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Is breakfast really the most important meal of the day?

We're told that eating breakfast will make us slimmer, happier and livelier, but have we been swallowing a myth?



Too excited about breakfast to sit down at the table

Peter Marlow/Magnum Photos

A LOT of health advice is hard to swallow. But it can be made more palatable if it tastes like crispy bacon and lightly poached eggs, a buttery croissant or a steaming bowl of porridge... This is perhaps why the idea that breakfast is the most important meal of the day has stuck to our collective subconscious like an egg to an unoled pan.

The health claims for breakfast are innumerable. It can boost your metabolism, leave you eating more healthily for the rest of the day, plus you'll have more energy and be less likely to put on weight, which is good news for avoiding heart disease and diabetes.

“The problem is that these benefits, although logical sounding, are largely assumptions based on observational studies and had never actually been tested,” says James Betts, who studies nutrition and metabolism at the University of Bath, UK. “I was amazed when I started looking for evidence – I thought there would be a lot,” he says. What was out there, though, didn't stand up to scrutiny. So he decided to find out for himself.

Is breakfast important to you?



Fundamental



Don't bother

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The concept of a healthy breakfast was probably first introduced at the turn of the last century by John Harvey Kellogg to promote his new breakfast cereal (see “The original ‘health food’”). Despite these dubious beginnings, a body of research has since been published to support the idea. Studies show, for instance, that both adults and children who skip breakfast could end up at increased risk of type 2 diabetes. Other work found that eating breakfast cereals leads to a healthy BMI in adolescent girls and that teens who skip the meal are more likely to be overweight. So surely eating breakfast amounts to a simple and important public health message?

Not quite. There is one big problem – these and similar findings are based on observational studies, in which investigators watch people going about their normal life, without control groups. This means that other elements of the person’s lifestyle – such as regular exercise or getting a good night’s sleep – could truly be driving the health effects. So are people healthy because they eat breakfast, or do they eat breakfast because they are healthy?

It’s not a trivial matter. Given that so many countries are in the midst of an obesity epidemic, Betts thinks questioning the value of breakfast should ensure advice dished out by doctors is based on solid evidence. “As soon as doctors find out that an overweight patient skips breakfast they’ll often tell them to make sure they eat it every day,” he says. “But should we not know more about the effects? We try not to give other health advice without evidence, so why are we more lax with breakfast?”

To separate the (Shredded) wheat from the chaff and determine what, if any, causal

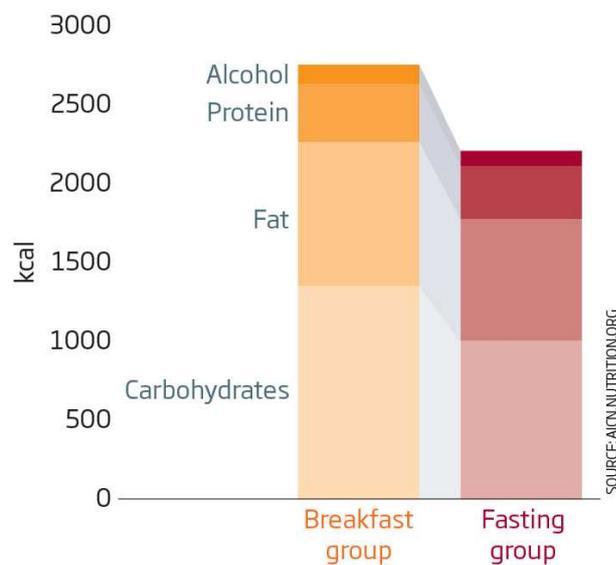
effect breakfast can have on health, Betts and his team decided to conduct a randomised trial. One group ate breakfast, while the other fasted and drank just water until lunch. Those who ate breakfast had to chow down on a whopping 700 calories or more before 11 am. The team then recorded a range of measurements throughout the day – either by monitoring participants in the lab or by having them keep their own records.

First, they looked at daily total consumption. Does breakfast really make people less likely to overeat at lunch or dive into the biscuit tin?

Contrary to accepted wisdom, skipping breakfast had little effect – those who fasted all morning ate more at lunch, but not enough to make up the 700 calorie deficit, which meant that the breakfast group ended up eating a fair bit more over the day (see “Breakfast binge”). And eating breakfast didn’t give people a much-touted metabolic boost either.

Breakfast binge

Breakfast eaters consume more calories over the whole day, especially in the form of carbohydrates...

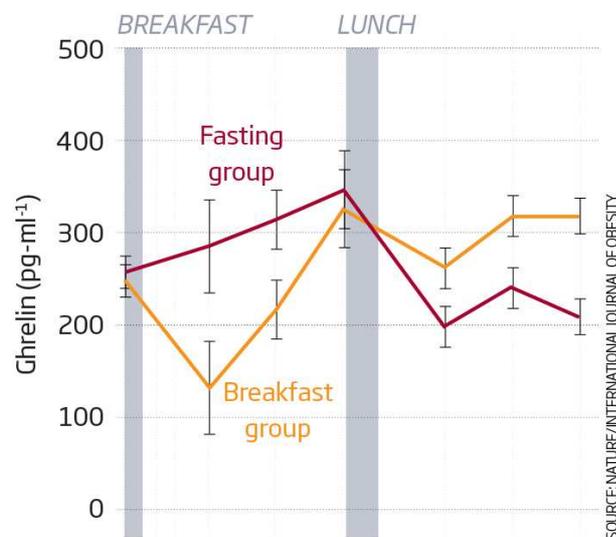


Bigger burn

The results also quash the idea that if you skip breakfast you'll be ravenous later on. In the lab the team took blood samples to measure ghrelin, a hunger hormone, and found something unexpected. Levels of the hormone were much the same at lunchtime, irrespective of whether breakfast was on the menu (see "Hunger hormone"). "That might partly explain why those who fasted didn't overeat that much," Betts says. "But the bit that was surprising was that after lunch, ghrelin levels dropped in those who had fasted but stayed high in those who had had breakfast."

Hunger hormone

By lunchtime, levels of the hunger hormone ghrelin are similar whether you eat or not

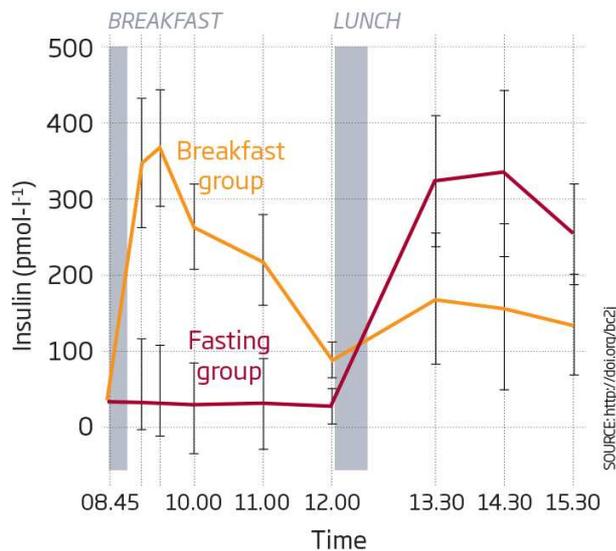


Despite some gentle cajoling, Betts refuses to coin the "Augustus Gloop" effect, in which the more somebody is used to eating, the more they might want to eat later in the day.

There's not yet enough evidence, he says. He is more confident about the team's finding that skipping breakfast did not affect fat levels or weight gain, which is corroborated by a much larger 2014 randomised trial. This all suggests that a doctor's advice to start the day with breakfast might be misguided.

Insulin spike

Insulin spikes after breakfast and gradually comes down before lunch. People who fast get a spike after lunch instead



So does breakfast have any benefits at all?

It turned out that the breakfast eaters had better control over glucose levels in the afternoon, an advantage that Betts wants to probe further, especially since we know that this is what goes wrong in people with type 2 diabetes.

Other work backs up this idea. One study showed that children who ate breakfast every day, especially high-fibre cereal, were at lower risk of developing type 2 diabetes later on in life. “Our work and others’ certainly show an association between not eating breakfast and an increased risk of later disease such as type 2 diabetes,” says Peter Whincup at St George’s, University of London, who led the research.

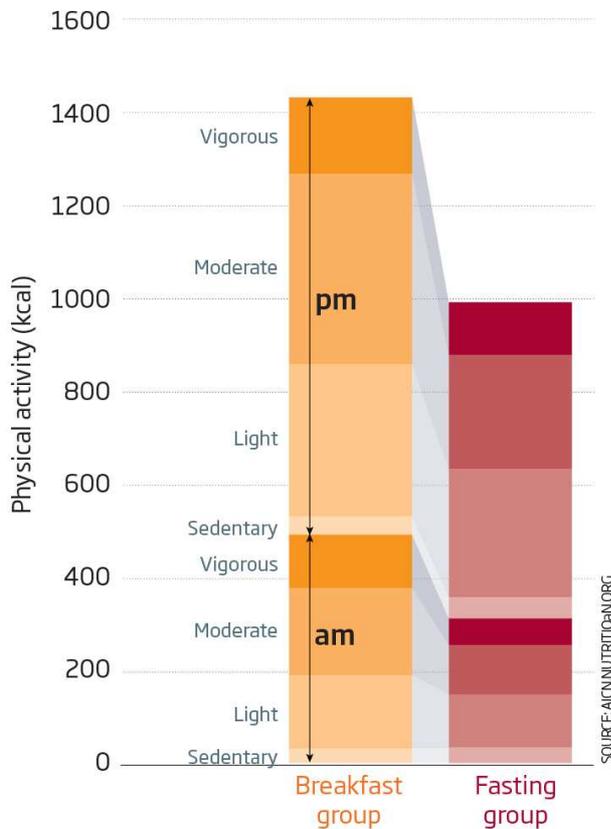
Even so, Whincup warns against over-interpreting data from these kinds of studies because they are observational and come with the usual caveats. Plus his research was based on asking children to remember what they had eaten, which is prone to errors.

Perhaps the biggest boon of breakfast is that those who indulge, while tending to eat more during the day, manage to burn off those calories later on – an effect that we didn’t know about before. Betts’s team used heart rate monitors and accelerometers to measure movement, giving them the edge over past studies based on questionnaires alone. These would have missed lower-intensity activities such as unconscious movement or fidgeting, otherwise known as “non-exercise activity thermogenesis”, or NEAT. And even light activity can make a big difference. Calorie expenditure from low-intensity activities was significantly higher in breakfast eaters than in the fasters. They also burned on average several hundred more calories during the morning than their fasting counterparts (see “Bigger breakfast burn”). Those who fasted just moved

around less without thinking about it.

Bigger breakfast burn

...but end up burning more energy than those who fast - in particular through light exercise like fidgeting and walking around



“It makes sense from an evolutionary perspective,” Betts says. “Our bodies are strongly evolved to defend against weight loss, so if you’ve eaten fewer calories your body might compensate by doing less.”

This adds another level of sophistication to our breakfast decision-making. We should chew over the idea every morning rather than unthinkingly reaching for the porridge – there might indeed be good reason to skip it, especially if you’re stuck in a plane or conference all day without much chance to move.

Breakfast brain boost

But even if breakfast’s reputation as the most important meal of the day is no longer secure, we shouldn’t lay down our knives and forks just yet. “We’ll need to find out about different types of breakfast foods: perhaps those rich in fats, carbohydrates or protein,” says Betts. “And we didn’t include caffeine in our tests, but maybe it could encourage greater physical activity even if you skip breakfast?”

There is also the question of whether missing breakfast takes a mental toll (watch our video above). Betts didn’t measure mood or cognition, the effects most often mentioned – or moaned about – by colleagues who haven’t eaten breakfast.

That question is hard to answer. Children who miss breakfast do not perform as well at

school as those who eat it regularly, but that could be because the provision of breakfast is a marker of socioeconomic circumstance or stability at home.

In the absence of fake food, there's no placebo for the first meal of the day, which makes fair studies tricky. "If somebody turns up to a study and doesn't receive breakfast they might feel annoyed and expect to have a slump in energy," says Peter Rogers, at the University of Bristol, UK. "There's actually a suggestion that eating too much for breakfast could adversely affect you and make you sluggish – think about how you feel after Christmas lunch."

So next time someone preaches about the benefits of breakfast, you're perfectly entitled to shrug and walk away. "Most of us could do with eating less," Rogers says. "Given that it's probably the easiest meal to skip, maybe skipping breakfast occasionally could be that opportunity."

The original 'health food'

Breakfast wasn't always about a healthy start, you'd just "break the fast" and replenish energy supplies after a long night's sleep. "Historically, if you had a hard day ahead of you doing manual labour on the farm, it made sense to refuel with a good breakfast. The idea of health didn't really come into it," says Louise Dye, professor of nutrition and behaviour at the University of Leeds, UK.

Then came the industrial revolution. Our days became less physical and the need for refuelling less obvious. "It was around the turn of the last century when Dr Kellogg popped up with his cereal, which really revolutionised the idea of breakfast as being healthy," says Kaori O'Connor, a social anthropologist at University College London.

Legend has it that John Harvey Kellogg, a Seventh-Day Adventist, invented his cornflakes because he thought that eating pure, wholesome food would stop people masturbating. That apart, as a doctor he also believed that the common health concerns of the day – digestion and regularity – could be improved by consuming the fibre in his cornflakes, says O'Connor. "Kellogg managed to take these free-floating health anxieties and embody them in a product," she says.

Both the product and the concept were received very well. "People hadn't really had health food marketed to them before," says O'Connor. For women who'd traditionally cooked a large breakfast for their family it was a godsend – the fact that it was healthier for their families took the guilt away from buying breakfast in a box. "It was such a successful marketing vehicle that others piggy-backed on to it."

Other staples of our breakfast routine, including orange juice and coffee, followed. The popularity of bacon for breakfast was allegedly the brainchild of Edward Bernays, the self-styled grandfather of public relations. In the 1920s, he was commissioned by the US pork industry to boost bacon sales. Bernays surveyed medical doctors and asked them one question: is a hearty breakfast preferable? The resounding answer was yes, presumably, says Dye, as a relic of the ideas of breakfast and refuelling from bygone agricultural days. Bernays used this fact in marketing campaigns and the popularity of bacon and eggs went through the roof.

"Let's not trash the benefits of breakfast all together," says O'Connor, "but it's safe to say that the idea that it is healthy in its own right was laid on a plate for us by marketing companies. And, by and large, we've gobbled it up."

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By **Dara Mohammadi**