

Successful Aging: The Longer One Lives, the Better One Has Eaten?



See also page 1774

Successful aging is usually described in contrast to “usual” aging and implies that functional status is maintained or that the decline in functional status is slowed or delayed. Also implied is that biologic age has been altered in a way such that it is relatively less than chronologic age. This is often expressed as increased health span and measured on a population level as healthy life-years completed. Studies on exceptional longevity suggest that apart from genetic factors, environmental and behavioral influences are contributory and include exercise, purposeful living, strong social support systems, spirituality, healthy body mass index, and diet.¹ The paper by Goshen et al² in this issue of *Mayo Clinic Proceedings* offers evidence that diet quality does in fact promote successful aging by reducing frailty in older adults. Their report, based on data from the Israeli Longitudinal Study on Aging, prospectively examines in the oldest old the association between frailty, a marker of functional status, and diet quality.

In this study, older adults 65 years of age or older underwent a dietary interview and functional assessment that provided a healthy eating index (HEI) score and frailty index based on deficit accumulation, respectively. Based on logistic regression models and after adjustment for socio-demographic and lifestyle factors, a greater HEI was associated with decreased risk of incident frailty during 12 years. Improved diet quality was inversely related to the incidence of frailty and in a dose-dependent fashion, the latter suggesting that a clinically meaningful impact on healthy aging can be achieved with even a modest or moderate improvement in diet quality. Importantly, this relationship was independent of the frailty measure chosen.

Not surprisingly, greater HEI scores were related to beneficial lifestyle behaviors (eg,

physical activity), lower body mass index, and better socioeconomic status; but even when accounted for, the association between diet quality and frailty remained. Those who became frail during follow-up years tended to be older and female, to have fewer years of education, and to have lower household incomes at baseline.

There is uncertainty surrounding the application of healthy diets (eg, the Mediterranean diet) to cultures and countries where the diet has not been popularized. Because the current study evaluated dietary quality with reference to national nutritional guidelines shared by multiple countries, it may be more generalizable. Furthermore, this study extends the findings from younger cohort investigations on the relationship between nutrition and frailty to the oldest old and during a much greater period of observation. The results reported by Goshen et al also support nutritional guidelines that suggest it is not mandatory to adhere to a single dietary plan to maintain beneficial eating habits.³

Observed benefits from a healthy diet, such as frailty prevention, may be related to intake of key micronutrients or antioxidants, the absence of which may be linked to sarcopenia, multimorbidity, and so-called inflammaging.⁴⁻⁶ Other links between diet and frailty include low protein, nutrient deficiencies associated with mitochondrial dysfunction, and dietary patterns lacking a diverse range of nutrient-rich foods (eg, fruits, nuts, vegetables, seeds, legumes).

Whereas this study has a prospective design with a long follow-up period and a nationally representative cohort of the oldest old, there are also several limitations to consider. As with many observational studies, only association rather than causation can be ascribed. Also, because dietary practices are usually lifelong, they may be a proxy for more global health behaviors (either beneficial or

detrimental). Other relevant caveats to consider are HEI scores based on a single dietary recall, significant differences in baseline characteristics, potential underestimation of frailty incidence at follow-up, and reverse causation due to frailty affecting an individual's capacity for food preparation. Despite these limitations, which the authors have tried to mitigate methodologically, their results support an important association between healthy diet and a decreased risk of frailty, with striking implications for the oldest old. Thus, the adage may be true that you are what you (have) eat(en).

POTENTIAL COMPETING INTERESTS

The author reports no competing interests.

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