

Low fertility: The daddy of all problems

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By Kate Hilpern

Millions of men suffer from low fertility - and many have no idea. But cutting down on fast food and avoiding tight pants can help revive your sperm count

Male fertility is plunging. And nearly one in 10 men may be suffering, according to a survey published last month. The Male Fertility Study, compiled by Norwich Union Healthcare from a survey of GPs, suggests that 2.5 million British men are affected, and many do not even know they may be at risk.

The scale of the problem was first recognised in 1991 when a Danish study found that sperm counts of Western men had fallen by about half in 50 years. Almost 15 years later, scientists are still trying to explain it.

Male fertility can be far more changeable than in women. Unlike women - who are born with a finite number of eggs - men are continually producing sperm. But samples from the same men taken as little as a month apart can vary dramatically. "We've had patients whose sperm has been fine. But on the day of their IVF treatment, the man has had little or no sperm at all because he's had a bad bout of flu," says Dr Iwan Lewis-Jones, a consultant andrologist at the Liverpool Women's Hospital and an expert in male infertility. Here are some of the other things that scientists believe may have an effect on male fertility...

FAST FOOD

If you happen to be partial to convenience or fast food - which is often packed full of "hidden soy" - you may be heading for a host of fertility problems. Scientists believe chemicals in the soya bean mimic oestrogen. Dr Sheena Lewis, who conducted the latest research, says chemicals found in soya appear to lower sperm count and affect the ability of sperm to swim. "The results concern us," she says.

DRIVING

A mounting body of evidence reveals that sitting behind the wheel for long periods is bad for sperm. Italian researchers found taxi drivers, truckers and other professional drivers all had reduced fertility levels. Another study by French researchers found that even driving for two hours can raise testicle temperature by around 2C.

"The increase in scrotal temperature we measured in drivers could be one of the strongest pieces of evidence to explain why the partners of occupational drivers take longer to conceive," says Dr Roger Mieusset, the head of the research group. You can minimise the damage by taking hourly breaks from the wheel for 10 minutes.

TRAFFIC POLLUTION

You don't have to actually drive a car to put your fertility at risk. Scientists believe that nitrogen oxide and lead in exhaust fumes may be to blame. Dr Michele De Rosa

and her colleagues at the University of Naples in Italy examined the sperm of 85 men employed at motorway tollgates who, on average, were exposed to traffic fumes six hours a day. They were found to have poorer sperm quality and less active sperm than men of the same age, living in the same area, who were not exposed to traffic pollution.

But Professor Harry Moore of Sheffield University, who is carrying out the biggest study yet to examine the impact of chemicals in the environment on male fertility, is sceptical. "We know from other studies that there is no relationship between exposure to traffic fumes and reduced fertility of men living in urban areas compared with men living in rural areas," he says. "If the study suggests anything - a relatively small number of men took part in it - then it's that men would have to be exposed to very high levels before their fertility was affected."

LAPTOPS

Years of using a laptop regularly "may cause irreversible or partially irreversible changes in male reproductive function" according to one study. It is well known that sperm production drops if the environment within the testicles becomes too hot, which is why they are housed outside the main part of the body. The study, published in the *Journal of Human Reproduction*, found that laptops can reach internal operating temperatures of over 70C. "They are frequently placed close to the scrotum. As well as being capable of producing direct local heat, they require the user to sit with his thighs close together to balance the machine, trapping the scrotum," explains Yefim Sheynkin from the State University of New York at Stony Brook, who led the study. The good news is that he believes external protective devices could help.

MOBILE PHONES

Another fertility scare came from the University of Szeged in Hungary, which claimed mobile phones could lower sperm counts by up to a third because of the radiation they emit. What's more, the ability of the sperm to swim properly was also found to be impaired, particularly among men who made long calls.

Not everyone accepts the evidence as conclusive, however. "This research failed to take into account other aspects of men's lifestyles. Men who use mobiles often have very different lifestyles to those who don't," says Allan Pacey, a fertility expert at the University of Sheffield and spokesman for the British Fertility Society.

NAPPIES

Baby boys who wear disposable nappies may find it harder to produce their own offspring when they grow up, according to German research. Scientists at the University of Kiel found that the plastic lining increases the temperature of the scrotum by 1C - more among babies with fevers - reducing their sperm counts as adults. "It seems to be possible that a prolonged and continuous elevation of testicular temperature by a mean of one degree can affect the maturation of the infant testis," the scientists wrote in the *British Medical Journal*. The German scientists believe their discovery could explain the fall in sperm counts over the past 25 years. Reusable nappies, on the other hand, had no effect on the temperature of the scrotum.

PESTICIDES

In 2001, 225 Argentinian men who had attended an infertility clinic were tested and interviewed and a clear link was found between those exposed to pesticides and those with sperm levels well below the limit for male fertility. The men who were exposed to pesticides also had higher levels of two female sex hormones in their system. The results, according to the French research institute Inserm, suggest that pesticides have a toxic effect on the testicles and other sex glands. Professor Harry Moore says, "The biggest concern is that it seems that semen quality may not return, even when exposure ceases."

SMOKING

It's widely accepted that smoking tobacco reduces sperm count, impairs sperm movement and makes them less able to penetrate an ovum. The good news is that if you quit, the health of your sperm will start to improve within two months. Smoking also restricts the blood flow to the genitals, which contributes to a man's inability to get an erection. A man in his 30s or 40s can increase the risk of impotence by around 50 per cent.

Marijuana can also restrict the chances of fatherhood. A recent study carried out by Dr Sheena Lewis, the professor of reproductive medicine at Queen's University in Belfast, found that cannabis makes sperm less likely to reach the egg to fertilise it. In addition, she found the drug affects sperms' ability to digest the egg's protective coat with enzymes to aid its penetration. "It is estimated that 3.2 million people in Britain smoke cannabis," she says. "If male reproductive health is under threat and we add lifestyle choices that may cause further difficulty, that is a cause for concern."

TIGHT PANTS AND HOT TUBS

Wear loose underpants and lose the leather trousers. It's not a myth. Studies show they can reduce a man's chances of fathering a baby by overheating sperm-producing cells in testicles, which lowers sperm count.

As for hot tubs, use them once in a blue moon. Frequent use has the same effect. "Plenty of men with tight briefs are fathers, so it's not an all or nothing situation," says Allan Pacey. "But if you're on the borderline of success, you could potentially change your fertility by swapping your briefs for boxer shorts."

CAFFEINE

The jury's still out. Some research indicates that coffee and medications with caffeine appear to make sperm sluggish. But researchers from Brazil found caffeine actually increases the ability of sperm to reach the egg at the right time. Other studies show no evidence of an association of caffeine intake and sperm. A spokesman for the charity Infertility UK advises men "not to worry about a moderate amount".

WATER

Obviously nobody expects wannabe dads to give up drinking, but they should be aware that water supplies may be affected by women taking the contraceptive pill. Natural oestrogens break down easily, but synthetic oestrogens are designed to withstand the rigours of the human intestine - the same traits that prevent them from being broken down by microbes in sewage-treatment works. Environmentalists, including representatives of Friends of the Earth, have been warning of the danger for more than a decade, originally alerting men that they may find themselves "firing blanks". Mary Taylor, a chemicals campaigner, is a bit more positive now than in the past. "Water companies are increasingly addressing the problem, but further investment and ongoing monitoring is required," she says.

OVEREATING

Scientists from Atlanta have found that the quality of sperm starts to deteriorate as soon as men pass a healthy weight for their size. According to fertility experts, this is because excess body fat creates localised heat in the groin area that can damage the sperm. In addition, fat is linked with oestrogen - the female sex hormone - and more fat means more oestrogens, which can lead to a possible increase in the risk of interference with the proper development of male reproductive organs. Even if an obese man does manage to fertilise his partner's eggs, there is a far greater chance of miscarriage because the quality of the sperm is reduced, the researchers found.

SEAFOOD

Raised levels of mercury in the blood, from high seafood consumption, are linked to infertility, according to researchers from Hong Kong. The good news for British men is that scientists in the UK point out that we eat less seafood than men in other countries, and our seas have far lower levels of pollution. But they do admit that the study shows the potential effects of that environmental pollution can have on male fertility.

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