

## Skipping breakfast may increase food intake at lunchtime

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Researchers at the University of Nottingham have found that skipping breakfast leads to increased food intake later in the day. Their study also shows how eating breakfast can affect metabolic and hormonal responses to subsequent meals.

In an environment of rising obesity prevalence, eating breakfast has been recommended as a strategy for helping to achieve a healthy weight. However, it is unclear whether body weight is directly influenced by breakfast consumption or if this link is a consequence of other factors. To explore this further, the Nottingham research team compared the effects of consuming breakfast versus skipping breakfast on subsequent energy intake and appetite in 12 healthy men.

In a randomized crossover design, participants were either served a standardised breakfast of cereal or given no breakfast. The participants were all self-reported regular breakfast eaters. All participants were provided with an evening meal the night before, a preload ('snack') mid-morning which consisted of a vanilla-flavoured drink, and were served a pasta-based meal for lunch. Blood samples were taken throughout the experiment, and appetite ratings were assessed regularly.

The researchers found that participants who ate breakfast consumed around 17% less energy at lunchtime compared to those who did not eat breakfast, although there were no differences in combined energy intake (breakfast + preload + lunch). In the no-breakfast condition, participants also reported feeling hungrier and less full during the mid-morning period before eating lunch.

Skipping breakfast had an additional effect on metabolic and hormonal responses. Most notably, participants who did not eat breakfast had higher levels of glucose and insulin after consuming the preload. They also appeared to show a degree of insulin resistance. The authors attribute this last effect to high levels of free fatty acids (FFA), or fats, in the no-breakfast condition prior to consuming the preload: high FFA levels can interfere with the normal uptake of glucose by insulin.

The authors acknowledge that the relatively small breakfast provided in the experiment might not be representative of a typical breakfast consumed by healthy men. Nevertheless, their findings suggest that breakfast consumption has a significant effect on appetite and energy intake, and on the metabolic and hormone responses to food consumed throughout the day.

For more information:

[Astbury NM et al. \(2011\). Breakfast consumption affects appetite, energy intake, and the metabolic and endocrine responses to foods consumed later in the day in male habitual breakfast eaters. J Nutr 141\(7\):1381-89.](#)