
*Understanding nutrition economics and its impact
on dietetic services*

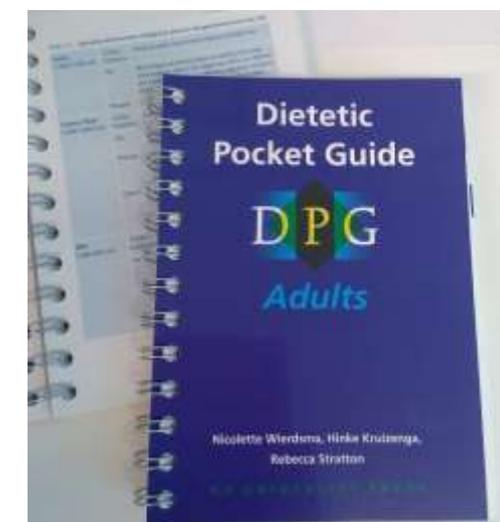
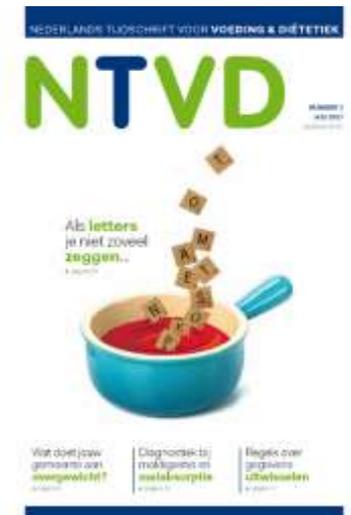
**Impact on dietetic workforce –
how to use data to show the added
value of a dietitian in clinical practice**

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
- Dietitian – researcher VU University medical center
 - www.dieteticpocketguide.com



Topics

- 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

Cochrane review on effectiveness dietary intervention in malnutrition **IN REVISION!**

Christine Baldwin (UK), Elizabeth Weekes (UK), Marian de van der Schueren (NL), Hinke Kruizenga (NL)



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

Review

Intervention

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 [View/save citation](#)

Example 1 – prevalence of malnutrition in Dutch hospitals

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

Hospitals
90% SNAQ and 10% MUST

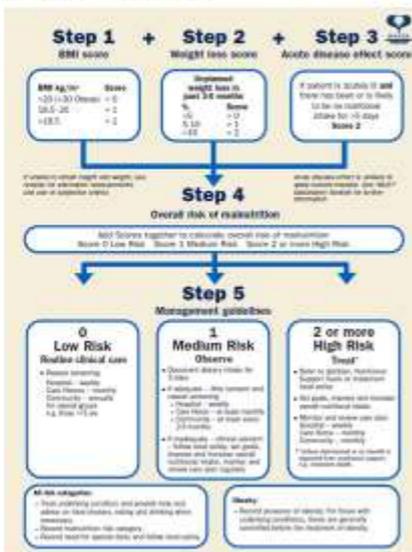


www.fightmalnutrition.eu

- Have you lost weight unintentionally?
More than 6 kg in the last 6 months
More than 3 kg in the last month
- Did you experience a decreased appetite over the last month?
- Did you use supplemental drinks or tube feeding over the last month?

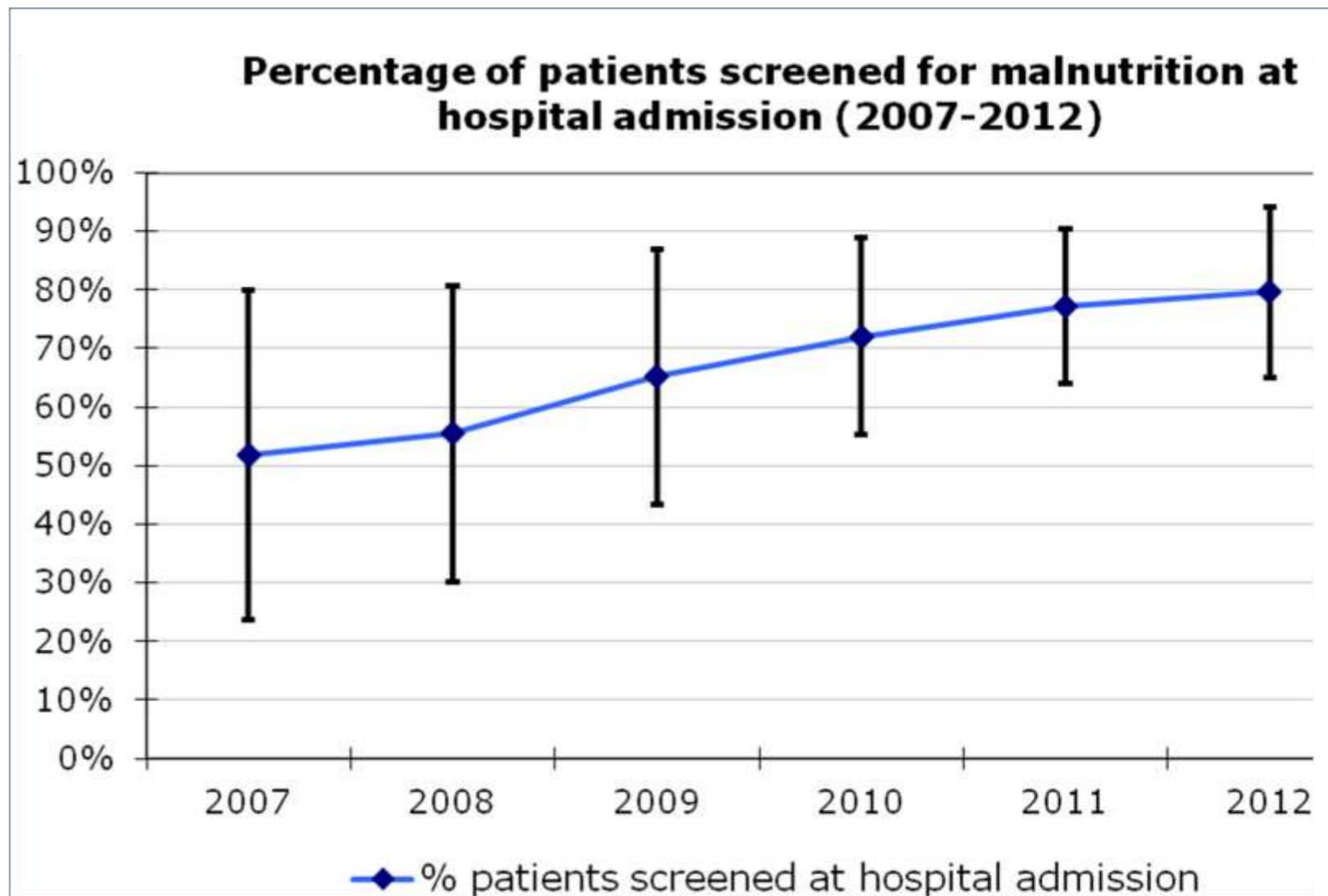
● no intervention
●● moderately malnourished; nutritional intervention
●●● severely malnourished; nutritional intervention and treatment dietitian

Kruizenga HM et al. Clinical Nutrition 2005; 24: 75-82



http://www.bapen.org.uk/must_tool.html

<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



**9 SNAQ
hospitals**



**4 MUST
Hospitals**

N

419,086

144,977

M / F

48% / 52%

48% / 52%

Age (y)

61.8 ± 18.1

62.3 ± 18.0

Median 65

Median 66

Age > 70 y

39%

41%

% screened

80%

80%

SNAQ ≥ 3 points / MUST ≥ 2 points

14%

15%

SNAQ 2 points / MUST 1 points

4%

10%

Length of hospital Stay (LOS) (days)

6,4 ± 8,8

6,1 ± 8,0

Median 4

Median 4

Unique number of patients!: 564,063 patients!

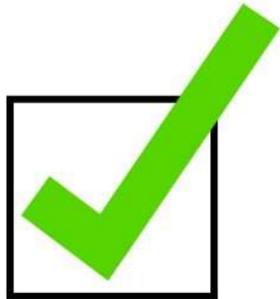
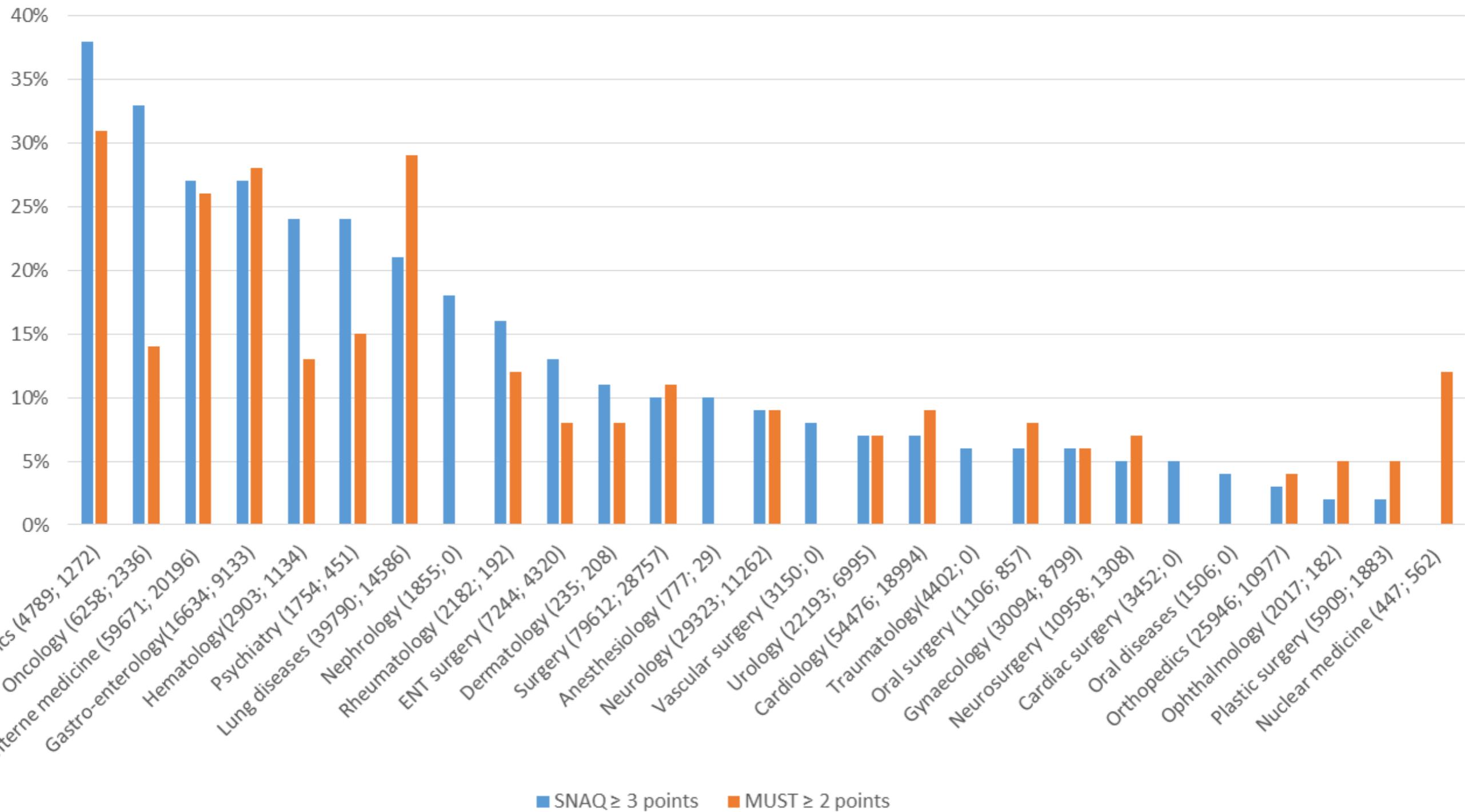


Table 1 Prevalence of hospital malnutrition in studies reported after 1990 according to country and discipline.

Author	Country	Discipline	n	Prevalence (%)
VA Study Group ¹²⁷	USA	Abdominal- or thoracic surgery	2448	39
Coats et al. ¹²⁸	USA	General medicine	228	38
Lansey et al. ¹²⁹	USA	Geriatrics	47	45
Mowe et al. ¹³⁰	Norway	Surgery	331	37
McWhirter and Pennigton ³	Scotland	General surgery	100	46
		Internal medicine	100	27
		Respiratory medicine	100	45
		Orthopaedics	100	39
		Geriatrics	100	43
Larsson et al. ¹³¹	Sweden	General surgery	199	35
Cederholm et al. ¹³²	Sweden	General surgery	205	20
Giner et al. ¹⁰⁹	USA	Intensive care	129	43
Naber et al. ⁸⁶	Netherlands	Internal medicine	155	45
Gariballa et al. ⁹¹	UK	Geriatrics	201	31
Waitzberg et al. ¹³³	Brazil	Internal medicine	4000	48.1
Bruun et al. ¹³⁴	Norway	Surgery	244	39
Corish et al. ¹³⁵	Ireland	General surgery	232	7
		General medicine	198	13
		Respiratory medicine	60	18
		Geriatrics	26	15
		Orthopedics	53	9
Kondrup et al. ⁴⁹	Denmark	Multidisciplinary	750	22
Kyle et al. ¹³⁶	Switzerland	Multidisciplinary	995	31.3
Correia and Campos ²	Latin America	Multidisciplinary	9348	50
Wyszynski et al. ¹³⁷	Argentina	Multidisciplinary	1000	47
Malnutrition Prevalence Group ¹³⁸	UK	General medicine and surgery	850	20
Rasmussen et al. ⁴	Denmark	Multidisciplinary	590	39.9
Pirlich et al. ¹	Germany	Multidisciplinary	1886	27.4
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



Conclusion of prevalence measurement

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 x 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:

- Publication in Am. J Clin Nutr 2016:
<http://ajcn.nutrition.org/content/103/4/1026.long>
- Toolkit on www.fightmalnutrition.eu



Undernutrition screening survey in 564,063 patients: patients with a positive undernutrition screening score stay in hospital 1.4 d longer¹

Hinke Kruijenga,^{2,3,10} Suzanne van Keeken,² Peter Weijs,³ Luc Bastiaanse,^{2,4} Sandra Beijer^{2,5} Getty Huisman-de Waal,^{2,6} Harriët Jager-Wittenaar,^{2,7} Cora Jonkers-Schuitema,^{2,8} Mariël Klos,^{2,9} Wineke Remijnse-Meester,^{2,10} Ben Witteman,^{2,11} and Abel Thijs^{2,3}*

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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	13.06.2017
+ Dutch Export Opportunities in Asia: Is the Netherlands Lagging Behind?	19.04.2017
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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.

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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*

The logo for SEO, consisting of the lowercase letters 'seo' in a bold, red, sans-serif font.

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



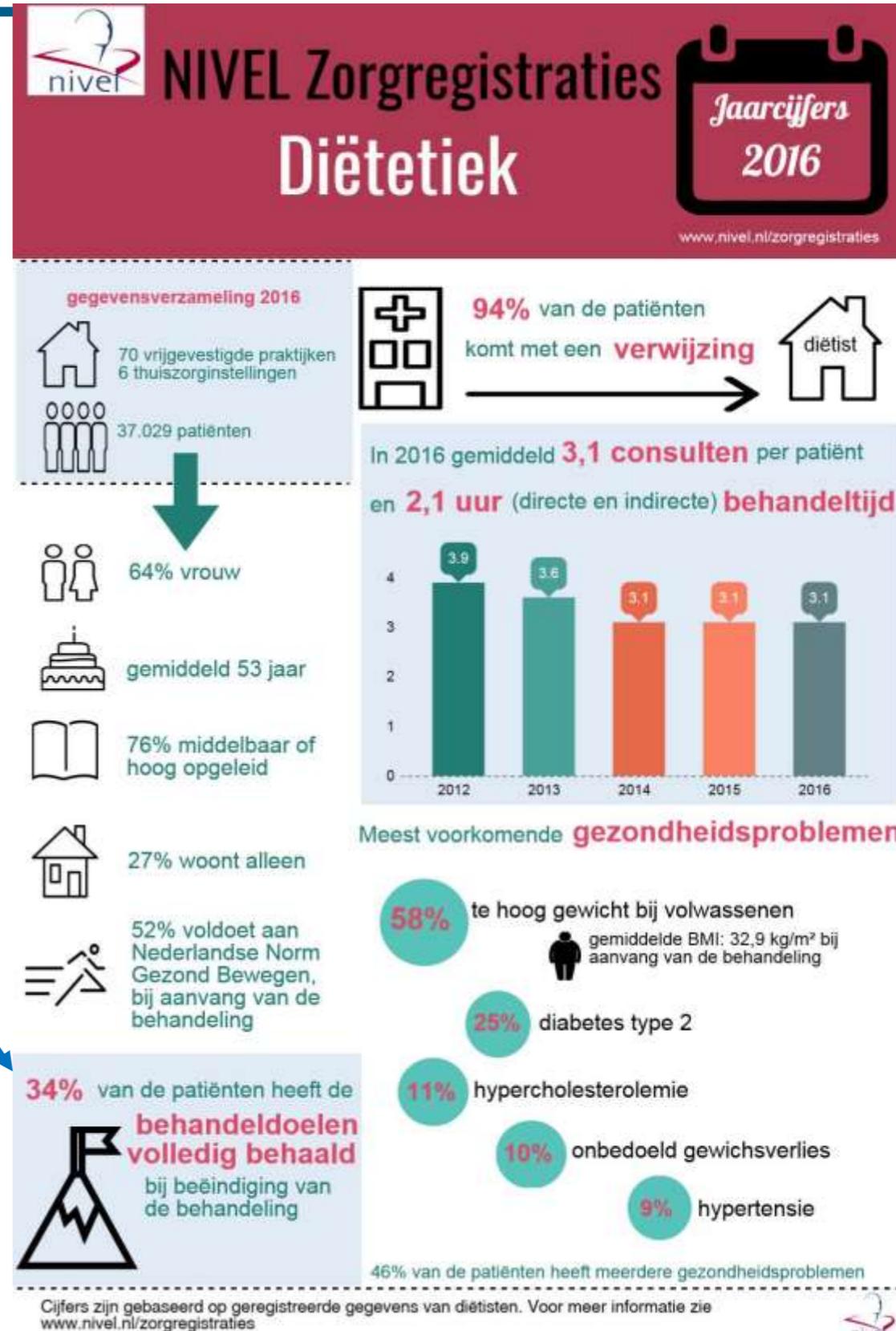
Yearly report and fact sheet

Mean: 3.1
consultation
per patient

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

34% of the patients
achieved their treatment
goal

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



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 Dietetians



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!



Toolkit nutrition economics on fightmalnutrition.eu

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

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ISPOR Nutrition Economics
Special Interest Group

DOWNLOAD

Workshop report on NE (2011)

DOWNLOAD

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

DOWNLOAD

Experts' view on NE in disease-
related malnutrition

DOWNLOAD

The costs of malnutrition and the
return on medical nutrition

DOWNLOAD

Thesis on Nutrition economics –
Karen Freijer

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