

Nutrition Economics – An Introduction

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KEY POINTS

- Nutrition Economics focuses on the interdependency between nutritional habits, health, and public expenses.
- There is no systematic approach or specific methodology to assess the impact of nutrition on health and health-related quality of life despite a clear need from policy makers.
- The establishment of an ISPOR Nutrition Economics Special Interest Group is underway to develop recommendations on economic evaluations to describe and quantify the costs (both the immediate costs of the intervention and downstream consequences) and effectiveness of nutrition interventions, as well as to assess the impact for individuals, the health care system, and society as a whole regarding disease-related malnutrition (DRM) as the initial focus.

Nutrition economics, as the name implies, is the merging of the nutrition and health economics disciplines to assess the impact of nutrition on health and disease and to illustrate the health and economic aspects of specific changes in the daily nutrition and nutrition recommendations through the lens of cost effectiveness. Nutrition economics is defined as “a discipline dedicated to researching and characterizing health and economic outcomes in nutrition for the benefit of society” [1]. This rising research field focuses on the interdependency between nutritional habits, health, and public expenses. It supports nutrition, health economics, and health policy development in an evidence- and health-benefit-based manner [1]. It will increase the understanding of nutrition’s impact on health outcomes and of its absolute and relative monetary effect.

The nutrition field is extremely broad, with interventions from individual treatments to broad public health measures. Answers are needed to questions such as: How should the cost and effectiveness of nutrition interventions be quantified? How would one assess their impact on the individual, the health care system, and society as a whole?

Until now, no systematic approach or specific methodology has been developed to assess the impact of nutrition on health and health-related quality of life despite a clear need from policy makers. There are many challenges in nutrition assessment, from the difficulty in establishing a correlation between a product’s consumption and future health status, to confounding factors and special methodological considerations, such as those encountered when assessing medical devices for reimbursement [2-4]. Economic evaluation will require a range of different approaches that compare nutrition-related costs to health outcomes, in order to sustain value-based decisions within systems providing health care.

With the increasing number of nutrition-related interventions and the consequent number of (economic) evaluations, the time has come to establish a group to develop preliminary scientific guidelines for nutrition economic assessments and outcomes research. To this end, ISPOR is initiating a Nutrition Economics Special Interest Group (SIG). This initiative is already supported by a group of leading experts in the fields of nutrition, medicine, pharmacology, epidemiology, and health economics. The SIG’s initial focus will be on recommendations for

the economic evaluation of disease-related malnutrition (DRM), meaning under-nutrition in health care [5-7].

The causes of DRM are multi-factorial. The metabolic stress on the body due to an acute or chronic disease resulting in catabolism is one of the most important and prevalent [8]. The effects of DRM can complicate the disease process by: weakness/fatigue, impaired functioning of organs, such as the heart, lungs, and GI system, and slower wound healing. Any of these effects results in a greater chance for clinical complications [7,8].

DRM thus leads to the increased likelihood of patient complications, as potential (re-) admission(s), and length(s) of hospital stay(s). Any of these results is associated with higher health care costs [8-9]. It has been calculated that approximately 33 million patients in Europe are suffering from DRM, at an estimated cost of €170 billion [11,12]. This is more than double the amount of money spent on obesity, based on figures from the UK [13].

Improvement in the quality or quantity of food supplied can ameliorate this type of under-nutrition. Unfortunately, in many cases, the patient cannot or will not consume a sufficient amount of nutrients needed to meet their increased nutritional requirements.

In the case of a disease treatment, it is important to consider additions to their daily nutrition or alternatives to improve nutritional intake, such as medical nutrition. Medical nutrition comprises parenteral nutrition (regulated in pharmaceutical legislation), as well as all forms of enteral nutritional support that are regulated as “foods for special medical purposes” (FSMP), as defined by the European Commission Directive 1999/21/EC, independent of the route of application [14].

FSMP is a special category for food that is intended for the dietary management of patients. This food is specially processed or formulated and used under medical supervision. FSMP products include oral nutritional supplements (ONS), as well as enteral tube feeding (ETF) via nasogastric, naso-enteral, or percutaneous tubes. These products contain regulated minimum and maximum levels of macro (carbohydrates, protein, fat) and micro (vitamins, minerals, trace-

elements) nutrients. These products can be used in inpatient or outpatient settings for complete daily nutrition or as a supplement to the daily diet [14,15].

Evidence on the use of medical nutrition for patients suffering from DRM has demonstrated functional, as well as clinical, benefits [16,17]. While cost-effectiveness analysis has become common practice for informing reimbursement decisions for pharmaceuticals, the use of health economic analyses for (medical) nutrition is not yet common. Consequently, medical nutrition interventions tend to be excluded in the current competitive health care funding as their value was previously unrecognized. Nevertheless, evidence of the integral role of food in disease progression, as well the onset and evolution of lifestyle-related disorders, has forced health care decision makers to realize the importance and impact of nutrition. Consequently, economic evaluations of its effectiveness have been conducted on an increasing basis [18,19].

Published discussions regarding the existing challenges in health economics for medical nutrition and other nutrition interventions can be used as the basis for developing preliminary guidelines for economic analyses of medical nutrition. Developing criteria for nutrition-related economic assessments and outcomes research, adapted to the differences in nutrition interventions compared to pharma, is the first step.

In conclusion, improving health care through better (medical) nutrition may contribute to the cost-effectiveness and sustainability of health care systems. Therefore, it is essential to describe and quantify the costs (both the immediate costs of the intervention and downstream consequences) and effectiveness of nutrition interventions, as well as to assess the impact for individuals, the health care system, and society as a whole. The establishment of an ISPOR Nutrition Economics Special Interest Group is underway to develop recommendations on economic evaluations in this emerging scientific field.

More information on this initiative will become available in future ISPOR publications and communications.

REFERENCES

1. Lenoir-Wijnkoop I, Dapoigny M, Dubois D, et al. Nutrition economics: characterizing the economic and health impact of nutrition. *BJN* 2011;105:157-66.
2. Drummond M, Griffin A, Tarricone R. Economic evaluation for devices and drugs – same or different? *Value Health* 2009;12:402-4.
3. Taylor RS, Iglesias CP. Assessing the clinical and cost-effectiveness of medical devices and drugs: Are they that different? *Value Health* 2009;12:404-6.
4. Freijer K, Russell CA, Lenoir-Wijnkoop I, et al. Nutrition economics The view of international experts regarding health economics for medical nutrition in disease related malnutrition. Submitted for publication 2014.

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5. ESPEN Guidelines on adult enteral nutrition. *Clin Nutr* 2006;25:177-360.

6. NAIT (National Alliance for Infusion Therapy) and A.S.P.E.N. (the American Society for Parenteral and Enteral Nutrition) Public Policy Committee and Board of Directors. Disease-related malnutrition and enteral nutrition therapy: a significant problem with a cost-effective solution. *Nutr Clin Pract* 2010;25:548-54.

7. Fight malnutrition. Malnutrition guidelines: Guideline screening and treatment of malnutrition 2012. Available at: <http://www.fightmalnutrition.eu>. [Accessed June 25, 2014].

8. Norman K, Pichard C, Lochs H, et al. Prognostic impact of disease-related malnutrition. *Clin Nutr* 2008;27:5-15.

9. Stratton RJ, Green CJ, Elia M. Disease-related Malnutrition: An Evidence based Approach to Treatment, 1st Ed., Oxford: UK CABI Publishing; 2003.

10. Jensen GL, Mirtallo J, Compher C, et al. Adult starvation and disease-related malnutrition: A proposal for etiology-based diagnosis in the clinical practice setting from the International Consensus Guideline Committee. *JPEN* 2010;34:156-59.

11. Ljungqvist O, van Gossum A, Sanz M, de Man F. The European fight against malnutrition. *Clin Nutr* 2010;29:149-50.

12. Ljungqvist O, de Man F. Under nutrition - a major health problem in Europe. *Nutr Hosp* 2009;24:368-70.

13. House of Commons Health Committee. Obesity: Third Report of Session 2003-04. Volume 1. London: Stationery Office. 2004.

14. Commission directive 1999/21/EC of 25 March 1999 on dietary foods for special medical purposes. Available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0021:EN:NOT>. [Accessed June 25, 2014].

15. Lochs H, Allison SP, Meier R, et al. Introductory to the ESPEN guidelines on enteral nutrition: terminology, definitions and general topics. *Clin Nutr* 2006;25:180-6.

16. Stratton RJ, Elia M. Who benefits from nutritional support: what is the evidence? *Eur J Gastroenterol Hepatol* 2007;19:353-8.

17. MNI (Medical Nutrition International Industry). Oral nutritional supplements to tackle malnutrition: a summary of the evidence base. 3rd version. Brussels;2012.

18. Freijer K, Bours MJ, Nuijten MJC, et al. The economic value of enteral medical nutrition in the management of disease-related malnutrition: A Systematic Review. *JAMDA* 2014;15:17-29.

19. Milte RK, Ratcliffe J, Miller MD, et al. Economic evaluation for protein and energy supplementation in adults: opportunities to strengthen the evidence. *Eur J Clin Nutr* 2013;67:1243-50.

**KF receives a salary from Nutricia Advanced Medical Nutrition (NAMN) as a Health Economics Manager and I.L.-W is employed by Danone Research. KF is a posted PhD student at the University of Maastricht in the Netherlands. This University has an unrestricted agreement with NAMN to enable KF to do research. [C]*

WEB CONNECTIONS

Researching world health expenditures? Want to know what countries are spending on the health care of their populations? The WHO's Global Health Observatory (GHO) has exactly what you need: http://www.who.int/gho/health_financing/en/. One can quickly find country specific data regarding health care funding such as per capita expenditure and out of pocket expenditure. For some countries, data availability dates back to 1995 and through 2012. Dig through the data; you will be amazed at how much exists and the flexibility to find exactly what you need.

Do you know of any websites that you would like to share with the ISPOR community? If so, contact Bonnie M. Korenblat Donato, PhD, at: bonnie.donato@bms.com.