

Dietary intake and mealtime habits in relation to dietary requirements in elderly living at sheltered housing in Sweden

part of the study

“Diet and nutritional routines in the care of the elderly in Malmo, Sweden”

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Introduction

Providing elderly living at sheltered housing with a dietary intake that meets individual needs is an essential task for all health care professionals in nutritional care. Previous studies in Sweden show that about 28% of the patients can be classified as having protein and energy malnutrition [1]. The aim was to study the dietary intake and mealtimes in relation to dietary requirements in elderly living at sheltered housing in Sweden as only a few studies have analysed both macro- and micronutrient intake.

Methods

A 7-day dietary record was completed in 166 elderly, 129 women and 37 men, with a mean age of 85 years (SD ± 7.7 years; range 53-104 years), living at four different sheltered housings, as part of the study “Diet and nutritional routines in the care of the elderly in Malmo, Sweden”.

The dietary record form is developed for use in clinical settings and designed to be self explanatory to nursing staff. The instrument is validated [2] and tested for reproducibility [3]. It consists of a “Food and Fluid Chart” for individual dietary recording over a 24-hour period. All food and drink during a 24-hour day was noted on the chart, including snacks and items bought by the elderly or brought by relatives. The food-intake at lunch and supper were described by standardised portion sizes using the quartile method (0, 1/4, 1/2, 3/4, 1/1). Breakfast, snacks and beverages were assessed separately using household measuring devices. The time of serving all items was noted on the chart. The nursing staff was educated before the study and they were supplied with instructions.

The nursing staff prepared the meals at the wards. Almost 300 different recipes of dishes have been used and calculated.

Dietary requirements were calculated based on the Nordic Recommendations 1996 for recommended daily intake [4]. The Nordic recommendations (NNR96) were completed with Swedish recommendations for hospital nutrition because of different recommendations for macronutrients [5]. The term “minimum safety level” is the lower limit of intake recommended in the NNR96 since a “prolonged intake below these levels may induce a risk of deficiency” [4]. Energy requirements have been calculated based on Swedish recommendations for hospital nutrition [5]. The equation of 33 kcal/kg bodyweight minus 10% for age, since elderly persons at sheltered housing often are less physically active, was used.

Results

Mean daily energy intake in women was 1591 kcal and in men 1894 kcal. According to the calculated individual energy needs an insufficient intake was recorded for 63% of the elderly. The mean intake was 28 kcal/kg bodyweight in women and 27 kcal/kg bodyweight in men. The intake of vitamin A, C, D, E, folate, iron and selenium were below the recommended daily intake for 40-100 % of the elderly and many elderly did not even reach the minimum safety-level (see Table 1).

Only 16 % of the elderly received dietary supplements (liquid dietary supplements or food fortification) on a daily basis and 30 % of the elderly received dietary supplement at sometime during the dietary registration period.

Most of the dietary intake, 96%, and fluid intake, 91%, took place during 10 hours in daytime. The mean night period without any food was almost 15 hours and 14 hours for fluids. The energy intake for food from main meals was 86% and 14% was snacks. Corresponding figures for fluid was 75% and 25%.

Conclusion

Previously studies at nursing homes and sheltered housing in the same town have showed similar results [6]. A large number of elderly living in sheltered housing are not eating according to dietary requirements and mealtime recommendations, especially the between meals snacks are insufficient. Many of the elderly living at sheltered housing have an insufficient dietary intake and are served all meals in too few hours during daytime.

There is a great need to develop nutritional routines and educate staff in nutritional care. All elderly living at sheltered housing in Sweden should be offered a minimum of six meals daily and daily multivitamin and multimineral supplementation.

Table 1. Dietary intake and Nordic Nutrition Recommendations (NNR96) for recommended dietary intake (RDI) levels in women and men. Values are given as mean daily intake, SD (\pm) and range. Values given in brackets in the columns with RDI correspond to minimum safety-level.

		Women (n=129)			Men (n=37)	
	Dietary intake	RDI for women >75 years and minimum safety level	Below RDI and minimum safety level (%)	Dietary intake	RDI for men >75 years and minimum safety level	Below RDI and minimum safety level (%)
Energy (kcal)	1591 \pm 337 (758-2398)	1768	63	1894 \pm 436 (1239-3162)	2122	65
Protein (g)	56,1 \pm 13,8 (23,3-91,9)	66	70	67,3 \pm 16,4 (42,5-103,0)	80	70
Fat (g)	66,3 \pm 17,3 (24,7-109,0)	69	50	77,9 \pm 20,2 (49,8-136,0)	83	57
Carbohydrates (g)	189,8 \pm 41,6 (89,0-324,0)	221	70	225,2 \pm 57,4 (140,0-381,0)	265	76
Alcohol (g)	0,8 \pm 1,8 (0-9,4)	-		2,6 \pm 6,5 (0-37,6)	-	
Dietary fiber (g)	10,6 \pm 2,9 (3,9-18,5)	18	96	12,7 \pm 3,8 (6,3-26,7)	21	97
Vitamin A (μ g)	865,6 \pm 338,0 (367,0-3395,0)	800,0 (600,0)	46 (16)	1036,2 \pm 383,8 (534,0-1973,0)	900,0 (600,0)	46 (8)
Vitamin D (μ g)	4,2 \pm 1,7 (1,1-9,5)	10,0 (2,5)	100 (15)	4,8 \pm 1,8 (2,2-9,4)	10,0 (2,5)	100 (3)
Vitamin E (mg)	5,8 \pm 1,9 (2,4-14,7)	8,0 (3,0)	89 (5)	7,1 \pm 4,2 (3,4-29,4)	10,0 (4,0)	95 (5)
Thiamin (mg)	1,1 \pm 0,3 (0,5-1,8)	1,0 (0,5)	30 (0)	1,3 \pm 0,4 (0,7-2,0)	1,1 (0,6)	32 (0)
Riboflavin (mg)	1,4 \pm 0,4 (0,6-2,9)	1,2 (0,8)	26 (4)	1,6 \pm 0,5 (0,9-2,6)	1,3 (0,8)	30 (0)
Niacin (mg)	21,6 \pm 5,5 (8,7-35,4)	13,0 (9,0)	6 (1)	26,2 \pm 6,1 (14,9-39,6)	15,0 (11,0)	3 (0)
Vitamin B6 (mg)	1,3 \pm 0,4 (0,6-3,8)	1,1 (0,9)	33 (16)	1,5 \pm 0,4 (0,8-2,8)	1,2 (1,0)	30 (11)
Folate (μ g)	176,9 \pm 55,3 (71,0-367,0)	300,0 (100,0)	95 (5)	201,5 \pm 71,5 (110,0-388,0)	300,0 (100,0)	89 (0)
Vitamin B12 (μ g)	4,5 \pm 1,6 (1,2-9,6)	2,0 (1,0)	5 (0)	5,3 \pm 1,8 (2,5-10,9)	2,0 (1,0)	0 (0)
Vitamin C (mg)	81,2 \pm 47,1 (13,5-262,0)	60,0 (10,0)	42 (0)	85,1 \pm 56,0 (15,0-239,0)	60,0 (10,0)	46 (0)
Calcium (mg)	929,6 \pm 288,5 (464,0-1758,0)	800,0 (400,0)	39 (0)	1065,7 \pm 377,3 (463,0-1804,0)	800,0 (400,0)	32 (0)
Iron (mg)	6,0 \pm 1,5 (2,1-10,0)	10,0 -	99 -	7,2 \pm 1,8 (4,1-12,5)	10,0 (7,0)	89 (51)
Zink (mg)	7,5 \pm 1,9 (3,1-11,9)	7,0 (4,0)	40 (2)	9,3 \pm 2,3 (5,4-14,3)	9,0 (5,0)	46 (0)
Selenium (μ g)	29,5 \pm 7,7 (10,2-47,3)	40,0 (20,0)	93 (12)	34,7 \pm 10,2 (18,3-75,9)	50,0 (20,0)	97 (3)
Fluid (mL)	1176 \pm 272 (565-2220)	-		1358 \pm 390 (642-2482)	-	

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