Better malnutrition treatment for less food waste

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Le gaspillage alimentaire et la nutrition dans les établissements de santé: Des liens pour développer une économie circulaire

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Introduction

Malnutrition is common in sick subjects (especially hospital patients) but is frequently not recognised or underestimated.¹

Approximately 31% of all hospital patients are considered malnourished or at nutritional risk. In elderly patients and in some settings such as in oncology this rate is even higher.¹

Almost two-thirds of general and acute hospital beds are used by people aged > 65 years,³ in which malnutrition is twice as common as in < 65 years.⁴

Between 30 and 60% of hospital food is not consumed and therefore wasted, sometimes because catering practices do not meet the needs of the sick.²
Prognostic impact of malnutrition

Malnutrition

Morbidity ↑
- wound healing ↓
- Complications ↑
- infections ↑
- falls ↑
- convalescence ↓

Mortality ↑

Treatment ↑

Length of hospital stay ↑
- 2.4 – 7.2 days

COSTS ↑
- between 1640 – 5829 uro

QUALITY OF LIFE ↓

Food waste is a great challenge for hospitals:

Uneaten food in hospitals is paid at least three times:

- when the food is purchased and prepared,
- expenses for organic waste disposal,
- when the patients are poorly nourished or even malnourished, leading to poorer outcomes of their medical treatment.
How we tried to rise malnutrition awareness?

- In 2013 General hospital Novo mesto set a lot of priority tasks to improve nutrition support and rise malnutrition awareness of employees.

- Process included all levels of nutrition management:
  - foodservice,
  - dietitian (1) and
  - nutrition support teams (mainly nurses).
Malnutrition indicators in GH Nm 2010 - 2017

METHODS:
Non-invasive methods were used to indirectly evaluate malnutrition in GH Nm;
• nutrition screening tool *Nutritional risk screening 2002*,
• Nutrition day worldwide questionnaires
• a review of the patient's electronic health records and
• measurements of edible part of food waste (without bones, peelings...).

What was done – main projects?
1. A cross-sectional study of a nutritional risk assessment with the NRS 2002 (MIS tools for dialysis patients) - 2012 and 2016
   Proportion of patients with malnutrition risk
2. International cross-sectional study "Nutrition day worldwide„, - six times from 2010 to 2015
   Proportion of patients who ate half or less
   Proportion of patients who consumed less food than usual in the last week
   Proportion of patients reporting loss of weight in the last 3 months
3. Evaluation of measurable activities in the hospital – from 2013 -
   Number of malnurished patients with documented nutrition intervention
   Time from hospitalization to first dietitian visit
   Proportion of patients with prescribed special diet
4. Pilot project „Let’s not waste food!“ (2017)
   Meal intake
   Cost of edible part of food waste
   Reasons for uneaten food / food waste
Our situation – main results

Nutritional screening NRS -2002

2012: 41.1 % patients at risk of malnutrition.

2016: 43.3 % patients at risk of malnutrition.

2008: 32.6 % patients at risk of malnutrition.

In 2016, on a sample of 125 patients (31.6 % of all patients), we estimated that as many as 44 % of patients had a medium or high risk of malnutrition.

EUROPE

SPLOŠNA BOLNIŠNICA NOVO MESTO

REMAINS THE SAME

Meal intake

Results from the project *Let’s not waste food!* in comparison with the results of *nutritionDay worldwide* study

Often, patients refused to eat food due to poor taste or, in their opinion, without any.

62% of the food delivered to patients in GH Nm is prepared according to dietetic therapeutic principles.

Approximately 60% of meals were consumed half or less.

Data were collected by a student of dietetics in the three most delicate departments.
Total number of nutritional management records and duration from hospitalization to first dietetic consultation

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Hospital nutritional management records</th>
<th>Duration from hospitalization to first dietitian visit</th>
<th>Outpatient care nutritional management records</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>68</td>
<td>/</td>
<td>167</td>
</tr>
<tr>
<td>2014</td>
<td>111</td>
<td>21</td>
<td>189</td>
</tr>
<tr>
<td>2015</td>
<td>125</td>
<td>10.5</td>
<td>179</td>
</tr>
<tr>
<td>2016</td>
<td>135</td>
<td>11.7</td>
<td>125</td>
</tr>
</tbody>
</table>

1. Total number of nutritional management records remains the same,

2. We increased number of hospital nutritional management records and

3. We halved duration time from hospitalization to first dietitian consultation.

Which could indicate an increase in malnutrition awareness among employees.
Number of malnurished patients with documented nutrition intervention

<table>
<thead>
<tr>
<th>OUTPATIENT CARE</th>
<th>HOSPITAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKB 10 Dg</td>
<td>n</td>
</tr>
<tr>
<td>Length of stay</td>
<td></td>
</tr>
<tr>
<td>(days)</td>
<td></td>
</tr>
<tr>
<td>No of deaths</td>
<td></td>
</tr>
<tr>
<td>R64 Kaheksija (shiranost)</td>
<td>30</td>
</tr>
<tr>
<td>Length of stay</td>
<td></td>
</tr>
<tr>
<td>(days)</td>
<td></td>
</tr>
<tr>
<td>No of deaths</td>
<td></td>
</tr>
<tr>
<td>C80 Rakasta kaheksija</td>
<td>42</td>
</tr>
<tr>
<td>Length of stay</td>
<td></td>
</tr>
<tr>
<td>(days)</td>
<td></td>
</tr>
<tr>
<td>No of deaths</td>
<td></td>
</tr>
</tbody>
</table>

- number of **recorded** diagnosis that indicate malnutrition doubled in four years; both in hospital and clinic environment
- nutrition care plan (with an recipe for ONS) is often incorporated into discharge plan - personal observation
- length of stay was reduced by approximately a third for malnourished patients
Total food waste in all departments

excluding drinks, beverages and soups

On measurement day

„Dry” part of the waste: 308 kg

-per patient: 1.170 g

- and 185 g drinks and beverages

unedible part of food waste (bones, peelings…), untouched and uneaten food

Per year

Total „dry“ part of the waste: 111 t
Cost of edible part of food waste

On measurement day

- cost of edible part - 362 €
- per patient - 1,37 € (all meals)
- per each meal - 0,46 €

Excluding:
- labor cost!
- cost of drinks

Per year

Cost of edible part of food waste per year: **157,000 €**

It will never be ZERO, but, there is a great opportunity for reducing costs.

\[ S_l \approx S_{kg} \cdot m_{kg} \left( \sum_i d_i \cdot f_{di} \right) \cdot f_{suhe} \]
Results

In average 42% of patients had a medium or high risk of malnutrition.

Malnourished patients received nutritional intervention in **average twelfth day after admission**.

The average length of their stay was twice as long (10 days) as the average length of stay (5.3 days). This, increases the cost for malnourished patients ranged between 45% and 102%, according to literature.

According to more studies **three-fifths of meals were consumed half or less**.

**17% of prepared food (111 tons) was thrown away in 2017**. The cost of edible part of food waste, excluding the costs of drinks and labor, is estimated at 157,000 euros per year.

On average **62% of the food delivered to patients was prepared according to dietetic therapeutic principles**.
We managed to increase malnutrition awareness among employees and to implement smaller changes.

However, progress in practical work is slow and the accessibility of nutritional therapy for patients is poor.

How to cut the Gordian Knot of past unsuccessful multiple actions?

A number of other actions was done to create a positive attitude to nutritional management in hospital (lectures, surveys, updated nutrition information handouts, increased number of nutrition teaching aids..)
When clinical nutrition is more involved in clinical setting than as a result, we can expect increased awareness of malnutrition among healthcare professionals and consequently reduce negative clinical implications.

Better organic waste management could be a positive side effect of improved medical treatment of malnutrition.
We have found that for improvement of nutrition support and malnutrition therapy of patients more active involvement of clinical nutrition specialists in the clinical treatment of primary disease is required.

This can be permanently solved by a new healthcare program *Clinical nutrition*, which we have after a comprehensive assessment of hospital malnutrition problem in 2018 applied for.
Our first „patient centered action“.

„Overnight fasts exceeding 11 h, fewer than four eating episodes a day, and not cooking independently were associated with both malnutrition and risk of malnutrition."

Policy into practice

A lot of regulations, recommendations, study programs… and only 23 working dietitians in 2016 as a part of medical services; patient-centred as a part of non-medical services; eg. food supply, but working with patients; food and patient-centred

TO DO
Investment in nutritional therapy provides economic return. ¹

With better malnutrition treatment to less food waste 😊

It’s time for patient centered care.


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