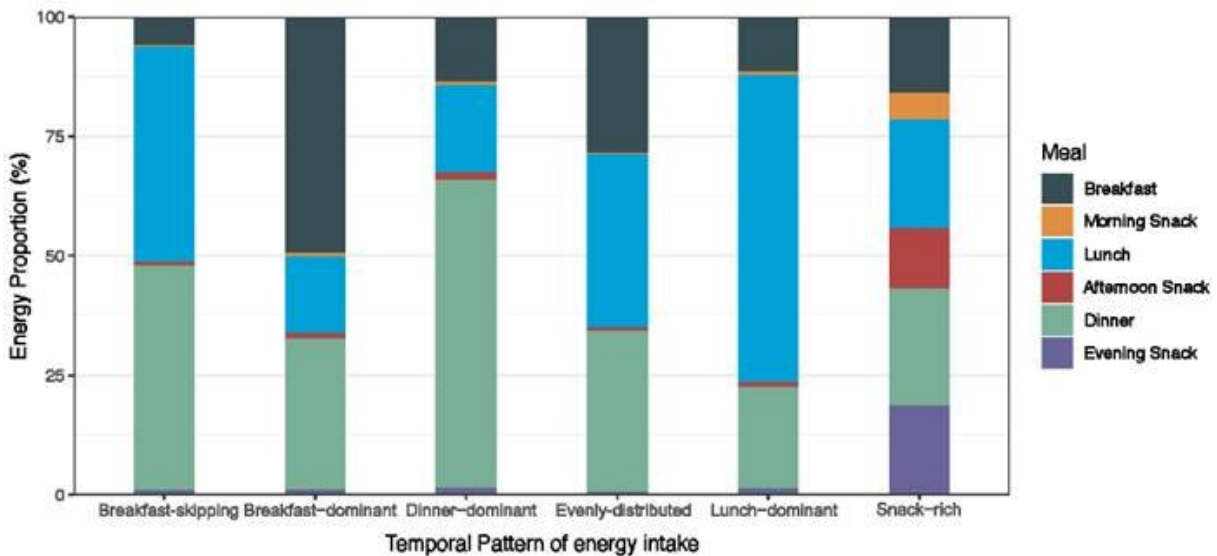


Cognitive health may benefit from balanced meal timing

September 16 2022



Temporal patterns of energy intake among participants in the China Health and Nutrition Study. Credit: Hui Chen et al

Globally, there are approximately 55 million people who suffer from dementia, and the incidence of the disease has steadily increased. The number of affected is expected to triple by 2050, particularly in low- and middle-income countries. Dementia affects the quality of life of individuals and adds significant economic burdens to families and society.

Epidemiological studies have shown a correlation between the temporal distribution of energy intake during a day (TPEI) and the risk of various chronic diseases such as diabetes and hypertension. However, evidence regarding the relationship between TPEI and cognitive function at the population level is relatively lacking.

Previous studies in animal models have shown that the disruption in meal timing can cause alterations in clock rhythms in the hippocampus, thereby affecting cognitive function. According to a short-term intervention trial of 96 [young adults](#), dividing equal amounts of food into four meals between 9 am and 3 pm could improve cognitive function compared to eating twice between 9 am and 3 pm. However, long-term study is lacking about the TPEIs and cognitive function.

Recently, Drs Changzheng Yuan and Dongmei Yu at Zhejiang University published a paper in *Life Metabolism* entitled "Temporal patterns of energy intake and cognitive function and its decline: a community-based cohort study in China."

Based on the China Nutrition Health Survery (CHNS) public database, a total of 3,342 participants were included in this study, who were middle-aged and [older adults](#) (mean age 62 years) from nine provinces in China with a baseline age ≥ 55 years.

The researchers used: 1) A data-driven k-means algorithm to identify six patterns of TPEIs, including "evenly-distributed" pattern, "breakfast-dominant" pattern, "lunch-dominant" pattern, "dinner-dominant" pattern, "snack-rich" pattern, and "breakfast-skipping" pattern; 2) Cognitive function was assessed using the modified Telephone Interview for Cognitive Status (TICS-m), comprising immediate and delayed word recalls (20 points), backward counting (2 points), and serial-7 subtraction test (5 points).

The total global cognitive score ranged from 0 to 27, with a [higher score](#) representing a better cognitive function; 3) The correlation of TPEIs to cognitive function over 10 years was assessed using linear mixed models (LMMs), which was adjusted for age, gender, residence, [total energy](#), [physical activity](#), smoking status, alcohol consumption, household income, education level, and body mass index (BMI).

The result showed that, compared with those with "evenly-distributed" pattern, the long-term cognitive function scores were significantly lower in those who had unbalanced TPEIs, especially those with "breakfast-skipping" pattern. Thus, maintaining balanced TPEIs has potentially positive effects on cognitive health, whereas skipping breakfast may significantly increase the risk of cognitive decline in middle-aged and older adults. In conclusion, this study highlights the importance of optimal TPEIs in cognitive function.

More information: Hui Chen et al, Temporal patterns of energy intake and cognitive function and its decline: a community-based cohort study in China, *Life Metabolism* (2022). [DOI: 10.1093/lifemeta/loac011](https://doi.org/10.1093/lifemeta/loac011)

Provided by Higher Education Press

Citation: Cognitive health may benefit from balanced meal timing (2022, September 16) retrieved 6 May 2024 from <https://medicalxpress.com/news/2022-09-cognitive-health-benefit-meal.html>

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