

Editorial



Extending Healthy Life Expectancy: The Promise of Addressing Preventable Chronic Disease through Healthy Lifestyle Intervention

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Healthy life expectancy is a pivotal measure of population health by integrating both life expectancy and the quality of years lived. A significant increase in life expectancy was evident in most populations during the past decades worldwide^[1], but the growth in healthy life expectancy has generally lagged behind^[2]. China has made substantial strides in enhancing both life expectancy and healthy life expectancy. From 1990 to 2019, annual growth rate of life expectancy and healthy life expectancy was 0.75% and 0.71%, respectively^[3]. By 2035, the projected life expectancy at birth in mainland China will reach 81.3 years, with 85.1 years for women and 78.1 years for men^[4].

Preventable chronic diseases account for the majority of global deaths. In the current issue of *the journal*, Cui et al. quantified the impact of major chronic diseases on changes in healthy life expectancy from 2011 to 2020 in China^[5]. They found that ischemic heart disease contributed the most to the decline in healthy life expectancy at age 60, and diabetes was the greatest contributor on reduced healthy life expectancy at age 60 due to disability, followed by stroke. Ischemic heart disease, diabetes and stroke are among major chronic diseases that can be effectively prevented or delayed. The findings by Cui et al. underscored the importance of preventable chronic disease in determining healthy life expectancy, calling for an enhanced chronic disease prevention and care in Chinese older adults^[5].

Accumulating evidence supports that adopting a healthy lifestyle could substantially extend life expectancy. Using data from the Nurses' Health Study and the Health Professionals Follow-up Study, a previous study showed that the projected life expectancy at age 50 years was on average 14.0 years longer among women with five low-risk factors (never smoking, normal body weight, regular

physical activity, moderate alcohol intake, and a high diet quality score) compared with those with zero low-risk factors; for men, the difference was 12.2 years^[6]. Among the China Kadoorie Biobank study participants, the gain in life expectancy at age 30 was 8.8 years for men and 8.1 years for women comparing individuals with all five low-risk factors (never smoking or quitting not for illness, no excessive alcohol use, being physically active, healthy eating habits, and healthy body shape) versus those with 0–1 low-risk factors. The estimated extended life expectancy for men and women was mainly attributable to reduced death from cardiovascular disease (2.4 years for men and 3.7 years for women), cancer (2.6 years for men and 0.9 years for women), and chronic respiratory disease (0.6 years for men and 1.2 years for women)^[7].

Further, a recent study has taken longevity genes into account in assessing the association of healthy lifestyle with life expectancy. Among older adults in the Chinese Longitudinal Healthy Longevity Survey, a weighted healthy lifestyle score was constructed from the following variables: current non-smoking, non-harmful alcohol consumption, regular physical activity, and a healthy diet. A genetic risk score was constructed based on 11 lifespan loci, with a higher genetic risk score indicating increased years of life. Healthy lifestyle was associated with a gain of 3.84 years at the age of 65 years in the low genetic risk group, and 4.35 years in the high genetic risk group. These findings highlighted that healthy lifestyle could extend the lifespan, regardless of individual's genetic risk^[8].

Evidence regarding the influence of healthy lifestyle on healthy life expectancy is sparse but still promising. Findings from the Nurses' Health Study and the Health Professionals Follow-up Study showed that adherence to a healthy lifestyle was

doi: [10.3967/bes2026.010](https://doi.org/10.3967/bes2026.010)

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associated with a longer life expectancy free of major chronic diseases^[9]. The life expectancy free of diabetes, cardiovascular diseases, and cancer at age 50 was 23.7 years for women who adopted no low-risk lifestyle factors, in contrast to 34.4 years for women who adopted four or five low-risk factors. At age 50, the life expectancy free of any of these chronic diseases was 23.5 years among men who adopted no low-risk lifestyle factors and 31.1 years in men who adopted four or five low-risk lifestyle factors^[9]. Among the China Kadoorie Biobank study participants, the life expectancy free of cardiovascular diseases, cancer and chronic respiratory diseases at age 40 years for individuals with five low-risk factors (never smoking or quitting for reasons other than illness, no excessive alcohol use, being physically active, healthy eating habits and healthy body fat levels) was increased by 6.3 years for men and 4.2 years for women than those with 0–1 low-risk factors, which corresponded to an increase from 73.1% to 76.3% for men and from 67.6% to 68.4% for women in terms of the proportion of disease-free life expectancy to total life expectancy^[10].

In summary, extending healthy life expectancy is a global public health priority, and addressing preventable chronic diseases through healthy lifestyle interventions is the key to achieving this goal. By prioritizing prevention and creating supportive environments for healthy lifestyle, we can not only substantially reduce the risk of developing preventable chronic diseases, but also narrow the gap between life expectancy and healthy life expectancy and improve the overall quality of life for populations worldwide.

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Received: November 27, 2025;

Accepted: December 29, 2025

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