

Healthiest lifestyle linked to 75% reduction in diabetes risk, reduced risk of CD, death in those already with diabetes

September 4 2019



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People with the healthiest lifestyle have a 75% lower risk of type 2 diabetes than those with the least healthy lifestyle, according to a new

study in *Diabetologia* (the journal of the European Association for the Study of Diabetes). Amongst those individuals with type 2 diabetes, a healthy lifestyle is also associated with a lower risk of cardiovascular disease (CVD) and a lower risk of death from all causes, including CVD and cancer.

The number of people with type 2 [diabetes](#) (T2D) globally has now been estimated at higher than half a billion, according to the latest Global Burden of Disease Study. There are 22 million new cases documented each year. Previous studies have shown that [healthy lifestyle](#) factors, such as physical activity, diet and weight management, are useful interventions in the prevention and management of T2D. This new systematic review and meta-analysis, conducted by Dr. An Pan and Mr Yanbo Zhang, Huazhong University of Science and Technology, Wuhan, China, and colleagues, aimed to evaluate the impact of combined [healthy lifestyle](#) factors; firstly on incidence of diabetes and secondly on morbidity and mortality outcomes in persons with the condition.

The authors looked for studies to include in their analysis that had a combination of at least three factors to indicate overall lifestyle, including: smoking, drinking alcohol, physical activity/ sedentary behaviour, diet, being overweight or obese, and sleep duration/ quality. Follow up of at least a year was required for study eligibility. Baseline characteristics of the participants were extracted to adjust the data—age, gender, race and ethnicity, [education level](#), health status.

Fourteen studies were identified for the main analysis, with 1,116,248 participants, and researches based in the USA, Asia, Europe, and Oceania (Australia, New Zealand and adjacent islands). Mean baseline age ranged from 38 to 73 years; mean follow up was 2.7 to 20.8 years. A further 10 studies were used in the meta-analysis of people who already had T2D, with 34,385 diabetic participants from researches based in USA, Asia, and Europe, and one global study across several continents.

The mean age at baseline ranged from 46 and 69 years; with a mean follow up duration of 4 to 21 years.

A combination of healthy lifestyle factors was found to be associated with a 75% lower risk of T2D, compared with individuals with the least healthy lifestyle. For each of the 14 studies, healthiest versus unhealthiest lifestyle was assessed in a slightly different way (usually with a points system), with each study giving a slightly different result. However, by weighting each study based on number of participants and variation of the effect size, it was possible for the authors to come to the final figure of 75% lower risk of developing type 2 diabetes for the healthiest versus the unhealthiest lifestyle.

Due to the differences in definition and selected study populations, the proportion of people with the healthiest lifestyle varied substantially across studies and in most of the studies, it was low (under 20%). A meta-analysis of the included studies (data not included in this paper) indicated that overall, around 14% of people adhered to the healthiest lifestyle, whereas 11% adhered to the unhealthiest lifestyle, although the range in both categories was large across all the studies (from 4% to 42% for the healthiest lifestyle and from 3% to 43% for the unhealthiest lifestyle). It is clear from the results, say the authors, there are clearly large rooms for improvement in lifestyle across all countries.

This study, with over 1 million participants, has identified that healthy lifestyle factors in combination, can substantially lower the risk of developing T2D. Although bodyweight plays a dominant role in the risk of T2D, its individual association with the condition was found to be weaker than that of combined lifestyle factors; furthermore, lifestyle behaviours such as [physical activity](#), diet quality and sleep pattern, have been shown to affect bodyweight. Within this new research, several studies reported that each additional lifestyle factor was associated with an 11-61% lower risk of T2DM.

This study also considered the potential benefits of a healthy lifestyle on the management of T2D—an important clinical issue. Compared with diabetic individuals with the least healthy lifestyle, those with the healthiest lifestyle displayed a 56% lower risk of all-cause mortality, a 49% lower risk of CVD mortality and a 31% lower risk of cancer mortality, as well as a 52% lower risk of developing CVD. The authors say: "This supports the recommendations from the American Diabetes Association and other organisations that lifestyle modification should be the cornerstone for the management of diabetes, and the findings from various trials indicating that healthy lifestyle interventions could reduce CVD outcomes in persons with type 2 diabetes."

The authors note certain limitations to this study, which they suggest might be addressed by future research. As most studies were conducted in high-income countries and most participants were of white ethnicity, they suggest that evidence from other populations is needed. Also, as T2D is now increasingly seen in adolescents and young adults, the authors recommend more research on the associations of healthy lifestyle with diabetes and diabetes complications in these age groups.

The reduction of premature mortality from non-communicable diseases, the authors note, is one of the Sustainable Development Goals set by the United Nations, to be achieved globally by 2030. They say: "As diabetes complications, particularly CVD, are the leading cause of illness and death amongst individuals with type 2 diabetes, prevention of the condition and its long-term adverse outcomes is urgently needed to meet this goal."

They add: "At the individual level, we encourage people to adopt healthy living habits for example as regards diet, activity, smoking and drinking. At the population level, governments should facilitate the changes needed to make healthy lifestyle choices accessible, affordable and sustainable."

They conclude: "Given that the proportion of individuals with the healthiest lifestyle was found to be low in most populations, promotion of an overall healthy lifestyle, instead of tackling one particular lifestyle factor, should be a public health priority for all countries".

More information: Yanbo Zhang et al. Combined lifestyle factors and risk of incident type 2 diabetes and prognosis among individuals with type 2 diabetes: a systematic review and meta-analysis of prospective cohort studies, *Diabetologia* (2019). [DOI: 10.1007/s00125-019-04985-9](https://doi.org/10.1007/s00125-019-04985-9)

Provided by Diabetologia

Citation: Healthiest lifestyle linked to 75% reduction in diabetes risk, reduced risk of CD, death in those already with diabetes (2019, September 4) retrieved 26 April 2024 from <https://medicalxpress.com/news/2019-09-healthiest-lifestyle-linked-reduction-diabetes.html>

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