

HIGH PROPORTION OF OLDER PEOPLE WITH NORMAL NUTRITIONAL STATUS HAVE POOR NUTRIENT INTAKES AND LOW DIET-QUALITY.

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Introduction: Mini Nutritional Assessment (MNA) is a well-validated instrument examining nutritional status of people >65 years. Less is known how diet-quality and nutrient intakes are associated with MNA-class. Aim of this study was to examine whether MNA finds older people at risk of developing malnutrition due to low nutrient intakes and to find out how diet-quality and nutrient intake are associated with MNA.

Methods: This cross-sectional study combined data sets of five nutritional studies. Healthy home-dwelling older people (n=54), home-dwelling older men from Helsinki Business-men study (n=68), home-dwelling people with Alzheimer's disease (n=99), and their spousal caregivers (n=97), older people in Parvoo Sarcopenia and Nutrition Trial (n=208), and residents of Helsinki assisted living facilities [n=374]. Nutritional status was assessed using MNA, and nutrient intakes were retrieved from 1-3 day food records. Nutrient intakes were divided according to MNA-class (normal, risk of malnutrition, malnutrition). Micronutrient intakes were compared with average requirement to determine sufficient/insufficient intakes. Energy, protein, fibre and polyunsaturated fatty acids intakes were compared with recommended nutrient intakes.

Results: In people with normal nutritional status, a high proportion had low protein and micronutrient intakes. The poorest nutrient intakes were observed among the malnourished-group whereas the highest in the normal nutritional status-group. This finding was consistent in all nutrients except total energy, protein (g/BW kg), total vitamin D, and calcium, when including supplemental use.

Conclusions: MNA status was consistently associated with nutrient intakes and diet-quality. However, a high proportion of participants with poor nutrient intakes and low diet-quality were also observed in people with normal nutritional status. Thus, even MNA may not find all those with poor nutrient intakes that are at risk for developing malnutrition early enough. It may be helpful to use a food diary or an appropriate food frequency questionnaire together with MNA when concerns of older persons' nutrition is raised.

Table 1. Energy, protein, carbohydrate and micronutrient intakes according to nutritional status measured by Mini Nutritional Assessment (MNA)

Energy and nutrient intakes	Malnutrition* n=72	Risk of malnutrition* n=449	Normal nutritional status* n=379	p-value ¹
Energy total kcal, (range)				
Among females	1553 (823–2316)	1598 (257–2673)	1665 (604–3324)	0.03
Among males	1708 (509–2975)	1829 (630–3967)	1776 (828–3320)	0.80
Protein total g, mean (range)	55.8 (16.8–98.5)	65.6 (10.6–163.4)	73.3 (18.2–172.5)	<0.001
g/kg BW/d, mean (range)	1.0 (0.3–1.7)	1.0 (0.2–3.6)	1.0 (0.3–2.6)	0.15
Carbohydrates total g, mean (range)	209.0 (51.7–408.6)	205.0 (32.1–510.3)	195.1 (47.4–510.5)	0.014
Sugar	68.9 (7.6–185.1)	52.7 (0.8–162.2)	39.2 (3.8–193.4)	<0.001
Fiber	13.2 (2.1–31.4)	16.8 (2.4–40.5)	20.9 (4.6–53.2)	<0.001
Fat total g, mean (range)	56.4 (24.8–100.0)	60.4 (8.4–133.7)	66.6 (24.4–240.7)	<0.001
SFA	23.7 (10.6–53.1)	24.6 (2.4–62.8)	26.2 (8.7–89.1)	0.008
MUFA	16.2 (5.2–45.7)	16.3 (1.9–67.7)	20.2 (5.4–133.8)	<0.001
PUFA	7.3 (1.6–34.1)	11.2 (0.9–43.9)	13.5 (2.2–43.2)	<0.001
Vitamin C mg, mean (range)	91 (8–266)	95 (0–425)	103 (6–384)	0.04
Folate µg, mean (range)	195 (36–380)	232 (31–998)	264 (63–1453)	<0.001
Thiamine mg, mean (range)	1.1 (0.3–2.3)	1.2 (0.1–3.8)	1.2 (0.3–2.7)	0.03
Vitamin E mg, mean (range)	5.9 (1.2–14.8)	7.2 (1.2–29.1)	9.7 (2.1–31.3)	<0.001
Vitamin A µg, mean (range)	583 (137–4373)	841 (66–12280)	1111 (82–18516)	<0.001
Total vitamin D µg, mean (range)	18.4 (1.2–47.5)	17.2 (1.0–68.7)	18.9 (1.2–97.9)	0.12
Total calcium mg, mean (range)	1391 (310–3017)	1344 (161–3278)	1255 (177–2884)	0.037
Iron mg, mean (range)	8.1 (2.3–34.7)	9.2 (1.3–27.8)	10.3 (2.4–36.2)	<0.001
Zinc mg, mean (range)	8.7 (2.4–15.1)	10.0 (1.9–30.7)	10.9 (3.1–24.5)	<0.001

* Measured with Mini Nutritional Assessment (MNA) [Vellas et al. 1999]. SFA= saturated fatty acids; MUFA= monounsaturated fatty acids; PUFA= polyunsaturated fatty acids. ¹ Differences between the groups for categorical variables were tested with X²-test or Fischer exact test and for non-normally distributed continuous variables with Kruskal-Wallis test.

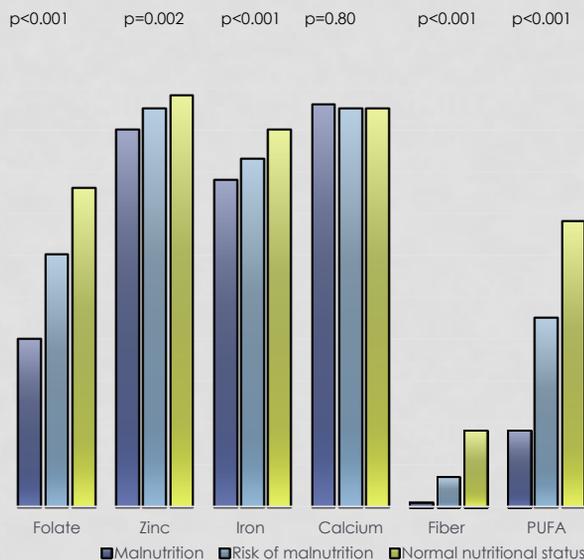
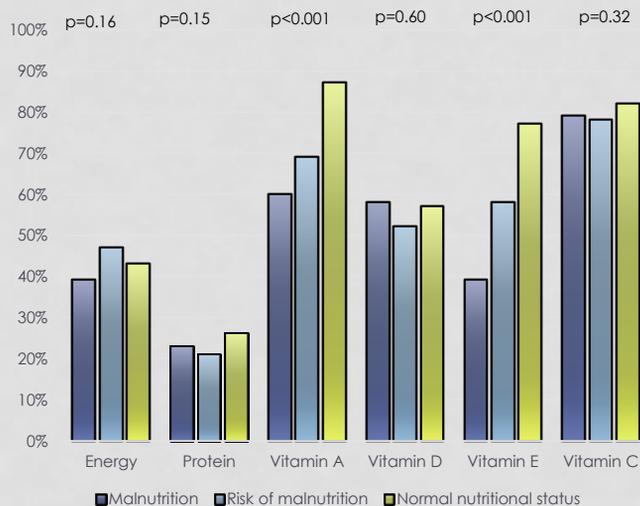


Figure 1 and 2. Proportion of people according to nutritional status measured by MNA reaching recommended intakes for energy, protein, fiber and Polyunsaturated fatty acids (PUFA) and sufficient intakes of micronutrients reaching average requirement.