	3.2	10.2	18.2	29.1	38.6	0.0	0.0	100.0	521
8	0.0	0.0	0.0	2.8	7.5	12.2	21.2	29.1	27.2	0.0	100.0	424
9 +	0.0	0.0	0.7	1.3	2.2	4.6	11.4	17.1	19.9	42.8	100.0	881
Total	11.6	11.0	10.7	12.6	12.1	11.1	10.8	8.4	5.1	6.6	100.0	5687

surviving. With respect to women with only two live births, they have a 79 percent chance that both children are surviving. In other words, child loss increases as the number of children ever born increases. A similar pattern is observed by women's current age (data not shown).

12.3 LEVELS OF INFANT AND CHILD MORTALITY

In this section, the direct and indirect estimates of infant and child mortality are considered in order to examine the levels, trends, and sex and age patterns of mortality among infants and children in Yemen.

In the analysis of mortality among children under five, the population is conventionally sub-divided into categories which roughly reflect changes in the probability of dying and changes in the main causes of death, which occur during the first months and years of life. The probability of dying is at its peak at the time of birth, including the period immediately before birth, and declines thereafter, except perhaps for a minor peak when the child is weaned. Broadly speaking, between the twenty-eighth week of gestation and the end of the first week of life, the underlying causes of death are principally complications of the pregnancy and delivery, and poor maternal health and nutritional status. After the first week of life diarrheal disease and respiratory infections become leading causes of death, with undernutrition often an underlying cause. The infectious diseases of childhood begin to appear in the second half of the first year of life and, combined with poor hygiene, may result in high case-fatality rates. Deaths of children age one to four years are mainly a product of environmental factors, including nutrition. As such, they provide a sensitive indicator of the socioeconomic conditions under which people live, and it is among this group that the most striking effects of the decline from high mortality levels are observed.

A number of subgroupings of the period between birth and age five years are used in this chapter, the choice dictated by considerations of the availability and accuracy of the data as well as the mortality level and principal causes of death. Before presenting the results, the subdivisions and the measurement of mortality that will be used are described.

Infant mortality is defined as the probability that a live born child will die before reaching its first birthday. Here, it usually takes the form of a rate per 1,000 live births called the *infant mortality rate* (IMR).

In order to isolate most of the deaths associated with pregnancy and delivery and with maternal health status, infant deaths are further divided into those occurring in the neonatal and postneonatal periods, where the neonatal period refers to the first month of life. The rates are called the *neonatal mortality rate* (NNMR) and the *postneonatal mortality rate* (PNNMR), respectively.

Childhood mortality is defined as the probability of dying before or between selected ages of childhood. It refers variously to the probability that a child will die in the first two years of life (${}_2q_0$) or in the five years of life (${}_5q_0$), or between the first and fifth (${}_4q_1$) birthdays. The rates are presented in terms of deaths per 1,000 live births or per 1,000 survivors to the earlier birthday. These rates are called the *under-two mortality rate* (U2MR), *under-five mortality rate* (U5MR), and *non-infant child mortality rate* (NICMR), respectively.

Cohort Direct Measures of Mortality

The computations for cohort estimates are straightforward. Children born in a specific time period, taken here as five-year periods, are followed during the first five years of their lives. The results are presented in Table 12.3 for cohorts born in four 5-year periods preceding the survey. The estimates for cohorts NNMR, PNNMR, IMR, NICMR, and U5MR reveal a decline in infant and child mortality levels in Yemen.

Table 12.3 Infant and child mortality by gender of child

Cohort-direct measures of infant and child morality for five-year periods preceding the survey, by gender of child, Yemen 1991/92

Mortality rate	Years before the survey			
	0 - 4	5 - 9	10 - 14	15 - 19
MALE				
Neonatal mortality rate (NNMR)	39.7	58.0	53.3	61.5
Postneonatal mortality rate (PNNMR)	42.2	61.3	84.9	99.9
Infant mortality rate (IMR)	81.9	119.3	138.2	161.5
Non-infant child mortality rate (NICMR)	NA	39.4	56.2	92.7
Under-5 mortality rate (U5MR)	NA	154.0	186.6	239.2
FEMALE				
Neonatal mortality rate (NNMR)	34.0	41.3	40.4	49.6
Postneonatal mortality rate (PNNMR)	39.8	54.6	77.5	103.6
Infant mortality rate (IMR)	73.8	95.9	117.9	153.2
Non-infant child mortality rate (NICMR)	NA	42.1	61.4	105.2
Under-5 mortality rate (U5MR)	NA	134.0	172.1	242.3
TOTAL				
Neonatal mortality rate (NNMR)	36.9	49.8	47.3	55.6
Postneonatal mortality rate (PNNMR)	41.0	58.0	81.5	101.8
Infant mortality rate (IMR)	77.9	107.8	128.8	157.4
Non-infant child mortality rate (NICMR)	NA	40.8	58.6	98.7
Under-5 mortality rate (U5MR)	NA	144.2	179.9	240.6

NA = Not applicable

Cohort IMR dropped from 158 per 1,000 live births to 78 deaths per 1,000 live births during the twenty years preceding the survey. The U5MR declined from 241 deaths per 1,000 live births born 15-19 years before the survey, to 144 deaths per 1,000 live births born 5-9 years prior to the survey. The decline in infant and child mortality is indicated for both male and female children. Cohort measures of mortality are, however, higher for males than females, especially during the neonatal period.

Period-direct Measures of Mortality

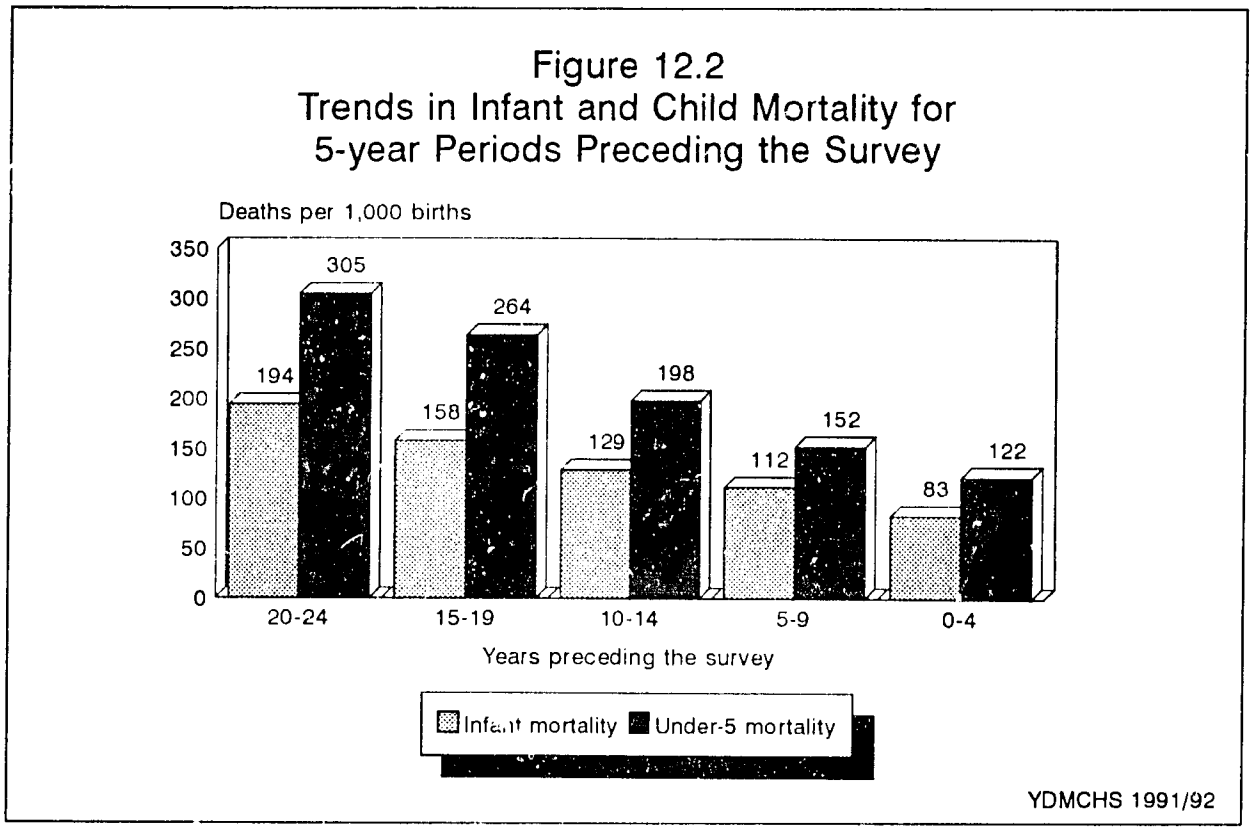
Infant and child mortality can be estimated directly for 5-year periods in the 25 years preceding the survey. These period estimates are based on data collected in the YDMCHS birth histories. Direct estimates, however, rely on mothers' reports of dates of live births and the age at death of children who have died. Especially where levels of female literacy are low, errors regarding these events, in addition to resulting in underreporting of child deaths, can lead to distortions of the trend and the age patterns of infant and child mortality.

Table 12.4 Period-direct measures of infant and child mortality by residence and gender

Infant and child mortality for five-year periods preceding the survey, by residence and gender of the child, Yemen 1991/92

Years preceding the survey	Neonatal mortality rate (NNMR)	Postneonatal mortality rate (PNNMR)	**Infant mortality rate (IMR)**	Non-infant child mortality rate (NICMR)	**Under-five mortality rate (U5MR)**
URBAN					
0-4	32.5	35.1	67.6	29.7	95.3
5-9	54.0	53.1	107.1	30.2	134.1
10-14	53.4	75.8	129.2	56.3	178.2
15-19	53.2	90.6	143.8	73.1	206.4
20-24	61.1	131.0	192.1	134.4	300.7
RURAL					
0-4	37.8	47.9	85.7	45.1	127.0
5-9	49.3	63.3	112.6	48.9	156.0
10-14	45.8	83.3	129.1	85.2	203.3
15-19	56.3	105.6	162.0	143.9	282.6
20-24	76.4	118.5	194.9	138.3	306.3
MALE					
0-4	40.1	47.5	87.6	37.8	122.1
5-9	58.3	63.3	121.6	44.0	160.2
10-14	53.1	86.1	139.3	74.8	203.7
15-19	61.2	100.1	161.3	125.9	266.9
20-24	81.5	131.2	212.7	149.5	330.4
FEMALE					
0-4	33.7	44.1	77.7	47.3	121.3
5-9	41.5	59.8	101.2	47.1	143.6
10-14	40.6	77.0	117.6	83.6	191.3
15-19	49.9	104.2	154.1	126.2	260.8
20-24	62.5	111.6	174.1	125.1	277.4
TOTAL					
0-4	37.0	45.8	82.8	42.5	121.8
5-9	50.1	61.6	111.6	45.5	152.1
10-14	47.3	81.9	129.1	79.0	198.0
15-19	55.6	102.1	157.7	126.0	263.8
20-24	72.4	121.8	194.2	137.5	305.0

Table 12.4 presents direct estimates of period infant and child mortality rates by sex of child and residence for cohorts born in five 5-year periods preceding the survey. The estimates suggest that there has been a sustained decline in infant and childhood mortality during the two decades preceding the survey. IMRs dropped from 158 deaths per 1,000 births born 15-19 years prior to the survey, to about 83 deaths per 1,000 births born 0-4 years prior to the survey (See Figure 12.2). Under-five mortality rates (U5MRs) dropped from 264 deaths per 1,000 births born 15-19 years preceding the survey, to 122 deaths per 1,000 births born 0-4 years preceding the survey. Differentials in infant and child mortality by sex of child indicate that mortality is higher among boys than



girls, especially during the neonatal period. After age one, female children have a higher probability of dying than male children. This may indicate some sex differentials in health care favoring male children.

The estimates in Table 12.4 indicate a continuous decline in mortality levels in the 25-year period preceding the survey. For live births born 0-4 years prior to the interview, NNMR, PNNMR, IMR, NICMR, and U5MR were 37, 46, 83, 43, and 122, respectively, compared to 72, 122, 194, 138, and 305, respectively, for live births born 20-24 years prior to the survey. The expected biological effects of sex on mortality and sex-related differentials in child survival due to child care practices are observed, especially among infants. Males have higher infant and child mortality than females throughout the 25-year period, as shown in Table 12.4.

Typically, as infant mortality declines, neonatal deaths (i.e., deaths occurring in the first four weeks of life) decrease more slowly than deaths occurring during the postneonatal period (1-11 months following birth). Over the 25-year period for which YDMCHS estimates are available, postneonatal mortality rate (PNNMR) has declined from 122 deaths per 1,000 births born 20-24 years preceding the survey to 46 deaths per 1,000 births born 0-4 years prior to the survey. The neonatal mortality rate (NNMR) has declined more slowly from 72 to 37 deaths per 1,000 births during the same period. Again, the results indicate that neonatal and postneonatal deaths are higher among boys than girls in Yemen.

Child death probability has shown a faster and larger decline than infant mortality rates. The NICMR dropped from 138 deaths per 1,000 survivors at age one in the 20-24 years preceding the survey, to only 43 deaths per 1,000 survivors for those born in the 0-4 years preceding the survey. Accordingly, the U5MR declined by 60 percent during the 25-year period preceding the survey, from 305 to 122 deaths per 1,000 births born in the 0-4 years preceding the survey.

Differentials in infant and child mortality by residence are significant. The direct estimates show that mortality levels in rural areas are much higher than in urban areas. This is true regardless of the time period or the child age at death. In addition, infant and child mortality (except neonatal mortality) declined at a faster pace in urban areas than in rural areas.

Indirect Estimates of Mortality

Estimates of mortality can also be derived from the proportion of children who died by five-year age groups of women or by five-year intervals since first marriage. These indirect estimates are based on the total number of children ever born and the number of living children, and do not require the sophisticated level of reporting used for direct estimates. Instead, they rely on demographic models and assume that the infant and childhood age schedule of mortality conforms approximately to that of a model life table.

The level of mortality implied by indirect rates is generally higher than for direct period rates. The upward bias, which usually occurs for young mothers (age 15-19) or mothers with short duration of marriage (0-4 years)—since mortality is generally higher for first births than for higher-order births—can extend into the next age group or duration group (Ewbank, 1982; Preston, 1985).

Indirect techniques were applied to data on the proportion dead among children ever born by age of mother and duration of marriage, according to number of years since first marriage. However, because of the problems that might arise when the duration of marriage is not accurately measured, and when entrance into (legal) marriage predates the initiation of cohabitation—as may occur in Yemen—the duration variant is expected to be less accurate than the age variant.

Table 12.5 presents indirect estimates of infant and child mortality according to place of residence and specified reference dates for the age and duration variants, assuming the Coale-Demeny (1966) South model life tables and Trussell (1975) multipliers, which map these proportions to probabilities of dying. The YDMCHS results indicate a downward trend in infant and child mortality since the late 1970s. The estimated indirect infant mortality rate declined from 130 deaths per 1,000 live births in 1978 to 101 deaths in 1988. For non-infant child mortality, the decline observed for the same period was more pronounced. The indirect non-infant child mortality rate declined by 40 percent, from 89 deaths per 1,000 children one year of age in 1978 to only 53 deaths in 1988 (see Age Model, Table 12.5).

The under-five mortality rate, which is the overall summary measure, shows that while 1 of every 5 live births was expected to die before the fifth birthday in 1978, only 1 of 7 was expected to die in 1988, a decline of about 30 percent over the ten-year period from 1978 to 1988. This figure, however, is much higher than the target set by the United Nations—an under-five mortality rate of 70 by the year 2000. If Yemen is to achieve this target, greater effort and resources are required. With the pace of decline observed during the period 1978-88, it is more likely that the under-five mortality rate in the year 2000 will be in the mid- to upper 70s per 1,000 live births. The results of the duration model are consistent with the age model, though slightly higher.

Differentials in the level of infant and child mortality by place of residence are substantial. As shown in Table 12.5, the indirect rates for infant mortality, non-infant child mortality, and under-five mortality in rural areas are higher than the corresponding rates in urban areas.

Table 12.5 Infant and child mortality estimates, age model and duration model

Indirect estimates of infant and child mortality by urban-rural residence, age model and duration model, Yemen 1991/92

AGE MODEL				DURATION MODEL			
Reference date	Infant mortality ($_1q_0$)	Non-infant child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)	Reference date	Infant mortality ($_1q_0$)	Non-infant child mortality ($_4q_1$)	Under-five mortality ($_5q_0$)
Urban				**Urban**			
1978	132	91	211	1977	139	102	227
1981	126	83	199	1980	118	72	182
1984	108	60	162	1982	112	65	170
1986	105	56	155	1985	105	56	155
1988	76	27	101	1986	84	35	116
1990	81	32	110	1988	52	11	62
Rural				**Rural**			
1978	130	89	207	1976	136	98	221
1981	115	69	176	1979	115	69	176
1983	115	69	176	1982	116	70	178
1986	114	68	174	1984	109	61	163
1988	107	59	160	1986	110	62	165
1989	114	68	174	1989	99	49	143
Total				**Total**			
1978	130	89	207	1976	137	98	222
1981	118	72	182	1979	115	70	177
1983	114	68	174	1982	115	69	176
1986	112	66	171	1984	108	60	162
1988	101	53	149	1986	105	57	156
1989	107	60	161	1989	90	41	127

Note: The indirect estimates are computed using Trussell equations assuming Coale-Demeny South Model Life Table by the United Nations Software Package for Mortality Measurement (MORTPAK-LITE 2.0/NCP).

12.4 DIFFERENTIALS IN INFANT AND CHILD MORTALITY

Infant and child mortality is often thought to be higher among certain socioeconomic groups than others because of differences in living standards and health conditions in general, and differential availability and access to public health facilities in particular. In this section, differentials in infant and child mortality are examined with special attention given to selected background characteristics: place of residence, mother's level of education, region, and maternal health care.

Place of Residence and Region

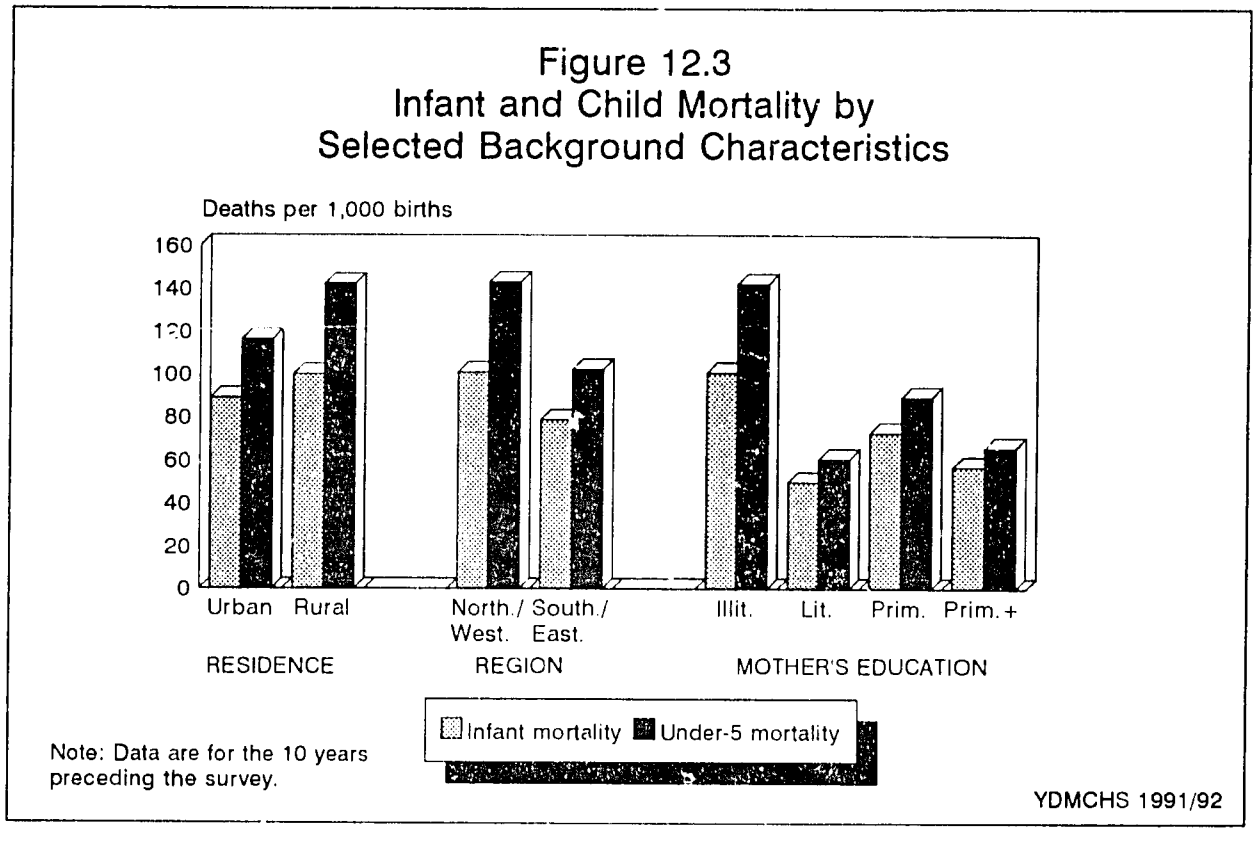
Table 12.6 presents direct estimates of infant and child mortality for the ten-year period preceding the survey by place of residence, region, level of education, and medical maternal care. The difference between mortality rates in rural and urban areas is again confirmed. There are substantial differences in the level of infant and child mortality by place of residence and region. As shown in Figure 12.3, IMRs in rural areas and in the northern and western governorates are about 100 deaths per 1,000 births, while the level is 89 deaths per 1,000 births in urban areas and 79 in the southern and eastern governorates. Substantial differences in the level of both non-infant child mortality and under-five mortality by place of residence and region are also observed. The NICMR is 47 deaths per 1,000 survivors in rural areas and the northern and

Table 12.6 Infant and child mortality by background characteristics

Infant and child mortality for the ten-year period preceding the survey, by selected background characteristics, Yemen 1991/92

Characteristic	Neonatal mortality rate (NNMR)	Postneonatal mortality rate[1] (PNNMR)	**Infant mortality rate (IMR)**	Non-infant child mortality rate (NICMR)	**Under-five mortality rate (U5MR)**
Residence					
Urban	44.2	44.7	88.9	29.9	116.1
Rural	43.9	56.0	99.8	47.0	142.1
Region					
North./West.	44.7	56.2	100.8	46.8	142.9
South./East.	38.9	39.8	78.7	25.4	102.1
Mother's education					
Illiterate	44.7	55.9	100.6	46.1	142.0
Literate	24.7	25.0	49.8	11.3	60.5
Primary	36.8	35.9	72.7	17.9	89.3
More than primary	33.7	23.3	57.0	9.4	65.8
Medical maternity care[2]					
No antenatal/delivery care	42.6	53.2	95.9	61.1	151.1
Either antenatal or delivery	22.9	24.8	47.7	13.4	60.5
Both antenatal & delivery	16.7	28.0	44.7	3.4	48.0
Total	43.9	54.1	98.0	44.0	137.7

Note: The month of interview is excluded from analysis.
[1]Computed as the difference between infant and neonatal mortality.
[2]Rates are for the five-year period preceding the survey.



western governorates, compared to only 30 in urban areas and 25 in the southern and eastern governorates. The U5MR is around 143 deaths per 1,000 births in rural areas and in the northern and western governorates, compared to 116 in urban areas and 102 in the southern and eastern governorates.

Mother's Level of Education

With regard to the level of education of the mother, Table 12.6 and Figure 12.3 show the expected inverse relationship. The results provide strong evidence concerning the impact of mother's education on child health and survival. The infant mortality rate for children born to illiterate mothers is 101 deaths per 1,000 births, significantly higher than the IMR for children of educated mothers. Children of illiterate mothers also have a higher probability of dying between ages one and five than children of women with at least primary education. An interesting observation is that the levels of infant and child mortality in rural areas and among children of illiterate women are identical. This result probably reflects the concentration of illiterate women in rural areas.

Medical Maternal Care

The children of mothers who received medical maternal care during pregnancy and/or delivery show lower levels of infant and non-infant child mortality than children of mothers who received no medical care prior or during delivery. Maternal care guarantees healthy delivery for mothers. In addition, while these types of maternal care have a direct impact on neonatal mortality rates, they also contribute to the survival of children at various ages. As shown in Table 12.6, children whose mothers received no antenatal or medical care at delivery have at least twice the level of neonatal, postneonatal, infant, and child mortality as children whose mothers received both antenatal and delivery care.

12.5 REPRODUCTIVE FACTORS AND CHILD SURVIVAL

The interaction of factors associated with individual women, and more specifically with individual children, and the role of the woman's reproductive life cycle in infant and child survival, are considered in this section. Infant and child mortality are closely related to reproductive behavior, especially in the context of the traditional family building process. Four bio-demographic factors have been found to be particularly associated with infant and child mortality. These are: sex of child, age of mother at maternity, birth order, and birth spacing.

It is well-established that male children are at increased mortality risk both before and shortly after birth compared with female children, presumably due to genetic factors. However, mortality after the first month should not be affected by the sex of the child.

Children born to women under 20 years of age and to older women at the end of their reproductive cycle are much more likely to die in the first five years of life than are those born to women in their twenties or thirties. The pattern of high mortality among children born to women at the extremes of the reproductive ages is fairly universal. It is associated with selectivity in respect to socioeconomic factors, though it is principally and directly an effect of physiological determinants. Children born to younger mothers are at risk in the neonatal period for a range of causes associated with pregnancy and delivery; in addition, the larger proportion of low birth weight children born to younger mothers involves a disadvantage which extends beyond the neonatal period.

The chances of surviving infancy and childhood decrease according to the number of live births the mother has already experienced. It is also often found that first births are subject to especially high neonatal mortality. Mortality among children born to women of high parity is especially elevated in the neonatal and postneonatal periods. Increasing maternal age is associated with physiological factors exacerbated by the effects of socioeconomic variables.

The factor that most strikingly differentiates alternative survival chances is the length of the preceding birth interval. Infant mortality among births that occurred after an interval of less than two years is usually much higher than among children who were born after an interval of two years or more. The relationship tends to hold even after restricting the comparison to children born after a short interval in which the previous child survived. Pregnancy coming too soon after the previous confinement leaves the mother little time to recover her health (maternal depletion), especially if a child is still unweaned when the next child is conceived. Indeed, a continuous cycle of pregnancy and lactation leads to progressively higher risks of low birth weight babies with heightened chances of death.

Young children of women with high parity and/or short intervals between births are in competition for the mother's care and attention. It is likely that these factors account for some of the higher mortality at different stages of childhood.

The effects of these reproductive factors on infant and child mortality are examined in the following section. The analysis is based on birth history estimates of infant and child mortality for the ten-year period preceding the survey, by sex of child, maternal age, birth order, and the length of the preceding birth interval.

Sex of Child

Table 12.7 shows the direct estimates of infant and child mortality by selected demographic characteristics for the ten-year period preceding the survey. For Yemeni children, infant mortality is higher for boys than for girls (106 versus 90 deaths per 1,000 births). The higher male IMRs are largely due to

Table 12.7 Infant and child mortality by demographic characteristics

Infant and child mortality for the ten-year period preceding the survey, by selected bio-demographic characteristics, Yemen 1991/92

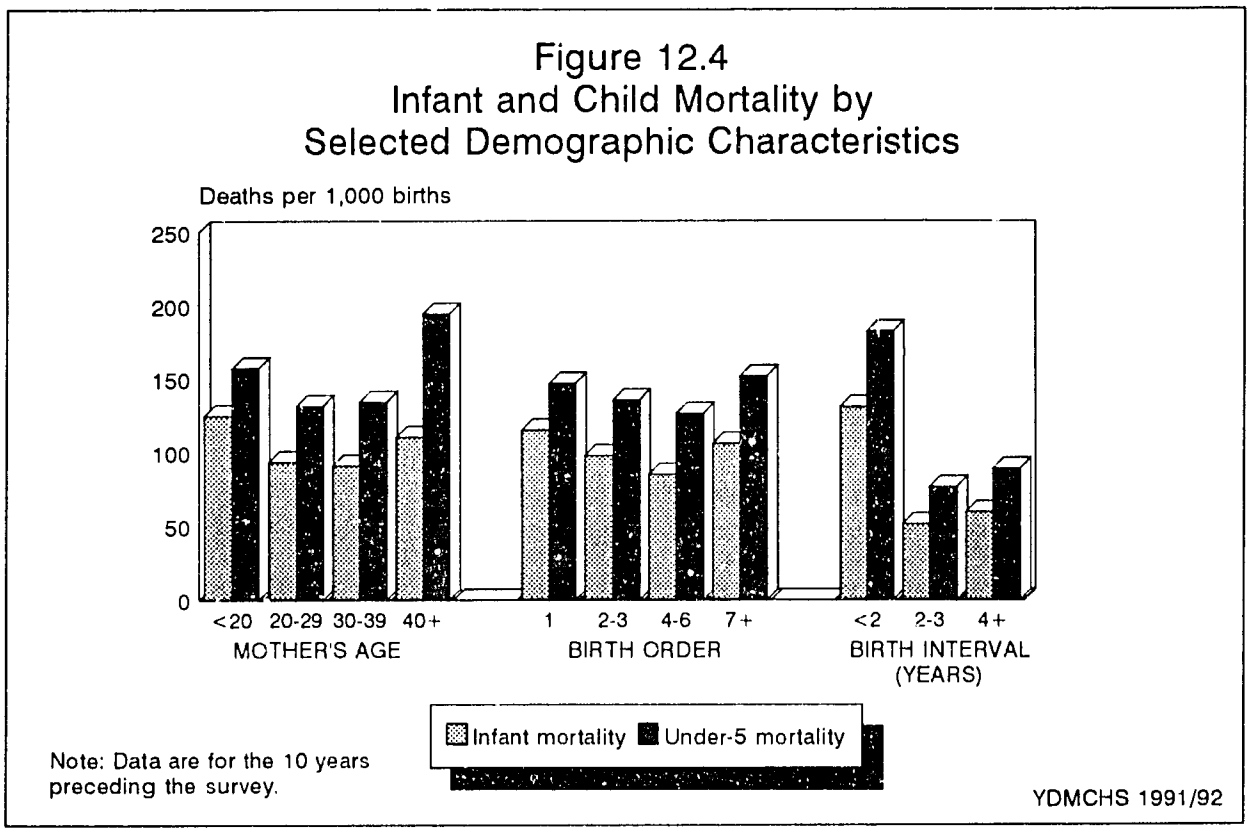
Demographic/ biological characteristic	Neonatal mortality rate (NNMR)	Postneonatal mortality rate[1] (PNNMR)	**Infant mortality rate (IMR)**	Non-infant child mortality rate (NICMR)	**Under-five mortality rate (U5MR)**
Sex of child					
Male	49.8	55.8	105.6	41.0	142.2
Female	37.8	52.3	90.1	47.1	133.0
Age of mother at birth					
< 20	59.8	65.2	125.0	36.9	157.3
20-29	41.1	52.7	93.8	41.7	131.7
30-39	41.4	49.7	91.1	47.3	134.2
40-49	45.0	65.3	110.3	94.4	194.3
Birth order					
1	62.2	53.0	115.2	35.8	146.9
2-3	41.6	56.3	97.9	41.7	135.6
4-6	35.3	50.0	85.3	45.0	126.4
7+	48.6	57.7	106.3	50.7	151.6
Previous birth interval					
< 2 years	53.7	77.4	131.1	58.9	182.3
2-3 years	25.4	26.1	51.4	26.6	76.6
4 years +	32.2	27.4	59.6	31.2	88.9
Size at birth[2]					
Very small	28.3	121.7	150.0	43.6	187.1
Smaller than average	47.0	40.7	87.7	41.0	125.1
Average or larger	16.6	26.8	43.4	16.4	59.1
Don't know	96.6	111.5	208.4	172.0	344.6

Note: The month of interview is excluded from analysis.
[1]Computed as the difference between infant and neonatal mortality.
[2]Rates for the five-year period preceding the survey.

higher levels of neonatal mortality among boys than girls. However, higher level of NICMRs for girls than boys suggests that there may be some tendency to provide greater care for boys than for girls during childhood. While 47 per 1,000 female children surviving to age one die before reaching age five, the probability is only 41 per 1,000 for male children.

Maternal Age at Birth

The association of infant mortality with maternal age at birth exhibits the expected pattern. The highest infant mortality risk occurs among children of very young mothers under age 20 years (1 in 8 live births) and among children of mothers age 40-49 (1 in 9 live births). Child mortality after age one seems to increase with maternal age at birth. Children born to mothers nearing the end of their reproductive lives at age 40-49 years have the highest non-infant mortality risk. As shown in Figure 12.4, under-five mortality is higher for children born to mothers under age 20 and mothers age 40-49 than to mothers age 20-39 years.



Birth Order

Since birth order of the child and maternal age are highly correlated it is not surprising to find infant mortality risks to be greater among first births (which are generally to young mothers) and among births of order seven or higher (which are generally to older mothers) than among second to sixth births. For all Yemen, IMRs were 115 deaths per 1,000 live births among first births and 106 deaths per 1,000 live births among seventh or higher births, compared to only 98 deaths per 1,000 live births among second and third births, and only 85 deaths among fourth to sixth births. Non-infant child mortality increases steadily with increasing birth order, from 36 deaths per 1,000 first births age one year to over 50 deaths per 1,000 births of order seven or higher.

Previous Birth Interval

The most significant differentials in both infant and child mortality are associated with the length of the preceding birth interval. When the length of the previous birth interval is under two years, the levels of infant, non-infant, and under-five mortality are almost twice those when the interval between the child and the next older sibling is more than two years. Infant mortality decreases from 131 deaths per 1,000 live births for birth intervals less than two years to only 51-60 deaths for birth intervals of two years or more. The corresponding figures for under-five mortality are 182 and 77-89 deaths per 1,000 live births, respectively (See Figure 12.4). These differentials by the preceding birth interval suggest that mortality risks for Yemeni children are substantially reduced when the interval between birth increases, regardless of other bio-demographic or socioeconomic factors. Mortality rates are affected by weight at birth. The heavier the child, the lower the postneonatal, infant, and childhood mortality.

12.6 ENVIRONMENTAL FACTORS AND CHILD MORTALITY

Differentials in child health by selected demographic and socioeconomic variables were examined in previous subsections. In addition to the various socioeconomic factors influencing the levels of mortality and morbidity, another important group of factors deserves analysis. Environmental factors are key variables in explaining the large differentials in level of health and nutrition seen in urban and rural areas and across different regions of the country. The environmental factors investigated in this chapter operate at the household level. These factors are broadly divided into two categories. The first is strongly influenced by community infrastructure. These include: source of drinking water and type of toilet facilities. The second is more strongly influenced by socioeconomic level of the household. These include: flooring material, crowding, cleanliness of the area around the house, and whether farm animals and household members are in the same dwelling.

This section focuses on one of the more direct determinants of health: environmental conditions. The level of environmental conditions influences children's exp[illegible]e to disease and is expected to be directly associated with morbidity and mortality. The main results [illegible]g the relationship between environmental factors and infant and child mortality and morbidity are [illegible] below.

Environmental conditions are one of the most [illegible] determinants of infant and child health. In the presence of deteriorated environmental conditions, children are exposed to diseases which may ultimately result in higher rates of mortality. Table 12.8 presents direct estimates of infant and child mortality for the ten-year period preceding the interview according to selected environmental factors.

For infant and non-infant child mortality, the YDMCHS findings, shown in Table 12.8 indicate that only the rates for flooring material and type of toilet facility conform to expected patterns. Better flooring material and toilet facilities are associated, in general, with lower rates of infant and non-infant child mortality. Infant and non-infant child mortality rates vary in the expected direction with source of drinking water and cleanliness of the area around the house. An interesting observation is that the difference between infant mortality levels seems to disappear when the source of drinking water is controlled. Moreover, the presence of stagnant water or sewage problems cause infant and child mortality to increase to alarming high levels, especially in urban areas. While the IMR in urban areas is only 72 deaths per 1,000 live births when the area around the house is clean, it reaches 163 deaths per 1,000 with the presence of stagnant or sewage water. The two corresponding figures for NICMRs are 18 and 118 deaths per 1,000 live births, respectively. While a similar pattern is observed for IMRs in rural areas, the figures for presence of clean water and stagnant water/sewage overflow are not far apart (86 and 81 deaths, respectively. However, when the area is dirty around the house, the IMR is 107. These results raise the possibility that a significant cause of high infant and child mortality levels in Yemen are sanitary and environmental conditions.

On the other hand, crowding (measured by the average number of persons per room) and the presence of farm animals in the same dwelling did not exhibit the expected pattern. For example, the infant mortality rate was 111 deaths per 1,000 live births among children residing in houses with two persons or fewer per room compared to only 92 deaths among children residing in houses with at least five persons per room. Additionally, in rural areas, the IMR among children living in houses with farm animals present is lower (99 deaths per 1,000 live births) than among children living in houses with no farm animals present (102 deaths per 1,000 live births), an unexpected result.

Table 12.8 Infant and child mortality by environmental characteristics

Infant and child mortality for the ten-year period preceding the survey, by environmental characteristics, according to urban-rural residence, Yemen 1991/92

Environmental characteristic	Urban					Rural					Total				
	Neonatal mortality rate (NNMR)	Post-neonatal mortality rate (PNNMR)	Infant mortality rate (IMR)	Non-infant child mortality rate (NICMR)	Under-five mortality rate (U5MR)	Neonatal mortality rate (NNMR)	Post-neonatal mortality rate (PNNMR)	Infant mortality rate (IMR)	Non-infant child mortality rate (NICMR)	Under-five mortality rate (U5MR)	Neonatal mortality rate (NNMR)	Post-neonatal mortality rate (PNNMR)	Infant mortality rate (IMR)	Non-infant child mortality rate (NICMR)	Under-five mortality rate (U5MR)
Type of floor															
Tile/cement/wood	37.6	41.0	78.6	21.8	98.7	37.3	54.2	91.5	41.2	128.9	37.4	51.1	87.5	35.0	119.4
Earth/other	63.0	55.1	118.1	53.3	165.1	47.1	55.8	103.9	49.8	148.5	48.2	56.7	104.9	50.0	149.7
Type of drinking water															
Piped	44.6	42.6	87.2	27.2	112.1	40.8	44.7	85.5	36.9	119.2	42.4	43.8	86.2	32.7	116.1
Well	46.3	52.6	98.9	59.0	152.0	47.2	57.6	104.8	45.5	145.5	47.2	57.5	104.7	45.8	145.7
Other	37.0	62.5	99.4	35.2	131.1	40.5	62.5	103.0	58.6	155.6	40.3	62.5	102.9	57.4	154.4
Type of toilet facility															
Flush	42.3	37.0	79.4	18.1	96.1	22.9	49.8	72.6	45.8	115.1	38.6	39.5	78.1	23.3	99.6
Bucket	43.1	58.7	101.8	29.8	127.7	42.1	55.5	97.6	34.5	128.7	42.3	56.1	98.4	33.3	128.5
Other	50.3	50.4	100.7	62.3	156.7	45.0	56.3	101.2	49.9	146.1	45.2	56.0	101.2	50.5	146.6
Area around household															
Clean	36.0	35.9	71.9	18.1	88.6	36.3	49.5	85.8	29.0	112.3	36.2	46.5	82.7	26.4	107.0
Dirty	50.5	46.6	97.1	33.3	127.1	47.5	59.9	107.4	55.7	157.2	47.9	58.1	106.0	52.6	153.0
Stagnant water/ sewage overflow	55.2	107.6	162.8	115.2	261.7	41.8	38.8	80.5	46.7	123.5	44.6	53.5	98.1	61.0	153.1
Household crowding															
0-2 persons/room	48.8	35.7	84.5	21.3	104.0	64.1	54.7	118.8	54.7	167.0	60.8	50.5	111.3	46.7	152.8
3-4 persons/room	47.6	47.6	95.3	22.3	115.4	37.4	60.2	97.7	38.2	132.2	39.3	57.9	97.2	35.2	129.0
5+ persons/room	35.5	47.7	83.2	47.7	127.0	41.2	52.7	93.9	52.2	141.2	40.5	52.0	92.6	51.6	139.4
Farm animals in household															
Yes	36.5	55.6	92.1	58.6	145.3	45.5	53.3	98.9	48.1	142.2	45.1	53.4	98.6	48.6	142.4
No	45.5	42.8	88.3	24.9	111.0	40.9	60.7	101.6	44.8	141.8	42.4	54.9	97.3	38.0	131.6
Total	44.2	44.7	88.9	29.9	116.1	43.9	56.0	99.8	47.0	142.1	43.9	54.1	98.0	44.0	137.7

12.7 CAUSES OF DEATH

In the YDMCHS, an attempt is made to obtain general information on the types of illness which had preceded death for those children whose birth and death occurred during the five-year period preceding the survey. This approach to determining the causes of death is often called the verbal autopsy or postmortem interview technique. This analysis of child causes of death is presented in terms of the percentage of children born and dead during the five-year period preceding the survey, who had specific symptoms during the two-week period before death, including: diarrhea, vomiting, cough, difficult breathing, fever, rash, and convulsions, as reported by the mother, according to the age of the child at death.

The YDMCHS results presented in Table 12.9 suggest that fever, diarrhea, vomiting, cough, and breathing difficulties were the most common symptoms. During the postneonatal period, the probable cause of child death was fever in 41 percent of the cases and diarrhea in 39 percent. Vomiting and cough/difficult breathing followed in 36 and 28 percent of the cases, respectively. For children 12 months of age and older, fever was most common, reportedly causing 38 percent of all deaths in that age group. Vomiting and cough/difficult breathing were the second and third leading causes of child deaths after fever, while diarrhea was the fourth leading cause of child deaths.

As expected, the proportion of children reported to have diarrhea and respiratory infection symptoms is higher among children who died following the neonatal period. The results of the YDMCHS indicate that many child deaths may be preventable. Deaths associated with diarrheal illness can be prevented through the use of oral rehydration therapy (ORT). Early detection and treatment of acute respiratory illness also would contribute to a reduction in infant and child mortality in Yemen.

Table 12.9 Causes of death in early childhood

Among children born and dead during the five years preceding the survey, the percentage reported to have died from specific symptoms or other causes, by age at death, Yemen 1991/92

Symptom or cause	Age of child at death				Total
	< 1 month	1 - 11 months	< 12 months	12 - 59 months	
Diarrhea	10.9	38.7	24.8	27.9	25.4
Vomiting	10.2	35.9	23.1	29.8	24.4
Cough/difficult breathing	11.4	28.4	19.9	29.8	21.9
Fever	13.8	40.6	27.2	37.5	29.2
Rash	4.8	6.7	5.8	9.4	6.5
Convulsions	7.7	16.1	11.9	25.9	14.7
Other illnesses	2.7	4.3	3.5	8.7	4.5
Total	290	290	580	143	723

CHAPTER 13

SUMMARY AND POLICY IMPLICATIONS

The 1991/1992 Yemen Demographic and Maternal and Child Health Survey (YDMCHS) is the first national survey of Yemen since unification of the Yemen Arab Republic and the People's Democratic Republic of Yemen into a single country, the Republic of Yemen, in May 1990. It is a nationally representative survey of ever-married women age 15-49 and children under five. All governorates and the city of Sana'a were covered by the survey. The objective of the YDMCHS was to gather reliable statistics on fertility and mortality, levels of family planning knowledge and use, and maternal and child health. While the survey was being implemented, a national strategy for population was adopted and the First National Population Policy Conference was held in 1991.

Fieldwork for the YDMCHS was conducted over a two-month period between November 1991 and January 1992. Information was collected from 12,836 households, 5,687 ever-married women age 15-49 years, and 6,715 children under five years.

The survey collected information on a number of important topics: child morbidity and mortality, factors affecting child health (e.g., vaccinations, curative measures, and feeding and weaning practices), various aspects of maternal health care, marriage, fertility, family planning, and reproductive preferences and attitudes. The YDMCHS also provides data on fertility, mortality, and family planning comparable to the 1979 Yemen Fertility Survey, which was conducted only in the northern and eastern governorates.

This chapter provides a summary of the main features of the health and demographic situation in the Republic of Yemen according to the YDMCHS findings presented in the preceding chapters. Also presented in this chapter are the conclusions and implications of the survey results for health and population activities and for program and policy recommendations in Yemen. Because maternal and child health are the primary concern of the survey, the following summary is presented with that focus, and topics are not necessarily presented in the order followed in the main body of the report. High infant and child mortality are consequences of poor maternal and child care, inadequate socioeconomic and environmental conditions, poor feeding and nutrition habits, and low vaccination rates. In addition, early marriage, pregnancy at too young or too old an age, too many births, and short intervals between births are contributing factors affecting the health of mothers and children. Improved and accessible health care and greater fertility regulation, however, will reduce morbidity and mortality rates among young children, increase child survival, and contribute to safe motherhood.

I. SUMMARY OF FINDINGS

Infant and child mortality levels are high in Yemen, but currently show a downward trend. Almost 1 in 5 children die before their fifth birthday. Women 45-49, at the end of their reproductive years, have borne an average of eight children, of which two have not survived.

The neonatal mortality rate is 37 deaths per 1,000 births for the five-year period preceding the survey and has been declining slowly from a level of 72 deaths per 1,000 births for the period 1968-72. The corresponding postneonatal mortality rates are 46 and 122, respectively. Infant mortality and under-five mortality rates declined slowly in the 1970s, and hit a plateau in the 1980s. Infant mortality dropped from 194 deaths per 1,000 live births during 1968-72 to 83 during 1978-82, or a decline of 57 percent; under-five mortality dropped from 305 deaths per 1,000 births to 122, or a decline of 60 percent during the same period.

Indirect methods of estimation yield similar results. With these observed trends, it is doubtful whether Yemen will achieve the United Nations target of an under-five mortality rate of 70 by the year 2000. Greater effort and resources would need to be committed to preventive and curative health measures for mothers and children.

Differentials in child survival by place of residence are significant. For example, for the ten-year period preceding the survey, the infant mortality rate was 89 deaths per 1,000 births in urban areas and 100 per thousand births in rural areas; under-5 mortality rates were 116 and 142 deaths per thousand births in urban and rural areas, respectively. Mother's education is associated with child survival. Children of educated mothers have a greater chance of survival than children of illiterate mothers.

Reproductive factors, such as maternal age, birth order, length of the previous birth interval, and maternal care mothers receive before or during delivery, play an important role in child survival. Children born to very young or very old mothers pose a higher risk of death for both mothers and children. When the preceding birth interval is under two years, both infant and under-five mortality rates are doubled, compared to rates for births following an interval of two years or longer. In addition, children of mothers who received no health care before or during delivery are twice as likely to die before one year of age as children whose mothers received both antenatal and delivery care.

The environmental factors, such as better flooring material, access to piped water, cleanliness around the house, and less crowding are associated with lower rates of infant and under-five mortality in Yemen. The results for urban and rural areas are not consistent for some of the environmental factors. For example, keeping farm animals inside the house has no effect on infant mortality, but the practice does affect rates for non-infant child mortality and under-five mortality in urban areas.

Fever, diarrhea, vomiting, cough, and breathing difficulties are the most common symptoms that preceded death of children under five years of age. Minor differences are observed in the order of importance of these symptoms by age at death of child. Many of these disease related infant and child deaths are preventable by following certain basic hygienic principles. Use of oral rehydration therapy (ORT) for treatment of diarrhea, and early detection and treatment of acute respiratory illness would contribute to a reduction of infant and child mortality in Yemen.

The antenatal, delivery, and postnatal care that mothers receive is important to the health, well-being, and survival of both children and mothers. The level of antenatal care (ANC) in Yemen is very low. The YDMCHS results indicate that mothers of only one-fourth of births in the five-year period preceding the survey made at least one antenatal care visit to a nurse/midwife or doctor. In the majority of cases, the first visit is made to confirm the pregnancy or to consult a physician regarding complaints; follow-up ANC visits are mostly made for complaints. In about 7 of 8 births, the checkup with a medical professional involved consultation with a doctor.

Higher proportions of births receive antenatal care in urban areas and in the southern and eastern governorates, compared to rural areas and the northern and western governorates. While only 1 in 5 births whose mothers have no education received ANC, over 1 in 2 births to mothers with primary education, and 3 in 4 births to mothers who attended more than primary education, received ANC.

One in 3 currently pregnant women who had no ANC reported that she had no complaint to warrant an ANC visit. Other reasons given by pregnant women for not having any ANC visit relate to accessibility of services, i.e., services were not available, were too far away, or cost too much. Accessibility and quality of care are major issues for policymakers and service providers in the health field. Substantial proportions of responses indicate ignorance of the need for ANC. Many women do not consider it necessary to have

antenatal care unless there is a problem with the pregnancy. This lack of understanding of the general need for an ANC check-up clearly suggests the importance of launching campaigns emphasizing that all mothers should receive antenatal care, not just those with complaints.

Among women who sought antenatal care, health facilities for ANC are not perceived to be close. Motorized transport is used by almost three-quarters of currently pregnant women for ANC visits. About one-third of pregnant women who made ANC visits reported that the trip took less than 30 minutes, while one-third reported that it took more than two hours. More than half of the ANC recipients stated that the waiting time was more than 30 minutes.

Neonatal tetanus, a major cause of infant deaths in developing countries, can be prevented if mothers receive tetanus toxoid vaccinations. For 1 in 7 births in the five years preceding the survey, mothers received one or more doses of tetanus toxoid while only 1 in 10 received two or more doses. Births in urban areas, in the southern and eastern governorates, and to educated mothers are more likely to receive protection against tetanus than births in rural areas, in the northern and western governorates, and to less educated mothers.

The fact that the proportion of births covered by tetanus toxoid is lower than proportion of births that received ANC, indicates missed opportunities for providing tetanus coverage at the time of ANC. The reasons for not providing tetanus toxoid at the time of ANC should be studied, and a strong message should be sent to all public health service outlets not to miss such opportunities to provide tetanus vaccinations.

Three of 5 currently pregnant women in Yemen reported that they suffered from some health conditions. The YDMCHS findings indicate that almost one-fourth had swollen ankles and fingers, one-half had persistent headaches, one-third had convulsions, and one-sixth had high blood pressure. Very few pregnant women were taking medications such as vitamins.

In the five years preceding the survey, 5 of 6 deliveries took place at home—6 of 10 in urban areas and 9 of 10 in rural areas. Births that are delivered at home are more likely to be delivered without assistance from anyone, whereas, births delivered at health facilities are more likely to be delivered by trained medical personnel. About half of deliveries in Yemen are assisted by a relative and one-fifth by a traditional birth attendant (*jidda* or daya). Medical doctors assist in only 11 percent of deliveries. Distance to health services, high costs, lack of available services, and the preference for home delivery were the main reasons for having a delivery at home.

Neonatal tetanus, which may result in death, is generally caused by unsterile cord-cutting practices or by applying infectious dressings to the umbilical stump. Among births that did not take place in a health facility, the most widespread practice for cutting the umbilical cord is the use of a razor or knife (3 in 5 deliveries), and then the use of a hot iron, and *kohl* for the cord dressing.

Postnatal care is even less common than antenatal care in Yemen. Postnatal care is sought for only 1 in 16 births. Doctors and nurses/midwives provided such care for most of the mothers who received postnatal care.

Both children and mothers are affected by infant feeding Frequency, duration, and amount of feeding affect a child's nutritional status and survival. Virtually all children in Yemen are breastfed. Almost 95 percent of last births were breastfed. The early death of a child is the main reason for not breastfeeding.

Breastfeeding is continued for a relatively long period. The average duration of breastfeeding is 17 months. Less than 10 percent of births in the five years prior to the survey were weaned under three months

of age. While no substantial differences are observed in the prevalence of breastfeeding by place of residence and mother's education, significant variations in the mean duration of breastfeeding are noted. Breastfeeding duration is shorter for births to women residing in urban areas (15 months) than to those residing in rural areas (17 months).

Bottlefeeding is widespread in Yemen; more than half of all infants are bottlefed. Differentials in bottlefeeding by mother's education are striking. While almost half of last births to illiterate women were bottlefed, almost three-fourths of children whose mothers had more than primary education were given the bottle.

Weaning practices are generally associated with age at weaning, although, pregnancy is often a reason for weaning a child before two years of age. Reasons for weaning in early infancy are usually involuntary, namely, that the child refused, or the mother became pregnant, or the mother had no milk or insufficient milk. In later infancy, and for children weaned at 12-17 months, the mother's pregnancy becomes the major factor determining the time of weaning. For weaning at age 12-17 months, the primary reasons, after mother's pregnancy, are that the child is considered old enough to be weaned, or the mother has no milk or insufficient milk. Generally, mothers stop breastfeeding when their children reach their second birthday and are considered old enough to be weaned.

One of the primary mechanisms for improving child survival is increasing the proportion of children vaccinated against the major preventable childhood diseases (tuberculosis, diphtheria, whooping cough, tetanus, polio, and measles). Overall, 3 in 5 children under five years receive at least one vaccination against childhood illness. Two in 5 children have completed the primary schedule of immunization and are fully immunized. Urban mothers, educated mothers, and mothers living in the southern and eastern governorates are more likely to have their children vaccinated than less-educated mothers and those residing in rural areas or in the northern and western governorates.

The YDMCHS results indicate that a substantial proportion of mothers not only fail to have their children fully vaccinated, but also do not have them vaccinated at the recommended ages, which greatly diminishes the effectiveness of the vaccination. Distance to place of vaccination, lack of awareness of the need for vaccination, or belief that a child is too young for vaccination are the main reasons reported for 6 of 10 children who either were not vaccinated at all or had not completed the full vaccination schedule. Rural women and women residing in the northern and western governorates gave, as one of the main reasons for not (fully) vaccinating their children, that the place of vaccination was too far away, while urban women or women living in the southern and eastern governorates said that the child was too young for vaccination. The reasons cited for inadequate vaccinations pinpoint two deficiencies in the health system: (1) not having accessible health facilities (and not conducting special vaccination campaigns), and (2) not educating people about the need for vaccinations even for very young children. The need for vaccination of children can be impressed on mothers during the ANC visits, at the time of delivery, or when other contacts are made with health personnel. Similarly, the need to space births and the importance of ANC and tetanus toxoid vaccination during the next pregnancy can be emphasized at the time the mothers bring their children for vaccination.

Higher levels of morbidity reflect poor health and imply greater risk of dying. Diarrheal diseases are among the leading causes of infant and childhood deaths in Yemen. Overall, 17 percent of children under age five were reported to have had an episode of diarrhea in the 24 hours before the interview, while 34 percent had diarrhea during the two weeks preceding the survey. One in 2 children who had a diarrheal episode was reported by the mother (or other person who was the respondent for the Child's Questionnaire) to have a severe case of diarrhea. In the northern and western governorate the prevalence rate of diarrhea is three times that in the southern and eastern governorates.

Use of oral rehydration salt (ORS) for treatment of diarrhea depends on the mother's recognition of the severity of the illness, her knowledge of ORS and its sources of supply, and her skills and motivation for its effective use. Around 6 of 10 mothers have heard of ORS; higher levels of knowledge is reported among urban and educated respondents and respondents residing in the southern and eastern governorates than among rural and uneducated mothers and those residing in the northern and western governorates. About half of the respondents who had heard of ORS mentioned private pharmacies as a source for ORS packets while 2 in 5 reported public health facilities as a source. Respondents residing in the southern and eastern governorates were much more aware of public health facilities as a source for ORS than women residing in the northern and western governorates. Although there is general awareness of ORS, and a substantial proportion of respondents have had experience preparing the solution, only 1 in 4 mothers used it as a treatment during the last episode of their child's diarrhea. Six in 10 children received neither ORS nor medical advice. For those children for whom no outside advice was sought, it was mainly because no health facilities were available, or the child's illness was perceived as mild, or the mothers were busy.

Respiratory illnesses are another important public health problem which affects child survival. During the two weeks prior to the interview, half of the children experienced a cough. About half of the children who had a cough also had difficult breathing. The percentage of children experiencing cough is higher in rural areas and in the northern and western governorates than in urban areas and in the southern and eastern governorates. Almost 1 in 2 mothers reported that their children did not receive any treatment for cough, and when they did, cough mixture was the preferred treatment; only a small proportion were treated with antibiotics.

Measles is one of the leading causes of death among young children in Yemen. The YDMCHS findings indicate that among living children under five years of age 15 percent are reported to have had measles. A similar pattern was observed by place of residence and mother's education. While vaccination programs have achieved some success and the majority of children have been vaccinated against measles, these programs have not yet been able to achieve the results that they had hoped for. To be effective, measles vaccination should be administered before a child's first birthday. An investigation should be made of the reasons for the low level of reported measles in Yemen. The low level of measles vaccination may have resulted because people in some areas of the country are not inclined to immunize their children, or vaccination services are not provided there in a regular manner, or both.

Almost half of children under five had fever in the two weeks preceding the interview. Differentials are similar to those observed in diarrheal and cough infections. Only 6 in 10 respondents stated that some medication was given for fever, usually aspirin.

Studies have shown that early age at marriage, and the subsequent teenage pregnancies, negatively affect child health and result in higher infant and child mortality. Almost all Yemeni women marry during their lifetime. Consanguineous marriage is quite common in Yemen: among ever-married women 15-49, almost 2 in 5 reported having a blood relationship with their husbands. About 6 percent of currently married women lived in a polygynous union (i.e., married to a man who has more than one wife).

Overall, among all women 15-49 years, about 1 in 4 have never been married, 72 percent are currently married, 2 percent are widowed, and another 2 percent divorced or separated. Nine of 10 women in Yemen have been married only once. The proportion who have been married more than once increases with age, from 5 percent among women age 20-24, to 20 percent among women who are in their forties.

Young age at marriage tends to lead to young age at first birth. Births at a young age contribute to ill health and death in children. Over the last thirty years, there has been some decline in early marriage in Yemen. While the median age at marriage for women 30-49 years is 15.7 years, it has increased for women

age 25-29 (16.2 years). The YDMCHS results also indicate that half of women age 20-24 now marry after age 18, i.e., more than two years later than the national average. No urban-rural differentials are observed for median age at marriage.

Level of education plays an important role in determining woman's age at first marriage. Increasing educational opportunities for women will contribute to the decline in early marriage and to the upward trend in age at first marriage.

High parity and short birth intervals are known to influence child health and survival. The average number of children ever born for all currently married women in Yemen is very high (4.9 children), and exceeds 8 for those age 45-49. These results reflect a high level of fertility in Yemen. Less than 2 percent of currently married women age 40-49 are childless. Among women age 30-34 years, the average number of children was 5.5, while women age 35-39 reported an average of 6.9 children. One-fourth of women age 40-44 and one-third of those age 45-49 have given birth to 10 or more children.

Women and children are at greater risk of sickness and death due to the complications of pregnancy and delivery if the pregnancy occurs among women under the age of 20 or over the age of 35. Among all women, more than 1 in 7 age 15-19 have begun childbearing. Fifty percent of Yemeni women age 25-49 have had their first birth before age 20. The incidence of very early childbearing might have increased slightly over time. The median age at first birth decreased from almost 23 years for women age 45-49 to 20 years for women under 35 years of age. One-half of women aged 25-34 gave birth to their first child before age 20, while one-third of women aged 40-44 gave birth to their first child before their twentieth birthday. In addition, one-fifth of 19 year old women have already had two children. The high proportion of births among the youngest and oldest age cohorts indicates that a serious health and social problem exists and needs to be addressed.

The total fertility rate (TFR) for Yemen is 7.7. Differentials in fertility by place of residence and level of education are notable. The TFR for urban areas and the southern and eastern governorates is about 5.5 births, compared to 8.2 for rural areas and the northern and western governorates. Illiterate women have a much higher TFR (8.1) than women with primary education (5.7) or women with more than primary education (3.5).

Current fertility, measured by the proportion of women reporting a current pregnancy, indicates that at the time of the survey this proportion was 18 percent of currently married women and 13 percent of all women. Differentials by place of residence or geographic region are observed. Urban-rural differentials by age show an interesting pattern; in urban areas women under age 25 report much higher pregnancy rates than rural women, but rural women have higher proportion currently pregnant among women 25 and over. Women residing in the northern and western governorates reported higher pregnancy rates (19 percent) than women residing in the southern and eastern governorates (15 percent). The proportion of currently married women reporting a pregnancy shows no pattern by the number of children; however, high pregnancy rates are observed ameng women with at least five surviving children. Pregnancy and births to these women increase the risks to life and health of both mother and child and should be avoided or at least minimized.

Overall, one-half of currently married women in Yemen wanted to have more children. Only 1 in 3 women wanted to cease childbearing. While the proportion of women desiring more children decreased steadily with the increase in the number of living children, about one-fourth of women with six living children or in the age group 40-44 still want to have more children. One-third of women in rural areas do not want any more children, compared to almost one-half of urban women. No significant differences are detected between women residing in the northern and western governorates and those residing in the southern and eastern governorates, or by educational level.

The ideal family size in Yemen is 5.4 children. Differences by mother's level of education are substantial, compared to urban-rural and regional differentials. Women with primary or higher education desire, on average, 3.8 children, while illiterate women desire 5.6 children, or almost two children more. Husband's ideal family size, as perceived by the wife, was even larger than the wife's ideal family size (6.4 children).

The preferred type of family composition is the balanced-gender family —i.e., equal numbers of boys and girls—although there are some indications of son preference. For Yemeni families with balanced sex composition or with no children, there is almost no gender preference.

Knowledge of fertility regulation in is not widespread in Yemen. Only 60 percent of currently married women have heard of at least one method of family planning. The most widely known method is the pill, which was known by more than half, followed by the IUD, injection (one-third), and female sterilization (one-fourth). Differentials by place of residence and region and level of education were quite substantial. Younger women, educated women, and women living in urban areas and in the southern and eastern governorates reported higher levels of knowledge of family planning.

Nonuse of family planning, which results in higher parities and shorter birth intervals, affects child survival. The level of contraceptive use is very low in Yemen. About one-fifth of all ever-married women have ever used at least one method to regulate their fertility; only 13 percent have ever used a modern method. However, the survey results indicate that once women decide to adopt contraception, they do so at a fairly early stage in the family building process. Almost one-fourth of all ever-users began using contraception when they had only one child. This early use of contraception is probably for purposes of spacing rather than for stopping childbearing; half of ever-users mentioned spacing as the reason for first use.

The percentage of current users of family planning (including prolonged breastfeeding) among all currently married women is 10 percent; excluding breastfeeding it is 7 percent. However, because of the relatively common use of traditional methods compared to modern methods, current use of modern methods is only about 6 percent. Contraceptive use varies substantially by socioeconomic variables. Current use of any method, for example, is 28 percent among urban women and 39 percent among women with more than primary education.

Only one-fourth of women, or just half of those who have heard of any modern method, know where to go to get a family planning method. The public sector, including nongovernmental organizations, is a major provider of family planning in Yemen. It provides methods to 6 of 10 users of modern methods. Pharmacies are the major source of contraceptive methods, providing modern methods to one-fourth of those who want to regulate their fertility.

There are many obstacles to the use of family planning in Yemen, the most important of which is that most women do not plan to ever use a method. Only 16 percent of currently married women who are not currently using any method intend to use a method in the future. Among nonusers, almost half reported that their method of choice is the pill, while 1 in 7 preferred either injection or the IUD. The main reasons given for nonuse are: lack of knowledge (one-fourth), disapproval of husbands (16 percent), religious prohibition (15 percent), and fear of side effects (10 percent). Religious prohibition was mentioned more often by older women, while disapproval of husbands was mentioned more often by younger women.

Family planning efforts should initially be directed at identifying those women who want no more children, in order to assist them in realizing their desired family size (which may be well below the actual number), for the welfare of the child, the mother, and the family and community. Simultaneously, information and educational efforts should be directed at changing misconceptions about and negative

attitudes toward family planning and to vigorously promote child spacing as a means of increasing child survival and reducing maternal mortality.

II. POLICY RECOMMENDATIONS

In mid-1990, the population of Yemen was estimated at 11.3 million, based on a crude birth rate of about 54 per thousand and a crude death rate of 23 per thousand. The annual rate of growth is high, approaching 3.1 percent, and has resulted in an age structure in which 52 percent of the population is below 15 years of age. The resulting dependency ratio is above one. An increasing proportion of the population lives in urban areas, such that the urban-rural ratio is about 1:4.

Low levels of social and economic conditions constitute an important dimension of the health and demographic setting in Yemen. These characteristics, in terms of health, nutrition, illiteracy, education, life expectancy, and the status of women, have been associated with low rates of labor productivity and, hence, with only moderate rates of socioeconomic development. Most recent estimates indicate that (1) infant mortality rate is about 130 deaths per 1,000 live births, (2) literacy rates are only 49 percent for males and only 8 percent for females, (3) dependency ratio is 126, (4) maternal mortality rate is in the range 800-1,000 deaths per 100,000 females, and (5) life expectancy is very low (46 years for males and 47 years for females).

In light of the findings from the YDMCHS and the socioeconomic backdrop, some policy recommendations are discussed below. One of the major objectives of the YDMCHS was to provide planners and policymakers with a comprehensive set of data suitable for designing strategies and policies for dealing with the social and health status of the mother and child.

The preceding review points to three main areas of concern. First, there is an urgent need to adopt strategies that will help to reduce the level of infant and child mortality. Greater effort should be made and programs designed to achieve the United Nations target of an under-five mortality rate of 70 deaths per 1,000 live births by the year 2000. Second, efforts should be targeted toward improving maternal and reproductive health. An 11 percent pregnancy rate among the high risk group of young women (i.e., those age under 20 years) and a high proportion of pregnancy wastage should be avoided or at least minimized. Third, policies and programs should be designed to alter the motivation for large families for the sake of mothers' and children's health and well-being. More specifically, the following strategies are recommended.

1. Sanitary and environmental conditions inside houses or in neighboring communities should be improved. Unhealthy sources of drinking water, presence of farm animals in the home, and other conditions within the house or in the surrounding environment are associated with infant and child mortality.

2. A coherent information, education, and communication campaign should be developed to inform parents about the need for vaccination and the vaccination schedule against childhood diseases.

3. Health facilities should be more accessible to people, especially those residing in rural areas. Distance, cost, and/or unavailability of services are cited repeatedly by the Yemeni mothers, particularly in these two areas in which majority of the total population reside.

4. The essential elements of obstetrical care should be available at the first referral level for better maternal and child health and survival. These elements should include surgical obstetrics, anesthesia, medical treatment, blood replacement, management of women at high risk, family planning support, and neonatal care.

5. Regular medical checkups and receiving tetanus toxoid vaccinations during pregnancy should be advocated. In addition, a referral system is needed to treat and supervise those high risk pregnancies which are detected by regular checkups.

6. Public health programs aimed at reducing child mortality should be coordinated with intensive efforts to educate parents on the family size implications of these programs. Moreover, family planning efforts could be especially productive if coordinated or integrated with programs which strive to reduce child mortality.

7. Fertility regulation for spacing purposes should be encouraged. Emphasis on encouraging women to increase the interval between desired births would contribute to health benefits for the child and the mother and consequently, to reduced infant, child, and maternal mortality levels.

8. With the implementation of a referral system for high risk pregnancies, specialized training programs for dayas and midwives in fields related to delivery and fertility regulation should be promoted.

9. Attention should be focused on the demographic variables associated with the shortening of the reproductive life span, such as age at first marriage and maternal age at first and last birth. With high proportions of women marrying before reaching their fifteenth birthday and still perceiving that their daughters marry at an early age, a legal age at marriage decree would be appropriate. Information regarding the health hazards of having births at very young (under 20 years) or very old (above 35 years) to both the mother and the child should be made available to all couples in reproductive age groups.

10. Fertility regulation efforts should focus on developing the preconditions for family planning by providing basic health care to reduce child mortality, augmenting basic education programs, and establishing strong informative campaigns aimed at increasing knowledge of and shifting attitudes toward fertility regulation.

11. With regard to promotion of family planning efforts, priority should be given to women in immediate need of contraceptive services, i.e., those who do not want any more children and are not currently using any method. Specifically, among women in the high risk group, either those age 35-49 or those with at least five living children, one-third cited that they do not want more children: they should be key targets of family planning efforts, since eliminating unwanted childbearing among this group would result in reducing completed fertility in Yemen. Family planning messages should emphasize the health benefits of contraceptive use for mothers and their children.

12. With regard to target populations for family planning campaigns, emphasis should be given especially to women living in rural areas and to women at low educational levels.

13. Emphasis should continue to be placed on the health benefits of traditional practices such as high prevalence and long durations of breastfeeding and postpartum abstinence.

14. An educational policy which is designed to increase enrollment rates among the female population, especially in primary and preparatory schools, should be of great importance. Educated Yemeni women are characterized by favorable fertility attitudes and behavior, and by better health for the mother and child.

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APPENDIX A

SURVEY STAFF

APPENDIX A

PERSONNEL INVOI VED IN THE YEMEN DEMOGRAPHIC AND MATERNAL AND CHILD HEALTH SURVEY

SUPREME COMMITTEE

Members

Mr. Abdorabo Jaradah, *Chairman*
Dr. Abdulla Saleh Al-Saedi, *Vice Chairman*
Salira Bin Hummam, *Member*
Mohamed Said Ba-Masaoud, *Member*
Hussein Ogleh, *Member*
Amin Marouf Al-Janad, *Member*
Abdulla Hassan Al-Shater, *Member*
Mohamed Gharamah Al-Raee, *Member*
Dr. Jafer Mohamed Said, *Member*
Aisha Abdulaziz, *Member*
Abdo Mohamed Nasser Al-Qubati, *Rapporteur and Member*

SURVEY TECHNICAL COMMITTEE

Executive Manager & Chairman: Amin M. Al-Janad

Members

A. Gabbar A. Abdullah, Ministry of Health, *Coordinator*
Abdo M. Qubati, *Technical Assitant to Executive Manager*
Iskander A. Sattar, *Technical Assitant to Executive Manager, Aden*
Dr. Nageeb Alawi, Health Services, MOPH
Othman Baji, Public Health, MOPH
Ali Saeed Naji, Health Statistics, MOPH
A. Rakeeb A. Saif, PPSRC
Mohamed Badwi, Data Bank, CSO
A. Lateef Ali Hasan, *Secretary, and Assistant (for field operations) to Executive Manager*

FIELD SUPERVISORS

Mugahed Ahmed Al-Shaab, Group Supervisor, Sana'a City
Nour Saleh Allan, Group Supervisor, Aden-I
Kais Rashed, Group Supervisor, Aden-II
A. M. Kaid Sallam, Group Supervisor, Sana'a-I
M. Yehya Shaga Al-Din, Group Supervisor, Sana'a-II
Ahmed A. Rab Mohamed, Group Supervisor, Taiz
Adnan Mohamed, Asst. Group Supervisor, Taiz
A. Kader Muneef, Supervisor, Hadramout-I and Maharah
Yaslam Ben Kallah, Supervisor, Hadramout-II
Tarek Yaslam AwdHadramout, Supervisor
Saeed Hammadi, Supervisor, Hodaidah
Rashad M. A. Kader, Supervisor, Ibb
A. Kawi Ibraheem, Assistant Supervisor, Ibb
Ahmed Al-BarakaniSupervisor, Lahj
Saleh Waheeb Ali, Supervisor, Lahj-I
Dadi Bagoal, Supervisor, Lahj-II
Ali Ahmed Kasem, Supervisor, Hajjah and Mahweet
Ali Kahtan Abdullah, Assistant Supervisor, Hajjah and Mahweet
Khaled Abubakr, Supervisor, Shabwa
Othman Mehdi Bagl, Supervisor, Abyan
Ali A. Kawkabani, Group Supervisor, Sadah and Mareb

APPENDIX B

SAMPLE DESIGN

APPENDIX B

SAMPLE DESIGN

The YDMCHS-1991/92 is based on a national sample design in order to provide independent estimates with acceptable precision for important population characteristics for the following major domains: two regions, the northern and western governorates, and the southern and eastern governorates; urban and rural areas (each as a separate domain) and the total country of the Republic of Yemen.

Yemen is divided into 17 governorates, 11 in the northern and western region and 6 in the southern and eastern region. The YDMCHS-1991/92 was carried out in the whole country. The only population excluded from the survey was the nomadic population located in the southern and western governorates. The nomadic population accounts for only 5 percent in that region and a much smaller proportion of the total population of Yemen.

The population covered by the YDMCHS-1991/92 was the universe of all ever-married women age 15-54, and all children under five living in households. The initial target sample was 12,000 households for the Household Questionnaire; in half of the households eligible women were to be interviewed and information was to be collected on children under five in the household.

The target sample was initially allocated among governorates in proportion to their size, but in order to provide a minimum number of selected units to have reliable results by each combination of region and residence the sample design was modified.

In selecting the YDMCHS-1991/92 sample, the 1986 population census in the northern and western governorates and the 1988 population census in the southern and eastern governorates were combined to construct the basic sample frame for this survey. In the northern and western governorates, the lowest geographic area having basic information on households and population is enumeration blocks in urban areas, and *ozzlahs* (combination of villages) in rural areas. In the southern and eastern governorates, it is the enumeration area both in urban and rural areas.

Enumeration blocks and ozzlahs in the northern and western governorates and enumeration areas in the southern and eastern governorates were assigned a measure of size (one measure equal to 100 households) to facilitate selection at the first stage with probability proportional to size (PPS). The sampling units, which were stratified by urban and rural areas in each region and governorate, were arranged in geographical order in each combination. The final sample is a two-stage sample design; in the first stage a total of 258 clusters were selected, 84 in urban and 174 in rural areas. A total of 178 were selected in the northern and western governorates and 80 in the southern and eastern governorates, under constraint of having about 40 clusters per domain (region by area of residence).

The selection probability for each cluster in each urban and rural area of a given governorate can be expressed as

$$\mathbf{P(i\text{-th cluster})} = (aM_i / \Sigma_i M_i)$$

where

a is the number of clusters selected in a given area (urban/rural by governorate)

$\mathbf{M_i}$ is the measure of size assigned to i-th cluster

$\Sigma_i \mathbf{M_i}$ is the sum of measures of size in the given area.

In each selected sampling area a complete household listing was implemented. Since there was no significant variation between the data provided by the listing and the census figures, a fixed number (40) of households were selected in each urban cluster and 60 in each rural cluster in the second sampling stage. For each selected address, a household questionnaire was administered, and in half (an average of 20 for each urban area and 30 for each rural cluster), eligible women were interviewed and information on children under five was collected.

The household selection probability was simplified as

$$\mathbf{P(household \mid i\text{-}th\ cluster) = b / 100*M_i}$$

Since this is not a self-weighting sample design, sample weights have been calculated for each cluster. All tabulations presented in this report are based on the weighted data.

A total of 6,404 of the 6,851 households selected for only the household interview were completed. A total of 6,432 of 6,461 households were completed where the Women's Questionnaire and the Child's Questionnaire were to be administered. A total of 6,010 of 6,511 ever-married women age 15-54 and 5,687 of 6,150 eligible women 15-49 were successfully interviewed. Questionnaires for a total of 6,715 children under five of the 7,022 eligible children were completed. Table B.1 provides the results of sample implementation for households and eligible women 15-49 according to urban-rural residence and region.

Table B.1 Sample implementation

Percent distribution of households and eligible women by results of the interview, and household response rates, eligible woman response rates, and overall response rates, according to sample domain and urban-rural residence, Yemen 1991/92

	Residence		Region		
Result	Urban	Rural	North./ West.	South./ East.	Total
Selected households					
Completed (C)	92.3	94.0	95.8	93.2	93.6
Household present but no competent respondent at home (P)	0.4	0.1	0.2	0.2	0.2
Postponed	0.1	0.0	0.0	0.0	0.0
Refused (R)	0.3	0.3	0.3	0.2	0.3
Dwelling not found (DNF)	0.2	0.2	0.2	0.3	0.2
Dwelling vacant (DV)	4.7	3.1	3.2	4.1	3.5
Dwelling destroyed (DD)	0.0	0.0	0.0	0.0	0.0
Other (O)	2.0	2.2	2.2	2.0	2.2
Total percent	100.0	100.0	100.0	100.0	100.0
Number	3333	10379	9708	4004	13712
Household response rate (HRR)[1]	99.0	99.3	99.2	99.2	99.2
Eligible women					
Completed (EWC)	92.7	92.4	93.4	90.3	92.5
Not at home (EWNH)	3.4	3.6	3.1	4.5	3.5
Postponed (EWP)	0.1	0.1	0.1	0.2	0.1
Refused (EWR)	0.3	0.4	0.4	0.4	0.4
Partly completed (EWPC)	0.4	0.2	0.3	0.1	0.2
Other (EWO)	3.2	3.3	2.7	4.6	3.3
Total Percent	100.0	100.0	100.0	100.0	100.0
Number	1568	4582	4293	1857	6150
Eligible woman response rate (EWRR)[2]	92.7	92.4	93.4	90.3	92.5
Overall response rate (ORR)[3]	91.7	91.8	92.7	89.6	91.8

Note: The household response rate is calculated for completed households as a proportion of completed, no competent respondent, postponed, refused, dwelling not found and household absent. The eligible woman response rate is calculated for completed interviews as a proportion of completed, not at home, postponed, refused, partially completed and "other." The overall response rate is the product of the household and woman response rates.

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

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

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

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

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

$$ORR = HRR * EWRR$$

APPENDIX C

ESTIMATES OF SAMPLING ERRORS

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The results from sample surveys are affected by two types of errors, nonsampling error and sampling error. Nonsampling error is due to mistakes made in carrying out field activities, such as failure to locate and interview the correct household, errors in the way the questions are asked, misunderstanding on the part of either the interviewer or the respondent, data entry errors, etc. Although efforts were made during the design and implementation of the YDMCHS to minimize this type of error, nonsampling errors are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be measured statistically. The sample of women selected in the YDMCHS is only one of many samples that could have been selected from the same population, using the same design and expected size. Each one would have yielded results that differed somewhat from the actual sample selected. The sampling error is a measure of the variability between all possible samples; although it is not known exactly, it can be estimated from the survey results.

Sampling error is usually measured in terms of *standard error* of a particular statistic (mean, percentage, etc.), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which one can reasonably be assumed that, apart from nonsampling errors, the true value of the variable for the whole population falls. For example, for any given statistic calculated from a sample survey, the value of that same statistic as measured in 95 percent of all possible samples with the same design (and expected size) will fall within a range of plus or minus two times the standard error of that statistic.

If the sample of women had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the YDMCHS sample design depended on stratification, stages and clusters. Consequently, it was necessary to utilize more complex formulas. The computer package CLUSTERS, developed by the International Statistical Institute for the World Fertility Survey, was used to assist in computing the sampling errors with the proper statistical methodology.

The CLUSTERS program treats any percentage or average as a ratio estimate, $r = y/x$, where y represents the total sample value for variable y, and x represents the total number of cases in the group or subgroup under consideration. The variance of r is computed using the formula given below, with the standard error being the square root of the variance:

$$var(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \left[\frac{m_h}{m_h - 1} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right]$$

in which

$$z_{hi} = y_{hi} - r.x_{hi} \text{ , and } z_h = y_h - r.x_h$$

where h represents the stratum which varies from 1 to H,
m_h is the total number of EAs selected in the hth stratum,
y_{hi} is the sum of the values of variable y in EA i in the hth stratum,
x_{hi} is the sum of the number of cases (women) in EA i in the hth stratum, and
f is the overall sampling fraction, which is so small that CLUSTERS ignores it.

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

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

Sampling errors are presented in Tables C.2-C.6 for variables considered to be of major interest. Results are presented for the whole country, for the each separated urban and rural area, for the Northern and Western governorates region and for the Southern and Eastern governorates region, as well as for the three major groups age only ever married women. For each variable, the type of statistic (mean or proportion) and the base population are given in Table C.1. For each variable, Tables C.2-C.6 present the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted cases (WN), the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits (R±2SE).

The confidence limits have the following interpretation. For the mean number of children ever born (*EVB*), the overall average from the sample is 4.942 and its standard error is 0.056. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., 4.942 ± (2 x 0.056), which means that there is a high probability (95 percent) that the *true* average number of children ever born is between 4.829 and 5.055.

The relative standard error for most estimates for the country as a whole is small, except for estimates of very small proportions. The magnitude of the error increases as estimates for subpopulations such as geographical areas are considered. For the variable *EVB*, for instance, the relative standard error (as a percentage of the estimated mean) for the whole country and its two regional division is 1.1 percent, 1.3 percent, and 2.2 percent, respectively.

Table C.1 List of selected variables for sampling errors, Yemen 1991/92

Variable	Type	Description	Base population
URBRUR	Urban	Proportion	Ever-married women 15-49
ILLIT	Illiterate	Proportion	Ever-married women 15-49
PRICOM	Completed primary	Proportion	Ever-married women 15-49
CURMAR	Currently married	Proportion	Ever-married women 15-49
PREG	Currently pregnant	Proportion	Currently married women 15-49
EVB	Children ever born	Mean	Currently married women 15-49
EV4049	Children ever born to women 40-49	Mean	Currently married women aged 40-49
SURV	Children surviving	Mean	Currently married women 15-49
KMETHO	Know any contraceptive method	Proportion	Currently married women 15-49
KSRCE	Know any source of method	Proportion	Currently married women 15-49
KMDMET	Know modern contraceptive method	Proportion	Currently married women 15-49
EVUSE	Ever used any method	Proportion	Currently married women 15-49
CUSE	Currently using any method	Proportion	Currently married women 15-49
CUMODE	Currently using a modern method	Proportion	Currently married women 15-49
PSOURC	Using public sector source	Proportion	Currently married women 15-49 using modern methods
NOMORE	Want no more children	Proportion	Currently married women 15-49
IDEAL	Ideal number of children	Mean	Currently married women 15-49 giving numeric responses
TETANU	Mother received tetanus injection	Proportion	Births in last five years
ANTENA	Had antenatal check-up	Proportion	Births in last five years
MDCARE	Received medical care at birth	Proportion	Births in last five years
DIARRH	Had diarrhea in last 2 weeks	Proportion	Children under five
ORSTRE	Treated with ORS packets	Proportion	Children under 5 with diarrhea in last 2 weeks
MEDTRE	Consulted a medical facility	Proportion	Children under 5 with diarrhea in last 2 weeks
VCARD	Vaccination card seen	Proportion	Children under five
BCG	Received BCG vaccination	Proportion	Children under five
VCARD23	Vaccination card seen	Proportion	Children 12-23 months
BCG23	Received BCG vaccination	Proportion	Children 12-23 months
DPT3	Received third DPT vaccination	Proportion	Children 12-23 months
MEASLE	Received measles vaccination	Proportion	Children 12-23 months
FULLVAC	Received BCG, measles and three doses of polio and DPT	Proportion	Children 12-23 months

Table C.2 Sampling errors - Entire sample, Yemen 1991/92

Variable	Value (R)	Standard error (SE)	Number of cases Unweighted (N)	Number of cases Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
URBRUR	.185	.005	5687	5687	1.037	.029	.175	.196
ILLIT	.893	.006	5687	5687	1.456	.007	.881	.905
PRICOM	.056	.004	5687	5687	1.206	.066	.048	.063
CURMAR	.942	.004	5687	5687	1.235	.004	.934	.949
PREG	.184	.006	5336	5356	1.193	.034	.172	.197
EVB	4.942	.056	5336	5356	1.207	.011	4.829	5.055
EV4049	7.971	.111	1073	1091	1.155	.014	7.749	8.193
SURV	4.088	.049	5336	5356	1.270	.012	3.990	4.185
KMETHO	.602	.010	5336	5356	1.497	.017	.582	.622
KSRCE	.270	.009	5336	5356	1.512	.034	.251	.288
KMDMET	.532	.009	5336	5356	1.371	.018	.513	.550
EVUSE	.198	.008	5336	5356	1.520	.042	.181	.214
CUSE	.097	.005	5336	5356	1.338	.056	.086	.107
CUMODE	.061	.004	5336	5356	1.376	.074	.052	.070
PSOURC	.567	.032	417	325	1.305	.056	.504	.631
NOMORE	.350	.008	5336	5356	1.238	.023	.334	.366
IDEAL	5.427	.071	3795	3835	1.400	.013	5.286	5.569
TETANU	.155	.006	7136	7421	1.277	.042	.142	.167
ANTENA	.261	.010	7136	7421	1.605	.040	.240	.281
MDCARE	.159	.008	7136	7421	1.488	.050	.143	.175
DIARRH	.344	.009	6715	6715	1.535	.026	.326	.362
ORSTRE	.276	.015	2090	2311	1.584	.056	.245	.307
MEDTRE	.333	.016	2090	2311	1.580	.049	.301	.366
VCARD	.218	.011	6715	6715	2.190	.051	.196	.240
BCG	.591	.014	6715	6715	2.305	.023	.563	.619
VCARD23	.270	.016	1255	1256	1.294	.060	.237	.302
BCG23	.604	.017	1255	1256	1.253	.029	.569	.638
DPT3	.473	.018	1255	1256	1.270	.038	.437	.508
MEASLE	.515	.018	1255	1256	1.277	.035	.479	.551
FULLVAC	.450	.018	1255	1256	1.280	.040	.414	.486

Table C.3 Sampling errors - Urban area, Yemen 1991/92

Variable	Value (R)	Standard error (SE)	Number of cases Unweighted (N)	Number of cases Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
URBRUR	1.000	.000	1453	1055	.000	.000	1.000	1.000
ILLIT	.663	.016	1453	1055	1.260	.024	.632	.694
PRICOM	.148	.012	1453	1055	1.242	.078	.125	.171
CURMAR	.902	.010	1453	1055	1.323	.011	.882	.923
PREG	.165	.013	1315	951	1.280	.079	.139	.191
EVB	4.925	.096	1315	951	.964	.019	4.733	5.117
EV4049	8.138	.216	244	172	.929	.027	7.705	8.571
SURV	4.179	.084	1315	951	1.021	.020	4.010	4.347
KMETHO	.888	.015	1315	951	1.758	.017	.858	.919
KSRCE	.673	.024	1315	951	1.829	.035	.626	.721
KMDMET	.862	.015	1315	951	1.579	.017	.832	.892
EVUSE	.518	.018	1315	951	1.315	.035	.482	.555
CUSE	.282	.016	1315	951	1.323	.058	.249	.315
CUMODE	.188	.014	1315	951	1.329	.076	.159	.216
PSOURC	.566	.037	279	178	1.246	.065	.491	.640
NOMORE	.441	.018	1315	951	1.319	.041	.405	.477
IDEAL	4.388	.149	975	701	1.586	.034	4.090	4.687
TETANU	.339	.018	1569	1200	1.283	.054	.302	.375
ANTENA	.571	.029	1569	1200	1.821	.050	.514	.629
MDCARE	.462	.024	1569	1200	1.507	.052	.414	.510
DIARRH	.263	.013	1474	1113	1.118	.049	.237	.289
ORSTRE	.457	.040	341	293	1.482	.088	.377	.537
MEDTRE	.583	.030	341	293	1.125	.052	.522	.643
VCARD	.417	.028	1474	1113	2.211	.068	.360	.474
BCG	.813	.016	1474	1113	1.608	.020	.780	.845
VCARD23	.519	.043	298	220	1.484	.083	.433	.605
BCG23	.859	.023	298	220	1.161	.027	.812	.906
DPT3	.765	.031	298	220	1.270	.041	.702	.827
MEASLE	.778	.033	298	220	1.349	.042	.713	.843
FULLVAC	.725	.032	298	220	1.229	.044	.661	.789

Table C.4 Sampling errors - Rural area, Yemen 1991/92

Variable	Value (R)	Standard error (SE)	Number of cases Unweighted (N)	Number of cases Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
URBRUR	.000	.000	4234	4633	.000	.000	.000	.000
ILLIT	.945	.006	4234	4633	1.773	.007	.933	.957
PRICOM	.035	.003	4234	4633	1.244	.101	.028	.042
CURMAR	.951	.004	4234	4633	1.226	.004	.943	.959
PREG	.188	.007	4021	4404	1.161	.038	.174	.203
EVB	4.946	.065	4021	4404	1.230	.013	4.815	5.076
EV4049	7.940	.125	829	919	1.187	.016	7.689	8.190
SURV	4.068	.056	4021	4404	1.292	.014	3.955	4.181
KMETHO	.540	.012	4021	4404	1.488	.022	.516	.563
KSRCE	.183	.010	4021	4404	1.672	.056	.162	.203
KMDMET	.460	.011	4021	4404	1.385	.024	.439	.482
EVUSE	.129	.009	4021	4404	1.736	.071	.110	.147
CUSE	.057	.005	4021	4404	1.492	.096	.046	.067
CUMODE	.033	.004	4021	4404	1.522	.129	.025	.042
PSOURC	.569	.054	138	147	1.272	.094	.462	.677
NOMORE	.330	.009	4021	4404	1.216	.027	.312	.348
IDEAL	5.660	.081	2820	3134	1.378	.014	5.498	5.821
TETANU	.119	.006	5567	6220	1.238	.053	.107	.132
ANTENA	.201	.011	5567	6220	1.671	.055	.179	.223
MDCARE	.100	.008	5567	6220	1.685	.082	.084	.117
DIARRH	.360	.010	5241	5602	1.561	.029	.340	.381
ORSTRE	.249	.017	1749	2018	1.637	.068	.215	.283
MEDTRE	.297	.018	1749	2018	1.642	.060	.261	.333
VCARD	.178	.012	5241	5602	2.295	.068	.154	.202
BCG	.547	.016	5241	5602	2.361	.030	.515	.579
VCARD23	.217	.018	957	1036	1.330	.082	.181	.252
BCG23	.550	.021	957	1036	1.281	.038	.508	.591
DPT3	.410	.021	957	1036	1.306	.051	.369	.452
MEASLE	.459	.021	957	1036	1.287	.045	.418	.500
FULLVAC	.391	.021	957	1036	1.315	.053	.350	.433

Table C.5 Sampling errors - Northern and western governorates region, Yemen 1991/92

Variable	Value (R)	Standard error (SE)	Number of cases: Unweighted (N)	Number of cases: Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits: R-2SE	Confidence limits: R+2SE
URBRUR	.153	.006	4010	4708	1.051	.039	.141	.165
ILLIT	.935	.005	4010	4708	1.255	.005	.926	.945
PRICOM	.040	.004	4010	4708	1.272	.098	.032	.048
CURMAR	.947	.004	4010	4708	1.207	.005	.938	.955
PREG	.192	.007	3799	4458	1.134	.038	.177	.206
EVB	5.102	.065	3799	4458	1.173	.013	4.971	5.233
EV4049	8.131	.123	763	906	1.084	.015	7.886	8.376
SURV	4.179	.056	3799	4458	1.239	.013	4.067	4.292
KMETHO	.573	.011	3799	4458	1.376	.019	.551	.595
KSRCE	.232	.009	3799	4458	1.331	.039	.214	.250
KMDMET	.493	.010	3799	4458	1.245	.020	.473	.513
EVUSE	.170	.009	3799	4458	1.465	.053	.152	.188
CUSE	.083	.006	3799	4458	1.324	.072	.071	.094
CUMODE	.051	.005	3799	4458	1.376	.097	.041	.060
PSOURC	.518	.042	224	226	1.257	.081	.434	.602
NOMORE	.362	.009	3799	4458	1.163	.025	.344	.380
IDEAL	5.497	.080	2745	3237	1.364	.015	5.337	5.658
TETANU	.119	.006	5452	6423	1.253	.054	.106	.132
ANTENA	.237	.011	5452	6423	1.505	.046	.215	.258
MDCARE	.137	.009	5452	6423	1.497	.064	.120	.155
DIARRH	.380	.010	5094	5793	1.459	.026	.360	.400
ORSTRE	.272	.016	1895	2200	1.579	.059	.240	.305
MEDTRE	.322	.017	1895	2200	1.582	.053	.288	.356
VCARD	.195	.012	5094	5793	2.221	.063	170	.219
BCG	.558	.016	5094	5793	2.263	.028	.527	.590
VCARD23	.234	.018	957	1089	1.318	.077	.197	.270
BCG23	.562	.019	957	1089	1.206	.034	.523	.601
DPT3	.431	.020	957	1089	1.234	.046	.392	.471
MEASLE	.475	.020	957	1089	1.227	.042	.436	.515
FULLVAC	.409	.020	957	1089	1.242	.048	.370	.449

Table C.6 Sampling errors - Southern and eastern governorates region, Yemen 1991/92

Variable	Value (R)	Standard error (SE)	Number of cases Unweighted (N)	Number of cases Weighted (WN)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
URBRUR	.342	.014	1677	979	1.218	.041	.314	.370
ILLIT	.688	.024	1677	979	2.141	.035	.640	.737
PRICOM	.128	.009	1677	979	1.152	.073	.109	.147
CURMAR	.917	.009	1677	979	1.275	.009	.899	.934
PREG	.147	.011	1537	897	1.237	.076	125	.169
EVB	4.146	093	1537	897	1.126	.022	3.960	4.332
EV4049	7.186	.255	310	185	1.445	.035	6.676	7.695
SURV	3.631	.079	1537	897	1.112	.022	3.474	3.789
KMETHO	.743	.024	1537	897	2.131	.032	.695	.790
KSRCE	.458	.030	1537	897	2.378	.066	.398	.519
KMDMET	.724	.025	1537	897	2.150	.034	.675	.773
EVUSE	.337	.022	1537	897	1.809	.065	.293	.380
CUSE	.167	.014	1537	897	1.455	.083	.139	.195
CUMODE	.111	.012	1537	897	1.517	.110	.087	.135
PSOURC	.679	.042	193	99	1.247	.062	.595	.763
NOMORE	.291	.018	1537	897	1.524	.061	.256	.326
IDEAL	5.048	.127	1050	598	1.258	.025	4.794	5.302
TETANU	.383	.022	1684	998	1.500	.056	.340	.426
ANTENA	.415	.032	1684	998	2.048	.076	.352	.479
MDCARE	.296	.020	1684	998	1.413	.067	.256	.335
DIARRH	.121	.012	1621	923	1.501	.101	.096	.145
ORSTRE	.340	.041	195	111	1.198	.120	.259	.422
MEDTRE	.546	.041	195	111	1.141	.075	.465	.628
VCARD	.363	.019	1621	923	1.551	.051	.326	.400
BCG	.796	.019	1621	923	1.868	.024	.758	.833
VCARD23	.505	.031	298	167	1.074	.062	.443	.567
BCG23	.874	.025	298	167	1.306	.029	.824	.924
DPT3	.740	.036	298	167	1.402	.048	.669	.811
MEASLE	.772	.038	298	167	1.568	.049	.695	.848
FULLVAC	.715	.037	298	167	1.413	.052	.641	.789

APPENDIX D

DATA QUALITY TABLES

APPENDIX D

DATA QUALITY TABLES

Table D.1 Household age distribution

Single-year age distribution of the de jure household population by sex (weighted), Yemen 1991/92

	Males		Females			Males		Females	
Age	Number	Percent	Number	Percent	Age	Number	Percent	Number	Percent
0	821	3.9	812	3.8	36	108	0.5	112	0.5
1	701	3.3	654	3.0	37	73	0.3	108	0.5
2	767	3.6	765	3.5	38	119	0.6	136	0.6
3	774	3.6	644	3.0	39	90	0.4	93	0.4
4	625	2.9	651	3.0	40	487	2.3	396	1.8
5	863	4.1	923	4.3	41	84	0.4	58	0.3
6	872	4.1	806	3.7	42	94	0.4	123	0.6
7	949	4.5	951	4.4	43	48	0.2	66	0.3
8	849	4.0	812	3.8	44	48	0.2	56	0.3
9	706	3.3	698	3.2	45	401	1.9	338	1.6
10	940	4.4	794	3.7	46	46	0.2	59	0.3
11	614	2.9	561	2.6	47	51	0.2	55	0.3
12	804	3.8	725	3.4	48	56	0.3	64	0.3
13	632	3.0	565	2.6	49	64	0.3	60	0.3
14	501	2.4	460	2.1	50	368	1.7	212	1.0
15	580	2.7	605	2.8	51	35	0.2	38	0.2
16	378	1.8	378	1.8	52	56	0.3	41	0.2
17	303	1.4	304	1.4	53	28	0.1	35	0.2
18	390	1.8	410	1.9	54	38	0.2	50	0.2
19	229	1.1	250	1.2	55	205	1.0	252	1.2
20	426	2.0	479	2.2	56	47	0.2	172	0.8
21	138	0.6	167	0.8	57	48	0.2	120	0.6
22	217	1.0	221	1.0	58	47	0.2	116	0.5
23	159	0.7	199	0.9	59	51	0.2	86	0.4
24	144	0.7	186	0.9	60	425	2.0	412	1.9
25	404	1.9	649	3.0	61	39	0.2	31	0.1
26	126	0.6	171	0.8	62	54	0.3	54	0.3
27	146	0.7	200	0.9	63	30	0.1	32	0.1
28	224	1.1	268	1.2	64	39	0.2	45	0.2
29	166	0.8	215	1.0	65	203	1.0	168	0.8
30	527	2.5	569	2.6	66	17	0.1	13	0.1
31	100	0.5	148	0.7	67	26	0.1	13	0.1
32	137	0.6	178	0.8	68	18	0.1	20	0.1
33	77	0.4	84	0.4	69	8	--	16	0.1
34	89	0.4	114	0.5	70+	800	3.8	649	3.0
35	477	2.2	574	2.7	Don't know/ missing	53	0.2	62.0	0.3
					Total	21259	100.0	21549	100.0

Table D.2 Age distribution of eligible and interviewed women

Five-year age distribution of the de jure household population of women aged 10-54, five-year age distribution of interviewed ever-married women aged 15-49, and percentage of eligible women 15-49 who were interviewed (weighted), Yemen 1991/92

Age	Household population of women		Ever-married women		Interviewed women age 15-49		Percentage interviewed (weighted)
	Number	Percent	Number	Percent	Number	Percent	
10-14	3104	-	-	-	-	-	-
15-19	1947	24.1	473	7.8	427	7.6	90.4
20-24	1252	15.5	916	15.0	807	14.3	88.0
25-29	1503	18.6	1365	22.4	1286	22.8	94.2
30-34	1092	13.5	1059	17.4	995	17.6	93.9
25-39	1024	12.7	1011	16.6	958	17.0	94.8
40-44	699	8.6	694	11.4	645	11.4	93.0
45-49	576	7.1	573	9.4	525	9.3	91.6
50-54	376	NC	NC	NC	NC	NC	NC
15-49	8095	-	6091	-	5643	-	92.7

Note: Weights for all women, ever-married women and interviewed women are household weights.
NC = Not counted

Table D.3 Completeness of reporting

Percentage of observations missing information for selected demographic and health questions (weighted), Yemen 1991/92

Subject	Reference group	Percentage missing information	Number of cases
Birth date	Births in last 15 years		
Month only		24.4	22237
Month and year		0.7	22237
Age at death	Deaths to births in last 15 years	7.0	3236
Age/date at first marriage[1]	Ever-married women 15-49	1.0	5687
Respondent's education	Ever-married women	0.4	5687
Child's size at birth	Births in last 59 months	26.9	514
Diarrhea in last 2 weeks	Living children age 0-59 months	1.3	6715

[1]Both year and age missing
[2]Child not measured

Table D.4 Births by calendar year since birth

Distribution of births by calendar years since birth for living (L), dead (D), and all (T) children, according to reporting completeness, sex ratio at birth, and ratio of births by calendar year, Yemen 1991/92

	Number of births			Percentage with complete birth date[1]			Sex ratio at birth[2]			Calendar ratio[3]			Male			Female		
Year	L	D	T	L	D	T	L	D	T	L	D	T	L	D	T	L	D	T
91	1529	116	1646	98.9	89.5	98.3	100.4	108.4	100.9	241.5	149.3	231.4	766	61	827	763	56	819
90	1265	156	1421	98.6	87.6	97.4	109.6	92.8	107.6	85.9	118.2	88.5	661	75	736	604	81	685
89	1417	148	1564	94.0	75.1	92.2	101.0	123.2	102.9	108.3	95.1	106.9	712	81	793	705	66	771
88	1350	154	1504	90.9	72.9	89.0	118.3	126.5	119.1	105.5	97.6	104.6	731	86	818	618	68	687
87	1143	169	1312	90.2	71.0	87.8	99.6	56.3	97.8	77.2	82.5	77.8	570	78	648	573	91	663
86	1611	255	1866	82.9	73.0	81.5	92.8	112.2	95.3	123.3	109.4	121.2	775	135	910	836	120	956
85	1471	298	1768	68.4	55.8	66.3	106.3	96.5	104.6	91.7	123.4	95.8	758	146	904	713	151	864
84	1597	227	1824	64.6	69.1	65.2	99.9	158.2	105.7	111.4	80.0	106.2	798	139	937	799	88	887
83	1396	270	1667	66.5	52.7	64.2	109.7	170.9	117.6				730	171	901	666	100	766
88-92[4]	5562	574	6136	95.7	80.8	94.3	106.7	111.9	107.2		-		2871	303	3174	2691	271	2962
83-87	7218	1219	8437	73.9	63.3	72.4	101.3	121.6	104.0		-		3632	669	4301	3586	550	4136
78-82	5510	1219	6729	65.0	62.2	64.5	109.3	120.5	111.2	-	-	-	2878	666	3543	2633	553	3185
73-77	2813	956	3769	64.6	62.2	64.0	103.3	106.6	104.1		-	-	1429	493	1923	1384	463	1847
< 73	1823	904	2727	67.9	60.7	65.5	107.9	121.3	112.1	-	-	-	946	496	1441	877	408	1285
All[4]	22926	4872	27798	75.4	64.4	73.5	105.2	117.0	107.2	-	-	-	11755	2627	14382	11170	2245	13415

NA = Not applicable

[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 of births in calendar year x

[4]One case in 1992 is included but is not shown separately.

Table D.5 Reporting of age at death in days

Distribution of reported deaths under 1 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, Yemen 1991/92

Age at death (in days)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1	53	68	64	36	221
1	60	93	54	39	245
2	18	19	22	11	69
3	20	24	18	16	78
4	12	12	5	9	38
5	5	7	7	3	21
6	3	6	8	1	19
7	19	41	25	14	100
8	7	8	4	7	27
9	0	6	0	1	8
10	5	19	7	5	36
11	3	1	1	0	5
12	0	7	7	3	17
13	2	3	4	1	11
14	11	16	14	11	52
15	15	32	22	8	77
16	1	0	4	1	6
17	2	1	0	0	3
18	1	0	1	1	3
19	2	0	0	0	2
20	6	13	2	5	26
21	2	2	3	0	8
22	1	0	1	3	5
23	0	1	0	0	1
24	0	1	1	0	2
25	0	5	2	0	7
26	0	1	0	0	1
27	0	1	0	0	2
Total 0-30	249	389	277	174	1090
Percent early neonatal[1]	68.7	59.0	63.9	64.9	63.4

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

Table D.6 Reporting of age at death in months

Distribution of reported deaths under 2 years of age by age at death in months and the percentage of infant deaths reported to occur at ages under one month, for five-year periods of birth preceding the survey, Yemen 1991/92

Age at death (in months)	Number of years preceding the survey				Total
	0-4	5-9	10-14	15-19	0-19
<1[a]	249	389	277	174	1090
1	59	70	81	54	263
2	30	63	69	43	205
3	41	48	69	40	198
4	23	47	48	21	139
5	26	52	47	22	147
6	25	36	41	46	148
7	27	56	38	28	150
8	23	35	31	24	112
9	16	33	36	26	110
10	11	17	11	8	47
11	1	5	4	5	16
12	63	105	96	73	337
13	4	2	3	2	12
14	0	5	10	2	18
15	4	8	1	5	18
16	1	1	4	4	11
17	3	2	8	4	16
18	10	11	29	16	65
19	1	1	1	0	4
20	0	1	3	1	5
22	0	0	0	1	1
Total 0-23	533	852	750	490	2624
Percent neonatal[b]	46.8	45.7	36.9	35.6	41.5

[a]Includes deaths under 1 month reported in days
[b](Under 1 month/under 1 year) * 100

APPENDIX E

QUESTIONNAIRES

REPUBLIC OF YEMEN

MINISTRY OF PLANNING AND DEVELOPMENT

CENTRAL STATISTICAL ORGANIZATON

YEMEN DEMOGRAPHIC AND CHILD HEALTH SURVEY

1. HOUSEHOLD QUESTIONNAIRE

1991

* In collaboration with the Ministry of Public Health, the PAPCHILD Project, the Demographic and Health Survey Project (DHS), and USAID.
Sana'a

REPUBLIC OF YEMEN
MINISTRY OF PLANNING AND DEVELOPMENT
CENTRAL STATISTICAL ORGANIZATION

All information in this questionnaire is confidential by law and will be used for scientific purposes only

YEMEN DEMOGRAPHIC AND MATERNAL AND CHILD HEALTH SURVEY
1. Household Questionnaire

1

IDENTIFICATION

Governorate : _____ ☐☐

District: _____ ☐☐

Urban / rural: _____ ☐

Cluster Number : _____ ☐☐☐☐

Name household /address: _____

Building Number: _____ ☐☐☐☐

Number of family in building: _____ ☐

Household Number : _____ ☐☐

Name of the head of the houshold: _____

INTERVIEWER VISITS	1	2	3	
Name of interviewer	.....	.....	.....	☐☐
Date of visit	.....	.....	.....	☐☐ ☐☐ M Y
Starting time	.....	.....	.....	
Ending time	.....	.....	.....	
Duration of interview				
Hours	☐☐	☐☐	☐☐	☐☐
Minutes	☐☐	☐☐	☐☐	☐☐
Result Code*	☐	☐	☐	☐
Next visit				
Date	../../19..	../../19..	.....	
Time	.....	.....	.....	

* Result codes:
1. Completed
2. No competent respondent at home
3. Refused
4. Postponed
5. Dwelling destroyed
6. Dwelling vacant
7. Dwelling not found
8. Other (specify) _____

	Field Editing	Office Editing	Data Entry
Name	_____	_____	_____
Date	.../../19...	.../../19...	.../../19...

Keyed by ☐☐

1. HOUSEHOLD ROSTER

LINE NUMBER	NAME 101 Please give me the names of the persons who usually live in your household starting with the head of the household.	SEX 102 Is (NAME) male or female? MALE	FEMALE	RELATIONSHIP 103 What is the relationship of (NAME) to the head of the household?	MOTHER LINE NO.	RESIDENCE 104 Does (NAME) usually live here? YES	NO	AGE 105 How old is (NAME) now? IF LESS THAN 6: in years and months. MONTHS	YEARS	LINE NUMBER
01		1	2			1	2			01
02		1	2			1	2			02
03		1	2			1	2			03
04		1	2			1	2			04
05		1	2			1	2			05
06		1	2			1	2			06
07		1	2			1	2			07
08		1	2			1	2			08
09		1	2			1	2			09
10		1	2			1	2			10
11		1	2			1	2			11
12		1	2			1	2			12
13		1	2			1	2			13
14		1	2			1	2			14
15		1	2			1	2			15
16		1	2			1	2			16
17		1	2			1	2			17
18		1	2			1	2			18
19		1	2			1	2			19
20		1	2			1	2			20

JUST TO MAKE SURE I HAVE A COMPLETE LISTING:

1. Are there any other persons, such as small children or infants whom we have not listed?
   YES ☐ 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 ☐ NO ☐

IF ANSWER IS "YES", ENTER EACH IN TABLE. IF ANSWER IS "YES", ENTER EACH IN TABLE.

	ORPHANHOOD				EDUCATION												MARITAL STATUS				
					PERSONS 6-30 YEARS			PERSONS AGED 10 AND OVER									PERSONS AGED 10 AND OVER				
	106 Is his/her father still alive?		107 Is his/her mother still alive?		108 Is (NAME) currently attending school, or has he/she ever attended school?			109 What is the educational status of (NAME)?									110 What is the marital status of (NAME)?				
LINE NUMBER	YES	NO	YES	NO	YES: CURRENTLY	YES: EVER	NO	ILLITERATE	READ	READ AND WRITE	PRIMARY	PREPARATORY	SECONDARY	POSTSECOND.	UNIVERSITY	SINGLE	MARRIED	DIVORCED	WIDOWED	LINE NUMBER
01	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	01
02	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	02
03	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	03
04	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	04
05	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	05
06	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	06
07	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	07
08	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	08
09	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	09
10	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	10
11	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	11
12	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	12
13	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	13
14	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	14
15	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	15
16	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	16
17	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	17
18	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	18
19	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	19
20	1	2	1	2	1	2	3	1	2	3	4	5	6	7	8	1	2	3	4	20

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 ☐ NO ☐

IF ANSWER IS "YES", ENTER EACH IN TABLE.

HOUSEHOLD SIZE ☐☐

M ☐☐ F ☐☐

LINE NUMBER	ECONOMIC ACTIVITY — PERSONS AGED 10 YEARS AND OVER: 201 What did (NAME) do most of the time during the past month? Was he/she: WORKING	UNEMPLOYED	HOUSEWORK AND WORKING	STUDENT AND WORKING	SEEKING WORK FOR 1st TIME	DOING HOUSEWORK	STUDENT	RETIRED	202 IF 201=1 or 4: What is (was) his/her status in employment? SALARIED EMPLOYEE	OWN ACCOUNT WORKER	EMPLOYER	UNPAID FAMILY WORKER	UNPAID APPRENTICE	203 IF 201=1 to 4: What is (was) his/her main occupation?	CODE	ELIGIBILITY: 112 LINE NUMBER OF EVERY ELIGIBLE WOMAN	113 LINE NUMBER OF EVERY ELIGIBLE CHILD	114 LINE NUMBER OF THE MOTHER OF EVERY ELIGIBLE CHILD (IF Deceased = 97 Other = 96)	LINE NUMBER
01	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	01
02	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	02
03	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	03
04	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	04
05	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	05
06	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	06
07	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	07
08	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	08
09	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	09
10	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	10
11	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	11
12	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	12
13	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	13
14	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	14
15	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	15
16	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	16
17	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	17
18	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	18
19	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	19
20	1	2	3	4	5	6	7	8	1	2	3	4	5		☐☐	☐☐	☐☐	☐☐	20

Total number of eligible women ☐☐

Total number of eligible children ☐☐

Total number of eligible children whose mothers live in the household ☐☐

If continuation sheet used, tick here ☐

GENERAL MORTALITY

301 During the past 24 months, has any of the usual members of this household died?

YES 1 NO 2

IF 'YES' ASK : IF 'NO' GO TO 401

	302 Name	303 Relationship to the head of the household		304 SEX		305 Age at death	306 Date of death	
				M	F		Month	Year
1				1	2			
2				1	2			
3				1	2			
4				1	2			
5				1	2			

DISABILITY

401 Does anyone in this household, including very young children and women, have any long-term condition or health problem which prevents or limits his/her participation in activities normal for a person of his/her age?

YES 1
NO 2

IF 'YES' ASK 402 - 404 IF 'NO' GO TO 501

402 Name and line number in Household Roster		403 What is the type of his/her condition?		404 What is the cause of the condition? (See coding categories below)*	

* Coding categories for Q404

1. Congenital
2. Infant birth trauma
3. Injury/Accident
4. Infectious illness
5. Disease
6. Evil eye/envy
7. Other (specify)
8. D.K.

FERTILITY AND CHILD SURVIVAL (For ever married women under age 55)

501 Name and line number in Household Roster		Children Ever Born							Last Live Birth					
		502 Does (Name) have any children of her own living with her? IF 'YES' : How many sons and how many daughters?		503 Does she have any children of her own who do not live with her? IF 'YES' : How many sons and how many daughters?		504 Has she ever given birth to a child who later died? IF 'YES' : How many sons and daughters have died?		505 Just to make sure I have this correct, she has had (SUM) births. Is this correct? IF 'NO' : CORRECT THE RESPONSES.	506 In what month and year did her last live birth occur?		507 What was the sex of this child?		508 Is this child still living?	
		S	D	S	D	S	D	SUM	MONTH	YEAR	BOY	GIRL	YES	NO
											1	2	1	2
											1	2	1	2
											1	2	1	2
											1	2	1	2
											1	2	1	2

REPUBLIC OF YEMEN

MINISTRY OF PLANNING AND DEVELOPMENT

CENTRAL STATISTICAL ORGANIZATON

YEMEN DEMOGRAPHIC AND CHILD HEALTH SURVEY

2. HOUSING CHARACTERISTICS QUESTIONNAIRE

1991

* In collaboration with the Ministry of Public Health, the PAPCHILD Project, the Demographic and Health Survey Project (DHS), and USAID.
Sana'a

IDENTIFICATION	2
Urban/Rural :	☐
Name of the cluster.....	
Cluster Number :	☐☐☐
Household Number :	☐☐

Section 1 : HOUSING

	QUESTIONS	CODING CATEGORIES		SKIP TO
10	INTERVIEWER: Record the time	Hour	☐☐	
		Minutes	☐☐	
11	What type of dwelling unit does your household occupy?	Independent house/Villa	1	
		Apartment in building	2	
		Hut	3	19
		Wood house	4	19
		Cave	5	19
		Tent	6	19
		Temporary shelter	7	19
		Other(specify) ————	8	19
12	Is your dwelling owned by your household or is it rented?	Owned	1	
		Beneficial contract	2	
		Rented	3	
		Other(specify) ————	4	
13	What kind of material is the floor made from? (Record main type)	Earth	1	
		Cement	2	
		Stone/Mud	3	
		Gypsum	4	
		Tile	5	
		Wood	6	
		Marble	7	
		Other(specify) ————	8	
14	How many rooms are there in this dwelling for the exclusive use of this household?	Number of rooms	☐☐	
15	Of this number, how many are bedrooms or used for sleeping?	Number of rooms	☐☐	

	QUESTIONS	CODING CATEGORIES		SKIP TO
16	INTERVIEWER: Check the ventilation in the house and mark the appropriate answer.	Good	1	
		Fair	2	
		Poor	3	
17	INTERVIEWER: Check light condition in the house and mark the appropriate answer.	Good	1	
		Fair	2	
		Poor	3	
18	INTERVIEWER: Check amount of sunlight in the house and mark the appropriate answer.	Good	1	
		Fair	2	
		No sun	3	
19	Are any farm animals kept in any part of this dwelling?	Yes	1	
		No	2	

Section 2 : COOKING

	QUESTIONS	CODING CATEGORIES		SKIP TO
21	Is there a special room used for cooking inside or outside your dwelling?	Yes: Inside dwelling	1	
		Yes: Outside dwelling	2	
		No	3	
22	Is the place used for cooking shared with other households?	Not shared, only HH using	1	
		Shared	2	
23	What fuel is used for cooking?	Gas	1	
		Electricity	2	
		Kerosene	3	
		Coal/Charcoal	4	
		Wood	5	
		Other(specify) ————	6	

Section 3 : WATER

	QUESTIONS	CODING CATEGORIES		SKIP TO
31	What is the major source of drinking water for members of the household?	Government project	1	
		Cooperative project	2	
		Private project	3	
		Well with pump	4	
		Regular well	5	
		Stream	6	
		Covered pool	7	
		Uncovered pool	8	
		Other(specify) ————	9	
32	Where is this source of drinking water located?	Within dwelling	1	35
		Outside dwelling	2	
33	How long does it take you to go to the source from the household and come back?	Time (minutes)	⌊_⌊_⌊_⌋	
34	Who usually brings the water?	Children	1	
		Adult women	2	
		Adult men	3	
		'Sakka' using animals	4	
		Trucks/Mules	5	
35	Do you buy this water?	Yes	1	
		No	2	
		Other(specify) ————	3	

	QUESTIONS	CODING CATEGORIES		SKIP TO
36	What kind of container do you use to store water in your home?	Concrete/Zinc water tank	1	
		Plastic container	2	
		Bottles	3	
		Earthen pots	4	
		Tin	5	
		Other(specify)	6	
		No storage	7	
37	How do you treat drinking water to purify it in your house?	Boiling	1	
		Distillation	2	
		Chlorination	3	
		Filtration	4	
		Other(specify)	5	
		No treatment	6	

Section 4 : LIGHTING

	QUESTIONS	CODING CATEGORIES		SKIP TO
41	What kind of lighting does this unit have?	Government electricity	1	
		Cooperative electricity	2	
		Private electricity	3	
		Personal generator	4	
		Gas	5	51
		Kerosene/Oil lamps/Candle	6	51
		Other(specify)	7	51
		None	8	51
42	How many hours in a whole day does your household use electricity?	Less than 6 hours	1	
		6-12 hours	2	
		13-18 hours	3	
		19-24 hours	4	

Section 5 : SANITATION

	QUESTIONS	CODING CATEGORIES		SKIP TO
51	What type of toilet facilities are available for this household?	Flush toilet connected to sewer	1	
		Flush toilet not connected to sewer	2	
		Bucket	3	
		Pit	4	
		Toilet connected to an open drainage	5	53
		Latrine shared with others in building	6	53
		Public (street) toilet	7	53
		Open air	8	53
		Other(specify)	9	
52	Where is the toilet that you use located?	Inside dwelling	1	
		Outside dwelling within same building/courtyard	2	
		Elsewhere	3	
53	Do you use soap when you wash your hands?	Yes	1	
		No	2	

Section 6 : WASTE DISPOSAL

	QUESTIONS	CODING CATEGORIES		SKIP TO
61	In what do you put the garbage before it is disposed of?	Container with lid	1	
		Container without lid	2	
		Plastic bag	3	
		Thrown straight in street	4	71
		Other(specify) ————	5	
62	And where is the garbage (container/bag/etc.) kept?	Inside kitchen	1	
		Outside kitchen within dwelling	2	
		Outside dwelling	3	
63	How do you dispose of the garbage?	Garbage collector	1	
		Dumping in special place	2	
		Burning	3	
		Thrown in street	4	71
		Other(specify): ————	5	
64	How often do you dispose of the garbage?	Everyday	1	
		At least twice a week	2	
		Once a week	3	
		Other(specify): ————	4	

Section 7 : OWNERSHIP OF OBJECTS AND ASSETS

	QUESTIONS	CODING CATEGORIES		SKIP TO
		Yes	No	
71	Do you have any of the following objects at this dwelling?:			
	1. Radio/Cassette recorder	1	2	
	2. Black & White TV	1	2	
	3. Colour TV	1	2	
	4. Video	1	2	
	5. Refrigerator	1	2	
	6. Gas/Electric cooking stove	1	2	
	7. Water heater	1	2	
	8. Sewing machine	1	2	
	9. Electric fan	1	2	
	10. Washing machine	1	2	
	11. Telephone	1	2	
	12. Air conditioner	1	2	
	13. Vacuum cleaner	1	2	
	14. Blender	1	2	
	15. Bicycle	1	2	
	16. Motorcycle	1	2	
	17. Private car	1	2	
	18. Taxi	1	2	

Section 8 : DRAINAGE

	QUESTIONS	CODING CATEGORIES		SKIP TO
81	INTERVIEWER: Observe around the dwelling and circle appropriate response.	Clean	1	
		Dirty	2	
		Stagnant water	3	
		Sewage overflow	4	
82	INTERVIEWER: Record the time.	Hour	⌊_⌋⌊_⌋	
		Minutes	⌊_⌋⌊_⌋	

REPUBLIC OF YEMEN

MINISTRY OF PLANNING AND DEVELOPMENT

CENTRAL STATISTICAL ORGANIZATON

YEMEN DEMOGRAPHIC AND CHILD HEALTH SURVEY

3. REPRODUCTIVE HEALTH QUESTIONNAIRE

1991

* In collaboration with the Ministry of Public Health, the PAPCHILD Project, the Demographic and Health Survey Project (DHS), and USAID.
Sana'a

REPRODUCTIVE HEALTH QUESTIONNAIRE

(For All Ever-Married Women Under Age 55)

3

IDENTIFICATION

Governorate : _____ ☐☐

District: _____ ☐☐

Urban / Rural: _____ ☐

Cluster Name: _____ Cluster No. ☐☐☐

Household Number : _____ ☐☐

Line Number of Women _____ ☐☐

☐☐

INTERVIEWER VISITS	1	2	3	
Name of interviewer	.....	.....	.....	☐
Date of visit	.....	.....	.....	☐☐ M ☐☐ Y
Starting time	.....	.....	.....	
Ending time	.....	.....	.....	
Duration of interview. Hours	☐☐	☐☐	☐☐	☐☐ Hours
Minutes	☐☐	☐☐	☐☐	☐☐ Min.
Result Code*	☐	☐	☐	☐
Next visit				
Date	../../19..	../../19..	.....	
Time	.....	.....	.....	

* Result codes:

1. Completed
2. Not at home
3. Postponed
4. Refused
5. Partly completed
6. Other (specify) _____

	Field Editing	Office Editing	Data Entry
Name	_____	_____	_____
Date	.../../19...	.../../19...	.../../19...

Keyed by ☐☐

Section 1 : RESPONDENT'S RESOURCES

	QUESTIONS	CODING CATEGORIES		SKIP TO
101	INTERVIEWER: Record the time.	Hour	⌊_⌊_⌋	
		Minutes	⌊_⌊_⌋	
102	First I would like to ask some questions about you. In what month and year were you born?	Month (DK = 98)	⌊_⌊_⌋	
		Year (DK = 98)	⌊_⌊_⌋	
103	How old were you at your last birthday? INTERVIEWER: • Compare and correct 102 and/or 103 if inconsistent. • If respondent is 55 or more years of age: END INTERVIEW	Age in completed years	⌊_⌊_⌋	
104	Have you always lived in (NAME OF PLACE)?	Yes	1	110
		No	2	
105	How long have you been living continuously in (NAME OF PLACE)?	Years	⌊_⌊_⌋	
106	Why did you come to (NAME OF PLACE)?	Marriage	1	108
		Work	2	
		Study	3	
		Came with husband	4	108
		Came with parents	5	
		Came with children	6	
		Other(specify) _____	7	
107	Was this before you were first married or after?	Before	1	
		After	2	
		At the time of marriage	3	
108	Was the place you were living in before coming to (NAME OF PLACE): a city, a town, or a village?	City	1	
		Town	2	
		Village	3	
109	For most of the time until you were 12 years old, did you live in a city, a town, a large village, or a small village?	City	1	
		Town	2	
		Village	3	

	QUESTIONS	CODING CATEGORIES		SKIP TO
110	Have you ever attended or are you now attending school?	Yes : currently	1	
		Yes : not currently	2	
		Never attended	3	114
111	What (is/was) the highest level of education you attended?	Primary	1	
		Preparatory	2	
		Secondary	3	
		Postsecondary	4	
		University	5	
112	What was the highest grade (year) you successfully completed at that level?	Grade	⌊_⌋⌊_⌋	
113	INTERVIEWER: Check 111 & 112	Less than 4 years of primary	1	
		Four years of primary or more	2	116
114	Can you read a letter or newspaper?	Yes	1	
		No	2	117
115	Can you write a letter, for example?	Yes	1	
		No	2	
116	Do you usually read a newspaper or magazine at least once a week?	Yes	1	
		No	2	
117	Do you watch television?	Yes	1	
		No	2	119
118	What is the suitable time for watching television?	4-6 in the evening	1	
		6-8 in the evening	2	
		After 8 in the evening	3	
		The whole time TV is on	4	
		Don't watch or no TV	5	
119	Do you listen to radio?	Yes	1	
		No	2	121
120	What is the suitable time for listening to radio? (CIRCLE ALL ANSWERS MENTIONED)	Morning	1	
		Noon	2	
		Afternoon	3	
		Evening	4	
121	Before you were first married, did you ever do any work regularly for which you were paid in cash?	Yes	1	
		No	2	124

	QUESTIONS	CODING CATEGORIES		SKIP TO
122	When you were working then, what did you do with most of the money that you earned?	Gave	1	
		Sell	2	
		Other(specify): _____	3	
123	Was the money used mainly to prepare for marriage?	Yes	1	
		No	2	
124	Since you were first married, have you ever done any work for cash?	Yes	1	
		No	2	
125	Are you now doing any work for cash?	Yes	1	
		No	2	127
126	In this work...are you working on your own, for a family member, or for someone else?	On her own	1	GO
		For a family member	2	TO
		For someone else	3	129
127	Do you assist any family member in his/her work?	Yes	1	129
		No	2	
128	Do you assist someone not in the family in his/her work?	Yes	1	
		No	2	132
129	What kind of work do you mainly do? INTERVIEWER: Write response exactly as given.	_____	⌊_⌋⌊_⌋	
130	How many hours did you work in the past week?	Hours worked	⌊_⌋⌊_⌋	
131	INTERVIEWER: Check 123	Working for cash	1	201
		Not working for cash	2	
132	If a good opportunity for working for cash was available, would you want to work in the future?	Yes	1	
		No	2	
		Unsure/D.K.	3	

Section 2 : MARRIAGE AND CO-RESIDENCE

	QUESTIONS	CODING CATEGORIES		SKIP TO
201	Are you now married, widowed, divorced, or separated?	Married	1	
		Widowed	2	203
		Divorced	3	203
		Separated	4	
202	Does your husband have another wife? IF 'YES' : How many?	Number of co-wives	⌊_⌋	
		No	4	
		D.K.	8	
203	Have you been married only once or more than once?	Once	1	205
		More than once	2	
204	Is (was) there a blood relation between you and your (last) husband? IF 'YES' : What is (was) the type of this relation?	First cousin from father's side	1	
		First cousin from mother's side	2	
		Other	3	
		No relation	4	
205	Is (was) there a blood relation between you and your (first) husband? IF 'YES' : What is (was) the type of this relation?	First cousin from father's side	1	
		First cousin from mother's side	2	
		Other	3	
		No relation	4	
206	In what month and year did you and your (first) husband begin to live together "zifaf"?	Month	⌊_⌋⌊_⌋	
		D.K. Month	9 8	
		Year	⌊_⌋⌊_⌋	208
		D.K. Year	9 8	
207	At what age did you and your (first) husband begin to live together "zifaf"?	Age	⌊_⌋⌊_⌋	

	QUESTIONS	CODING CATEGORIES		SKIP TO
208	At the time you first married, did you and your (first) husband have your own home or did you begin by living in someone else's home?	Had own home	1	
		Lived in someone else's home	2	210
209	At the time of your (first) marriage, did anyone else live with you?	Yes	1	
		No	2	301
210	With whom did you live (who lived with you) for at least six months after you (first) married? (CIRCLE ALL RESPONSES MENTIONED)	Husband's parents	1	
		Husband's mother	2	
		Husband's father	3	
		Respondent's parents	4	
		Respondent's mother	5	
		Respondent's father	6	
		Other relatives (specify): _____	7	
		Other (specify): _____	8	
211	INTERVIEWER : Check 210 Only one code circled ☐ ↓ More than one code circled ☐ GO TO 213			
212	For how long did you live together with (specify) at that time?	Months	⌊_⌊_⌋	GO
		Years	⌊_⌊_⌋	TO
		Up to the present	9 6	301
213	What was the longest period you lived together with (any) of them?	Months	⌊_⌊_⌋	
		Years	⌊_⌊_⌋	
		Up to the present	9 6	

Section 3 : REPRODUCTION AND CHILD SURVIVAL

	QUESTIONS	CODING CATEGORIES		SKIP TO
301	During your lifetime, have you ever given birth to a baby born alive?	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? INTERVIEWER: IF NONE, ENTER "00"	Sons at home	⌊_⌊_⌋	
		Daughters at home	⌊_⌊_⌋	
304	Do you have any sons or daughters to whom you have given birth... and who are alive but not living 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? INTERVIEWER: IF NONE ENTER "00"	Sons elsewhere	⌊_⌊_⌋	
		Daughters elsewhere	⌊_⌊_⌋	
306	Have you ever given birth to a boy or a girl who was born alive but later died? IF NO, PROBE: any (other) boy or girl who cried or showed any sign of life, but only survived a few hours or days?	Yes	1	
		No	2	308
307	How many boys have died? And how many girls have died? INTERVIEWER: IF NONE ENTER "00"	Boys dead	⌊_⌊_⌋	
		Girls dead	⌊_⌊_⌋	
308	INTERVIEWER: Sum answers to 303,305, and 307 and enter total.	Total	⌊_⌊_⌋	

309 INTERVIEWER: Check 308

Just to make sure that I have this right, you have had in total _____ live births during your life. Is this correct?

YES ☐ ↓

NO ☐ (Probe and correct 301-309 as necessary)

310 INTERVIEWER: Check 308

One or more births ☐ ↓

No births ☐ (GO TO 321)

311 Now I would like to talk to you about your births, whether still alive or not, starting with the first one you had.

INTERVIEWER:
- Record names of all the births in 313.
- If no name was given, put "X" in 313.
- Record twins on separate lines and mark with a bracket.
- Ask 314 through 318 as appropriate for each birth. After recording all births woman has had, go to 319.

312 Birth order	313 What name was given to your (first,...) baby?	314 Is (NAME) a boy or a girl?		315A In what year was (NAME) born? IF D.K. ASK: How many years ago?		315B And in what month? IF D.K. ASK: In what season?		316 Is (NAME) still living?		317 If DEAD: How old was (NAME) when he/she died? (RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN 2 YEARS; OR YEARS)		318 Was year of birth derived from a document?	
01		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
02		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
03		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
04		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
05		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
06		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
07		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
08		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
09		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			

312 Birth order	313 What name was given to your (first,...) baby?	314 Is (NAME) a boy or a girl?		315A In what year was (NAME) born? IF D.K. ASK: How many years ago?		315B And in what month? IF D.K. ASK: In what season?		316 Is (NAME) still living?		317 If DEAD: How old was (NAME) when he/she died? (RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN 2 YEARS; OR YEARS)		318 Was year of birth derived from a document?	
10		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
11		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
12		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
13		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
14		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
15		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
16		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
17		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			
18		Boy	1	Year		Month		Yes (to 318)	1	Days		Yes	1
		Girl	2	Years ago		Season		No (to 317)	2	Months		No	2
										Years			

	QUESTIONS	CODING CATEGORIES		SKIP TO
319	INTERVIEWER: Compare 308 and 309 with number of births in table above and mark: Numbers are same ☐ ↓ Numbers are different ☐ (Probe and Reconcile)			
320	In addition to the pregnancies which ended in live births, have you had any other pregnancy which ended in a miscarriage, still birth, or an abortion? PROBE: Any other pregnancy which lasted only a few weeks or months?	Yes	1	322
		No	2	324
321	Have you had any pregnancy which ended in a miscarriage, still birth, or abortion? PROBE: Any other pregnancy which lasted only a few weeks or months?	Yes	1	
		No	2	324
322	How many pregnancies ended in still births? INTERVIEWER: IF NONE, ENTER "00"	Still births	⌊_⌊_⌋	
323	How many pregnancies ended in miscarriages and abortions? INTERVIEWER: IF NONE, ENTER "00"	Miscarriages or abortions	⌊_⌊_⌋	
324	Are you pregnant now?	Yes	1	
		No	2	326
		Unsure	3	326
325	For how many months have you been pregnant?	Months	⌊_⌋	327

	QUESTIONS	CODING CATEGORIES		SKIP TO
326	How long ago did your last menstrual period start?	Days ago	1 ⌊_⌊_⌋	
		Weeks ago	2 ⌊_⌊_⌋	
		Months ago	3 ⌊_⌊_⌋	
		Years ago	4 ⌊_⌊_⌋	
		Before last birth	9 9 5	
		Never menstruated	9 9 6	329
327	At what age did you have your first menstrual period ?	Age	⌊_⌊_⌋	
		D.K.	9 8	
328	INTERVIEWER: Check 324	Currently pregnant	1	401
		Not pregnant/Unsure	2	
329	INTERVIEWER: Check "Live Births Table."	One or more births in last five years	1	501
		No births in last five years	2	801

Section 4 : ANTENATAL CARE : CURRENT PREGNANCY

	QUESTIONS	CODING CATEGORIES			SKIP TO
401	Did you see anyone for a check-up on this pregnancy?	Yes	1		
		No	2		412
402	How many months were you pregnant when you had your first check-up?	Months	⌊_⌋		
403	Was there any complaint which led you to have a check-up?	Yes	1		
		No	2		
404	How many check-ups did you have since you became pregnant?	Number	⌊_⌋⌊_⌋		
405	Have you seen any of the following persons during the check-up(s) on your pregnancy?		Yes	No	
		Doctor	1	2	
		Trained nurse/Midwife	1	2	
		Daya/Grandmother	1	2	
		Anyone else	1	2	
406	How many weeks ago was the last check-up?	Number of weeks	⌊_⌋⌊_⌋		
407	Where did you have the last check-up?	Public health establishment	1		
		Cooperative health establishment	2		
		Private health estaplishment	3		
		At home	4		413
		Other(specify): _____	5		413
408	How long did it take to get to (PLACE IN 407)?	Minutes	⌊_⌋⌊_⌋⌊_⌋		
409	How did you go to (PLACE IN 407)?	Walking	1		
		Bus/Taxi	2		
		Private car	3		
		Other(specify): _____	4		
410	How long did you have to wait at (NAME OF PLACE) for check-up?	Less than ½ hour	1		
		Between ½ and 1 hours	2		
		Between 1 and 2 hours	3		
		More than 2 hours	4		

	QUESTIONS	CODING CATEGORIES		SKIP TO
411 A	Were you satisfied with the care you got during your last check-up in (PLACE IN 407)?	Yes	1	413
		No	2	
411 B	INTERVIEWER: If answer in 411A is "NO," ask about the reason for dissatisfaction with care received. (CIRCLE ALL RESPONSES MENTIONED)	Bad treatment	1	GO TO 413
		Examination not thorough	2	
		Appropriate attention not given for pregnancy	3	
		Specialist not present	4	
		Staff not qualified	5	
		Crowded place	6	
		Other(specify): _____	7	
412	What was the main reason for not having a check-up for the current pregnancy?	Too early	1	
		Intends to	2	
		Had no complaints	3	
		Had previous experience	4	
		Service not available	5	
		Service too far	6	
		Costs too much	7	
		Too busy	8	
		Husband too busy	9	
		Other(specify): _____	0	
413	Are you taking now any of the following?		Yes / No	
		Iron tablets	1 / 2	
		Vitamins	1 / 2	
		Any other medicine	1 / 2	
414	Since the beginning of this pregnancy, have you been given any injection to prevent the baby from getting convulsions after birth, i.e., an anti-tetanus shot? IF YES : How many injections did you have?	Yes: one dose	1	
		Yes: two doses	2	
		No	3	
		D.K.	4	
415	Since you have been pregnant, did you have any of the following conditions?		Yes / No	
		Swollen ankle & fingers	1 / 2	
		Persistent headaches	1 / 2	
		High blood pressure	1 / 2	
		Bleeding	1 / 2	
		Convulsions (fits)	1 / 2	

	QUESTIONS	CODING CATEGORIES		SKIP TO
416	Does anyone help you now with your usual daily chores? IF "YES" : Who is helping you? INTERVIEWER: Circle all applicable codes.	Mother	1	
		Husband	2	
		Mother-in-law	3	
		Sister	4	
		Daughter	5	
		Relative	6	
		Maid	7	
		Other (specify): _____	8	
		No one	9	
417	When you have your baby ... do you expect anyone to help you looking after the baby? IF "YES" : Who? INTERVIEWER: If more than one person, probe and circle person expected to provide most help.	Mother	1	
		Mother-in-law	2	
		Sister	3	
		Relative	4	
		Maid/Nanny	5	
		Other(specify): _____	6	
		No	7	
418	Where do you plan to deliver your baby?	Public health establishment	1	
		Private health establishment	2	
		At home	3	
		Other(specify): _____	4	
419	Who will assist you with the delivery?	Doctor	1	
		Trained nurse/Midwife	2	
		Daya/Grandmother	3	
		Other(specify): _____	4	
		D.K.	8	
420	How much would the delivery cost?	Cost (in Rials)	⌊_⌊_⌊_⌊_⌋	
		Free service	9966	
		D.K.	9988	

	QUESTIONS	CODING CATEGORIES		SKIP TO
421	Would you prefer to have a boy or a girl?	Boy	1	
		Girl	2	
		Either	3	
		Other(specify):_____	4	
422	Do you plan to breastfeed your baby? IF "YES" : For how long?	Duration (in months)	⌊_⌊_⌋	
		Yes: duration undecided	9 8	
		Will not breastfeed	9 6	
423	INTERVIEWER: Check "Live Births Table."	One or more births in last five years	1	
		No births in last five years	2	801

Section 5 : MATERNAL CARE : THE LAST FIVE YEARS

			Name (Youngest)		Name (Next to Youngest)		Name (Second to Youngest)		Name (Third to Youngest)	
	INTERVIEWER: Check Birth History Table and enter names of all children born in the "Last Five Years," starting with "Last Live Birth."									
501	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"									
502	SURVIVAL STATUS : CHECK 316		Alive [ ]		Alive [ ]		Alive [ ]		Alive [ ]	
			Dead [ ]		Dead [ ]		Dead [ ]		Dead [ ]	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
503	When you were pregnant with (NAME), did you see anyone for a check-up on the pregnancy?	Yes	1		1		1		1	
		No	2	509	2	509	2	509	2	509
504	Was there any complaint which led you to have the check-up?	Yes	1		1		1		1	
		No	2		2		2		2	
505	How long were you pregnant with (NAME) when you had the first check-up?	Months								
		D.K.	9 6		9 6		9 6		9 6	
506	How many check-ups did you have during the pregnancy?	Number								
		Cannot remember	9 6		9 6		9 6		9 6	
507	Whom did you usually see? INTERVIEWER: Record the most qualified	Doctor	1		1		1		1	
		Trained nurse/Midwife	2		2		2		2	
		Daya	3		3		3		3	
		Other(specify):	4		4		4		4	
508	Where did you usually have the check-up(s)?	Public health establishment	1	GO	1	GO	1	GO	1	GO
		Cooperative health establishment	2	TO	2	TO	2	TO	2	TO
		Private health establishment	3		3		3		3	
		At home	4	510A	4	510A	4	510A	4	510A
		Other(specify):	5		5		5		5	
509	What was the main reason for not having a check-up on the pregnancy?	Had no complaints	1		1		1		1	
		Had previous experience	2		2		2		2	
		Costs too much	3		4		4		4	
		Service not available	4		3		3		3	
		Services too far	5		3		3		3	
		Other(specify):	5		5		5		5	
510 A	When you were pregnant with (NAME), were you given any injection to prevent the baby from getting convulsions after birth, i.e., an anti-tetanus shot?	Yes	1		1		1		1	
		No	2	511	2	511	2	511	2	511
		D.K.	3	511	3	511	3	511	3	511
510 B	How many shots?	Number								

			Name		Name		Name		Name	
	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"									
	SURVIVAL STATUS : CHECK 316		Alive ☐		Alive ☐		Alive ☐		Alive ☐	
			Dead ☐		Dead ☐		Dead ☐		Dead ☐	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
511	Where was (NAME) delivered?	Public health establishment	1		1		1		1	
		Private health establishment	2		2		2		2	
		At home	3		3		3		3	
		At another home	4		4		4		4	
		Other(specify):	5		5		5		5	
512	Who assisted with the delivery of (NAME)? INTERVIEWER: Record the most qualified	Doctor	1		1		1		1	
		Trained nurse/Midwife	2		2		2		2	
		Daya	3		3		3		3	
		Relative/Friend	4		4		4		4	
		Other(specify):	5		5		5		5	
		No one	6		6		6		6	
513	Was the delivery normal or were there any complications?	Normal	1		1		1		1	
		Complications	2		2		2		2	
514	INTERVIEWER: Check 511	Child was delivered at health establishment	1		1		1		1	
		Child was not delivered at health establishment	2	517	2	517	2	517	2	517
515	Why did you have the delivery of (NAME) at (hospital/clinic)?	Safer/Better	1		1		1		1	
		Complications	2		2		2		2	
		Other(specify):	3		3		3		3	
516	Did you have a cesarean section while delivering (NAME)?	Yes	1	GO TO	1	GO TO	1	GO TO	1	GO TO
		No	2	519B	2	519B	2	519B	2	519B
517	Why did you not have the delivery of (NAME) at a public hospital or a private clinic? INTERVIEWER: Circle main reason	Service not available	1		1		1		1	
		Service too far	2		2		2		2	
		Costs too much	3		3		3		3	
		Premature/Sudden delivery	4		4		4		4	
		Home is better	5		5		5		5	
		Other(specify):	6		6		6		6	

			Name		Name		Name		Name	
	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"									
	SURVIVAL STATUS : CHECK 316		Alive [ ] Dead [ ]		Alive [ ] Dead [ ]		Alive [ ] Dead [ ]		Alive [ ] Dead [ ]	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
518	How was the umbilical cord cut?	Medical instruments	1		1		1		1	
		Ordinary scissors	2		2		2		2	
		Razor/Knife	3		3		3		3	
		Other(specify):	4		4		4		4	
		D.K.	5		5		5		5	
519 A	How was the cord stump treated?	Sterilized dressing	01		1		1		1	
		Covered with ground coffee	02		2		2		2	
		Covered with flour	03		3		3		3	
		Covered with earth	04		4		4		4	
		Covered with cauterizing	05		3		3		3	
		Covered with boiled oil	06		3		3		3	
		Covered with egg	07		3		3		3	
		Covered with kohl	08		3		3		3	
		Other(specify):	09		5		5		5	
		D.K.	10		6		6		6	
519 B	Was (NAME) born on time (9 months) or before time?	On time	01		1		1		1	
		Before time	02							
		After time	03		3		3		3	
		D.K.	04		4		4		4	
520	When (NAME) was born, was his/her weight normal, below normal, or above normal?	Normal	1		1		1		1	
		Below	2		2		2		2	
		Much below	3		3		3		3	
		Above	4		4		4		4	
		D.K.	5		5		5		5	
521	Was (NAME) weighed at the time of birth?	Yes	1		1		1		1	
		No	2	523	2	523	2	523	2	523
522	How much was the weight in grams?									
523	During the six-week period (i.e., Nifath Period) following the birth of (NAME), did you see anyone for a check-up on your health?	Doctor	1		1		1		1	
		Trained nurse/Midwife	2		2		2		2	
	IF "YES" : Whom did you see?	Daya	3		3		3		3	
		Other(specify):	4		4		4		4	
	INTERVIEWER: Record the most qualified	No one	5		5		5		5	
524	How many months after the birth of (NAME) did your period return?	Number of months Has not returned yet	96	NEXT CHILD	96	NEXT CHILD	96	NEXT CHILD	96	NEXT CHILD

Section 6 : CHILD FEEDING

			Name (Youngest)		Name (Next to Youngest)		Name (Second to Youngest)		Name (Third to Youngest)	
	INTERVIEWER: Check Birth History Table and enter names of all children born in the "Last Five Years," starting with "Last Live Birth."									
	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"									
	SURVIVAL STATUS: CHECK 316		Alive ☐ Dead ☐		Alive ☐ Dead ☐		Alive ☐ Dead ☐		Alive ☐ Dead ☐	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
601	Did you ever feed (NAME) at the breast?	Yes	1		1		1		1	
		No	2	603	2	603	2	603	2	603
602	How soon after the birth of (NAME) did you start breastfeeding?	Less than 1 hour	1		1		1		1	
		Between 1 and 3 hours	2	GO	2	GO	2	GO	2	GO
		Between 3 and 6 hours	3	TO	3	TO	3	TO	3	TO
		Between 6 and 24 hours	4	604	4	604	4	604	4	604
		Between 24 and 72 hours	5		5		5		5	
		More than 72 hours	6		6		6		6	
603	Why did you never breastfeed (NAME)?	Child sick	1		1		1		1	
		Child died	2	NEXT CHILD	2	NEXT CHILD	2	NEXT CHILD	2	701
		Child refused	3		3		3		3	
		Mother sick	4		4		4		4	
		No/Insufficient milk	5		5		5		5	
		Breast/Nipples problems	6		6		6		6	
		Mother had to work	7		7		7		7	
		Other(specify):	8		8		8		8	
604	Have you ever given (NAME) powdered milk on a regular basis? .IF 'YES' : How old was the child when you started on a regular basis?	Age (in months)								
		No	96		96		96		96	
605	Have you ever given (NAME) animal milk such as cow's, goat's, or camel's milk on a regular basis? IF "YES" : How old was the child when you started on a regular basis?	Age (in months)								
		No	96		96		96		96	
606	Have you ever given (NAME) solid or mushy food on a regular basis? IF "YES" : How old was the child when you started on a regular basis?	Age (in months)								
		No	96		96		96		96	

			Name		Name		Name		Name	
	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"		[ ][ ]		[ ][ ]		[ ][ ]		[ ][ ]	
	SURVIVAL STATUS: CHECK 316		Alive ☐		Alive ☐		Alive ☐		Alive ☐	
			Dead ☐		Dead ☐		Dead ☐		Dead ☐	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
607	INTERVIEWER: Check 316 and 601 and circle appropriate code.	Alive and breastfed	1		1	613	1	613	1	613
		Alive and never breastfed	2	618	2	618	2	618	2	618
		Dead and breastfed	3	613	3	613	3	613	3	613
		Dead and never breastfed	4	NEXT CHILD	4	NEXT CHILD	4	NEXT CHILD	4	701
608	Are you still breastfeeding (NAME)?	Yes	1							
		No	2	613						
609	How many times did you breastfeed (NAME) yesterday during the daylight hours?	Number of times	[ ][ ]							
		As often as child wanted	9 6							
610	How many times did you breastfeed (NAME) last night between sunset and sunrise?	Number of times	[ ][ ]							
		As often as child wanted	9 6							
611	Do you breastfeed (NAME) whenever he/she wants or according to a fixed schedule?	Demand	1							
		Schedule	2							
		Both	3							
612	When (NAME) has diarrhea, what do you do with breastfeeding? ... Do you continue without change, increase, decrease, or stop breast-feeding?	No change	1							
		Increase	2	GO						
		Decrease	3	TO						
		Stop	4	O						
		No diarrhea	4	618						
		D.K.	5							

			Name		Name		Name		Name	
	LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"									
	SURVIVAL STATUS: CHECK 316		Alive ☐ Dead ☐		Alive ☐ Dead ☐		Alive ☐ Dead ☐		Alive ☐ Dead ☐	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
613	How many months did you breastfeed (NAME)?	Number of months								
		Until child died	96	NEXT CHILD	96	NEXT CHILD	96	NEXT CHILD	96	701
614	Why did you stop breastfeeding him him/her at that age?	Child reached weaning age	01		01		01		01	
		Child sick	02		02		02		02	
	INTERVIEWER: Record main reason	Child refused	03		03		03		03	
		Child died	04	NEXT CHILD	04	NEXT CHILD	04	NEXT CHILD	04	701
		Mother sick	05		05		05		05	
		No/Insufficient milk	06		06		06		06	
		Pregnant	07		07		07		07	
		Wanted another child	08		08		08		08	
		Wanted to use pill	09		09		09		09	
		To (Return to) work	10		10		10		10	
		Preferred bottle	11		11		11		11	
		Other(specify):	12		12		12		12	
615	Did you stop breastfeeding suddenly or progressively?	Suddenly	1		1		1		1	
		Progressively	2		2		2		2	
616	When you weaned (NAME), did you put "Mor" or "Sabr" or any other thing of that type on the breast?	Yes	1		1		1		1	
		No	2		2		2		2	
617	INTERVIEWER: Check 316	Child alive	1		1		1		1	
		Child dead	2	NEXT CHILD	2	NEXT CHILD	2	NEXT CHILD	2	701

		Name _____			Name _____			Name _____			Name _____		
LINE NUMBER OF CHILD IN "BIRTH HISTORY TABLE"		⊔⊔			⊔⊔			⊔⊔			⊔⊔		
SURVIVAL STATUS: CHECK 316		Alive ☐			Alive ☐			Alive ☐			Alive ☐		
		Dead ☐			Dead ☐			Dead ☐			Dead ☐		
Questions	Coding Categories	Codes		Skip to	Codes		Skip to	Codes		Skip to	Codes		Skip to
618 Is (NAME) being given any of the following types of liquid and food?		Yes	No		Yes	No		Yes	No		Yes	No	
	Plain water	1	2		1	2		1	2		1	2	
	Fresh full cream milk	1	2		1	2		1	2		1	2	
	Pasteurized bottled milk	1	2		1	2		1	2		1	2	
	Powdered milk for infant	1	2		1	2		1	2		1	2	
	Canned/Powdered milk	1	2		1	2		1	2		1	2	
	Juices	1	2		1	2		1	2		1	2	
	Sugar water	1	2		1	2		1	2		1	2	
	Rice water	1	2		1	2		1	2		1	2	
	Herbal drinks	1	2		1	2		1	2		1	2	
	Homemade baby food	1	2		1	2		1	2		1	2	
	Preserved(jars) baby food	1	2		1	2		1	2		1	2	
	Food made for family	1	2		1	2		1	2		1	2	
	Other(specify): _____	1	2		1	2		1	2		1	2	
619 Was (NAME) ever fed regularly from a bottle with a nipple?	Yes	1			1			1			1		
	No	2		NEXT CHILD	2		NEXT CHILD	2		NEXT CHILD	2		701
620 How old was (NAME) when you began to feed him/her with a bottle?	Months	⊔⊔		NEXT	⊔⊔		NEXT	⊔⊔		NEXT	⊔⊔		GO TO
	Years	⊔⊔		CHILD	⊔⊔		CHILD	⊔⊔		CHILD	⊔⊔		701
	D.K.	9 6			9 6			9 6			9 6		

Section 7 : CAUSE OF DEATH FOR CHILDREN WHO DIED

			Name (Youngest)		Name (Next to Youngest)		Name (Second to Youngest)		Name (Third to Youngest)	
	INTERVIEWER: Check Birth History Table and enter names of all children born in the "Last Five Years," starting with "Last Live Birth."		_____		_____		_____		_____	
	LINE NUMBER OF CHILD in "BIRTH HISTORY TABLE"		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
	Questions	Coding Categories	Codes	Skip to	Codes	Skip to	Codes	Skip to	Codes	Skip to
701	INTERVIEWER: Check 316 in Birth History Table	Alive	1	NEXT CHILD	1	NEXT CHILD	1	NEXT CHILD	1	801
		Dead	2		2		2		2	
702	During the two weeks before (NAME) died, did he/she have any of the following symptoms? — A) Diarrhea	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	B) Vomiting	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	C) Cough or difficulty in breathing	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	D) Fever	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	E) Rash	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	F) Convulsions	Yes: less than 2 days ago	1		1		1		1	
		Yes: 2 days or more ago	2		2		2		2	
		No	3		3		3		3	
	G) Other illness	Yes(specify):_____	1		1		1		1	
		No	2		2		2		2	
703	What was the main cause of his/her death?	Youngest child_____	⌊_⌊_⌋							GO TO 801
		Next to youngest_____			⌊_⌊_⌋					
		Second to youngest_____					⌊_⌊_⌋			
		Third to youngest_____							⌊_⌊_⌋	
		Sudden death	9 6		9 6		9 6		9 6	
704	Was anyone consulted before the death of (NAME)?	Yes	1		1		1		1	
		No	2	NEXT CHILD	2	NEXT CHILD	2	NEXT CHILD	2	701
705	Who was consulted?	Hospital	1		1		1		1	
		Health center	2		2		2		2	
		Private clinic	3		3		3		3	
		Traditional healer	4		4		4		4	
		Other(specify):_____	5		5		5		5	
		No one	6		6		6		6	

Section 8 : FAMILY PLANNING AND CHILDBEARING ATTITUDES

801 Now I would like to talk about a different topic. There are various methods that a couple can use to delay or avoid a pregnancy. Which of these methods or ways have you heard about?

INTERVIEWER: Circle code 1 in 802 for each method mentioned spontaneously. Then proceed down the column, reading the name of each method not mentioned spontaneously. Circle code 2 if the method is recognized, and code 3 if not recognized. Then for each method with code 1 or 2 circled in 802, ask 803.

	METHOD	802 Have you ever heard of (METHOD)?		802A Do you know a source of (METHOD)?		803 Have you ever used (METHOD)?	
01	PILL	Yes: Spontaneously	1	Yes	1	Yes	1
		Yes: Probed	2				
		No *	3	No	2	No	2
02	IUD	Yes: Spontaneously	1	Yes	1	Yes	1
		Yes: Probed	2				
		No *	3	No	2	No	2
03	INJECTIONS	Yes: Spontaneously	1	Yes	1	Yes	1
		Yes: Probed	2				
		No *	3	No	2	No	2
04	DIAPHRAGM/ FOAM/JELLY	Yes: Spontaneously	1	Yes	1	Yes	1
		Yes: Probed	2				
		No *	3	No	2	No	2
05	CONDOM	Yes: Spontaneously	1	Yes	1	Yes	1
		Yes: Probed	2				
		No *	3	No	2	No	2
06	FEMALE STERILIZATION	Yes: Spontaneously	1			Yes	1
		Yes: Probed	2				
		No *	3			No	2

	METHOD	802 Have you ever heard of (METHOD)?		803 Have you ever used (METHOD)?	
07	MALE STERILIZATION	Yes: Spontaneously	1	Yes	1
		Yes: Probed	2		
		No *	3	No	2
08	SAFE PERIOD	Yes: Spontaneously	1	Yes	1
		Yes: Probed	2		
		No *	3	No	2
09	WITHDRAWAL	Yes: Spontaneously	1	Yes	1
		Yes: Probed	2		
		No *	3	No	2
10	BREAS/FEEDING	Yes: Spontaneously	1	Yes	1
		Yes: Probed	2		
		No *	3	No	2
11	ANY OTHER METHOD	Yes	1		
		No	2		
	1. _____			Yes	1
				No	2
	2. _____			Yes	1
				No	2

* Skip to next method

	QUESTIONS	CODING CATEGORIES		SKIP TO
804	INTERVIEWER: Check 803	Ever used a method	1	
		Never used a method	2	824
805	How many living sons and how many living daughters, if any, did you have when you first used a family planning method?	Number of sons	⌊_⌊_⌋	
		Number of daughters	⌊_⌊_⌋	
806	When you first began to use family planning, did you want to have another child but at a later time or did you want to stop childbearing?	Wanted child later	1	
		Wanted to stop childbearing	2	
		Other(specify):————	3	
807	INTERVIEWER: Check 201	Currently married	1	
		Not currently married	2	823
808	INTERVIEWER: Check 325	Not pregnant/Unsure	1	
		Currently pregnant	2	823
809	Are you currently using any method of family planning?	Yes	1	
		No	2	823
810 A	Which method are you using?	Pill	01	
		IUD	02	813
		Injections	03	817C
		Diaphragm/Foam/Jelly	04	817C
		Condom	05	817C
		Female sterilization	06	816
		Male sterilization	07	816
		Safe period	08	820
		Withdrawal	09	820
		Breastfeeding	10	820
		Other(specify):————	11	820
810 B	Did you consult a doctor or a nurse when you started using it?	Yes	1	
		No	2	
811	How much does one packet (cycle) of pills cost you?	Cost (in Rials)	⌊_⌊_⌊_⌋	
		Free	9 9 6	
		D.K.	9 9 8	
812	Who obtained the packet (cycle) of pills the last time?	Respondent	1	817A
		Husband	2	817A
		Home delivered	3	818
		Other(specify):————	4	817A

	QUESTIONS	CODING CATEGORIES		SKIP TO
813	How much did it cost to have the IUD inserted?	Cost (in Rials)	⌊_⌊_⌊_⌋	
		Free	9 6	
		D.K.	9 8	
814	Did you get the IUD at the place where you had it inserted or did you get it somewhere else?	Yes : Same place	1	817B
		No : Somewhere else	2	
815	How much did it cost to get the IUD at (Place where IUD was bought)?	Cost (in Rials)	⌊_⌊_⌊_⌋	
		Free	996	817B
		D.K.	998	
816	In what month and year did you (your husband) have the operation?	Month	⌊_⌊_⌋	817D
		Year	⌊_⌊_⌋	
817	A) Where did you(your husband) obtain the pill the last time? B) Where was the IUD which you are using now inserted? C) Where did you obtain the (METHOD)? D)Where did the sterilization take place?	Public hospital	01	
		Public FP clinic	02	
		Private voluntary FP clinic	03	
		MCH centre	04	
		Private doctor/Clinic	05	
		Field worker	06	
		Mobile clinic	07	
		Pharmacy	08	
		Other	09	819
		D.K.	10	819
818 A	How much time does it take to go to this place?	Minutes	⌊_⌊_⌊_⌋	
818	Was there anything you particularly disliked about the services you (your husband) received from that source? IF "YES" : What? INTERVIEWER: Record main reason	Wait too long	1	
		Staff discourteous	2	
		Too expensive	3	
		Desired method unavailable	4	
		Other(specify):————	5	
		No complaints	6	
819	INTERVIEWER: Check 803	Neither sterilized	1	
		He/She sterilized	2	835

	QUESTIONS	CODING CATEGORIES		SKIP TO
820	For how long have you been using (CURRENT METHOD) continuously?	Duration: Months	⌊_⌊_⌋	
		Years	⌊_⌊_⌋	
821	Have you experienced any problem from using (CURRENT METHOD)?	Yes	1	
		No	2	833
822	What is the main problem you experienced?	Health concerns	1	GO TO
		Method failed	2	
		Husband disapproved	3	
		Access/Availability	4	
		Costs too much	5	
		Inconvenient to use	6	
		Other(specify): _____	7	833
		D.K.	8	
823	Which was the last method of family planning you used?	Pill	01	
		IUD	02	
		Injections	03	
		Diaphragm/Foam/Jelly	04	
		Condom	05	
		Female sterilization	06	
		Male sterilization	07	
		Safe period	08	
		Withdrawal	09	
		Breastfeeding	10	
		Other(specify): _____	11	
824	INTERVIEWER: Check 201	Currently married	1	
		Not currently married	2	835
825	Do you intend to use a method of family planning at any time in the future?	Yes	1	
		No	2	828

	QUESTIONS	CODING CATEGORIES		SKIP TO
826	Which method would you prefer to use?	Pill	01	
		IUD	02	
		Injections	03	
		Diaphragm/Foam/Jelly	04	
		Condom	05	
		Female sterilization	06	
		Male sterilization	07	
		Safe period	08	
		Withdrawal	09	
		Breastfeeding	10	
		Other(specify):————	11	
		Don't know	90	
827	When do you plan to begin using (METHOD)?	Within 12 months	1	GO TO 829
		From 1 to 2 years	2	
		Three years or more	3	
		Undecided	4	
828	What is the main reason that you do not want to use a method of family planning?	Religious prohibitions	01	
		Opposed to FP	02	
		Husband disapproves	03	831
		Other relatives disapprove	04	
		Side effects	05	
		Lack of Knowledge	06	
		Difficult to obtain	07	
		Costs too much	08	
		Inconvenient to use	09	
		Fatalistic	10	
		Menopausal/Subfecund	11	
		Other(specify):————	12	
		Unsure/D.K.	13	
829	Have you ever talked with your husband about family planning?	Yes	1	
		No	2	

	QUESTIONS	CODING CATEGORIES		SKIP TO
830	In your opinion, in general, does your husband approve or disapprove of couples using a method of family planning?	Approves	1	
		Conditionally approves	2	
		Disapproves	3	
		D.K.	4	
831	INTERVIEWER: Check 325	Pregnant	1	
		Not pregnant/Unsure	2	833
832	After the child you are expecting, would you like to have another child or would you prefer not to have any more children?	Have another	1	GO
		No more	2	TO
		Undecided/D.K.	3	835
833	Would you like to have a (another) child or would you prefer not to have any (more) children?	Have another	1	
		No more	2	835
		Cannot get pregnant	3	835
		Undecided/D.K.	4	835
834	Would you prefer your next child to be a boy or a girl?	Boy	1	
		Girl	2	
		Either	3	
		Other(specify):————	4	
835	INTERVIEWER: Check 303 and 305	No living children	1	
		Has living children	2	837
836	If you could choose exactly the number of children to have in your whole life, how many would that be?	Number	⌊_⌊_⌋	GO TO
		Other(specify):————	9 6	838
837	If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?	Number	⌊_⌊_⌋	
		Other(specify):————	9 6	
838	INTERVIEWER: Check 201	Currently married	1	
		Not currently married	2	840
839	If your husband could choose exactly the number of children for you to have, without regard to the number of children that you already have, how many do you think that would be?	Number	⌊_⌊_⌋	
		Other(specify):————	9 6	

	QUESTIONS	CODING CATEGORIES		SKIP TO
840	In your opinion, what level of education would you like (your daughter/a girl) to obtain?	None	1	
		Read and write	2	
		Primary	3	
		Preparatory	4	
		Secondary	5	
		University	6	
841	In your opinion, What level of education would you like (your son/a boy) to obtain?	None	1	
		Read and write	2	
		Primary	3	
		Preparatory	4	
		Secondary	5	
		University	6	
842	In your opinion, what is the most suitable age for (your daughter/a girl) to marry?	Age	⌊_⌊_⌋	
		Other(specify):————	9 6	
843	In your opinion, how many children should (your daughter /a girl) have?	Number	⌊_⌊_⌋	
		Other(specify):————	9 6	
844	Would you approve or disapprove of your daughter(s) (girls) working if a good opportunity for earning cash were available?	Approve	1	
		Conditionally approve	2	
		Disapprove	3	
845	Do you approve or disapprove of female circumcision?	Approve	1	
		Disapprove	2	847
		Undecided	3	901
846	Why is that? INTERVIEWER: Circle the most important reason	Religious beliefs	1	
		Normal practice here	2	G O
		Good for the girl	3	
		Husband's desire	4	T O
		Other(specify):————	5	901
847	What is the main reason for that?	Not good for the girl	1	
		Husband's desire	2	
		Other(specify):————	3	

Section 9 : HUSBAND'S RESOURCES

	QUESTIONS	CODING CATEGORIES		SKIP TO
901	Now I would like to ask some questions about your (last/ late) husband. Did he ever attend school?	Yes	1	
		No	2	905
		D.K.	3	905
902	What was the highest level of education he attended?	Primary	1	
		Preparatory	2	
		Secondary	3	
		Postsecondary	4	
		University	5	
		D.K.	6	905
903	What was the highest grade (year) he completed at that level?	Grade	⌊_⌊_⌋	
		D.K.	9 8	
904	INTERVIEWER: Check 902 and 903	Less than 4 years of primary	1	
		Four years of primary or more	2	907
905	Can (could) he read a letter or newspaper, for example?	Yes	1	
		No	2	907
		D.K.	3	907
906	Can(could) he write a letter, for example?	Yes	1	
		No	2	
		D.K.	3	
907	What is (was) his occupation; that is, what kind of work does (did) he mainly do?	_____ _____	⌊_⌊_⌋	
908	INTERVIEWER: Check 907	In agriculture	1	
		Not in agriculture	2	911
909	Does (did) your husband work mainly on his or family land, or on someone else's land?	His/Family land	1	912
		Someone else's land	2	
910	Does (did) he work mainly for money or does (did) he work for a share of the crops?	Money	1	GO
		A share of crops	2	TO
		Both	3	912

	QUESTIONS	CODING CATEGORIES		SKIP TO
911	Does (did) he earn a regular wage or salary?	Yes	1	
		No	2	
		D.K.	3	
912	INTERVIEWER: Check 201	Currently married	1	
		Not currently married	2	END
913	Does your husband have any additional or secondary job? IF 'YES' : What does he do?	Secondary job: _____ _____	⌊_⌊_⌋	
		No	9 6	
		D.K.	9 8	
914	How old is your husband now?	Age	⌊_⌊_⌋	
		D.K.	98	
915	Has your husband been living with you here continuously during the last three months or has he been away?	Living at home	1	END
		Away	2	
916	What is the reason for his absence?	Working elsewhere inside the country	1	918
		Working abroad	2	
		Separated	3	918
		Other(specify):_____	4	918
917	In which country does he work now?	Country: _____	⌊_⌊_⌋	
918	For how long has he been away?	Months	⌊_⌊_⌋	
		Years	⌊_⌊_⌋	

INTERVIEWER'S OBSERVATIONS

A	Degree of cooperation	Poor	1	
		Fair	2	
		Good	3	
		Very Good	4	
B	Privacy of interview	No others present	1	
		Others present during part of the interview	2	
		Others present during all of the interview	3	
C	IF "OTHERS" PRESENT : Mark whether any of the following were present during the interview		YES	NO
		Children under 10	1	2
		Husband	1	2
		Other females	1	2
		Other males	1	2

Interviewer's Comments

Supervisor's Comments

Editor's Comments

REPUBLIC OF YEMEN

MINISTRY OF PLANNING AND DEVELOPMENT

CENTRAL STATISTICAL ORGANIZATON

YEMEN DEMOGRAPHIC AND CHILD HEALTH SURVEY

4. CHILD HEALTH QUESTIONNAIRE

1991

* In collaboration with the Ministry of Public Health, the PAPCHILD Project, the Demographic and Health Survey Project (DHS), and USAID.
Sana'a

CHILD HEALTH QUESTIONNAIRE

(For All Children Under 5 Years of Age)

4

IDENTIFICATION	
Governorate :	
District:	
Urban / Rural:	
Cluster Number :	
Household Number :	

INTERVIEWER VISITS	1	2	3
Name of interviewer	.....	.....	.....
Date of visit	.....	.....	.....
Starting time	.....	.....	.....
Ending time	.....	.....	.....
Duration of interview.			
Hours			
Minutes			
Result Code*			
Next visit Date	../../19..	../../19..	.....
Time	.....	.....	.....

M Y

* Result codes:

1. Completed
2. Not at home
3. Postponed
4. Refused
5. Partly completed
6. Other (specify) _____

	Field Editing	Office Editing	Data Entry
Name	_____	_____	_____
Date	.../../19...	.../../19...	.../../19...

Keyed by

Section 1 : GENERAL

Time	
	Hour ☐☐
	Minutes ☐☐

Number of eligible children ☐

		Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	INTERVIEWER: Check "Household Roster" and enter names of all children under five years of age, starting with the youngest.	_____		_____		_____		_____	
100	LINE NUMBER OF CHILD IN "HOUSEHOLD SCHEDULE"	☐☐		☐☐		☐☐		☐☐	
101	AGE OF CHILD	☐☐ M	☐☐ Y	☐☐ M	☐☐ Y	☐☐ M	☐☐ Y	☐☐ M	☐☐ Y
102	LINE NUMBER OF MOTHER IN "HOUSEHOLD SCHEDULE" (DECEASED = 97) , (NOT A MEMBER OF HOUSEHOLD = 96)	☐☐		☐☐		☐☐		☐☐	
103	LINE NUMBER OF CHILD IN "BIRTH HISTORY" (N.A. = 95)	☐☐		☐☐		☐☐		☐☐	
104	NUMBER OF VISITS RESULT* OF INTERVIEW (SEE PRECEDING PAGE FOR CODES)	☐ ☐		☐ ☐		☐ ☐		☐ ☐	
105	LINE NUMBER OF PERSON ANSWERING THIS QUESTIONNAIRE FROM THE HOUSEHOLD SCHEDULE	☐☐		☐☐		☐☐		☐☐	
	QUESTIONS / CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
106	Who is primarily responsible for the care of (NAME)? — Mother	1	108	1	108	1	108	1	108
	Step mother	2		2		2		2	
	Father	3		3		3		3	
	Aunt	4		4		4		4	
	Grandmother	5		5		5		5	
	Sister	6		6		6		6	
	Other(specify):_____	7		7		7		7	
107	LINE NUMBER OF CARETAKER (Not member of Household = 96) — Line number	☐☐		☐☐		☐☐		☐☐	
108	Do you (Does caretaker) give the care of (NAME) to another person when you leave home for an extended period, either for work, visiting shopping, or other reasons? — Yes	1		1		1		1	
	No : always take child with me	2	112	2	112	2	112	2	112
	No : do not go out	3	112	3	112	3	112	3	112
109	With whom do you leave (NAME)? — Sister	☐☐		☐☐		☐☐		☐☐	
	INTERVIEWER : • Record all persons mentioned and enter line number of each person mentioned as shown on Household Roster. • If person mentioned not member of household CIRCLE 96. — Aunt	☐☐		☐☐		☐☐		☐☐	
	Grandmother	☐☐		☐☐		☐☐		☐☐	
	Nanny	☐☐		☐☐		☐☐		☐☐	
	Child care group	96		96		96		96	
	Other(specify):_____	☐☐		☐☐		☐☐		☐☐	

			Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	LINE NUMBER OF CHILD IN "HOUSEHOLD SCHEDULE"		⊔⊔		⊔⊔		⊔⊔		⊔⊔	
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
110	INTERVIEWER: See 109 Aunt / grandmother mentioned and line number of either or both=96. YES ☐ NO ☐ (GO TO 112)									
111	Where does (do) aunt (and/or grandmother) live?	In same building or courtyard	A 1 / G 1		A 1 / G 1		A 1 / G 1		A 1 / G 1	
		Nearby	2 / 2		2 / 2		2 / 2		2 / 2	
		Another part of the village or city	3 / 3		3 / 3		3 / 3		3 / 3	
112	Does the father of (NAME) play regularly with him/her, say, for a half-hour or more? INTERVIEWER: If in household schedule 106, father is deceased, then don't ask the question, circle code 6.	No: not at home	1	NEXT CHILD	1	NEXT CHILD	1	NEXT CHILD	1	GO TO 2 01
		No: works until late	2		2		2		2	
		No: rarely or never	3		3		3		3	
		Yes: sometimes	4		4		4		4	
		Yes: almost every day	5		5		5		5	
		Father deceased	6		6		6		6	

Section 2 : MORBIDITY : DIARRHEA

	INTERVIEWER: Check "Household Roster" and enter names of all children under five years of age, starting with the youngest.		Name (Youngest) _____		Name (Next to youngest) _____		Name (Second to youngest) _____		Name (Third to youngest) _____	
	Line number of child in 'Household Roster'		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
201	Now I would like to ask some questions about any illnesses your children might have had recently. Has (NAME) had diarrhea in the last 24 hours?	Yes	1	204	1	204	1	204	1	204
		No	2		2		2		2	
202	Has (NAME) had diarrhea in the last two weeks?	Yes	1		1		1		1	
		No	2	NEXT	2	NEXT	2	NEXT	2	220
		D.K.	3	CHILD	3	CHILD	3	CHILD	3	220
203	For how many days did the last episode of diarrhea last?	Days (D.K. = 98)	⌊_⌊_⌋	205	⌊_⌊_⌋	205	⌊_⌊_⌋	205	⌊_⌊_⌋	205
204	How many days ago did the diarrhea start?	Days (D.K. = 98)	⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
205	Was (is) the diarrhea mild or severe?	Mild	1		1		1		1	
		Severe	2		2		2		2	
		D.K.	3		3		3		3	
206	During this (the last) episode of diarrhea, how many liquid stools did (NAME) have on worst day?	Number	⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
		D.K.	98		98		98		98	
207	Was there blood and/or mucus in the stools?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
208	Did (NAME) also have fever?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
209	Did he/she experience vomiting?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
210	Did he/she also experience dehydration?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
211	When (NAME) had diarrhea then, was he/she given more, less, or the same amount of liquid as before the diarrhea?	More	1		1		1		1	
		Less	2		2		2		2	
		Same	3		3		3		3	
		D.K	4		4		4		4	

			Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	Line number of child in "Household Roster"									
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
212	Was (NAME) given either a home solution of sugar, salt, and water to drink, or a solution made from an ORS packet? If "YES": Which?	Home solution of sugar, salt, and water	1		1		1		1	
		ORS packet solution prepared at home	2		2		2		2	
		Both given	3		3		3		3	
		Neither given	4	215	4	215	4	215	4	215
213	For how many days was (NAME) given (Home solution/special packet)?	Days (Less than 24Hours = 00) (D.K. = 98)								
214	The last time (NAME) was given (Home solution/special packet), did he/she get better, worse, or was there no change?	Better	1		1		1		1	
		Worse	2		2		2		2	
		No change	3		3		3		3	
215	Was (NAME) given more, less, or the same amount of solid food as was given before he/she had diarrhea?	More	1		1		1		1	
		Less	2		2		2		2	
		Same	3		3		3		3	
		Solid food was not given	4		4		4		4	
		D.K.	5		5		5		5	
216	Was (NAME) taken to any of the following persons or places during the last episode of diarrhea?		Y N DK		Y N DK		Y N DK		Y N DK	
		Public health service	1 2 3		1 2 3		1 2 3		1 2 3	
		Cooperative health service	1 2 3		1 2 3		1 2 3		1 2 3	
		Private doctor	1 2 3		1 2 3		1 2 3		1 2 3	
		Pharmacy	1 2 3		1 2 3		1 2 3		1 2 3	
		Traditional midwife	1 2 3		1 2 3		1 2 3		1 2 3	
		Traditional herbalist	1 2 3		1 2 3		1 2 3		1 2 3	
		Anyone else	1 2 3		1 2 3		1 2 3		1 2 3	
217	INTERVIEWER : Check 216 At least one YES to 216 ☐ ↓ Not a single YES to 216 ☐ (Go to 219)									
218	What treatment did (NAME) receive there in the last visit? INTERVIEWER : Circle all treatments mentioned	Intravenous	1	N	1	N	1	N	1	
		Other injection	2	E	2	E	2	E	2	GO
		Tablets or pills	3	X T	3	X T	3	X T	3	
		Syrups	4		4		4		4	
		ORS	5	C H	5	C H	5	C H	5	TO
		Other(specify):	6	I L D	6	I L D	6	I L D	6	
		Nothing given	7	201	7	201	7	201	7	220
		D.K.	8		8		8		8	
219	Why was (NAME) not taken somewhere for treatment during the last episode of diarrhea? INTERVIEWER: Record main reason	Illness was mild	1	NEXT	1	NEXT	1	NEXT	1	GO
		Mother too busy	2	CHILD	2	CHILD	2	CHILD	2	TO
		No facilities or person to consult	3	201	3	201	3	201	3	
		Other(specify):	4		4		4		4	220

	QUESTIONS	CODING CATEGORIES	Codes	Skip
220	Interviewer : Check 212 ORS used ☐ (SKIP to 222) ORS not used/no diarrhea ☐ ↓			
221	Have you ever heard of a special product called ORS (LOCAL NAME) you can get for the treatment of diarrhea?	Yes No	1 2	 301
222	Have you ever prepared one of the ORS packets for yourself or for someone else?	Yes No	1 2	 225
223	The last time you used ORS, how much water did you use to prepare the packet?	1/2 Litre 1 Litre 1 1/2 Litres 2 Litres Other(specify) ——— D.K.	1 2 3 4 5 6	
224	Did you use boiled water, bottled water, or other water to prepare the packet (the last time)?	Boiled water Bottled water Other(specify) ——— D.K	1 2 3 4	
225	Where can you get ORS packets? (MARK ALL ANSWERS GIVEN)	Public health establishment Cooperative health establishment Field worker Private doctor/hospital Pharmacy Shop Daya Other(specify) ——— D.K.	1 2 3 4 5 6 7 8 9	
226	How much do (you think) the packets cost?	Cost Free = 996 D.K. = 998	⌊_⌊_⌊_⌋	

Section 3 : MORBIDITY: OTHER ILLNESSES

			Name (Youngest) _____		Name (Next to youngest) _____		Name (Second to youngest) _____		Name (Third to youngest) _____	
	Line number of child in 'Household Roster'		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
301	Did (NAME) have a cough at any time during the last two weeks?	Yes	1		1		1		1	
		No	2	306	2	306	2	306	2	306
		D.K.	3	306	3	306	3	306	3	306
302	For how many days did he/she have the cough the last time?	No. of days (D.K. = 98)	⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋		⌊_⌊_⌋	
303	Did (NAME) also experience difficulty in breathing when he/she had the cough?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
304	How was (NAME) treated from the cough or shortness of breath? INTERVIEWER: Circle all treatements mentioned.	Cough mixture	1		1		1		1	
		Tablets	2		2		2		2	
		Antibiotic(capsule/syrup)	3		3		3		3	
		Injection	4		4		4		4	
		Other (specify)	5		5		5		5	
		Nothing	6		6		6		6	
		D.K.	7		7		7		7	
305	Was the advice of any of the following persons sought on how to treat the cough? INTERVIEWER: Read out list		Y / N / DK		Y / N / DK		Y / N / DK		Y / N / DK	
		Public health service	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Cooperative health service	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Private doctor	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Pharmacy	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Traditional midwife	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Traditional herbalist	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Relatives/friends	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
		Anyone else (specify)	1 / 2 / 3		1 / 2 / 3		1 / 2 / 3		1 / 2 / 3	
306	Did (NAME) have fever at any time during the last two weeks?	Yes	1		1		1		1	
		No	2	309	2	309	2	309	2	309
		D.K.	3	309	3	309	3	309	3	309

			Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	Line number of child in "Household Roster"									
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
307	How was (NAME) treated from the fever? INTERVIEWER: Circle all treatments mentioned	Aspirin	01		01		01		01	
		Anti-malarial tablets	02		02		02		02	
		Antibiotic(capsule/syrup)	03		03		03		03	
		Other syrup/mixture	04		04		04		04	
		Injection	05		05		05		05	
		Suppository	06		06		06		06	
		Cold water applications	07		07		07		07	
		Other (specify)	08		08		08		08	
		Nothing	09		09		09		09	
		D.K.	10		10		10		10	
			Y N DK		Y N DK		Y N DK		Y N DK	
308	Was the advice of any of the following sought on how to treat him/her from the fever? INTERVIEWER: Read out list	Public health service	1 2 3		1 2 3		1 2 3		1 2 3	
		Private doctor	1 2 3		1 2 3		1 2 3		1 2 3	
		Pharmacy	1 2 3		1 2 3		1 2 3		1 2 3	
		Traditional midwife	1 2 3		1 2 3		1 2 3		1 2 3	
		Traditional herbalist	1 2 3		1 2 3		1 2 3		1 2 3	
		Relatives/friends	1 2 3		1 2 3		1 2 3		1 2 3	
		Anyone else (specify) :	1 2 3		1 2 3		1 2 3		1 2 3	
309	Did he/she have pus coming from his/her ears during the last two weeks?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
310	Did he/she have pus coming from his/her eyes during the last two weeks?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
311	Did (NAME) have any (other) illness during the last two weeks?	Yes	1		1		1		1	
		No	2	313	2	313	2	313	2	313
		D.K.	3	313	3	313	3	313	3	313
312	What was this illness?	Illness/symptoms Youngest child_____ Next to youngest_____ Second to youngest_____ Third to youngest_____								
313	Did (NAME) ever have the measles?	Yes	1		1		1		1	
		No	2	NEXT	2	NEXT	2	NEXT	2	GO TO
		D.K.	3	CHILD	3	CHILD	3	CHILD	3	401
314	How old was (NAME) when he/she had the measles?	Age (in years) (D.K. = 8)		NEXT CHILD		NEXT CHILD		NEXT CHILD		GO TO 401

Section 4 : IMMUNIZATION

		Name (Youngest child) _____	Name (Next to youngest child) _____	Name (Second to youngest child) _____	Name (Third to youngest child) _____
Line number of child in "Household Roster"		☐☐	☐☐	☐☐	☐☐

	Questions	Coding Categories	Codes	Skip	Codes	Skip	Codes	Skip	Codes	Skip
401	Is there an immunization card (or local equivalent) for (Name)?	Yes : Seen	1		1		1		1	
	IF "YES" :	Yes : Not seen	2	403	2	403	2	403	2	403
	May I see it please?	No	3	403	3	403	3	403	3	403
		D.K.	4	403	4	403	4	403	4	403

			Not Given	D	M	Y	IF	Not Given	D	M	Y	IF	Not Given	D	M	Y	IF	Not Given	D	M	Y	IF
402	INTERVIEWER: Record dates of immunizations from card.	BCG	1 ☐	☐☐	☐☐	☐☐	ALL	1 ☐	☐☐	☐☐	☐☐	ALL	1 ☐	☐☐	☐☐	☐☐	ALL	1 ☐	☐☐	☐☐	☐☐	ALL
		POLIO 1	1 ☐	☐☐	☐☐	☐☐	DATES	1 ☐	☐☐	☐☐	☐☐	DATES	1 ☐	☐☐	☐☐	☐☐	DATES	1 ☐	☐☐	☐☐	☐☐	DATES
		POLIO 2	1 ☐	☐☐	☐☐	☐☐	GIVEN	1 ☐	☐☐	☐☐	☐☐	GIVEN	1 ☐	☐☐	☐☐	☐☐	GIVEN	1 ☐	☐☐	☐☐	☐☐	GIVEN
		POLIO 3	1 ☐	☐☐	☐☐	☐☐	GO TO	1 ☐	☐☐	☐☐	☐☐	GO TO	1 ☐	☐☐	☐☐	☐☐	GO TO	1 ☐	☐☐	☐☐	☐☐	GO TO
		DPT 1	1 ☐	☐☐	☐☐	☐☐	NEXT	1 ☐	☐☐	☐☐	☐☐	NEXT	1 ☐	☐☐	☐☐	☐☐	NEXT	1 ☐	☐☐	☐☐	☐☐	501
		DPT 2	1 ☐	☐☐	☐☐	☐☐	CHILD	1 ☐	☐☐	☐☐	☐☐	CHILD	1 ☐	☐☐	☐☐	☐☐	CHILD	1 ☐	☐☐	☐☐	☐☐	ELSE
		DPT 3	1 ☐	☐☐	☐☐	☐☐	ELSE	1 ☐	☐☐	☐☐	☐☐	ELSE	1 ☐	☐☐	☐☐	☐☐	ELSE	1 ☐	☐☐	☐☐	☐☐	403
		MEASLES	1 ☐	☐☐	☐☐	☐☐	403	1 ☐	☐☐	☐☐	☐☐	403	1 ☐	☐☐	☐☐	☐☐	403	1 ☐	☐☐	☐☐	☐☐	

			Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	Line number of child in "Household Roster"		⊔⊔		⊔⊔		⊔⊔		⊔⊔	
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
403	Has (NAME) ever been given any "vaccination drops" in the mouth to protect him/her against illness?	Yes	1		1		1		1	
		No	2	405	2	405	2	405	2	405
		D.K.	3	405	3	405	3	405	3	405
404	How many times has (NAME) been given these drops?	Number (D.K = 8)	⊔		⊔		⊔		⊔	
405	Has (NAME) ever been given "vaccination injections" to protect him/her from getting diseases?	Yes	1		1		1		1	
		No	2		2		2		2	
		D.K.	3		3		3		3	
406	INTERVIEWER: See 402, 403 and 405 Child not immunized or not fully immunized [1] → ↓ Child immunized (403=1 and 405=1) [2] →		→	NEXT CHILD	→	NEXT CHILD	→	NEXT CHILD	→	GO TO 501
407	Why was (NAME) not (fully) immunized?	Child too young	01	N	01	N	01	N	01	ALL GO TO 501
		Unaware of need for immunization	02	E	02	E	02	E	02	
		Unaware of need to return for other doses	03	X T	03	X T	03	X T	03	
		Place/Time of immunization not known	04		04		04		04	
		Fear of side reactions	05	C	05	C	05	C	05	
		Intends to go	06	H	06	H	06	H	06	
		Child ill	07	I	07	I	07	I	07	
		Vaccine not available	08	L	08	L	08	L	08	
		Place far away	09	D	09	D	09	D	09	
		Bad treatment	10	401	10	401	10	401	10	
		Other(specify):————	11		11		11		11	

Section 5 : ACCIDENTS

			Name (Youngest)		Name (Next to youngest)		Name (Second to youngest)		Name (Third to youngest)	
	LINE NUMBER OF CHILD IN "HOUSEHOLD ROSTER"									
	QUESTIONS	CODING CATEGORIES	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO	CODES	SKIP TO
501	Has (NAME) ever been involved in a serious accident?	Yes	1		1		1		1	
		No	2	NEXT CHILD	2	NEXT CHILD	2	NEXT CHILD	2	601
502	When did this accident happen?	During last 12 months	1		1		1		1	
		More than 12 months ago			2		2		2	
503	What was this accident?	Wound	1		1		1		1	
		Burn	2		2		2		2	
		Fracture/Sprain	3		3		3		3	
		Poisoning	4		4		4		4	
		Other(specify):_____	5		5		5		5	
504	What was the external cause of this accident?	Youngest child_____								
		Next to youngest_____								
		Second to youngest_____								
		Third to youngest_____								
505	Where did this accident happen to (NAME)?	Inside the house	1		1		1		1	
		Just outside the house	2		2		2		2	
		Other(specify):_____	3		3		3		3	
506	Was there any long-term implication resulting from the accident?	Yes	1		1		1		1	
		No	2	NEXT CHILD	2	NEXT CHILD	2	NEXT CHILD	2	601
507	What was it?	Youngest child_____								
		Next to youngest_____								
		Second to youngest_____								
		Third to youngest_____								

Section 6 : WEIGHT AND HEIGHT

		Name (Youngest)	Name (Next to youngest)	Name (Second to youngest)	Name (Third to youngest)
	Line number of child in "Household Roster"	☐☐	☐☐	☐☐	☐☐
601	Weight (in kgs.)	☐☐.☐	☐☐☐.☐	☐☐☐.☐	☐☐☐.☐
602	Length/Height (in cms.)	☐☐☐☐.☐	☐☐☐☐.☐	☐☐☐☐.☐	☐☐☐☐.☐
603	INTERVIEWER: State reason if unable to record	☐	☐	☐	☐

604	TIME	Hour	☐☐
		Minutes	☐☐