Effect of nutritional intervention
in patients at risk of disease-related malnutrition

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Prevalence of malnutrition

Malnutrition / at risk in Europe is reported present in

• 5% of the entire population

• 10% in those over 65 years

• 15% in ages 75-80 living at home

• 35-40% of all hospital admissions

(O Ljungqvist. 31th ESPEN Congress, Vienne 2009)
Prevalence in cancer patients

- Malnutrition is seen in 40-85% of patients with cancer during some part of the cancer treatment.

- Patients with head and neck, lung and gastrointestinal cancers are most at risk for nutritional problems.
Causes to malnutrition

The aetiology of malnutrition in patients with cancer is multifactorial (Capra, 2001)

Tumour can depending on tumour size, type and stage cause

- systemic effects such as anorexia and altered metabolism
- local effects such as obstruction, malabsorption, vomiting, and diarrhoea

Side-effects of treatment

Psychological and emotional stress
Consequences of malnutrition during cancer treatment

- Weight loss
- Impaired immune function
- Reduced resistance to disease
- Increased morbidity and mortality
- Increased complications and side-effects of cancer treatment
- Reduction of treatment efficacy
- Increased overall cost of care
Malnutrition

- Can be prevented
- Can be treated
- Early detection of nutritional risk would allow early intervention, which may prevent later complications
The aim of this study were to evaluate the effect of a nutritional intervention, during the intervention and 3 month after ended intervention, in patients at risk of disease-related malnutrition (DRM) defined by the Nutritional Risk Screening 2002.

In addition, the prevalence of patients at risk for DRM was estimated during the study period.
Methods

- During 3½-month period 386 (85%) patients were screened for risk of DRM
- 63 at risk were recruited to a controlled trial with historical control group
- The first 20 patients constituted the control group (CG)
- The following 43 constituted the intervention group (IG)
- Patients are given two-week stays at the institution
## Characteristics

### Table 1 Baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>37</td>
<td>19</td>
<td>-</td>
</tr>
<tr>
<td>Age (years, mean + SD)</td>
<td>69±9,9</td>
<td>67±11,96</td>
<td>-</td>
</tr>
<tr>
<td>Sex (%M)</td>
<td>64</td>
<td>65</td>
<td>-</td>
</tr>
<tr>
<td>BMI (kg/m2, mean+SD)</td>
<td>21,8±4,22</td>
<td>24,7±4,93</td>
<td>0,019</td>
</tr>
<tr>
<td>Total score NRS-2002 (0-7, mean+SD)</td>
<td>3,7±0,60</td>
<td>3,5±0,61</td>
<td>ns</td>
</tr>
<tr>
<td>Score for nutritional status (0-3, mean+SD)</td>
<td>1,67±0,57</td>
<td>1,5±0,70</td>
<td>ns</td>
</tr>
<tr>
<td>SF-12, Mental health score (mean+SD)</td>
<td>42±12,60</td>
<td>44±11,38</td>
<td>ns</td>
</tr>
<tr>
<td>SF-12, Physical functioning score (mean+SD)</td>
<td>30±8,45</td>
<td>29±10,84</td>
<td>ns</td>
</tr>
<tr>
<td>Physical activity score (1-5, mean+SD)</td>
<td>2,8±1,12</td>
<td>2,9±0,99</td>
<td>ns</td>
</tr>
<tr>
<td>Newly operated (%)</td>
<td>67</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Decreased appetite (%)</td>
<td>60</td>
<td>60</td>
<td>ns</td>
</tr>
<tr>
<td>Difficulty chewing/swallowing (%)</td>
<td>17</td>
<td>25</td>
<td>ns</td>
</tr>
<tr>
<td>Constipation/diarrhea (%)</td>
<td>29</td>
<td>40</td>
<td>ns</td>
</tr>
<tr>
<td>Mouth sores/dryness (%)</td>
<td>50</td>
<td>40</td>
<td>ns</td>
</tr>
</tbody>
</table>
## Diagnosis

### Table 2 Primary diagnosis at admission

<table>
<thead>
<tr>
<th>Diagnosis (%)</th>
<th>Intervention (n=43)</th>
<th>Control (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-vascular disease</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>Respiratory diseases</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Neurological disorders</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gastrointestinal disorders</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Various internal medicine disorders</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Cancer/gastrointestinal disorders</td>
<td>31</td>
<td>10</td>
</tr>
<tr>
<td>Other cancer diagnoses</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Orthopedic disorders</td>
<td>7</td>
<td>30</td>
</tr>
</tbody>
</table>
Data collection

Data were collected on:

- Nutritional risk score
- Body weight
- BMI
- Energy and protein intake
- Quality of life
- Changes in physical activity
Data collection

Data from the subjects were collected:

- upon admission to the institution (T1)
- at the time of discharge (T2)
- three months after discharge (T3)
Nutritional intervention

- Patients in the control group received nutritional treatment according to the standard procedure of the institution.

- Intervention group received extra nutritional care with focus on treatment and prevention of malnutrition during and after institutional care.
Nutritional intervention IG

- Individual dietetic consultations were individual nutrition care plan were worked out and followed up

- Four educational meetings in group setting covering different topics with focus on increasing patients knowledge regarding treatment and prevention of malnutrition, during institutional stay and after discharge
Results screening

<table>
<thead>
<tr>
<th>Month</th>
<th>Number screened</th>
<th>In risk of DRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/9-6/10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/10-10/12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 2008</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Screening

- Number screened
- In risk of DRM
Results energy intake

![Graph showing energy intake over time for IG and CG groups.](image-url)
Results protein intake

[Graph showing protein intake over time for IG and CG groups. The x-axis represents Baseline, End treatment, and 3 months, while the y-axis represents Grams. The graph indicates a significant increase in protein intake for IG compared to CG at the end of the intervention period.]
Results weight change

Baseline  | End treatment  | 3 month
---|---|---
IG | CG

%
Results

- Changes in nutritional risk score, QoL and PA were not significantly different between the two study groups at any time.
Conclusion

- The findings suggest that screening for DRM at admission to institutions followed by a relatively short structured nutritional care programme was beneficial to the patients at risk of DRM by improved long term body weight, and energy and protein intake.
Aknowledgement

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- Ellen Øverberg  Ergotherapist. Godthaab Health and Rehabilitation
- Ketil Berstad  MD, DMSc, Head dept. of health, Godthaab Health and Rehab.
- Ingvild Veset  Registered dietitian. Godthaab Health and Rehabilitation
- Monica Sørensen  Head of intake. Godthaab Healt and Rehabilitation
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