THERAPEUTICS

Review: Oral protein and energy supplements reduce all-cause mortality in elderly persons

Milne AC, Potter J, Avenell A. **Protein and energy supplementation in elderly people at risk from malnutrition.** Cochrane Database Syst Rev. 2002;(3):CD003288 (latest version 5 Feb 2002).

QUESTION

In hospitalized or community-dwelling elderly persons, are oral protein and energy supplements effective for improving clinical outcomes and nutritional status?

DATA SOURCES

Studies were identified by searching the Cochrane Library (2001, issue 1), MEDLINE (1966 to February 2001), EMBASE/Excerpta Medica (1980 to March 2001), HealthStar (1975 to March 2001), CINAHL (1982 to Jan 2001), BIOSIS (1985 to March 2001), CAB abstracts (1973 to March 2001), and 4 databases of registered trials; hand searching 8 nutrition journals; scanning bibliographies of relevant articles; and contacting researchers and manufacturers of nutritional supplements for unpublished and ongoing trials.

STUDY SELECTION

Studies were selected if they were randomized controlled trials (RCTs) comparing a protein and energy supplement with no intervention, a placebo, or an alternative supplement; assessed ≥ 1 relevant clinical outcome; and studied hospitalized or community-dwelling elderly persons with a minimum average age > 65 years.

DATA EXTRACTION

2 reviewers independently extracted data on sample size, participant characteristics, inclusion and exclusion criteria, details and duration of intervention, study quality, and outcomes. Main outcomes included all-cause mortality, morbidity (number of people with complications such as pressure sores, deep venous thrombosis, and respiratory and urinary infections), and functional status (e.g., cognitive functioning, mobility, and ability to perform activities of daily living).

MAIN RESULTS

31 RCTs (2464 participants) met the selection criteria. The interventions used in the trials aimed to provide additional energy (175 to 1000 kcal/d) and protein (10 to 36 g/d). Meta-analyses were done using random-effects models for outcomes with significant heterogeneity. The rate of all-cause mortality was lower in the supplemented group than in the control group (22 RCTs) (Table). The groups did not differ for rate of morbidity (9 RCTs) (Table). Measures of functional status or quality of life (reported in 21 RCTs) were diverse and showed little evidence of benefit associated with nutritional supplements in individual studies.

CONCLUSION

In hospitalized or community-dwelling elderly persons, oral protein and energy supplements are effective for reducing all-cause mortality.

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Oral protein and energy supplementation vs routine care in hospitalized or community-dwelling elderly persons at 2 weeks to 18 months*

Outcomes	Weighted event rates		RRR (95% CI)	NNT (CI)
	Supplements	Routine care		
All-cause mortality	9.7%	13.7%	33% (13 to 48)	25 (13 to 50)
Morbidity (complications)	37.6%	40.6%	7% (–13 to 23)	Not significant

*Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article using a fixed-effects model.

COMMENTARY

Perhaps justifiably, most of the attention paid by the medical community to nutritional status lately has focused on the health risks of an oversupply of calories. The thorough review and meta-analysis by Milne and colleagues turns our attention to the hazard posed by malnutrition in older adults, and specifically to the utility of treatment with food supplements. Even in the developed world, malnutrition among hospitalized patients is prevalent (1) and is generally found to be associated with poorer health outcomes (2).

Milne and colleagues found a substantial benefit after oral protein and energy supplements both in reduced mortality and length of hospital stay (3.4 d shorter, 95% CI 0.7 to 6.1), corroborated by a small (1.3-kg) but consistent increase in patient weight. Overall functional status was difficult to assess, but improvement in specific measures, such as number of falls, activity rating, and forced vital capacity, was reported in several studies. Although the underlying studies were rarely of optimal quality or even placebo-controlled, all were RCTs. Because most included patients were not malnourished, the benefit could have been greater if supplementation had been targeted to malnourished (mini-nutritional assessment score < 17) elderly persons. Which components of nutritional supplements (calories, protein, vitamins, and minerals) were responsible for the benefit could not be determined. A large clinical trial would be needed to answer the mechanism question.

Although we have much to learn, the common sense notion that improving nutritional status improves health, combined with the results of careful, conservative analyses such as this one, adds to our comfort level as practitioners in placing greater emphasis on the nutritional status of older patients. The lesson we take away from this review is that we should pursue the diagnosis and treatment of poor nutritional health as vigorously as we pursue abnormal blood tests or physical examination findings.

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