

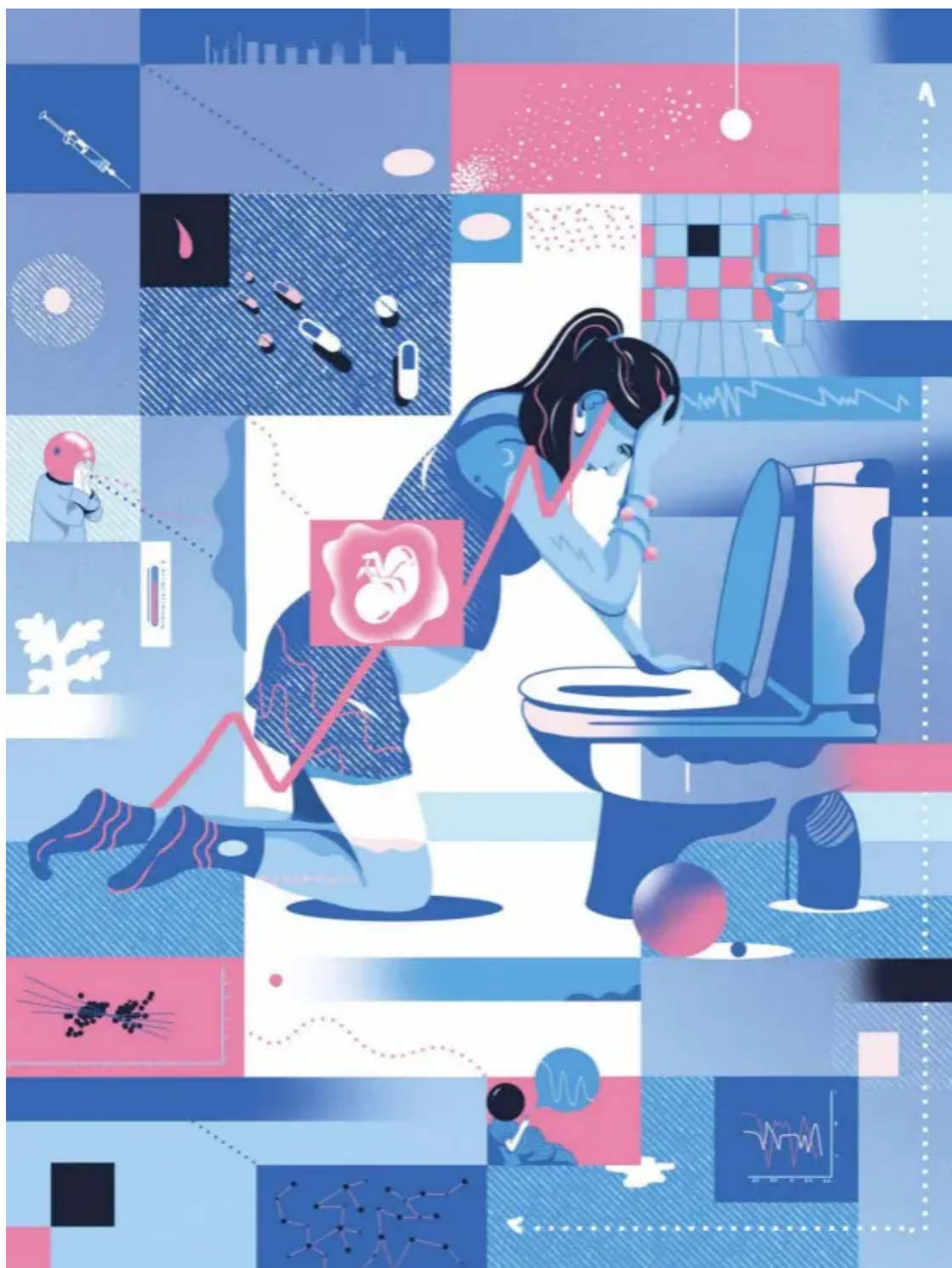
- Pregnancy

One hormone could be the key that unlocks a cure for morning sickness

The nausea and vomiting that, in extreme cases, can endanger mothers and babies might soon be just a memory

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Scientists are on the brink of unravelling the mystery of morning sickness.



“Her doctor was dismissive, suggesting she was exaggerating her symptoms to get attention” We’ve all experienced vomiting at some stage in our lives, whether it’s from a nasty bout of food poisoning or the well-known norovirus that periodically spreads through the population.

And everyone can agree that it's horrendous.

But imagine if ongoing nausea and vomiting was expected for a significant phase in your life, and how that would affect you physically, mentally and emotionally. This is the reality for the four in five women who develop nausea and vomiting during pregnancy. Even in milder cases this means unpleasant symptoms, such as queasiness, lack of appetite and throwing up.

For the three per cent of women who develop a condition called hyperemesis gravidarum, things are even worse, requiring hospital admission and treatment.

Hyperemesis gravidarum is a collection of symptoms including such severe nausea and vomiting that a woman can't normally eat or drink, resulting in dehydration, nutrient deficiency and weight loss – putting the lives of both mother and baby at risk. According to the Office of National Statistics, this led to nearly 20,000 women being admitted to hospital in 2022.

Yet despite it being very common, until recently hardly anything was known about the cause of nausea and vomiting in pregnancy. Anecdotes or 'old wives' tales' suggest that the more sickness you experience, the 'healthier the pregnancy' and that it even relates to the number of babies you're pregnant with.

Real-world evidence, however, shows there's no truth to this. In fact, there's a wide range of severity and patterns of nausea and vomiting throughout pregnancy.

Although it's often called 'morning sickness', nausea and vomiting in pregnancy can occur at any time day or night. It's typically worse in the first 12 weeks and then settles down, but for many women it persists throughout the whole pregnancy.

Fortunately, after over 20 years of work trying to determine the cause, there has now been a breakthrough. This has been driven by Dr Marlena Fejzo, a geneticist at the Keck School of Medicine of USC in California.

Dr Fejzo was motivated to do this work after suffering from nausea and vomiting during her second pregnancy in 1999. She was unable to eat or drink without vomiting, rapidly lost weight and became too weak to stand or walk.

Yet her doctor was dismissive, suggesting she was exaggerating her symptoms to get attention. She was eventually hospitalised and miscarried at 15 weeks. Working with private company 23andMe, which enables individuals to supply their own DNA sample to determine health and ancestry insights, Dr Fejzo conducted a genetic study with women who had previously been pregnant.

She found a connection between those women who suffered from severe nausea and vomiting in pregnancy, requiring intravenous fluids (a key medical treatment), and a variant in a gene coding for a protein named GDF15, a hormone that acts on the brainstem.

This association pinpointed where further research was needed to understand the role of GDF15 in pregnancy. It's secreted from the placenta in the first two trimesters of pregnancy. It likely plays a role in preventing the mother from biologically rejecting the baby and so is vital in enabling the pregnancy to continue.

GDF15 has also been shown to be a regulator of physiological body weight and appetite via the brain, however. It's overproduced in people with cancer suffering from severe appetite and weight loss.

In a collaborative, global research effort led by Dr Fejzo and Prof Sir Stephen O'Rahilly, from the University of Cambridge, high levels of GDF15 were found in women with severe nausea and vomiting in pregnancy.

The hormone's effect seemed to be dependent on the women's sensitivity and pre-pregnancy exposure to GDF15, however. Those women who had high exposure prior to becoming pregnant had no nausea or vomiting symptoms despite having high levels of GDF15 hormone.

It's hypothesised that prolonged exposure to GDF15 before pregnancy could have a protective effect, making women less sensitive to the sharp surge in the hormone caused by the developing baby. This exposure relationship is quite uncommon and provides not only more understanding, but also suggests a potential treatment. Women could be desensitised to prevent such severe nausea and vomiting by increasing exposure of the hormone before they become pregnant. Much like how some people are treated for dietary allergies through controlled exposure therapy.

Like nausea and vomiting in pregnancy, many common conditions affecting women are poorly understood despite their incidences being very high. The healthcare of women is not niche, and there's so much more to understand and learn through this type of research.