Fall incidents decrease after short-term oral nutritional intervention in malnourished older patients: a randomized controlled trial

Floor Neelemaat
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Background

Milne et al. 2009

*Protein and energy supplementation in elderly people at risk from malnutrition*

62 trials, > 10,000 patients:

- Increase in body weight
- No beneficial effect on mortality
- In subgroup of malnourished people complications ↓ and mortality ↓

Still:

- Lack of trails on functional outcome
- Frequent problems with study design and quality
Introduction

Therefore, RCT with focus on clinical outcome

First results:

Post-discharge nutritional support in malnourished older patients leads to

1. Body weight ↑
2. Functional limitations (climbing up a stairs, dressing) ↓
3. No extra health care costs
4. No significant differences in QoL, physical activities and hand grip strength

FALLS ???

Neelemaat F et al. Post-discharge nutritional support in malnourished elderly individuals improves functional limitations
Why falls?

- Decreased physical functioning, loss of independency, nursing home admittance and death
- Increased health care costs
- Falls are associated with malnutrition

What is the effect on fall incidents of oral nutritional supplements in malnourished older patients from hospital admission, until three months after discharge?
Population

Inclusion criteria

- Older patients (≥ 60 years of age)
- Admitted to the wards of internal medicine of the VU University Medical Center
- Malnourished
  - BMI < 20 and/or
  - ≥ 5% unintentional weight loss in the previous month and/or
  - ≥ 10% unintentional weight loss in the previous six months

Exclusion criteria

- Senile dementia / confusion
- Can not understand the Dutch language
- Not able to or willing to give informed consent
Methods design

Intervention group

- Energy and protein enriched diet
- 2 bottles / day ONS (Nutridrink®, Nutricia, 600 kcal / day and 24 g protein / day)
- 1x / day 400 IU vitamin D3 plus 500 mg calcium (Calci-Chew D3®, Nycomed bv)
- Telephone counselling by dietitian (every other week)

Control group

- Usual care (nutritional support only on prescription by the treating physician or dietitian)
- In general, no nutritional support after discharge
Methods measurements

Measurements
- Baseline and clinical characteristics (sex, age)
- Dietary intake (energy and protein intake)
- Biochemical parameters (serum vitamin D)
- Frequency of falling (validated diary)
  - Number of patients who fell
  - Number of fall incidents
  - Number of fall incidents per faller

Hospital admission 3 months after discharge
Results baseline characteristics

n = 210

74 years (SD 9.5)

55% female

No significant differences between groups at baseline

Potential fall risk factors did not differ between groups e.g.

- body weight
- hand grip strength
- functional limitations
- physical performance
Results  clinical outcomes

Effects of nutritional intervention (95% CI)

- +280 kcal
- +11 g
- +10.9 nmol/l
## Results  clinical outcomes

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th>Control group</th>
<th>Effect</th>
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<tbody>
<tr>
<td>Patients who fell</td>
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<tr>
<td>Total number of patients who fell (Total number of fall incidents)</td>
<td>10 (10%) (16)</td>
<td>24 (23%) (41)</td>
<td>0.36 (p = 0.018)*</td>
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<td>Mean number of fall incidents</td>
<td></td>
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<td>Among the whole group (n=I:76 / C:75)</td>
<td>0.21 (SD 0.57) 1.6 (SD 1.1)</td>
<td>0.55 (SD 0.84) 1.7 (SD 0.91)</td>
<td>0.001# 0.550#</td>
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<tr>
<td>Among fallers (n=I:10 / C:24)</td>
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* Hazard ratio

# Mann Whitney U
Kaplan-Meier curve for the time to a fall incident

Results clinical outcomes

No. of patients at risk

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Patients not fallen
Discussion

• First nutritional intervention study with short-term (3 mo.) effects on patients who had fallen

• Reduction of patients with falls of > 60%

• High adherence to study protocol
  80% ONS
  96% calcium/vitamin D
  96% dietetic counselling

• Low dose of vitamin D (400 IU/d)

• Multi-component intervention, which (combination of) component is/are effective?
Short-term nutritional intervention decrease the number of falls in malnourished older patients