

PN-ACB-408

DHS COMPARATIVE STUDIES

23

Gender Preferences for Children



DEMOGRAPHIC
AND HEALTH
SURVEYS



The Demographic and Health Surveys (DHS) is a 13-year project to assist government and private agencies in developing countries to conduct national sample surveys on population and maternal and child health. Funded primarily by the U.S. Agency for International Development (USAID), DHS is administered by Macro International Inc. in Calverton, Maryland.

The main objectives of the DHS program are (1) to promote widespread dissemination and utilization of DHS data among policymakers, (2) to expand the international population and health database, (3) to advance survey methodology, and (4) to develop in participating countries the skills and resources necessary to conduct high-quality demographic and health surveys.

For information about the Demographic and Health Surveys program, write to DHS, Macro International Inc., 11785 Beltsville Drive, Suite 300, Calverton, MD 20705, U.S.A. (Telephone 301-572-0200; Fax 301-572-0999).

B

PN-ACB-408

**Demographic and Health Surveys
Comparative Studies No. 23**

**Gender Preferences
for Children**

FRED ARNOLD

Macro International Inc.
Calverton, Maryland USA

August 1997

C

Recommended citation:

Arnold, Fred. 1997. *Gender Preferences for Children*. DHS Comparative Studies No. 23. Calverton, Maryland: Macro International Inc.

d

Contents

Preface	v
Acknowledgments	vi
Executive Summary	vii
1 Introduction	1
1.1 Purpose of the study	1
1.2 Data and analysis	1
1.3 Reasons for gender preferences	2
2 Attitudes about Gender Preference	3
2.1 Childbearing attitudes	3
2.2 Attitudes toward contraception	7
3 Marriage Patterns	12
4 Reproductive Behavior	15
4.1 Contraceptive use	15
4.2 Fertility	21
5 Impact of Gender Preferences	34
5.1 Quantitative estimates of the impact of gender preference	34
5.2 Multivariate analysis	34
6 Treatment of Daughters and Sons	36
6.1 Medical treatment	36
6.2 Feeding practices	36
6.3 Malnutrition	40
6.4 Childhood mortality	46
6.5 School attendance	46
6.6 Mother's employment	48
7 Conclusions	50
8 References	51
Appendix A	
Summary of DHS-I, DHS-II, and DHS-III Surveys, 1985-1996	53
Tables	
2.1 Desire for another child	4
2.2 Desire for pregnancy	6
2.3 Unwanted pregnancies	7
2.4 Desire for last child	8
2.5 Ideal number of children	9
2.6 Intention to use a contraceptive method	10
3.1 Marital dissolution	13
3.2 Polygyny	14

4.1	Use of contraception	16
4.2	Use of sterilization	18
4.3	Sex ratios by contraceptive use	20
4.4	Discontinuation rates	21
4.5	Failure rates	22
4.6	Pregnancy by sex of children	23
4.7	Current pregnancy by sex of youngest child	25
4.8	Sex ratio at birth	26
4.9	Sex ratios of children ever born	29
4.10	Number of siblings	30
4.11	Sex ratio of children for second parity women with children of same sex	31
4.12	Birth intervals	32
4.13	Postpartum abstinence	33
5.1	Effect of gender preference	35
5.2	Parity progression ratios	35
6.1	Vaccinations	37
6.2	Prevalence and treatment of childhood diseases ...	38
6.3	Breastfeeding	41
6.4	Recommended feeding indicators	43
6.5	Malnourished children	44
6.6	Severely malnourished children	45
6.7	Childhood mortality	47
6.8	School attendance	48
6.9	Women's employment	49

Preface

One of the most significant contributions of the DHS program is the creation of an internationally comparable body of data on the demographic and health characteristics of populations in developing countries. The *DHS Comparative Studies* series and the *DHS Analytical Reports* series examine these data across countries in a comparative framework, focusing on specific topics.

The objectives of DHS comparative research are: to describe similarities and differences between countries and regions, to highlight subgroups with specific needs, to provide information for policy formulation at the international level, and to examine individual country results in an international context. While *Comparative Studies* are primarily descriptive, *Analytical Reports* utilizes a more analytical approach.

The comparative analysis of DHS data is carried out primarily by staff at the DHS headquarters in Calverton, Maryland. The topics covered are selected by staff in conjunction with the DHS Scientific Advisory Committee and USAID.

The *Comparative Studies* are based on a variable number of data sets reflecting the number of countries for which data were available at the time the report was prepared. Each report provides detailed tables and graphs for countries in four regions: sub-Saharan Africa, the Near East and North Africa, Asia, and Latin America and the Caribbean. Survey-related issues such as questionnaire comparability, survey procedures, data quality, and methodological approaches are addressed in each report, as necessary. Where appropriate, data from previous DHS surveys are used to evaluate trends over time.

Comparative Studies published under the current phase of the DHS program (DHS-III) are, in some cases, updates and expansions of reports published earlier in the series. Other reports, however, will cover new topics that reflect the expanded substantive scope of the DHS program.

It is anticipated that the availability of comparable information for a large number of developing countries will have long-term usefulness for analysts and policymakers in the fields of international population and health.

Martin Vaessen
Project Director

Acknowledgments

The author wishes to thank Martin Wulfe and Trevor Croft for producing the tabulations for this report, Andrea Piani for research assistance, and George Bicego for his helpful review of this manuscript. I gratefully acknowledge Mary Lane for her assistance in the production of this report.

Executive Summary

Parental preferences for daughters or sons exhibit a wide variety of patterns throughout the world. This report documents patterns and consequences of gender preferences in countries with Demographic and Health Surveys (DHS). The report also provides a model of how to analyze DHS data on gender preferences. The findings are based on data from 57 DHS surveys in 244 countries, conducted from 1986 to 1995. Three different aspects of gender preferences are examined in this report: (1) women's gender preference attitudes; (2) the extent to which gender preferences influence demographic behavior; and (3) differential treatment of daughters and sons, particularly during the first few years of life. The underlying reasons for gender preferences are also briefly addressed.

Although DHS questionnaires usually include few, if any, questions directly related to gender preference, the analyses in this report demonstrate that the DHS is one of the most important sources of information on gender preferences and their impact worldwide. The predominant types of gender preference that are identified in these surveys are a preference for sons or a preference for a balance of daughters and sons (often expressed as a desire for at least one child of each sex). In some countries, these two types of preferences exist simultaneously.

Gender preferences for children vary dramatically from one country to another. Son preference is most prominent in a band of countries stretching from North Africa, through the Near East, to South Asia. The most extreme preference for sons is found in India, Bangladesh, Nepal, and Egypt, but a distinct preference for sons is also evident in Turkey, Tunisia, Pakistan, Sri Lanka, Jordan, and Morocco. The range of different countries where son preference is strong demonstrates that such preferences do not emerge from a single set of historical and cultural experiences.

The Southeast Asian nations (Indonesia, the Philippines, and Thailand) do not exhibit any consistent gender preference. Sub-Saharan Africa is, for the most part, devoid of any strong or consistent gender preferences for children, except for some manifestations of son preference in Kenya and Cameroon. In Latin America and the Caribbean, the sex of children generally does not appear to be an important issue. Moreover, this region contains the only countries where daughters are preferred to sons, at least in some situations. Daughter preference is most prevalent in the Dominican Republic and, to a much smaller extent, in Colombia, but even in these countries gender preference is not strong.

According to the attitudinal measures, son preference is particularly strong in countries like India and Pakistan where only 5-10 percent of women say they would like their next child to be a girl and where the average ideal number of sons in a family exceeds the ideal number of daughters by nearly 50

percent. In many cases, gender preference attitudes can have a substantial impact on reproductive behavior and even on the stability of marriages. In four countries, divorce and separation are significantly more common among women with no sons than among those with no daughters. The prevalence of polygyny also appears to be related to a woman's lack of sons (or daughters) in a few cases.

Patterns of contraceptive use are indicative of a particularly strong preference for sons in Nepal, India, Bangladesh, Egypt, Jordan, and Tunisia. In Nepal, for example, women with all sons are five times as likely to use contraception as women with no sons. Women are particularly unlikely to adopt sterilization if they do not have an adequate number of sons. These differentials in contraceptive use and the method mix, in turn, often affect fertility behavior (as measured by pregnancy rates, the sex ratio at birth, the average number of siblings, the sex distribution of children, birth intervals and the duration of postpartum abstinence). There is no clear evidence, however, that sex-selection techniques (including sex-selective abortion) have had an appreciable impact in DHS countries other than Sri Lanka.

One potentially important demographic consequence of son preference is that female children may grow up in larger families than male children if couples are more likely to continue childbearing if their first few children are predominantly girls. If this is the case, then daughters could face more competition for limited resources than sons, even if parents treat daughters and sons equally in each individual family. In fact, in six surveys in high son preference countries, daughters do have significantly more siblings than sons, although the differentials are not large.

A quantitative analysis in the seven countries where son preference is most pervasive reveals that son preference can have a substantial influence on fertility and family planning. However, the effect is not as strong as might be expected given that son preference is so firmly entrenched in those societies. In the absence of any gender preferences, it is estimated that contraceptive prevalence in those seven countries would increase by 3-25 percent from its current level and that pregnancy rates would decrease by 9-21 percent.

The DHS data provide evidence that in most of the less developed countries young daughters and sons are treated equally in a number of key areas. Nevertheless, discrimination against girls is evident in some countries with respect to various measures of health and nutrition. School attendance is the one area in which the survey data show consistently poorer results for girls than for boys. School-age boys were more likely to be attending school than school-age girls in 26 out of the 29 surveys that collected educational information on the household questionnaire.

In several countries, particularly in South Asia, boys are more likely than girls to have been vaccinated against six vaccine-preventable childhood diseases. When young children get sick, however, there are few differences in the proportion who receive medical care. India is the only country in which daughters are systematically discriminated against in receiving medical treatment for common childhood illnesses. In Bangladesh and India, boys are significantly more likely than girls to receive oral rehydration therapy when they have diarrhea.

There are few sex differences in feeding practices or malnutrition for young children. In countries with a strong son preference, sons are typically breastfed for a slightly longer period than daughters, but the differences are not large. Moreover, most countries do not exhibit any significant sex differences in nutritional status, and where differences do occur, boys are usually the more disadvantaged group (except at two years of age).

The relative risk of mortality for girls and boys varies dramatically according to the age group of the children. During the neonatal period, boys have a substantially higher risk of dying in nearly every country. By the postneonatal period, more than one-third of the surveys estimate higher probabilities of dying for girls than for boys. There is a cross-over effect after age one, with the risk of dying being higher for girls than for boys between one and four years of age (child mortality) in most countries. At this age, girls face particularly unfavorable survival prospects relative to boys in most of the South Asian countries and in Egypt. Girls are most disadvantaged in Pakistan where child mortality is two-thirds higher for females than for males.

1 Introduction

Parents' preferences for the sex of their children have constituted an important theme in population and social research over the past three decades. In the mid-1970s, Williamson's (1976) exhaustive review of the literature on gender preferences throughout the world focused attention on the wide variety of patterns prevailing in different societies and spawned a renewed interest in this area of research. More recently, information from the Demographic and Health Surveys has been used to compare the magnitude and impact of gender preferences in a large number of less developed countries, using a limited number of indicators (Arnold, 1997, 1992).

The most prevalent types of gender preference observed in less developed countries are a preference for a balanced number of daughters and sons (or at least one child of each sex) and a preference for sons (often together with a balance preference). Son preference is most widespread in a band of countries from North Africa through the Middle East and South Asia to East Asia. A wide range of religious and cultural traditions prevail in this region (including Islam, Hinduism, and Confucianism), so it is clear that a strong preference for sons can emerge from a variety of different cultural and historical experiences. A distinct preference for daughters is rare, although it has been found in a few societies (Williamson, 1976; Cleland, Verrall, and Vaessen, 1983; Sargent and Harris, 1992).

This comparative studies report provides further evidence regarding gender preferences in a large number of countries and their demographic and health consequences. The purpose of the report is outlined in the next section, followed by a brief discussion of the underlying causes of gender preferences, and the presentation of empirical findings based on DHS data.

1.1 PURPOSE OF THE STUDY

This report is both comparative and analytical in nature. On the one hand, the report documents patterns and consequences of gender preference across countries. On the other hand, it provides a model of how to analyze data on gender preferences that are contained in the Demographic and Health Surveys. Although DHS questionnaires typically include few, if any, questions that are directly related to gender preferences for children, the surveys can provide a rich source of information on this topic if the proposed analytical strategies are employed.

The tabulations in this report are based on country-level data because breakdowns by socioeconomic background characteristics would be cumbersome to present when so many surveys are included in the analysis. An in-depth analysis for an individual country, however, could take advantage of the wide array of background variables that are collected in the DHS (for example, age of respondent, type of place of residence, educational attainment, religion, ethnicity, migration status, asset ownership, quality of housing, and living arrangements).

In countries where male surveys have been conducted, the analytical possibilities are even greater, since the aggregate responses of women and men on attitudes toward gender preference can be compared. In countries which have matched samples of wives and husbands, the relevant comparisons can also be made within the marital dyad.

Although gender preferences for children are inextricably linked to the status of women in a society, the current report does not include explicit measures of the status of women. A detailed analysis of indicators of the status of women has been published in an earlier DHS comparative studies report (Kishor and Neitzel, 1996). Although there is not an exact correspondence between the status of women and gender preferences for children, women who live in countries in which the status of women is relatively high typically do not express a strong preference for sons.

1.2 DATA AND ANALYSIS

This report is based on findings from 57 surveys conducted in 44 countries in the 10-year period from 1986 to 1995. A summary of the characteristics of these surveys is given in the Appendix. All except two of the surveys were conducted as part of the Demographic and Health Surveys program. The 1992-93 National Family Health Survey in India and the 1991 Nepal Fertility, Family Planning and Health Survey were not part of the DHS program, but both surveys were conducted along the lines of a DHS with technical assistance from DHS staff. All of the surveys are national in scope, with the exception of the 1991 Brazil DHS (which was conducted only in the Northeast region of the country), the 1989-90 Sudan survey (which was administered only in northern Sudan), and the 1987 Sri Lanka survey (which excluded two zones in the North and the East).

The tabulations in 12 countries include information from more than one survey, allowing an examination of changes over time. For Indonesia, data are included from three surveys conducted between 1987 and 1994.

The tabulations are based on information from the individual woman's questionnaire and the household questionnaire. In many cases, particular surveys are excluded from a table or individual cells are denoted as U (indicating that the information is unknown (not available)). In these cases, the calculations could not be done because either the related questions were not included in the questionnaire or the questions were sufficiently different from the standard core questions that cross-country comparisons would be misleading. Because of sampling variability, estimates that are based on a small number of cases should be interpreted cautiously. Estimates based on fewer than 25 unweighted cases are not shown in the tables and estimates based on 25-49 unweighted cases are enclosed in parentheses.

The analysis for this report focuses on three issues related to gender preferences. The first is attitudes about gender preference, particularly about the preferred sex combination of children. The second is the impact of gender preference on reproductive behavior and marriage patterns. The third is the differential treatment and survival of daughters and sons. Several analytical techniques are used to explore these issues, including relating both attitudinal and behavioral measures to sex combinations of living children, examining patterns of sex ratios, calculating a quantitative index of the impact of gender preferences on reproductive behavior, and using multivariate techniques.

1.3 REASONS FOR GENDER PREFERENCES

Gender preferences for children develop not only from the personal desires of the parents but also from cultural and religious traditions and community norms that shape individual attitudes and behavior. These norms are often communicated to new generations, in part, through popular adages, even if the original rationale for developing these sayings is not always clear. For example, son preference is supported in some societies by such expressions as:

“Bringing up a daughter is like watering your neighbor’s garden.”

“May you be the mother of 100 sons.”

“A new-born son should be laid on a bed, clad in fine clothes, and given precious stones to play with, while a girl at birth should be left on the floor, with only a diaper on and given only pieces of roof-tile to play with.”

“A son is your own; a daughter is someone else’s.”

“A woman should obey her father before marriage, her husband during married life, and her son in widowhood.”

“Even the beams of the house shed tears when a girl is born.”

Children of a particular sex are often desired because they provide certain utilities or they minimize various financial and psychological costs. The specific causes of gender preference vary substantially among countries, but they can usually be grouped into broad categories of utilities—economic, religious, social, and psychological. Economic considerations usually favor sons. Sons may be valued for their help on the family farm or in the family business, or their ability to earn wages that can be shared with the family. Sons may also be the recipients of substantial dowry payments in some cultures (and, conversely, daughters may entail considerable costs since their families must raise funds for their dowry). Sons may also be considered better

insurance for old age support, but in some situations daughters are thought to be more reliable in providing such assistance (particularly emotional support). Sons are often thought to enhance the power and prestige of a family. Daughters are frequently desired to help with household tasks and to help care for younger children. Both sons and daughters may be needed to perform various religious functions, but most religions favor sons in this regard. In addition, parents may prefer to have at least some children of their own sex for the purpose of companionship. In patriarchal societies, son preference is often institutionalized. Male progeny are wanted to carry on the family line or the family name. Even in societies in which son preference is pervasive, however, many families consider it important to have at least one daughter among their children.

2 Attitudes about Gender Preference

2.1 CHILDBEARING ATTITUDES

In the Demographic and Health Surveys, currently married women were asked whether or not they wanted to have a child (or another child, if they had already had at least one child) in the future and, if so, when. Table 2.1 shows the percentage of nonpregnant women who said they want another child, according to the sex distribution of their living children.¹ In general, a pattern of declining percentages within a parity as the number of sons increases would indicate the presence of son preference, since women with more sons would be less inclined to continue bearing children. A U-shaped relationship would be indicative of a society with a preference for a mixture of daughters and sons or a balanced number of daughters and sons depending on the precise pattern of the estimates. An inverted U-shaped pattern would indicate a desire to have children of the same sex (that is, an aversion to a mixture or a balance). A J-shaped relationship would suggest a combination of daughter preference and balance preference and a reverse J-shaped pattern would suggest a mixture of son preference and balance preference.

In every country, a large majority of women with one child want to have a second child, regardless of the sex of the first child. Even at this parity, however, there is evidence of son preference in Nepal, Mexico, India, and Nigeria, and evidence of daughter preference in Ecuador, Colombia (1990), Bolivia (1989), Peru, Kenya (1993), Indonesia (1987), and the Philippines. By the second parity, stark differentials begin to emerge in a number of countries. Pure son preference is most evident in Nepal and India and, to a lesser extent, in Rwanda. In Nepal, for example, more than three times as many women want to continue childbearing if they have two daughters than if they have two sons. In Kenya (1988-89), Jordan, Pakistan, and Turkey, there is a strong desire to have one son, but having a second son does not appear to be a major concern. The largest number of countries have either no discernible gender preference or a preference for one child of each sex at the second parity. Daughter preference is evident in a few countries in the Latin American/Caribbean region, often in concert with a balance preference. The fertility preferences of women in higher parities can be interpreted in a similar fashion. Again, there is a wide mix of different patterns for women with three or more children. As before, the most extreme son preference is

found in South Asia (except for Sri Lanka), followed by a number of countries in North Africa and the Near East. Daughter preference is found, less consistently, in a few countries in Latin America and Southeast Asia.

In India and Pakistan, women who said they wanted another child were asked whether they would prefer that child to be a boy or a girl. Almost half of women in Pakistan (46 percent) and nearly as many in India (40 percent) said that the sex of the next child would not matter or that it was up to God. But among women who expressed a preference, sons were preferred to daughters by nearly 10 to 1 in Pakistan (49 percent to 5 percent) and nearly 5 to 1 in India (49 percent to 11 percent).

A related question on fertility preferences, which was asked primarily in the first phase of the DHS project (DHS-I), asked how happy the respondent would be if she were to get pregnant in the next few weeks. Because this question was restricted to a more limited segment of the sample, many of the estimates are based on a small number of cases. Nevertheless, a few countries exhibit fairly consistent patterns of gender preference at different parities (see Table 2.2). Women in Bangladesh, Sri Lanka, and Egypt tend to favor sons, whereas women in Bolivia (1989) and (to some extent) the Dominican Republic are more favorable toward daughters.

Another way to gauge gender preference attitudes is to examine the responses of pregnant women to a question on whether or not they wanted to get pregnant at the time they did. These women were asked whether they wanted to become pregnant at the time they did, whether they wanted to wait until later, or whether they did not want to become pregnant at all. The percentage of women who gave any of those responses can be broken down by the sex of their living children, but for most countries there is an insufficient number of pregnant women to support this type of analysis. As an illustration, Table 2.3 shows the percentage of pregnant women in India whose pregnancy was unwanted (that is, the women did not want to become pregnant at all). Because of the large size of the India sample (89,777 women), the differentials can be interpreted meaningfully. Except at the first parity, when unwanted pregnancies are very rare, there is a general tendency for the percentage of unwanted pregnancies to increase with the number of living sons. The differentials are especially large at the third and fourth parities, where crucial decisions about whether or not to curtail childbearing are being made. For third parity women, the decline in unwanted births between those with two sons and those with three sons is noteworthy. This pattern undoubtedly reflects the importance of having one daughter in the Hindu religion. One of the principal ways for Hindu parents to gain religious merit is through the practice of *kanya daan* (selflessly giving away a daughter at the time of marriage without the expectation of receiving anything in return).

¹ A similar table could be prepared that takes into account the desired timing of the next birth, if more detail is wanted. It might be useful, for example, to examine the percentage of women who wanted to have another child within a specified period of time (say, one or two years). In addition, for any of the tables that are based on the number and sex of a woman's children, it would be possible to break the columns down further by specifying the order in which the children were born, but for most surveys the sample size is not large enough to support such a detailed analysis.

Table 2.1 Desire for another child

Percentage of currently married, nonpregnant women age 15-49 who want another child, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	No children	One child		Two children			Three children				Four children					5+ children		
		No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	87	91	92	75	66	75	(64)	68	65	(52)	*	60	61	(64)	*	27	29	35
Burkina Faso (1992-93)	90	95	93	89	89	91	76	78	79	83	(64)	68	66	66	(59)	37	28	37
Burundi (1987)	95	94	96	92	91	91	(89)	84	79	78	*	76	78	54	*	46	28	35
Cameroon (1991)	90	94	93	79	85	83	(84)	85	79	(73)	*	74	74	71	*	48	31	40
Central African Republic (1994-95)	86	81	82	76	72	73	72	71	68	68	(80)	57	62	64	*	35	31	37
Ghana (1988)	78	95	96	88	88	88	82	82	82	76	(81)	64	60	67	(78)	32	30	36
Ghana (1993)	85	89	91	81	74	80	60	60	63	52	(46)	41	38	35	*	20	8	20
Kenya (1988-89)	85	94	92	80	67	68	75	58	60	52	(67)	51	38	38	(39)	14	9	11
Kenya (1993)	86	83	88	68	61	69	47	43	43	45	(31)	36	16	26	(32)	12	7	9
Liberia (1986)	93	93	93	85	88	87	95	82	85	82	*	73	65	70	*	44	36	42
Madagascar (1992)	89	90	89	83	74	86	65	55	46	70	(38)	34	42	42	(32)	23	20	20
Malawi (1992)	83	81	83	75	71	69	(62)	63	63	(68)	(61)	50	49	40	*	26	23	23
Mali (1987)	94	94	92	79	89	82	(79)	83	75	(70)	*	67	59	72	*	43	45	44
Namibia (1992)	83	76	79	52	54	65	(46)	63	49	(61)	*	46	49	54	*	46	38	45
Niger (1992)	96	93	91	88	88	92	75	86	86	82	(79)	79	79	82	(78)	58	47	60
Nigeria (1990)	72	88	82	79	76	83	82	73	65	76	63	63	59	61	63	42	40	43
Rwanda (1992)	96	96	95	91	85	80	72	69	75	(71)	*	59	50	52	*	29	21	22
Senegal (1986)	97	95	98	94	94	94	83	91	86	82	(88)	79	79	79	*	51	32	40
Senegal (1992-93)	89	93	89	92	87	88	86	83	75	81	(81)	76	75	71	*	43	40	40
Sudan (1989-90)	97	93	93	86	82	86	(81)	78	72	77	*	73	68	58	(76)	42	37	37
Togo (1988)	98	98	98	95	92	91	(83)	82	81	85	*	66	64	75	*	35	38	37
Uganda (1988-89)	84	92	96	96	92	95	88	87	81	(99)	*	74	72	78	*	43	32	45
Zambia (1992)	89	95	92	90	84	90	87	85	83	89	*	65	63	69	(65)	34	29	32
Zimbabwe (1988-89)	80	94	95	79	83	76	(83)	77	68	(70)	*	63	55	64	*	30	23	25
Zimbabwe (1994)	84	92	91	82	71	79	63	59	65	73	(47)	37	44	45	*	22	15	21
Near East/North Africa																		
Egypt (1988-89)	95	88	89	55	35	39	26	17	14	19	(18)	11	7	6	8	6	2	3
Egypt (1992)	93	89	86	48	30	38	27	15	9	18	27	11	4	3	8	4	1	2
Jordan (1990)	85	91	89	75	66	66	76	59	49	55	(57)	51	31	37	(47)	18	13	12
Morocco (1987)	97	90	90	80	60	72	69	52	48	57	*	36	24	28	(55)	16	6	11
Morocco (1992)	94	87	87	81	56	68	72	43	33	38	*	33	20	27	(35)	11	4	10
Tunisia (1988)	93	88	87	66	51	58	56	36	30	33	*	23	14	14	(23)	10	7	6
Turkey (1993)	89	71	69	25	10	13	18	3	4	4	(13)	3	1	2	0	3	0	2

Continued

Table 2.1 Desire for another child—Continued

Country (year)	One child			Two children			Three children				Four children					5+ children		
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Asia																		
Bangladesh (1993-94)	94	88	88	65	25	39	48	15	8	20	(52)	13	3	3	7	3	2	2
India (1992-93)	85	79	73	57	27	22	50	19	6	11	37	14	4	3	11	5	3	2
Indonesia (1987)	86	81	86	57	45	56	31	24	20	37	26	13	10	10	25	5	4	8
Indonesia (1991)	88	80	82	45	34	48	26	14	17	32	24	8	9	9	19	4	2	4
Indonesia (1994)	93	88	89	47	37	50	35	21	20	26	19	12	10	14	20	5	5	6
Nepal (1991)	90	89	79	77	39	25	66	29	7	10	63	18	3	4	6	6	2	2
Pakistan (1990-91)	89	85	81	77	60	61	79	56	28	33	(72)	43	18	17	(31)	15	2	7
Philippines (1993)	84	74	79	44	34	46	24	12	12	30	19	9	7	5	10	4	4	4
Sri Lanka (1987)	94	80	80	47	26	36	18	11	6	16	(20)	6	3	5	(12)	1	2	1
Thailand (1987)	89	74	73	33	20	26	19	8	8	20	(10)	7	6	5	(22)	4	0	3
Latin America/Caribbean																		
Bolivia (1989)	79	54	61	25	25	25	14	14	11	11	(10)	7	4	7	(13)	1	2	2
Bolivia (1993-94)	63	62	64	29	23	28	19	12	7	16	(10)	4	5	7	(9)	3	2	2
Brazil (1986) ¹	82	68	70	31	23	31	15	14	7	15	*	9	8	11	*	8	3	5
Brazil, NE (1991)	65	61	63	29	17	21	6	4	2	24	*	5	6	6	*	4	4	6
Colombia (1986)	92	69	67	33	23	39	(27)	8	12	28	(5)	6	6	13	(20)	6	5	7
Colombia (1990)	78	66	75	26	27	36	8	10	12	13	(10)	13	6	4	0	2	3	2
Dominican Republic (1986)	93	79	83	42	38	53	16	16	16	30	(15)	10	8	8	(16)	6	7	7
Dominican Republic (1991)	90	80	83	42	33	49	15	12	10	13	(2)	4	2	2	(4)	1	1	1
Ecuador (1987)	89	69	78	39	35	36	(26)	22	22	23	*	15	8	5	*	6	8	12
Guatemala (1987) ¹	91	79	78	56	54	58	43	40	34	41	*	26	22	24	(21)	23	19	26
Mexico (1987)	73	80	73	37	28	37	24	19	13	12	(6)	9	5	8	(13)	8	6	6
Paraguay (1990)	85	83	81	57	58	63	47	33	39	53	(37)	27	31	37	(48)	21	30	19
Peru (1986)	83	66	72	33	23	33	23	16	13	32	*	6	9	7	(12)	4	4	3
Peru (1991-92)	84	63	61	23	19	27	14	8	8	14	8	5	5	4	5	2	1	2
Trinidad and Tobago (1987)	91	77	73	36	27	44	(24)	18	14	29	*	5	10	11	(19)	7	0	5

Note: Respondents who are sterilized or say that they are infecund are assumed to not want another child.

¹ Based on women age 15-44

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

Table 2.2 *Desire for pregnancy*

Percentage of currently married, nonpregnant women age 15-49 who would be happy if they got pregnant in the next few weeks, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	No children	One child		Two children			Three children				Four children					5+ children		
		No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	91	77	71	(44)	55	(81)	*	(47)	(38)	*	*	(48)	(30)	*	*	26	*	28
Burundi (1987)	95	36	34	31	24	31	(8)	19	26	27	*	22	34	22	*	23	(23)	14
Central African Republic (1994-95)	92	56	53	51	44	42	47	36	40	(49)	*	29	31	36	*	28	(39)	34
Ghana (1988)	91	61	60	47	49	58	(32)	38	39	(36)	*	33	35	35	*	28	37	24
Kenya (1988-89)	94	58	70	41	28	50	(52)	34	30	(41)	*	35	30	17	*	15	15	18
Liberia (1986)	95	76	72	57	68	51	(72)	62	59	57	*	51	54	57	*	44	37	38
Mali (1987)	76	56	61	45	50	36	(36)	55	52	(60)	*	54	33	50	*	32	27	38
Sudan (1989-90)	94	66	65	63	56	61	(64)	56	52	55	*	53	53	47	(48)	42	41	42
Uganda (1988-89)	95	59	63	51	43	54	(36)	46	39	(49)	*	37	32	40	*	24	21	30
Zimbabwe (1994)	79	28	30	28	24	22	(28)	33	32	(18)	*	(40)	21	29	*	29	30	31
Near East/North Africa/Asia																		
Egypt (1988-89)	95	60	44	42	25	29	29	15	14	17	(21)	13	10	12	(8)	7	1	4
Morocco (1987)	(89)	60	(71)	*	32	(27)	*	(22)	(28)	*	*	(16)	17	(7)	*	9	(10)	10
Bangladesh (1993-94)	79	35	34	28	13	20	23	9	7	16	(46)	12	4	4	9	3	2	3
Indonesia (1994)	85	40	42	23	21	27	18	15	15	16	13	9	9	10	16	9	12	9
Sri Lanka (1987)	94	54	55	40	24	33	(39)	22	11	(19)	*	(3)	(18)	(17)	*	8	*	4
Thailand (1987)	77	46	52	30	30	40	(35)	19	23	*	*	(24)	21	16	*	15	(17)	15
Latin America/Caribbean																		
Bolivia (1989)	80	41	62	7	25	31	(17)	21	19	(25)	*	(17)	11	15	*	4	3	8
Bolivia (1993-94)	75	45	45	45	42	45	*	40	(56)	*	*	*	*	*	*	(29)	*	*
Colombia (1986)	97	74	(62)	*	(35)	*	*	*	*	*	*	*	*	*	*	23	*	27
Dominican Republic (1986)	95	59	77	(47)	43	(68)	*	(39)	45	*	*	*	(38)	(22)	*	30	(61)	31
Ecuador (1987)	82	43	43	(35)	28	(29)	*	(38)	29	*	*	(41)	(22)	(12)	*	20	(16)	22
Guatemala (1987) ¹	81	67	62	59	57	62	(33)	36	37	*	*	28	35	(36)	*	30	28	36
Mexico (1987)	70	33	29	16	15	11	(15)	11	11	(24)	*	5	5	(3)	*	6	2	3
Peru (1986)	79	(54)	54	*	28	(32)	*	(28)	21	*	*	*	(22)	*	*	7	(3)	5
Trinidad and Tobago (1987)	69	55	53	(27)	25	(39)	*	20	26	*	*	*	6	*	*	11	(4)	7

Note: For surveys completed before 1991, percentages are based on women who are not using any contraceptive method and have had sex in the past 4 weeks. For the remaining surveys, percentages are based on women who are not sterilized.

¹ Based on women age 15-44

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

Table 2.3 Unwanted pregnancies

Percentage of currently pregnant, ever-married women age 15-49 whose pregnancy was unwanted, by number and sex composition of living children, India, 1992-1993

Number and sex of living children	Percent unwanted
No children	0.5
One child	
No sons	2.1
One son	1.1
Two children	
No sons	4.5
One son	12.9
Two sons	14.2
Three children	
No sons	4.6
One son	18.8
Two sons	30.8
Three sons	20.1
Four children	
No sons	(5.5)
One son	25.9
Two sons	33.7
Three sons	40.4
Four sons	*
Five or more children	
Sons < daughters	31.5
Sons = daughters	(50.0)
Sons > daughters	43.5

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases

Surveys conducted in the 1990s included a similar question on whether a pregnancy was wanted, mistimed or unwanted for all pregnancies leading to live births that occurred in the past few years.² It would be possible to analyze a larger number of countries by including all of these births, but the pattern of results would not be very different from Table 2.1. For methodological purposes, it is useful to examine the responses to this question for the most recent birth by the sex of that child. Theoretically, the responses should not differ by whether the last child was a girl or a boy (except for a small amount of noise), because the mother could not have known the sex of the child at the time she became pregnant. In most

countries, the differences in the responses by sex of the child are very small, as expected, and the ratios of the percentages for females and males cluster closely around 1.00 (see Table 2.4). In all of the South Asian countries included in the table (Bangladesh, India, Nepal, and Pakistan) as well as in Egypt, there are significant differences favorable to male children. In Colombia, boys are significantly more likely than girls to be unwanted. The significant differences observed in some countries suggest that some respondents were unable to correctly interpret the question in terms of their desires *at the time they became pregnant*, and they must have taken the subsequently determined sex of the child into account when framing their responses.

The final measure of gender preference attitudes concerns the sex of children in a woman's ideal family. Respondents were asked how many children they would choose to have in their whole lives if they could go back to the time before they had any children. In some countries, women were further asked to break down their ideal family size into their ideal number of sons and daughters. Table 2.5 shows the ideal combination of daughters and sons in those countries. In some countries, the response categories also included a category "doesn't matter," indicating that either sex would be fine. The final column of the table shows the ratio of the ideal number of sons to the ideal number of daughters. In 14 of the 17 surveys, the ratio is greater than one, indicating that more sons than daughters are desired in the ideal family. Once again, South Asian countries are characterized by particularly large imbalances. The average number of ideal sons exceeds the average number of ideal daughters by 48 percent in India, 44 percent in Pakistan and 27 percent in Bangladesh. Son preference is also substantial in North Africa and in two West African countries (Mali and Senegal).

2.2 ATTITUDES TOWARD CONTRACEPTION

Another attitudinal measure which can provide some insight into the magnitude and pattern of gender preferences is the intention to use contraception in the near future. Women who were not using contraception at the time of the survey were asked whether they intended to use contraception at any time in the future, and more specifically within the next 12 months. Even if women who say they intend to use contraception within 12 months do not ultimately adopt family planning in that period of time, or in fact at any time in the future, their stated intentions can be used to identify gender preferences for children. The percentages of nonusers who intend to use in the next 12 months are shown in Table 2.6 for women with different numbers of living daughters and sons. Because women were also asked what method they prefer to use if they do adopt contraception, a similar table could be constructed for women who prefer to use the most effective methods (although that has not been done here).

² This question was asked about children born in the past five years in most countries, but in some countries the time period was shortened to three or four years.

Table 2.4 Desire for last child

Fertility planning status of last birth at the time of pregnancy, by sex of child, Demographic and Health Surveys, 1990-1995

Country (year)	Female child				Male child				Ratio (female/male)		
	Child wanted then	Child wanted later	Did not want child	Total	Child wanted then	Child wanted later	Did not want child	Total	Child wanted then	Child wanted later	Did not want child
Sub-Saharan Africa											
Burkina Faso (1992-93)	73.1	22.6	4.3	100.0	74.1	22.0	3.9	100.0	0.99	1.03	1.11
Cameroon (1991)	76.0	19.0	5.0	100.0	78.7	16.0	5.3	100.0	0.97	1.19	0.95
Central African Rep. (1994-95)	76.6	16.6	6.7	100.0	76.2	16.6	7.2	100.0	1.00	1.00	0.94
Ghana (1993)	55.8	35.2	9.0	100.0	56.7	35.1	8.3	100.0	0.98	1.00	1.09
Kenya (1993)	43.8	36.1	20.1	100.0	44.6	35.4	20.0	100.0	0.98	1.02	1.01
Madagascar (1992)	72.8	9.8	17.4	100.0	70.4	11.3	18.3	100.0	1.03	0.86	0.95
Malawi (1992)	56.9	27.3	15.8	100.0	55.3	28.3	16.3	100.0	1.03	0.97	0.96
Namibia (1992)	64.1	21.7	14.2	100.0	62.7	23.3	14.0	100.0	1.02	0.93	1.01
Niger (1992)	85.6	12.3	2.1	100.0	86.0	11.6	2.4	100.0	1.00	1.06	0.86
Nigeria (1990)	88.4	9.0	2.6	100.0	87.0	9.9	3.2	100.0	1.02	0.91	0.83
Rwanda (1992)	45.9	24.9	29.1	100.0	46.6	24.4	29.0	100.0	0.98	1.02	1.00
Senegal (1992-93)	69.6	24.7	5.7	100.0	69.0	26.0	5.0	100.0	1.01	0.95	1.13
Zambia (1992)	63.9	28.4	7.7	100.0	61.2	30.5	8.3	100.0	1.04	0.93	0.93
Zimbabwe (1994)	56.4	34.4	9.2	100.0	57.9	33.9	8.1	100.0	0.97	1.01	1.13
Near East/North Africa/Asia											
Egypt (1992)	57.9	8.7	33.4	100.0	60.5	9.7	29.8	100.0	0.96	0.90	1.12
Jordan (1990)	60.4	12.4	27.2	100.0	63.7	11.9	24.4	100.0	0.95	1.05	1.11
Morocco (1992)	61.4	15.2	23.4	100.0	63.2	15.0	21.8	100.0	0.97	1.01	1.07
Turkey (1993)	63.4	12.7	23.8	100.0	66.6	12.0	21.3	100.0	0.95	1.06	1.12
Bangladesh (1993-94)	65.5	20.6	13.9	100.0	69.9	17.6	12.5	100.0	0.94	1.17	1.11
India (1992-93)	74.5	14.3	11.3	100.0	78.4	12.3	9.3	100.0	0.95	1.16	1.21
Indonesia (1991)	77.1	15.3	7.6	100.0	75.7	16.8	7.5	100.0	1.02	0.92	1.01
Indonesia (1994)	81.8	9.1	9.1	100.0	80.7	10.1	9.2	100.0	1.01	0.90	0.99
Nepal (1991)	71.3	12.2	16.6	100.0	75.5	10.3	14.2	100.0	0.94	1.18	1.17
Pakistan (1990-91)	73.5	9.4	17.0	100.0	78.5	6.5	15.1	100.0	0.94	1.46	1.13
Philippines (1993)	52.9	25.9	21.3	100.0	53.3	26.1	20.6	100.0	0.99	0.99	1.03
Latin America/Caribbean											
Bolivia (1993-94)	42.2	20.4	37.4	100.0	45.7	17.3	37.0	100.0	0.92	1.18	1.01
Brazil, NE (1991)	54.9	20.2	24.9	100.0	51.7	21.5	26.8	100.0	1.06	0.94	0.93
Colombia (1990)	62.9	18.8	18.3	100.0	60.7	16.2	23.0	100.0	1.04	1.16	0.79
Dominican Republic (1991)	59.9	23.3	16.8	100.0	57.8	22.8	19.4	100.0	1.04	1.02	0.87
Paraguay (1990)	75.9	15.5	8.7	100.0	75.5	17.0	7.5	100.0	1.00	0.91	1.16
Peru (1991-92)	40.0	24.4	35.6	100.0	41.5	23.2	35.3	100.0	0.96	1.05	1.01

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

Table 2.5 Ideal number of children

Mean ideal number of daughters and sons for ever-married women age 15-49, Demographic and Health Surveys, 1990-1995

Country (year)	Daugh- ters	Sons	Doesn't matter	Sons/ daughters
Burundi (1987)	2.83	2.63	U	0.93
Cameroon (1991)	3.48	3.78	U	1.08
Central African Rep. (1994-95)	3.12	2.89	0.67	0.93
Ghana (1993)	2.12	2.31	0.26	1.09
Kenya (1988-89)	2.34	2.42	U	1.03
Kenya (1993)	1.90	1.98	U	1.04
Mali (1987)	3.08	3.84	U	1.25
Senegal (1986)	3.22	3.90	U	1.21
Togo (1988)	2.70	2.76	U	1.02
Zimbabwe (1994)	2.24	2.24	0.21	1.00
Egypt (1988-89)	1.32	1.58	U	1.20
Tunisia (1988)	1.64	1.90	U	1.16
Bangladesh (1993-94)	1.10	1.39	0.03	1.27
India (1992-93)	1.05	1.56	0.25	1.48
Indonesia (1987)	1.59	1.62	U	1.02
Indonesia (1994)	1.44	1.46	0.02	1.01
Pakistan (1990-91)	1.61	2.31	0.14	1.44

Note: Table excludes women who gave nonnumeric responses to questions on ideal number of sons and daughters.

U = Unknown (not available)

In most countries, only a minority of nonusers say they intend to use family planning within the next 12 months. The differentials by the number of sons at each parity indicate that only a few countries show consistent gender preference patterns. Son preference is strong in Nepal and is also evident to some extent in Egypt, India, and Thailand. A consistent preference for daughters is evident only in the 1990 survey in Colombia.

As will be seen in a later section of this report, couples may be particularly reluctant to adopt permanent methods of family planning if they are not fully satisfied with the sex distribution of children in the family. Those who have already adopted sterilization may later regret getting sterilized, particularly if one of their children dies. In the DHS, women who were sterilized (or whose husband was sterilized) were asked whether or not they regretted the sterilization. For these women, another aspect of gender preference can be discerned by examining the sex distribution of children who have died since the sterilization operation among women who regret that the sterilization was performed. Because sterilization regret is not common among those who have been sterilized, only three countries (all in South Asia) have a sufficient number of cases to analyze. Some degree of son preference is observed in all three of these countries (data not shown). Among women who regret the sterilization, 82 percent of the children who died since the sterilization were male in Nepal, compared with 60 percent in India and 52 percent in Bangladesh. Moreover, in India, for women who specifically say that they regret the sterilization because of the death of a child, 64 percent of the children who died were male.

Table 2.6 Intention to use a contraceptive method

Percentage of currently married nonusers of contraception who intend to use within the next 12 months, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	One child			Two children			Three children				Four children					5+ children		
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	19	38	33	(29)	45	32	(55)	47	44	*	*	(39)	42	(57)	*	50	(39)	42
Burkina Faso (1992-93)	12	19	17	23	19	25	26	26	23	26	(18)	19	22	34	*	22	18	25
Burundi (1987)	6	11	14	7	15	12	(6)	12	9	10	*	7	11	12	*	15	18	11
Cameroon (1991)	5	8	4	6	8	12	(2)	7	11	(2)	*	10	9	7	*	13	9	16
Central African Republic (1994-95)	15	26	30	32	33	39	43	37	38	32	*	47	43	42	*	42	45	45
Ghana (1988)	5	11	16	22	18	19	16	22	20	19	(23)	24	24	29	(7)	29	24	29
Ghana (1993)	10	27	30	30	37	32	25	37	26	42	*	39	42	39	*	33	37	37
Kenya (1993)	28	39	45	41	52	40	46	48	43	(59)	*	57	50	47	*	48	49	42
Madagascar (1992)	10	24	25	36	36	34	(35)	37	41	39	*	52	48	41	*	48	51	44
Malawi (1992)	26	35	46	45	45	37	52	44	48	(50)	(32)	60	39	41	*	47	52	51
Mali (1987)	8	13	6	10	9	11	(5)	6	9	(8)	*	13	19	10	*	16	16	15
Namibia (1992)	21	20	31	36	37	31	*	34	26	(27)	*	29	25	(37)	*	22	(26)	20
Niger (1992)	4	15	14	16	16	18	12	15	15	13	(13)	20	21	17	(7)	20	16	16
Nigeria (1990)	4	9	9	9	8	10	8	16	11	9	(9)	11	18	14	21	15	19	24
Rwanda (1992)	18	43	47	54	56	53	47	59	55	(32)	*	63	60	62	*	55	49	54
Senegal (1986)	4	5	11	15	10	15	(16)	12	12	15	*	16	8	19	*	16	21	16
Senegal (1992-93)	5	12	15	16	18	14	25	18	22	19	(15)	19	17	18	(24)	24	24	25
Sudan (1989-90)	9	11	15	11	17	19	16	15	16	17	(14)	15	17	13	(25)	11	11	12
Togo (1988)	7	22	31	21	26	26	(27)	25	33	(17)	*	(31)	34	(21)	*	36	29	32
Uganda (1988-89)	3	6	8	9	15	9	7	9	13	15	*	14	11	9	*	21	25	16
Zambia (1992)	17	34	34	44	36	33	46	35	31	38	(36)	36	42	44	*	39	38	38
Zimbabwe (1988-89)	28	40	39	(32)	31	40	*	37	42	(42)	*	(44)	37	(33)	*	35	31	39
Zimbabwe (1994) ¹	58	63	63	61	56	65	(62)	44	58	(53)	*	52	51	(57)	*	39	41	51
Near East/North Africa																		
Egypt (1988-89)	10	21	28	26	29	31	32	29	32	22	(24)	28	28	31	(40)	23	27	26
Egypt (1992)	13	28	32	31	33	47	35	29	38	45	(25)	29	31	37	(29)	29	22	30
Jordan (1990)	11	27	27	33	28	38	(38)	35	38	(37)	(32)	32	29	39	*	26	27	26
Morocco (1987)	13	31	30	31	33	36	36	22	38	24	*	33	39	34	*	31	22	30
Morocco (1992)	24	38	38	46	46	48	(44)	39	42	52	*	42	41	43	*	35	39	36
Tunisia (1988)	18	40	46	39	42	42	(40)	36	52	(42)	*	35	44	40	*	36	37	32
Turkey (1993)	22	52	46	40	32	42	(30)	32	33	(26)	*	20	19	21	*	29	(19)	25

Continued

Table 2.6 Intention to use a contraceptive method—Continued

Country (year)	One child			Two children			Three children				Four children					5+ children		
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Asia																		
Bangladesh (1993-94)	30	49	50	43	57	48	55	53	50	42	(39)	36	46	46	*	29	24	29
India (1992-93)	4	12	13	12	19	17	11	19	25	19	12	19	22	21	16	17	22	17
Indonesia (1987)	14	23	21	23	31	29	23	23	32	28	(14)	22	24	21	(14)	16	17	16
Indonesia (1991)	16	24	21	26	27	31	22	28	27	29	12	21	27	25	26	17	12	14
Indonesia (1994)	27	35	34	32	36	32	29	35	34	35	22	31	27	27	21	19	18	20
Nepal (1991)	2	9	12	11	20	28	9	22	32	29	11	24	32	32	27	25	25	24
Pakistan (1990-91)	2	5	6	7	11	11	7	7	12	14	(0)	16	20	13	(13)	15	18	16
Philippines (1993)	15	29	25	30	30	32	21	23	31	34	(30)	24	25	28	40	21	22	21
Sri Lanka (1987)	10	21	20	19	31	32	(20)	36	39	(15)	*	(25)	25	(26)	*	18	(22)	20
Thailand (1987)	25	33	42	37	32	40	(24)	16	23	(41)	*	(22)	18	25	*	10	(10)	13
Latin America/Caribbean																		
Bolivia (1989)	13	24	25	23	27	29	20	30	24	24	(33)	24	22	30	(23)	23	19	21
Bolivia (1993-94)	35	53	53	54	51	48	40	36	47	58	*	42	46	40	*	36	31	36
Brazil (1986)	30	42	49	41	39	52	*	(48)	(41)	*	*	(39)	(48)	*	*	39	*	51
Brazil, NE (1991)	33	39	42	46	52	31	*	41	21	*	*	(55)	(28)	(45)	*	24	(34)	27
Colombia (1986)	39	51	59	(55)	66	(54)	*	(57)	58	*	*	*	(52)	*	*	36	(44)	33
Colombia (1990)	27	53	53	60	55	44	*	64	44	*	*	(62)	(46)	(40)	*	45	(40)	29
Dominican Republic (1986)	24	39	32	49	40	47	(43)	40	35	(38)	*	(31)	49	33	*	23	12	29
Dominican Republic (1991)	29	45	43	41	48	50	(35)	45	40	(60)	*	(24)	(57)	(57)	*	28	(52)	31
Ecuador (1987)	24	39	40	36	43	31	*	37	31	(32)	*	30	30	26	*	30	27	24
Guatemala (1987)	7	14	11	30	16	29	12	17	17	(17)	*	23	16	13	*	16	12	14
Mexico (1987)	41	49	47	43	59	73	(56)	53	48	(31)	*	47	40	(48)	*	32	(24)	34
Paraguay (1990)	24	36	33	30	40	35	(41)	32	34	(24)	*	(25)	25	24	*	24	20	30
Peru (1986)	27	54	42	45	47	52	(44)	50	49	(22)	*	(39)	39	(46)	*	34	27	29
Peru (1991-92)	39	55	58	63	60	55	44	53	58	49	(46)	46	53	48	(68)	43	45	43
Trinidad and Tobago (1987)	19	34	36	(38)	33	26	*	34	35	*	*	*	18	*	*	18	(30)	27

Note: Table is based on women age 15-49 in all surveys except Brazil (1986) and Guatemala, where it is based on women age 15-44.

¹ Respondents who never had sex skipped questions on future use

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

3 Marriage Patterns

In extreme cases, if children of the desired sex are not produced in a marriage, that circumstance could result in marital dissolution through divorce or separation. Alternatively, the husband may take a second wife in countries where polygyny is common. Despite biological evidence to the contrary, women are often blamed for the inability to bear children of a particular sex.

Although it is possible to compare patterns of marital dissolution and polygyny for women with any combination of children, it is best to limit the analysis to women whose children are all of the same sex to avoid the confounding effect of age.³ Table 3.1 compares the relative percentages of women who are divorced or separated for women with all male children and those with all female children. The ratio of these percentages is shown in the final column of the table. Percentages close to 1.00 suggest that divorce and separation are unrelated to the sex of children a woman has ever born. Ratios substantially less than one suggest the possibility that dissolution of the marriage is related to the absence of a male child, whereas ratios substantially higher than one suggest that lack of a female child may have an impact on marital dissolution. Although the ratios often deviate substantially from one, the differences in the percentages divorced or separated are statistically significant in only four surveys—Cameroon, Senegal (1992-93), Bangladesh, and India. In all of these cases, divorce or separation is more common among women with all daughters than with all sons.

With respect to polygyny (Table 3.2), the ratios are lowest in two surveys in which the importance of having at least one son has previously been demonstrated to be paramount (0.69 in the 1992 Morocco survey and 0.70 in Pakistan), although polygyny is not common in either of these countries. However, the differences are statistically significant only in the Central African Republic and Nigeria. In the Central African Republic, the lack of a son is associated with the prevalence of polygyny, whereas in Nigeria it is the absence of a daughter that appears to be an important factor.

³ The confounding effect of age arises because women with at least one child of each sex are older and of higher parity than women whose children are all of the same sex.

Table 3.1 Marital dissolution

Percentage of ever-married women age 15-49 who are divorced or separated, by the sex of children ever born, for women whose children are all of the same sex, Demographic and Health Surveys, 1986-1995

Country (year)	Women with all male births	Women with all female births	Ratio	Country (year)	Women with all male births	Women with all female births	Ratio
Sub-Saharan Africa				Asia			
Botswana (1988)	15.60	14.70	1.06	Bangladesh (1993-4)	<i>4.10</i>	<i>5.70</i>	0.71
Burkina Faso (1992-93)	1.80	1.90	0.94	India (1992-3)	<i>2.30</i>	<i>2.90</i>	0.79
Burundi (1987)	8.90	7.40	1.19	Indonesia (1987)	3.00	2.60	1.16
Cameroon (1991)	<i>5.60</i>	<i>10.60</i>	0.53	Indonesia (1991)	5.30	4.90	1.09
Central African Republic (1994-95)	11.90	10.80	1.10	Indonesia (1994)	4.80	4.90	0.98
Ghana (1988)	12.10	15.70	0.77	Nepal (1991)	1.10	1.40	0.76
Ghana (1993)	14.90	15.00	0.99	Pakistan (1990-1)	2.10	2.40	0.87
Kenya (1988-89)	9.20	9.00	1.02	Philippines (1993)	5.00	5.50	0.89
Kenya (1993)	10.90	10.10	1.07	Sri Lanka (1987)	5.20	4.50	1.15
Liberia (1986)	16.30	11.90	1.36	Thailand (1987)	6.90	6.30	1.10
Madagascar (1992)	19.80	14.60	1.35	Latin America/Caribbean			
Malawi (1992)	13.50	15.10	0.89	Bolivia (1989)	11.10	12.20	0.91
Mali (1987)	2.70	3.20	0.86	Bolivia (1993-4)	13.90	11.30	1.22
Namibia (1992)	12.00	13.90	0.87	Brazil (1986) ¹	10.50	9.30	1.13
Niger (1992)	6.00	5.50	1.08	Brazil, NE (1991)	14.40	13.30	1.09
Nigeria (1990)	3.00	2.40	1.25	Colombia (1986)	13.80	13.40	1.03
Rwanda (1992)	12.00	14.50	0.83	Colombia (1990)	18.80	17.40	1.08
Senegal (1986)	5.50	7.50	0.74	Dominican Republic (1986)	24.90	24.70	1.01
Senegal (1992-93)	<i>5.30</i>	<i>8.50</i>	0.62	Dominican Republic (1991)	26.80	23.20	1.16
Sudan (1989-90)	6.30	8.50	0.74	Ecuador (1987)	12.00	8.50	1.42
Togo (1988)	4.50	6.80	0.65	Guatemala (1987) ¹	11.80	11.30	1.05
Uganda (1988-89)	14.80	10.80	1.38	Mexico (1987)	9.20	10.30	0.90
Zambia (1992)	13.70	15.10	0.91	Paraguay (1990)	10.30	10.80	0.95
Zimbabwe (1988-89)	16.40	17.30	0.95	Peru (1986)	11.70	12.60	0.93
Zimbabwe (1994)	14.90	12.40	1.20	Peru (1991-2)	11.40	12.30	0.93
Near East/North Africa							
Egypt (1988-89)	3.00	4.50	0.68				
Egypt (1992)	3.30	4.30	0.77				
Jordan (1990)	4.30	3.30	1.30				
Morocco (1987)	9.70	11.10	0.87				
Morocco (1992)	11.30	11.40	1.00				
Tunisia (1988)	2.90	2.80	1.03				
Turkey (1993)	1.70	2.50	0.70				

Note: Numbers in italics indicate that the difference between female births and male births is significant at the 0.05 level. There is no category for separated women in Zimbabwe (1994), Bangladesh, Egypt, Indonesia (1991, 1994), and Morocco.

¹ Based on children of women age 15-44

Table 3.2 Polygyny

Percentage of currently-married women age 15-49 whose husbands have more than one wife, by the sex of children ever born, for women whose children are all of the same sex, Demographic and Health Surveys, 1986-1995

Country (year)	Women with all male births	Women with all female births	Ratio
Burkina Faso (1992-93)	45.7	42.0	1.09
Burundi (1987)	8.9	11.9	0.75
Cameroon (1991)	37.2	32.7	1.14
Central African Republic (1994-95)	<i>24.3</i>	<i>29.5</i>	0.82
Ghana (1988)	27.1	27.6	0.98
Ghana (1993)	23.9	19.8	1.21
Kenya (1988-89)	20.1	19.7	1.02
Kenya (1993)	14.8	14.9	0.99
Liberia (1986)	34.9	36.6	0.95
Madagascar (1992)	5.1	4.0	1.25
Malawi (1992)	16.3	17.4	0.94
Mali (1987)	36.7	34.8	1.05
Namibia (1992)	23.6	21.0	1.12
Niger (1992)	27.9	29.0	0.96
Nigeria (1990)	<i>40.3</i>	<i>32.7</i>	1.23
Rwanda (1992)	10.7	8.9	1.20
Senegal (1986)	35.6	39.2	0.91
Senegal (1992-3)	36.6	36.4	1.01
Sudan (1989-90)	17.6	18.9	0.93
Togo (1988)	43.6	44.9	0.97
Uganda (1988-89)	32.1	28.5	1.13
Zambia (1992)	14.4	13.1	1.10
Zimbabwe (1988-89)	12.2	12.2	1.00
Zimbabwe (1994)	13.9	14.8	0.94
Morocco (1987)	5.0	6.0	0.83
Morocco (1992)	4.3	6.2	0.69
Pakistan (1990-91)	3.7	5.3	0.70

Note: Numbers in italics indicate that the difference between female births and male births is significant at the 0.05 level.

4 Reproductive Behavior

If some couples continue to have children even after reaching their ideal family size because they have not yet achieved their minimum desired number of daughters and sons, then gender preference could have an inhibiting effect on the reduction of fertility in a country. Even in countries with very pronounced gender preferences, however, this effect has not been consistently observed. Some studies show a substantial effect of gender preference on reproductive behavior and others show little or no impact (Arnold, 1992, 1987; Bairagi, 1996; Bairagi and Langsten, 1986; Cleland, Verrall, and Vaessen, 1983; Das, 1987; De Tray, 1984; Nag, 1991; Park, 1986; Parasuraman, Roy, and Surender, 1994; Rahman and DaVanzo, 1993; Rajaretnam, 1995; Raju and Bhat, 1995; Repetto, 1972). Information from the Demographic and Health Surveys sheds further light on the effect of gender preference on both family planning and fertility.

4.1 CONTRACEPTIVE USE

Table 4.1 shows the percentage of women who were using any method of contraception at the time of the survey, broken down by the number and sex of their living children. Within any given parity, higher percentages suggest that women are more satisfied with their current combination of daughters and sons. At the first parity, the differences are generally small, although more countries exhibit a preference for sons than a preference for daughters. At higher parities, women in most countries do not exhibit strong gender preferences based on the differential use of contraception. In the remaining countries, the most common preferences are for sons or for a balance of daughters and sons. The strongest differentials are consistently in countries with a preference for sons such as Nepal, India, Bangladesh, Egypt, Jordan, and Tunisia. The most extreme case is that of Nepal, where women are five times as likely to use contraception if they have all sons than if they have all daughters. In fact, it is rare for Nepalese women to practice family planning unless they have at least one son.

As might be expected, all of the countries with the strongest gender preferences, as revealed by contraceptive practices, have moderate levels of overall contraceptive use (between 23 percent in Nepal and 50 percent in Tunisia). In countries with low levels of contraceptive prevalence, even if gender preferences exist, they may not be apparent in reproductive behavior since contraceptive use is not substantial for any group of women. Similarly, in countries with a high level of contraceptive prevalence, most women use contraception irrespective of the sex of their previous children.

Women who are not completely satisfied with the sex of their children may use temporary methods of contraception if they want to space their births or if they are thinking about curtailing their childbearing but are not sure. The use of permanent methods of contraception (female or male sterilization) is usually not contemplated until women already have their desired number of daughters and sons. Therefore, another useful measure of gender preference is the use of

sterilization according to the number and sex of living children (see Table 4.2). Throughout Africa and in some parts of Asia and Latin America, the use of sterilization is not prevalent, so the differentials are not very meaningful. The most pronounced differentials are found in the South Asian countries of Nepal and India. In Nepal, the use of sterilization rises dramatically until women have two sons, after which the percentages are fairly constant. This situation is similar in India, where there is also a slight indication of interest in having one daughter among one's children.

The information presented in detail in Tables 4.1 and 4.2 is shown in convenient summary form in Table 4.3. A table in this format can be used to facilitate the comparison of patterns of contraceptive use across countries when more detailed tabulations are not required. This type of analysis is not suitable for identifying countries where a preference for a balanced number of daughters and sons is considered ideal (because sex ratios that do not vary substantially across the three columns could be indicative of either balance preference or no gender preference), but it can be used to detect the presence of son preference or daughter preference. In countries with a strong preference for sons, the sex ratios of living children should decline from left to right in the table because couples will be reluctant to use contraception (and particularly sterilization) unless they have a sufficient number of sons. Daughter preference would be characterized by an increase in sex ratios from left to right.

According to this measure, son preference is prevalent in four times as many surveys (23) as daughter preference (6). Moreover, the sex ratio is higher for the users of sterilization than for other methods of contraception in nearly two-thirds of the surveys. The sex ratios of children are particularly skewed for sterilized couples in Niger (143), Nepal and Burkina Faso (135 each), Egypt in 1988-89 (131), Ghana in 1988 (126), and India (125). Overall, son preference is most evident in Nepal, Burkina Faso, India, Cameroon, Kenya (1988-89), Egypt (both surveys), and Ghana (both surveys). In almost every country where more than one survey was conducted, the differentials among the three categories declined in the intersurvey period. This suggests that the preference of parents for either sons or daughters may be abating over time.

In countries with strong gender preferences, even couples who adopt contraception may use the method less effectively or may discontinue the method sooner if they do not already have their desired combination of daughters and sons (Akhter and Ahmed, 1992). Contraceptive failure rates and discontinuation rates can be calculated from the DHS for surveys that include a calendar that collects information on contraceptive use for each month during the five years before the survey. The calendar was used primarily in countries with high levels of contraceptive prevalence. Unfortunately, that type of information is not available for many of the countries with strong gender preferences such as India and Nepal.

Table 4.1 Use of contraception

Percentage of currently married women age 15-49 who are currently using contraception, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	No children	One child		Two children			Three children				Four children					5+ children		
		No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	7	22	27	34	40	31	(32)	40	50	(55)	*	34	35	29	*	32	43	34
Burkina Faso (1992-93)	9	21	23	28	28	27	23	24	29	24	(27)	31	32	31	(37)	30	27	28
Burundi (1987)	1	6	7	14	13	6	(14)	10	8	4	*	8	10	5	(9)	10	7	12
Cameroon (1991)	15	12	16	10	16	18	(15)	17	17	(8)	*	16	15	18	(18)	19	15	19
Central African Republic (1994-95)	3	14	16	16	17	14	13	18	19	20	(32)	19	18	19	*	17	19	19
Ghana (1988)	4	12	8	11	11	14	14	16	15	9	(10)	17	16	13	(9)	14	15	19
Ghana (1993)	10	16	15	22	19	22	15	24	32	28	(28)	17	23	27	(15)	20	25	20
Kenya (1988-89)	5	14	19	19	28	22	22	24	31	44	(19)	20	37	37	(29)	29	31	34
Kenya (1993)	6	27	25	26	32	32	33	30	42	46	(40)	34	36	40	(17)	38	38	39
Liberia (1986)	3	4	4	7	5	4	5	6	7	4	(10)	8	11	10	(7)	10	10	10
Madagascar (1992)	7	12	15	20	21	16	23	22	21	12	(29)	30	20	24	(12)	15	17	18
Malawi (1992)	3	12	10	11	11	12	12	16	15	16	(3)	14	21	16	*	16	24	18
Mali (1987)	7	4	5	4	5	3	(3)	2	5	(1)	*	4	4	3	*	3	4	6
Namibia (1992)	11	33	25	45	35	39	(44)	35	34	40	*	28	25	35	*	26	21	23
Niger (1992)	0	4	3	4	6	5	3	5	6	5	(4)	7	7	6	(4)	6	5	6
Nigeria (1990)	4	4	3	3	5	4	1	4	8	4	(7)	7	7	8	3	9	11	10
Rwanda (1992)	1	11	11	13	21	23	21	20	21	(23)	(26)	26	27	24	(29)	29	27	29
Senegal (1986)	1	11	13	14	14	10	16	11	14	15	(24)	12	11	11	(11)	13	18	12
Senegal (1992-93)	2	4	4	6	8	7	4	11	5	6	(10)	9	7	7	(11)	10	12	11
Sudan (1989-90)	1	8	7	7	13	6	9	9	12	2	(3)	7	9	13	(14)	11	8	11
Togo (1988)	6	29	25	34	33	32	(45)	39	33	35	*	33	39	36	*	41	43	44
Uganda (1988-89)	1	3	3	3	5	2	6	5	4	3	*	9	4	5	*	8	14	7
Zambia (1992)	1	12	12	14	18	16	16	16	16	13	(10)	17	20	9	(22)	20	16	22
Zimbabwe (1988-89)	3	48	39	52	45	42	(44)	46	55	50	*	53	52	53	*	42	47	44
Zimbabwe (1994)	7	47	48	56	59	58	55	56	51	53	(62)	51	54	59	*	54	49	49
Near East/North Africa																		
Egypt (1988-89)	1	21	25	37	43	48	41	47	50	48	33	48	48	49	50	41	38	45
Egypt (1992)	0	30	33	44	55	54	49	58	64	56	46	52	58	64	67	49	52	56
Jordan (1990)	1	22	24	31	36	46	33	38	54	53	(23)	45	45	56	52	46	47	50
Morocco (1987)	8	29	32	29	39	38	24	40	43	35	(44)	43	42	45	(48)	42	45	42
Morocco (1992)	6	37	41	42	51	43	42	52	52	44	(41)	44	52	48	(49)	45	49	47
Tunisia (1988)	4	35	33	49	61	59	47	57	57	54	*	58	61	65	(65)	53	53	56
Turkey (1993)	9	58	58	74	79	79	66	71	76	77	(67)	70	68	65	(66)	55	44	57

Continued

Table 4.1 Use of contraception—Continued

Country (year)	No children	One child		Two children			Three children				Four children					5+ children		
		No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Asia																		
Bangladesh (1993-94)	13	33	36	38	53	53	44	56	62	60	(38)	50	60	61	58	51	50	47
India (1992-93)	4	17	21	31	46	55	32	51	68	65	36	52	62	63	62	48	43	46
Indonesia (1987)	8	42	44	52	59	56	57	59	62	62	40	56	59	52	58	46	49	48
Indonesia (1991)	8	49	48	59	59	60	58	59	59	58	58	63	59	60	51	45	43	49
Indonesia (1994)	9	55	53	63	67	64	66	65	66	63	53	60	65	59	59	49	47	47
Nepal (1991)	1	4	7	6	19	31	8	22	45	45	8	27	41	44	39	29	32	33
Pakistan (1990-91)	0	3	3	9	12	10	10	9	14	9	(7)	12	19	21	15	18	21	18
Philippines (1993)	2	24	29	41	46	41	54	50	53	50	58	54	51	52	47	40	35	38
Sri Lanka (1987)	6	44	44	65	64	64	76	80	78	71	(79)	81	77	81	(67)	77	69	73
Thailand (1987)	25	57	57	74	81	75	81	80	85	80	(80)	73	70	69	(66)	61	66	62
Latin America/Caribbean																		
Bolivia (1989)	9	24	31	28	37	32	34	41	35	42	(30)	35	39	31	(38)	28	20	25
Bolivia (1993-94)	17	43	44	55	52	55	50	57	56	57	(59)	44	48	52	(59)	39	36	35
Brazil (1986) ¹	28	56	63	72	76	76	77	82	82	81	*	69	71	74	*	57	72	66
Brazil, NE (1991)	23	49	51	67	66	65	77	76	75	70	(58)	70	78	58	*	58	47	61
Colombia (1986)	20	56	57	71	72	81	(69)	81	76	75	*	69	78	79	(68)	61	60	63
Colombia (1990)	20	65	61	68	72	74	76	78	75	79	(87)	76	71	74	(78)	72	50	68
Dominican Republic (1986)	7	42	33	43	48	54	61	66	66	60	(68)	76	64	61	(64)	62	55	60
Dominican Republic (1991)	13	38	42	53	59	55	72	74	76	70	(70)	81	81	64	(85)	67	43	63
Ecuador (1987)	15	32	35	48	52	49	(57)	57	52	56	*	51	56	46	*	42	35	46
Guatemala (1987) ¹	2	15	10	25	25	28	24	31	34	43	*	26	30	27	(30)	22	20	23
Mexico (1987)	15	53	48	62	61	61	69	62	67	62	(75)	55	62	64	(63)	50	45	46
Paraguay (1990)	21	44	42	59	57	58	58	63	59	58	(69)	63	46	56	(38)	40	44	45
Peru (1986)	18	43	40	57	58	55	55	60	57	54	*	52	46	53	(33)	38	35	38
Peru (1991-92)	23	58	59	68	67	64	64	65	66	66	58	63	62	63	69	52	51	53
Trinidad and Tobago (1987)	32	50	50	64	59	55	(52)	64	60	65	*	67	53	63	(70)	55	(45)	53

¹ Based on women age 15-44

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

Table 4.2 Use of sterilization

Percentage of currently married women age 15-49 who are currently using sterilization, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	One child		Two children			Three children				Four children					5+ children			
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	0	1	0	1	3	5	(3)	7	2	(18)	*	3	5	(3)	*	7	12	7
Burkina Faso (1992-93)	0	0	0	0	0	0	0	0	1	0	(0)	0	1	0	(2)	0	0	0
Burundi (1987)	0	0	0	1	0	0	(0)	0	0	0	*	0	0	0	(0)	0	0	0
Cameroon (1991)	0	1	0	0	1	0	(0)	0	0	(0)	*	2	0	2	(0)	2	4	4
Central African Republic (1994-95)	0	1	0	0	1	0	1	0	1	0	(0)	1	0	0	*	1	1	1
Ghana (1988)	0	0	0	0	1	1	2	0	1	1	(0)	0	1	1	(0)	2	3	3
Ghana (1993)	0	0	0	0	0	1	1	1	1	3	(0)	0	0	0	(4)	2	2	3
Kenya (1988-89)	0	0	1	1	1	5	4	1	2	10	(0)	0	4	6	(7)	7	10	9
Kenya (1993)	0	1	0	0	1	0	1	0	4	2	(6)	5	6	7	(3)	11	14	12
Liberia (1986)	1	0	0	1	0	0	0	2	1	2	(0)	1	2	2	(7)	2	0	2
Madagascar (1992)	0	0	0	1	0	0	0	1	2	0	(0)	2	4	3	(0)	1	1	2
Malawi (1992)	0	0	1	0	1	0	4	4	1	1	(0)	3	3	3	*	3	5	3
Mali (1987)	0	0	0	0	0	0	(0)	0	1	(0)	*	0	0	0	*	0	0	0
Namibia (1992)	2	1	1	9	9	7	(16)	9	11	10	*	5	10	11	*	13	6	9
Niger (1992)	0	0	0	0	0	0	0	0	0	0	(0)	0	1	0	(0)	0	0	0
Nigeria (1990)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1
Rwanda (1992)	0	0	0	0	1	1	2	3	2	(0)	(0)	0	1	1	(0)	1	0	0
Senegal (1986)	0	0	0	0	0	0	2	0	0	0	(0)	0	0	0	(0)	0	1	0
Senegal (1992-93)	0	0	0	0	0	0	0	0	0	0	(0)	1	0	1	(0)	1	2	1
Sudan (1989-90)	0	0	0	1	1	0	2	0	1	0	(0)	0	0	1	(2)	2	2	1
Togo (1988)	1	0	0	0	0	0	(0)	2	1	0	*	0	0	0	*	1	1	1
Uganda (1988-89)	0	1	0	0	1	0	0	1	0	1	*	0	0	2	*	1	2	2
Zambia (1992)	0	0	1	2	2	0	0	1	1	0	(0)	1	2	2	(4)	4	5	5
Zimbabwe (1988-89)	0	0	1	3	2	2	(2)	2	3	4	*	2	4	3	*	3	5	4
Zimbabwe (1994)	1	0	0	0	1	1	0	2	4	0	(3)	2	3	6	*	5	5	4
Near East/North Africa																		
Egypt (1988-89)	0	0	0	0	1	1	1	2	3	2	0	3	2	1	4	2	3	3
Egypt (1992)	0	0	0	0	0	0	3	1	1	0	0	0	1	2	2	2	3	3
Jordan (1990)	0	0	0	0	0	1	0	2	4	1	(0)	0	6	5	1	9	8	11
Morocco (1987)	0	1	0	0	1	1	0	2	1	1	(0)	3	3	3	(2)	3	6	5
Morocco (1992)	0	0	0	1	1	0	0	2	1	2	(4)	3	3	2	(6)	6	8	7
Tunisia (1988)	0	0	1	2	3	2	3	7	6	8	*	10	15	19	(12)	21	24	28
Turkey (1993)	0	1	1	3	3	3	4	4	4	2	(5)	4	4	10	(0)	4	6	5

Continued

Table 4.2 Use of sterilization—Continued

Country (year)	One child		Two children			Three children				Four children					5+ children			
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Asia																		
Bangladesh (1993-94)	1	2	3	3	10	10	6	13	17	17	(12)	11	19	17	11	13	9	12
India (1992-93)	1	4	5	16	30	41	20	41	61	59	27	42	56	58	53	41	35	40
Indonesia (1987)	0	0	0	1	2	2	5	4	3	5	2	7	6	5	3	7	10	7
Indonesia (1991)	0	0	1	1	2	2	4	4	5	5	3	6	9	9	5	6	7	7
Indonesia (1994)	0	0	0	2	2	2	6	5	6	8	5	9	9	9	9	8	10	7
Nepal (1991)	0	1	2	1	11	24	3	16	39	39	3	19	36	39	37	24	25	27
Pakistan (1990-91)	0	0	0	0	2	1	1	1	3	2	(3)	2	4	10	4	6	13	7
Philippines (1993)	0	0	1	5	7	7	20	21	20	17	18	23	24	24	21	14	13	15
Sri Lanka (1987)	1	2	2	15	19	20	35	46	47	42	(51)	53	54	52	(48)	55	55	51
Thailand (1987)	1	4	3	28	36	38	44	52	51	43	(54)	41	42	48	(38)	38	44	37
Latin America/Caribbean																		
Bolivia (1989)	0	0	1	1	3	2	4	6	6	2	(11)	8	9	6	(6)	8	4	6
Bolivia (1993-94)	0	0	0	4	2	4	8	5	9	5	(12)	8	8	10	(16)	6	7	6
Brazil (1986) ¹	0	4	3	25	28	28	48	50	52	54	*	47	50	52	*	33	37	41
Brazil, NE (1991)	0	6	3	34	42	42	60	63	65	54	(39)	61	60	45	*	46	35	48
Colombia (1986)	1	2	2	10	9	11	(21)	32	25	24	*	38	39	36	(36)	31	35	29
Colombia (1990)	0	2	1	10	14	9	43	40	38	39	(47)	30	43	49	(32)	35	37	36
Dominican Republic (1986)	0	4	2	18	23	20	45	54	52	40	(59)	66	54	53	(46)	54	46	52
Dominican Republic (1991)	0	4	2	29	30	25	50	64	68	61	(58)	75	72	58	(77)	61	37	54
Ecuador (1987)	0	0	1	8	8	9	(19)	27	22	20	*	17	29	26	*	23	17	27
Guatemala (1987) ¹	0	1	0	4	8	7	14	12	17	21	*	17	23	18	(17)	15	13	14
Mexico (1987)	0	1	1	8	15	13	31	26	32	27	(31)	28	39	30	(32)	30	24	26
Paraguay (1990)	0	1	1	3	5	8	11	15	11	9	(12)	13	10	11	(12)	10	10	11
Peru (1986)	0	0	0	2	3	1	7	5	6	4	*	12	9	14	(11)	11	11	10
Peru (1991-92)	0	0	0	7	4	4	8	11	12	13	8	16	13	13	11	11	16	13
Trinidad and Tobago (1987)	0	0	1	3	6	3	11	11	12	9	*	19	14	13	(30)	22	(24)	21

Note: Sterilization includes both female and male sterilization.

¹ Based on women age 15-44

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

Table 4.3 Sex ratios by contraceptive use

Sex ratios of living children, by current contraceptive use, for currently married nonpregnant women age 15-49, Demographic and Health Surveys, 1986-1995

Country (year)	Using sterilization ¹	Using any other method	Not currently using	Country (year)	Using sterilization ¹	Using any other method	Not currently using
Sub-Saharan Africa				Asia			
Botswana (1988)	103.5	98.2	96.2	Bangladesh (1993-94)	119.0	109.3	102.5
Burkina Faso (1992-93)	135.0	103.0	101.3	India (1992-93)	125.4	102.0	97.1
Burundi (1987)	(76.1)	92.9	105.3	Indonesia (1987)	103.8	106.5	101.4
Cameroon (1991)	126.0	107.5	98.5	Indonesia (1991)	110.3	104.7	103.3
Central African Rep. (1994-95)	87.8	103.4	101.2	Indonesia (1994)	106.5	105.0	106.8
Ghana (1988)	126.1	106.5	102.7	Nepal (1991)	134.6	108.9	95.2
Ghana (1993)	123.9	107.6	103.7	Pakistan (1990-91)	118.1	101.2	106.6
Kenya (1988-89)	122.3	105.4	95.8	Philippines (1993)	105.5	104.0	105.3
Kenya (1993)	100.2	97.5	95.8	Sri Lanka (1987)	103.2	101.1	110.4
Liberia (1986)	115.3	93.6	102.2	Thailand (1987)	106.8	101.8	107.3
Madagascar (1992)	111.8	97.0	100.3	Latin America/Caribbean			
Malawi (1992)	113.5	103.8	97.9	Bolivia (1989)	96.5	110.5	102.7
Mali (1987)	*	122.3	106.4	Bolivia (1993-94)	109.2	101.3	101.0
Namibia (1992)	89.9	94.3	99.5	Brazil (1986) ²	106.2	104.6	88.4
Niger (1992)	(142.7)	103.8	106.9	Brazil, NE (1991)	98.5	99.2	107.6
Nigeria (1990)	102.6	110.0	103.8	Colombia (1986)	107.1	110.6	108.6
Rwanda (1992)	94.9	99.3	95.6	Colombia (1990)	103.5	96.5	103.2
Senegal (1986)	(73.3)	104.1	101.3	Dominican Republic (1986)	99.0	101.6	100.5
Senegal (1992-93)	79.2	104.8	99.6	Dominican Republic (1991)	99.4	99.4	99.9
Sudan (1989-90)	100.7	107.0	102.7	Ecuador (1987)	112.5	104.1	106.2
Togo (1988)	81.8	102.0	100.8	Guatemala (1987) ²	110.1	109.6	104.6
Uganda (1988-89)	90.0	90.2	97.3	Mexico (1987)	99.9	100.8	101.8
Zambia (1992)	110.4	95.9	98.6	Paraguay (1990)	103.2	102.6	99.6
Zimbabwe (1988-89)	111.3	97.9	99.7	Peru (1986)	99.3	105.6	108.4
Zimbabwe (1994)	106.8	99.6	100.4	Peru (1991-92)	106.0	102.6	100.1
Near East/North Africa				Trinidad and Tobago (1987)	108.0	105.2	108.3
Egypt (1988-89)	130.9	112.0	105.7				
Egypt (1992)	117.5	113.6	97.1				
Jordan (1990)	120.7	114.7	103.4				
Morocco (1987)	112.7	104.8	101.7				
Morocco (1992)	106.6	106.7	103.3				
Tunisia (1988)	113.3	102.6	99.5				
Turkey (1993)	110.4	108.7	99.7				

¹ Includes both female and male sterilization

² Based on children of women age 15-44

() Based on 25-49 unweighted cases

* Sex ratio not shown; based on fewer than 25 unweighted cases.

Contraceptive discontinuation rates are shown in Table 4.4 and contraceptive failure rates in Table 4.5 for the 15 surveys with calendar information. The differentials are often small and rather erratic, so it is difficult to discern any consistent patterns from the tables. A preference for sons is fairly consistently shown

in Turkey for both measures. For Paraguay, discontinuation rates are indicative of daughter preference, but the pattern is mixed for failure rates. For the remaining countries, the differentials are too erratic to be interpretable.

Table 4.4 Discontinuation rates

Contraceptive discontinuation rates, by number and sex of living children at the time of the start of contraception use, Demographic and Health Surveys, 1990-1994

Country (year)	One child		Two children			Three children				Four children			5+ children		
	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	1 son	2 sons	3 sons	Sons < daughters	Sons = daughters	Sons > daughters
Zimbabwe (1994)	25	25	(19)	18	(15)	*	(17)	(16)	*	*	(20)	*	18	*	14
Egypt (1992)	36	34	32	32	27	(32)	29	31	(28)	25	28	23	28	(21)	25
Jordan (1990)	*	(74)	*	52	(52)	*	(54)	(48)	*	*	(45)	(43)	41	41	36
Morocco (1992)	45	47	(39)	40	(43)	*	(33)	38	*	*	(37)	(31)	34	(31)	33
Turkey (1993)	46	44	43	32	33	*	39	29	(24)	(37)	(34)	(32)	25	*	(29)
Bangladesh (1993-94)	55	56	51	49	45	(43)	47	40	(52)	(43)	37	41	41	(34)	42
Indonesia (1991)	32	33	29	27	27	27	24	25	17	26	21	23	19	(30)	24
Indonesia (1994)	32	31	23	26	24	26	23	23	21	23	24	21	23	(17)	20
Philippines (1993)	42	37	38	37	34	*	35	41	(39)	(31)	31	(31)	30	(35)	34
Bolivia (1993-94)	48	43	(38)	47	40	*	32	42	*	(29)	(36)	(38)	32	*	44
Brazil, NE (1991)	62	61	(46)	44	(44)	*	(55)	(42)	*	*	*	*	(23)	*	(28)
Colombia (1990)	44	49	49	37	44	*	24	31	*	*	(32)	*	(21)	*	(32)
Dominican Republic (1991)	67	63	(57)	52	56	*	39	43	*	*	*	*	(20)	*	(31)
Paraguay (1990)	54	61	57	64	65	*	(47)	61	*	(45)	(60)	*	33	*	47
Peru (1991-92)	51	53	51	45	45	53	42	43	44	46	45	38	42	(36)	43

Note: Discontinuation rates are based on ever-married women in Bangladesh, Egypt, Indonesia, Jordan, and Turkey and are based on all women in the remaining countries. Discontinuation rates are not shown for women with no children and women with four children all of the same sex because of an inadequate number of cases for these groups.

() Based on 125-249 unweighted person-months of exposure

* Rate not shown; based on fewer than 125 unweighted person-months of exposure.

4.2 FERTILITY

There are a number of ways to study the relationship between gender preference and fertility. This section examines the following fertility-related variables: current pregnancy, sex ratios, the average number of siblings, the sex distribution of children at the second parity, birth intervals, and the duration of postpartum abstinence. Empirical measures of the impact of gender preferences on fertility are analyzed in the next section. These tables demonstrate that attitudes about gender preference are often reflected in actual fertility behavior.

In the DHS, women reported whether or not they were pregnant at the time of the survey. Of course, some women may not be aware that they are pregnant, particularly in the early stages of pregnancy, but this measure is still an excellent predictor of the fertility of each group in the near future. In Table 4.6, current pregnancy rates are broken down by the number and sex of living children. In this table, low percentages identify combinations of children that are preferred. Because pregnancy rates rarely exceed 20 percent for women who are already mothers, huge differentials were not expected in the

absolute rates for different groups of women. Nevertheless, a clear pattern of gender preference can be discerned in a number of countries.

At the first parity, more countries exhibit son preference than daughter preferences, but the differences are not large. At the second parity, the lowest pregnancy rates are seen for women with one child of each sex in 20 countries, and women in that category share the lowest percentages with another group in an additional 9 countries. In the remaining countries, pregnancy rates are lowest for women with 2 sons in 20 countries and with 2 daughters in only 7 countries. This suggests that balance preference and son preference are most common for women with two children. Son preference is particularly strong in Jordan and Pakistan. The patterns are not quite as clear at higher parities, but where differences do exist, son preference is much more prevalent than daughter preference.

A summary measure of the effect of gender preference on pregnancy rates is shown in Table 4.7. This table indicates whether women employ stopping rules such that they are more likely to become pregnant after the birth of a girl or a boy.

Table 4.5 Failure rates

Contraception failure rates, by number and sex composition of living children at the time of the start of contraception use, Demographic and Health Surveys, 1986-1995

Country (year)	One child		Two children			Three children				Four children			5+ children		
	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	1 son	2 sons	3 sons	Sons < daughters	Sons = daughters	Sons > daughters
Zimbabwe (1994)	3.4	5.0	(3.8)	4.1	(3.5)	*	(4.4)	(2.5)	*	*	(3.6)	*	3.2	*	2.5
Egypt (1992)	3.6	3.0	2.9	4.0	5.6	(6.5)	7.6	5.1	(3.7)	3.5	7.9	5.1	7.8	(3.9)	6.0
Jordan (1990)	*	(18.9)	*	12.8	(12.7)	*	(15.0)	(12.4)	*	*	(10.5)	(14.4)	12.2	9.5	9.7
Morocco (1992)	6.1	5.3	(5.3)	7.4	(8.9)	*	(8.0)	7.7	*	*	(5.0)	(7.8)	10.3	(11.0)	8.7
Turkey (1993)	8.3	8.4	11.5	8.8	6.9	*	13.1	9.8	(6.3)	(18.7)	(12.2)	(10.3)	10.4	*	(12.6)
Bangladesh (1993-94)	3.8	3.4	4.1	2.9	2.4	(2.0)	2.5	3.6	(1.1)	(3.9)	4.3	3.5	5.4	(4.9)	5.5
Indonesia (1991)	1.8	1.4	2.4	4.2	2.7	1.2	2.8	1.8	2.1	2.8	2.0	3.2	3.0	(3.4)	3.1
Indonesia (1994)	3.6	1.5	2.9	2.1	2.8	7.1	4.2	4.0	5.5	2.0	3.1	1.4	2.7	(0.9)	2.6
Philippines (1993)	8.9	8.1	9.7	13.0	9.1	*	11.5	11.5	(13.4)	(9.0)	11.6	(13.0)	14.3	(24.1)	11.2
Bolivia (1993-94)	8.7	10.1	(10.7)	13.0	9.6	*	10.2	14.0	*	(11.4)	(10.5)	(6.4)	12.9	*	16.6
Brazil, NE (1991)	10.7	7.5	(13.5)	12.4	(5.5)	*	(7.6)	(7.1)	*	*	*	*	(7.5)	*	(7.4)
Colombia (1990)	5.7	7.3	12.2	8.1	8.7	*	8.5	8.0	*	*	(10.0)	*	(8.4)	*	(10.6)
Dominican Republic (1991)	8.5	7.7	(14.1)	8.9	6.9	*	10.0	9.0	*	*	*	*	(4.2)	*	(6.3)
Paraguay (1990)	9.9	7.5	5.6	8.1	7.4	*	(11.5)	6.2	*	(8.4)	(6.6)	*	12.2	*	12.7
Peru (1991-92)	11.2	13.0	15.5	14.0	14.9	19.4	16.3	14.0	16.1	18.1	16.9	13.3	19.4	(17.1)	21.3

Note: Failure rates are based on ever-married women in Bangladesh, Egypt, Indonesia, Jordan, and Turkey and are based on all women in the remaining countries. Failure rates are not shown for women with no children and women with four children all of the same sex because of an inadequate number of cases for these groups.

() Based on 125-249 unweighted person - months of exposure

* Rate not shown; based on fewer than 125 unweighted person - months of exposure.

Table 4.6 Pregnancy by sex of children

Percentage of currently married women age 15- 49 who were pregnant at the time of interview, by number and sex of living children, Demographic and Health Surveys, 1986-1995

Country (year)	No children	One child		Two children			Three children				Four children					5+ children		
		No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Sub-Saharan Africa																		
Botswana (1988)	11	16	11	10	15	13	(9)	10	6	(7)	*	3	9	(9)	*	8	1	6
Burkina Faso (1992-93)	22	17	13	13	12	17	19	10	12	20	(13)	8	11	19	(17)	7	5	6
Burundi (1987)	39	21	19	14	12	20	(18)	17	15	8	*	15	11	16	(9)	8	10	7
Cameroon (1991)	17	10	13	15	13	17	(16)	14	14	(17)	*	10	10	13	(19)	12	19	10
Central African Republic (1994-95)	20	12	15	14	13	17	15	14	12	13	(11)	8	8	15	*	12	12	12
Ghana (1988)	29	11	15	18	13	14	14	16	12	22	(10)	11	12	7	(18)	9	5	9
Ghana (1993)	25	18	14	11	10	8	15	12	8	9	(13)	12	4	7	(11)	7	8	7
Kenya (1988-89)	27	23	19	19	12	14	11	10	14	6	(23)	12	8	11	(9)	7	6	8
Kenya (1993)	26	19	20	16	9	12	21	9	11	14	(1)	12	8	9	(20)	7	7	6
Liberia (1986)	22	19	13	20	19	12	19	18	16	14	(26)	9	10	10	(13)	11	11	8
Madagascar (1992)	20	16	15	12	12	16	15	9	12	11	(11)	13	10	20	(8)	9	10	9
Malawi (1992)	26	15	17	17	15	18	18	12	10	20	(20)	18	11	16	*	11	15	11
Mali (1987)	19	19	14	13	16	16	(23)	16	8	(12)	*	15	13	17	*	9	5	10
Namibia (1992)	18	13	13	16	13	13	(6)	9	17	17	*	12	12	10	*	7	11	8
Niger (1992)	18	13	18	12	20	13	16	16	18	14	(7)	17	16	16	(11)	9	9	7
Nigeria (1990)	24	18	12	17	19	13	15	16	12	10	17	10	13	13	8	7	6	8
Rwanda (1992)	36	12	19	15	16	14	18	12	13	(13)	(22)	10	6	13	(9)	9	5	9
Senegal (1986)	17	17	21	17	16	17	10	14	14	18	(0)	12	15	22	(22)	12	9	11
Senegal (1992-93)	20	13	13	13	17	10	16	14	15	17	(10)	17	15	13	(25)	10	6	12
Sudan (1989-90)	27	20	19	20	16	21	15	17	15	15	(21)	20	17	16	(10)	11	8	10
Togo (1988)	32	15	18	14	14	20	(13)	14	21	9	*	13	14	12	*	8	6	6
Uganda (1988-89)	27	23	24	17	17	18	15	21	21	12	*	17	20	17	*	11	9	8
Zambia (1992)	34	21	16	19	19	16	25	19	15	14	(25)	18	17	16	(8)	11	11	10
Zimbabwe (1988-89)	37	11	17	10	12	16	(15)	11	10	12	*	6	11	11	*	9	8	11
Zimbabwe (1994)	34	14	14	10	10	9	7	6	13	11	(2)	13	9	8	*	6	3	11
Near East/North Africa																		
Egypt (1988-89)	27	20	20	16	13	11	16	10	9	8	22	9	7	6	8	6	6	6
Egypt (1992)	30	18	18	11	9	12	9	8	5	9	13	9	6	5	6	6	4	3
Jordan (1990)	37	25	30	29	26	19	26	19	13	12	(16)	13	12	16	13	11	14	9
Morocco (1987)	23	19	19	14	12	15	22	14	13	16	(12)	10	11	11	(10)	8	5	7
Morocco (1992)	24	20	17	14	13	22	6	9	11	12	(19)	11	9	10	(9)	8	5	6
Tunisia (1988)	29	20	22	16	11	8	14	9	8	11	*	7	5	5	(7)	6	3	4
Turkey (1993)	31	14	12	7	3	3	8	3	2	4	(1)	4	2	4	(5)	5	4	2

Continued

Table 4.6 Pregnancy by sex of children—Continued

Country (year)	One child		Two children			Three children				Four children					5+ children			
	No children	No sons	1 son	No sons	1 son	2 sons	No sons	1 son	2 sons	3 sons	No sons	1 son	2 sons	3 sons	4 sons	Sons < daughters	Sons = daughters	Sons > daughters
Asia																		
Bangladesh (1993-94)	22	15	12	10	7	6	11	7	4	3	(12)	6	5	4	4	2	3	3
India (1992-93)	21	14	13	11	7	6	11	6	3	3	10	4	3	3	3	3	4	3
Indonesia (1987)	23	9	9	6	3	7	11	4	4	3	4	4	2	4	3	4	3	3
Indonesia (1991)	25	8	9	6	5	5	5	5	5	5	6	4	4	4	4	3	3	4
Indonesia (1994)	24	8	8	6	6	5	4	5	4	5	5	3	4	3	1	3	3	2
Nepal (1991)	18	15	13	15	10	10	12	9	5	5	9	7	5	5	5	4	4	4
Pakistan (1990-91)	26	20	19	21	19	12	22	18	12	19	(15)	8	17	17	4	11	12	8
Philippines (1993)	31	18	14	11	10	11	5	5	8	9	3	7	7	8	15	7	6	7
Sri Lanka (1987)	34	10	10	5	5	6	3	3	3	0	(3)	1	2	0	(5)	1	1	1
Thailand (1987)	23	10	10	6	2	3	2	0	2	2	(4)	2	3	2	(0)	1	2	2
Latin America/Caribbean																		
Bolivia (1989)	38	13	16	9	11	13	10	12	13	11	(3)	5	8	12	(15)	8	11	7
Bolivia (1993-94)	37	16	18	10	10	9	8	8	7	7	(7)	10	5	6	(5)	7	7	8
Brazil (1986) ¹	29	15	13	5	7	9	2	5	3	9	*	4	10	7	*	8	3	10
Brazil, NE (1991)	26	13	12	12	8	7	7	5	5	6	(15)	10	2	7	*	7	6	5
Colombia (1986)	34	15	18	9	9	4	(16)	4	4	2	*	1	2	5	(4)	6	8	4
Colombia (1990)	29	10	13	11	7	5	1	5	6	4	(3)	5	2	4	(5)	4	11	3
Dominican Republic (1986)	35	16	17	13	12	12	10	6	5	9	(1)	3	5	6	(3)	4	2	6
Dominican Republic (1991)	32	17	15	13	8	12	1	3	4	5	(10)	4	4	9	(1)	4	8	5
Ecuador (1987)	31	14	16	7	9	6	(9)	7	6	6	*	10	3	14	*	8	9	5
Guatemala (1987) ¹	35	23	26	16	14	16	14	9	11	14	*	12	12	9	(7)	11	9	9
Mexico (1987)	36	15	15	7	12	13	5	9	8	4	(9)	6	6	7	(0)	6	2	6
Paraguay (1990)	26	15	16	10	10	8	8	7	7	6	(6)	7	9	10	(10)	7	8	12
Peru (1986)	31	18	21	14	7	11	7	10	5	6	*	5	7	14	(4)	7	3	5
Peru (1991-92)	39	11	10	8	9	8	6	6	7	8	5	6	7	6	6	6	5	6
Trinidad and Tobago (1987)	13	12	7	8	6	8	(9)	5	4	4	*	2	3	3	(6)	4	(2)	3

¹ Based on women age 15-44

() Based on 25-49 unweighted cases

* Percentage not shown; based on fewer than 25 unweighted cases.

Table 4.7 Current pregnancy by sex of youngest child

Percentage of currently married women age 15-49 who were pregnant at the time of interview, by sex of the youngest living child, Demographic and Health Surveys, 1986-1995

Country (year)	Sex of youngest living child		Country (year)	Sex of youngest living child	
	Female	Male		Female	Male
Sub-Saharan Africa			Asia		
Botswana (1988)	8.7	9.1	Bangladesh (1993-94)	<i>7.9</i>	<i>6.0</i>
Burkina Faso (1992-93)	11.2	11.7	India (1992-93)	<i>7.6</i>	<i>5.7</i>
Burundi (1987)	13.0	13.5	Indonesia (1987)	5.3	5.0
Cameroon (1991)	12.1	13.0	Indonesia (1991)	5.6	5.4
Central African Republic (1994-95)	12.2	13.7	Indonesia (1994)	5.2	5.0
Ghana (1988)	11.9	11.9	Nepal (1991)	<i>9.5</i>	<i>7.1</i>
Ghana (1993)	10.7	9.3	Pakistan (1990-91)	15.4	12.9
Kenya (1988-89)	11.1	10.3	Philippines (1993)	9.3	9.2
Kenya (1993)	10.7	10.1	Sri Lanka (1987)	4.1	4.4
Liberia (1986)	<i>16.0</i>	<i>12.6</i>	Thailand (1987)	4.3	3.6
Madagascar (1992)	11.2	12.2			
Malawi (1992)	13.2	15.0	Latin America/Caribbean		
Mali (1987)	13.3	13.3	Bolivia (1989)	10.2	10.7
Namibia (1992)	11.4	11.0	Bolivia (1993-94)	9.4	9.5
Niger (1992)	13.3	14.5	Brazil (1986) ¹	7.9	8.5
Nigeria (1990)	13.8	11.3	Brazil, NE (1991)	7.9	6.9
Rwanda (1992)	11.1	12.4	Colombia (1986)	8.5	7.2
Senegal (1986)	13.8	16.2	Colombia (1990)	7.0	6.5
Senegal (1992-93)	13.1	12.3	Dominican Republic (1986)	9.1	8.4
Sudan (1989-90)	15.1	14.3	Dominican Republic (1991)	7.8	7.9
Togo (1988)	12.1	13.2	Ecuador (1987)	8.9	8.5
Uganda (1988-89)	16.3	15.9	Guatemala (1987) ¹	14.6	12.4
Zambia (1992)	15.9	14.9	Mexico (1987)	8.7	8.8
Zimbabwe (1988-89)	10.3	11.8	Paraguay (1990)	9.7	10.3
Zimbabwe (1994)	9.9	10.0	Peru (1986)	8.6	9.8
			Peru (1991-92)	7.5	7.5
			Trinidad and Tobago (1987)	6.8	5.3
Near East/North Africa					
Egypt (1988-89)	<i>11.2</i>	<i>9.9</i>			
Egypt (1992)	8.4	8.1			
Jordan (1990)	15.5	14.6			
Morocco (1987)	10.9	11.9			
Morocco (1992)	11.0	10.6			
Tunisia (1988)	9.4	9.0			
Turkey (1993)	5.8	5.1			

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

¹ Based on women age 15-44

Overall, 32 surveys have higher pregnancy rates when the last child was a girl and 22 when the last child was a boy. In three surveys, the pregnancy rate did not differ according to the sex of the last child. A further breakdown by region shows stark differences in different parts of the world. In Asia, the Near East, and North Africa, pregnancy rates are higher after a female birth in 15 surveys and after a male birth in only 2 surveys, demonstrating the strong influence of son preference in this region. In the other two regions, the differentials favor sons and daughters about equally. The differentials reach statistical significance in only five surveys, however (Liberia, Nepal, Bangladesh, India, and Egypt in 1988-89). In all of these cases, son preference is the predominant force.

No matter what stopping rules couples employ with respect to fertility behavior, the overall sex ratio of children at

birth is biologically determined and should not be affected unless couples utilize sex-selective abortion techniques. These techniques have been used extensively in some countries where son preference is strong, such as Korea and China, and consequently the sex ratio at birth has increased rapidly in those countries in recent years (Park and Cho, 1995). In Korea, the sex ratio at birth increased from 104 in 1980 to 114 in 1992. In China, the rate of increase was somewhat slower, but still substantial (from 108 in 1981 to 114 in 1989).

Table 4.8 shows the overall sex ratio at birth for children born to survey respondents, as well as the trend over time, in five-year periods. Sex ratios at birth could also be shown for single years before the survey to see if there have been recent changes within the past five years in surveys that have a sufficiently large number of births. Single-year tables are

Table 4.8 Sex ratio at birth

Sex ratio at birth by calendar years before the survey, Demographic and Health Surveys, 1986-1995

Country (year)	Year before survey						Country (year)	Year before survey					
	Less than 5 years	5-9 years	10-14 years	15-19 years	20+ years	Total		Less than 5 years	5-9 years	10-14 years	15-19 years	20+ years	Total
Sub-Saharan Africa							Asia						
Botswana (1988)	95.1	100.5	97.2	98.8	110.7	99.0	Bangladesh (1993-94)	103.6	105.4	104.2	109.9	114.3	106.5
Burkina Faso (1992-93)	104.3	104.0	106.0	110.8	104.9	105.2	India (1992-93)	106.2	106.4	106.5	106.6	111.9	107.0
Burundi (1987)	104.6	100.2	100.7	121.9	110.3	105.1	Indonesia (1987)	108.1	103.7	102.6	101.5	111.0	105.7
Cameroon (1991)	102.3	98.7	101.4	100.5	118.3	103.0	Indonesia (1991)	109.7	107.6	105.6	101.9	106.5	106.5
Central African Republic (1994-95)	104.5	103.5	105.8	98.8	99.5	103.1	Indonesia (1994)	104.7	108.2	111.6	106.8	105.5	107.8
Ghana (1988)	102.9	108.8	105.7	104.2	100.6	105.0	Nepal (1991)	102.7	106.9	101.4	108.1	113.7	105.6
Ghana (1993)	104.5	103.2	111.9	115.0	98.8	105.8	Pakistan (1990-91)	104.3	103.4	103.6	108.7	114.6	105.6
Kenya (1988-89)	98.0	102.7	98.1	106.2	108.7	101.6	Philippines (1993)	107.2	106.8	104.1	112.1	105.9	107.0
Kenya (1993)	101.3	95.6	94.7	104.4	97.5	97.9	Sri Lanka (1987)	114.0	103.1	106.6	103.6	102.3	105.9
Liberia (1986)	105.8	103.2	105.8	106.9	98.7	104.6	Thailand (1987)	105.7	103.8	109.2	107.8	103.2	106.2
Madagascar (1992)	103.2	107.4	100.9	100.3	99.4	103.0	Latin America/Caribbean						
Malawi (1992)	101.8	99.5	91.3	102.2	106.9	100.3	Bolivia (1989)	100.9	109.7	106.5	105.9	121.0	107.6
Mali (1987)	107.4	103.8	109.1	106.9	115.0	106.9	Bolivia (1993-94)	103.0	103.9	104.3	105.6	103.8	104.6
Namibia (1992)	92.2	99.4	98.3	101.9	102.7	98.3	Brazil (1986) ¹	107.7	102.2	103.6	109.3	108.4	105.2
Niger (1992)	107.9	100.8	106.0	107.6	108.7	105.6	Brazil, NE (1991)	105.0	112.0	97.4	106.7	111.1	106.6
Nigeria (1990)	98.4	105.1	100.9	123.4	124.4	106.2	Colombia (1986)	107.8	106.6	107.9	115.9	105.0	108.6
Rwanda (1992)	99.5	99.6	96.1	99.6	98.5	99.0	Colombia (1990)	94.6	97.4	112.0	97.1	105.3	101.2
Senegal (1986)	104.4	106.5	103.1	106.0	102.2	104.5	Dominican Republic (1986)	99.1	108.0	109.8	99.6	104.4	103.7
Senegal (1992-93)	95.1	104.5	102.0	104.5	108.7	101.1	Dominican Republic (1991)	111.5	105.4	98.5	94.0	103.7	102.8
Sudan (1989-90)	103.3	101.0	109.5	99.4	109.6	104.0	Ecuador (1987)	108.6	102.4	107.1	109.6	126.1	108.7
Togo (1988)	108.0	102.7	101.2	101.4	92.9	102.3	Guatemala (1987) ¹	101.5	107.3	107.8	113.6	121.3	106.4
Uganda (1988-89)	101.7	100.1	95.2	100.6	103.0	99.8	Mexico (1987)	102.2	100.2	108.5	102.8	102.1	103.2
Zambia (1992)	100.5	94.3	99.1	96.6	103.8	98.5	Paraguay (1990)	106.6	105.0	104.8	93.5	107.5	104.0
Zimbabwe (1988-89)	97.9	105.1	104.5	111.5	98.2	103.5	Peru (1986)	107.5	102.8	108.0	111.9	115.5	108.1
Zimbabwe (1994)	102.0	100.0	105.9	109.5	105.9	103.3	Peru (1991-92)	106.8	98.4	106.4	103.8	100.3	103.2
Near East/North Africa							Trinidad and Tobago (1987)						
Egypt (1988-89)	104.3	104.1	104.8	113.6	110.2	107.0	93.5	111.5	109.1	107.2	112.1	106.3	
Egypt (1992)	105.8	100.4	104.4	109.6	108.7	105.2							
Jordan (1990)	105.4	106.8	113.0	106.8	113.5	108.1							
Morocco (1987)	102.0	106.1	106.8	102.0	104.3	104.1							
Morocco (1992)	104.0	105.1	111.5	106.9	99.7	105.7							
Tunisia (1988)	100.5	105.0	102.7	96.3	114.5	103.4							
Turkey (1993)	103.7	108.9	107.7	104.4	105.2	106.4							

Note: Sex ratio is number of males per 100 females. Table is based on births to ever-married women in Bangladesh, Egypt, India, Indonesia, Jordan, Nepal, Pakistan, Sri Lanka, Thailand, Tunisia, and Turkey and births to all women in the remaining countries.

¹ Based on births to women age 15-44

typically produced in an appendix in DHS reports. For most countries, the overall sex ratios at birth fall in the normal range of 102-107. Ten countries (almost all in sub-Saharan Africa) have reported sex ratios at birth of less than 102 and six countries have sex ratios exceeding 107. These outliers are undoubtedly caused by differential underreporting of births by sex or to sampling error rather than real deviations from the expected pattern. The estimates for five-year age groups are subject to these same types of problems. The sampling errors are higher for the five-year groups than for births overall, and reporting is often less reliable for births that occurred long before the time of the survey.

We would not expect to find any clear and consistent trends in sex ratios at birth over time in countries that do not have a strong preference for either sons or daughters, or in surveys conducted in the early years of the DHS program when sex-selection technology was not well developed or easily accessible. In Table 4.8, no country shows a consistent trend of higher sex ratios in the more recent years. Moreover, there are only a few instances of unusually high sex ratios in the most recent five-year period. Except for Sri Lanka, none of these countries has registered a high son preference in previous analyses. In addition, Sri Lanka is the only country where the recent sex ratio at birth is as high as that recorded in Korea and China. Therefore, it is unlikely that sex-selection techniques, including abortion, have had an appreciable impact in the DHS countries, with the possible exception of Sri Lanka. Even in India, where other studies have suggested that sex-selective abortion has had a sizable impact (Das Gupta and Bhat, 1997; Patel, 1989; Sachar et al., 1990), the NFHS data show that sex ratios at birth for the country as a whole have been virtually constant over the past 20 years (at least up to the time of the survey in 1992-93).

Although the use of stopping rules by couples based on the sex of their previous children will not affect the sex ratio of subsequent births, it can have a major influence on sex ratios at birth for women at different parities. For example, if couples are more likely to stop having children after having a boy than a girl, then women at low parities will tend to have relatively high sex ratios at birth for their children because those who have girls will tend to continue to higher parities. Sex ratios at higher parities will be much lower than sex ratios at lower parities when son preference is strong and couples adopt sex-selective stopping rules. Moreover, stopping rules governed by son preference will result in very high sex ratios at birth for all last births and much lower sex ratios for all other births. A large majority of countries in Asia and the Near East/North Africa exhibit a very distinct son preference which has affected sex ratios at birth (Table 4.9). The sex ratio at birth for last births exceeds that for all previous births by at least 15 points in three surveys, 10 points in three more surveys, and 5 points in an additional six surveys. Son preference is most consequential in Turkey, Nepal, and India. In contrast, several countries in Latin America and the Caribbean show signs of daughter preference in reproductive behavior.

The patterns of sex ratios at birth by the mother's parity (Table 4.9) usually confirm the gender preferences seen above, but the trends are not always consistent. No country has sex ratios at birth that either rise or fall monotonically with parity throughout the distribution. A general preference for sons, however, can be seen in the sex ratio pattern in countries such as Egypt in 1992, India, Nepal, and Pakistan. The sex ratio tabulations can be further extended by examining the sex ratios for each birth order of children, overall and separately by the mother's parity. This type of analysis has not been pursued here, partially because of the earlier results showing that sex-selective abortions are not numerically important in the DHS countries. But such tables can be produced given a sufficient number of cases.

One consequence of basing fertility decisions on a preference for sons, which emerges from the patterns in Table 4.9, is that daughters will have more siblings than sons on average. If daughters grow up in larger families, then there is likely to be more competition for the available resources in those families and daughters may not have the same opportunities as sons for that reason. Even if parents in each family treat daughters and sons equally, daughters will still be at a disadvantage if they are raised in larger than average families. This consequence of son preference can be seen in Table 4.10, which shows the average number of siblings for all of the female and male children of survey respondents. In most surveys, there is almost no difference in the average number of siblings for sons and daughters. The differences reach statistical significance in six surveys (Nepal, Turkey, India, Mexico, Egypt in 1992, and Tunisia). In all six of these surveys, daughters have more siblings than sons, presumably as a result of son preference. Although the differentials are not large in any of these countries, even a difference of 0.2 children means that one in every five female children is growing up in a family with one more child than her male counterpart.

Yet another way to observe the impact of sex-based stopping rules for childbearing is to examine the number of women with each number of sons and daughters within a given parity. The entire distribution could be inspected, but for the sake of simplicity Table 4.11 compares only the number of second parity women with two sons and two daughters. Because this table is based on living children, the number of women in each category depends not only on stopping rules but also on differential mortality of children up to the time of the survey. In the absence of both mortality and sex-differentiated stopping rules, we would expect to find more women with two sons than with two daughters because more boys are born than girls. Based on the average sex ratio at birth of 104.4 for all Demographic and Health Surveys included in this report, 51.08 percent of all children born are males. This implies that 26.09 percent of two-child families would have two sons and 23.93 percent would have two daughters in the absence of mortality. The ratio between these two percentages is 1.09. In a country with a high sex ratio at birth of 107, this same ratio would be

1.14. As will be seen later, in all but a handful of countries, under-five mortality is higher for boys than for girls. This suggests that the above ratios should be even lower than 1.09 or 1.14 for surviving children. Therefore, ratios that are higher than about 1.1 suggest that son preference is distorting the normal family composition.

The ratio of the number of women with two sons to two daughters is very high in several countries (see Table 4.11). The ratio exceeds 1.30 in seven countries, all of them within the Near East/North Africa/Asia region. Outside of this region, notably high ratios are also observed in Mexico, Kenya (1988-89), and Burundi. In all of these countries, it is clear that women with two daughters are more likely than women with two sons to continue on to higher parities.

It is also expected that women with an undesirable sex distribution of children will try to have their next child sooner than other women. Table 4.12 shows the average length of closed and open birth intervals in relation to the sex of the child born at the start of the interval. Statistically significant differences were found for closed birth intervals in 13 surveys and for open birth intervals in 7 surveys. In all but 3 of these 20 cases, the birth interval was longer after the birth of a son than a daughter. It is unlikely that these differences are due to biological factors, because a large majority of countries do not exhibit any significant differences. Moreover, the countries with significantly longer intervals after the birth of a son have all been determined to have a preference for sons according to other measures. Therefore, the differences are undoubtedly caused by son preference. As usual, the Near East/North Africa/Asia region stands out as having a large number of countries where son preference is unusually strong.

There are several ways in which parents may try to accelerate the birth of their next child, including avoiding the use of contraception, refraining from breastfeeding or shortening the duration of breastfeeding, and shortening the period of postpartum abstinence. The effect of gender preference on contraceptive use has already been shown in Tables 4.1-4.5. Table 4.13 shows the average duration of postpartum abstinence by the sex of the child. A similar table is presented for the average duration of breastfeeding in Chapter 6. There are few substantive differences in the length of postpartum abstinence evident from Table 4.13. The only statistically significant differences are found in Egypt (1988-89) and Indonesia (1987), where women abstain from sex for about one month longer after the birth of a boy than a girl. Therefore, gender preferences do not seem to be an important determinant of the resumption of sex after the birth of a child.

Table 4.9 Sex ratios of children ever born

Sex ratios of children ever born by parity, Demographic and Health Surveys, 1986-1995

Country (year)	Parity							Last births	All but last births
	One	Two	Three	Four	Five	Six	Seven+		
Sub-Saharan Africa									
Botswana (1988)	111.2	103.3	99.0	92.6	99.4	100.1	96.9	102.1	97.7
Burkina Faso (1992-93)	99.4	114.5	108.2	105.5	101.3	108.4	103.9	101.6	106.3
Burundi (1987)	139.6	111.3	103.3	100.7	99.9	102.4	106.3	106.4	104.7
Cameroon (1991)	106.4	103.8	105.4	110.4	100.3	104.3	100.7	105.5	102.3
Central African Republic (1994-95)	95.6	116.1	98.9	102.9	95.2	115.8	101.6	101.1	103.8
Ghana (1988)	91.6	109.2	105.4	112.0	105.4	107.0	102.9	104.7	105.0
Ghana (1993)	103.3	102.9	106.6	106.6	106.7	106.3	105.7	103.8	106.5
Kenya (1988-89)	100.3	106.5	104.2	95.8	108.6	98.4	101.4	99.8	102.1
Kenya (1993)	101.0	95.1	105.1	92.3	99.3	99.7	97.4	99.5	97.5
Liberia (1986)	103.0	94.4	111.0	105.5	104.0	106.1	104.9	104.1	104.7
Madagascar (1992)	108.9	103.5	105.3	97.8	99.7	102.9	103.7	106.7	101.9
Malawi (1992)	111.7	95.4	105.3	91.9	103.9	100.6	100.3	103.1	99.5
Mali (1987)	99.0	95.2	110.5	113.6	105.8	104.8	107.7	104.9	107.5
Namibia (1992)	102.3	88.2	105.2	92.6	96.2	103.1	99.4	96.1	99.2
Niger (1992)	111.0	101.4	111.7	101.0	100.0	102.9	107.8	111.0	104.2
Nigeria (1990)	102.0	113.9	110.8	102.1	101.7	104.2	107.6	98.4	108.7
Rwanda (1992)	107.4	109.3	98.4	106.1	97.5	93.0	97.8	105.1	97.4
Senegal (1986)	94.8	96.5	111.8	120.6	101.9	93.9	105.2	102.1	105.2
Senegal (1992-93)	109.9	89.5	97.0	100.2	98.8	100.3	103.9	98.5	101.8
Sudan (1989-90)	96.7	108.3	115.0	105.5	107.4	100.7	102.2	100.2	105.0
Togo (1988)	97.8	119.2	106.0	92.8	100.3	106.7	101.2	105.7	101.3
Uganda (1988-89)	118.0	104.4	106.5	98.8	100.5	100.6	96.7	98.8	100.1
Zambia (1992)	106.9	100.5	98.8	99.0	96.6	101.2	97.1	98.8	98.4
Zimbabwe (1988-89)	96.9	103.4	108.4	98.0	99.0	98.4	108.1	107.0	102.5
Zimbabwe (1994)	92.3	104.2	103.9	99.5	96.5	110.7	106.1	97.7	105.4
Near East/North Africa									
Egypt (1988-89)	115.7	105.4	111.4	107.4	110.2	102.8	105.8	111.5	105.7
Egypt (1992)	100.7	118.5	117.9	107.9	101.1	102.5	100.6	113.7	102.7
Jordan (1990)	93.3	111.1	105.4	113.5	102.1	115.5	107.8	106.8	108.3
Morocco (1987)	97.1	102.2	105.3	112.6	100.7	109.2	102.6	104.1	104.1
Morocco (1992)	99.8	108.6	108.5	113.4	104.0	109.0	103.2	112.2	104.0
Tunisia (1988)	106.9	114.1	106.3	108.0	103.9	91.1	102.8	112.1	100.9
Turkey (1993)	120.8	117.6	115.5	98.9	108.8	95.6	98.3	120.4	100.9
Asia									
Bangladesh (1993-94)	106.5	109.9	111.5	113.2	104.9	103.7	103.3	110.4	105.1
India (1992-93)	107.0	111.0	122.1	120.2	108.6	101.4	99.8	119.4	102.4
Indonesia (1987)	105.7	119.8	104.1	105.8	106.0	103.6	105.6	110.0	104.2
Indonesia (1991)	106.5	105.3	106.9	111.1	104.9	107.7	107.3	106.5	106.5
Indonesia (1994)	107.8	103.1	108.4	104.0	114.3	108.2	105.0	107.1	108.1
Nepal (1991)	105.7	113.3	121.9	120.9	106.3	102.9	102.1	119.1	101.5
Pakistan (1990-91)	105.6	116.8	118.7	106.5	106.3	104.6	104.4	106.7	105.3
Philippines (1993)	107.0	104.5	109.9	105.9	110.3	110.8	102.3	107.8	106.8
Sri Lanka (1987)	105.9	115.8	109.9	111.6	102.1	95.2	104.1	109.2	104.5
Thailand (1987)	106.3	111.9	103.0	101.6	117.9	104.5	101.5	106.5	106.2
Latin America/Caribbean									
Bolivia (1989)	107.6	105.9	96.3	113.5	108.9	98.3	108.5	100.8	109.9
Bolivia (1993-94)	104.6	115.0	111.6	99.5	104.9	105.2	106.2	112.9	101.9
Brazil (1986) ¹	105.2	119.7	111.3	98.1	102.8	101.9	100.4	106.1	104.7
Brazil, NE (1991)	106.6	113.7	105.5	98.6	98.6	120.8	105.6	108.5	106.1
Colombia (1986)	108.6	95.9	107.6	118.1	113.1	112.0	111.0	104.4	110.2
Colombia (1990)	101.2	94.1	96.0	98.6	102.0	102.9	116.2	99.5	101.9
Dominican Republic (1986)	103.8	104.5	98.4	99.5	105.1	103.1	105.4	97.6	106.0
Dominican Republic (1991)	102.8	88.0	98.7	106.4	111.5	101.9	93.6	101.1	103.5
Ecuador (1987)	108.7	113.4	105.9	113.1	99.8	110.4	102.3	108.6	108.7
Guatemala (1987) ¹	106.4	93.0	104.3	111.2	103.4	104.9	110.4	101.3	108.2
Mexico (1987)	103.2	105.0	117.4	104.3	97.1	109.6	102.6	105.1	102.6
Paraguay (1990)	104.0	116.6	101.9	110.7	97.9	102.2	108.7	105.5	103.5
Peru (1986)	108.1	109.8	104.1	109.3	105.9	108.4	110.6	105.1	109.1
Peru (1991-92)	103.2	111.6	102.7	100.3	101.8	106.2	104.9	103.1	103.2
Trinidad and Tobago (1987)	106.3	111.7	99.4	100.3	115.4	103.1	109.7	100.8	108.9

Note: Sex ratio is number of males per 100 females. Table is based on births to ever-married women in Bangladesh, Egypt, India, Indonesia, Jordan, Nepal, Pakistan, Sri Lanka, Thailand, Tunisia, and Turkey and births to all women in the remaining countries.

¹ Based on births to women age 15-44

Table 4.10 Number of siblings

Average number of siblings of living children of ever-married women age 15-49, by sex of child, Demographic and Health Surveys, 1986-1995

Country (year)	Sex of child		Country (year)	Sex of child	
	Female	Male		Female	Male
Sub-Saharan Africa			Asia		
Botswana (1988)	4.55	4.50	Bangladesh (1993-94)	4.26	4.22
Burkina Faso (1992-93)	4.99	4.96	India (1992-93)	3.67	3.50
Burundi (1987)	4.73	4.71	Indonesia (1987)	4.20	4.18
Cameroon (1991)	5.01	4.97	Indonesia (1991)	3.77	3.71
Central African Republic (1994-95)	4.70	4.73	Indonesia (1994)	3.62	3.61
Ghana (1988)	4.75	4.74	Nepal (1991)	4.20	3.99
Ghana (1993)	4.24	4.23	Pakistan (1990-91)	5.10	5.04
Kenya (1988-89)	5.59	5.61	Philippines (1993)	4.30	4.27
Kenya (1993)	5.34	5.30	Sri Lanka (1987)	3.49	3.43
Liberia (1986)	4.76	4.79	Thailand (1987)	3.25	3.22
Madagascar (1992)	5.58	5.59			
Malawi (1992)	5.14	5.12	Latin America/Caribbean		
Mali (1987)	5.19	5.22	Bolivia (1989)	4.52	4.56
Namibia (1992)	4.73	4.80	Bolivia (1993-94)	4.60	4.53
Niger (1992)	5.36	5.37	Brazil (1986) ¹	4.00	3.95
Nigeria (1990)	4.85	4.86	Brazil, NE (1991)	5.18	5.17
Rwanda (1992)	5.31	5.27	Colombia (1986)	4.41	4.37
Senegal (1986)	5.01	5.01	Colombia (1990)	3.87	3.93
Senegal (1992-93)	5.23	5.27	Dominican Republic (1986)	4.70	4.75
Sudan (1989-90)	5.76	5.70	Dominican Republic (1991)	3.83	3.82
Togo (1988)	4.88	4.83	Ecuador (1987)	4.45	4.47
Uganda (1988-89)	5.61	5.52	Guatemala (1987) ¹	4.40	4.45
Zambia (1992)	5.31	5.32	Mexico (1987)	4.80	4.64
Zimbabwe (1988-89)	4.86	4.90	Paraguay (1990)	4.79	4.72
Zimbabwe (1994)	4.48	4.56	Peru (1986)	4.87	4.83
			Peru (1991-92)	4.29	4.26
			Trinidad and Tobago (1987)	3.53	3.58
Near East/North Africa					
Egypt (1988-89)	4.78	4.73			
Egypt (1992)	4.61	4.50			
Jordan (1990)	6.56	6.54			
Morocco (1987)	5.52	5.48			
Morocco (1992)	5.27	5.21			
Tunisia (1988)	4.64	4.54			
Turkey (1993)	3.72	3.52			

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

¹ Based on children of women age 15-44

Table 4.11 Sex ratio of children for second parity women with children of same sex

Among ever-married women age 15-49 with two living children, the ratio of women with two sons to women with two daughters, Demographic and Health Surveys, 1986-1995

Country (year)	Ratio	Country (year)	Ratio	Country (year)	Ratio
Sub-Saharan Africa		Near East/North Africa		Latin America/Caribbean	
Botswana (1988)	1.11	Egypt (1988-89)	1.17	Bolivia (1989)	0.93
Burkina Faso (1992-93)	1.06	Egypt (1992)	1.49	Bolivia (1993-94)	1.20
Burundi (1987)	1.26	Jordan (1990)	1.16	Brazil (1986) ¹	1.19
Cameroon (1991)	1.14	Morocco (1987)	1.09	Brazil, NE (1991)	1.15
Central African Republic (1994-95)	1.01	Morocco (1992)	1.16	Colombia (1986)	1.16
Ghana (1988)	1.10	Tunisia (1988)	1.36	Colombia (1990)	0.91
Ghana (1993)	1.06	Turkey (1993)	1.49	Dominican Republic (1986)	0.83
Kenya (1988-89)	1.27			Dominican Republic (1991)	0.95
Kenya (1993)	1.03	Asia		Ecuador (1987)	1.10
Liberia (1986)	0.73	Bangladesh (1993-94)	1.41	Guatemala (1987) ¹	1.06
Madagascar (1992)	1.06	India (1992-93)	1.55	Mexico (1987)	1.29
Malawi (1992)	0.89	Indonesia (1987)	1.04	Paraguay (1990)	1.03
Mali (1987)	1.06	Indonesia (1991)	1.14	Peru (1986)	1.17
Namibia (1992)	0.74	Indonesia (1994)	1.13	Peru (1991-92)	1.01
Niger (1992)	1.03	Nepal (1991)	1.48	Trinidad and Tobago (1987)	0.99
Nigeria (1990)	1.18	Pakistan (1990-91)	1.32		
Rwanda (1992)	1.05	Philippines (1993)	1.19		
Senegal (1986)	1.19	Sri Lanka (1987)	1.29		
Senegal (1992-93)	0.76	Thailand (1987)	1.02		
Sudan (1989-90)	1.09				
Togo (1988)	1.16				
Uganda (1988-89)	0.90				
Zambia (1992)	0.91				
Zimbabwe (1988-89)	1.00				
Zimbabwe (1994)	1.03				

¹ Based on women age 15-44

Table 4.12 Birth intervals

Mean closed and open birth intervals, by sex of preceding birth, Demographic and Health Surveys, 1986-1995

Country (year)	Closed birth interval		Open birth interval	
	Female	Male	Female	Male
Sub-Saharan Africa				
Botswana (1988)	36.5	36.8	48.0	49.8
Burkina Faso (1992-93)	32.7	32.4	37.7	37.8
Burundi (1987)	31.6	31.8	32.5	33.3
Cameroon (1991)	31.9	31.6	46.7	49.3
Central African Republic (1994-95)	32.3	32.0	53.4	54.7
Ghana (1988)	35.1	34.7	43.2	43.3
Ghana (1993)	37.2	36.7	48.8	45.3
Kenya (1988-89)	30.5	31.0	42.7	43.9
Kenya (1993)	<i>30.4</i>	<i>31.2</i>	48.7	48.7
Liberia (1986)	<i>32.4</i>	<i>31.4</i>	43.9	43.6
Madagascar (1992)	29.8	29.8	45.8	44.5
Malawi (1992)	32.4	32.3	44.5	47.3
Mali (1987)	<i>30.6</i>	<i>31.6</i>	42.3	41.5
Namibia (1992)	35.2	34.9	50.5	54.4
Niger (1992)	29.4	29.7	38.5	40.1
Nigeria (1990)	30.9	31.4	<i>41.1</i>	<i>45.8</i>
Rwanda (1992)	30.2	30.3	36.5	35.9
Senegal (1986)	31.3	31.8	37.0	39.1
Senegal (1992-93)	31.6	31.6	41.2	43.3
Sudan (1989-90)	28.5	28.6	46.8	46.2
Togo (1988)	35.1	34.6	36.6	38.9
Uganda (1988-89)	29.8	29.9	39.2	39.3
Zambia (1992)	32.5	32.2	42.6	42.8
Zimbabwe (1988-89)	33.3	33.3	48.3	50.1
Zimbabwe (1994)	35.7	35.2	56.2	56.0
Near East/North Africa				
Egypt (1988-89)	<i>29.3</i>	<i>30.7</i>	60.7	63.6
Egypt (1992)	<i>29.9</i>	<i>31.4</i>	63.7	63.7
Jordan (1990)	<i>24.2</i>	<i>25.9</i>	43.8	46.3
Morocco (1987)	29.3	29.5	51.0	52.1
Morocco (1992)	30.3	30.8	54.9	56.7
Tunisia (1988)	<i>28.6</i>	<i>29.8</i>	52.3	54.0
Turkey (1993)	<i>31.6</i>	<i>33.0</i>	<i>94.6</i>	<i>88.6</i>
Asia				
Bangladesh (1993-94)	<i>33.7</i>	<i>34.7</i>	<i>63.3</i>	<i>67.3</i>
India (1992-93)	<i>31.5</i>	<i>32.4</i>	<i>78.2</i>	<i>83.7</i>
Indonesia (1987)	34.2	33.6	73.5	75.4
Indonesia (1991)	36.0	35.7	78.2	76.7
Indonesia (1994)	37.4	37.4	83.0	81.6
Nepal (1991)	<i>32.5</i>	<i>33.3</i>	<i>55.3</i>	<i>60.8</i>
Pakistan (1990-91)	27.5	28.0	49.5	48.3
Philippines (1993)	30.7	31.0	63.1	64.3
Sri Lanka (1987)	<i>33.0</i>	<i>34.1</i>	79.6	73.4
Thailand (1987)	34.3	34.3	86.7	88.8
Latin America/Caribbean				
Bolivia (1989)	32.5	31.9	<i>52.4</i>	<i>57.1</i>
Bolivia (1993-94)	32.2	32.2	55.7	58.4
Brazil (1986) ¹	30.6	29.6	59.4	58.5
Brazil, NE (1991)	27.9	27.5	71.8	69.1
Colombia (1986)	30.3	31.1	71.2	76.5
Colombia (1990)	33.4	33.2	76.8	82.4
Dominican Republic (1986)	29.7	29.0	68.2	67.2
Dominican Republic (1991)	31.3	31.1	81.5	76.8
Ecuador (1987)	31.1	30.9	57.3	61.6
Guatemala (1987) ¹	<i>30.4</i>	<i>31.2</i>	41.8	41.5
Mexico (1987)	30.1	30.6	<i>65.1</i>	<i>60.0</i>
Paraguay (1990)	32.3	32.8	57.7	57.8
Peru (1986)	30.4	31.0	60.7	63.6
Peru (1991-92)	33.0	32.8	68.8	68.3
Trinidad and Tobago (1987)	32.8	33.2	79.9	79.4

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

¹ Based on births to women age 15-44

Table 4.13 Postpartum abstinence

Mean duration of postpartum abstinence (prevalence-incidence mean) in months, by sex of the preceding birth, Demographic and Health Surveys, 1986-1995

Country (year)	Sex of preceding birth		Country (year)	Sex of preceding birth	
	Female	Male		Female	Male
Sub-Saharan Africa			Asia		
Botswana (1988)	12.9	12.1	Bangladesh (1993-94)	3.2	3.1
Burkina Faso (1992-93)	19.0	19.2	India (1992-93)	5.8	5.8
Burundi (1987)	2.9	3.5	Indonesia (1987)	<i>4.4</i>	<i>5.2</i>
Cameroon (1991)	13.8	14.9	Indonesia (1991)	3.9	4.3
Central African Republic (1994-95)	12.3	12.6	Indonesia (1994)	3.9	4.5
Ghana (1988)	13.2	13.5	Philippines (1993)	3.4	3.6
Ghana (1993)	14.4	13.9	Sri Lanka (1987)	6.3	6.0
Kenya (1988-89)	5.5	5.5	Thailand (1987)	2.9	3.4
Kenya (1993)	6.7	6.0			
Liberia (1986)	15.6	16.4	Latin America/Caribbean		
Madagascar (1992)	6.2	7.1	Bolivia (1989)	5.6	5.5
Mali (1987)	7.4	6.2	Bolivia (1993-94)	5.1	5.9
Namibia (1992)	10.2	10.6	Brazil (1986) ¹	2.6	2.8
Niger (1992)	4.8	4.9	Brazil, NE (1991)	3.3	2.9
Nigeria (1990)	14.2	15.0	Colombia (1986)	4.5	4.7
Rwanda (1992)	2.8	2.5	Colombia (1990)	4.8	4.7
Senegal (1986)	7.4	7.6	Dominican Republic (1986)	3.8	4.8
Senegal (1992-93)	7.8	7.3	Dominican Republic (1991)	3.9	3.3
Sudan (1989-90)	4.6	4.8	Ecuador (1987)	4.9	4.2
Togo (1988)	16.6	16.5	Guatemala (1987) ¹	6.2	6.2
Uganda (1988-89)	4.0	4.2	Mexico (1987)	4.0	4.0
Zambia (1992)	8.3	8.0	Paraguay (1990)	4.1	4.0
Zimbabwe (1988-89)	5.0	5.5	Peru (1986)	5.7	5.7
Zimbabwe (1994)	6.7	6.2	Peru (1991-92)	4.7	4.4
			Trinidad and Tobago (1987)	2.6	2.7
Near East/North Africa					
Egypt (1988-89)	2.5	3.3			
Egypt (1992)	2.4	2.2			
Jordan (1990)	1.9	1.8			
Morocco (1992)	1.8	2.1			
Pakistan (1990-91)	4.6	5.0			
Tunisia (1988)	1.8	1.7			
Turkey (1993)	1.9	2.2			

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. The prevalence-incidence mean is the number of children under 36 months of age whose mothers are postpartum abstinent (prevalence) divided by the average number of births per month (incidence).

¹ Based on women age 15-44

5 Impact of gender preferences

5.1 QUANTITATIVE ESTIMATES OF THE IMPACT OF GENDER PREFERENCE

Measures that relate fertility and family planning to the number and sex of children in the family provide useful information for detecting the influence of gender preference within each parity, but they do not provide an overall estimate of the quantitative effect of gender preference. Arnold (1985) has developed a measure which takes account of both the strength of gender preferences within parities and the percentage of couples with each combination of children. The reason for using a measure of this type is clear if one considers the fact that women with all sons or all daughters might behave very differently from women with some children of each sex. However, by sheer biological chance, there may be few women who have all children of the same sex, particularly at higher parities. Therefore, these women will not have a major impact on overall reproductive behavior.

The Arnold measure is designed to answer the question, "What would happen if all gender preferences were to suddenly disappear?" The critical assumption in the calculation is that in the absence of gender preference, all women within a parity would behave in the same manner as those women at the same parity who are currently most satisfied with the sex combination of their children. The measure can be used with any estimates of fertility-related attitudes or behavior, such as the desire for another child, contraceptive use, abortion rates, parity progression ratios, birth intervals, or the duration of breast-feeding. This method is most appropriate for use in countries where gender preferences are fairly homogeneous. It may underestimate the effect of gender preference when gender preferences are heterogeneous.

In Table 5.1, this measure is calculated for three variables related to fertility attitudes and behavior. The table includes only the countries where gender preferences have been found to be relatively homogeneous and pervasive. All of these countries are characterized by strong son preference. It is estimated that in the absence of gender preference, the percentage of nonpregnant women who want another child would decrease by 8-20 percent, with the largest effects in the South Asian countries. Similarly, pregnancy rates would be expected to decrease by 9-21 percent and contraceptive prevalence rates would increase by 3-25 percent. On average, for the eight surveys, these three indicators would change by 10-13 percent in the absence of gender preference. Changes of this magnitude are notable, but they are not as large as might be expected given the high levels of son preference in these countries. Moreover, this amount of change would only be realized if gender preferences were completely eliminated from these societies, which is not a realistic prospect at least in the near future. Therefore, gender preferences can have a substantial

impact on fertility and family planning in countries where couples have strong preferences for the sex of their children, but gender preferences are not likely to be a major obstacle to fertility decline in these countries.

5.2 MULTIVARIATE ANALYSIS

Many studies of the impact of gender preferences on reproductive attitudes and behavior use multivariate models to estimate net effects. These models usually include as independent variables either the number of daughters and sons a woman has or an attitudinal measure of gender preference. As an example of the type of analysis that can be done, Table 5.2 reproduces some of the information from Tables 4 and 5 in Mutharayappa et al. (1997) for India. This analysis shows the effect of the sex distribution of surviving children on a woman's probability of going on to have another child within five years using life table methods and hazard models. For the reference group (second or third parity women with two sons), the probability of having another child within five years is estimated by a life table method. The relative risks for the other groups are estimated by hazard models.

Women with two children are most likely to go on to have a third child if they have no sons and least likely to continue childbearing if they have no daughters. At the third parity, once again women with no sons are most likely to go on, but the lowest fertility group is women with two sons and one daughter. This suggests that once women have two sons, they have a slight preference for having at least one daughter.

This analysis can be taken one step further by combining the results of the multivariate analysis with the Arnold measure discussed in the last section. Using the adjusted parity progression ratios, Mutharayappa et al. (1997: 19) have estimated the excess percentage of births due to gender preference at 8.4 percent. The effect of gender preference on parity progression is particularly strong at the third parity, which is a crucial decision making point for many couples in India.

Table 5.1 Effect of gender preference

Arnold measure for changes in desire for another child, current pregnancy, and contraceptive use in the absence of gender preference for children, Demographic and Health Surveys, 1988-1994

Country (year)	Percent of currently married, nonpregnant women age 15-49 who want another child			Percent of currently married women age 15-49 who are pregnant			Percent of currently married women age 15-49 who are currently using contraception		
	Current	In absence of gender preference		Current	In absence of gender preference		Current	In absence of gender preference	
		Percent difference			Percent difference			Percent difference	
Egypt (1988-89)	30.1	27.7	8.0	12.0	11.0	9.0	37.8	40.5	7.0
Egypt (1992)	27.5	24.5	10.7	10.3	9.1	11.6	47.1	50.7	7.7
Tunisia (1988)	35.7	32.8	8.1	10.7	9.2	14.6	49.8	51.9	4.3
Turkey (1993)	23.0	20.8	9.6	7.8	6.7	14.1	62.6	64.3	2.7
Bangladesh (1993-94)	36.4	31.7	12.9	8.7	7.4	14.5	44.9	47.6	5.9
India (1992-93)	32.5	27.4	15.7	8.5	7.5	11.0	40.7	45.5	11.8
Nepal (1991)	36.3	28.9	20.4	9.5	8.5	10.3	22.7	28.4	24.8
Pakistan (1990-91)	41.6	34.6	16.8	15.5	12.3	20.6	11.8	13.9	17.3

Table 5.2 Parity progression ratios

Adjusted parity progression ratios for women with two or three surviving children, by number of sons, National Family Health Survey, India, 1992-93

Parity and number of sons	Adjusted percentage having next child within five years
Women with two children	
Two sons	66.7
One son	72.0
No sons	80.7
Women with three children	
Three sons	55.5
Two sons	50.9
One son	65.1
No sons	78.0

Note: Adjustments are made by using proportional hazard models controlling for the effects of child mortality, year of birth of the last child, mother's age at the birth of the last child, mother's literacy, mother's residence, and religion of head of household. In comparison with the reference group (women with two sons), all underlying hazard model coefficients are statistically significant at the .05 level.

Source: Mutharayappa et al. (1997)

6 Treatment of Daughters and Sons

Once couples have children, in most countries the children receive approximately equal treatment in a number of critical areas regardless of their sex and the underlying gender preferences in the society (Arnold 1992). But in some countries, a preference for sons accompanied by the low status of women can lead to various forms of discrimination against daughters. There is ample evidence, particularly in South Asia, that young boys are often given preferential treatment with respect to medical care, food allocation, and educational opportunities (Bairagi, 1986; Basu, 1992; Chen, Huq and D'Souza, 1981; Das Gupta, 1987; Hossain and Glass, 1988; Kielmann et al., 1983; Kishor, 1995; Kynch and Sen, 1983; Makinson, 1986; Miller, 1981; Muhuri and Preston, 1991; Pebley and Amin, 1991; Sen and Sengupta, 1983). The DHS questionnaires contain a wide array of information related to the treatment of children, including medical care, feeding practices, malnutrition, school attendance, mother's employment and infant and child mortality. The following sections examine whether daughters and sons are treated equitably in these areas.

6.1 MEDICAL TREATMENT

If parents have a strong preference for children of a particular sex, then daughters and sons may be treated differently with respect to both preventive medical care and curative care once a child becomes ill. An important indicator of preventive care is the coverage of vaccinations against childhood diseases. Table 6.1 shows the extent to which children have been vaccinated against six vaccine-preventable childhood diseases. Children who are fully vaccinated have received a BCG vaccination against tuberculosis, a measles vaccination, and three doses each of DPT and polio vaccine (not including polio vaccine administered at the time of birth). Children recorded as having no vaccinations have not received any of these eight vaccinations. The table is restricted to one-year-old children since all children should be fully vaccinated by the time they reach their first birthday. The table excludes DHS-I surveys which collected information only from vaccination cards. The later surveys included information from vaccination cards when available and otherwise information based on the mother's recall.⁴ In a large majority of countries, there are no statistically significant differences between the vaccination coverage of daughters and sons. Sons receive preferential treatment in Bangladesh, Bolivia, Madagascar, Nepal, and India, whereas daughter preference is evident in the Dominican Republic and Paraguay. Sons are much more likely to be fully vaccinated in Pakistan, but the difference between

⁴ During DHS-I, sons were significantly more likely to be fully vaccinated in Tunisia and to have received no vaccinations in Sri Lanka and Brazil (data not shown). Daughters were more likely to be fully vaccinated in Ghana and Mexico.

daughters and sons does not reach statistical significance in that country.

Table 6.2 provides information on the prevalence and treatment of three common childhood illnesses among young children—diarrhea, fever, and acute respiratory infection. In most countries, girls and boys are equally likely to have had a recent occurrence of these illnesses. When there is a significant difference, boys are always more likely to be sick than girls. Of course, it is possible that parents with a preference for sons may be less apt to recognize illness in a daughter or to report it to an interviewer, but there is no way of examining this possibility with the survey data.

When children become sick with one of these three illnesses, there is usually no statistically significant difference in the proportion who are taken to a health facility or a health provider for treatment. Out of the 125 comparisons that can be made, the sex differences are statistically significant in only 11 cases, and all but 2 of these favor sons. India is the only country where daughters are systematically and consistently discriminated against in receiving medical treatment. Even in India, however, more than 60 percent of young girls are taken for medical care when they fall sick with one of these illnesses.

If we consider only the direction of the differences in treatment between daughters and sons (not the statistical significance of the differences), girls are disadvantaged in nearly two-thirds of the comparisons for the three illnesses combined. Boys are most favored with respect to the treatment of fever. In 29 out of the 37 comparisons for the treatment of fever, boys received medical attention more often than girls, although the differentials are quite small on average.

Further information is available on the type of treatment received for these illnesses. The last column of Table 6.2 shows the percentage of children with a recent episode of diarrhea who were given oral rehydration therapy (ORT) during the illness. In this table, ORT includes both a solution made from packets of oral rehydration salts (ORS) and a recommended home fluid (RHF), usually a mixture of sugar, salt, and water. In more than 60 percent of the surveys, boys are more likely to have received ORT when they had diarrhea, but the differences are statistically significant in only two countries (Bangladesh and India).

6.2 FEEDING PRACTICES

Several sets of international recommendations for the feeding of infants and young children have been formulated by different groups (World Health Assembly, 1994; World Health Organization, 1991; and Innocenti Declaration, 1990). Although the wording of their statements varies somewhat, the basic recommendations are as follows:

Table 6.1 Vaccinations

Percent of children 12-23 months old who are fully vaccinated or who have received no vaccinations, Demographic and Health Surveys, 1989-1995

Country (year)	Percentage fully vaccinated ¹		Percentage with no vaccinations	
	Female	Male	Female	Male
Sub-Saharan Africa				
Burkina Faso (1992-93)	35.4	33.8	11.1	15.0
Central African Republic (1994-95)	36.4	36.8	19.7	17.0
Cameroon (1991)	38.6	41.3	22.9	20.4
Ghana (1993)	56.7	53.2	16.6	14.0
Kenya (1993)	78.2	78.1	3.5	3.1
Madagascar (1992)	42.4	44.4	23.5	16.7
Malawi (1992)	81.9	81.8	1.5	3.4
Namibia (1992)	57.5	58.2	5.2	4.4
Niger (1992)	18.7	16.3	56.1	61.0
Nigeria (1990)	28.0	30.0	34.0	37.8
Rwanda (1992)	86.2	86.5	3.7	2.1
Senegal (1992-93)	52.3	46.2	13.1	17.2
Sudan (1989-90)	50.2	52.9	22.2	20.0
Zambia (1992)	66.9	66.3	4.7	3.5
Zimbabwe (1994)	80.9	79.2	3.5	4.7
Near East/North Africa/Asia				
Egypt (1992)	65.7	68.9	4.2	3.5
Jordan (1990) ²	14.5	15.4	1.7	2.5
Morocco (1992)	76.0	75.5	7.4	5.0
Turkey (1993)	66.2	62.6	2.0	3.9
Bangladesh (1993-94)	55.8	62.0	16.7	11.4
India (1992-93)	34.1	36.7	32.3	27.8
Indonesia (1991)	48.3	48.4	24.6	23.3
Indonesia (1994)	50.3	50.5	18.2	17.7
Nepal (1991)	35.5	38.8	25.8	21.9
Pakistan (1990-91)	31.3	39.1	30.9	25.3
Philippines (1993)	72.1	71.0	7.1	6.4
Latin America/Caribbean				
Bolivia (1993-94)	33.4	39.8	16.4	13.4
Brazil, NE (1991)	55.5	56.4	3.0	3.2
Colombia (1990)	68.6	68.1	1.0	1.1
Dominican Republic (1991)	41.9	31.8	0.4	1.2
Paraguay (1990)	37.9	31.1	7.7	10.3
Peru (1991-92)	58.7	56.8	4.1	4.0

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

¹ Percentage of children who have received BCG, measles, and three doses of DPT and polio vaccines (excluding polio0)

² BCG is not included in the calculation of fully vaccinated children in Jordan

Table 6.2 Prevalence and treatment of childhood diseases

Percentage of children under 5 years of age with diarrhea, fever, and symptoms of acute respiratory infection (ARI) during the two weeks preceding the survey, and among those with each condition, percentage receiving treatment, by sex, Demographic and Health Surveys, 1986-1995

Country (year)	Prevalence of diarrhea		Prevalence of fever		Prevalence of ARI		Percent with diarrhea receiving treatment		Percent with fever receiving treatment		Percent with ARI receiving treatment		Percent with diarrhea given ORT	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Sub-Saharan Africa														
Botswana (1988)	9.7	9.9	4.2 ^a	3.6 ^a	27.9 ^b	28.8 ^b	46.8	44.7	94.7 ^a	84.8 ^a	82.1 ^b	82.4 ^b	64.8	68.2
Burkina Faso (1992-93)	18.6	21.5	33.3	36.0	11.0	11.3	16.4	13.4	19.1	19.5	19.0	18.6	15.4	15.4
Burundi (1987)	16.9	17.5	7.7 ^a	8.0 ^a	40.6 ^b	38.1 ^b	38.7	38.0	48.8 ^a	50.9 ^a	37.4 ^b	34.3 ^b	35.9	30.0
Cameroon (1991)	16.2	19.0	21.6	23.5	8.5	8.8	20.8	19.5	36.5	44.7	41.8	50.8	34.1	31.6
Central African Republic (1994-95) ¹	21.9	23.3	35.2	34.5	27.5	28.8	28.8	31.1	30.0	33.5	39.4	43.0	34.7	33.6
Ghana (1988)	25.3	26.8	34.0 ^a	36.0 ^a	19.6 ^b	19.9 ^b	45.6	40.7	57.8 ^a	55.1 ^a	50.8 ^b	47.4 ^b	35.3	36.5
Ghana (1993) ¹	19.6	20.5	26.3	28.7	8.9	11.2	22.3	25.6	48.7	46.2	37.8	46.6	35.0	39.1
Kenya (1988-89)	12.7	12.7	42.6 ^a	41.1 ^a	18.4 ^b	17.8 ^b	45.9	47.0	55.0 ^a	56.0 ^a	68.4^b	61.8^b	67.4	57.6
Kenya (1993)	13.5	14.1	40.7	42.2	18.8	17.6	36.4	45.1	45.3	49.2	51.1	52.2	29.9	33.2
Liberia (1986)	38.0 ^a	39.5 ^a	50.6 ^a	50.3 ^a	35.9 ^c	37.0 ^c	U	U	U	U	U	U	9.4 ^c	9.8 ^c
Madagascar (1992)	11.1	13.5	26.3	27.3	14.9	16.3	36.4	34.0	37.4	40.8	44.6	39.0	23.0	27.2
Malawi (1992)	20.0	23.3	39.8	40.2	14.7	14.1	42.5	51.2	50.5	51.0	54.8	52.6	61.7	64.4
Mali (1987)	32.6	35.6	30.9	34.4	6.4 ^d	6.6 ^d	U	U	U	U	U	U	1.1	0.9
Namibia (1992)	20.6	20.4	34.3	33.8	18.2	17.6	67.5	68.6	65.6	64.1	67.1	67.3	63.0	66.6
Niger (1992)	27.1	28.3	44.7	44.6	10.6	10.5	10.0	9.7	9.9	11.6	11.0	15.8	14.9	18.2
Nigeria (1990)	16.3	19.2	31.5	33.2	6.2	7.2	28.4	25.5	30.8	34.1	40.2	34.4	27.6	25.7
Rwanda (1992)	21.5	21.8	41.1	41.5	32.5	32.2	22.6	23.0	27.9	33.1	28.4	31.7	36.8	34.6
Senegal (1986)	36.8	38.7	48.5 ^e	51.0 ^e	U	U	U	U	U	U	U	U	4.3	4.8
Senegal (1992-93)	18.7	22.2	37.0	38.6	13.0	14.7	22.8	23.4	29.5	33.6	32.5	31.2	16.1	16.0
Sudan (1989-90)	29.1	30.6	38.6	39.7	18.6 ^f	20.3 ^f	53.9	53.8	61.7	64.3	65.6 ^f	67.6 ^f	37.6	35.3
Togo (1988)	28.8	29.7	42.3	43.3	9.6 ^g	11.4 ^g	27.2	23.9	30.8	30.6	33.6 ^g	32.3 ^g	21.9	22.7
Uganda (1988-89)	23.1	25.3	41.1 ^a	41.2 ^a	22.3 ^b	22.4 ^b	16.0	13.8	42.6 ^a	46.5 ^a	47.6 ^b	49.3 ^b	15.3	14.7
Zambia (1992)	21.1	24.0	42.9	43.6	12.5	12.8	53.3	55.7	61.0	61.4	62.3	60.7	61.8	65.3
Zimbabwe (1988-89)	19.0	20.4	6.7 ^a	7.5 ^a	6.5 ^a	6.5 ^a	33.1	33.3	63.8 ^a	66.7 ^a	61.2 ^a	58.7 ^a	71.6	67.9
Zimbabwe (1994) ¹	21.9	25.1	39.9	39.5	24.6	26.3	30.7	28.9	41.7	35.7	53.4	51.0	79.8	79.2
Near East/North Africa														
Egypt (1988-89) ²	15.0 ^b	16.7 ^h	U	U	42.2 ⁱ	43.8 ⁱ	42.3 ^h	44.4 ^h	U	U	44.1 ⁱ	46.5 ⁱ	25.9	30.8
Egypt (1992)	12.2	14.3	19.9	22.2	7.6	8.7	43.4	46.7	56.7	61.1	55.4	61.2	32.5	32.8
Jordan (1990)	8.3	8.6	15.2	17.8	U	U	49.6	49.8	68.8	74.6	U	U	38.9	43.8
Morocco (1987)	27.5 ^j	29.9 ^j	U	U	U	U	14.0 ^j	16.0 ^j	U	U	U	U	15.0 ^j	15.8 ^j
Morocco (1992)	12.1 ⁱ	13.1 ^j	26.6 ^j	27.3 ^j	15.1 ^j	15.3 ^j	10.5 ^j	9.8 ^j	18.4 ^j	17.6 ^j	15.6 ^j	19.0 ^j	14.0 ^j	16.0 ^j
Tunisia (1988)	19.2	22.0	U	U	U	U	24.8	31.6	U	U	U	U	4.4	3.8
Turkey (1993)	22.8 ^j	26.5 ^j	28.7	30.9	11.7	12.9	23.4 ^j	25.7 ^j	37.0	37.6	38.7	36.1	15.0 ^j	16.8 ^j
Asia														
Bangladesh (1993-94) ¹	12.9	11.8	U	U	20.8	26.1	20.8	19.9	U	U	24.9	30.1	53.7	63.3
India (1992-93) ³	9.7	10.2	19.1	20.9	5.8	7.0	59.1	63.0	64.9	71.6	63.1	73.0	28.5	32.4
Indonesia (1991)	10.6	11.4	26.5	26.9	9.5	9.8	46.0	46.3	59.6	60.4	62.3	66.3	56.9	57.3
Indonesia (1994)	11.0	13.1	27.4	28.3	9.3	10.7	54.1	52.6	56.0	58.4	60.1	65.0	46.8	43.7
Nepal (1991)	15.4	16.5	20.2	20.8	16.3	17.5	U	U	U	U	U	U	35.3	35.7
Pakistan (1990-91)	13.9	15.0	29.7	30.1	16.2	15.5	53.6	42.6	62.8	66.3	65.1	67.5	42.2	41.2
Philippines (1993)	9.9	10.2	25.2	25.5	8.7	8.6	35.8	32.0	44.5	42.1	50.6	51.9	50.9	48.2
Sri Lanka (1987)	5.5	6.5	U	U	U	U	68.1	74.8	U	U	U	U	33.8	35.6
Thailand (1987)	14.0	17.1	U	U	U	U	39.5	42.5	U	U	U	U	42.4	37.9

Continued

Table 6.2 Prevalence and treatment of childhood diseases—Continued

Country (year)	Prevalence of diarrhea		Prevalence of fever		Prevalence of ARI		Percent with diarrhea receiving treatment		Percent with fever receiving treatment		Percent with ARI receiving treatment		Percent with diarrhea given ORT	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Latin American/Caribbean														
Bolivia (1989)	28.5	27.3	U	U	U	U	23.0	24.3	U	U	U	U	33.1	36.5
Bolivia (1993-94) ¹	30.0	29.3	28.9	28.9	16.9	18.7	31.3	33.4	26.7	28.8	38.4	40.7	37.3	39.3
Brazil (1986)	16.5	17.1	U	U	U	U	U	U	U	U	U	U	11.2	10.2
Brazil, NE (1991)	13.9	16.3	21.6	22.3	17.3	19.0	19.8	29.1	35.4	37.1	34.4	30.0	44.8	51.6
Colombia (1986)	19.1	18.5	21.4 ^k	19.9 ^k	16.0 ^l	16.6 ^l	33.7	28.7	40.5 ^k	43.7 ^k	41.2 ^l	41.2 ^l	50.8	46.9
Colombia (1990)	11.9	13.0	17.4	20.8	14.9	16.6	28.1	42.1	42.5	52.8	40.5	48.3	46.4	34.3
Dominican Republic (1986)	24.5	25.5	U	U	U	U	31.0	25.2	U	U	U	U	43.9	39.2
Dominican Republic (1991)	16.0	17.0	26.2	27.5	21.6	21.0	29.0	30.8	41.9	43.5	39.2	41.7	29.1	32.1
Guatemala (1987)	15.3	17.9	U	U	U	U	16.2	17.3	U	U	U	U	15.0	17.0
Mexico (1987)	21.5	23.9	U	U	U	U	U	U	U	U	U	U	4.3	4.5
Paraguay (1990)	8.4	7.8	31.5	31.0	15.9	18.4	35.1	38.2	56.1	58.6	60.8	65.6	29.3	31.1
Peru (1986)	30.4 ^j	33.7 ^j	U	U	U	U	22.3 ^g	28.5 ^g	U	U	U	U	46.2 ^j	48.2 ^j
Peru (1991-92)	17.5	19.1	U	U	22.0	24.4	19.7	23.8	U	U	31.8	33.8	25.2	29.0
Trinidad and Tobago (1987)	5.6	6.4	U	U	U	U	58.5	41.7	U	U	U	U	58.5	60.0

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. The questions on the treatment of illnesses were somewhat different in different surveys. The most common questions asked either whether anyone sought advice or treatment for the sick child or whether the child was taken to a health facility or health provider.

ARI = Symptoms of acute respiratory infection (cough with rapid breathing/short, rapid breaths)

ORT = Oral rehydration therapy (solution prepared from oral rehydration salts (ORS), or recommended home fluids (RHF))

U = Unknown (not available)

^a Based on past 4 weeks

^b Severe cough or difficult or rapid breathing in past 4 weeks

^c Cough with difficult breathing in past 4 weeks

^d Difficult or rapid breathing in past 4 weeks

^e Malaria last winter

^f Cough with rapid breathing in past 2 weeks

^g Fever last winter

^h Rapid or difficult breathing only

ⁱ Based on past 7 days

^j Cough in past month

^k Difficult or rapid breathing in past 2 weeks

^l Based on past 7 days

^m Cough with difficult breathing in past month

ⁿ Based on past 15 days

^o Based on last birth in past 4 weeks

^p Cough with difficult or agitated breathing in past 4 weeks for last birth

¹ Limited to children under 3 years of age

² Treatment based on whether the respondent sought anyone's opinion during the episode

³ Limited to children under 4 years of age

- Children should be exclusively breastfed from birth to age 4-6 months.
- Thereafter, children should receive appropriate and complementary foods in addition to breast milk for up to two years or more.
- Bottle feeding is not advocated.

To accompany these recommendations, a number of indicators have been proposed to assess feeding practices. The main indicators are the *timely complementary feeding rate*, the *continued breastfeeding rate at one year* (12-15 months), the *continued breastfeeding rate at two years* (20-23 months), and the *bottle-feeding rate* (up to 12 months). Additional indicators include the *ever-breastfed rate*, the *timely first suckling rate* and the *median duration of breastfeeding*. Information that is necessary to calculate all of these indicators is available in the DHS, although only partial information is available in some of the surveys. Tables 6.3 and 6.4 show the extent to which the international recommendations are followed for feeding girls and boys through two years of age. The tables report the results for the most widely available indicators, as well as for bottle feeding (which has been included in only the more recent surveys). The remaining indicators can be calculated for selected countries, but they are not shown in the comparative tables either because of a lack of information for many countries or differences in the type of information collected in various surveys.

Table 6.3 shows that nearly all children are breastfed regardless of their sex. The percentages ever breastfed are typically more than 95 percent, except in Latin America and the Caribbean. In nearly three-fourths of the surveys, girls are more likely to have ever been breastfed than boys, but the differences are trivial. Moreover, the lower percentages for boys are almost entirely a result of the fact that boys are more likely to die in the first few days of life before their mothers had a chance to breastfeed them. If the analysis is restricted to children who survived at least seven days, the percentage ever breastfed always increases and the sex differentials almost disappear. Table 6.3 also shows the percentage of living, last-born children under five years of age who were still being breastfed at the time of the survey. The percentages still being breastfed are higher for girls in about half of the countries and higher for boys in the remaining countries. Boys are significantly more likely to still be breastfeeding in Namibia and India, as are girls in Morocco (1987), Brazil (1986), and Jordan. The median duration of breastfeeding, shown in the last two columns of the table, is lower than the recommended period in nearly all countries. Once again, the differences are not large, but sons are typically breastfed for a slightly longer period than daughters in the countries that have previously been identified as having the strongest preference for sons.

The continued breastfeeding indicators in Table 6.4 exhibit somewhat larger differentials than the mean duration of breastfeeding shown earlier, mainly because they are subject to greater variation because the estimates are based on relatively small numbers of living children in the specified four-month age groups. At age 12-15 months, India and Peru (1986) are the only two surveys with statistically significant sex differentials. By age 20-23 months, the sex differentials in breastfeeding tend to increase, and they reach statistical significance in 10 surveys. In all of these 10 surveys, sons are significantly more likely than daughters to be breastfeeding as they approach their second birthday.

Information on bottle feeding is available from 29 surveys. Except for Bolivia, the majority of infants are bottle fed in Latin America and the Caribbean. In the other regions, bottle feeding is much less common. Sons are significantly more likely to be bottle fed in the Philippines and India, whereas daughters are more likely to be bottle fed in Kenya (1993).

6.3 MALNUTRITION

A poor diet and exposure to repeated, untreated illnesses are two of the major causes of malnutrition (Mosley and Chen, 1984). In the DHS, the extent of malnutrition in young children is assessed through measurement of their height and weight. From these measurements, three indicators of malnutrition are calculated:

- *Height-for-age* is an indicator of stunting or chronic malnutrition.
- *Weight-for-height* is an indicator of wasting or acute malnutrition.
- *Weight-for-age* is a composite measure which takes into account both chronic and acute malnutrition.

Children who fall more than two standard deviations below the median value of nutritional status for an international reference population, recommended by the World Health Organization, are considered to be malnourished (Dibley et al., 1987a, 1987b). Those who are more than three standard deviations below the reference median are considered to be severely malnourished.

Tables 6.5 and 6.6 summarize the nutritional status of children in two age groups. The age group 3-35 months was selected because nearly all surveys that included anthropometry measured children in this age range. The 24-35 month category was selected because of the potential for children of the less desired sex to face nutritional problems shortly after weaning. A more detailed discussion of sex differentials in the nutritional status of young children in different age groups can be found in Sommerfelt and Arnold (1997).

Table 6.3 Breastfeeding

Patterns of breastfeeding by sex of child, Demographic and Health Surveys, 1986-1995

Country (year)	Percentage of last births ever breastfed				Percentage of living last-born children under age 5 still being breastfed		Median months of breastfeeding for living children born 0-35 months before survey	
	All last births		Last births surviving at least one week		Female	Male	Female	Male
	Female	Male	Female	Male				
Sub-Saharan Africa								
Botswana (1988)	97.0	95.8	97.7	97.0	47.2	44.6	18.8	17.4
Burkina Faso (1992-93)	98.5	98.7	99.6	99.6	68.9	68.7	26.4	26.5
Burundi (1987)	98.7	98.8	99.3	99.4	73.3	72.3	24.0	24.6
Cameroon (1991)	98.1	97.6	99.0	98.9	51.5	53.3	17.2	18.7
Central African Rep. (1994-95) ¹	98.8	98.5	99.7	99.3	73.2	73.0	21.6	21.3
Ghana (1988)	98.5	97.0	99.4	99.6	56.8	58.6	21.4	21.7
Ghana (1993) ¹	98.2	97.8	99.6	99.8	70.3	69.8	22.6	21.3
Kenya (1988-89)	98.3	98.0	98.9	99.2	60.5	58.6	21.2	19.7
Kenya (1993) ¹	98.1	98.0	99.3	99.3	56.9	56.2	21.1	22.6
Liberia (1986)	95.3	95.2	96.4	96.5	52.9	56.1	17.7	17.8
Madagascar (1992)	98.5	98.2	99.3	99.2	63.9	61.8	20.2	20.8
Malawi (1992)	98.0	97.8	99.4	99.2	64.3	65.9	22.4	21.9
Mali (1987)	98.2	98.6	99.8	99.8	67.9	67.1	20.8	19.8
Namibia (1992)	96.4	95.6	97.4	97.0	44.4	48.9	18.2	17.7
Niger (1992)	98.5	98.4	99.6	99.4	65.9	64.9	22.0	22.0
Nigeria (1990)	98.4	97.9	99.2	99.5	57.9	60.2	20.3	20.6
Rwanda (1992)	99.3	98.4	99.6	99.6	80.0	80.6	30.0	28.6
Senegal (1986)	98.1	97.9	99.1	98.9	57.9	54.8	19.8	19.3
Senegal (1992-93)	98.7	98.3	99.5	99.2	57.1	58.7	20.4	21.4
Sudan (1989-90)	97.9	98.0	99.1	99.4	55.9	57.8	20.4	19.7
Togo (1988)	98.2	97.7	99.3	99.3	64.5	60.9	23.0	23.3
Uganda (1988-89)	98.4	98.5	99.7	99.9	63.0	61.8	19.9	19.8
Zambia (1992)	98.4	98.3	99.4	99.7	57.5	58.6	19.3	19.7
Zimbabwe (1988-89)	99.0	98.9	99.7	99.6	46.6	45.4	18.9	19.2
Zimbabwe (1994) ¹	99.3	98.6	99.9	99.5	58.3	58.3	19.0	18.9
Near East/North Africa								
Egypt (1988-89)	93.2	93.5	94.1	94.7	48.5	50.6	18.6	19.7
Egypt (1992)	95.9	95.3	96.5	96.0	44.7	45.2	19.5	19.8
Jordan (1990)	95.6	94.1	96.4	95.0	41.4	38.0	12.6	13.0
Morocco (1987)	94.5	95.2	95.4	95.9	44.2	39.4	15.8	15.7
Morocco (1992)	95.9	95.0	96.7	96.0	37.8	36.8	16.5	15.7
Tunisia (1988)	95.7	95.6	96.3	96.4	43.2	45.3	16.7	15.5
Turkey (1993)	96.8	95.3	97.7	96.7	30.6	32.6	12.5	13.8
Asia								
Bangladesh (1993-94) ¹	97.0	96.8	99.0	98.6	89.1	90.4	a	a
India (1992-93) ²	96.9	96.5	98.4	98.4	74.8	76.5	24.6	26.6
Indonesia (1987)	96.3	96.5	96.7	97.1	57.9	58.7	23.1	24.0
Indonesia (1991)	97.2	97.1	97.9	98.1	55.8	56.4	23.7	24.9
Indonesia (1994)	97.8	97.1	98.5	98.3	56.1	57.0	24.9	24.6
Nepal (1991)	97.9	97.9	99.2	99.3	85.8	86.3	32.3	33.8
Pakistan (1990-91)	95.2	95.6	96.5	96.4	61.6	62.8	22.1	21.3
Philippines (1993)	87.9	87.5	88.4	88.3	37.1	35.8	14.8	14.5
Sri Lanka (1987)	98.5	98.2	99.0	98.8	53.6	54.7	21.2	20.3
Thailand (1987)	95.4	95.0	96.0	95.7	35.6	36.9	15.7	14.4

Continued

Table 6.3 Breastfeeding—Continued

Country (year)	Percentage of last births ever breastfed				Percentage of living last-born children under age 5 still being breastfed		Median months of breastfeeding for living children born 0-35 months before survey	
	All last births		Last births surviving at least one week		Female	Male	Female	Male
	Female	Male	Female	Male				
Latin America/Caribbean								
Bolivia (1989)	<i>97.5</i>	<i>95.8</i>	98.1	97.4	47.5	46.0	17.2	17.2
Bolivia (1993-94) ¹	96.4	96.8	97.6	98.5	62.4	59.3	19.6	17.6
Brazil (1986)	88.4	86.9	89.7	87.7	<i>25.2</i>	<i>20.5</i>	6.4	5.0
Brazil, NE (1991)	91.4	89.5	92.4	90.7	24.8	24.2	4.1	4.0
Colombia (1986)	94.6	92.8	95.3	93.7	28.4	26.9	9.5	7.3
Colombia (1990)	93.6	94.6	94.3	95.1	27.4	29.3	8.0	9.7
Dominican Republic (1986)	90.7	90.3	91.9	92.0	27.2	25.4	7.5	7.5
Dominican Republic (1991)	92.8	93.4	93.7	94.5	22.9	22.0	6.1	5.9
Ecuador (1987)	94.0	93.0	94.9	94.1	39.7	38.8	14.0	13.8
Guatemala (1987) ¹	95.8	95.3	96.8	97.3	61.1	62.3	20.5	22.0
Mexico (1987)	82.8	83.4	U	U	28.4	28.5	10.7	7.7
Paraguay (1990)	93.9	92.8	94.5	93.8	30.3	29.4	11.2	10.9
Peru (1986)	94.0	94.4	95.7	95.2	45.9	42.1	19.1	14.4
Peru (1991-92)	96.9	96.0	97.7	97.1	44.5	42.8	18.1	18.0
Trinidad and Tobago (1987)	89.0	90.0	89.6	90.9	25.2	24.5	7.3	5.6

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. First six columns are based on children born in the 5 years preceding the survey. The median duration of breastfeeding is calculated on the basis of current status methodology using a three-month moving average.

U = Unknown (not available)

¹ Breastfeeding information based on children born in the 3 years before the survey

² Breastfeeding information based on children born in the 4 years before the survey

^a Median is more than 36 months

Table 6.4 Recommended feeding indicators

Recommended feeding indicators for children 0-23 months, by sex of child, Demographic and Health Surveys, 1986-1995

Country (year)	Percent of children being breastfed				Percent of last-born children < 12 months being bottle fed		Country (year)	Percent of children being breastfed				Percent of last-born children < 12 months being bottle fed	
	Age 12-15 months		Age 20-23 months		Female	Male		Age 12-15 months		Age 20-23 months		Female	Male
	Female	Male	Female	Male				Female	Male	Female	Male		
Sub-Saharan Africa							Asia						
Botswana (1988)	79.1	74.9	27.3	17.7	U	U	Bangladesh (1993-94)	95.1	96.0	85.4	87.4	U	U
Burkina Faso (1992-93)	97.5	97.9	81.1	80.4	1.8	1.1	India (1992-93)	85.7	89.3	64.0	68.9	13.2	15.0
Burundi (1987)	98.2	93.3	66.0	76.1	U	U	Indonesia (1987)	79.3	84.3	61.5	57.8	U	U
Cameroon (1991)	79.8	81.6	34.1	35.9	16.0	11.9	Indonesia (1991)	89.0	85.7	57.9	65.4	12.0	12.6
Central African Rep. (1994-95)	95.1	98.0	54.1	49.1	1.1	1.1	Indonesia (1994)	88.1	88.4	60.5	66.0	15.7	14.1
Ghana (1988)	91.7	96.6	50.9	54.0	U	U	Nepal (1991)	96.7	97.0	81.9	87.8	U	U
Ghana (1993)	94.7	93.8	60.4	46.7	22.2	20.2	Pakistan (1990-91)	79.0	77.3	55.9	47.3	31.0	29.6
Kenya (1988-89)	81.6	80.4	50.0	40.4	U	U	Philippines (1993)	57.8	55.3	21.3	15.5	44.4	50.5
Kenya (1993)	92.3	88.7	46.2	61.5	14.8	10.4	Sri Lanka (1987)	72.3	69.2	50.4	39.6	U	U
Liberia (1986)	67.5	72.1	32.0	28.8	U	U	Thailand (1987)	62.0	55.3	30.4	37.2	U	U
Madagascar (1992)	89.8	91.6	43.2	47.4	3.7	2.9	Latin America/Caribbean						
Malawi (1992)	89.3	95.7	62.3	50.7	4.6	5.5	Bolivia (1989)	75.3	70.2	29.8	29.1	U	U
Mali (1987)	89.5	89.8	49.9	39.1	U	U	Bolivia (1993-94)	74.8	72.3	36.2	35.8	35.7	37.8
Namibia (1992)	65.6	70.6	19.6	24.8	35.2	32.5	Brazil (1986)	24.2	25.5	14.5	11.0	U	U
Niger (1992)	95.0	95.8	60.5	58.6	3.6	2.3	Brazil, NE (1991)	27.2	29.5	20.4	15.9	80.4	82.9
Nigeria (1990)	86.6	86.2	45.2	40.2	26.3	27.9	Colombia (1986)	35.7	28.7	11.7	16.3	U	U
Rwanda (1992)	97.7	98.8	80.7	87.7	2.6	1.6	Colombia (1990)	40.7	38.1	25.4	22.2	68.8	70.5
Senegal (1986)	93.7	91.8	39.8	34.2	U	U	Dominican Republic (1986)	23.2	22.9	14.1	7.2	U	U
Senegal (1992-93)	93.2	92.2	40.2	55.8	5.4	4.7	Dominican Republic (1991)	27.5	30.3	6.4	8.0	86.3	82.7
Sudan (1989-90)	79.4	77.5	45.7	41.3	U	U	Ecuador (1987)	51.0	51.7	18.4	26.3	U	U
Togo (1988)	95.2	93.8	66.7	69.0	U	U	Guatemala (1987)	84.3	79.4	35.0	53.7	U	U
Uganda (1988-89)	81.8	86.8	36.9	37.9	U	U	Mexico (1987)	32.4	31.8	13.6	27.8	U	U
Zambia (1992)	91.1	89.9	32.3	36.3	6.9	4.9	Paraguay (1990)	40.9	38.9	4.2	11.5	61.1	59.8
Zimbabwe (1988-89)	90.2	89.9	22.4	29.0	U	U	Peru (1986)	64.7	48.4	43.1	36.0	U	U
Zimbabwe (1994)	88.4	90.3	23.3	27.8	6.7	6.2	Peru (1991-92)	68.7	66.7	38.8	33.5	51.5	52.4
Near East/North Africa							Trinidad and Tobago (1987)						
Egypt (1988-89)	70.3	70.6	30.9	40.8	U	U		29.5	30.6	16.9	14.5	U	U
Egypt (1992)	76.6	74.7	38.1	36.1	20.2	19.2							
Jordan (1990)	42.6	46.0	11.3	13.4	41.9	44.0							
Morocco (1987)	61.3	62.0	19.4	15.8	U	U							
Morocco (1992)	65.0	61.4	17.8	20.6	31.8	28.0							
Tunisia (1988)	56.0	55.9	18.6	30.9	U	U							
Turkey (1993)	44.6	49.9	4.5	23.9	37.4	41.1							

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

U = Unknown (not available)

Table 6.5 Malnourished children

Percentage of children who are malnourished, by age, sex, and type of nutritional measure, Demographic and Health Surveys, 1986-1995

Country (year)	Age 3-35 Months						Age 24-35 Months					
	Stunted		Underweight		Wasted		Stunted		Underweight		Wasted	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Sub-Saharan Africa												
Burkina Faso (1992-93)	30.1	32.2	36.9	39.2	17.8	18.6	44.0	41.1	43.2	41.9	11.1	10.6
Burundi (1987)	47.1	47.7	38.0	37.1	5.1	6.2	58.1	60.6	43.6	44.3	2.1	4.7
Cameroon (1991)	24.2	25.7	19.3	16.2	3.7	4.7	36.0	28.4	21.0	13.5	2.1	1.7
Central African Republic (1994-95)	34.4	38.0	27.5	31.3	6.9	7.9	45.8	47.0	35.7	31.9	4.6	4.5
Ghana (1988)	28.8	30.0	30.4	30.1	6.8	9.2	42.7	42.1	36.2	32.5	1.6	3.2
Ghana (1993)	25.2	29.8	27.4	30.9	11.2	12.3	36.9	40.8	35.9	36.1	8.0	6.1
Kenya (1993)	30.4	35.1	23.2	26.0	6.4	7.1	40.4	36.2	28.0	25.9	5.1	5.4
Madagascar (1992)	49.7	55.2	40.3	43.7	5.8	6.5	61.8	61.5	45.9	46.0	3.0	4.0
Malawi (1992)	41.1	48.5	27.8	33.3	6.1	8.2	57.9	61.1	33.2	37.9	1.6	6.3
Mali (1987)	23.9	23.8	31.4	29.8	8.9	13.8	34.3	32.1	34.1	32.7	3.6	10.2
Namibia (1992)	28.9	32.5	27.9	27.9	9.1	9.4	32.3	33.4	33.3	32.5	8.2	8.5
Niger (1992)	36.8	41.4	48.1	49.5	20.0	20.3	51.0	54.1	57.2	54.9	14.5	11.5
Nigeria (1990)	38.5	39.6	36.7	38.8	9.2	13.2	54.6	52.0	46.4	44.2	8.9	7.3
Rwanda (1992)	43.1	46.8	30.3	31.3	5.0	6.0	51.3	49.7	32.5	30.4	2.2	3.6
Senegal (1986) ¹	20.6	25.3	20.0	24.0	3.5	8.1	24.3	33.3	22.4	31.0	1.9	8.0
Senegal (1992-93)	21.1	25.3	21.6	25.6	9.4	12.4	29.0	33.8	27.2	29.3	7.8	6.7
Togo (1988)	28.2	33.6	25.2	26.9	4.6	6.7	35.2	37.8	29.6	25.2	2.6	5.0
Uganda (1988-89)	41.4	46.3	24.6	25.6	2.3	2.2	51.9	52.5	29.4	22.7	1.4	1.4
Zambia (1992)	38.5	40.1	27.4	29.1	6.4	6.3	48.2	50.8	33.9	34.4	5.3	4.4
Zimbabwe (1988-89)	28.7	31.0	11.7	13.6	0.9	1.5	36.3	36.5	16.5	16.3	0.7	1.4
Zimbabwe (1994)	22.8	23.8	15.0	18.9	4.7	7.0	28.5	28.9	19.3	19.0	4.0	3.2
Near East/North Africa/Asia												
Egypt (1988-89)	31.0	30.9	12.9	13.8	0.8	1.4	36.0	29.1	11.9	9.5	0.4	0.0
Egypt (1992)	29.1	29.6	13.1	13.2	4.1	4.3	28.5	30.2	12.1	13.1	3.1	3.4
Jordan (1990)	17.2	16.2	6.0	6.8	2.7	3.8	15.7	13.9	6.7	6.8	1.8	2.9
Morocco (1987)	23.1	24.2	13.5	14.5	3.3	4.0	31.0	28.1	15.9	16.0	1.1	1.9
Morocco (1992)	24.7	24.0	10.4	11.5	2.0	3.3	31.4	29.7	11.9	13.5	1.6	2.3
Tunisia (1988)	18.7	17.2	10.0	10.5	2.2	3.8	23.7	20.7	10.4	10.6	2.1	0.6
Turkey (1993)	16.3	16.7	10.2	10.8	2.8	4.4	22.7	21.9	13.3	12.0	2.1	3.6
India (1992-93)	49.4	50.3	53.8	55.0	17.9	22.0	61.7	58.8	62.9	61.5	15.2	17.9
Pakistan (1990-91)	45.3	46.8	37.9	40.8	9.1	11.0	57.4	56.2	46.7	44.9	9.5	9.7
Sri Lanka (1987)	28.7	26.0	37.7	37.0	11.5	11.6	39.8	28.5	53.8	41.5	11.3	8.8
Thailand (1987)	21.1	21.9	25.4	25.3	5.3	5.3	26.6	27.6	28.3	32.5	2.5	2.6
Latin America/Caribbean												
Bolivia (1989)	36.0	39.4	11.4	15.1	1.5	1.7	50.3	50.0	13.1	11.0	1.2	0.9
Bolivia (1993-94)	28.1	28.2	15.2	16.1	3.1	5.5	31.2	31.5	17.4	15.8	2.9	5.6
Brazil (1986)	26.7	31.8	13.4	14.8	0.6	1.5	35.0	26.5	17.5	8.8	0.0	0.0
Colombia (1986)	24.3	26.4	12.9	11.1	1.2	1.4	30.5	37.7	14.2	13.4	0.4	1.7
Dominican Republic (1986) ¹	16.8	24.7	10.6	14.4	1.2	3.5	21.0	29.9	14.0	16.6	1.3	1.3
Dominican Republic (1991)	16.1	18.7	10.4	13.3	1.5	1.2	17.9	13.0	14.1	10.3	3.1	0.4
Guatemala (1987)	56.7	58.7	33.9	32.4	1.5	1.1	68.5	66.6	40.8	35.8	0.3	0.5
Paraguay (1990)	14.7	16.7	5.0	4.2	0.3	0.2	11.9	12.2	3.6	1.9	0.1	0.1
Peru (1991-92)	26.8	29.3	11.1	12.9	1.9	2.3	36.9	34.8	13.3	12.8	1.7	1.6
Trinidad and Tobago (1987)	4.5	5.0	6.9	6.0	3.8	3.8	4.1	3.9	3.5	5.5	2.4	3.9

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. Each index is expressed in terms of the number of standard deviation units from the median of the NCHS/CDC/WHO international reference population. Children are classified as malnourished if their z-scores are more than two standard deviations below the median of the reference population. Table excludes children with imputed dates of birth and children whose z-score is improbably low or high.

¹ Children age 3-5 months not included

Table 6.6 Severely malnourished children

Percentage of children who are severely malnourished by age, sex, and type of nutritional measure, Demographic and Health Surveys, 1986-1995

Country (year)	Age 3-35 months						Age 24-35 months					
	Stunted		Underweight		Wasted		Stunted		Underweight		Wasted	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Sub-Saharan Africa												
Burkina Faso (1992-93)	11.6	12.2	12.1	13.0	3.5	4.5	19.7	17.1	13.9	13.8	1.6	1.4
Burundi (1987)	17.5	20.2	9.0	11.1	0.9	0.7	24.3	27.5	9.4	12.4	0.4	0.3
Cameroon (1991)	9.3	8.1	5.3	4.6	0.4	0.5	15.2	11.7	5.5	2.1	0.6	0.0
Central African Rep. (1994-95)	14.2	16.7	7.5	8.7	0.9	1.3	21.5	23.7	8.6	9.6	0.2	1.1
Ghana (1988)	9.7	9.7	6.1	8.0	0.2	0.7	<i>19.2</i>	<i>12.9</i>	8.8	9.6	0.0	0.4
Ghana (1993)	9.6	10.0	7.9	9.0	1.9	2.6	15.7	17.7	11.5	9.0	1.0	1.4
Kenya (1993)	11.7	12.1	6.2	7.3	1.3	1.3	17.0	13.3	7.3	7.0	0.6	0.9
Madagascar (1992)	<i>19.9</i>	<i>24.8</i>	<i>8.5</i>	<i>14.0</i>	0.4	0.5	28.6	29.9	12.3	11.3	0.1	0.1
Malawi (1992)	<i>17.0</i>	<i>22.4</i>	<i>7.2</i>	<i>11.5</i>	<i>1.1</i>	<i>2.9</i>	24.7	30.6	7.4	13.5	0.5	1.8
Mali (1987)	6.8	9.4	7.6	10.7	<i>0.4</i>	<i>2.0</i>	12.1	15.5	9.9	12.4	0.0	0.6
Namibia (1992)	9.6	9.9	6.3	7.4	1.4	1.9	10.5	9.3	9.0	8.2	0.7	1.6
Niger (1992)	16.5	19.0	18.0	19.3	2.9	4.3	26.2	29.1	26.7	22.7	0.5	1.6
Nigeria (1990)	<i>17.7</i>	<i>21.2</i>	11.8	13.7	2.1	2.6	27.8	31.9	21.0	17.4	2.1	1.5
Rwanda (1992)	<i>15.8</i>	<i>19.9</i>	6.8	8.1	1.0	1.0	20.5	22.1	8.0	7.0	0.3	0.6
Senegal (1986) ¹	7.1	8.1	4.2	6.5	0.3	0.3	9.3	13.8	3.7	10.3	0.0	1.1
Senegal (1992-93)	8.4	9.1	7.3	6.5	<i>1.5</i>	<i>3.4</i>	11.9	15.1	11.7	7.3	1.8	2.0
Togo (1988)	9.7	10.7	5.9	6.7	0.3	0.8	12.8	12.6	6.6	5.4	0.0	0.0
Uganda (1988-89)	15.5	19.1	5.8	6.4	0.3	0.1	24.2	26.7	8.7	5.2	0.2	0.0
Zambia (1992)	13.5	15.0	6.4	7.8	1.1	1.4	19.6	21.4	9.7	8.8	1.5	0.8
Zimbabwe (1988-89)	<i>6.5</i>	<i>9.6</i>	1.0	1.9	0.3	0.3	10.1	12.5	3.0	2.4	0.4	0.7
Zimbabwe (1994)	5.8	7.5	2.9	3.7	0.4	1.2	6.7	8.6	4.9	3.8	0.3	0.8
Near East/North Africa/Asia												
Egypt (1988-89)	12.0	11.9	2.7	2.4	0.1	0.1	16.8	12.2	1.7	1.3	0.0	0.0
Egypt (1992)	11.7	11.8	2.9	2.8	1.1	1.0	12.2	13.6	2.4	3.8	0.6	0.7
Jordan (1990)	5.1	4.5	1.3	0.9	0.7	0.6	4.4	4.4	0.2	1.1	0.1	0.5
Morocco (1987)	7.8	7.4	3.4	2.9	0.6	0.8	10.4	9.9	3.3	3.1	0.3	0.0
Morocco (1992)	9.8	8.1	3.2	2.1	0.7	0.5	10.1	14.4	2.1	4.1	0.9	0.7
Tunisia (1988)	4.9	6.0	1.4	2.0	0.8	0.4	8.6	7.0	1.8	0.8	0.0	0.3
Turkey (1993)	4.2	4.0	2.5	2.0	0.3	0.2	8.1	9.0	3.0	4.1	0.4	0.3
India (1992-93)	26.5	26.9	22.1	20.8	4.5	2.9	<i>36.6</i>	<i>32.7</i>	<i>26.8</i>	<i>25.0</i>	2.2	2.8
Pakistan (1990-91)	27.6	25.6	15.7	13.3	2.9	1.1	36.4	34.4	19.9	18.6	0.4	1.6
Sri Lanka (1987)	7.5	8.3	7.9	8.7	0.6	0.6	<i>13.8</i>	7.7	14.2	9.9	0.7	0.5
Thailand (1987)	3.7	4.4	4.1	4.0	0.2	0.6	7.5	5.2	6.3	4.7	0.4	0.0
Latin America/Caribbean												
Bolivia (1989)	13.3	15.7	2.2	2.9	0.4	0.2	22.0	18.9	3.2	1.9	0.9	0.1
Bolivia (1993-94)	9.7	10.1	3.1	4.1	0.8	0.8	11.4	11.1	3.8	4.6	0.4	0.3
Brazil (1986)	11.5	10.2	2.8	5.9	0.0	0.3	15.8	9.7	2.5	1.8	0.0	0.0
Colombia (1986)	7.8	8.6	2.3	1.5	0.1	0.2	12.0	16.8	3.5	2.7	0.0	0.0
Dominican Republic (1986) ¹	5.6	9.7	1.9	3.8	0.3	0.1	8.7	13.4	4.7	4.6	0.7	0.0
Dominican Republic (1991)	3.7	6.4	1.3	2.8	0.0	0.3	4.0	5.8	1.6	1.7	0.0	0.0
Guatemala (1987)	30.9	29.2	8.9	8.2	0.1	0.1	<i>42.3</i>	<i>34.5</i>	12.3	8.8	0.0	0.3
Paraguay (1990)	3.7	3.2	0.6	0.4	0.1	0.0	3.3	2.3	0.6	0.1	0.0	0.0
Peru (1991-92)	9.2	8.9	2.4	2.3	0.4	0.4	13.2	11.2	2.8	1.9	0.3	0.2
Trinidad and Tobago (1987)	0.7	0.0	0.2	0.5	0.5	1.0	1.2	0.0	0.0	0.8	0.6	0.8

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. Each index is expressed in terms of the number of standard deviation units from the median of the NCHS/CDC/WHO international reference population. Children are classified as severely malnourished if their z-scores are more than three standard deviations below the median of the reference population. Table excludes children with imputed dates of birth and children whose z-score is improbably low or high.

¹ Children age 3-5 months not included

In most countries, there are no significant differences in malnutrition between females and males in either age group. Moreover, when significant differences do occur, it is sons who are more likely to be malnourished than daughters in every case for children age 3-35 months. When statistical differences occur in the 24-35 month age group, daughters are as likely as sons to be the more disadvantaged group. Girls appear to be particularly disadvantaged in Sri Lanka, where the differentials exceed 10 percentage points for two of the three measures.

This situation is somewhat different in the case of severe malnutrition, which carries with it a high risk of mortality. Once again, sons are almost always the more disadvantaged group at age 3-35 months when the sex differentials are statistically significant. At age 24-35 months, however, daughters are more likely than sons to be severely malnourished in five out of the six such cases. The differentials in India tend to be significant because of the very large sample size, but they are rather modest in absolute terms and not consistently unfavorable to either sons or daughters.

6.4 CHILDHOOD MORTALITY

If children of the less preferred sex receive a disproportionately low share of household resources devoted to food and health care, or are discriminated against in other ways that have adverse health consequences, their poor treatment might ultimately lead to increased risks of mortality. Previous research has found that male mortality is higher than female mortality at every age in most countries (United Nations Secretariat, 1988; Heligman, 1983), but Tabutin and Willems (1995) have shown that countries with high overall levels of mortality may deviate from the normal pattern. In those countries, females often have higher mortality than males during childhood and continuing through most of the childbearing years. This pattern is particularly pronounced in South Asia.

Table 6.7 shows data from the DHS on relative risk ratios for mortality for males and females at various ages below age five. With the exception of Trinidad and Tobago, the neonatal risk ratios are uniformly above 1.00, indicating that male mortality is higher than female mortality in the first month of life. The average risk ratio of 1.29 across all countries during the neonatal period means that boys have a 29 percent higher probability than females of dying in the first month of life. By the postneonatal period (age 1-11 months), the average risk ratio has dropped to 1.08, and girls have a higher probability of dying than boys in 18 of the 57 surveys. The lowest risk ratios (indicating the highest relative risk of mortality for females) are in Trinidad and Tobago, Egypt (1988-89), Jordan, Tunisia, Mali, and India. Most of these are countries that have previously been identified as having a strong preference for sons.

The relative risk ratios for child mortality (i.e., mortality at ages one to four years) cluster around 1.00. At that age, the

risk ratios are below 1.00 in 35 surveys. As usual, most of the South Asian countries and Egypt stand out as having patterns that are particularly unfavorable to girls. The worst case is Pakistan, where female child mortality is two-thirds higher than male child mortality. The situation for girls is nearly as serious in Egypt (1992), India, and Bangladesh, where excess female child mortality ranges from 33 percent to 47 percent. These results are particularly dramatic when viewed against the average excess female child mortality in all DHS surveys of only 2 percent. Moreover, the level of excess female child mortality can vary substantially within a single country. In India, for example, girls are most disadvantaged in the six states in the northern region of the country, where excess female child mortality is 74 percent (Arnold, Choe, and Roy, 1996). Thus, conditions in the region from Pakistan through northern India to Bangladesh are particularly detrimental to girls between the ages of one and four years.

In the 11 countries that have more than one national DHS survey, there is no consistent time trend in the relative risks of mortality at these ages. The relative risks are almost as likely to have decreased than to have increased between surveys. Unfortunately, except for Egypt, the countries with the strongest gender preference do not have a series of DHS surveys that would allow an examination of changes in gender preferences and their impact over time. When standard recode data tapes become available for the recent DHS surveys in Bangladesh (1996-97), Nepal (1996), Jordan (1997), and Egypt (1995-96), it will be possible to get a better picture of how gender preferences change over time in countries where son preference is pervasive.

6.5 SCHOOL ATTENDANCE

Previously discussed measures of the treatment of children have shown that in most countries parents do not discriminate between girls and boys with respect to medical treatment or feeding practices. The situation is quite different in the case of opportunities for schooling, however. In every country for which data are available, except Colombia, there is a statistically significant difference in school attendance rates between females and males during the childhood and young adult years (see Table 6.8). This information is collected for all de facto school-age residents in sample households as part of the household questionnaire. School attendance questions were not included in surveys conducted before 1990. In 26 of the 29 surveys, school attendance is higher for males than females. The greatest disparities are in Niger, Pakistan, the Central African Republic, Burkina Faso, Senegal, and Morocco, where school attendance rates for females are less than 70 percent as high as those for males. Most of these countries have not previously been identified as countries with widespread son preference. The Latin American region is the most egalitarian with respect to school attendance, whereas the other two regions have disparities in favor of boys of about equal magnitude.

Table 6.7 Childhood mortality

Relative risk of infant and child mortality by sex for the 10-year period preceding the survey, Demographic and Health Surveys, 1986-1995

Country (year)	Risk ratio (male/female)				
	Neonatal mortality	Post-neonatal mortality	Infant mortality	Child mortality	Under-five mortality
Sub-Saharan Africa					
Botswana (1988)	<i>2.07</i>	0.99	<i>1.49</i>	1.14	<i>1.37</i>
Burkina Faso (1992-93)	<i>1.25</i>	1.05	<i>1.14</i>	0.97	1.05
Burundi (1987)	<i>1.43</i>	<i>1.22</i>	<i>1.31</i>	0.90	1.06
Cameroon (1991)	<i>1.32</i>	1.01	1.16	0.85	1.01
Central African Republic (1994-95)	<i>1.33</i>	1.04	<i>1.16</i>	0.99	1.09
Ghana (1988)	<i>1.45</i>	0.98	<i>1.23</i>	1.00	1.10
Ghana (1993)	<i>1.29</i>	0.92	1.13	1.02	1.07
Kenya (1988-89)	<i>1.34</i>	1.05	1.17	1.07	<i>1.13</i>
Kenya (1993)	1.14	1.13	1.14	1.01	1.09
Liberia (1986)	<i>1.21</i>	<i>1.28</i>	<i>1.25</i>	0.97	<i>1.13</i>
Madagascar (1992)	1.18	0.91	1.01	1.04	1.03
Malawi (1992)	1.06	1.10	1.09	1.10	1.09
Mali (1987)	<i>1.33</i>	0.87	1.09	0.97	1.02
Namibia (1992)	1.24	1.10	1.18	0.87	1.06
Niger (1992)	1.02	1.02	1.02	<i>0.91</i>	0.95
Nigeria (1990)	1.18	0.94	1.05	<i>1.16</i>	1.10
Rwanda (1992)	1.10	<i>1.32</i>	<i>1.20</i>	<i>1.19</i>	<i>1.19</i>
Senegal (1986)	<i>1.26</i>	1.11	<i>1.19</i>	1.00	1.07
Senegal (1992-93)	<i>1.41</i>	1.02	<i>1.21</i>	<i>1.20</i>	<i>1.20</i>
Sudan (1989-90)	<i>1.42</i>	0.96	<i>1.19</i>	0.99	1.09
Togo (1988)	<i>1.29</i>	0.94	1.12	<i>0.82</i>	0.96
Uganda (1988-89)	1.24	1.00	1.11	1.12	<i>1.10</i>
Zambia (1992)	<i>1.37</i>	1.06	<i>1.18</i>	1.07	<i>1.12</i>
Zimbabwe (1988-89)	<i>1.36</i>	1.19	<i>1.28</i>	0.95	1.15
Zimbabwe (1994)	1.23	1.27	<i>1.25</i>	1.03	1.17
Near East/North Africa					
Egypt (1988-89)	<i>1.24</i>	<i>0.83</i>	1.01	<i>0.81</i>	0.95
Egypt (1992)	<i>1.34</i>	0.92	<i>1.12</i>	<i>0.68</i>	0.98
Jordan (1990)	1.06	0.86	0.98	1.07	0.99
Morocco (1987)	1.06	0.99	1.03	0.99	1.02
Morocco (1992)	<i>1.33</i>	1.06	<i>1.20</i>	0.88	1.11
Tunisia (1988)	1.22	0.86	1.03	0.94	1.01
Turkey (1993)	1.20	0.93	1.07	0.91	1.04
Asia					
Bangladesh (1993-94)	<i>1.27</i>	0.97	<i>1.15</i>	<i>0.75</i>	0.99
India (1992-93)	<i>1.18</i>	<i>0.88</i>	<i>1.06</i>	<i>0.70</i>	<i>0.94</i>
Indonesia (1987)	<i>1.38</i>	<i>1.27</i>	<i>1.32</i>	0.89	<i>1.15</i>
Indonesia (1991)	1.14	<i>1.21</i>	<i>1.18</i>	1.04	<i>1.13</i>
Indonesia (1994)	<i>1.45</i>	1.09	<i>1.25</i>	1.12	<i>1.21</i>
Nepal (1991)	<i>1.27</i>	1.01	<i>1.16</i>	<i>0.89</i>	1.05
Pakistan (1990-91)	<i>1.30</i>	1.07	<i>1.19</i>	<i>0.60</i>	1.03
Philippines (1993)	1.21	<i>1.44</i>	<i>1.32</i>	1.12	<i>1.23</i>
Sri Lanka (1987)	<i>1.74</i>	1.36	<i>1.59</i>	1.03	<i>1.43</i>
Thailand (1987)	1.48	1.46	<i>1.47</i>	0.92	1.32
Latin America/Caribbean					
Bolivia (1989)	<i>1.27</i>	1.16	<i>1.21</i>	0.98	<i>1.11</i>
Bolivia (1993-94)	1.04	1.16	1.10	1.12	1.10
Brazil (1986)	<i>1.35</i>	<i>1.42</i>	<i>1.39</i>	0.99	<i>1.32</i>
Brazil, NE (1991)	<i>1.54</i>	<i>1.47</i>	<i>1.49</i>	0.82	<i>1.35</i>
Colombia (1986)	1.19	1.05	1.12	1.24	1.15
Colombia (1990)	1.07	1.01	1.05	<i>1.97</i>	1.20
Dominican Republic (1986)	<i>1.29</i>	1.30	<i>1.30</i>	0.90	<i>1.18</i>
Dominican Republic (1991)	<i>1.86</i>	1.21	<i>1.52</i>	0.86	<i>1.28</i>
Ecuador (1987)	1.38	0.96	1.18	0.94	1.10
Guatemala (1987)	<i>1.41</i>	1.22	<i>1.31</i>	0.96	<i>1.17</i>
Mexico (1987)	1.24	1.07	1.15	0.88	1.09
Paraguay (1990)	1.20	1.19	1.20	0.80	1.09
Peru (1986)	1.19	1.06	1.11	0.89	1.03
Peru (1991-92)	<i>1.21</i>	1.10	<i>1.15</i>	0.94	1.08
Trinidad and Tobago (1987)	0.98	0.58	0.87	0.91	0.87

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level.

Table 6.8 School attendance

Percentage of children age 6-24 years attending school, by sex,
Demographic and Health Surveys, 1990-1995

Country (year)	Percentage attending school		
	Female	Male	Ratio (f/m)
Burkina Faso (1992-93)	<i>16.9</i>	<i>25.4</i>	0.66
Cameroon (1991)	<i>50.2</i>	<i>61.4</i>	0.82
Central African Republic (1994-95)	<i>33.5</i>	<i>52.9</i>	0.63
Ghana (1993)	<i>52.2</i>	<i>62.8</i>	0.83
Kenya (1993)	<i>58.0</i>	<i>64.8</i>	0.90
Madagascar (1992)	<i>37.4</i>	<i>39.4</i>	0.95
Malawi (1992)	<i>43.8</i>	<i>51.4</i>	0.85
Namibia (1992)	<i>66.1</i>	<i>69.3</i>	0.96
Niger (1992)	<i>9.0</i>	<i>17.1</i>	0.53
Nigeria (1990)	<i>40.3</i>	<i>50.8</i>	0.79
Rwanda (1992)	<i>34.1</i>	<i>37.1</i>	0.92
Senegal (1992-93)	<i>20.1</i>	<i>29.7</i>	0.68
Zambia (1992)	<i>48.3</i>	<i>55.5</i>	0.87
Zimbabwe (1994)	<i>58.4</i>	<i>65.4</i>	0.89
Egypt (1992)	<i>55.2</i>	<i>67.1</i>	0.82
Jordan (1990)	<i>62.1</i>	<i>64.4</i>	0.96
Morocco (1992)	<i>29.2</i>	<i>43.0</i>	0.68
Turkey (1993)	<i>39.6</i>	<i>54.0</i>	0.73
Bangladesh (1993-94)	<i>45.7</i>	<i>56.3</i>	0.81
Indonesia (1991)	<i>49.8</i>	<i>55.0</i>	0.91
Indonesia (1994)	<i>54.3</i>	<i>59.7</i>	0.91
Pakistan (1990-91)	<i>32.1</i>	<i>51.1</i>	0.63
Philippines (1993)	<i>60.8</i>	<i>59.3</i>	1.02
Bolivia (1993-94)	<i>65.1</i>	<i>72.5</i>	0.90
Brazil, NE (1991)	<i>49.0</i>	<i>39.4</i>	1.24
Colombia (1990)	<i>55.5</i>	<i>56.7</i>	0.98
Dominican Republic (1991)	<i>55.4</i>	<i>50.0</i>	1.11
Paraguay (1990)	<i>55.5</i>	<i>58.0</i>	0.96
Peru (1991-92)	<i>67.9</i>	<i>70.9</i>	0.96

Note: Numbers in italics indicate that the difference between females and males is significant at the 0.05 level. This table is based on de facto persons in household listing except in Indonesia, where the base is the de jure population.

6.6 MOTHER'S EMPLOYMENT

It might be hypothesized that women who prefer children of a particular sex would be less likely to work and more likely to spend extra time in childrearing if they have a young child of the preferred sex. On the other hand, it might be argued that women will find work more compelling if they have a young child of the preferred sex because they may need more financial resources to care for the child. On balance, the effect

might be expected to be small. In fact, Table 6.9 shows that there is no country where the mother's employment is significantly related to the sex of the youngest child. Women are slightly more likely to be working if their youngest child is a son than a daughter in 17 countries, less likely in 10 countries, and equally likely in 2 countries, but the sex differences are not substantial on the whole and none of the sex differences is statistically significant.

Table 6.9 Women's employment

Among women with living children under age 5, percentage working away from home, by sex of youngest living child, Demographic and Health Surveys, 1990-1995

Country (year)	Percentage of women working		
	Youngest child is female	Youngest child is male	Ratio female/male
Burkina Faso (1992-93)	42.3	42.3	1.00
Cameroon (1991)	46.9	50.2	0.93
Central African Rep. (1994-95)	70.5	71.3	0.99
Ghana (1993)	62.7	61.7	1.02
Kenya (1993)	29.1	30.6	0.95
Madagascar (1992)	54.3	54.7	0.99
Malawi (1992)	12.2	12.6	0.96
Namibia (1992)	24.3	22.9	1.06
Niger (1992)	21.9	21.3	1.03
Nigeria (1990)	43.4	43.7	0.99
Rwanda (1992)	89.2	89.5	1.00
Senegal (1992-93)	35.2	35.6	0.99
Zambia (1992)	36.4	38.4	0.95
Zimbabwe (1994)	30.2	32.7	0.92
Egypt (1992)	19.5	19.0	1.03
Jordan (1990)	8.2	8.2	1.00
Morocco (1992)	11.9	13.8	0.87
Bangladesh (1993-94)	4.0	3.6	1.13
India (1992-93)	24.5	23.5	1.04
Indonesia (1991)	37.0	36.0	1.03
Nepal (1991)	74.6	74.7	1.00
Pakistan (1990-91)	8.6	8.7	0.99
Philippines (1993)	24.1	25.1	0.96
Bolivia (1993-94)	46.4	45.7	1.01
Brazil, NE (1991)	32.0	32.5	0.99
Colombia (1990)	23.2	21.5	1.08
Dominican Republic (1991)	27.4	27.5	1.00
Paraguay (1990)	17.4	18.8	0.93
Peru (1991-92)	37.3	36.7	1.02

7 Conclusions

Son preference and a desire for a balanced number of daughters and sons are the two most prevalent types of gender preference found in 57 Demographic and Health Surveys conducted between 1986 and 1995, although gender preferences are weak or nonexistent in many countries. A preference for sons is particularly widespread in parts of South Asia, North Africa, and the Near East. Son preference is rarely found in sub-Saharan Africa, Southeast Asia, Latin America, or the Caribbean.

In some situations, gender preferences for children affect reproductive attitudes and behavior as well as the treatment of daughters and sons. A variety of analytical techniques have been used in this report to examine the impact of gender preferences on fertility, family planning, and marriage patterns. A strong preference for sons is often associated with reduced levels of contraceptive use, increased fertility, and skewed sex distributions of children. The impact of gender preferences on reproductive behavior, however, is more moderate than might be expected.

The picture is quite mixed with respect to the differential treatment of female and male children in DHS countries. In almost every country, girls have more limited educational opportunities than boys. In countries with a strong

son preference, girls sometimes receive less favorable treatment in terms of immunization coverage and health care, but they are not similarly disadvantaged with respect to feeding practices or nutritional status. The most distressing finding is the high relative risk of child mortality for girls in Egypt and in most of South Asia.

The strong preference for sons that is observed in many countries is often stubbornly resistant to change even in the face of rapid modernization. Son preference is firmly entrenched in enduring religious and cultural traditions. Attempts to modify parents' attitudes and behavior have involved a variety of initiatives, including instituting educational campaigns in support of the girl child, establishing educational savings accounts for girls, banning the payment of dowries, and prohibiting the use of amniocentesis and other methods to determine the sex of fetuses. Whether these policies and programs will be effective in the long run remains to be seen. Fragmentary evidence from multiple DHS surveys in Egypt and Morocco indicates that son preference has not been moderating in those countries, at least over the period of 4-5 years between surveys. The availability of additional DHS information from more recent surveys in Bangladesh, Nepal, and Jordan will soon provide further evidence of whether or not son preference is beginning to relax its grip in that part of the world.

8 References

- Akhter, Halida H. and Saifuddin Ahmed. 1992. Determinants of contraceptive continuation in rural Bangladesh. *Journal of Biosocial Science* 24(2):261-268.
- Arnold, Fred. 1997. Gender preferences for children: Findings from the Demographic and Health Surveys. Paper prepared for the 23rd General Population Conference of the International Union for the Scientific Study of Population, October 11-17, Beijing.
- Arnold, Fred. 1992. Sex preference and its demographic and health implications. *International Family Planning Perspectives* 18(3):93-101.
- Arnold, Fred. 1987. The effect of sex preference on fertility and family planning: Empirical evidence. *Population Bulletin of the United Nations* 23-24:44-55.
- Arnold, Fred. 1985. Measuring the effect of sex preference on fertility: The case of Korea. *Demography* 22(2):280-288.
- Arnold, Fred, Minja Kim Choe, and T.K. Roy. 1996. Son preference, the family-building process and child mortality in India. East-West Center Working Papers, Population Series, No. 85. Honolulu: East-West Center.
- Bairagi, Radheshyam. 1996. Is son preference an obstacle to fertility transition in Bangladesh. Paper presented at the IUSSP Seminar on Comparative Perspectives on Fertility Transition in South Asia, December 17-20, Rawalpindi, Pakistan.
- Bairagi, Radheshyam. 1986. Food crisis, child nutrition and female children in rural Bangladesh. *Population and Development Review* 12(2):307-315.
- Bairagi, Radheshyam and Ray L. Langsten, 1986. Sex preference for children and its implications for fertility in rural Bangladesh. *Studies in Family Planning* 17(6):302-307.
- Basu, Alaka M. 1992. *Culture, the Status of Women and Demographic Behavior*. Oxford: Clarendon Press.
- Chen, Lincoln C., Emdadul Huq, and Stan D'Souza. 1981. Sex bias in the family allocation of food and health care in rural Bangladesh. *Population and Development Review* 7(1):55-70.
- Cleland, John, Jane Verrall, and Martin Vaessen. 1983. *Preferences for the sex of children and their influence on reproductive behavior*. World Fertility Survey Comparative Studies: Cross-National Summaries No. 27. Voorburg: International Statistical Institute.
- Das, Narayan. 1987. Sex preference and fertility behaviour: A study of recent Indian data. *Demography* 24(4):517-530.
- Das Gupta, Monica. 1987. Selective discrimination against female children in rural Punjab, India. *Population and Development Review* 13(1):77-100.
- Das Gupta, Monica and P.N. Mari Bhat. 1997. Intensified gender bias in India: A consequence of fertility decline. *Population Studies* (forthcoming).
- De Tray, Dennis. 1984. Son preference in Pakistan: An analysis of intentions vs. behaviour. *Research in Population Economics* 5:185-200.
- Dibley, M.J., J.B. Goldsby, N.W. Staehling, and F.L. Trowbridge. 1987a. Development of normalized curves for the international growth reference: Historical and technical considerations. *American Journal of Clinical Nutrition* 46(5):736-748.
- Dibley, M.J., M.W. Staehling, P. Neiburg, and F.L. Trowbridge. 1987b. Interpretation of z-score anthropometric indicators derived from the international growth reference. *American Journal of Clinical Nutrition* 46(5):749-762.
- Heligman, Larry. 1983. Patterns of sex differentials in mortality in less developed countries. In Lopez, Alan D. and Lado T. Ruzicka (eds.), *Sex Differentials in Mortality: Trends, Determinants and Consequences*. Canberra: Australian National University.
- Hossain, M.M. and R.I. Glass. 1988. Parental son preference in seeking medical care for children less than five years of age in a rural community in Bangladesh. *American Journal of Public Health* 78(10):1349-1350.
- Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding. 1990. Adopted by the WHO/UNICEF policymakers' meeting on "Breastfeeding in the 1990s: A Global Initiative," July 30 - August 1, Innocenti, Florence, Italy.
- Kielmann, Amfried A., Cecile DeSweemer, William Blot, Inder S. Uberoi, A. Douglas Robertson, and Carl E. Taylor. 1983. Impact of child growth, nutrition and psychomotor development. In A.A. Kielmann and Associates (eds.), *Child and Maternal Health Services in Rural India: The Narangwal Experiment*. Vol. 1. Baltimore: Johns Hopkins University Press.
- Kishor, Sunita. 1995. Gender differentials in child mortality: A review of the evidence. In Monica Das Gupta, Lincoln C. Chen and T.N. Krishnan (eds.), *Women's Health in India: Risk and Vulnerability*. Bombay: Oxford University Press. 19-54.
- Kishor, Sunita and Katherine Neitzel. 1996. *The Status of Women: Indicators for Twenty-Five Countries*. DHS Comparative Studies, No. 21. Calverton, Maryland: Macro International Inc.
- Kynch, Jocelyn and Amartya Sen. 1983. Indian women: Well-being and survival. *Cambridge Journal of Economics* 7(3-4):363-80, September-December.

- Makinson, Carolyn. 1986. Sex differentials in infant and child mortality in Egypt. Unpublished Ph.D. Dissertation, Princeton University, Princeton.
- Miller, Barbara D. 1981. *The Endangered Sex: The Neglect of Female Children in Rural North India*. Ithaca: Cornell University Press.
- Mosley, W. Henry and Lincoln C. Chen. 1984. An analytical framework for the study of child survival in developing countries. *Population and Development Review*, Supplement 10:22-45.
- Muhuri, Pradip K. and Samuel H. Preston. 1991. Effects of family composition on mortality differentials by sex among children in Matlab, Bangladesh. *Population and Development Review* 17(3):415-434.
- Mutharayappa, Rangamuthia, Minja Kim Choe, Fred Arnold, and T.K. Roy. 1997. *Son Preference and Its Effect on Fertility in India*. National Family Health Survey Subject Reports, No. 3. Mumbai and Honolulu: International Institute for Population Sciences and East-West Center.
- Nag, Moni. 1991. Sex preference in Bangladesh, India and Pakistan and its effect on fertility. *Demography India* 20(2):163-185.
- Parasuraman, Sulabha, T.K. Roy, and S. Sureender. 1994. Sex composition of children and fertility behavior in rural Maharashtra. In K.B. Pathak, U.P. Sinha and, Arvind Pandey (eds.), *Dynamics of Population and Family Welfare*. Bombay: Himalaya Publishing House.
- Park, Chai Bin. 1986. How many births are attributable to preference for sex of children? A simulation analysis. Paper presented at the Annual Meeting of the Population Association of America, April 3-5, San Francisco.
- Park, Chai Bin and Nam-Hoon Cho. 1995. Consequences of son preference in a low-fertility society: Imbalance of the sex ratio at birth in Korea. *Population and Development Review* 21(1):59-84.
- Patel, Vibhuti. 1989. Sex-determination and sex-preselection test in India: Modern techniques of femicide. *Bulletin of Concerned Asian Scholars* 21(1):2-10.
- Pebley, Ann R. and Sajeda Amin. 1991. The impact of a public-health intervention on sex differentials in childhood mortality in rural Punjab, India. *Health Transition Review* 1(2):143-169.
- Rahman, Mizanur and Julie DaVanzo. 1993. Gender preference and birth spacing in Matlab, Bangladesh. *Demography* 30(3):315-332.
- Rajaretnam, T. 1995. Family size desire, sex preference, socio-economic condition and contraceptive use in rural Karnataka, India. *Demography India* 24(2):275-290.
- Raju, K.N.M. and T.N. Bhat. 1995. Sex composition of living children against socio-economic variables while accepting family planning methods. *Demography India* 24(1):87-99.
- Repetto, Robert. 1972. Son preference and fertility behaviour in developing countries. *Studies in Family Planning* 3(4):70-76.
- Sachar, R.K., J. Verma, V. Prakash, A. Chopra, R. Adlaka, and R. Sofat. 1990. Sex selective fertility control—An outrage. *Journal of Family Welfare* 36(2):30-35.
- Sargent, C. and M. Harris. 1992. Gender ideology, child-rearing, and child health in Jamaica. *American Ethnologist* 19(3):523-37.
- Sen, Amartya K. and Sunil Sengupta. 1983. Malnutrition of rural children and the sex bias. *Economic and Political Weekly* 18:855-64.
- Sommerfelt, A. Elisabeth and Fred Arnold. 1997. Sex differentials. Chapter 6 in United Nations Secretariat, *Too Young to Die: Genes or Gender?* ST/ESA/SER.A/155. New York: United Nations.
- Tabutin, Dominique and Michel Willems. 1995. Excess female child mortality in the developing world during the 1970s and 1980s. *Population Bulletin of the United Nations* 39:45-78.
- United Nations Secretariat. 1988. Sex differentials in life expectancy and mortality in developed countries: An analysis by age groups and causes of death from recent and historical data. *Population Bulletin of the United Nations* 25:65-107.
- Williamson, Nancy E. 1976. *Sons or Daughters: A Cross-Cultural Survey of Parental Preferences*. Beverly Hills, California: Sage Publications.
- World Health Assembly. 1994. *Infant and Young Child Nutrition*. Forty-Seventh World Health Assembly, A47/VR/11, May 9, Geneva.
- World Health Organization. 1991. Indicators for assessing breast-feeding practices. Report of an informal meeting, June 11-12, Geneva. Division of Diarrhoeal and Acute Respiratory Disease Control, World Health Organization, Geneva.

Appendix A

Summary of DHS-I, DHS-II, and DHS-III Surveys, 1985-1996

Region and Country	Date of Fieldwork	Implementing Organization	Respondents	Sample Size	Male/Husband Survey	Supplemental Studies, Modules, and Additional Questions
SUB-SAHARAN AFRICA						
DHS-I						
Botswana	Aug-Dec 1988	Central Statistics Office	AW 15-49	4,368		AIDS, PC, adolescent fertility
Burundi	Apr-Jul 1987	Département de la Population, Ministère de l'Intérieur	AW 15-49	3,970	542 Husbands	CA, SAI, adult mortality
Ghana	Feb-May 1988	Ghana Statistical Service	AW 15-49	4,488	943 Husbands	CA, SM, WE
Kenya	Dec-May 1988/89	National Council for Population and Development	AW 15-49	7,150	1,133 Husbands	
Liberia	Feb-Jul 1986	Bureau of Statistics, Ministry of Planning and Economic Affairs	AW 15-49	5,239		TBH, employment status
Mali	Mar-Aug 1987	Institut du Sahel, USED/CERPOD	AW 15-49	3,200	970 Men 20-55	CA, VC, childhood physical handicaps
Ondo State, Nigeria	Sep-Jan 1986/87	Ministry of Health, Ondo State	AW 15-49	4,213		CA, TBH
Senegal	Apr-Jul 1986	Direction de la Statistique, Ministère de l'Economie et des Finances	AW 15-49	4,415		CA, CD
Sudan	Nov-May 1989/90	Department of Statistics, Ministry of Economic and National Planning	EMW 15-49	5,860		FC, M, MM
Togo	Jun-Nov 1988	Unité de Recherche Démographique, Université du Bénin	AW 15-49	3,360		CA, SAI, marriage history
Uganda	Sep-Feb 1988/89	Ministry of Health	AW 15-49	4,730		CA, SAI
Zimbabwe	Sep-Jan 1988/89	Central Statistical Office	AW 15-49	4,201		AIDS, CA, PC, SAI, WE
DHS-II						
Burkina Faso	Dec-Mar 1992/93	Institut National de la Statistique et de la Démographie	AW 15-49	6,354	1,845 Men 18+	AIDS, CA, MA, SAI
Cameroon	Apr-Sep 1991	Direction Nationale du Deuxième Recensement Général de la Population et de l'Habitat	AW 15-49	3,871	814 Husbands	CA, CD, SAI
Madagascar	May-Nov 1992	Centre National de Recherches sur l'Environnement	AW 15-49	6,260		CA, MM, SAI
Malawi	Sep-Nov 1992	National Statistical Office	AW 15-49	4,850	1,151 Men 20-54	AIDS, CA, MA, MM, SAI
Namibia	Jul-Nov 1992	Ministry of Health and Social Services, Central Statistical Office	AW 15-49	5,421		CA, CD, MA, MM
Niger	Mar-Jun 1992	Direction de la Statistique et des Comptes Nationaux	AW 15-49	6,503	1,570 Husbands	CA, MA, MM, SAI
Nigeria	Apr-Oct 1990	Federal Office of Statistics	AW 15-49	8,781		CA, SAI
Rwanda	Jun-Oct 1992	Office National de la Population	AW 15-49	6,551	598 Husbands	CA
Senegal	Nov-Aug 1992/93	Direction de la Prévision et de la Statistique	AW 15-49	6,310	1,436 Men 20+	AIDS, CA, MA, MM, SAI
Tanzania	Oct-Mar 1991/92	Bureau of Statistics, Planning Commission	AW 15-49	9,238	2,114 Men 15-60	AIDS, CA, MA, SAI
Zambia	Jan-May 1992	University of Zambia	AW 15-49	7,060		AIDS, CA, MA

DHS-III						
Benin	Jun-Aug 1996	Institut National de la Statistique	AW 15-49	5,491	1,535 Men 20-64	AIDS, CA, MA, MM, SAI
Central African Republic	Sep-Mar 1994/95	Direction des Statistiques Démographiques et Sociales	AW 15-49	5,884	1,729 Men 15-59	AIDS, CA, CD, MA, MM, SAI
Comoros	Mar-May 1996	Centre National de Documentation et de la Recherche Scientifique	AW 15-49	3,050	795 Men 15-64	CA, MA
Côte d'Ivoire	Jun-Nov 1994	Institut National de la Statistique	AW 15-49	8,099	2,552 Men 12-49	CA, MA, SAI
Eritrea	Sep-Jan 1995/96	National Statistics Office	AW 15-49	5,054	1,114 Men 15-59	AIDS, CA, MA, MM, SAI
Ghana	Sep-Dec 1993	Ghana Statistical Service	AW 15-49	4,562	1,302 Men 15-59	CA, MA
Kenya	Feb-Aug 1993	National Council for Population and Development	AW 15-49	7,540	2,336 Men 15-54	AIDS, CA, MA, SAI
Malawi (KAP) ^a	Jun-Oct 1996	National Statistical Office	AW 15-49	2,683	2,658 Men 15-54	AIDS
Mali	Nov-Apr 1995/96	CPS/MSSPA et DNSI	AW 15-49	9,704	2,474 Men 15-59	AIDS, CA, MA, MM, SAI
Tanzania (KAP) ^a	Jul-Sep 1994	Bureau of Statistics, Planning Commission	AW 15-49	4,225	2,097 Men 15-59	AIDS, PC
Tanzania (In-depth)	Jun-Oct 1995	Bureau of Statistics, Planning Commission	AW 15-49	2,130		Adult and childhood mortality estimation
Tanzania	Jul-Nov 1996	Bureau of Statistics, Planning Commission	AW 15-49	8,120	2,256 Men 15-59	AIDS, CA, MA, MM
Uganda	Mar-Aug 1995	Statistics Department, Ministry of Finance and Economic Planning	AW 15-49	7,070	1,996 Men 15-59	AIDS, CA, MA, MM, SAI
Uganda (In-depth)	Oct-Jan 1995/96	Institute of Statistics and Applied Economics, Makerere University	AW 20-44	1,750	1,356 Partners	Negotiating reproductive outcomes
Zambia	Jul-Jan 1996/97	Central Statistics Office	AW 15-49	8,021	1,849 Men 15-59	AIDS, CA, MA, MM
Zimbabwe	Jul-Nov 1994	Central Statistical Office	AW 15-49	6,128	2,141 Men 15-54	AIDS, CA, MA, MM, PC, SAI
NEAR EAST/NORTH AFRICA						
DHS-I						
Egypt	Oct-Jan 1988/89	National Population Council	EMW 15-49	8,911		CA, CD, MM, PC, SAI, WE, WS
Morocco	May-Jul 1987	Ministère de la Santé Publique	EMW 15-49	5,982		CA, CD, S
Tunisia	Jun-Oct 1988	Office National de la Famille et de la Population	EMW 15-49	4,184		CA, S, SAI
DHS-II						
Egypt	Nov-Dec 1992	National Population Council	EMW 15-49	9,864	2,466 Husbands	CA, MA, PC, SM
Jordan	Oct-Dec 1990	Department of Statistics, Ministry of Health	EMW 15-49	6,461		CA, SAI
Morocco	Jan-Apr 1992	Ministère de la Santé Publique	AW 15-49	9,256	1,336 Men 20-70	CA, MA, MM, SAI
Yemen	Nov-Jan 1991/92	Central Statistical Organization	EMW 15-49	5,687		CA, CD, SAI
DHS-III						
Egypt	Nov-Jan 1995/96	National Population Council	EMW 15-49	14,779		CA, FC, MA, WS
Morocco (Panel)	Apr-May 1995	Ministère de la Santé Publique	AW 15-49	4,753		
Turkey	Aug-Oct 1993	General Directorate of MCH/FP Ministry of Health	EMW <50	6,519		CA, MA

ASIA

DHS-I						
Indonesia	Sep-Dec 1987	Central Bureau of Statistics, National Family Planning Coordinating Board	EMW 15-49	11,884		PC, SM
Nepal (In-depth)	Feb-Apr 1987	New Era	CMW 15-49	1,623		KAP-gap survey
Sri Lanka	Jan-Mar 1987	Department of Census and Statistics, Ministry of Plan Implementation	EMW 15-49	5,865		CA, NFP
Thailand	Mar-Jun 1987	Institute of Population Studies Chulalongkorn University	EMW 15-49	6,775		CA, S, SAI
DHS-II						
Indonesia	May-Jul 1991	Central Bureau of Statistics, NFPCB/MOH	EMW 15-49	22,909		PC, SM
Pakistan	Dec-May 1990/91	National Institute of Population Studies	EMW 15-49	6,611	1,354 Husbands	CA
DHS-III						
Bangladesh	Nov-Mar 1993/94	Mitra & Associates/NIPORT	EMW 10-49	9,640	3,284 Husbands	PC, SAI, SM
Bangladesh	Nov-Mar 1996/97	Mitra & Associates/NIPORT	EMW 10-49	9,127	3,346 EMM	CA, MA, SM
Indonesia	Jul-Nov 1994	Central Bureau of Statistics/ NFPCB/MOH	EMW 15-49	28,168		MM, PC, SAI, SM
Kazakstan	May-Aug 1995	Institute of Nutrition, National Academy of Sciences	AW 15-49	3,771		CA, MA
Nepal	Jan-Jun 1996	Ministry of Health/New ERA	EMW 15-49	8,429		CA, MA, MM
Philippines	Apr-Jun 1993	National Statistics Office	AW 15-49	15,029		MM, SAI
Uzbekistan	Jun-Oct 1996	Research Institute of Obstetrics and Gynecology	AW 15-49	4,415		CA, MA
LATIN AMERICA/CARIBBEAN						
DHS-I						
Bolivia	Feb-Jul 1989	Instituto Nacional de Estadística	AW 15-49	7,923		CA, CD, MM, PC, S, WE
Bolivia (In-depth)	Feb-Jul 1989	Instituto Nacional de Estadística	AW 15-49	7,923		Health
Brazil	May-Aug 1986	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-44	5,892		CA, S, SM, abortion, young adult use of contraception
Colombia	Oct-Dec 1986	Corporación Centro Regional de Población, Ministerio de Salud	AW 15-49	5,329		CA, PC, S, SAI, SM
Dominican Republic	Sep-Dec 1986	Consejo Nacional de Población y Familia	AW 15-49	7,649		CA, NFP, S, SAI, family planning communication
Dominican Republic (Experimental)	Sep-Dec 1986	Consejo Nacional de Población y Familia	AW 15-49	3,885		S, SAI
Ecuador	Jan-Mar 1987	Centro de Estudios de Población y Paternidad Responsable	AW 15-49	4,713		CD, SAI, employment
El Salvador	May-Jun 1985	Asociación Demográfica Salvadoreña	AW 15-49	5,207		CA, S, TBH
Guatemala	Oct-Dec 1987	Instituto de Nutrición de Centro América y Panamá	AW 15-44	5,160		CA, S, SAI
Mexico	Feb-May 1987	Dirección General de Planificación Familiar, Secretaría de Salud	AW 15-49	9,310		NFP, S, employment
Peru	Sep-Dec 1986	Instituto Nacional de Estadística	AW 15-49	4,999		NFP, employment, cost of family planning

Peru (Experimental)	Sep-Dec 1986	Instituto Nacional de Estadística	AW 15-49	2,534		
Trinidad and Tobago	May-Aug 1987	Family Planning Association of Trinidad and Tobago	AW 15-49	3,806		CA, NFP, breastfeeding
DHS-II						
Brazil (NE)	Sep-Dec 1991	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-49	6,222	1,266 Husbands	AIDS, PC
Colombia	May-Aug 1990	PROFAMILIA	AW 15-49	8,644		AIDS
Dominican Republic	Jul-Nov 1991	Instituto de Estudios de Población y Desarrollo (PROFAMILIA), Oficina Nacional de Planificación	AW 15-49	7,320		CA, MA, S, SAI
Paraguay	May-Aug 1990	Centro Paraguayo de Estudios de Población	AW 15-49	5,827		CA, SAI
Peru	Oct-Mar 1991/92	Instituto Nacional de Estadística e Informática	AW 15-49	15,882		CA, MA, MM, SAI
DHS-III						
Bolivia	Nov-May 1993/94	Instituto Nacional de Estadística	AW 15-49	8,603 ^b		AIDS, CA, CD, MA, MM, S, SAI
Brazil	Mar-Jun 1996	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-49	12,612	2,949 Men 15-59	AIDS, CA, MA, MM, PC, S
Colombia	Mar-Jun 1995	PROFAMILIA	AW 15-49	11,140		AIDS, CA, MA, PC
Dominican Republic	Aug-Dec 1996	CESDEM/PROFAMILIA	AW 15-49	8,422	2,279 Men 15-64	CA, MA
Guatemala	Jun-Dec 1995	Instituto Nacional de Estadística	AW 15-49	12,403		AIDS, CA, MA, MM, S
Haiti	Jul-Jan 1994/95	Institut Haitien de l'Enfance	AW 15-49	5,356	1,610 Men 15-59	AIDS, CA, CD, MA, SAI
Peru	Aug-Nov 1996	Instituto Nacional de Estadística e Informática	AW 15-49	28,951	2,487 Men 15-59	CA, MA, MM

^a No health or birth history section in questionnaire.

^b Household questionnaire was administered in 26,144 households.

AIDS	acquired immune deficiency syndrome	FC	female circumcision	S	sterilization
AW	all women	M	migration	SAI	service availability information
CA	child anthropometry	MA	maternal anthropometry	SM	social marketing
CD	causes of death (verbal reports of symptoms)	MM	maternal mortality	TBH	truncated birth history
CMW	currently married women	NFP	natural family planning	VC	value of children
EMM	ever-married men	PC	pill compliance	WE	women's employment
EMW	ever-married women			WS	women's status

Demographic and Health Surveys Comparative Studies Series

- 1 Boerma, J. Ties, A. Elisabeth Sommerfelt, Shea O. Rutstein, and Guillermo Rojas. 1990. *Immunization: Levels, Trends and Differentials.*
- 2 Arnold, Fred and Ann K. Blanc. 1990. *Fertility Levels and Trends.*
- 3 Westoff, Charles F. 1991. *Reproductive Preferences: A Comparative View.*
- 4 Boerma, J. Ties, A. Elisabeth Sommerfelt, and Shea O. Rutstein. 1991. *Childhood Morbidity and Treatment Patterns.*
- 5 Westoff, Charles F. and Luis Hernando Ochoa. 1991. *Unmet Need and the Demand for Family Planning.*
- 6 Rutenberg, Naomi, Mohamed Ayad, Luis Hernando Ochoa, and Marilyn Wilkinson. 1991. *Knowledge and Use of Contraception.*
- 7 Wilkinson, Marilyn I., Wamucii Njogu, and Nouredine Abderrahim. 1993. *The Availability of Family Planning and Maternal and Child Health Services.*
- 8 Govindasamy, Pavalavalli, M. Kathryn Stewart, Shea O. Rutstein, J. Ties Boerma, and A. Elisabeth Sommerfelt. 1993. *High-Risk Births and Maternity Care.*
- 9 Muhuri, Pradip K. and Shea O. Rutstein. 1994. *Socioeconomic, Demographic and Health Indicators for Subnational Areas.*
- 10 Westoff, Charles F., Ann K. Blanc, and Laura Nyblade. 1994. *Marriage and Entry into Parenthood.*
- 11 Ayad, Mohamed, Marilyn Wilkinson, and Melissa McNiff. 1994. *Sources of Contraceptive Methods.*
- 12 Sommerfelt, A. Elisabeth and M. Kathryn Stewart. 1994. *Children's Nutritional Status.*
- 13 Muhuri, Pradip K., Ann K. Blanc, and Shea O. Rutstein. 1994. *Socioeconomic Differentials in Fertility.*
- 14 Ayad, Mohamed, Andrea L. Piani, Bernard Barrère, Koffi Ekouevi, and James Otto. 1994. *Demographic Characteristics of Households.*
- 15 Sullivan, Jeremiah M., Shea Oscar Rutstein, and George T. Bicego. 1994. *Infant and Child Mortality.*
- 16 Westoff, Charles F. and Akinrinola Bankole. 1995. *Unmet Need: 1990-1994.*
- 17 Bankole, Akinrinola and Charles F. Westoff. 1995. *Childbearing Attitudes and Intentions.*
- 18 Ezeh, Alex C., Michka Seroussi and Hendrik Ridders. 1996. *Men's Fertility, Contraceptive Use, and Reproductive Preferences.*
- 19 Curtis, Siân L. and Katherine Neitzel. 1996. *Contraceptive Knowledge, Use, and Sources.*
- 20 Bicego, George and Omar B. Ahmad. 1996. *Infant and Child Mortality.*
- 21 Kishor, Sunita and Katherine Neitzel. 1996. *The Status of Women: Indicators for Twenty-Five Countries.*
- 22 Sommerfelt, A. Elisabeth and Andrea L. Piani. 1997. *Childhood Immunization: 1990-1994.*
- 23 Arnold, Fred. 1997. *Gender Preferences for Children.*