

22 August 2012 Last updated at 13:11 ET

Older dads linked to rise in mental illness



By Pallab Ghosh
Science correspondent, BBC News

A genetic study has added to evidence that the increase in some mental disorders may be due to men having children later in life.

An Icelandic company found the number of genetic mutations in children was directly related to the age of their father when they were conceived.

One prominent researcher suggested young men should consider freezing their sperm if they wanted to have a family in later life.

The research is published in Nature.

According to Dr Kari Stefansson, of Decode Genetics, who led the research, the results show it is the age of men, rather than women, that is likely to have an effect on the health of the child.

"Society has been very focussed on the age of the mother. But apart from [Down's Syndrome] it seems that disorders such as schizophrenia and autism are influenced by the age of the father and not the mother".

Male driven

Dr Stefansson's team sequenced the DNA of 78 parents and their children.

This revealed a direct correlation between the number of mutations or slight alterations to the DNA, of the child and the age of their father.

The results indicate that a father aged 20 passes, on average, approximately 25 mutations, while a 40-year-old father passes on about 65. The study suggests that for every year a man delays fatherhood, they risk passing two more mutations on to their child.

What this means in terms of the impact on the health of the child is unclear. But it does back studies that also show fathers are responsible for mutations and that these mutations increase with age.

And, for the first time, these results have been quantified and they show that 97% of all mutations passed on to children are from older fathers.

"No other factor is involved which for those of us working in the field is very surprising," said Dr Stefansson.

He added that the work backed other studies that have found links between older fathers and some mental disorders.

"The average age of fathers has been steeply rising [in industrialised countries] since 1970. Over the same period there has been an increase in autism and it is very likely that part of that rise is accounted for by the increasing age of the father," he said.

The findings should not alarm older fathers. The occurrence of many of these disorders in the population is very low and so the possible doubling in risk by having a child later in life will still be a very low risk.

Nearly all children born to older fathers will be healthy. But across the population the number of children born with disorders is likely to increase if this theory holds true.

Older fathers and therefore genetic mutations have been linked with neurological conditions because the brain depends on more genes for its development and regulation.

So mutations in genes are more likely to show up as problems in the brain than in any other organ. But it is unclear whether the age of fathers has an effect on any other organ or system. The research has not yet been done.

The reason that men rather than women drive the mutation rate is that women are born with all their eggs whereas men produce new sperm throughout their adult life. It is during sperm production that genetic errors creep in, especially as men get older.

Writing a commentary in the Journal Nature, Prof Alexey Kondrashov, of Michigan University, said young men might wish to consider freezing their sperm if future studies showed there were other negative effects on a child's health.

"Collecting the sperm of young adult men and cold storing it for later use could be a wise individual decision. It might also be a valuable for public health, as such action could reduce the deterioration of the gene pool of human populations," he said.

Dr Stefansson, however, told BBC News that from a long-term perspective the decision by some men to have children later in life might well be speeding up the evolution of our species.

"The high rate of mutations is dangerous for the next generation but is generating diversity from which nature can select and further refine this product we call man," he said.

"So what is bad for the next generation may be good for our species in general."

Follow Pallab [on Twitter](#)

More Health stories



[UK trials heart failure implant op \[/news/health-19344001\]](#)

A pioneering operation in the UK to fit a nerve-stimulating implant in a patient with heart failure is due to finish later.

[DRC Ebola outbreak 'kills ten' \[/news/world-africa-19346753\]](#)

[Antibiotics link to child weight \[/news/health-19341639\]](#)



BBC © 2012 The BBC is not responsible for the content of external sites. [Read more.](#)