



Infertility: Exploring Male and Female Rates and Its Impact on Society

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Abstract

About 8–12% of couples globally face infertility, which is defined as the inability to conceive after a year of unprotected sexual interaction. 53.2% of males and 57.3% of women in the UK who experienced infertility needed either medical treatment or professional help.

A wide range of factors, from lifestyle choices to underlying medical issues are included in the aetiology of infertility. Medical, surgical, and assisted reproductive procedures are some of the various techniques needed to treat infertility even though access and cost are still major obstacles.

High levels of education, economic prosperity and access to contraception contribute to low fertility rates in developed countries by delaying birth and eventually lowering fertility rates.

To improve infertility rates, policymakers, medical professionals, and the public must work together to address the issues surrounding infertility by encouraging an inclusive and equitable approach to infertility management to lower stigma in society and increase access to care.

What is infertility?

Infertility is defined as the inability to achieve a clinical pregnancy after a year of frequent, unprotected sexual intercourse. Around 8-12% of couples in the reproductive age range are thought to be affected by infertility globally¹⁹. It is estimated that couples in the UK (roughly 3.5 million people) suffer slightly higher levels, with approximately 14% of couples (1 in 7) experiencing infertility¹⁶.

There are two types of infertility broadly categorised into primary or secondary infertility. Primary infertility is the inability of a couple to conceive after multiple efforts at consistent, unprotected sexual intercourse. Secondary infertility is when a couple has successfully conceived in the past but is having difficulties getting pregnant again.

The most common risk factors for infertility include old age, smoking, being obese, drug abuse, underlying health conditions like ovulatory disorders, endometriosis and PCOS, drinking alcohol excessively and using certain prescribed medicines like chemotherapy, antipsychotic medicines, and anabolic steroids¹⁶.

Does infertility have an effect on the world's population?

Rates of fertility affect the growth and decline of the population which impacts various elements of society such as workforce and the economy.

Globally, there are significant differences in the demographic patterns of infertility. While most developed countries face concerns related to ageing populations, low fertility rates and the associated decline in population size decrease, the poorest countries have rapid population growth and high fertility rates¹⁹. Fertility

rates are higher in poorer countries due to fewer opportunities for female education as well as poor access to contraceptives¹³.

Other reasons including marriage, family traditions, social and economic factors could be the cause of the higher fertility rates in developing countries as some Asian, African, and Latin American communities encourage early marriage¹⁷. Based on lifestyle decisions linked to economic status where contraception is accessible to everyone and the childcare expenses due to housing, education etc., developed countries typically have lower fertility rates¹³. Resolving this problem will help the preservation of sustainability, which is necessary to reach the necessary birth rates and have young people to support national and global developments.

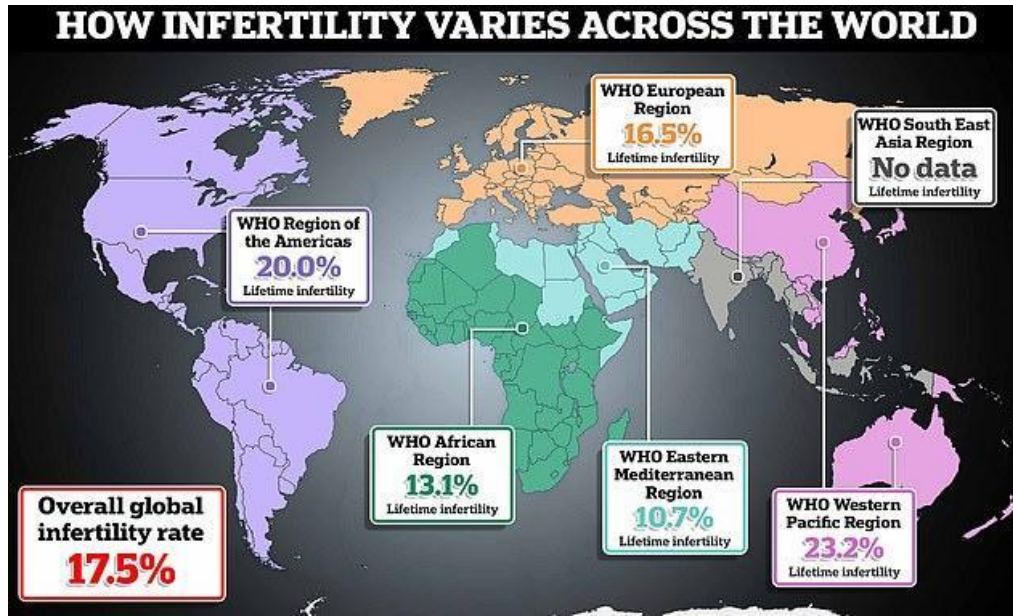


Figure 1: Infertility rates in different areas of the world⁷.

Infertility in men

Men make up approximately 50% of cases of fertility overall and they are also found to be mainly responsible for 20–30% of infertility cases¹⁹.

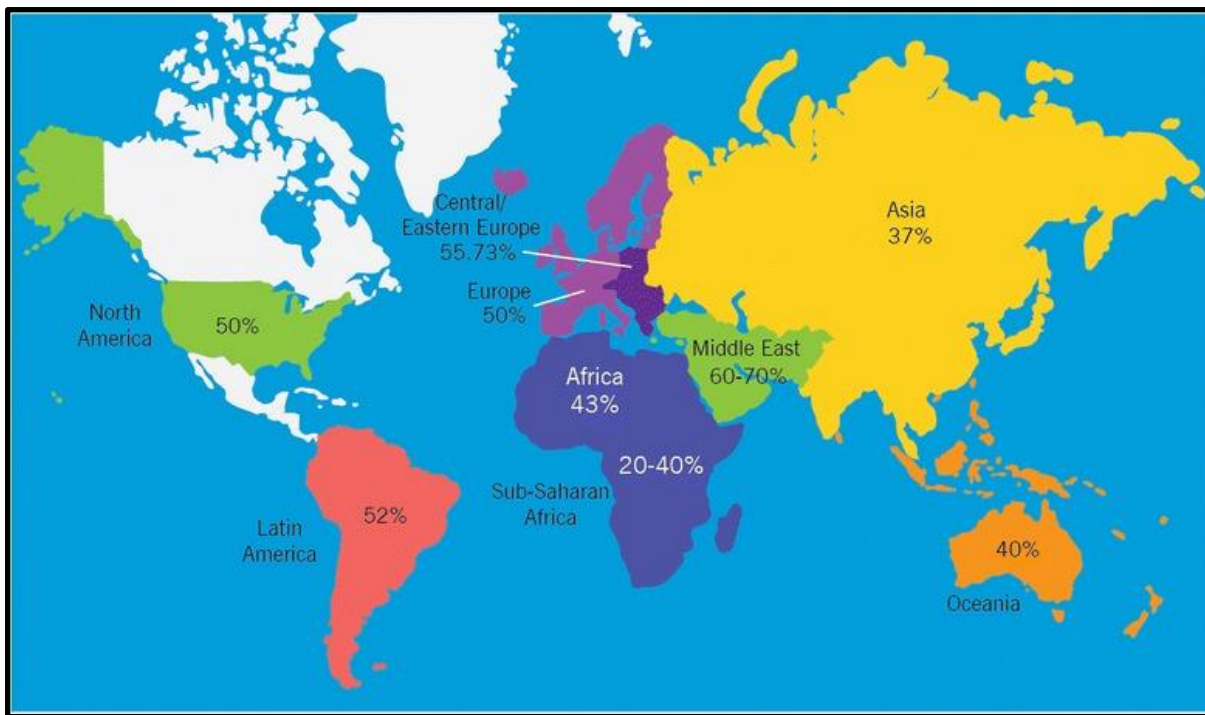


Figure 2: Estimate percentages of global male infertility cases in different regions¹.

The data presented in this figure was gathered from a study that examined global rates of male infertility by reviewing the most recent literature. Since most of the figures displayed are based on self-report, they vary significantly. Most developed nations like North America, Europe, and Australia have organisations that publish statistics with the highest accuracy which explain why infertility rates are more accurate in these regions than in less developed ones. The rates of male infertility in North Africa, Sub-Saharan Africa, and Eastern Europe are similar to some of the highest percentages recorded globally.

Men are usually viewed as the dominant member in a household family and in communities, especially in Africa. Men refuse to disclose their infertility because they feel it devalues them to not be able to begin a family with a woman, particularly in Africa and the Middle East. Because of this, men in these societies frequently refuse treatment and blame women for not being able to reproduce children. After reviewing the literature and gathering the findings, the analysis showed that worldwide rates of male infertility vary from 2.5% to 12%¹.

Previous investigations found that some factors affecting male fertility were testicular deficiency which is when testicles are unable to produce enough sperm or testosterone, sperm quality and consanguinity which is not common in Europe as it is usually practised by some ethnic and religious minorities¹⁹. Other causes for male infertility include low testosterone production, previous vasectomy and injuries to the testicles, sexual dysfunction and malignancies.

Some lifestyle choices that could improve male infertility include doing exercise regularly, having a health body weight and having a balanced diet³. Other ways to improve male infertility are surgeries like sperm extraction or assisted reproductive technology procedures like in vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI)¹⁵.

It is commonly known that younger women have a higher chance of a successful pregnancy through IVF treatment, but its success rate also relies on the age of the woman receiving treatment¹⁴. As ICSI is so effective at assisting sperm and egg fertilisation, success rates are usually quite similar to those of IVF⁸. Approximately 50–80% of cases with ICSI treatment result in successful fertilisation, even though there are several factors that influence the outcome of the pregnancy⁶.

Studies have also found that COVID-19 infection may impact male fertility. Evidence suggests that severe COVID-19 infections are associated with a reduction in fertility or even infertility¹⁰. This occurs when the virus seems to affect the testis directly through cellular infection. This induces a cytokine storm (interleukins, tumour necrosis factor, interferons) and because of adverse effects resulting from the administration of

antiviral and immunological therapies such as the long-term use of non-steroidal anti-inflammatory medicines, it lowers the sperm quality by decreasing mobility, vitality, count and morphology. The chronic use of corticosteroids can also reduce testosterone levels and trigger erectile dysfunction².

Infertility in women

A previous study showed that some of the main health conditions that caused female infertility were endometriosis (15%), ovulatory disorders (25%), tubal blockage (11%), pelvic adhesions (12%) and hyperprolactinemia (7%)²⁰. Other causes that contribute to female infertility are irregular menstrual periods, genetic disorders, uterine fibroids, and sterilisation reversal.

Women tend to have children later in life because of pursuing professional occupations and higher education. Due to a lack of flexible and part-time employment opportunities, socioeconomic factors have caused women to delay having children, which has resulted in low fertility rates. Considering ovarian ageing and associated factors lower the likelihood of conception, this has resulted in a decrease in their fertility levels¹³.

Does infertility affect personal lives?

The lives of infertile couples are negatively affected by infertility, especially for women who are more likely to face social stigma, abuse, divorce, psychological stress, anxiety, depression, and low confidence²¹.

There is a link between psychological stress and infertility as past research found that, in comparison to healthy couples, infertile couples experience higher levels of stress and are more likely to experience mental illnesses. Infertility can enter a vicious cycle, as research has also shown that that significant levels of psychological stress also contribute to infertility¹⁸.

Infertility can also influence the mental health of individuals whilst undergoing treatment as they can go through intense emotions which can lead to stress, anxiety, low self-esteem, frustration, depression, and grief due to failed fertility treatments¹².

How is male and female infertility a concern in the UK?

A previous study revealed that 53.2% of men and 57.3% of women who suffered from infertility sought out medical treatment or professional help⁴.

Like other European nations, the Department of Health is currently in charge of funding and controlling fertility treatments in the UK. Fertility treatment is not a top priority in healthcare as there are other current issues like cancer, treating the elderly, and acute medical conditions. Because of this, there are worries about inequality and lack of funding. Lack of governmental support for fertility services could lead wealthy individuals to be the only ones able to afford fertility treatments. The long-term result of this will be societal inequity¹³.

According to another study, being from a higher socioeconomic class, marrying or settling with a partner at a later age and older people that previously had children at a younger age are all linked to an increased prevalence of infertility⁴. Higher educated and employed individuals are more likely than others to seek medical advice for fertility issues and clinical practice and public health should take these disparities in help-seeking into consideration⁴.

The quintile of socioeconomic deprivation also significantly affected the age-specific rates of reproductive issues. It was found that among younger women, deprivation was linked to greater rates of infertility as results in research showed that women between the ages of 30 and 34 had the highest incidence rate of documented problems with fertility⁵.

When it comes to the incidence of male factor infertility and the need for medical services for male infertility, diagnosis and treatment, there is a major knowledge gap. This is due to the fact that males are less likely than women to seek medical evaluations for a variety of reasons including fear, cultural norms, lack of insurance, or social reasons. As a result, there are fewer opportunities for patient education regarding the causes, diagnosis, and treatments of male infertility¹¹.

How can infertility be managed?

Infertile couples now have access to a greater variety of treatment choices thanks to the rapid development of reproductive medicine and the knowledge learned from managing infertility. Fertility treatments can be grouped into three categories: medical (including ovulation induction therapy), surgical (including laparoscopy and hysteroscopy), and assisted reproductive procedures. The selection of a treatment for infertility is frequently influenced by factors such as cost, side effects and effectiveness. A couple's options for treatment will also depend on how long their infertility has been going on, which partner is suffering, the age of the female partner, whether she has had children in the past, underlying pathological issues and whether the treatment will be financed privately or by the NHS⁹.

When planning and implementing fertility services, general practitioners, primary care trusts, and policy makers can benefit greatly from having data on the prevalence and distribution of fertility issues that are reported in primary care.

There has been no regional variation in the high prevalence of infertility; however, given the age limits on the availability of fertility treatments in the UK, it is important to acknowledge the significant impact of infertility among younger, more disadvantaged women who often delay seeking support or face societal barriers when asking for help.

To sustain humanity, more resources are needed to address modifiable risk factors to reduce fertility issues in addition to ensuring that treatment is accessible to all and distributed more fairly throughout socioeconomic groups. The stigmas attached to infertility because of cultural and religious beliefs should be addressed as a society and since there are generally fewer men seeking support for their infertility, initiatives need to be implemented to increase public awareness about the issue. The government aid in setting up clinics to help men and women become more fertile by educating them about the factors that affect fertility and assisting them in conceiving naturally would be highly advantageous. In order to offer further treatment cycles within the guidelines of the health budget, they could also provide safe and affordable assisted reproduction treatment options with single embryo transfer, as well as flexible, part-time job opportunities for women¹³.

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