

Health Economics in Medical Nutrition: An Emerging Science

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The objective of this paper is to describe the applications of the health economic theory to medical nutrition. The published literature (meta-analyses and systematic reviews) provides evidence that medical nutrition, e.g. oral nutritional supplements (ONS), is an effective treatment for patients with disease-related malnutrition. Without nutritional intake, mortality occurs already after about 28 days in chronically ill patients (vs. approximately 70 days in healthy persons) caused by a 40% weight loss [1]. Mortality rates are significantly lower (odds ratio of 0.61) [2]. Similar findings were reported in other reviews [3]. Complication rates, including infections, are significantly reduced (odds ratio of 0.31) [4].

Malnutrition is not a new problem, and with an aging population it continues to become a major public health concern as increasing age is associated with an increased risk of malnutrition [5]. In European Union countries, about 20 million patients are affected by disease-related malnutrition (EUR 33 million in Europe), costing EU governments up to EUR 120 billion annually (EUR 170 billion in Europe) [6–8].

Freijer and Nuijten [9] performed a health economic study to assess the cost-effectiveness of ONS in the Netherlands. The use of ONS results in EUR 252 (7.6%) cost saving per patient. The hospitalization costs reduce from EUR 3,318 to 3,044 per patient, which is a 8.3% cost saving and corresponds to a 0.72-day reduction in length of stay. The use of ONS would lead to an annual cost saving of a minimum of EUR 40.4 million per year. This analysis shows that the use of medical nutrition, ONS in this case, is a cost-effective treatment in the Netherlands. A similar study by Nuijten and Mittendorf [10] assessed the health economic impact of ONS in the community setting in Germany. This study shows that the extra costs for ONS (EUR 534) are offset by a reduction in hospitalization costs (EUR 768) leading to total cost savings of EUR 234 per patient.

Regarding the basic concepts of health economics, cost-effectiveness of a medicinal product is based on the costs that will result from its use and the potential savings that will be made compared with other

products and/or treatments and the health benefits to the patient. The most used measure of this health benefit is the quality-adjusted life year (QALY). Threshold values are often used in coverage decisions. Medicinal products with ratios above these threshold values are not given coverage under the national health insurance package. Values ranging from USD 50,000 to 100,000 per QALY gained (EUR 37,000–74,000) are sometimes used as a threshold in the USA [11], whereas in the UK, the National Institute of Health and Clinical Excellence has adopted a cost effectiveness threshold range of GBP 20,000–30,000 per QALY gained (EUR 23,800–35,700) [12].

The QALY gain is calculated by combining the utility gain (quality of life gain) with the number of life years gained. QALY gained may therefore be the result of longer life expectancy, utility gain or both. Malnutrition may have a negative effect on QALY through a reduction in life expectancy and a reduction in quality of life. Meta-analyses of treatment of disease-related malnutrition with medical nutrition show an increase in quality of life [13, 14].

In a cost-effectiveness analysis, measuring the extent of costs is an important step. Costs can be broadly divided into two discrete resource categories: direct and indirect costs (often labeled productivity costs). Direct costs reflect the monetary burden of the medical care and nonmedical care expenditures made in response to a disease. The cost of medicinal products is one type of direct medical cost. Other types of direct medical costs include cost of hospitalizations, cost of physician visits, cost of tests and procedures, and cost of durable medical equipment. Direct nonmedical costs include the costs to patients, such as travel to obtain treatment, and the value of time spent by family and other nonprofessional caregivers in supporting patients. The main indirect cost is lost productivity from the patient being absent from work as a result of morbidity.

In conclusion, this overview shows that in case randomized controlled trials are providing the clinical evidence, there is no methodological difference between a cost-effectiveness analysis for pharmaceutical or nutrition treatment. However, in nutrition the evidence may not always come from data of randomized controlled trials, but will more often be based on observational data. Therefore, the clinical evidence of nutrition in itself is not the issue, but the handling of clinical evidence from observational studies. As the link between the consumption of a food product and the resulting health status is often more difficult to establish than the effect of a drug treatment, it requires further development of adapted methodologies in order to correctly predict the impact of food-related health effects and health economic outcomes from a broader perspective.

References

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