

PRESS RELEASE

EATING MORE FRUITS AND VEGETABLES, IN QUANTITY AND VARIETY, IMPROVES COGNITIVE FUNCTION WHEN AGEING

People who consume more fruits and vegetables, in terms of quantity and variety, at midlife are less likely to suffer cognitive impairment in their later years, by up to 23% reduction, a Singapore study has found.

Singapore, 20 April 2022 – People who consume more fruits and vegetables at midlife are less likely to suffer cognitive impairment in their later years, a Singapore study has found.

In the study, which was published in a recent edition of the British Journal of Nutrition in March 2022, scientists looked at data on consumption of fruits and vegetables among middle-aged Singaporean Chinese. Their consumption habits – both in quantity and variety – were correlated with cognitive health in late life. Those with high intake of fruits and vegetables, in terms of quantity as well as in variety, had significantly reduced risk of cognitive impairment. Compared to those who ate less fruit and vegetables, study subjects who had both high quantity and variety scores for fruits and vegetables recorded a 23% reduction in odds of cognitive impairment.

“WE NEED OUR OWN ASIAN POPULATION STUDY”

As a result of global population ageing, the number of people living with dementia will almost double every 20 years, and is estimated to reach 131.5 million in 2050 worldwide. A healthy diet is among the first steps to preserve cognitive function in ageing.

Said the study’s corresponding author, Professor Koh Woon Puay from the Healthy Longevity Translational Research Programme at the NUS Yong Loo Lin School of Medicine, “Fruit and vegetables are the major source of vitamins and phytochemicals with potent bioactivity, which are known to help to fight inflammation, maintain a healthy gut and weight and boost the immune system. Dietary guidelines from the World Health Organization (WHO) and many countries have recently emphasized that, on top of eating enough, increasing the variety in the consumption of fruits and vegetables is also important in improving health.

However, Prof Koh said there is less evidence on fruit and vegetable intake in relation to cognitive function in ageing. “Although previous studies have revealed that a higher consumption of fruits and vegetables is likely to reduce the incidence of dementia, the independent effect of these two food groups on cognitive function has yet to be established. Moreover, it is unclear whether increasing the variety in fruits and vegetables, independent of the quantity of intake, could further prevent cognitive impairment. Finally, the types of fruits and vegetables consumed commonly in different populations may vary due to socio-cultural factors such as religion, traditional beliefs and food preferences, as well as socio-economic factors such as cost, availability and ease of accessibility, which are all factors that can

influence the diversity in fruits and vegetables between Asian and Western populations. Given that most of previous studies were done in Western countries, studies among understudied Asian populations are necessary.”

VARIETY IS THE SPICE OF LIFE

Our finding was consistent with other studies in Western populations in showing that higher quantity of total fruit and vegetable intake was associated with lower odds of cognitive impairment at late life. Put it another way, vegetables and fruits have been known to be good for general wellbeing, but now, we also have evidence that “they are good for your brain!”

There is evidence from previous studies that some specific subtypes of fruits and vegetables, such as green leafy vegetables and berries, could be associated with cognitive function or risk of dementia. However, very few studies have reported a comprehensive examination of subtypes of fruits and vegetables,” she added. This study showed that the benefit of fruits and vegetables were not limited to a specific type or a few specific items. Instead, higher intake at midlife of a variety of fruits with low or moderate glycaemic-index, as well as a variety of light green vegetables and gourds, yellow-orange vegetables like corn and carrot and a variety of mushrooms, were all associated with lower risk of cognitive impairment at late life.

THE STUDY

The study by a team of international collaborators led by Prof Koh evaluated data from 16,737 participants of the Singapore Chinese Health Study, a population-based cohort study established between 1993 and 1998 by a recruitment of 63,257 Chinese participants aged 45–74 years in Singapore.

The participants provided dietary data at recruitment at a median age of 52.5 (range: 45-74) years. The quantity and variety of 14 fruits and 25 vegetables that the study participants had consumed at baseline were measured using a validated food-frequency-questionnaire. Fruits were further categorized as low-glycaemic-index fruits, moderate-glycaemic-index fruits, and high-glycaemic-index fruits according to carbohydrate quality. Vegetables were categorized as light green vegetables, dark green vegetables, cruciferous vegetables, yellow-orange vegetables, tomato products, and mushrooms.

The participants were contacted over the phone to update information (but not including diet) for two follow-up interviews in 1999-2004 and 2006-2010. They also participated in a third follow-up interview 20 years later in 2014-2016 at a median age of 72.2 (range: 61-96) years. Cognitive impairment at the third follow-up was defined using a Singapore-modified version of Mini-Mental State Examination. About 14.3% participants had cognitive impairment.

Independently, those with increased variety of fruit intake or higher quantity of vegetable intake also had significantly 22% and 15% reduced odds of cognitive impairment, respectively. Finally, compared to those with low intake for both quantity and variety, those with both high quantity and variety scores for fruits and vegetables had 23% reduction in odds of cognitive impairment.

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Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 30 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

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Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of the leading medical schools in Asia and ranks among the best in the world (Times Higher Education World University Rankings 2022 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2021).

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