

**Health**

Why many women with ADHD feel overwhelmingly controlled by their hormones

People with ADHD are unusually sensitive to hormone shifts. Psychiatrists have started to pay attention, creating strategies to address the intense emotions and cognitive challenges caused by these changes

By [Caroline Williams](#)

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▲ **Women with ADHD can feel at the mercy of their hormones**

Chloe Ash/Millennium Images, UK

They say you should write what you know. But there's a fine line between writing from experience and reporting from the trenches while trying to make sense of your own thoughts. This, I must admit, is an example of the latter.

One thing I do know: my brain has a mind of its own. I was 48 years old when I discovered this is because I have ADHD. I also know that I am "a bit hormonal" – words that I would find offensive coming from someone else, but which I nonetheless use to describe the shifts from happy-go-lucky to angry, tearful and overwhelmed that have been a part of my life since puberty. Yet somehow, despite knowing both of these things about myself, it had never occurred to me that they might be connected.

But connected they almost certainly are. Over the past few years, evidence has accumulated to suggest that fluctuations in female reproductive hormones not only have measurable effects on brain function and mental health, but that women with ADHD can be unusually sensitive to their effects.

Major hormonal shifts aligned with puberty, menstrual cycles, post-pregnancy and perimenopause are increasingly identified as periods that exacerbate ADHD symptoms, leaving a trail of chaos in their wake. There is still much to learn, but as researchers begin to unravel how the hormonal rollercoaster affects both body and brain, it is bringing hope for better ADHD treatments that target hormones, brain chemistry or both.

Flying under the radar

There are many reasons why the connection between hormones and ADHD was overlooked for so long. Women have long been underrepresented in scientific and medical studies, partly to avoid the complications of hormones, which can make it tricky to interpret results. Another major factor is that, until the mid-1990s, ADHD was considered a condition that primarily affects boys. Young boys are [more likely to exhibit](#) hyperactive and impulsive symptoms than girls, and the diagnostic criteria were written to reflect these male-specific traits and symptoms.

By the early 2000s, research started to reveal that girls were, in fact, just as likely to have ADHD as boys. But while their symptoms were as problematic for their education and wellbeing as those of their male classmates, their struggles [were more likely to be experienced internally, manifesting as anxiety or inattention rather than outward hyperactivity and impulsiveness](#). “Girls are more likely to fly under the radar because they’re typically kind of just there, quietly not understanding [lessons],” says [Michelle Martel, a psychologist at the University of Kentucky](#). “It doesn’t flag to the teachers in the same way.” Boys are still two to [three times more likely to](#) be diagnosed with ADHD in childhood than girls.



It can be difficult to disentangle these apparent sex differences from cultural expectation. Girls may face stronger pressure to suppress outward signs of hyperactivity and impulsivity, to avoid being labelled as “bossy” or “difficult.” Or, as one of my middle-school teachers once described me: “an itch with a capital B”.

But while the pressure to hide socially unacceptable ADHD traits is real, there is also evidence that biology significantly influences how women with ADHD are able to manage their symptoms. For [Sandra Kooij, a psychiatrist and adult ADHD researcher at Amsterdam University Medical Center in the Netherlands](#), the first inkling that hormones were a big part of the story came from the women she treated in the early 2000s.

“My patients were asking me for years to study their hormonal fluctuations,” she says. “They said, ‘We are definitely having a problem here and nobody knows about it. Can you study us?’”

Kooij was intrigued, so she designed a study, published in 2021, evaluating the experiences of 200 women with ADHD. Questionnaires measured their symptoms through the menstrual cycle and post-pregnancy, with the results confirming that [they did seem to be unusually sensitive to hormonal fluctuations](#). Almost half the participants met the criteria for premenstrual dysphoric disorder, which can be debilitating and is estimated to affect 3 to 8 per cent of the female population. What’s more, almost 60 per cent of the women in the study who had given birth experienced postpartum depression, more than double the proportion in the overall population. This chimes with other research suggesting that women with ADHD have a significantly higher risk of developing depression while on hormonal contraception. Together, these findings indicate that women with ADHD have unusually strong emotional reactions to hormonal fluctuations.

A revolutionary new understanding of autism in girls

By studying the brains of autistic girls, we now know the condition presents differently in them than in boys, suggesting that huge numbers of women have gone undiagnosed

There is also evidence that hormones affect the standard cognitive symptoms of ADHD. [An earlier 2018 study by Martel’s group](#) reported a twofold increase in symptoms of inattention, hyperactivity and impulsivity following ovulation and towards the end of the menstrual cycle, with the biggest cognitive changes among those who showed high impulsivity. While this study was in women who didn’t meet the criteria

for an ADHD diagnosis, Martel says that a follow-up study in 100 women with diagnosed ADHD, which is undergoing peer review, showed similar results. Furthermore, says Martel, the changes in symptom severity were significant enough that they could affect whether an individual would meet the ADHD diagnostic criteria from one week to the next.

A key diagnostic feature of ADHD is that it is present throughout someone's life, and so these hormonal fluctuations could prevent someone from getting the diagnosis and treatment they need. "To me, that's pretty clinically significant," says Martel.

Understanding these fluctuations is also key to improving the wellbeing of those experiencing intense reactions to hormone changes, particularly when, like me, they haven't put two and two together. In an [interview-based study from March](#) involving 14 women with ADHD, many reported feeling "controlled by their hormones" in ways that made it difficult to manage their everyday lives. Several people reported a surge in energy and motivation around ovulation, during which they made plans and promises that they were unable to keep just a few days later. As one woman in the study lamented, in words I fully relate to: "I feel like it's just chaos in my brain, constantly."

Worse still, while stimulant medications can help manage some of the chaos, there is [some evidence that hormones](#) can still derail the drugs' effects. [According to the handful of studies that have so far been done](#), stimulant medication is often reported to be less effective during the second half of the menstrual cycle, and sometimes it doesn't work at all.



▲ **Women with ADHD often have intense emotional reactions in response to menstrual hormone fluctuations**

Credit: Matt Perrin/Stockimo/Alamy

Hormonal shifts don't just affect monthly symptoms; they can have implications over a lifetime. This probably explains why so many women, myself included, are diagnosed during perimenopause. [A survey of 3000 women in their mid-40s to their mid-90s with ADHD](#) found the most common age at diagnosis was between 41 and 50, while more than half of

all respondents reported a life-altering impact from symptoms during perimenopause. Hormones may explain the significant rise in ADHD diagnosis rates in middle-aged women, which have [increased by 40 per cent over the past year in the UK alone](#). In a separate survey of 600 women with ADHD, led by [Caroline Gurvich, a clinical neuropsychologist](#) at Monash University in Melbourne, 98 per cent reported having a greater struggle with inattention during perimenopause.

Importantly, says Gurvich, this doesn't seem to be standard menopausal brain fog masquerading as late-onset ADHD. "If someone has had smooth sailing their entire life, and they hit menopause, and talk about brain fog, it might look similar, but it doesn't meet the diagnostic criteria for ADHD." By definition, ADHD has to have been present since childhood and, in Gurvich's study, women diagnosed in perimenopause reported first experiencing symptoms before the age of 8. Many of them had spent their entire lives masking symptoms or using coping strategies to work around them, she says. Then, in perimenopause, the hormone changes made this impossible. "They'd been covering up and masking and then it got to the point where that just didn't work any more," says Gurvich.

Other research backs this up. A 2025 study from [Kooij's group found that](#) among more than 5000 women over the age of 35, those with ADHD experienced perimenopause symptoms up to 10 years earlier than those without it, possibly because pre-existing issues with the neurotransmitter dopamine meant that a small drop in oestrogen levels in early perimenopause was more noticeable than for those with neurotypical brains. Once in the throes of perimenopause, women with ADHD were significantly more likely to report severe cognitive and emotional symptoms, with more severe ADHD predicting worse perimenopause symptoms.

A hormonal culprit

This range of evidence has established a clear connection between ADHD and hormone sensitivity, but researchers are still trying to unravel the mechanics. One clue comes from the fact that worsening symptoms tend to emerge when oestrogen levels fall rapidly. This happens twice in the menstrual cycle: immediately after ovulation and again just before menstruation. Significant drops are also seen in the days and weeks after giving birth, and in the erratic rises and falls that accompany puberty and perimenopause. "All those pieces of data suggest that declines or low oestrogen are really risky for cognition and for ADHD," says Martel.

Fortunately, there is already at least two decades' worth of evidence, first from studies in rats, and more recently in humans, to explain why this matters for brain function. Alongside its role as a reproductive hormone, [oestrogen plays several important roles in the brain](#), activating pathways that protect existing neural connections and support the formation of new ones. Oestrogen also supports cell energy release while reducing oxidative stress, and is tied to progesterone, which helps maintain brain

connections. [Research](#) from 2018 suggests the benefits of progesterone are evident only if they follow a surge in oestrogen. “You have to prime the brain with oestrogen before progesterone,” says [Juan Pablo Del Rio](#), a psychiatrist at the University of Chile in Santiago, who conducted the study.

How menopause radically changes the brain – and what happens after

The brain undergoes a full renovation during menopause. Although these changes are profound, we’re learning that the long-term impact needn’t be all bad

The impact of fluctuating oestrogen may be more pronounced in women with ADHD because of underlying vulnerabilities in their brain structure. But the fact that oestrogen boosts dopamine levels has gained the most attention. Dopamine has long been implicated in ADHD, partly because dopamine-related circuitry in the prefrontal cortex at the front of the brain is involved in motivation and impulse control. The stimulant medications used to treat ADHD increase the availability of dopamine in this part of the brain and, since it has [higher levels of oestrogen](#) than other bits of the brain, it makes sense that changes in oestrogen might hit these circuits harder.

It sounds plausible, but [it isn’t quite case closed](#). Despite what you might see on social media, the [current scientific consensus](#) is that there is more to ADHD than [a lack of dopamine](#). For one thing, says [Nevena Radonjić](#), a psychiatrist at SUNY Upstate Medical University in New York state, stimulants act on more than one neurotransmitter system. For another, despite some evidence that variations in [dopamine-transporter genes are connected with ADHD](#), genome-wide association studies suggest that ADHD risk comes from the [combined effects of large numbers of genes](#), only some of which are related to dopamine availability. “Dopamine-related genes show some associations with ADHD, but are not among the most prominent findings,” says [Jan Haavik](#), a neuroscientist at the University of Bergen in Norway, who [recently reviewed the evidence for the dopamine-ADHD connection](#).

One possibility, [Martel suggests](#), is that hormonal sensitivity in women with ADHD is caused by a neurological double whammy. In some people, problems with dopamine signalling provide an underlying vulnerability to ADHD. Then, sudden drops in oestrogen make an existing vulnerability more obvious, cranking up the volume in an already-noisy brain.



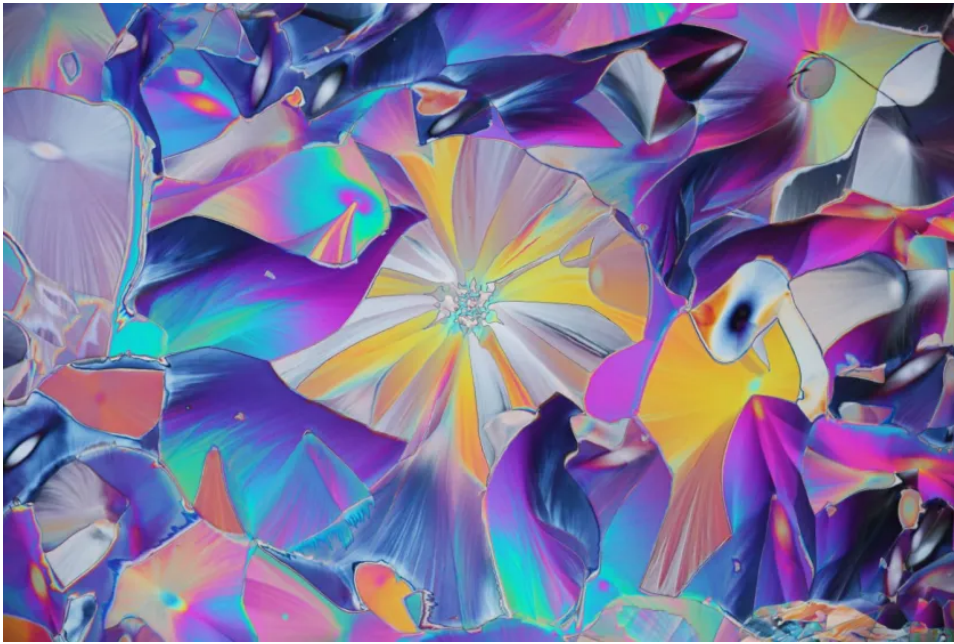
▲ **Pregnancy and the postpartum period come with intense hormone fluctuations**

Richard Baker/In Pictures via Getty Images

What hormones mean for treatments

Understanding these complexities is key to figuring out a solution to help women better manage their ADHD symptoms. If lack of oestrogen is the problem, perhaps an obvious answer is to plug that gap, by evening out the fluctuations with hormonal contraceptives or hormone-replacement therapy. These options can help some people and are worth trying, but, unfortunately, they aren't straightforward solutions and can exacerbate symptoms for other people. Martel's studies suggest that, even among women with ADHD, only around half are affected by hormonal fluctuations. And in some women who are affected, problems coincide with the rapid increase in oestrogen rather than the fall, with this period coinciding with a rise in impulsive risk-taking.

According to [one study](#), those with low dopamine see an improvement in symptoms when oestrogen is high, while people with higher dopamine levels get worse. "We don't know if it's low oestrogen that's risky, or changes in the level of oestrogen, or whether there's an optimal level [for brain function]," says Martel. And while some may find their ADHD symptoms even out on oestrogen-containing hormonal contraceptives, the medication is also [more likely to cause](#) mood-related side effects in women with ADHD.



▲ **Dopamine – shown here under microscopy – is thought to significantly affect ADHD symptoms**

Karl Gaff/SCIENCE PHOTO LIBRARY

Given the many uncertainties in our understanding of hormonal balances, tweaking doses of stimulant medications may be a simpler and more immediate option. Some of Kooij's patients acknowledged taking higher doses when their hormones hit worst, which prompted her group to run a [study monitoring](#) symptoms and side effects in nine women with ADHD through several menstrual cycles. She worked with the women's psychiatrists to increase the volunteers' usual medication dosage by 30 to 50 per cent in the premenstrual period, when oestrogen was low. All nine women reported an improvement in cognitive and mood-related ADHD symptoms, and all opted to continue adapting their dose in the same way after the experiment ended.

Kooij stresses that all nine women were closely monitored by their prescribing psychiatrist throughout for any side effects. She doesn't recommend that people experiment with their own medication because of potential side effects on blood pressure, heart rate and sleep. "If you do this unguided and start getting heart palpitations and start to panic, you could end up in a worse situation than before. That's what we would like to prevent." She also acknowledges that larger, double-blind studies will be needed to gauge whether the effect is real – something she plans to do when funding allows.

For now, those at the forefront of research agree that increasing awareness of the hormone-ADHD link is a priority. Doing so influences treatment options and hands a little power back to women who feel like they are living at the mercy of their own hormones. Understanding why motivation and focus vary from week to week could make it easier for those affected to plan their workload and self-care practices more effectively – perhaps even scheduling therapy for a week where changes are more likely to stick, Martel suggests.

which perimenopause treatments actually work?

For women going through perimenopause, there is no shortage of advice on how to deal with the symptoms – but which strategies show real results, and which are social media hype?

It can also provide much-needed comfort for people like me, and reassurance that they are less broken than they thought. My own relief tumbled out in a long and rambling story I told to Martel, describing my history of severe PMS, a blissfully quiet brain during pregnancy followed by postpartum depression, and, finally, the wheels falling off altogether in perimenopause. Having spent years feeling embarrassed by my inability to cope with life like a so-called normal person, it felt good to finally have an explanation, if not a solution. “Your reaction is very common,” says Martel. The last time her work was featured in the popular press, she says, it prompted a flood of comments from readers who finally understood what they had been living with for years.

Spreading awareness among doctors is even more important. Last year, Gurvich attended an international conference on ADHD and listened to a presentation in which two well-known male psychiatrists pondered the mystery of a woman who sought help for intense ADHD symptoms, which she found debilitating for two weeks each month. They were trying to figure out what was going on and if she met the diagnostic criteria for ADHD, and no one on the stage or in the audience mentioned hormones. “It was just baffling to me,” says Gurvich. “This was a woman of reproductive age, and no one brought up the menstrual cycle.”

That knowledge gap is pervasive: early-career psychiatrists can go through nearly a decade of training without hearing anything about the impact of hormones on the brain, says Del Rio. More broadly, he says, a true understanding of the mind needs to consider the body as well as the brain. “Psychiatry doesn’t end at the neck,” he says. “You have to take into account the whole body.” Kooij is working on exactly this approach, having recently set up the Head Heart Hormone Network, where psychiatrists can collaborate with specialists in gynaecology, cardiology and, in the future, other medical specialties, to explore the full impact of hormonal fluctuations.

The impact cannot be overstated, says Kooij. “What we’re facing is a revolution in medicine for female healthcare.” Many more changes are to come, she adds: “All the books will need to be rewritten.”

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