- Menstruation / Breast cancer

REALITY CHECK

THE SCIENCE BEHIND THE HEADLINES



REVIEW

Cycle syncing has the potential to change lives

Adapting to hormonal fluctuations throughout the menstrual cycle could be a secret weapon in the fight against breast cancer

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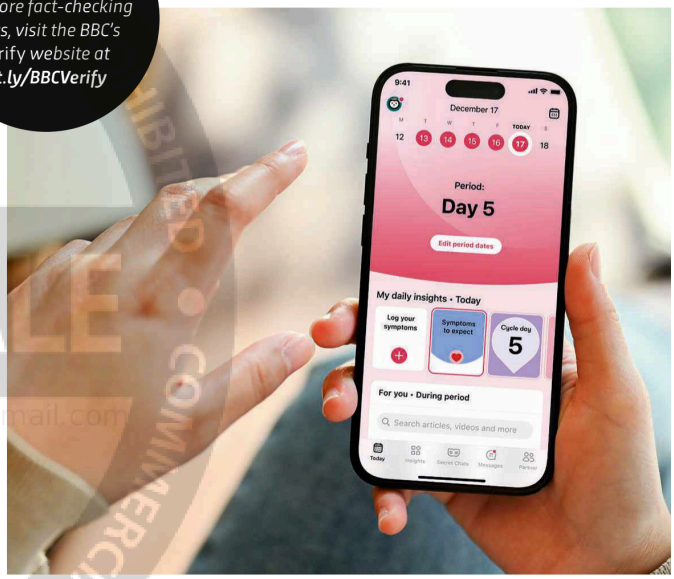
Cycle syncing is having 'a moment.' The practice, which involves women adjusting their habits to align with their menstrual cycle, is all over the digital realm.

Menstrual tracking apps – Clue and Flo are just two examples of the many available – are popular. Downloaded to phones, smartwatches and other wearable tech, they're currently used by an estimated 50 million people. Most women use them to track their periods and understand their cycles. On social media, however, cycle syncing is touted by influencers as a means to enhance fitness, help you lose weight and even boost your creativity.

There's scant evidence to back those claims, however. Research published this year from McMaster University, in Canada, for example, found no link between synchronising menstruation phases and exercise routines with the body's ability to build muscle and strength. It hasn't stopped #cyclesyncing from notching up more than 500 million views on TikTok, but it has drawn attention away from another application for cycle syncing: making drugs and medical tests work better.



ABOVE Period tracking apps are useful for getting an idea of where you are in your menstrual cycle

LEFT Hormonal fluctuations during the menstrual cycle could alter the efficacy of certain medical treatments

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"The female body was considered too complex and variable"

For drugs to be authorised for use, they have to first be tested in clinical trials. Before the 1990s, however, women were largely excluded from these trials because, it was thought, their fluctuating hormones would cloud the results. The female body was considered too complex and variable, and so most of the studies were done on men. Even female animals were often omitted from laboratory research for the same reasons.

This has changed now, but the effects of the menstrual cycle on drug response remain murky. It's known, for example, that certain painkillers, such as morphine, are more or less effective at different points in the cycle. Beyond that though, little is known.

"This area has been very overlooked," says Dr Colinda Scheele from the VIB-KU Leuven Center for Cancer Biology, in Belgium. Scheele is a cancer biologist. She became interested in cycle syncing when she was studying how mice with breast cancer respond to chemotherapy. Sometimes the treatment worked well, sometimes less so, with little obvious rhyme or reason to the pattern. Scheele and the female researchers she worked with at the time, wondered if the animals' hormonal cycles were having an effect.

Mice may not have periods, but they do have a four-to-five-day hormonal cycle called the oestrus cycle. In 2024, Scheele did a study where she gave mice chemotherapy at different stages in their oestrus cycles. When the treatment was given in the first half of the cycle, when progesterone levels were low, it worked better than when it was given in the second half, when progesterone levels were high. Cells were less resistant to chemotherapy and the tumours shrank up to three times more in size.

Encouraged, Scheele did a follow-up study where she looked at archived blood samples taken from women with breast cancer who were treated with chemotherapy. By analysing the samples, Scheele could tell where in their cycle the women were when they had their treatment. And from their clinical records, she could tell how they responded to the treatment. Chemotherapy was found to be better at shrinking breast cancer when it was given in the low progesterone, or 'follicular', phase of the menstrual cycle, compared with when it was given in the high progesterone, or 'luteal', phase.

The implications of the work are huge. If Scheele's results hold up, and can be replicated in a bigger study that she's already organising, then chemotherapy could be made more effective simply by cycle syncing. Waiting for a week or two, until progesterone levels fall, could help to banish breast cancers.

"It's such a simple thing to do. It's not giving an extra drug or doing anything invasive," says breast cancer researcher Dr Wendy Ingman from the University of Adelaide, who wasn't involved with the research. "The potential for improved survival is there."

Remarkably, timing just the first dose of chemotherapy was enough to have an effect. This is important because when women have multiple doses of chemotherapy, it can cause their periods to stop. Timing the first dose appears to prime the response to subsequent ones. →

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"These and other differences may help to explain why sensitivity to chemotherapy varies with the menstrual cycle"

→ Cycle syncing also worked for different subtypes of breast cancer, including those known to respond to ovarian hormones and those that don't. This suggests that something other than hormones might be at play.

In her mouse studies, Scheele has noticed that when chemotherapy is given in the favourable, low progesterone phase, blood vessels around the tumours get a little wider. "This suggests that more blood and potentially more chemotherapy can get to the tumour," she says. There are also lower levels of immune cells, called macrophages, which can otherwise limit the effectiveness of chemotherapy. These and other differences may help to explain why sensitivity to chemotherapy varies with the menstrual cycle.

ALL ABOUT THE TIMING

It's not just breast cancer treatments that could benefit from cycle syncing, either. The usefulness of the tests that guide those treatments could also be improved by cycle syncing.

Ingman's work focuses on certain genetic tests that are given to women who have breast cancer before they begin treatment for it. The tests, which assess patterns of gene expression, are designed to predict the aggressiveness of their particular cancer and the best treatment option for it.

Ingman has analysed how patterns of gene expression change over the two-week period between the initial breast biopsy and the surgery that follows. She has found that young women with active menstrual cycles have more variation in gene expression than older, menopausal women. In mouse studies, she has also shown that patterns of gene expression are different in different stages of the oestrus cycle.

"This suggests that the genes being used for profiling tests, which then guide treatment decisions, could be affected by the stage of the cycle that a woman is in when she has the test," says Ingman.

Put simply, if a woman has the test at one stage in her menstrual cycle, she may be recommended different treatment options than if she had it at a different stage. There may be an optimal time in the menstrual cycle for the test to be given and if clinicians can't change the timing of the test, then it may be possible to adjust the test itself to accommodate these hormonal changes.

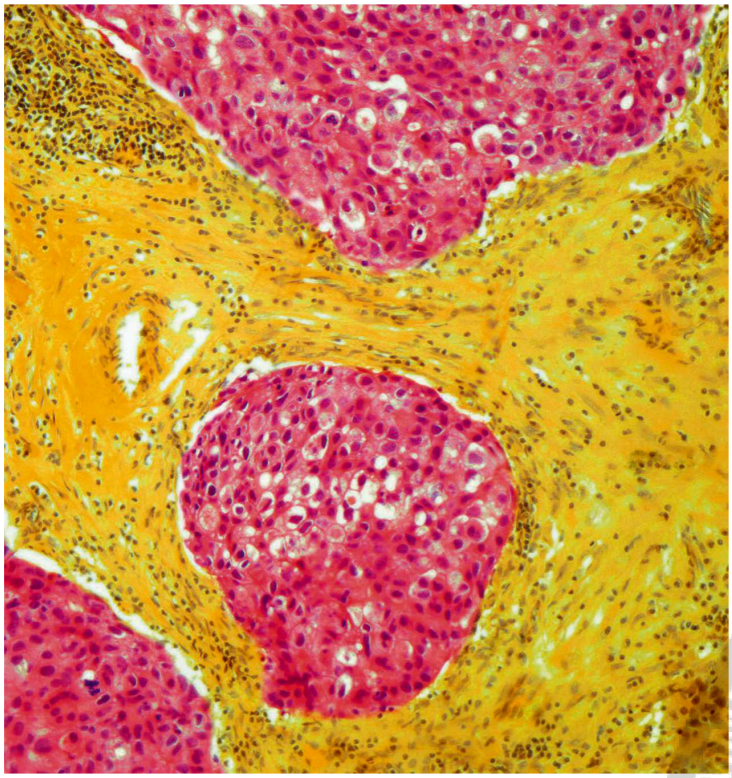
MORE TO LEARN

For now, the proposed benefits of cycle syncing for breast cancer are still being ironed out, but if the practice is found to make a reliable difference, then research into other interventions will follow. It may be that cycle syncing makes a difference in the way that other diseases are treated too.

Some researchers are sceptical, however. There's more to the menstrual cycle than just hormones, points out menstrual health researcher Dr Sally King from King's College London. If timing turns out to be important, then so too could other factors, such as inflammation and the activity of the immune system. Both of these factors are known to change through the cycle.

There are also significant differences between the mouse oestrus cycle and the human menstrual cycle, which make comparisons tricky. What's needed, King says, is more research into the menstrual cycle and an updated appreciation of its intricate biology.

In the meantime, tracking your menstrual cycle, if you have one, is still a good thing to do. "Women need to know what's normal for them because everybody's 'normal' is different," says King. In other words, don't pay too much attention to the influencers who make claims unsubstantiated by evidence, but do pay attention to your body, because its rhythms could be more important than you realise.



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BELOW Breast cancer, seen under a light micrograph

by DR HELEN PILCHER

Helen is a science writer with a PhD in cell biology.

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