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# Levels and Trends of Infertility and Childlessness (CR50) and Correlates of Secondary Infertility (AS79)

## An Analysis Brief from The DHS Program

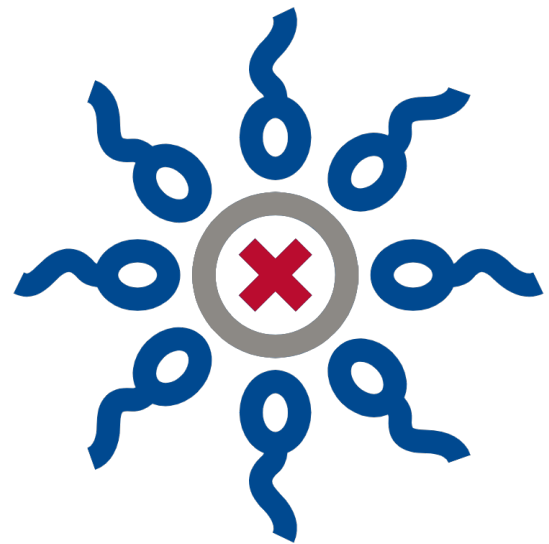
### Why study infertility?

Infertility is an essential, but often neglected, component of reproductive health. The experience of infertility has social, economic, and psychological effects on women and their partners. Between 48 million couples and 186 million individuals live with infertility globally, with half of these couples in sub-Saharan Africa and South Asia. There are multiple definitions of infertility within the disciplines of clinical, epidemiological, and demographic studies. The clinical definition of infertility is the failure to achieve a pregnancy after 12 months of regular unprotected sexual intercourse.

These two studies apply a demographic definition of infertility (see definition box). Levels and Trends of Infertility and Childlessness (Comparative Report 50) provides updated prevalence estimates and describes trends in childlessness and infertility over the past 20 years, while Correlates of Secondary Infertility (Analytical Study 79) examines the factors associated with secondary infertility at the individual level.

### Which countries were included in the study?

These analyses include data from 16 USAID Population and Reproductive Health priority countries: Bangladesh, Ethiopia, Ghana, Haiti, India, Kenya, Malawi, Mali, Nepal, Nigeria, Philippines, Rwanda, Senegal, Tanzania, Uganda, Zambia. Levels and Trends of Infertility and Childlessness (CR50) includes four rounds of Demographic and Health Survey (DHS) data since 2000 for all countries except India, for which only three rounds of survey data were available. Correlates of Secondary Infertility (AS79) examines the most recent DHS survey for each country.



### Definitions

#### **Childlessness**

Women age 20-49 who have never given birth and have been married for at least 5 years.

#### **Primary infertility**

The absence of a live birth for women who desire a child and have been in a union for at least 5 years, during which they did not use contraception.

#### **Secondary infertility**

The absence of a live birth for women who desire a child and have been in a union for at least 5 years since their last live birth, during which they did not use contraception.

# Levels and Trends of Infertility and Childlessness (CR50) and Correlates of Secondary Infertility (AS79)

## What methods were used?

### *Levels and Trends of Infertility and Childlessness (CR50)*

Estimates of childlessness, primary infertility, and secondary infertility among married women age 20-49 are calculated. For the 41 surveys which used the contraceptive calendar, the calendar is used to define the absence of contraception for at least five years. In the 22 surveys without the contraceptive calendar, current contraceptive use is used as a proxy for contraceptive use over the five previous years, though this has been shown to lead to over estimates of infertility. To adjust for this bias, data from the 41 surveys using the contraceptive calendar are used to estimate linear regressions to correct the biased estimates from the 22 surveys using the proxy of current contraceptive use.

### *Correlates of Secondary Infertility (AS79)*

This analysis explores how women's sociodemographic characteristics, health indicators, and partners' characteristics are associated with secondary infertility. The analysis includes cross-tabulations of all independent variables with secondary infertility, as well as adjusted logistic regressions fit for secondary infertility using five models.

## What are the key results from CR50?

### **Childlessness among married women is decreasing in many countries globally.**

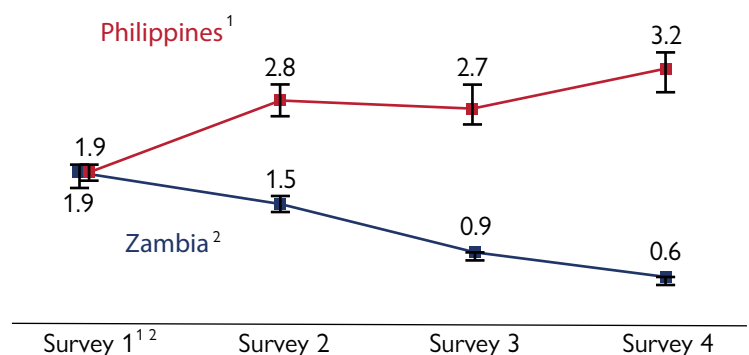
- Childlessness among married women age 20-49 ranges from 0.7% in Malawi to 3.9% in Senegal in the most recent round of surveys. Childlessness has decreased in 11 of 16 countries, increased in 4 countries (Bangladesh, Nepal, Philippines, Senegal), and remained the same in India.
- In high-income countries childlessness can be linked to delayed marriage and childbearing. However in these 16 study countries, age at first marriage remains low, ranging from 16.0 in Bangladesh to 19.1 in Zambia among women age 25-49 in recent surveys. Median age at first birth is also low in these study countries, ranging from 18.3 in Bangladesh to 23.5 in the Philippines.

### **Primary infertility is plateauing or decreasing in most countries, except for countries in Asia.**

- Primary infertility ranges from 0.3% in Kenya to 3.8% in Senegal in the last round of surveys. The average prevalence of primary infertility is 1.7%, a decrease from 2.1% in the first round of surveys.
- Among Asian countries, including the Philippines, primary infertility has increased over time, except in India where it has remained unchanged. In Haiti, Zambia, and all other sub-Saharan African countries except Senegal, primary infertility has decreased.

**Figure 1. Primary Infertility in the Philippines and Zambia**

*Percent of married women age 20-49 who have been in a union for at least 5 years, desire a child, have not used contraception and have not had a live birth in the last 5 years*



<sup>1</sup>Philippines: Survey 1 - 1998, Survey 2 - 2003, Survey 3 - 2013, Survey 4 - 2017

<sup>2</sup>Zambia: Survey 1 - 2001-02, Survey 2 - 2007, Survey 3 - 2013-14, Survey 4 - 2018

### Estimates of secondary infertility are higher than estimates of primary infertility.

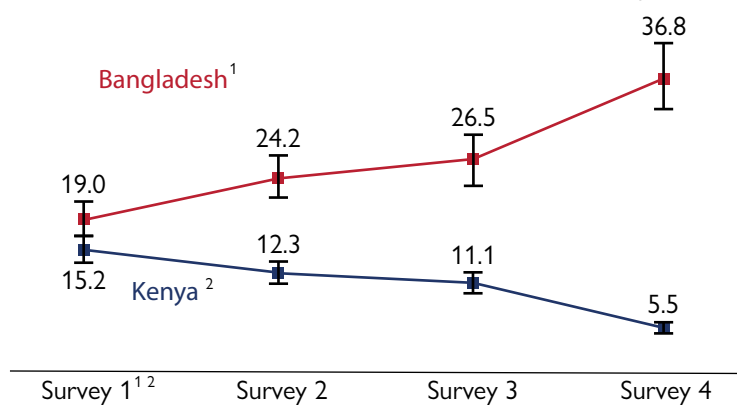
- Secondary infertility ranges from 5.5% in Kenya to 36.8% in Bangladesh in the most recent round of surveys.

### There is no clear pattern in secondary infertility over time.

- The average prevalence of secondary infertility is 18.4% in the last round of surveys, an increase from 17.1% in the first round of surveys. In four of the eleven sub-Saharan African countries, Haiti, and all Asian countries included in the study, secondary infertility has increased. However, in seven sub-Saharan African countries (Ethiopia, Kenya, Malawi, Nigeria, Rwanda, Tanzania, and Uganda) secondary infertility has decreased over time.

**Figure 2. Secondary Infertility in Bangladesh and Kenya**

Percent of married women age 20-49 who have been in a union for at least 5 years since their last live birth, desire another child, have not used contraception and have not had a live birth in the last 5 years



<sup>1</sup>Bangladesh: Survey 1 - 1999-2000, Survey 2 - 2004, Survey 3 - 2011, Survey 4 - 2017-18

<sup>2</sup>Kenya: Survey 1 - 1998, Survey 2 - 2003, Survey 3 - 2008-09, Survey 4 - 2014

## What are the key results from AS79?

### Secondary infertility increases with increasing woman's and partner's age for all surveys.

- While the link between women's older age and infertility is well established, an important finding is that the partner's older age is also associated with secondary infertility in all countries in this analysis. This suggests that while it is biologically possible for men to have children at older ages, there is an increased risk of secondary infertility among older men.

### Having other children under age 18 in the household who are not the woman's own children increases the risk of secondary infertility in most countries.

- The odds of secondary infertility increase with the presence of other children in the household who are not the woman's own for all countries except Nigeria (this variable not available for Bangladesh and the Philippines). This association may occur in both directions: women who have many children in the household may not prioritize having more, while women with secondary infertility may take in other children to raise as their own.

### Higher wealth quintile increases the risk of secondary infertility in several countries.

- In Bangladesh, Ghana, Haiti, India, and the Philippines the risk of secondary infertility increases as household wealth increases. In Kenya, Mali, Nepal, Nigeria, Senegal, and Tanzania, women in the highest wealth quintiles have higher odds of secondary infertility compared to women in the poorest households.

### Most women with secondary infertility have 2 or more of their own living children.

- This ranges from 53% of women with secondary infertility in the Philippines to 80% of women with secondary infertility in Ethiopia who have two or more children.

## At the global level, there is no clear predictor of secondary infertility.

Country-specific results include:

- Obesity is significantly associated with secondary infertility in India, Nigeria, and Tanzania.
- Women who terminated a pregnancy in the past have a higher odds of secondary infertility in 6 countries (Ghana, Haiti, Malawi, Mali, Nigeria, and Zambia).
- Using any type of tobacco is significantly associated with secondary infertility in Uganda and Zambia (this variable not available for Bangladesh and Senegal).
- Women with more than one sexual partner have a higher odds of secondary infertility in most countries. India shows a negative association between number of sexual partners and secondary infertility. Nepal, the Philippines, and Senegal show no significant association (this variable not available for Bangladesh and Tanzania).

## What does this mean?

Older women and their partners, and for many countries, wealthier women and women with other children in their household are more likely to have secondary infertility. Future research should identify other factors that may be driving trends in infertility and childlessness, including chronic health conditions, diet, environment, genetics, and infections.

Increased availability of assisted reproductive technology (ART) may contribute to the observed decrease in primary infertility, though ART is not accessible for many women in sub-Saharan Africa. Additional research on ART is required.

Country-specific findings from AS79 can be used to support women and couples experiencing secondary infertility with targeted interventions in these 16 countries.



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## The DHS Program Contraceptive Calendar

The DHS Program Contraceptive Calendar collects a complete history of women's reproduction (e.g., births, pregnancies, and terminations) and contraceptive use for a period of between 5 and 7 years prior to the survey. Visit the DHS Contraceptive Calendar Tutorial at <https://www.dhsprogram.com/data/calendar-tutorial/> or watch the video series on [The DHS Program's YouTube channel](#) to learn more.

*This brief summarizes The DHS Program's Comparative Report No. 50 by Sara Riese and Analytical Study No. 79 by Shireen Assaf with funding from The United States Agency for International Development through The DHS Program implemented by ICF. The full reports are available at: <https://www.dhsprogram.com/publications/publication-cr50-comparative-reports.cfm> for CR50 and <https://www.dhsprogram.com/publications/publication-as79-analytical-studies.cfm> for AS79.*