

Title: Plant-based diets and risk of frailty in community-dwelling older adults: the Seniors-ENRICA-1 cohort.

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Online Resource 1. Food items constituting the 18 food groups corresponding to the Plant-based Diet Indices (modified from Satija *et al.* (2016)).

FOOD GROUP	CONTENT	hPDI score	uPDI score
Healthy plant food			
Whole grains	Whole grain breakfast cereal, other cooked breakfast cereal, cooked oatmeal, dark bread, brown rice, other grains, bran, wheat germ, popcorn.	Positive	Reverse
Fruits	Raisins or grapes, prunes, bananas, cantaloupe, watermelon, fresh apples or pears, oranges, grapefruit, strawberries, blueberries, peaches or apricots or plums, fresh fruit juices.	Positive	Reverse
Vegetables	Tomatoes, tomato juice, tomato sauce, broccoli, cabbage, cauliflower, Brussels sprouts, carrots, mixed vegetables, yellow or winter squash, eggplant or zucchini, yams or sweet potatoes, spinach cooked, spinach raw, kale or mustard or chard greens, iceberg or head lettuce, romaine or leaf lettuce, celery, mushrooms, beets, alfalfa sprouts, garlic, corn, olives, fresh tomato juice.	Positive	Reverse
Nuts	Nuts, peanut or almond butter.	Positive	Reverse
Legumes	String beans, tofu or soybeans, beans or lentils, peas, lima beans, soy milk.	Positive	Reverse
Vegetable oils	Oil-based salad dressing, vegetable oil used for cooking.	Positive	Reverse
Coffee, tea	Coffee, decaffeinated coffee, tea, infusions.	Positive	Reverse
Unhealthy plant food			
Fruit juices	Packaged juices and juices from nectar.	Reverse	Positive
Refined grains	Refined grain breakfast cereal, white bread, white rice, pasta, bread, pizza mass, flour.	Reverse	Positive
Potatoes	French fries, baked or mashed potatoes, potato, or corn chips.	Reverse	Positive
Sugar-sweetened beverages	Colas with caffeine and sugar, colas without caffeine but with sugar, other carbonated beverages with sugar, noncarbonated fruit drinks with sugar, energetic drinks.	Reverse	Positive
Sweets and desserts	Chocolates, candy bars, candy without chocolate, cookies (home-baked and ready-made), biscuits, brownies, doughnuts, cake (home-baked and ready-made), sweet roll (home-baked and ready-made), pie (home-baked and readymade), jams or jellies or preserves or syrup or honey.	Reverse	Positive
Animal food			
Animal fat	Butter added to food, butter or lard used for cooking.	Reverse	Reverse
Dairy	Milk, cream, sour cream, ice cream, yogurt, cheese, cream cheese, kefir.	Reverse	Reverse
Egg	Eggs, omelette.	Reverse	Reverse
Fish & seafood	Canned tuna, dark meat fish, other fish, shrimp or lobster or scallops.	Reverse	Reverse
Meat	Chicken or turkey, bacon, hot dogs, processed meats, liver, hamburger, beef, pork or lamb mixed dish, beef, pork or lamb main dish, horse meat, bushmeat.	Reverse	Reverse
Miscellaneous animal-based foods	Pizza, chowder or cream soup, mayonnaise, or other creamy salad dressing, stuffed pasta.	Reverse	Reverse

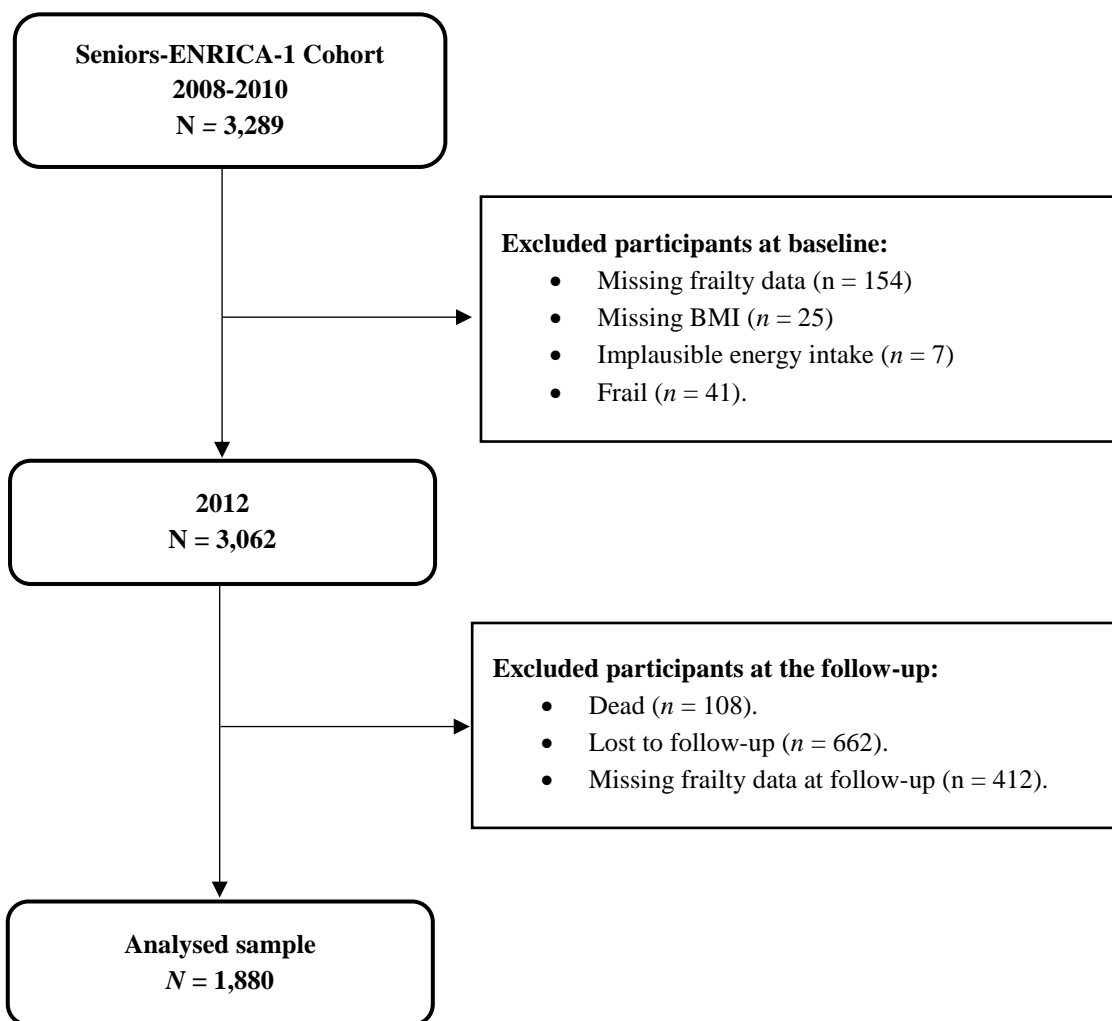
Abbreviations: hPDI, healthful Plant-based Diet Index; uPDI, unhealthful Plant-based Diet Index.

Food servings: whole grains 50 g, fruit 160 g, vegetable 236.6 g for green leafy and 118.3 for the rest, nuts 30 g, legumes 150 g, coffee 75 g, fruit juices 160 g, refined grains 150 g for rice and pasta and 75 for bread, potatoes 150 g, sugar-sweetened beverages 200 g, sweets 50 g, animal fat 12 g, dairy 200 g for milk and yogurt and 50 for cheese, eggs 55 g, fish and seafood 125 g, meat 125 g (42.5 if processed), miscellaneous animal-based foods servings vary depending on the composition.

Online Resource 2. Points assigned to quintiles of food groups for the construction of PDIs (from Satija *et al.*, 2016).

	Quintiles	hPDI	uPDI
Healthy plant foods (7 groups)		Positive scores	Reverse scores
	1st	1	5
	2nd	2	4
	3rd	3	3
	4th	4	2
5th	5	1	
Unhealthy plant foods (5 groups)		Reverse scores	Positive scores
	1st	5	1
	2nd	4	2
	3rd	3	3
	4th	2	4
5th	1	5	
Animal foods (6 groups)		Reverse scores	Reverse scores
	1st	5	5
	2nd	4	4
	3rd	3	3
	4th	2	2
5th	1	1	
Range		18-90	18-90

Online Resource 3. Flow diagram of included participants from the Seniors ENRICA-1 cohort.



Online Resource 4. Differences in participant's characteristics by inclusion status into the analytical sample.

	Included participants (N = 1880)	Lost to follow-up (n = 662)	Excluded due to missing frailty data (n = 566)
hPDI, range (18 – 90), mean (SD)	59.73 (5.63)	59.49 (5.79)	59.32 (5.59)
uPDI, range (18 – 90), mean (SD)	54.85 (5.32)	55.33 (5.80)	55.00 (5.71)
Sex, women, <i>n</i> (%)	971 (51.65)	392 (59.21)	312 (55.12)
Age, years, mean (SD)	68.65 (6.38)	69.57 (6.74)	68.46 (6.19)
Education, <i>n</i> (%)			
≤ Primary	997 (53.03)	437 (66.01)	327 (57.77)
Secondary	469 (24.95)	138 (20.85)	132 (23.32)
University	414 (22.02)	87 (13.14)	107 (18.90)
Smoking status, <i>n</i> (%)			
Current	221 (11.76)	87 (13.14)	58 (10.25)
Former	577 (30.69)	186 (28.10)	140 (29.68)
Never	1082 (57.55)	389 (58.76)	324 (60.07)
BMI, kg/m ² , <i>n</i> (%)			
< 25	368 (19.57)	126 (19.57)	111 (19.96)
25 – 29.9	937 (49.69)	274 (42.55)	257 (46.22)
≥ 30	575 (30.59)	244 (37.89)	188 (33.81)
Energy intake, kcal/day, mean (SD)	2031 (569)	1990 (776)	2064 (877)
Alcohol intake, servings/day, mean (SD)	1.05 (1.79)	0.91 (1.78)	1.08 (1.83)
Physical activity, METs*h/wk, mean (SD)	21.78 (15.38)	21.50 (14.52)	22.46 (15.02)
Prevalent diseases, <i>n</i> (%)			
Cardiovascular disease ^a	97 (5.16)	33 (4.98)	32 (5.65)
Type 2 diabetes mellitus	284 (15.11)	136 (20.54)	90 (15.90)
Cancer	34 (1.81)	21 (3.17)	9 (1.59)
Chronic lung disease ^b	143 (7.61)	55 (8.31)	29 (5.12)
Osteomuscular disease ^c	893 (47.50)	352 (53.17)	297 (52.47)
Depression	138 (7.34)	76 (11.48)	53 (9.36)
Medicines per day, <i>n</i> (%)			
0	504 (26.81)	152 (22.96)	165 (29.15)
1 – 3	993 (52.82)	359 (54.23)	274 (48.41)
4 – 6	332 (17.66)	128 (19.34)	109 (19.26)
> 6	51 (2.71)	23 (3.47)	18 (3.18)

Abbreviations: p, points; SD, standard deviation; BMI, body mass index.

a Including myocardial infarction, stroke, and heart failure.

b Including asthma and chronic obstructive pulmonary disease.

c Including osteoarthritis, rheumatoid arthritis, and hip fracture.

Online Resource 5. Secondary analyses. Odds ratios (95% CI) for the occurrence of frailty by tertiles of plant-based diet indices over 3.3 years of follow-up in the Seniors ENRICA-1 cohort.

	Tertile 1 (lowest)	Tertile 2	Tertile 3 (highest)	<i>P</i> -trend
Excluding pre-frail participants (N = 972)				
n/N	41/234	55/388	40/350	
hPDI	Ref.	0.56 (0.30 – 1.07)	0.40 (0.20 – 0.82)	0.014
n/N	37/464	51/321	48/187	
uPDI	Ref.	1.67 (0.90 – 3.07)	3.84 (1.96 – 7.50)	< 0.001
Excluding participants with prevalent diseases (N = 1294)				
n/N	18/293	31/528	20/473	
hPDI	Ref.	0.65 (0.32 – 1.32)	0.40 (0.18 – 0.88)	0.021
n/N	17/610	24/442	28/242	
uPDI	Ref.	1.60 (0.80 – 3.21)	3.03 (1.50 – 6.14)	0.002
Among participants self-reportedly healthy and independent in instrumental activities of daily living (n = 1204)				
n/N	14/281	12/479	8/444	
hPDI	Ref.	0.46 (0.18 – 1.14)	0.29 (0.10 – 0.87)	0.025
n/N	9/611	14/386	11/207	
uPDI	Ref.	2.78 (1.07 – 7.20)	3.54 (1.28 – 9.78)	0.011
Excluding weight loss from the definition of frailty (N = 1880)				
n/N	41/429	54/765	40/686	
hPDI	Ref.	0.62 (0.35 – 1.10)	0.53 (0.28 – 0.99)	0.058
n/N	37/879	51/639	48/362	
uPDI	Ref.	1.41 (0.82 – 2.44)	2.09 (1.17 – 3.74)	0.013
Alternative hPDI: considering fish, eggs and dairy as healthy products (N = 1880)				
Range	41 – 55 p	56 – 61 p	62 – 80 p	
n/N	30/309	54/701	52/870	
Modified hPDI	Ref.	0.65 (0.38 – 1.12)	0.40 (0.23 – 0.68)	< 0.001

Abbreviations: CI, confidence interval; Ref., reference.

All models: adjusted for sex, age, educational level (primary, secondary, university), alcohol consumption, smoking status (current, former, never), BMI (< 25, 25 – 29.9, ≥ 30), energy intake, physical activity, prevalent diseases (type 2 diabetes mellitus, cardiovascular disease [myocardial infarction, stroke, or heart failure], chronic lung disease [asthma or chronic obstructive pulmonary disease], osteomuscular disease [osteoarthritis, rheumatoid arthritis or hip fracture], cancer and depression), number of medicines consumed (0, 1-3, 4-6, > 6).