Understanding nutrition economics and its impact on dietetic services

Impact on dietetic workforce – how to use data to show the added value of a dietitian in clinical practice
Introduction

Hinke Kruizenga, PhD RD

- Editor in chief of the Dutch dietetic journal: Het Nederlands Tijdschrift voor Voeding & Diëtetiek
- Dutch Malnutrition Steering Group
  - [www.fightmalnutrition.eu](http://www.fightmalnutrition.eu)
- Dietitian – researcher VU University medical center
  - [www.dieteticpocketguide.com](http://www.dieteticpocketguide.com)
Examples of using research results to show the additional value of the dietitian.

- Prevalence of malnutrition in Dutch hospitals
- SEO economic evaluations
- Nivel

Future plans (Benchmark)

Learning points
Dietary advice with or without oral nutritional supplements for disease-related malnutrition in adults

Christine Baldwin, Christine Elizabeth Weekes

First published: 7 September 2011

Editorial Group: Cochrane Cystic Fibrosis and Genetic Disorders Group

DOI: 10.1002/14651858.CD002008.pub4
Example 1 – prevalence of malnutrition in Dutch hospitals

- Screening on malnutrition at admission to the hospital mandatory in Dutch hospitals

http://www.fightmalnutrition.eu/toolkits/hospital-screening
Methods

In 2015, the Dutch Association of Dietitians and the Dutch Malnutrition Steering Group asked all hospitals:

- Anonymised data of all admissions from 2007 until 2014
  - Age, sex
  - Length of hospital stay
  - SNAQ / MUST score
  - Admitting medical specialty
  - Medical ward
13 participating hospitals, 564,063 patients

<table>
<thead>
<tr>
<th></th>
<th>9 SNAQ hospitals</th>
<th>4 MUST Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>419,086</td>
<td>144,977</td>
</tr>
<tr>
<td>M / F</td>
<td>48% / 52%</td>
<td>48% / 52%</td>
</tr>
<tr>
<td>Age (y)</td>
<td>61.8 ± 18.1</td>
<td>62.3 ± 18.0</td>
</tr>
<tr>
<td></td>
<td>Median 65</td>
<td>Median 66</td>
</tr>
<tr>
<td>Age &gt; 70 y</td>
<td>39%</td>
<td>41%</td>
</tr>
<tr>
<td>% screened</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>SNAQ ≥ 3 points / MUST ≥ 2 points</td>
<td>14%</td>
<td>15%</td>
</tr>
<tr>
<td>SNAQ 2 points / MUST 1 points</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>Length of hospital Stay (LOS) (days)</td>
<td>6.4 ± 8.8</td>
<td>6.1 ± 8.0</td>
</tr>
</tbody>
</table>
Unique number of patients!: 564,063 patients!

Table 1: Prevalence of hospital malnutrition in studies reported after 1990 according to country and discipline.

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>Discipline</th>
<th>n</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA Study Group</td>
<td>USA</td>
<td>Abdominal- or thoracic surgery</td>
<td>2448</td>
<td>39</td>
</tr>
<tr>
<td>Coats et al.</td>
<td>USA</td>
<td>General medicine</td>
<td>228</td>
<td>38</td>
</tr>
<tr>
<td>Lansey et al.</td>
<td>USA</td>
<td>Geriatrics</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>Mowe et al.</td>
<td>Norway</td>
<td>Surgery</td>
<td>331</td>
<td>37</td>
</tr>
<tr>
<td>McWhirter and Pennigton</td>
<td>Scotland</td>
<td>General surgery</td>
<td>100</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Internal medicine</td>
<td>100</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory medicine</td>
<td>100</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orthopaedics</td>
<td>100</td>
<td>39</td>
</tr>
<tr>
<td>Larsson et al.</td>
<td>Sweden</td>
<td>General surgery</td>
<td>199</td>
<td>35</td>
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<tr>
<td>Cederholm et al.</td>
<td>Sweden</td>
<td>General surgery</td>
<td>205</td>
<td>20</td>
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<tr>
<td>Giner et al.</td>
<td>USA</td>
<td>Intensive care</td>
<td>129</td>
<td>43</td>
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<tr>
<td>Naber et al.</td>
<td>Netherlands</td>
<td>Internal medicine</td>
<td>155</td>
<td>45</td>
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<tr>
<td>Gariballa et al.</td>
<td>UK</td>
<td>Geriatrics</td>
<td>201</td>
<td>31</td>
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<tr>
<td>Waitzberg et al.</td>
<td>Brazil</td>
<td>Internal medicine</td>
<td>4000</td>
<td>48.1</td>
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<tr>
<td>Bruun et al.</td>
<td>Norway</td>
<td>Surgery</td>
<td>244</td>
<td>39</td>
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<tr>
<td>Corish et al.</td>
<td>Ireland</td>
<td>General surgery</td>
<td>232</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>General medicine</td>
<td>198</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory medicine</td>
<td>60</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orthopaedics</td>
<td>26</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multidisciplinary</td>
<td>53</td>
<td>9</td>
</tr>
<tr>
<td>Kondrup et al.</td>
<td>Denmark</td>
<td>Multidisciplinary</td>
<td>750</td>
<td>22</td>
</tr>
<tr>
<td>Kyle et al.</td>
<td>Switzerland</td>
<td>Multidisciplinary</td>
<td>995</td>
<td>31.3</td>
</tr>
<tr>
<td>Correia and Campos</td>
<td>Latin America</td>
<td>Multidisciplinary</td>
<td>9348</td>
<td>50</td>
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<tr>
<td>Wyszyński et al.</td>
<td>Argentina</td>
<td>Multidisciplinary</td>
<td>1000</td>
<td>47</td>
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<tr>
<td>Malnutrition Prevalence Group</td>
<td>UK</td>
<td>General medicine and surgery</td>
<td>850</td>
<td>20</td>
</tr>
<tr>
<td>Rasmussen et al.</td>
<td>Denmark</td>
<td>Multidisciplinary</td>
<td>590</td>
<td>39.9</td>
</tr>
<tr>
<td>Pirtlich et al.</td>
<td>Germany</td>
<td>Multidisciplinary</td>
<td>1886</td>
<td>27.4</td>
</tr>
</tbody>
</table>

Weighted mean of all listed studies 41.7
Weighted mean of the US and European studies 31.4
Positive SNAQ / MUST at admission

Percentage "screening result undernourished" per medical specialty

- SNAQ ≥ 3 points
- MUST ≥ 2 points
This study provides benchmark data on the prevalence of malnutrition, including more than half a million patients.

- One out of 7 patients (14-15%) was scored as malnourished.
- Highest prevalence in geriatrics (38%), oncology (33%), gastroenterology (27%), and internal medicine (27%).
- Hospital stay was 1.4 d longer among malnourished patients than among those who were well nourished.
Added value?

- *We know that*
  
  - Early recognition and treatment of malnutrition is important
  
  - Inadequate nutritional intake in a diseased state will result in a rapid decline of muscle mass, health status, functionality, …

How many dietitians will a hospital need to provide optimal dietetic care for the malnourished group?
How to proceed as a clinical dietitian?

• Q 1: How many admitted patients per year, per ward?
  • Patients admitted to VUmc in 2016: \( N=23,464 \)
  • Mean LOS 2016: 4.7 days
  • Mean LOS malnourished patients: 9.5 days
How to proceed as a clinical dietitian?

Q 2: How many malnourished patients in need for dietetic consultation (on yearly basis, per ward)?

- 15% of 23,464 patients: 3520 patients per year
How to proceed as a clinical dietitian?

Q 3: What do we need to provide optimal nutritional care?

To be defined per hospital. Example:

• 3 clinical consults and 2 outpatient consults: 17,600 consults
How to proceed as a clinical dietitian?

• Q 4: Is the dietetic department of our hospital up to strength?

  • 17,600 consults × 1 hour = 17,600 dietetic hours
  
  • 1 FTE dietitian = ±1200 hours = 14.6 full time dietitians, only for the treatment of the malnourished patients.

*Calculations can be different per medical specialism / hospital*
Details are available:

- Toolkit on www.fightmalnutrition.eu
Other Dutch initiatives

- SEO economic evaluations
- NIVEL care registration
- Benchmark hospitals
SEO economic evaluations

- Highly respected
- Used by the government to make decisions
- Impartial, independent

Reports

- Airport Industry Connectivity Report 2017
- Dutch Export Opportunities in Asia: Is the Netherlands Lagging Behind?
- Impact of the EU-Ukraine Free Trade Agreement on the Dutch Economy
- Monitoring Survey of Network Quality and State Guarantees 2016
- Benchmark study on airport charges and government levies 2016
- Review of the evaluation of the Energy Innovation Agenda
- Public investments in the Netherlands
- Impact of Six EU Free Trade Agreements on the Dutch Economy
- Telecommunication in the Dutch Caribbean
- Highly educated people of 35-44 years old in the risk equalization
- Continuing to work longer with an occupational disability

SEO in Brussels

As of 1 September 2017 SEO Amsterdam Economics is also based in Brussels. Our presence in Brussels brings us closer to our international clients and partners in European projects.

Read more.
SEO dietetic evaluation

- 2012 – Cost benefit analysis dietetics in overweight patients – paid by the Dutch Association of Dietitians

- 2014 - The costs of malnutrition and the return on medical nutrition – paid by the MNI

- 2015 - The social costs and benefits of dietetics for malnourished patients in hospital – paid by the university hospitals and the Dutch Associations of Dietitians
2014 - The costs of malnutrition and the return on medical nutrition

• The total costs of disease related malnutrition in the Netherlands amounted to € 1.8 billion in 2011 plus non quantified health care costs for persons living at home.

• The average hospital stay of malnourished patients is 28 percent longer than the average hospital stay of non-malnourished patients.

• Nursing homes spend on average about € 10,000 per malnourished person when tackling disease-related malnutrition.

• The use of medical nutrition with sick and malnourished elderly persons results in net benefits between € 1,4 and € 3,1 per person. For each euro that is invested in the treatment of a malnourished person society saves €1.9 to € 4.2.

2015 - The social costs and benefits of dietetics for malnourished patients in hospital

- malnourished patients with gastrointestinal or lung cancer, patients with head and neck cancer and elderly hospital patients.

- For every euro spent on dietetics for these patients the benefit to society is

  - 3 to 22 euros (gastrointestinal or lung cancer)
  - 2.4 - 4.5 euros (head and neck cancer)
  - 1.2 - 1.9 euros (malnourished elderly hospital patients).

- If all malnourished patients were to be treated the total annual benefit would be 4 - 42 million euros (gastrointestinal or lung cancer), 1.5 - 3.8 million euros (head and neck cancer) and 15-78 million euros (elderly hospital patients).

NIVEL care registration

• Aims
  • NIVEL: knowledge of the structure and functionality of Dutch health care
  • Dutch Association of Dietitians: Improving the quality of care and image of dietetics.

• Participants:
  • 177 dietitians working in primary care
  • In 2016 data of 37,029 patients
Yearly report and fact sheet

N=1033!!!
1/37 part of the total group
Missings!

34% of the patients achieved their treatment goal

Mean: 3.1 consultation per patient

58% obesity
25% diabetes 2
10% malnutrition
9% hypertension

52% voldoet aan Nederlandse Norm Gezond Bewegen, bij aanvang van de behandeling

94% van de patiënten komt met een verwijzing

In 2016 gemiddeld 3,1 consulten per patiënt en 2,1 uur (directe en indirecte) behandeltijd

Meest voorkomende gezondheidsproblemen

58% te hoog gewicht bij volwassenen
gemiddelde BMI: 32,9 kg/m² bij aanvang van de behandeling

25% diabetes type 2

11% hypercholesterolemie

10% onbeduidend gewichtsverlies

9% hypertensie

46% van de patiënten heeft meerdere gezondheidsproblemen

Cijfers zijn gebaseerd op geregistreerde gegevens van diëten. Voor meer informatie zie www.nivel.nl/zorgregistraties
Benchmark hospitals

- 112 indicators in the domains
  - Hospital profile
    - Mission, vision, number of beds
  - Performance
    - % malnutrition screening, # patients achieve treatment goal
  - Care process
    - Waiting time, # incidences
Why?

- Comparison between hospitals
- Quality dashboard per hospital
- National and regional management information for Dutch Association of Dietitians
Take home message

• Effectiveness and cost-effectiveness data are essential to underline our message

• Electronic patient charts have high potential. Correct and uniform registration is essential!

• Together is always better!
This toolkit will be explained during the EFAD conference on the 29th and 30th of September in Rotterdam, by dr. Karen Freijer, dr. Hinke Kruizenga and Sissi Stoven Lorentzen.

- Introduction to Nutrition Economics
- The social costs and benefits of dietetics for malnourished patients in hospital
- Thesis on Nutrition economics – Karen Freijer
- ISPOR Nutrition Economics Special Interest Group
- Experts’ view on NE in disease-related malnutrition
- Workshop report on NE (2011)
- The costs of malnutrition and the return on medical nutrition

http://www.fightmalnutrition.eu/toolkits/nutrition-economics-disease-related-malnutrition