

How age affects male fertility

March 4 2021, by Michael Carroll



Credit: cottonbro studio from Pexels

In 2012, proud dad [Ramjit Raghav](#) made global headlines when he became a father at the age of 96. He had beaten the record for the world's oldest dad—a record he'd set himself, two years earlier, at the age of 94.

Older men fathering children is not unknown, especially in the world of celebrities. Rod Stewart became a dad for the eighth time at 66, [Mick Jagger](#) at the age of 72, and [Bernie Ecclestone](#) became a father again at the age of 89 in July 2020. Men can produce [sperm](#) from puberty to a ripe old age and continue to father children as long as they do so.

Women, on the other hand, have a limited fertile window. Past 51—the [average age of menopause](#) – they cease to release any [eggs](#) and become infertile. Both men and women are delaying having children. The [average age](#) of first-time mothers in the UK is nearly 29 and [fathers](#) 33.

The biological difference often lead to discussions of women's biological clocks running out, while men are under the impression they'll stay fertile for much longer. But the reality is much more complex than that. There is a growing body of research showing that men's fertility is hugely affected by age.

Egg supplies

As women age, both the number and the quality of her eggs declines. All the eggs a woman will ever have for her reproductive life is determined before she's born, through a [processes called oogenesis](#).

By the 20th week of pregnancy, a female fetus has approximately 6 to 7 million germ cells, all with the potential to turn into eggs. After this, the number of [germ cells](#) drops steeply. Those that remain develop into primary oocytes, or immature egg cells.

These immature egg cells go through some changes, then form primordial follicles, each containing an egg. These primordial follicles will remain at this stage until puberty, by which time there are 400,000 to 500,000 left.

At the start of puberty until menopause, groups of primordial follicles are activated and start to mature. Each month, one mature egg cell will ovulate—be released into the Fallopian tube. As the woman ages, the number of follicles continue to decline with age. Those remaining immature eggs can stay at this stage for up to 50 years. During this time, they can accumulate chromosomal errors as they age, increasing the risk of conditions such as Down's syndrome.

This aging of the egg cells and the continuing drop in numbers are responsible for the limited fertile window in women. This decline in fertility occurs more steeply [after the age of 35](#) where she will have roughly 25,000 eggs in her ovaries. By the time she reaches menopause there will be just 1,000 eggs remaining.

Older fathers

Men's fertility doesn't stop as abruptly as women's. The testis can still produce the male hormone testosterone and [sperm cells](#), enabling some men to father children in to their 90s.

However, this doesn't mean men's fertility is unaffected by age. [One study](#) showed after adjusting for female age, conception during a 12-month period was 30% less likely for men over the age of 40 compared with men younger than 30.

Although sperm is still being produced, the quality changes. The number of sperm produced, called the concentration or count, how well the sperm swim, known as their motility, and the shape of the sperm, called their morphology, are all known to change with age.

One study [examining sperm quality](#) in 5,081 men aged 16.5 to 72.3 years reported ejaculate volume, sperm concentration, sperm motility and sperm morphology didn't change before the age of 34. However, sperm

concentration and the proportion of sperm of normal morphology declined after the age of 40. Sperm motility fell after the age of 43 and ejaculate volume after 45.

In a 2015 [meta-analysis study](#), using data from 90 studies, male age was associated with a decrease in semen volume, a decrease in total sperm count, a decrease in motility and a decrease in the percentage of normal sperm morphology.

Older fathers are also associated with [negative effects](#) on the child. Older men can accumulate [damage and mutations](#) in sperm DNA that may result in increased risks of unsuccessful or abnormal pregnancies, because of fertilization with damaged sperm. The offspring of older fathers show high prevalence of genetic abnormalities, childhood cancers and [several neuropsychiatric disorders](#) such as autism, psychosis and bipolar disorders.

In a recent study [in the BMJ](#) men aged 45 years or older had increased odds of fathering infants born premature, of [low birth weight](#), and with a low [Apgar score](#) – a score used to test the health of a newborn—compared with their younger counterparts. On top of this, the offspring of fathers older than 55 were more likely to require assisted ventilation and admission to a neonatal intensive care unit.

Women's fertility window is, on average, much shorter than the years men are able to produce sperm. But the negative effect of older age on fertility in women is well documented.

For men, there's increasing evidence indicating [older men](#) have poorer semen quality, increased sperm DNA damage and mutations, leading to less reproductive success. Older men should also be counseled on their offspring's possible increased risk of certain medical conditions.

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