**How hormone fluctuations caused by working night shifts could make it harder for women to conceive**

* **Experts claim women who work nights may find it harder to become pregnant**
* **Lowered fertility could be linked to shift work and inconsistent working patterns**
* **It comes after scientists examined 473 women who were aged an average of 35**

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Women who work night shifts may find it harder to become pregnant, experts have found.

Shift work and inconsistent working patterns could be linked to lowered fertility, according to a study led by Harvard Medical School.

Women who have physically demanding jobs with lots of heavy lifting may also struggle to conceive, they found.

The researchers suspect this is linked to hormone levels which fluctuate according to the wake-sleep cycle and physical exertion.

Scientists examined 473 women, aged 35 on average, who were undergoing fertility treatment at Massachusetts General Hospital.

They found women who regularly worked night shifts were found to have 24 per cent fewer 'mature' eggs - those which are capable of turning into a healthy embryo.

And women whose job involved heavy lifting had 14 per cent fewer mature eggs.

The process of turning an 'immature' egg into a 'mature' egg is the natural action by which the female body prepares an egg for ovulation.

When a girl is born she has millions of immature eggs which are stored until they are ready to be released into the womb.

These immature eggs have too many chromosomes - 46 rather than the 23 required to form an embryo.

From the onset of puberty, every month a surge of hormones 'matures' a certain number of these eggs, cutting their chromosomes down to the correct number, meaning they are ready for ovulation.

But if something interferes with this hormone surge, not enough eggs are matured, lowering the chance of conceiving a child.

Experts believe lifestyle factors such as not receiving enough sunlight or undertaking too much physically demanding activity may interfere with this hormonal activity.

The Harvard researchers, whose work is published in the Occupational & Environmental Medicine journal, artificially triggered the ovulation of several eggs, ready for IVF treatment.

They found women who worked during daylight hours produced an average of 9.3 mature eggs, but those who worked night shifts had only 7.0 - 24 per cent fewer.

Women whose jobs involved no manual labour produced an average of 9.7 mature eggs, but those who had to do heavy lifting had only 8.3 - 14 per cent fewer.

This reduction would not mean a woman could not conceive, but might mean it takes longer or may require IVF treatment.

The authors wrote: 'These findings have clinical implications, as women with fewer mature oocytes [eggs] would have fewer eggs which are capable of developing into healthy embryos.

They said their study was merely observational - so no firm conclusions can be drawn about cause and effect.

But British scientists last night said the results confirmed theories about how lifestyle patterns influence hormones.

One of the strongest influences on hormone production is the circadian rhythm or body clock - which synchronises bodily functions to the 24-hour pattern of the Earth's rotation.

The human body clock is regulated by the bodily senses, most importantly the way the eye perceives light and dark and the way skin feels temperature changes.

The mechanism rules our daily rhythms, including our sleep and waking patterns, and hormone levels in our body.

For women who work at night this cycle is disrupted, which may influence fertility.

Professor Alastair Sutcliffe of University College London said: 'When sunlight hits our retinae, the serotonin 'happy hormone' goes up instantly in the brain.

'Hence we love sunny winter days, but not dank overcast ones. So shift work is not a biologically good way to work and folks who have to do this are known to get many ill health risks such as hypertension.'

Physical exertion, meanwhile, is tied to greater testosterone production, which may also impact on fertility.

Professor Sutcliffe added: 'So what does this study mean? If trying to optimise fertility, stick to the day job and leave the lifting to their partner.'

Professor Darren Griffin of the University of Kent, however, urged caution, warning that the conclusions were 'perhaps a little over-stated' since the study had not directly examined the mechanisms at play.

But he added: 'That said, women who are trying to start a family may wish to take the study into account, perhaps avoiding heavy lifting and unsociable work hours as much as is possible during this time, especially if they are not falling pregnant within the first year of trying.'