

Chapter 3

Characteristics of Female Sterilization Users

Highlights:

- The prevalence of female sterilization and women's age at sterilization are inversely related: In countries where prevalence is high, the median age is generally low, while in low-prevalence countries, women often are not sterilized until older ages.
- In some high-prevalence countries (such as Brazil, Colombia, and the Dominican Republic), the proportion of women sterilized by some exact age (e.g., by age 30) rises steadily in each successively younger age cohort.
- In many countries in Asia and Latin America and the Caribbean, half of sterilized women have 3–4 children. In contrast, in China and the United States, half of sterilized women have two or fewer children, while in Africa, more than half of such women have five or more children.
- In Asia and Sub-Saharan Africa, most sterilization users reside in rural areas, while in Latin America and the Caribbean, North Africa, and North America, the majority of users live in urban locales.
- In many countries, more than 50% of women using female sterilization never used modern contraceptives before having the sterilization procedure performed.
- Sterilization procedures performed at a time not related to a pregnancy (known as interval sterilizations) tend to outnumber postpartum sterilizations among countries located in North Africa, South Asia, and Sub-Saharan Africa. Postpartum sterilizations are considerably more common than interval procedures, however, among several countries in Latin America and the Caribbean.

The social and demographic profiles of female sterilization users most likely differ greatly among countries as well as among regions. To illustrate these national and regional differences, this chapter presents information on the characteristics of sterilized women in union in selected countries. The data are derived from nationally representative population-based surveys of women of reproductive age conducted since the publication in 1985 of *Voluntary Sterilization: An International Fact Book*. The profiles reflect the characteristics of women in union who obtain sterilization services from both public and private sources. As a result of the lack of data from comparable surveys in developed countries, the chapter concentrates primarily on the profile of users in developing countries, with one exception: Data from the United States are included. Supplement 3.1 (page 79) collects user characteristics for all countries that have data available. Information regarding the characteristics of vasectomy users is not included in this chapter, as the sample sizes available from the surveys are too small to produce a valid analysis. (Chapter 5 presents information on characteristics of both female and male sterilization users, based on a review and critical analysis of the existing literature on voluntary contraceptive sterilization since 1985.)

Country information gathered from multiple data sets is presented to study the changes in user characteristics over time. The surveys are generally standardized and are administered by the same sources (the Demographic and Health Surveys project and the U.S. Centers for Disease Control and Prevention), which helps to ensure that the vari-

Table 3.1. Date and source of most recent national survey in selected countries, by region

Region	Country	Year of survey	Source
South Asia	Bangladesh	1996–1997	DHS
	Nepal	1996	DHS
Southeast Asia	Indonesia	1997	DHS
	Philippines	1998	DHS
East Asia	China*	1992	CDC
Latin America	Brazil	1996	DHS
	Colombia	1995	DHS
	El Salvador	1998	CDC
	Peru	1996	DHS
Caribbean	Dominican Republic	1996	DHS
North Africa	Egypt	1995–1996	DHS
	Morocco	1992	DHS
Sub-Saharan Africa	Ghana†	1993–1994	DHS
	Kenya	1998	DHS
	Tanzania	1996	DHS
	Zimbabwe	1994	DHS
North America	United States*	1995	VHS

* Missing some characteristics data.

† At the time the data for this book were being compiled, the final report for the 1998 Ghana DHS was not available.

Sources: Demographic and Health Survey (DHS); Centers for Disease Control and Prevention (CDC); and Vital and Health Statistics (VHS).

ables are similar across surveys. The selection of countries was based upon several factors, including geographical representation, availability of survey data from multiple years, and substantial change in sterilization prevalence. Regional outliers with strikingly high or low prevalence for the region were also selected. While global representation would be ideal, the lack of consecutive data from countries in some regions (Central Asia, Eastern Europe, and the Middle East) limits this chapter to examining South Asia, East Asia, Latin America and the Caribbean, North Africa, Sub-Saharan Africa, and North America (Table 3.1).

To some extent, these countries represent their regions; however, as country experiences vary greatly, it is difficult to generalize about the profile of a typical sterilization user in a region. Though the regional trends present a rough illustration of the type of individual who chooses sterilization, the explanation for why certain individuals choose sterilization must be analyzed at the country level, taking into account the various determinants of sterilization use.

Among the many factors that can determine levels of sterilization use, the major ones include the desire to end childbearing and the demand for contraception, knowledge of contraceptive choices and of service-delivery points, geographical access to services, availability of specific contraceptive methods, local preferences for certain methods, level of emphasis on sterilization as a contraceptive method, cultural norms regarding sterility, laws and restrictions surrounding sterilization, economic costs, and incentives. (Further discussion of the determinants of sterilization use can be found in Chapters 4 and 5.)

The relevant social and demographic characteristics examined in this chapter are age at sterilization, number of living children (or parity, in a few cases), educational level, and urban-rural residence. Data on previous use of modern contraceptives and on timing of the sterilization (postpartum versus interval) also are included in the analysis. These characteristics provide a profile of the women who utilize sterilization as a con-

traceptive method in a given country. By monitoring these statistics over time, we can examine changes in the population of sterilization users.

Age and Number of Children at Sterilization

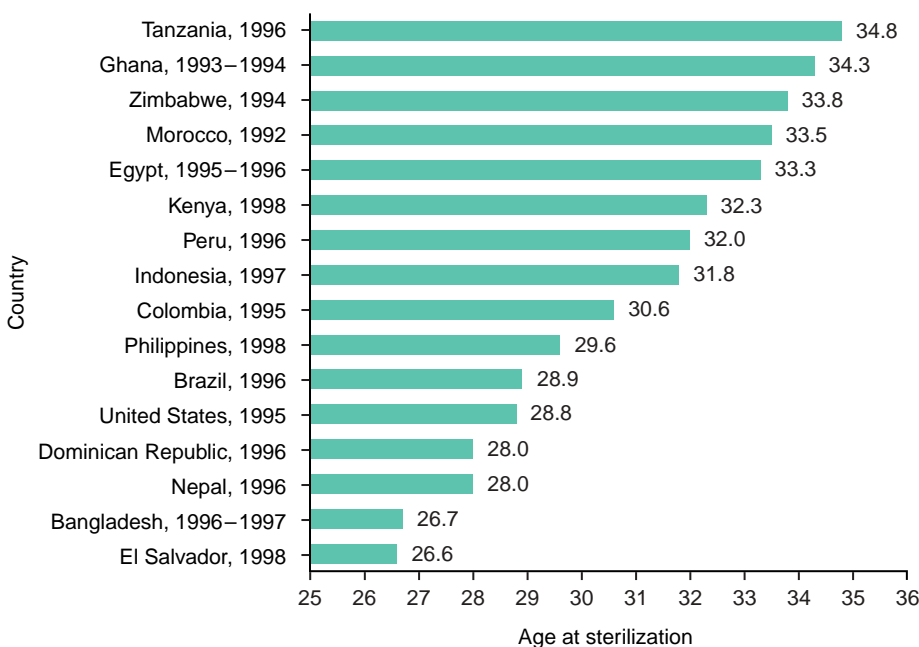
A woman's age and her number of living children at the time of sterilization are important factors in the choice of this method. Age can be closely associated with parity in a couple's decision to end childbearing, as they must consider their current family size and the demand for more children against the risks of pregnancy at older ages and their ability to care for a larger family (Rutenberg & Landry, 1993). Couples who choose sterilization at an early age maximize the duration of protection and the number of births averted during their reproductive years.

Median age at sterilization

The median age at sterilization for female users is slightly lower in selected countries of Asia, Latin America and the Caribbean, and North America than among countries in Africa (Figure 3.1). In Latin America and the Caribbean, the median ages range from 26.6 in El Salvador (1998) to 32.0 in Peru (1996). In East and South Asia, the median ages range from 26.7 in Bangladesh (1996–1997) to 31.8 in Indonesia (1997). For North America, the median age in the United States is 28.8 (1995). In North Africa and Sub-Saharan Africa, the median ages range from 32.3 in Kenya (1998) to 34.8 in Tanzania (1996).

Across the selected countries, sterilization prevalence and age at sterilization are inversely related. For example, in Brazil, the Dominican Republic, and El Salvador, the median age at sterilization is low (below 29) and the overall prevalence of sterilization is high (above 25%), while in Ghana, Egypt, Indonesia, and Peru, the median age is relatively high (32 and older) and prevalence is low (less than 10%). This may be explained in terms of the laws and requirements that regulate age at sterilization (see Chapter 4) or in terms of a sterilization program's maturity. (Mature programs can be characterized as those in which sterilization services are a major component of the national family planning program, and in which access is not restricted by legal or social barriers.) In coun-

Figure 3.1. Median age at sterilization among female sterilization users, by country



tries where the family planning and sterilization programs are mature, rates may be higher because of greater availability of services, and age at sterilization will be younger to the extent that a greater proportion of couples in these countries desire smaller families (Rutenberg & Landry, 1993). These factors combine to increase sterilization prevalence as more women enter the sterilization pool at progressively younger ages than exit at the end of their childbearing years.

Globally, while the prevalence of sterilization among women in union has increased over the past 5–10 years, the median age at sterilization has remained relatively constant. Many changes within individual countries have been slight (less than 0.5 years); the greatest differences occurred in Brazil, where the median age at sterilization dropped from 30.1 in 1986 to 28.9 in 1996, and in Tanzania, where it rose from 33.0 in 1991 to 34.8 in 1996. Of 17 selected countries, only Tanzania and Zimbabwe experienced increases in the median age at sterilization, while in most other countries the median age decreased (Supplement 3.1).

If the median age at sterilization remains generally constant while sterilization prevalence increases, this can indicate that a sterilization program is still maturing and therefore gaining new users at both ends of the reproductive age range. Alternatively, in countries with mature and stable sterilization programs, it can indicate that there may be a popularly accepted or practiced age at sterilization, yet the country's population momentum leads to increased prevalence, as large numbers of women reach that median age and choose sterilization. Countries with a relatively stable median age at sterilization and increasing sterilization prevalence include Colombia, the Dominican Republic, Egypt, Kenya, and Peru (see Supplement 3.1).

Cohort trends

Examining age cohorts of women in selected countries can help us understand changes in sterilization adoption and prevalence in each age category. The unit of analysis in this section is the five-year age cohort, which is simply *all* women aged 15–49, grouped into five-year age-groups (15–19, 20–24, and so on) at the time of the survey. For each age cohort, data have been compiled on the percentage of women sterilized by the exact age of 20, 25, 30, 35, 40, and 45. Comparisons can be made across these groups to determine whether the pace at which younger women are adopting sterilization differs from that of their predecessors, and whether sterilization prevalence is increasing in particular age categories.¹

Trends in sterilization prevalence for successive cohorts are determined by four factors (Rutenberg & Landry, 1993). Three of these relate to the specific age cohorts: the availability of sterilization services when women in each age-group seek them, the annual sterilization adoption rate, and the age at which couples seek sterilization. The fourth factor is related to an important characteristic of the method: Sterilization provides continuous contraceptive protection, from the time of the procedure through the remainder of the childbearing years (barring method failure). The first three factors are interrelated: Sterilization rates are higher in countries where services are well established (i.e., where services are more available) and where age at sterilization tends to be lower (as couples desire smaller families). Together, all four factors contribute to a steady growth in sterilization prevalence rates, as more women enter the pool of users at younger ages than exit the pool at the end of their childbearing years (Rutenberg & Landry, 1993).

The cohort data from recent country surveys² (Supplement 3.2, page 82) provide levels of sterilization adoption for each current age-group, over several different sur-

¹ For women now aged 45–49, past patterns can be traced at every exact age, whereas for younger women such patterns cannot be fully examined (e.g., women now aged 25–29 can only be traced back to exact ages 20 and 25). Therefore, some lines in figures in this chapter (e.g., Supplement 3.2) are shorter than others.

² Bangladesh, Brazil, Dominican Republic, Egypt, El Salvador, India, Kenya, Nepal, Tanzania, and the United States.

veys. In countries where sterilization prevalence is greater than 25%, such as Brazil and the Dominican Republic, the proportion of women who have been sterilized by any exact age is higher than that of each previous (older) group, resulting in an overall increase in sterilization prevalence. This trend can be attributed to mature sterilization programs and higher rates of sterilization among younger women (Rutenberg & Landry, 1993). For example, in Brazil in 1996, 10% of women aged 45–49 at the time of the survey had been sterilized by age 30, while the comparable proportions among women aged 40–44 and 35–39 were 22% and 25%, respectively; 30% of women aged 30–34 had been sterilized by age 30.

In other high-prevalence countries such as El Salvador and the United States, younger cohorts follow much the same path of sterilization adoption as older cohorts in the most recent surveys, resulting in stable sterilization prevalence rates. Cohort data from multiple surveys in El Salvador indicate that with time, the rapid increase in sterilization prevalence among successively younger cohorts stabilized and the time patterns came into agreement, at a high level (Figure 3.2, page 70).

Some countries with moderate sterilization prevalence levels (more than 5%) have also experienced rising patterns among successively younger cohorts, although to a smaller degree than the high-prevalence countries. In Nepal, 1% of women now aged 45–49 had been sterilized by age 30, compared with 5% of those aged 40–44, 10% of women aged 35–39, and 12% of women aged 30–34 (Supplement 3.2). Other countries with moderate prevalence, such as Bangladesh and Kenya, show more random patterns of adoption from one cohort to the next.

In countries with very low sterilization prevalence (less than 5%), prevalence among cohorts follows the same path at younger ages and rises only at older ages. In Tanzania, a substantial difference in cohort prevalence is not noted until age 40 (Supplement 3.2). With this pattern, total sterilization prevalence may increase very slowly, as many sterilized women age out of their reproductive years shortly after having the procedure (Rutenberg & Landry, 1993).

Number of living children

The basis for measuring trends in family size is the woman's number of living children at the time of the survey, rather than her parity (i.e., her total number of births). This is necessary because the number of living children may not necessarily reflect the number of births. Similar patterns in family size have emerged in countries within the same region, suggesting that societal as well as individual factors influence a couple's demand for children and, subsequently, their demand to end childbearing through the use of sterilization. For example, common patterns in Africa, Asia, and Latin America and the Caribbean are shown in Figure 3.3 (page 71) and display the percentage distribution of female sterilization users by number of living children.

For the selected countries, approximately 50% of sterilized women in Asia and in Latin America and the Caribbean have 3–4 children. The one exception is China, with its strict population policy during the 1980s, where more than 50% of sterilization users have 0–2 children. A similar pattern was found for the United States (not shown), where more than 50% of users have 0–2 children. North African and Sub-Saharan African countries present a very different trend, with more than 50% of sterilization users having five or more children.

Changes in family size

In examining the family size patterns of sterilization users over time, we find that countries in Asia and in Latin America and the Caribbean where there have been two or more surveys show a slight decline in family size at the time of sterilization (Supplement 3.1). This trend may be explained by a general decline in desired family size (resulting in a higher proportion of couples choosing sterilization once they have completed their families) and by the movement of older sterilization users (who often had higher numbers

Figure 3.2. Percentage of women sterilized by selected exact ages, by various cohorts, El Salvador, 1985, 1993, and 1998

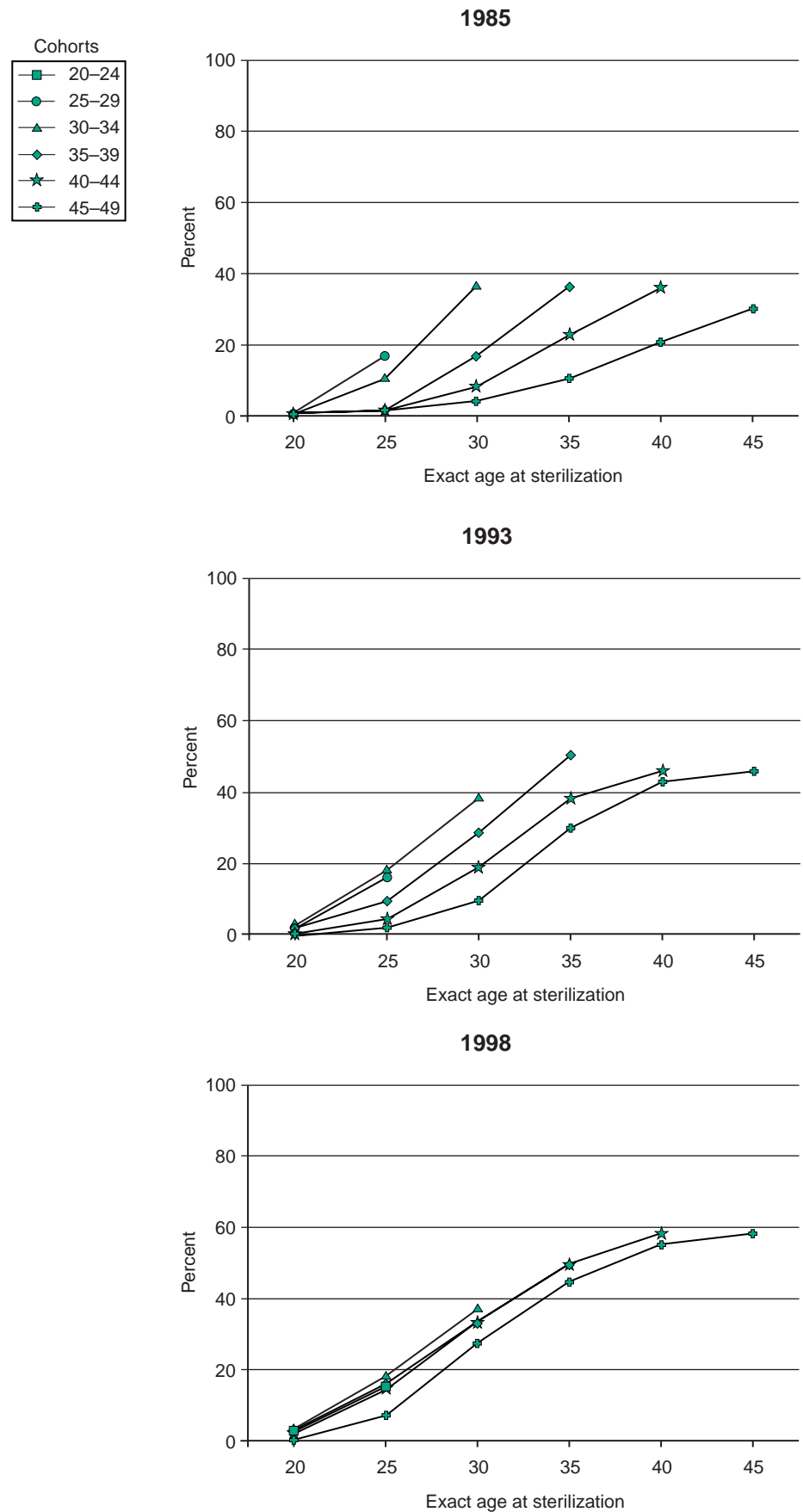
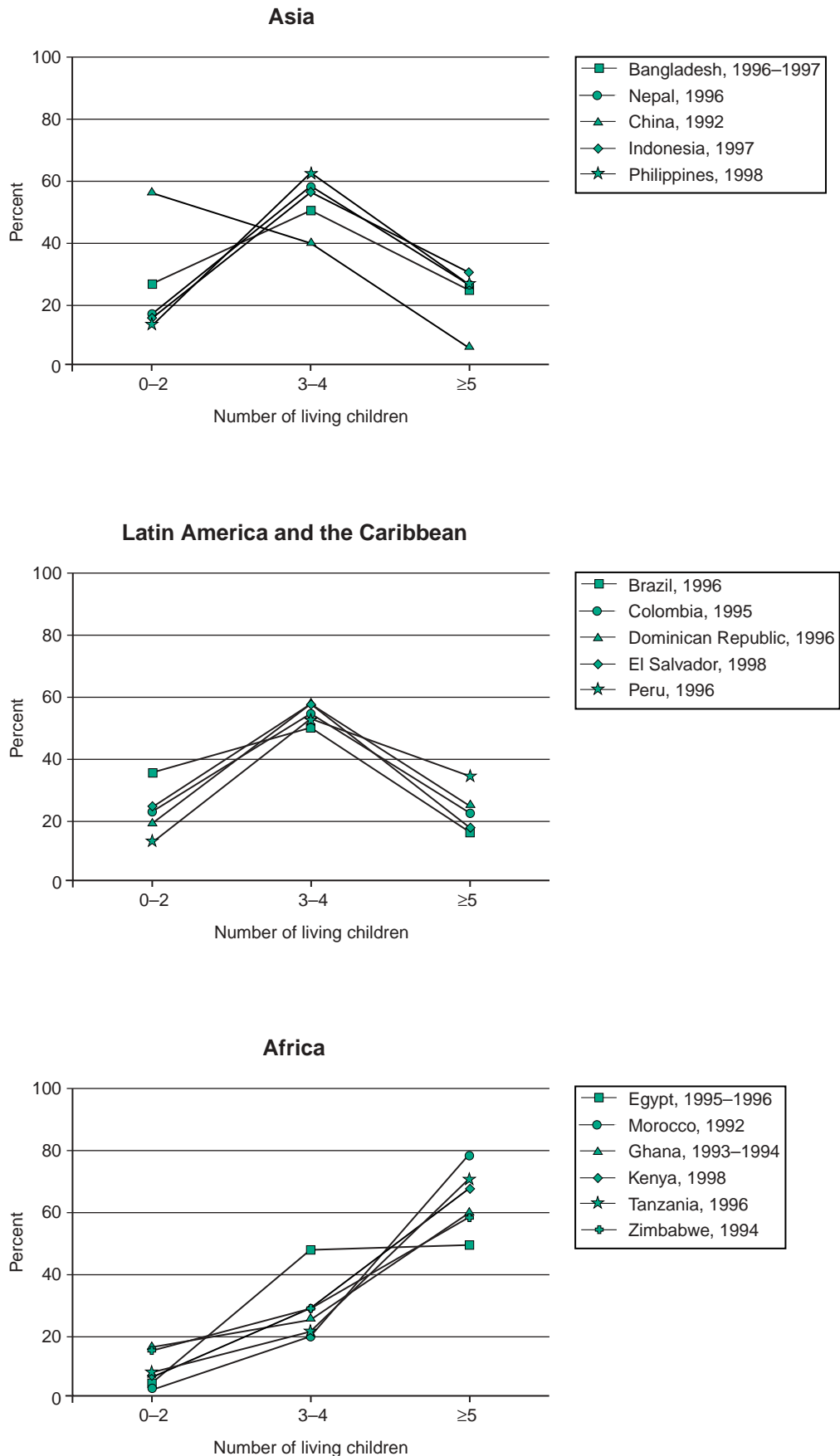


Figure 3.3. Percentage of women using female sterilization, by family size, according to region



of children) out of their childbearing years between surveys (Rutenberg & Landry, 1993). Trends in North Africa and Sub-Saharan Africa contrast with those in Asia and in Latin America and the Caribbean; in the former regions, either very little change has occurred or the number of living children has slightly increased.

Educational Attainment

Information on educational attainment was collected for female sterilization users in each of the selected countries. However, it is difficult to generalize about patterns in sterilization prevalence by educational level. In an analysis of 23 countries, Ross (1992) found no consistent trends associated with either low or high prevalence. This may be because educational categories are defined differently by country. Further, there are no clear patterns across countries relating levels of education among sterilization users to those among women using other contraceptive methods.

While definitions of educational level differ across countries, the data presented here are based on the standard Demographic and Health Survey education categories: none, primary, secondary, and postsecondary. Educational attainment, although not a *predictor* of sterilization use, is a useful descriptive characteristic that illustrates by proxy the socioeconomic status of sterilization users in a given country or region.

Worldwide, available data show that many female sterilization users have attained at least a primary education (Supplement 3.1). As would be expected for North America and for all developed countries where the level of education is generally high, most sterilization users in the United States have either a secondary or a postsecondary education. In East Asia and in Latin America and the Caribbean, the majority of users have either a primary or a secondary education, while in Sub-Saharan Africa, most users have attained a primary education. Sterilization users with the lowest levels of formal education are found in North Africa and South Asia, where the majority of users have no education (Figure 3.4).

Figure 3.4. Percentage distribution of women using female sterilization, by level of education, according to country

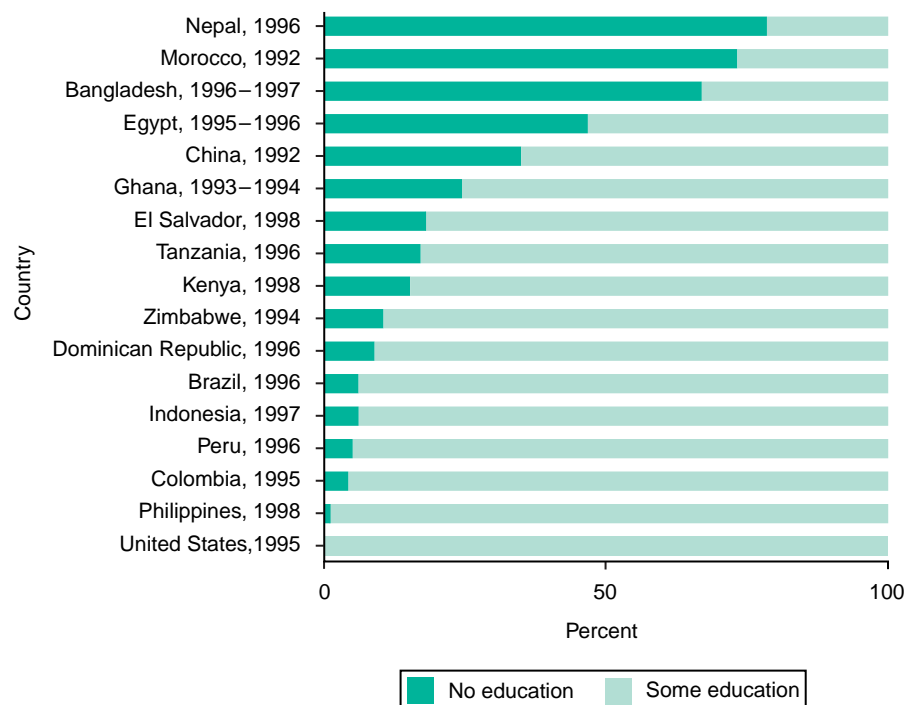
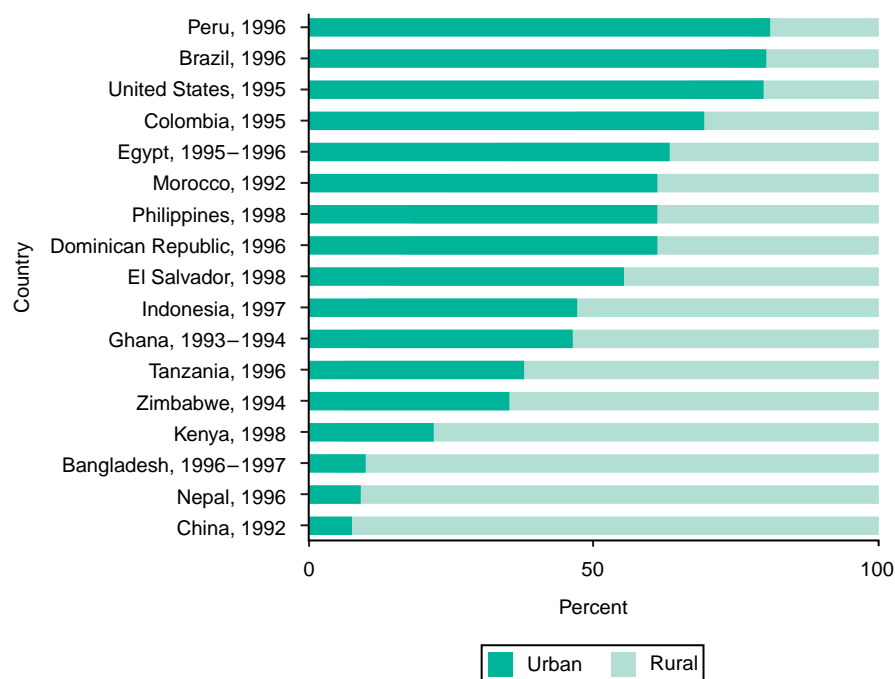


Figure 3.5. Percentage distribution of women using female sterilization, by urban-rural residence, according to country



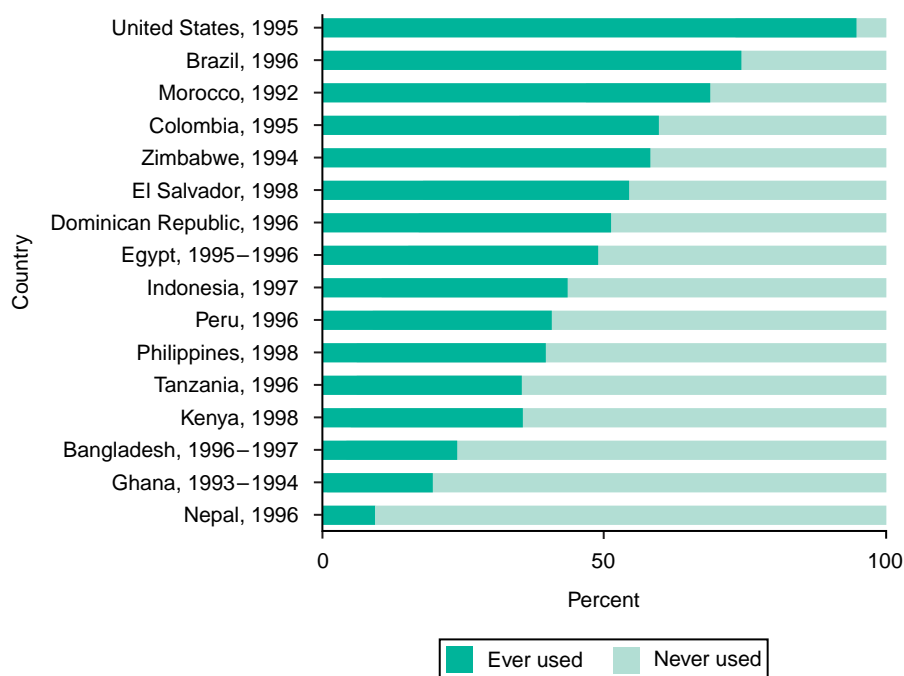
Urban-Rural Residence Patterns

In countries where sterilization programs are either relatively weak or still maturing, sterilization use may be expected to be higher in urban areas, where access to medical facilities and trained personnel is greater. In contrast, in countries that have stronger or more stable programs, sterilization use in rural areas often approximates that in urban areas (Ross, 1992). By virtue of their area of residence and their proximity to medical facilities, urban women often have access to a broader range of contraceptive methods than their rural counterparts. However, since rural women may find it difficult or burdensome to travel to a service-delivery point on a regular basis to obtain a temporary contraceptive method, sterilization may become an attractive option for rural couples who have reached their desired family size. Moreover, technological advances resulting in simpler sterilization techniques and greater programmatic outreach (such as mobile units) have made contraceptive sterilization even easier to obtain in rural areas (Ross, Hong, & Huber, 1985).

As shown in Supplement 3.1, there are 16 countries in which more than 50% of women using sterilization live in rural areas.³ The residential location of female sterilization users varies between regions (Figure 3.5). In Asian and Sub-Saharan African countries, most sterilization users reside in rural areas, while in selected nations from Latin America and the Caribbean, North Africa, and North America, the majority live in urban locales. This pattern mostly follows the distribution of the general population, as is indicated in a residential breakdown of survey respondents in selected Demographic and Health Surveys (data not shown).

³ Bangladesh, Cape Verde, China, Ghana, Haiti, India, Indonesia, Jamaica, Kenya, Mauritius, Nepal, Paraguay, Sri Lanka, Tanzania, Trinidad and Tobago, and Zimbabwe.

Figure 3.6. Percentage distribution of women using female sterilization, by use of modern methods prior to sterilization, according to country



Use of Modern Contraceptives Prior to Sterilization

Ever-use of modern contraceptives⁴ provides a crude measure of the extent to which a given population has experimented with modern family planning methods. Such use varies between countries and is affected by numerous factors, including the demand to postpone or space childbearing, local preferences, access to service-delivery points, availability of methods, and cost. As a result, low use of modern contraceptives prior to sterilization may be related to limited availability of modern methods (which leads to heavy reliance on traditional methods), a strong sterilization program coupled with a weak family planning program, or a recent surge in demand for fertility control and family planning (Rutenberg & Landry, 1993).

For many women, sterilization is the first and only modern contraceptive method that they or their partners ever use (Landry, 1990). In eight of 16 countries, more than 50% of female sterilization users never used a modern contraceptive prior to sterilization (Figure 3.6). Countries where sterilization users have low levels of ever-use of modern methods are not limited to one region; they include Bangladesh, Ghana, Indonesia, Kenya, Nepal, Peru, the Philippines, and Tanzania.

Countries where more than 50% of sterilization users had ever used a modern contraceptive prior to the procedure include Brazil, Colombia, the Dominican Republic, Egypt, El Salvador, Morocco, the United States, and Zimbabwe. High levels of modern method use before sterilization could have a variety of explanations: First, the sterilization program may be weak. Alternatively, there may be high demand for fertility control, but restrictions on access to sterilization may lead people to use alternate methods until they decide to use sterilization. Finally, the family planning program could respond to the changing needs of the population at different stages in the reproductive life cycle, with temporary methods for those who desire to space births and sterilization for those who have completed their desired family size.

⁴ Oral contraceptives, the intrauterine device (IUD), injectables, vaginal barrier methods, the condom, and Norplant implants.

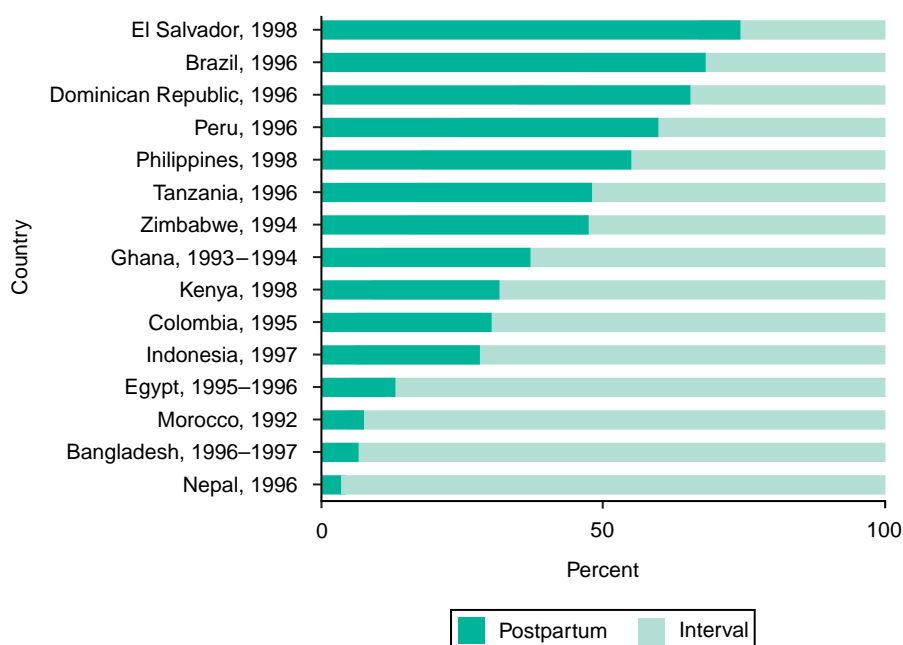
Sterilization Timing: Postpartum Versus Interval

Several factors affect the decision to have a postpartum sterilization (a sterilization procedure performed within the 42-day period following delivery) or an interval sterilization (a sterilization procedure performed at any other time). These include the type of sterilization technique commonly practiced, restrictions on who can obtain sterilization services, the accessibility of a hospital or clinic, the proportion of deliveries occurring in a hospital or clinic, the prevalence of cesarean deliveries, and attendance at antenatal services that include counseling on family planning methods (Rutenberg & Landry, 1993). The choice of postpartum or interval sterilization may also be related to type of insurance, especially if private insurance companies offer greater flexibility with regard to the timing of the sterilization (Miller, Shain, & Pasta, 1991). Postpartum sterilization is relatively easy to perform, because of the positioning of the tubes, and is convenient for women who have hospital deliveries. Interval sterilization may be more convenient for women who give birth at home, especially for those living in rural areas who have limited access to hospital-based maternity services (Chapter 6).

Figure 3.7 shows the proportion of women who have had postpartum and interval procedures in the selected countries. Interval procedures tend to outweigh postpartum sterilizations among countries located in North Africa, South Asia, and Sub-Saharan Africa. Postpartum sterilizations, however, are considerably more common than interval procedures among countries in Latin America and the Caribbean (with the exception of Colombia). In the United States, half of female sterilization procedures performed on an annual basis are postpartum (MacKay et al., 2001). Restrictive policies toward interval procedures in some countries may lead to a high level of postpartum sterilization (Chi & Thapa, 1993). For example, before its liberalization in 1997, the law regarding sterilization in Brazil was fairly restrictive, such that women were allowed to obtain the procedure only after a cesarean section (Faundes & Cecatti, 1993). (Laws and regulations surrounding sterilization are discussed in Chapter 4.)

The prevalence of either postpartum or interval sterilization has increased notably in recent years in a few countries (Supplement 3.1). The proportion of sterilizations per-

Figure 3.7. Percentage distribution of women using female sterilization, by timing of sterilization, according to country



formed postpartum has increased in Colombia, El Salvador, and the Philippines, while the relative share of interval procedures has increased in both Egypt and Peru. Countries with high levels of interval procedures may want to consider introducing postpartum sterilization, since it is generally more convenient for the client and is less costly to the program. Country programs that emphasize postpartum procedures, however, must ensure clients' informed choice and consent before they experience the stress of labor (Rutenberg & Landry, 1993).

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Supplement 3.1. Selected characteristics of women using contraceptive sterilization, by country, year, and source of data

Country/year/source	Prevalence	Number of living children			Median age at sterilization	Educational level			Residence		Ever used modern contraceptives prior to sterilization		Timing of sterilization		
		0-2	3-4	≥5		None	Primary	Secondary	Post-secondary	Urban	Rural	Yes	No	Prepartum	Interval
		Number of living children				None	Primary	Secondary	Post-secondary	Urban	Rural	Yes	No	Prepartum	Interval
Bangladesh, 1993-1994 (DHS)	9.2	23.9	49.0	27.1	27.0										
Bangladesh, 1996-1997 (DHS)	8.7	26.4	49.5	24.0	26.7	68.3	24.2	6.0	1.5	11.9	88.1	25.0	75.0	8.9	91.1
Belize, 1991 (CDC)*	18.7	12.1	38.8	49.1	28.4	6.3	73.9	13.7	6.1	76.5	23.5	58.0	42.0	MD	MD
Bolivia, 1989 (DHS)	4.4	11.2	46.4	42.4	31.3	5.2	46.1	35.6	13.1	76.8	23.2	33.8	66.2	78.2	21.8
Bolivia, 1993-1994 (DHS)	4.6	13.2	53.4	33.4	31.8	6.5	41.0	38.6	13.9	80.8	19.2	40.7	59.3	76.6	23.4
Bolivia, 1998 (DHS)	6.5	9.3	49.2	41.6	31.8	6.3	36.6	57.1†	NA	85.1	14.9	42.1	57.9	74.2	25.8
Brazil, 1986 (DHS)*	27.6	26.6	50.2	23.2	30.1	9.0	71.5	11.9	7.2	82.2	17.8	73.8	26.2	72.4	27.6
Brazil, 1991 (DHS)†	37.8	22.4	44.4	33.2	29.4	21.6	59.9	14.6	3.9	71.2	28.8	56.7	43.3	65.1	34.9
Brazil, 1996 (DHS)	42.7	34.3	49.9	15.8	28.9	7.9	41.4	45.2	5.5	81.8	18.2	76.0	24.0	69.3	30.7
Cape Verde, 1998 (CDC)	12.9	10.6	31.1	58.3	31.4	29.0	61.0	10.0†	NA	39.3	60.7	65.3	34.7	68.3	31.7
China, 1988 (CDC)	35.0	42.4	45.4	12.2	MD	49.0	32.7	17.8	0.4	7.9	92.1	MD	MD	MD	MD
China, 1992 (CDC)	46.1	54.9	40.1	5.0	MD	35.4	39.0	24.7	0.9	9.8	90.2	MD	MD	MD	MD
Colombia, 1986 (DHS)	18.7	15.7	47.0	37.3	30.6	11.0	64.4	22.0	2.6	71.5	28.5	57.1	42.9	32.6	67.4
Colombia, 1990 (DHS)	21.4	16.9	52.7	30.4	30.7	6.9	55.4	28.8	8.8	71.0	29.0	55.2	44.8	19.4	80.6
Colombia, 1995 (DHS)	26.4	23.0	54.6	22.4	30.6	5.8	49.1	36.9	8.3	71.7	28.3	61.6	38.4	32.8	67.2
Costa Rica, 1993 (CDC)	21.0	91.2	5.6	3.3	31.0	4.0	51.6	26.5	17.9	60.9	39.1	81.9	18.1	56.5	43.5
Dominican Republic, 1986 (DHS)	33.0	13.8	45.9	40.2	28.8	5.5	75.6	13.4	5.5	64.2	35.8	46.7	53.3	70.2	29.8
Dominican Republic, 1991 (DHS)	38.5	16.1	56.2	27.6	28.5	7.0	64.5	19.0	9.2	66.3	33.7	51.7	48.3	63.8	36.2
Dominican Republic, 1996 (DHS)	41.0	18.9	57.2	23.9	28.0	9.5	59.9	19.9	10.6	62.8	37.2	52.7	47.3	67.8	32.2
Ecuador, 1987 (DHS)	15.0	13.1	46.6	40.3	31.0	5.9	55.7	30.2	8.2	65.2	34.8	37.8	62.2	75.3	24.7
Ecuador, 1989 (CDC)	18.3	9.0	50.9	40.1	31.3	4.9	53.9	32.8	8.4	70.3	29.7	51.5	48.5	83.8	16.2
Ecuador, 1994 (CDC)	19.8	14.4	55.1	30.5	30.9	4.3	48.5	35.1	12.1	69.2	30.8	58.9	41.1	83.3	16.7
Ecuador, 1999 (CDC)	22.5	15.2	57.6	27.2	30.2	5.1	46.5	31.6	16.8	68.3	31.7	70.4	29.6	MD	MD
Egypt, 1988-1989 (DHS)	1.5	11.8	45.1	43.1	33.5	41.4	40.4	17.3	0.9	70.6	29.4	63.4	36.6	37.7	62.3
Egypt, 1992 (DHS)	1.1	4.9	36.1	59.0	33.4	59.0	24.6	15.1	1.4	51.3	48.7	53.0	47.0	22.5	77.5
Egypt, 1995-1996 (DHS)	1.1	4.0	46.6	49.4	33.3	47.2	26.8	16.8	9.2	65.2	34.8	50.5	49.5	15.7	84.3
El Salvador, 1985 (DHS)	32.5	22.8	52.1	25.1	27.9	24.4	64.9	8.3	2.4	62.6	37.4	39.3	60.7	64.8	35.2
El Salvador, 1988 (CDC)*	30.2	22.4	58.9	18.7	26.6	22.3	56.3	18.4	3.1	59.7	40.3	49.7	50.3	70.8	29.2
El Salvador, 1993 (CDC)	31.5	25.1	55.3	19.6	27.1	24.3	50.4	21.9	3.4	60.9	39.1	54.1	45.9	69.6	30.4
El Salvador, 1998 (CDC)	33.2	24.2	57.2	18.6	26.6	20.2	45.8	27.4	6.6	58.1	41.9	55.1	44.9	75.9	24.1
Ghana, 1988 (DHS)	1.0	16.2	24.3	59.5	MD	56.8	40.5	2.7†	NA	32.4	67.6	13.5	86.5	MD	MD
Ghana, 1993-1994 (DHS)	0.9	16.2	24.3	59.5	34.3	27.0	54.1	10.8	8.1	45.9	54.1	21.6	78.4	40.5	59.5

(cont'd.)

Supplement 3.1. Selected characteristics of women using contraceptive sterilization, by country, year, and source of data (cont'd.)

Country/year/source	Prevalence	Number of living children			Median age at sterilization	Educational level			Post-secondary		Residence		Ever used modern contraceptives prior to sterilization		Timing of sterilization	
		0-2	3-4	≥5		Primary	Secondary	Secondary	Urban	Rural	Yes	No	Prepartum	Interval		
															None	Post-secondary
Guatemala, 1987 (DHS)*	11.3	10.9	54.3	34.8	29.9	57.4	17.1	0.8	58.4	41.6	39.5	60.5	34.8	65.2		
Guatemala, 1995 (DHS)	15.8	12.7	56.3	31.1	29.5	52.1	26.5†	NA	59.5	40.5	38.1	61.9	37.1	62.9		
Haiti, 1989 (CDC)§	2.5	8.7	23.9	67.4	MD	34.8	10.9	2.2	39.1	60.9	100.0	0.0	MD	MD		
Honduras, 1996 (CDC)	18.2	13.4	50.0	36.6	29.5	66.9	18.8	1.9	55.9	44.1	63.0	37.0	39.3	60.7		
India, 1992-1993 (DHS)	30.7	22.7	56.7	20.6	26.6	21.3	19.7	1.9	29.0	71.0	4.4	95.6	39.4	60.7		
Indonesia, 1987 (DHS)	3.1	10.1	40.5	49.4	32.1	56.4	29.9	3.5	52.0	48.0	45.3	54.7	MD	MD		
Indonesia, 1991 (DHS)	3.3	10.6	52.3	37.1	31.4	52.2	35.0	2.2	56.2	43.8	42.2	57.8	24.7	75.3		
Indonesia, 1994 (DHS)	3.8	10.4	53.5	36.1	31.6	56.5	32.2	4.3	53.3	46.7	47.3	52.7	29.9	70.1		
Indonesia, 1997 (DHS)	3.4	15.0	55.0	30.0	31.8	52.6	34.5	5.1	47.2	52.8	44.5	55.5	30.7	69.3		
Jamaica, 1989 (CDC)§	13.7	13.2	34.2	52.6	30.0	65.3	27.7	7.0	35.1	64.9	68.9	31.1	MD	MD		
Jamaica, 1993 (CDC)*,§	12.5	11.8	88.2	0.0	29.5	47.7	41.1	11.0	39.7	60.3	83.4	16.6	MD	MD		
Jamaica, 1997 (CDC)§	12.3	18.6	43.9	37.5	31.1	8.8	80.1	10.7	49.6	50.4	79.0	21.0	56.3	43.7		
Jordan, 1990 (DHS)	5.6	1.6	11.4	87.0	35.1	36.3	23.2	2.9	82.5	17.5	50.7	49.3	19.2	80.8		
Kenya, 1989 (DHS)	4.7	8.2	17.5	74.3	MD	57.0	15.7	0.3	14.1	85.9	37.3	62.7	MD	MD		
Kenya, 1993 (DHS)	5.6	4.4	20.4	75.2	33.0	56.3	19.6	0.5	16.7	83.3	40.3	59.7	34.8	65.2		
Kenya, 1998 (DHS)	6.2	5.9	27.3	66.8	32.3	54.5	26.2	2.1	22.9	77.1	36.5	63.5	34.5	65.5		
Mauritius, 1985 (CDC)#	4.7	10.6	47.2	42.3	31.9	68.3	9.2	0.0	47.2	52.8	83.8	16.2	44.4	55.6		
Mauritius, 1991 (CDC)*	7.0	23.2	59.1	17.7	30.1	60.6	26.8	0.4	59.8	40.2	85.4	14.6	30.3	69.7		
Mexico, 1987 (DHS)	19.4	14.1	46.0	39.9	30.7	65.7	21.9	3.2	MD	MD	54.8	45.2	66.8	33.2		
Moldova, 1997 (CDC)*	3.4	72.8	24.5	2.6	27.9	0.6	60.1	38.7	55.8	44.2	48.3	51.7	50.3	49.7		
Morocco, 1987 (DHS)	2.2	5.7	22.1	72.1	34.4	16.4	7.4	1.6	73.8	26.2	69.7	30.3	13.9	86.0		
Morocco, 1992 (DHS)	3.0	2.0	19.9	78.1	33.5	19.9	6.0	0.7	62.9	37.1	70.9	29.1	9.9	90.1		
Namibia, 1992 (DHS)	7.6	20.8	37.5	41.7	32.5	36.5	40.2	6.4	69.4	30.6	48.3	51.7	49.7	50.3		
Nepal, 1996 (DHS)	17.5	16.4	58.2	25.4	28.0	12.4	7.9	0.2	11.4	88.6	10.7	89.3	5.8	94.2		
Nicaragua, 1992-1993 (CDC)	18.8	20.7	47.3	32.0	29.0	55.5	22.5	5.2	66.9	33.1	65.9	34.1	43.3	56.7		
Nicaragua, 1997-1998 (DHS)	26.6	16.1	45.8	38.1	29.5	48.0	28.9	4.6	68.7	31.3	59.4	40.6	41.6	58.4		
Panama, 1984 (CDC)	32.4	16.2	47.6	36.2	29.4	56.4	33.5	5.2	53.4	46.6	MD	MD	52.7	47.3		

(cont'd.)

Supplement 3.1. Selected characteristics of women using contraceptive sterilization, by country, year, and source of data (cont'd.)

Country/year/source	Prevalence	Number of living children			Median age at sterilization	Educational level			Residence		Ever used modern contraceptives prior to sterilization		Timing of sterilization		
		0-2	3-4	≥5		None	Primary	Secondary	Post-secondary	Urban	Rural	Yes	No	Prepartum	Interval
Paraguay, 1987 (CDC)	4.0	16.1	53.8	30.1	30.3	61.0	26.3	9.7	36.4	63.6	78.8	21.2	12.7	87.3	
Paraguay, 1990 (DHS)	7.4	19.4	42.7	37.9	32.3	64.9	23.9	7.3	62.2	37.8	44.3	55.7	62.2	37.8	
Paraguay, 1995-1996 (CDC)	6.8	14.2	48.4	37.4	31.1	60.7	25.0	9.0	52.4	47.6	68.7	31.3	72.6	27.4	
Paraguay, 1998 (CDC)	8.0	16.1	53.9	30.0	31.4	63.3	22.3	7.7	48.1	51.9	71.5	28.5	76.1	23.9	
Peru, 1986 (DHS)	6.1	7.0	42.2	50.8	31.9	49.7	28.1	11.4	82.7	17.3	25.4	74.6	74.6	25.4	
Peru, 1991-1992 (DHS)	8.0	14.1	47.7	38.2	32.0	36.4	35.2	23.3	87.6	12.4	38.9	61.1	73.5	26.4	
Peru, 1996 (DHS)	9.7	12.9	53.4	33.7	32.0	38.4	36.5	18.9	82.2	17.8	42.2	57.8	60.6	39.4	
Philippines, 1993 (DHS)	12.3	11.2	58.1	30.6	29.7	37.8	35.2	26.2	61.7	38.3	32.9	67.1	51.2	48.8	
Philippines, 1998 (DHS)	10.4	12.8	61.7	25.5	29.6	33.1	34.6	31.5	62.8	37.2	41.3	58.7	57.9	42.1	
Puerto Rico, 1995-1996 (CDC)	48.7	33.4	58.9	7.7	27.0	9.3	54.5	35.8	MD	MD	83.1	16.9	56.9	43.1	
Romania, 1999 (CDC)*	2.5	78.0	17.8	4.1	25.1	17.9	71.3	9.8	58.3	41.7	38.9	61.1	38.1	61.9	
Sri Lanka, 1987 (DHS)	29.8	12.0	54.0	34.0	30.0	39.4	34.0	12.3	15.5	84.5	15.9	84.1	MD	MD	
Swaziland, 1988 (CDC)	5.0	11.1	26.7	62.2	32.0	41.1	34.4	4.4	MD	MD	43.3	56.7	MD	MD	
Tanzania, 1991-1992 (DHS)	1.6	19.6	25.4	55.0	33.0	69.9	6.9†	NA	26.1	73.9	37.6	62.4	52.4	47.6	
Tanzania, 1996 (DHS)	1.9	7.3	21.8	70.9	34.8	70.6	10.7†	NA	38.6	61.4	36.6	63.4	49.8	50.2	
Thailand, 1987 (DHS)	28.5	32.9	48.2	18.9	29.0	80.3	7.1	4.3	21.8	78.2	50.6	49.4	MD	MD	
Trinidad and Tobago, 1987 (DHS)	8.4	14.9	43.4	41.7	32.2	69.7	29.4	0.4	43.9	56.1	66.7	33.3	39.9	60.1	
Tunisia, 1988 (DHS)	11.5	4.6	28.7	66.7	33.1	18.7	5.2	0.2	57.4	42.6	36.3	63.7	12.2	87.8	
Turkey, 1993 (DHS)	2.9	30.4	47.0	22.6	31.8	50.8	12.0	3.9	72.6	27.4	41.9	58.1	40.4	59.6	
Ukraine, 1999 (CDC)*	1.4	90.7	9.3	0.0	28.6	4.4	41.0	54.6	64.8	35.2	52.5	47.5	52.1	47.9	
United States, 1988 (Survey)*,§	36.3	55.4	44.6	MD	29.0	20.8	44.3	34.9	62.7	37.3	95.7	4.3	MD	MD	
United States, 1995 (Survey)*,§	38.7	53.5	46.4	MD	28.8	25.1	42.1	32.8	81.3	18.7	96.6	3.4	MD	MD	
Zambia, 1992 (DHS)	2.1	18.8	13.6	67.7	34.2	44.1	28.0	12.5	71.5	28.5	36.8	63.2	58.2	41.8	
Zambia, 1996-1997 (DHS)	2.0	7.9	18.0	74.1	35.9	48.6	31.7	10.2	65.2	34.8	47.7	52.3	50.5	49.5	
Zimbabwe, 1988-1989 (DHS)	2.5	12.7	28.2	59.2	33.2	46.5	35.2	2.8	47.9	52.1	62.0	38.0	45.1	54.9	
Zimbabwe, 1994 (DHS)	2.5	13.7	28.1	58.2	33.8	60.6	25.0	2.6	36.1	63.9	59.8	40.2	48.6	51.4	

* Data refer to ages 15-44.

† Data include both secondary and higher education level.

‡ Data are limited to Northeastern Brazil.

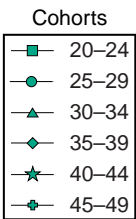
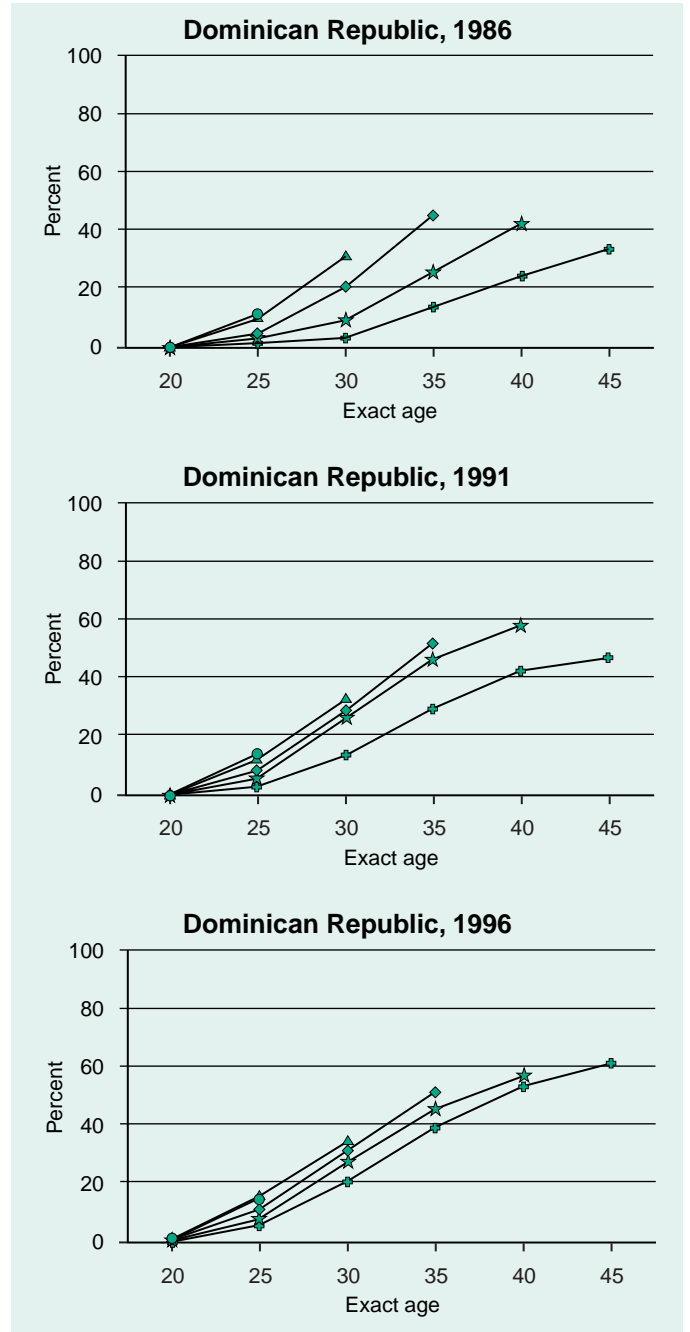
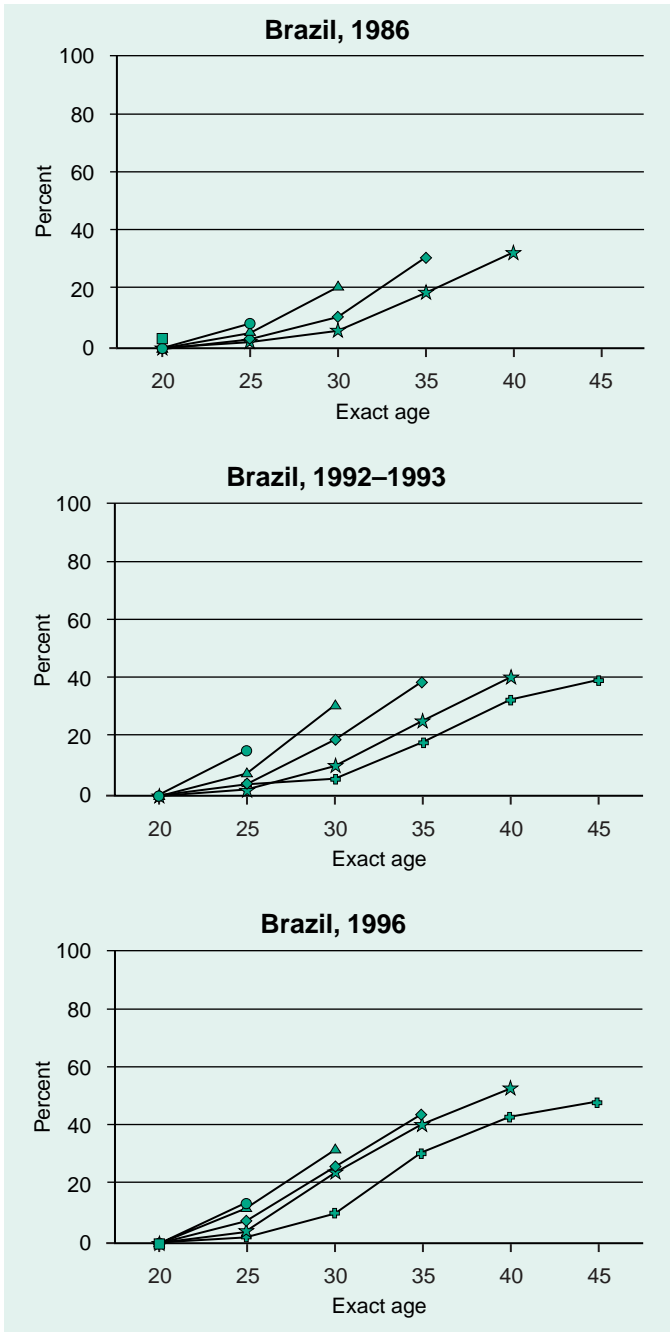
§ Data refer to number of live births.

|| Excludes the West Bank.

Data are not weighted.

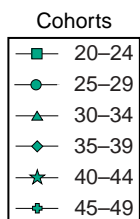
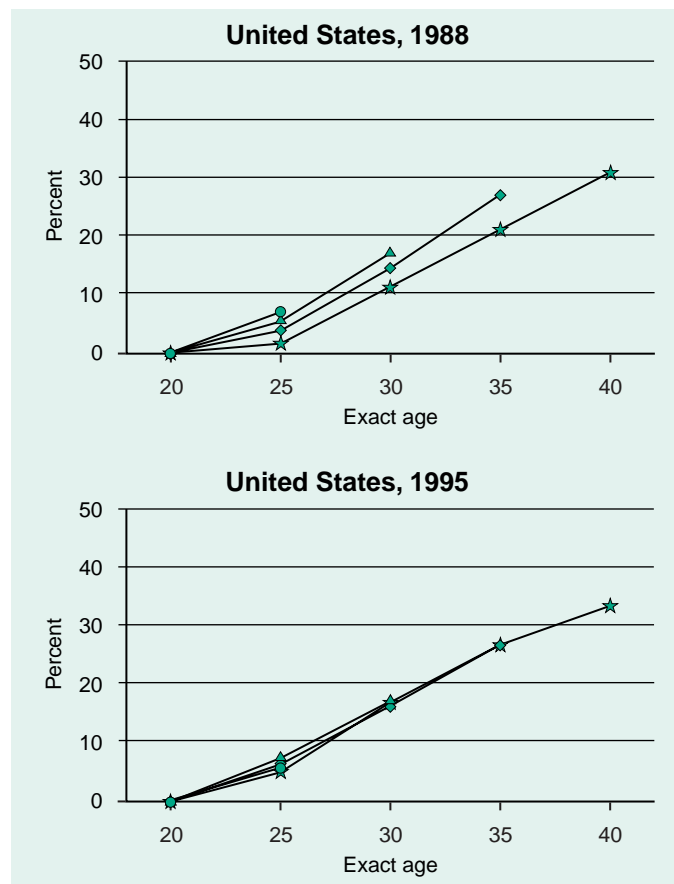
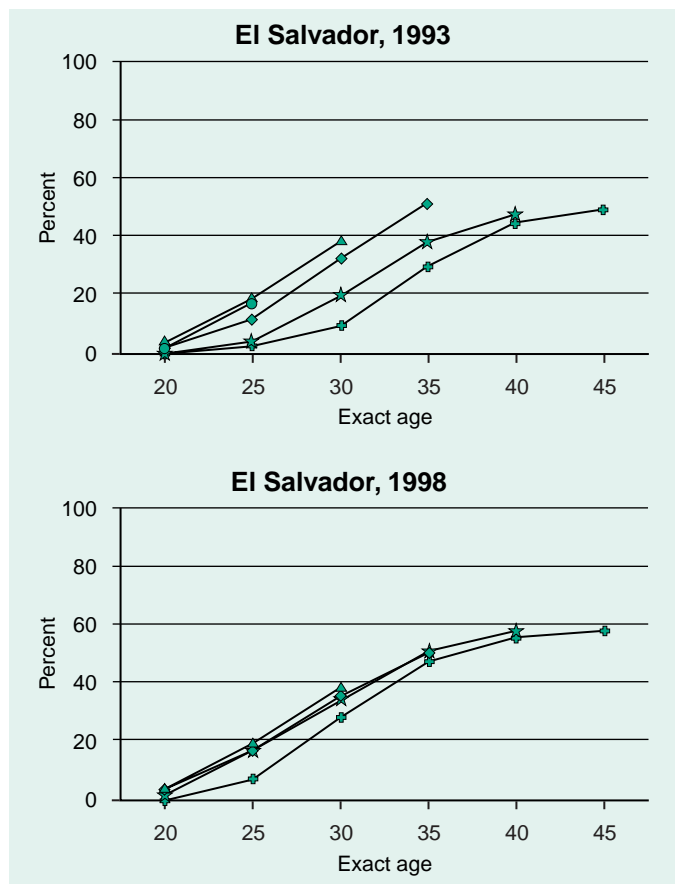
Notes: MD = missing characteristics data; NA = not applicable.

Supplement 3.2. Percentage sterilized by exact age, among various cohorts, selected countries



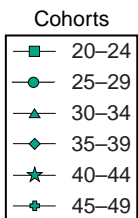
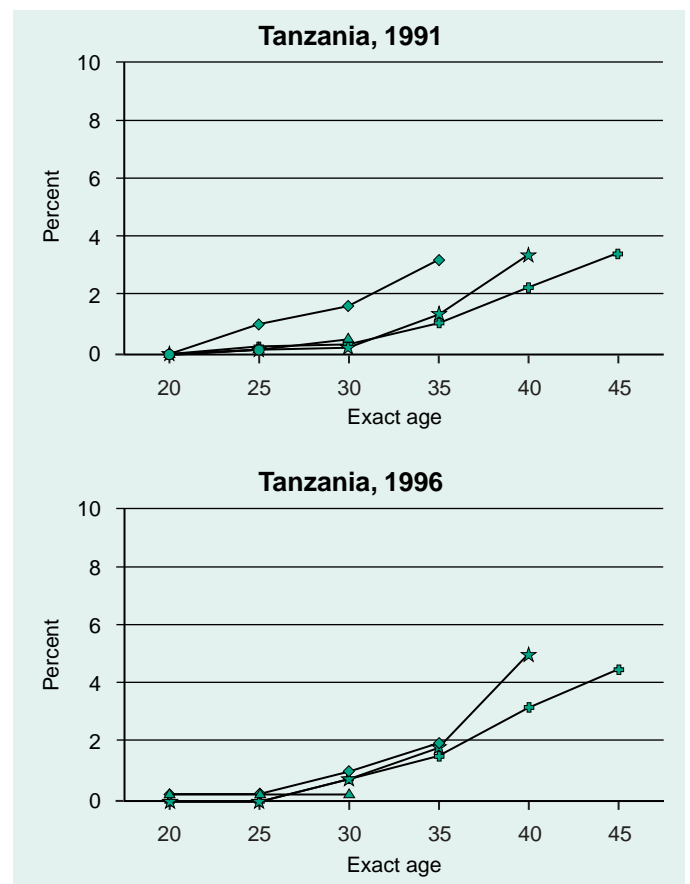
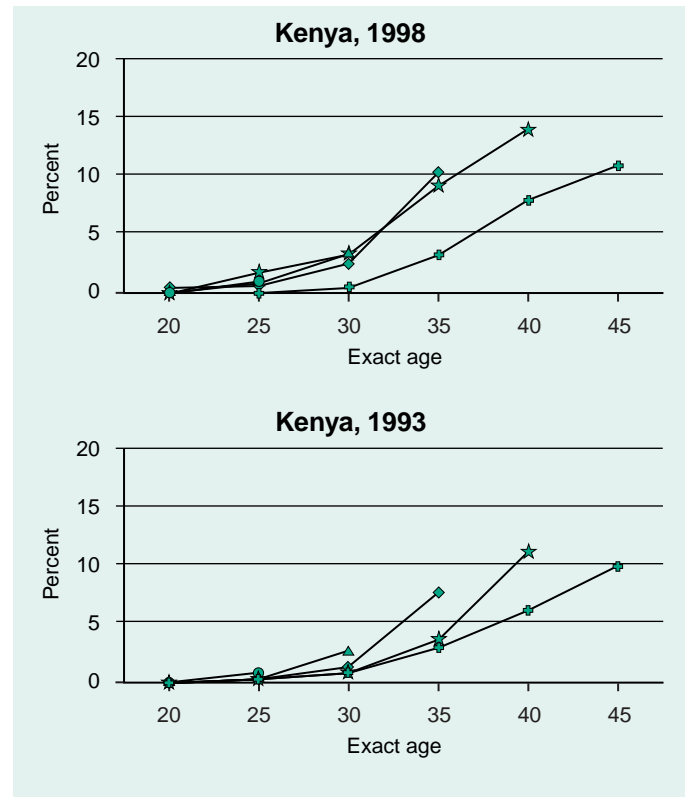
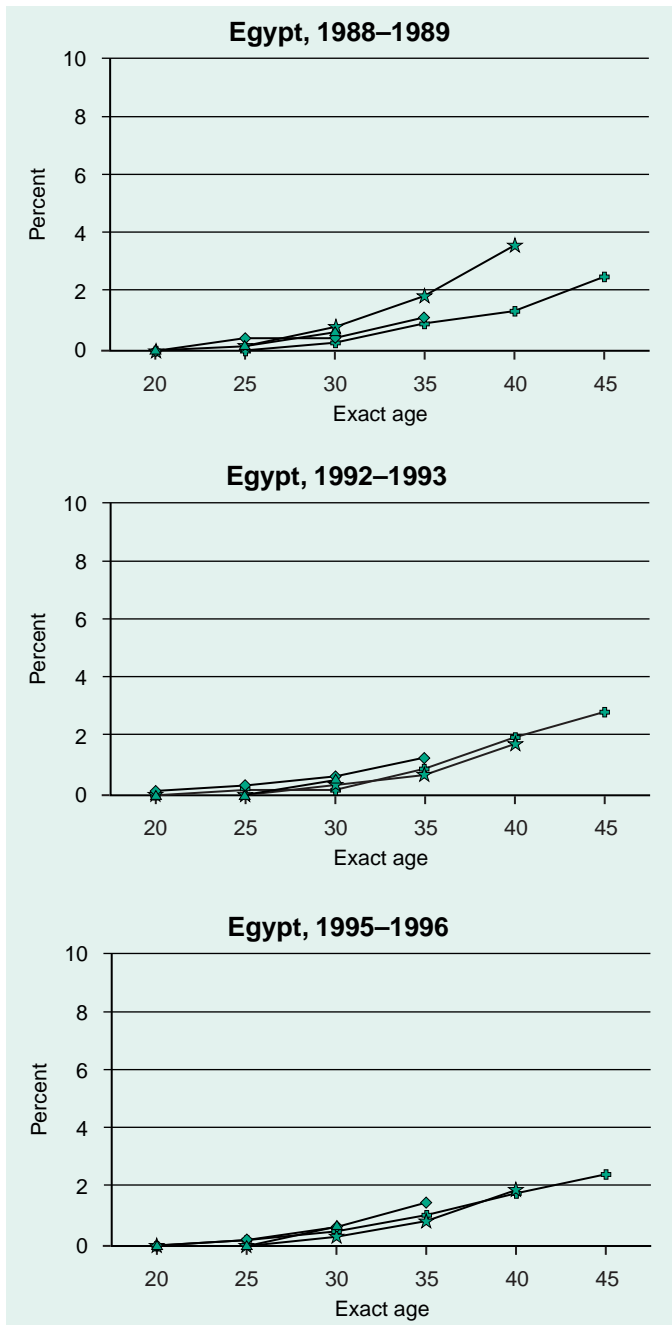
(cont'd.)

Supplement 3.2. Percentage sterilized by exact age, among various cohorts, selected countries (cont'd.)



(cont'd.)

Supplement 3.2. Percentage sterilized by exact age, among various cohorts, selected countries (cont'd.)



(cont'd.)

Supplement 3.2. Percentage sterilized by exact age, among various cohorts, selected countries (cont'd.)

