BBC NEWS

Stress sparks 'male foetus death'

A woman's body may actively kill off weaker male foetuses during times of stress, research suggests.

It is known that fewer boys tend to be born during times of hardship, such as a natural disaster.

Male foetuses and embryos are weaker than females and are less likely to survive to birth. It is not known why this should be the case.

University of California researchers examined data on Swedish births from 1751 to 1912.

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> Dr Ralph Catalano

Writing in Proceedings of the National Academy of Sciences researchers concluded aborting boys may be a way to maximise the odds of survival of the bloodline.

Competing ideas

Two explanations have been suggested as to why the proportion of newborn boys often dips sharply during times of stress.

One is that mothers' stress responses damage their unborn babies, affecting already weaker males disproportionately and spontaneously aborting more males than usual.

But a competing explanation is that mothers' bodies under stress have less tolerance for unhealthy embryos and foetuses, and thus spontaneously abort offspring that would have been otherwise carried to birth.

The scientists said their analysis supported the latter explanation.

Lead researcher Dr Ralph Catalano said that if stress was simply damaging male foetuses then it could be expected that even those boys that made it to full term would be damaged, and consequently their life expectancy would be shorter.

However, the researchers found the opposite to be true. Those males that survive to full-term actually lived longer than the average.

Genetic strategy

This suggested that only weak foetuses were selectively targeted by the mother's body, giving more robust males every opportunity to thrive.

They argued that actively culling weak male foetuses might increase the overall chance that a woman's genetic line will survive down the generations, as weak individuals were more likely to produce fewer offspring.

Writing in PNAS, the researchers said their findings may also have implications for public health.

Changes in the proportion of male and female newborns may give a clue as to what proportion of the population are likely to suffer from stress-related illnesses.

Dr Catalano said: "These findings demonstrate yet again that we need not go to museums of natural history to find evidence of natural selection.

"Indeed things as common and immediate as the gender and health of our children show its effects."

Other mechanisms

Dr Allan Pacey, an expert in andrology at the University of Sheffield, told the BBC News website: "Many scientists suspect that there must also be other mechanisms at play to manipulate the sex ratio in other situations.

"After the last world war there was a dramatic increase in the number of boys born and this theory cannot explain how that was achieved. Its a very complex area of biology.

"It is important that women don't take the wrong message from this work and think that if they have a miscarriage that it is because they are under stress or they are doing the wrong thing.

"These mechanisms are only likely to kick-in in periods of severe famine or after natural events like earthquakes. Neither of these happen in Britain very often."

Professor Henry Halliday said the paper was interesting, but a long way from providing definitive proof.

He said: "Stress in pregnancy is currently attracting a lot of interest and it is generally thought to have adverse effects on both the foetus and the relationship between mother and baby."

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