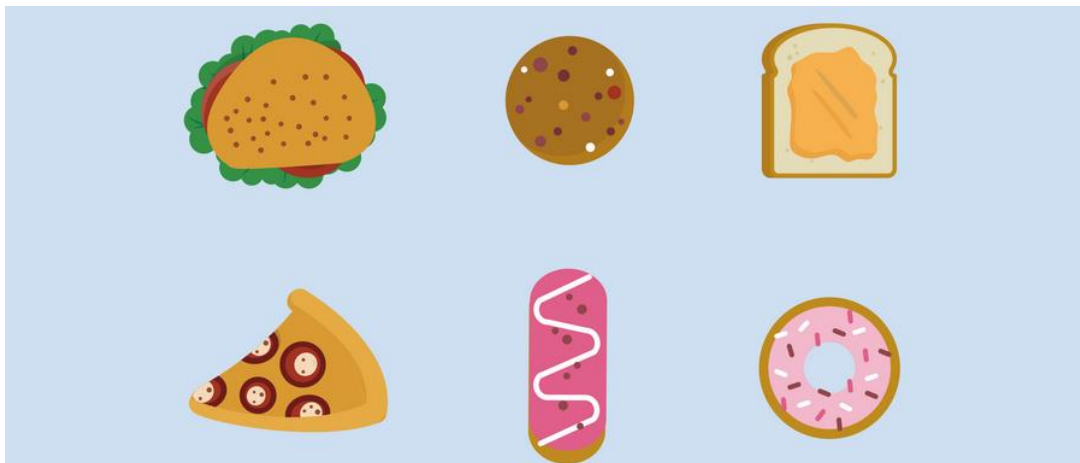


## Comment on “junk food accelerates human aging”

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### **Competing interests:**

The authors declare that they have no conflict of interest.

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Comments such as, "Our fast paced society is geared to fast food", "we are definitely a fast-food nation," and "the opportunity to eat poorly is everywhere" demonstrated the belief that fast food is a ubiquitous and influential component of American life and culture. However, many fast foods are highly processed foods, such as packaged biscuits, pastries and other snacks, packaged sausages, meatballs and other processed meats, cooked foods, instant noodles, sugary drinks, et al.

These foods rarely contain complete and fresh ingredients. The nutrition is not balanced, and usually contains additives such as flavoring, coloring, emulsifier and so on. More and more studies have observed the potential health hazards of highly processed foods, such as increasing the risk of obesity, diabetes, cancer and other chronic diseases and even death [1–6]. Recently, a study published at the European and International Obesity Conference (ECOICO 2020) also proposed that highly processed foods are related to accelerated aging. An analysis of the diet and genetic information of more than 800 people showed that the people who eat highly processed foods most often have cells aging twice as fast [7]. This research came from a Spanish team and focused on the association between highly processed food intake and an important biomarker of aging-DNA telomere length.

Telomeres are called the "clock of life" and are a repetitive DNA sequence at the end of a chromosome, just like a small piece of plastic at the end of a shoelace that can play a protective role [8]. Although telomeres do not contain genetic information, they are essential for maintaining the stability and integrity of chromosomes and even cell function. As the cell continues to divide, the telomere will gradually shorten, until it is too short, the cell will function abnormally. This is a key phenomenon in the aging process.

The research team included 886 subjects over 55 years of age from the Spanish University Graduates Cohort, including 645 men and 241 women. They have joined the project one after another since 1999 and provided saliva samples for genetic information analysis in 2008. In addition, they provided a large amount of basic information such as lifestyle and health status at the beginning of the study, and gave detailed feedback on eating habits through a questionnaire involving 136 items. The above information was updated every two years thereafter.

According to the intake of highly processed foods from "low" to "high", the subjects were divided into 4 groups: < 2 servings/day, 2–2.5 servings/day, 2.5 (excluding)–3 servings/day, > 3 servings/day.

Data shows that the 25% of people with the highest intake of highly processed foods have more cardiovascular diseases, diabetes and dyslipidemia, and generally prefer to eat snacks between meals. From

the overall diet, they are also less healthy. This is reflected in their intake of more fat, sodium, cholesterol, sugary drinks, fast food and processed meats, and less intake of carbohydrates, protein, fiber, and olive oil. Fruits, vegetables and other micronutrients. Statistics show that increased intake of highly processed foods is associated with increased risk of depression, hypertension, overweight/obesity and all-cause death.

Further analysis of genetic data found that as the intake of highly processed foods increases, the risk of telomere shortening also increases sharply. Compared with the lowest intake group, the risk of telomere shortening increased by 29%, 40%, and 82% in the low-medium, high-medium, and highest group, respectively. The research team believes that the above data shows that the intake of highly processed foods has a strong correlation with changes in telomere length, suggesting that this unhealthy diet is a factor that promotes faster cell aging. Further research is needed to verify these observations.

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