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Role of nut and seed intake on telomere length: a systematic review of observational and interventional studies

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Telomere length is a biomarker of ageing⁽¹⁾. A shorter telomere length is associated with an increased risk of age-related diseases and mortality. Oxidative stress and inflammation are predominant mechanisms leading to telomere shortening⁽²⁾. Diets and food groups high in antioxidant and anti-inflammatory properties are shown to be protective against telomere shortening⁽³⁾. The nut and seed food group is rich in nutrients such as unsaturated fats, vitamins, and minerals, and contains antioxidants and anti-inflammatory phytochemicals. Evidence is emerging on the beneficial effects of nuts and seeds in the prevention and management of age-related chronic conditions. This review aims to evaluate the role of nut and seed intake on telomere length in humans using the evidence from observational and interventional studies. Four databases, including Medline, CINAHL, Embase and Web of Science, were systematically searched from inception to 12 March 2024 for observational and interventional studies assessing the intake of nut or seed or applied nut or seed interventions and measured telomere length as an outcome in adult human participants (age ≥ 18 years). The quality assessment of the included studies was performed using the Academy of Nutrition and Dietetics Evidence Analysis Library® November 2022: Quality Criteria Checklist. Nine observational and four interventional studies were included. A positive association between nut and seed intake and telomere length was reported in three of the nine observational studies. None of the interventional studies reported a significant positive effect of nuts on telomere length. Three of the observational and interventional studies were classified as high quality, and the remaining studies were of neutral quality. Meta-analysis was not warranted due to the high heterogeneity in the telomere length measurements across the studies. The findings are inconsistent across these studies, and the evidence is insufficient to establish a beneficial role of nut and seed intake on telomere length. Larger epidemiological studies and adequately powered long-term randomised controlled trials are needed to establish the positive role of nut and seed on telomere length. However, nut and seed should continue to be recommended as a part of a healthy diet, given their proven benefits against age-related conditions.

References

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