

DEBATE

Medically assisted reproduction cannot fully counteract the social- and age-related challenges of reproduction

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ABSTRACT In the Declaration of Human Rights, the right of all adult women and men to found a family is stated. Globally, most adults want to have two to three children. Infertility is one of the most frequent chronic diseases among reproductive-aged women and men, and infertility contributes to involuntary childlessness and to many people having fewer children than they want. This is seen by the United Nations Population Fund as a crisis of reproductive agency. While medically assisted reproduction (MAR) is effective for many people, its success rates are much lower with advanced age. There are substantial barriers to accessing fertility service, such as the lack of recognition of infertility as a disease, low coverage of fertility treatment costs and the lack of availability of fertility care for non-traditional families. Studies, including from countries where people have access to MAR in the public health care sector with no patient payments, show that there are social and ethnic inequalities in the uptake of MAR, as well as social inequalities in live birth rates after MAR. There is a need for universal and equal access to MAR treatments for all people who could benefit from them, including people with infertility, single women and same-sex couples. Furthermore, there is a need to increase young adults' fertility knowledge to help ensure that they are making well-informed decisions regarding their family building goals.

KEYWORDS Age-related fecundity • Ethnic inequality • Fertility knowledge • Medically assisted reproduction • Reproductive agency • Social inequality

This contribution focuses on family aspirations, highlighting childbearing decision-making as a human right and emphasising the importance of reproductive agency. It discusses the role played by unrealised fertility aspirations in fuelling the current “fertility crisis”. I discuss access to fertility care, with a focus on social and ethnic inequalities in infertility and in the use of medically assisted reproduction (MAR). I also consider the potential role of MAR in offsetting the negative impact of delayed reproduction and age-related fecundity decline on achieving reproductive aspirations. I focus on high-income countries that are characterised by delayed reproduction and higher MAR use compared to lower- and middle-income settings.

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The real fertility crisis – not being able to realise your fertility aspirations

In 1948, the United Nations adopted the Universal Declaration of Human Rights. In Article 16 it is stated that “men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family” (United Nations, 1948). In other words, it is a human right for all adults to have children if they wish to do so. However, many people will not be able to have the number of children they desire.

Recently, the United Nations Population Fund (UNFPA) published a report entitled “The real fertility crisis”, featuring an online survey of 14,000 women and men from 14 countries representing major world regions (UNFPA, 2025). This report highlights that the real fertility crisis is not due to very low or high fertility, or overpopulation or underpopulation. Instead, the real fertility crisis occurs because high proportions of men and women globally are unable to realise their fertility aspirations, with many having smaller families than they planned or desired.

Across respondents from all countries, the most important reasons cited for desiring children were “to bring me lifelong joy” and “to derive satisfaction from guiding a child’s development and teaching them”, followed by “to strengthen the bond with my partner” and “to have a sibling for my existing child/children”. Overall, the most common ideal number of children cited by both men and women was two or three. The share of respondents who said they wanted to remain childless was low, averaging 7% for men and 8% for women.

Among respondents over age 50, 31% reported having fewer children than they ideally would have chosen. This is seen as a crisis of reproductive agency; “in the ability of individuals to make their own free, informed and unfettered choices about everything from having sex to using contraception to starting a family” (UNFPA, 2025, p. 12).

There are a mix of social and structural reasons, insecurities and partnership-related reasons on the one hand, and health-related issues on the other, that could explain why people do not have the children they want. In this report, 12% of respondents cited infertility as a reason for having fewer children than they desired (UNFPA, 2025). Infertility, which is often closely linked to delayed parenthood, contributes to higher childlessness rates, and to many people having fewer children than desired.

Demand for medically assisted reproduction exceeds its use

Infertility is defined as “a disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse” (Zegers-Hochschild et al., 2017). It is one of the most frequent chronic diseases among reproductive-aged women and men. Among 25–45-year-old women and men, infertility is more common than, e.g., asthma, cardiac diseases, mental disorders or cancer. A recent report from the World Health Organization estimates the average lifetime infertility prevalence, i.e., the likelihood

of experiencing infertility over the reproductive timespan, at 17.8% (95% CI 15.3–20.7) in high-income countries in 1990–2021 (WHO, 2023).

Medically assisted reproduction (MAR) covers all *in vitro* methods (assisted reproductive technologies (ART) in which eggs, semen and embryos are managed in a laboratory) and all *in vivo* methods (non-ART methods like intrauterine insemination with partner or donor semen). Smeenk et al. (2023) reported that one million ART cycles were performed in 40 European countries in 2019. This equals approximately 8700 ART cycles performed per million women of reproductive age (15–45 years). Furthermore, approximately 200,000 non-ART cycles were reported. Despite the huge numbers of MAR treatment cycles, the demand for fertility treatments in many regions greatly exceeds their availability and use (Adamson et al., 2023; Fauser et al., 2024).

Among the substantial barriers to accessing fertility services are that infertility is often not recognised as a disease; coverage of fertility treatment costs is low; fertility care is often not available to non-traditional families, such as same-sex couples and single-parent families; and people often have to travel long distances to reach a fertility centre. If MAR treatment is not supported by, e.g., a governmental health plan or insurance, the costs of MAR treatment (especially ART) are unaffordable for most people (Adamson et al., 2023, 2025).

Infertility and MAR – social and ethnic inequalities

Population-based studies exploring social and ethnic inequalities in infertility show different results. A study on the US population reported a higher risk of infertility among women with lower income aged 35 and older but found no association between infertility and low income among younger women (Chen et al., 2023). A study from Germany reported that migrants from Russia, Central Asia and Middle East had a higher risk of perceiving infertility than other migrants (Milewski et al., 2025).

On the other hand, two Danish population-based studies found no social class or educational differences in infertility (Eliassen et al., 2024; Schmidt et al., 1995). Similarly, no ethnic differences in infertility were identified (Eliassen et al., 2024).

However, there are huge social disparities in MAR use even in countries with free access to MAR treatments in the public health care system. A national register-based study from Denmark showed higher use of ART treatments in the public health care sector with increasing education and income (Brautsch et al., 2023). The odds ratio for accessing ART treatments in the public sector among 35–40-year-old women increased stepwise for each educational level to OR = 1.56 among women with a postgraduate research education compared to women with primary school only. Furthermore, women in the highest income quintile had OR = 5.26 of using ART treatments in the public sector compared to women in the lowest income quintile – this odds ratio was even higher than that for accessing ART treatments in the private sector (OR = 3.12). Similarly, a study from France, which provides free access to ART treatments, showed that women below the poverty line who had an unsuccessful ovulation induction treatment reported higher odds (OR = 3.76) of being unable to access to additional ART treatments (Messaoud et al., 2023).

A national register-based study from Denmark showed that the odds of receiving ART treatments among migrant women from non-western countries were 34–47% lower than those among women of Danish origin (Petersen and Østergaard, 2024). Similarly, a recent demographic study on Germany found evidence of lower medical help-seeking among migrants (Milewski et al., 2025). In line with these findings, a study from Massachusetts, a US state with a comprehensive fertility mandate, showed that Non-Hispanic Black and Hispanic populations were underrepresented in the use of fertility treatments (Korkidakis et al., 2025).

A narrative review covering studies exploring the factors associated with medical help-seeking for infertility in different countries with public and/or private access (in which the patients cover the costs themselves) to fertility treatments showed that these factors could be categorised into sociodemographic, socioeconomic, reproductive history, people’s attitudes and psychological factors (Passet-Wittig and Greil, 2021).

Women with higher socioeconomic position have higher MAR live birth rates

In Denmark, approximately 50% of all MAR treatments are performed in the public health system in which the treatment costs are covered by the state, and the remaining treatments are offered in the private health care system in which the patients cover the costs themselves. Access to MAR in the public system is limited to women up to age 41, and access to MAR at private clinics is limited to women up to age 46. Until 2025, access to MAR in the public system was only available to childless women or couples who did not have a common child; it was limited to up to three fresh ART cycles; and it was only permitted for the purpose of having a first (common) child. In 2025, the Danish Parliament gave women/couples access to up to six fresh ART cycles and expanded access to treatment for the purpose of having a second child at public clinics. Hence, we expect that a lower percentage of MAR treatments will be provided in the private sector in the future. Despite this expansion of access to MAR in the public sector, a national register-based study found that the likelihood of achieving a live birth after initiating ART treatments increased stepwise with higher education and income level. Women at the highest income level had a hazard ratio of achieving a live birth that was twice as high as that of women at the lowest income level (Uggerhøj et al., 2026). One of the reasons for this difference was that lower educated women were more likely than higher educated women to discontinue ART treatments after an unsuccessful treatment cycle (ibid.). Goisis et al. (2024) studied live births after MAR treatments across five different countries (Denmark, France, Spain, the UK and the US). University educated women were found to be more likely to give birth after MAR than women with lower educational levels. After adjustment for sociodemographic characteristics, educational differences disappeared in the UK and to some extent in Spain. The US, with the lowest levels of subsidies for MAR treatments, had the largest educational gradients.

Reducing social and ethnic disparities in the use of medically assisted reproduction: Key policies and adjustments

There is a need to establish equity for people with infertility and for people in non-traditional families who need MAR treatments to achieve their family-building goals. The following policies and adjustments are therefore recommended. First, it is important to establish access to MAR treatments that people do not have to pay for themselves. This could be done by offering people sufficient access to MAR treatments in a public, tax-financed health care system, or by expanding public and private insurance coverage. Second, it is important to explore the different reasons why lower educated people and members of different ethnic groups are less likely to initiate MAR treatments, and to understand why they are more likely to terminate treatment after an unsuccessful treatment attempt. This knowledge is fundamental for implementing evidence-based changes in access to MAR treatment that would encourage people to stay in treatment, as in most cases more than one treatment attempt is necessary to have a live-born child. Third, it is important to persuade policymakers, states and health care professionals that equitable access to assisted reproduction is needed. Equitable access is essential as it is a fundamental human right for all adults to have children if they wish to do so. Accordingly, all adults who want to have children, but have reproductive diseases or are living in non-traditional families, should have access to affordable, high-quality MAR treatments to increase their reproductive agency (UNFPA, 2025).

Advanced age and family building

For both women and men, advanced age is closely associated with lower chances of achieving a live birth. Research based on historical data for non-contracepting populations shows that the monthly probability of achieving a pregnancy resulting in a live birth decreases substantially with women's age (Larsen and Yan, 2000). For 25-year-old women, the monthly probability is around 24%, while for 40-year-old women, it is around 6%. This reduction in fecundity is due to both egg quality diminishing with age and the risk of foetal loss (miscarriage, ectopic pregnancy and stillbirth) increasing with age. A national register-based study found that the risk of foetal loss is higher than 20% among 35-year-old women and is higher than 50% among 42-year-old women (Nybo Andersen et al., 2000). Men's advanced age also contributes to the risk of miscarriage: a meta-analysis of first trimester miscarriages showed that the risk increased significantly for men aged ≥ 45 years (OR = 1.74) (du Fossé et al., 2020).

When it comes to achieving a live birth after MAR treatment, age is also very important. A large Danish national register-based study found that five years after initiating MAR treatment, 64% of women under age 35 at treatment initiation had achieved a live birth, compared to 49% of women aged 35–39 and only 16% of women aged ≥ 40 years (Malchau et al., 2017).

These results clearly show that even in a country where high-quality MAR treatments are offered and people have access to free treatments in the public health care sector,

MAR cannot overcome the reduced quality of women's eggs with advanced age and the increased risk of foetal loss with advanced female and male age. Among people who had ever experienced infertility, 44% reported they had not had the children they wanted, compared to 9% of people without infertility (Eliassen et al., 2024).

This suggests that despite having access to MAR treatments, some people who delay family building will remain childless or have fewer children than they desire. Furthermore, there is compelling evidence that many people are not aware of the limitations of MAR. A global review study on women's and men's fertility knowledge showed that, in general, study participants overestimated MAR success rates, and many thought that MAR could compensate for the age-related fecundity decline (Pedro et al., 2018).

It is also important to be aware that infertility does not only affect women and men of older reproductive age. One reason is that some of the most common reproductive diseases, such as low semen quality, PCOS, endometrioses and (untreated) sexually transmitted diseases like Chlamydia, are already present in young men and women. A Danish population-based study show that lifetime prevalence of infertility is high already in the mid-reproductive years (20% among 25–34-year-old women and men; Eliassen et al., 2024).

Concluding policy messages

MAR treatments should be made fully accessible and inclusive for all reproductive-aged people with infertility, as well as for single women, same-sex couples and others who need them. At present, there are large social and ethnic inequalities in family building options for people who need MAR treatments, as treatment success rates (live births) are higher among women with higher socioeconomic position – even in countries where people have access to MAR in a public health care setting. Moreover, inequalities in access to or use of MAR treatments contribute to stratified reproduction via MAR. Further postponement of child-bearing, and even stronger reliance of many prospective parents on MAR in the future, will deepen social inequalities in reproduction unless we gain a better understanding of these inequalities and how to tackle them.

Universal and equal access to MAR treatments is very important for people who need them. However, an important limitation of MAR treatments is that they are not successful remedies for age-related fertility decline. The possibility of having MAR treatments might lead women and men to believe that they can have children at very late ages. However, this is not the case, as for most people of high reproductive age, MAR treatments involving the use of the woman's own eggs are usually not successful.

Overall, it appears that MAR treatments cannot help many people who postponed family building to later ages to achieve their desired family size. More generally, they will not be able to offset the reduced live birth rates associated with the shift to delayed reproduction. In addition, more postponement and higher use of MAR will deepen social inequalities in reproduction.

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