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Global Fertility Rates and the Role of Infertility

OVERVIEW

While the world's population now approaches 8 billion people, global fertility rates have been declining for decades. The annual population growth rate was 2.1 percent in 1963, but by 2020, it had fallen to just 1 percent.¹ The overall drivers of this decline include increased access to contraception and reproductive health care, an increase in women seeking higher education, women's empowerment in the workforce, lower rates of child mortality globally, increased cost of raising children, and overall greater gender equality.²

Yet while greater gender equity and empowerment is a cause for celebration, demographic reports suggest that many couples end up having fewer children than they felt was ideal.³ At the heart of these findings are economic insecurity, struggles with fertility, fears over the growing impacts of climate change, and concern that having children will negatively impact career progression.^{4,5,6} Thus, any efforts to increase fertility rates must address the reasons that women and families are having fewer children.

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Infertility is a broad-based phenomenon, with 186 million people around the world suffering from its effects.⁷ It is defined as a couple-based disease associated with an inability to conceive after 12 months of regular unprotected sexual intercourse. Infertility impacts anywhere from 10 to 25 percent of couples of reproductive age globally, and it is associated with negative health outcomes such as poor mental health, chronic health conditions like cardiovascular disease, and complications attributable to infertility treatments.⁸ Thus, the efforts to reduce infertility in individuals and couples also represent strides taken to improve global health.⁹

Though men are equally likely to have conditions that lead to infertility, it is women who disproportionately bear the societal burden of infertility and fertility struggles.¹⁰ The misconceptions around infertility have dire effects—studies show that infertility is linked to poor mental health, increased gender-based violence, relationship abandonment, and severe stigma.¹¹ Across the world, women report experiencing pressures to meet cultural demands to have biological children. Among the key implications of this norm is also a belief that utilizing in vitro fertilization (IVF) or other assistive reproductive technologies (ARTs) is not a valid form of conceiving a child, and a sense of social isolation is created as a result of community stigma.¹²

Further complicating the picture are misconceptions that public health interventions such as vaccines or contraceptive use contribute to infertility. Such erroneous beliefs can hinder broader public health campaigns to encourage vaccination uptake, safer sex practices, and improved public health and safety.¹³

Causes of Infertility

Infertility can have a variety of causes, and can occur in both male and female reproductive systems.¹⁴ Up to half of all infertility cases can be attributed to genetics.¹⁵ Yet while the causes of

infertility can often be identified, how they manifest in individuals is anything but clear cut. In 25 percent of cases, infertility is caused by more than one factor. Furthermore, in 10 percent of incidences, infertility does not have a clear cause.¹⁶

In female reproductive systems, infertility often is caused by complications due to pregnancy or unsafe abortion, uterine disorders such as endometriosis, ovarian disorders such as polycystic ovarian syndrome (PCOS), untreated sexually transmitted infections (STIs), or hormone imbalances. In male reproductive systems, infertility occurs due to range of factors, including obstructions of the reproductive tract, hormone imbalances, untreated STIs, failure to produce sperm due to genetic conditions or medical treatments, and abnormal sperm function.^{17,18}

In general, however, environmental and lifestyle factors such as smoking, alcohol or drug intake, or exposure to environmental pollutants and toxins can directly cause lower fertility or infertility.^{19,20}

Prevention and Treatment of Infertility

Progress on infertility prevention and treatment is challenged by global misunderstandings of the key factors that have created the problem: the epidemiology of infertility, the shame and stigma associated with fertility struggles, and a lack of political will of policy makers to fund research and prevention interventions.²¹ Infertility is an overlooked issue within the global sexual and reproductive health and rights (SRHR) agenda, which is surprising, especially since it is a key component of human reproductive autonomy—the fundamental right and ability to make decisions on contraceptive use, pregnancy, and childbearing.²²

Typically, treatment for infertility involves ARTs, such as IVF. Yet the medicines used to stimulate ovulation can lead to adverse ovarian disorders, and people who conceive via IVF may face the higher risks associated with multiple births and



conceiving at older ages, both of which increase perinatal health complications.²³ Quality of care is intrinsically tied to ART outcomes. In addition, global access and affordability to IVF varies. Across several high and middle-income countries, government or private health care providers offer infertility services, though long waiting lists and exorbitant costs to obtain these services can be barriers. However, even in countries where IVF or other ARTs are affordable, the method remains underutilized often due to a misconception that men are not infertile, and, therefore, do not need infertility treatment.²⁴

Implementing infertility treatment is also not a priority for many international organizations working in low and middle-income countries (LMICs)—particularly those countries with high birth rates.²⁵ High fertility rates may discourage interventions that would aid individuals in having children, adding to the complexity of balancing reproductive autonomy with a desire to stabilize population trends.

Social Drivers and Impacts of Fertility Trends

While there is still progress to be made to improve working conditions for women, the last century has seen a sharp increase in women's participation in the paid workforce.²⁶ This development correlates with decreases in fertility rates, as women often delay childbearing due to gains made in the workforce.²⁷ Difficulty in balancing roles as both an employee and a mother is also a factor, especially since a lack of family-friendly workplaces represents a barrier to women who try to pursue both aims simultaneously.

Fertility trends have an outsized impact on economies worldwide. Declining fertility rates have the potential to destabilize global markets and national security.²⁸ If fertility rates continue to decline worldwide, subsequent labor shortages could weaken economic and social stability within a country.

In Japan, for example, decades of low fertility rates have contributed to broad economic difficulties, and its struggles have sounded an alarm for other high-income countries approaching similar diminished fertility rates.²⁹ Some nations have gone so far as to adopt policies to increase fertility rates. While some policies strictly provide support for fertility treatments, other countries have implemented more aggressive policies to incentivize childbearing. For example, the Hungarian government may provide loans to married couples that can be forgiven if the couple has at least three children, but must be repaid if the couple divorces. Additionally, Hungarian women under 40 years old may access free fertility treatments, but the LGBTQ+ community does not have access to these benefits. While these so-called “pronatalist” policies aimed to increase fertility rates can be implemented with benign intentions, they are not proven to be effective. Indeed, they can perpetuate patriarchal norms and nationalistic ideals, enable human rights abuses involving state control over women's bodies, and present threats to SRHR.³⁰

The effects of climate change also have a direct impact on fertility trends and infertility. While declining fertility is partially due to increased reproductive autonomy and choice, couples are increasingly facing difficulty conceiving children. One significant contributor to global infertility is increased exposure to environmental toxins, which can cause hormone imbalances, damage to the reproductive system, and impaired fetal viability.³¹ Exposure to chemical toxins, heavy metals, and air pollutants can also impair a couple's ability to conceive through IVF and other ARTs.³²

A perception of the severe impact of climate change on the planet itself also can be a driver for couples and individuals to choose not to have children.³³ The notion that declining fertility rates provide a way to mitigate the impacts of climate change does raise



the possibility that efforts to lower birth rates for this purpose also might infringe on reproductive autonomy and even violate human rights.³⁴

COUNTRY LEVEL INTERVENTIONS

Uruguay's Sexual and Reproductive Health and Rights Legislation

Uruguay has a population of around 3.5 million people and is considered to be a high-income country.³⁵ On average, women in Uruguay have 2.0 children over their lifetime—a significant decrease from an average of 3.0 children since 1974.³⁶ Estimates of infertility within the population range between 15 and 18 percent of couples.³⁷ Government policy initiatives taken in the last two decades have helped improve maternal and infant health, as well as support women's economic participation. Since 2002, Uruguay has expanded access to sexual and reproductive health care through the government's recognition of sexual and reproductive health care as a fundamental human right. This decision—and the passage of legislation to codify it—has resulted in significant health improvements.³⁸

- Law No. 19.167 Assisted Human Reproduction (2013)^{39,40}
 - ▶ Ensures that assisted reproductive health and infertility treatments are included in Uruguay's public health system, and that everyone has the right to access these health services.
 - ▶ Regulates quality standards for public and private institutions.
 - ▶ Allows surrogacy for altruistic purposes, preventing compensation in most cases.
- The Care Act (No. 19,353) (2015)⁴¹
 - ▶ Aims to transform the gendered division of caregiving to allow for women's economic participation.

- ▶ Grants children, elderly, and persons with disabilities the right to receive care.
- ▶ The government provides care services and maintains quality through trainings and regulations.

Japan's Policy Efforts to Make Parenting Easier

Japan has a population of more than 125 million people. Yet in a way similar to other high income countries, that population is shrinking. Today, women in Japan have 1.3 children on average over their lifetime.⁴² While exact estimates on the prevalence of infertility are not available, one survey found more than 18 percent of Japanese married couples sought or received treatments for infertility.⁴³ Taken together, an aging population, low birth rates, and highly regulated immigration levels have strained the Japanese economy.⁴⁴ Since the 1990s, the Japanese government has been committed to increasing the nation's total fertility, and it has created several policy initiatives to do so. Parenting is an intensive process in Japan, where traditional gender values place much of this work on women. Women often must choose between having children or having a career. Policies put in place over the past decade aim to make parenting easier and more equitable; however, such policies to increase births have had limited success.⁴⁵

- National Health Insurance Infertility Reimbursements (2022)^{46,47}
 - ▶ Pre-policy change, Japanese Health Insurance covered about 30 percent of costs for IVF.
 - ▶ New policy covers around 70 percent of costs for advanced fertility treatments.
- The New Angel Plan (2015)⁴⁸
 - ▶ Improves the accessibility of daycare and childcare services.



- ▶ Prioritizes flexible work plans for working parents.
- ▶ Increases the number of maternal and child health facilities.
- ▶ Reduces educational costs to reduce economic burden on families.

Ghana's Approach to Infertility Care and Family Planning

Ghana is a country of more than 31 million people. Similar to other lower-middle income countries, Ghana has high birth rates and a growing population. On average, women have 3.8 children in their lifetime.⁴⁹ Policy efforts in this nation have mostly aimed to reduce births, although Ghana still struggles with a high burden of infertility, and childlessness is especially stigmatized. Estimates of infertility within the population are between approximately 12 and 16 percent.⁵⁰ Ghana has privatized ART clinics and provides no insurance coverage for infertility treatment, yet Ghana still has one of the highest rates of ART utilization among countries within The African Network and Registration for Assisted Reproductive Technology (ANARA).

- The African Network and Registry for Assisted Reproductive Technology (ANARA) (2015)⁵¹
 - ▶ Improves understanding of ARTs in included African countries.
 - ▶ Creates a network for research, outcomes, and information sharing.
 - ▶ Provides free data collection software for participating centers.
- Several non-profit organizations work on initiatives to increase ART accessibility and decrease stigma around infertility
 - ▶ Association of Childless Couples of Ghana (ACCOG)⁵²
 - » Works to eliminate stigma towards childless people.

- » Provides members with counseling and financial resources to access ARTs.
- » Empowers members through training and education.
- ▶ The Walking Egg Project (tWE)⁵³
 - » Researches cost effective infertility options and ways to implement them in low-resource settings, including Ghana.
 - » Advocates for and builds networks to support global access to fertility care.
 - » Provides training and capacity building to health care workers.

POLICY RECOMMENDATIONS

Increase infertility research and investment (causes, prevention, and treatments)

While much is now known about the causes of infertility, research gaps remain in fertility-related needs for groups routinely underrepresented in fertility research, such as men, people living with HIV, people who use drugs, sex workers, people within the LGBTQ+ community, and people living in the Global South.⁵⁴ Research gaps also persist in understanding how much individuals understand about infertility or fertility struggles—a knowledge gap that directly contributes to harmful misconceptions. Conducting **qualitative and quantitative studies that are more inclusive and globally representative is critical to understanding the scope and drivers of infertility, as well as its impact on people's lives, how people understand the challenges, and the ways to break down barriers to access treatment.**

It is also essential to **invest in providing treatments for infertility for people living in countries with higher fertility rates, namely LMICs.** Efforts around fertility in these countries often aim to reduce birth rates, which neglects the





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needs of women experiencing infertility who do want to bear children.

Strengthen societal and health systems to increase access to infertility prevention and treatment

Addressing infertility at a systems level is a critical aspect of promoting human rights and gender equity. Globally, there is a need for **public awareness campaigns on infertility and infertility-related stigma** to combat the poor societal and mental health outcomes of experiencing fertility struggles. The stigma and discrimination women experience when they are seen as infertile is also a global issue. This stigma is often heightened in LMICs, where cultural and community norms expect women to have children, and blame them when they do not.⁵⁵

Research also shows that increasing access to fertility care such as IVF and other ARTs and integrating these treatments into existing SRHR programs can have a positive impact on fertility rates and reproductive autonomy.⁵⁶ **Increasing governmental support for people using ARTs is also critical to supporting people's childbearing desires globally.** While there is a trend of high-

income countries providing subsidized infertility treatment, LMICs do not provide the same level of support for people seeking treatment.

Additionally, **ensuring access to family planning to all individuals regardless of fertility rates in their country** is critical to provide people with the ability to have their desired number of children and to control spacing between births.⁵⁷

Implement policies to create family-friendly workplaces and make it easier to parent

Pronatalist policies that provide direct incentives for having children are not proven to be effective at changing fertility rates, and actually reinforce patriarchal and gender inequity norms. However, policies that create a more family-friendly society where it is easier to become a parent and raise a child are most effective in increasing fertility.⁵⁸

Providing widely available, accessible, and high-quality childcare can ease fears of financial instability and make it easier for people to have a child or multiple children. Additionally, workplace policies such as **paid parental leave, flexible working hours, and employee fertility benefits** create supportive workplaces to sustain higher fertility rates.



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