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Healthy diet rich in vegetables and chronic systemic inflammation in older adults

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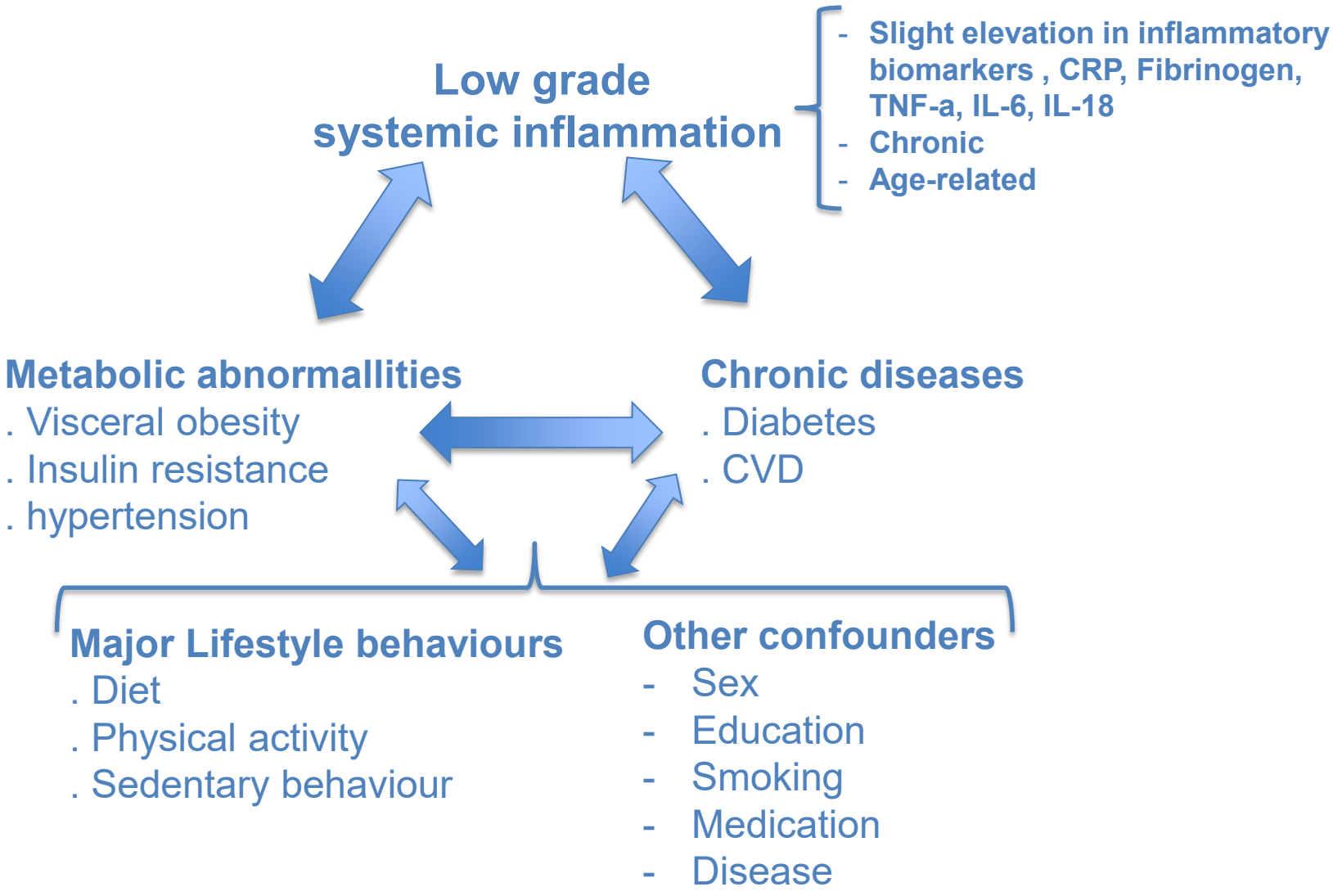
Introduction



Introduction

- Dietary habits may mitigate age-related chronic systemic inflammation.
- Previous studies show conflicting results.
- Potential confounding impacts of physical activity behaviors.
- Scarcity of studies on dietary habits and systemic inflammation in older adults.

Aim

The aim of the study is to explore the links between dietary habits and biomarkers of systemic inflammation in older adults, while considering objectively assessed physical activity behaviors.

Methods

- Design: cross-sectional study
- Population: 233 older men and women (65-70 yrs), free of overt disease
- Dietary habits assessed by food-frequency-questionnaires
- Physical activity measured by accelerometry
- Confounders include: age, sex, educational level, energy intake, medication and waist circumference
- Biomarkers of metabolic and inflammatory status include: CRP, Fibrinogen, Tnf-α, IL-6, IL-18
- Analysis: chi-squared (categorical data) and analysis of co-variance (ANCOVA)

Participant characteristics across tertiles of adherence to a healthy diet

	Low adherence (n=73)	Moderate adherence (n=74)	High adherence (n=86)
Medication use (%)	55	42	41
Abdominal obesity (%)	63	47	41*
Physically active (%)	75	85	86
Tobacco use (%)			
Never	49	54	47
Former	41	41	51
Current	10	5	2
Education level (%)			
University/College	63	57	71
High school	25	35	21
Secondary school	12	8	8

* significant difference between groups ($p < 0.05$)

Inflammatory biomarkers across tertiles of adherence to a healthy diet

Inflammatory biomarkers	Low adherence (n=73)	Moderate adherence (n=74)	High adherence (n=86)
CRP (mg/L)[a]	1.31 ± 2.0	0.98 ± 1.66	0.98 ± 2.43
Fibrinogen (mg/L)	3.27 ± 0.52	3.10 ± 0.53	3.15 ± 0.59
IL-6 (au)	3.36 ± 0.53	3.30 ± 0.54	3.32 ± 0.67
IL-18 (au)	8.14 ± 0.49	8.04 ± 0.58	7.98 ± 0.51
TNF-α (au)	3.20 ± 0.41	3.07 ± 0.30	3.17 ± 0.38

Results

- 56% of the participants with at least 2 servings of fruits
- 50% of the participants with at least 2 servings of vegetables
- 41% of the participants with at least 4 servings of fruit and vegetables combined
- Participants with < 2 servings had 9% lower levels of IL-6 than participants with ≥ 2 servings
- No correspondning differences were observed for the other biomarkers of inflammation

Discussion

- Participants with a daily vegetable intake of at least 2 servings or more had a significantly lower level of the pro-inflammatory biomarker IL-6 compared to those with fewer servings
- This finding is strengthened by the consideration of physical activity, sedentary behaviors and abdominal obesity
- Supporting guidelines for a vegetable intake of 2-3 servings per day for general health benefits

Discussion

- No causality can be determined as it is a cross-sectional study
- Caution should be taken when generalizing the findings to broader populations of older adults;
- Residual confounding from additional variables may still be present.

Conclusion

- Higher intake of vegetables is related to lower levels of IL-6 regardless of physical activity behaviors and adiposity level in older adults.
- This finding strengthens public health efforts to promote vegetable-rich diets in older adults to mitigate age-related systemic inflammation.