

# MNA Related to Energy Intake in Elderly in Swedish Sheltered Housing

*part of the study*

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

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### **Background**

The nutritional screening instrument “Mini Nutritional Assessment” (MNA) has been validated in many settings, but few studies have been reported on MNA related to energy intake in frail elderly living in sheltered housing [1-3].

### **Objective**

To study the correlation of MNA to energy intake in frail elderly living in sheltered housing.

### **Design**

A 7-day dietary record was completed in 146 frail elderly, 113 women and 33 men, with a mean age of 85 years (see Table 1) living at four different sheltered housings, as part of the study “Diet and nutritional routines in the care of the elderly in Malmo, Sweden”. A total of 42% of the elderly participating in the study scored an F or G on the Katz ADL index [4], indicating that they were highly dependent on others in their activities of daily life (see Table 1).

The dietary record form is developed for use in clinical settings and designed to be self explanatory to nursing staff. The instrument is validated [5] and tested for reproducibility [6]. 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.

Risk of malnutrition was assessed with the Swedish version of MNA [7].

### **Results**

According to MNA 14% was classified as “well nourished”, 58% as “at risk of malnutrition” and 28% as “malnourished”.

The elderly classified as “malnourished” according to MNA had less energy intake than those classified as “well nourished”. The correlation between energy intake and MNA was statistically significant in women ( $P=0.020$ ) but not in men. However, the energy intake per kg body weight showed the elderly classified as “malnourished” having a higher energy intake than those classified as “well nourished” by MNA. Also here was the correlation

between energy intake and MNA statistically significant in women ( $P=0.038$ ) but not in men. See Table 2.

### **Conclusions**

The results showed a weaker correlation between MNA classification and energy intake of frail elderly females in sheltered housing than earlier presented results [3, 8]. The figures for males were not statistically significant possibly due to a small sample. Further evaluation of MNA in Swedish settings would be of value. Comparisons between results on MNA and energy intake based on studies of frail elderly are difficult, since there not seem to be any consensus on how to report the results. Data on elderly males are scarce, and therefore less conclusive, than data on females.

The energy intake by kcal per kg body weight showed that malnourished frail elderly are getting a higher energy intake per kg body weight than elderly with a satisfactory MNA score. Furthermore, the frequency of elderly “at risk of malnutrition” was quite high. As have been shown in previous studies in geriatric patients [9] and in elderly patients in surgical care [10], these results indicate non-individualized care, where all residents are served the same amount of food.

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Table 1. Age, body-weight, BMI, Katz ADL-index and diagnoses by gender.

|                         | <b>Women (n=113)</b>       | <b>Men (n=33)</b>         | <b>All (n=146)</b>         |
|-------------------------|----------------------------|---------------------------|----------------------------|
| <b>Age (years)</b>      | 85.7 ±6.9<br>(68-104)      | 82.9 ±9.4<br>(53-97)      | 85.1 ±7.6<br>(53-104)      |
| <b>Body-weight (kg)</b> | 59.8 ±13.3<br>(33.4-105.6) | 71.1 ±12.3<br>(39.3-95.3) | 62.3 ±13.9<br>(33.4-105.6) |
| <b>BMI</b>              | 23.8 ±4.8<br>(14.3-39.4)   | 24.2 ±3.3<br>(17.1-30.9)  | 23.9 ±4.5<br>(14.3-39.4)   |
|                         |                            |                           |                            |
| <b>Katz ADL-index</b>   |                            |                           |                            |
| A-B                     | 28 (25%)                   | 8 (24%)                   | 36 (24%)                   |
| C-E, O                  | 31 (27%)                   | 18 (55%)                  | 49 (34%)                   |
| F-G                     | 54 (48%)                   | 7 (21%)                   | 61 (42%)                   |
|                         |                            |                           |                            |
| <b>Diagnoses</b>        |                            |                           |                            |
| Dementia                | 53 (47%)                   | 14 (42%)                  | 67 (46%)                   |
| Stroke                  | 14 (12%)                   | 7 (21%)                   | 21 (14%)                   |
| Orthopaedic             | 10 (9%)                    | 1 (3%)                    | 11 (8%)                    |
| Cancer                  | 7 (6%)                     | 0                         | 7 (5%)                     |
| Other                   | 29 (26%)                   | 11 (33%)                  | 40 (27%)                   |

Table 2. Correlation of MNA classification and energy intake of elderly subjects by gender (n = 146).

| <b>Subjects by gender</b>                           | <b>Well<br/>nourished<br/>≥24 points<br/>n=20<br/>Mean ± SD<br/>(range)</b> | <b>At risk of<br/>malnutrition<br/>17-23.5 points<br/>n=85<br/>Mean ± SD<br/>(range)</b> | <b>Malnourished<br/>&lt;17 points<br/>n=41<br/>Mean ± SD<br/>(range)</b> | <b>Mann-<br/>Whitney's<br/>test<br/><br/>P value</b> |
|---|---|--|--|--|
| <i>Women (n=113)</i><br><b>Energy intake (kcal)</b> | 1759 ±278<br>(1208-2171)  | 1633 ±326<br>(768-2398)  | 1496 ±322<br>(925-2171)  | 0.020  |
| <b>Energy intake per kg body<br/>weight (kcal)</b>  | 25.7 ±5.4<br>(18.6-38.0)  | 27.3 ±7.4<br>(13.2-50.6)   | 30.2 ±6.9<br>(15.7-44.8)   | 0.038  |
| <i>Men (n=33)</i><br><b>Energy intake (kcal)</b>    | 2153 ±218<br>(1828-2288)  | 1915 ±435<br>(1337-3162)   | 1879 ±541<br>(1239-2751)   | 0.274  |
| <b>Energy intake per kg body<br/>weight (kcal)</b>  | 29.2 ±7.8<br>(19.2-36.1)  | 26.7 ±6.7<br>(14.6-43.9)   | 30.1 ±8.9<br>(16.5-44.7)   | 0.599  |

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