



## An unhealthful plant-based diet and circulating hsCRP levels are independently associated with lower physical well-being in older adults

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Plant-based diets have been found to be environmentally sustainable as well as beneficial for health<sup>(1,2)</sup>. Previous research found that an increase in plant-based diet quality improves well-being in adult women, however this relationship has not yet been established for men and women of older ages. It has been hypothesized that anti-inflammatory properties of a plant-based diet may explain its effect on well-being<sup>(3)</sup>. Therefore, our aim is to 1) assess the association between plant-based diets and well-being in older adults of both genders and 2) test whether the effect is influenced by circulating hsCRP levels.

We studied the data of the population-based Lifelines Cohort Study<sup>(4)</sup> from which we selected participants older than 60 years of age with available food frequency questionnaire (FFQ) data and RAND-36 questionnaire data (n = 7953, mean age = 65.2 years) and a subsample in which circulating hsCRP was measured (n = 2753, mean age = 65.2 years). We applied a plant-based diet index measuring adherence to a healthful (hPDI) and an unhealthful (uPDI) diet based on FFQ data. The RAND-36 questionnaire was applied as measure of quality of life, from which we derived physical (PCS) and mental component scores (MCS). PCS and MCS were binarized by the median into a lower and higher category. They were consecutively used as outcome of logistic regression, with hPDI or uPDI, divided into tertiles, as determinants. We adjusted for age, sex, BMI, physical activity and in a second step for hsCRP levels.

Older adults with the highest adherence to an unhealthful plant-based diet had 18% lower odds for high physical well-being (OR 0.82 [95% CI 0.73; 0.92], p < 0.001) and 15% lower odds for high mental well-being (OR 0.85 [95% CI 0.76; 0.95], p = 0.005). Adherence to hPDI was not significantly associated with physical or mental well-being. While we also find hsCRP levels to be associated with lower physical well-being (OR 0.97 [95% CI 0.95; 0.99], p = 0.007), the association of uPDI and PCS remained borderline significant when further adjusting for hsCRP levels (OR 0.83 [95% CI 0.68; 1.00], p = 0.058), indicating independent effects.

We conclude that in older adults of both genders adherence to an unhealthful plant-based diet is associated with lower physical and mental well-being. Moreover, we conclude that uPDI and circulating hsCRP levels have independent additive effects on physical well-being.

### References

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