

Dietary patterns in an elderly population and their relation with bone mineral density: The Rotterdam Study

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Objectives

1. To identify dietary patterns that are associated with bone mineral density (BMD) in elderly subjects with a relatively high dairy intake.
2. To assess whether the associations between dietary patterns and BMD were independent of body weight.

Conclusions

1. A "Mediterranean-like" and "Traditional" dietary pattern may have benefits for BMD whereas adherence to a "Processed" dietary pattern may pose a risk for low BMD in elderly subjects with a relatively high dairy intake.
2. The associations of the "Mediterranean-like" and "Processed" pattern with BMD were independent of body weight.

Background

It is unclear whether overall dietary patterns influence BMD in populations with a relatively high dairy intake.

Studying overall dietary patterns (in contrast to single nutrients) accounts for potential interactions between nutrients.

Methods

Design: Prospective, population-based cohort of elderly subjects (≥ 55 years) of The Rotterdam Study (n = 5144) in the Netherlands

Baseline dietary assessment: food Frequency Questionnaire (FFQ) containing 172 food items, categorized into 23 food groups

Dietary pattern identification: principal component analysis on 23 food groups that were based on similarities in:

- nutrient composition (e.g. apples and pears) or
- culinary use (e.g. mixed meals)

BMD measurement: DXA scan of the femoral neck, using a Lunar DPX-densitometer and DPX-IQ and PRODIGY software

- At baseline (1989- 1993) and
- at 3 follow up visits (between 1993 and 2004)

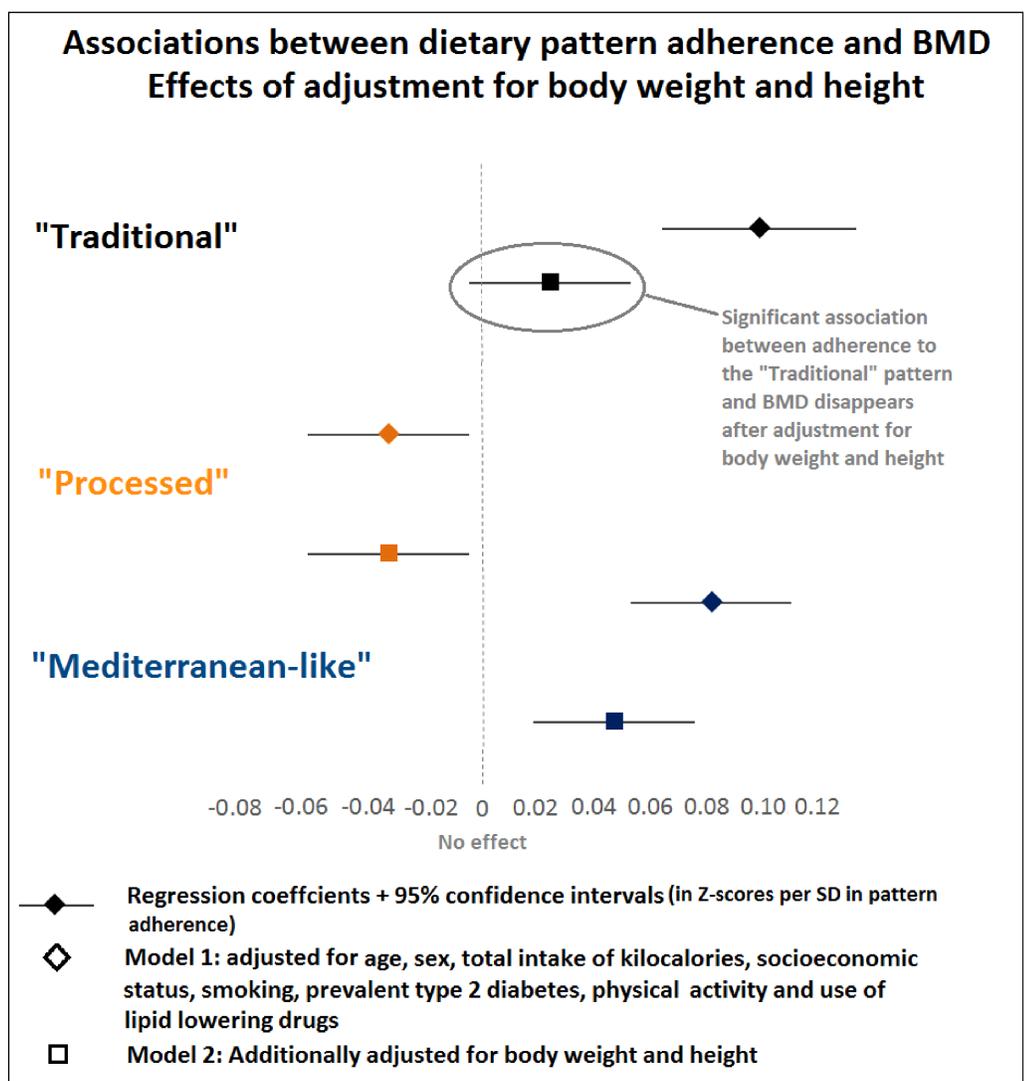
Results: dietary patterns identified

(by principal component analysis (PCA),

only food groups with factor loadings > 0.2 and < -0.2 are shown)

1. "Traditional" pattern	1. "Processed" pattern	1. "Mediterranean-like" pattern
High in	High in	High in
Unprocessed meat	Alcohol	Battered fish
Potatoes	Processed meat	Fatty fish
Processed meat	Mixed meals	Poultry
Vegetable oils	Eggs	Shell fish
Eggs		Eggs
Animal fats		Vegetables
		Fruits
		Alcohol
Low in	Low in	Low in
Soy	Fruits	Sweets
Mixed meals	Yoghurt	

Results: associations between adherence to dietary patterns and BMD



Independent of body weight:

- the "Mediterranean-like" pattern was associated with **high BMD**
- the "Processed" pattern was associated with **low BMD**

Implications

Recommendations favoring a "Mediterranean-like" and minimizing a "Processed" dietary pattern should be part of the Food Group Based Dietary Guidelines targeting improved bone health as part of overall health.

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