Clinical Nutrition ESPEN xxx (2018) 1–9

Contents lists available at ScienceDirect

Clinical Nutrition ESPEN

journal homepage: http://www.clinicalnutritionespen.com

Original article

Effectiveness of multidisciplinary nutritional support in older hospitalised patients: A systematic review and meta-analyses☆

Nanna M.L. Rasmussen [a], Kerstin Belqaid [b], Kerstin Lugnet [c], Anni Linnet Nielsen [d], Henrik Højgaard Rasmussen [e], Anne Marie Beck [f, *]

[a] Department of Clinical Nutrition, Regional Hospital West Jutland, Holstebro, Denmark
[b] Department of Learning, Informatics, Management and Ethics, Karolinska Institute, Function Area Clinical Nutrition, Karolinska University Hospital, Stockholm, Sweden
[c] Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden
[d] Department of Oncology, Herlev University Hospital, Herlev, Denmark
[e] Centre for Nutrition and Bowel Disease, Aalborg University Hospital, Aalborg, Denmark
[f] Department of Nutrition and Health, University College Copenhagen, Research Unit for Nutrition, Herlev and Gentofte Hospital, Copenhagen, Denmark

ARTICLE INFO

Article history:
Received 4 April 2018
Accepted 10 July 2018

Keywords:
Mortality
Readmissions
Quality of life
Nutrition
Elderly

SUMMARY

Malnutrition is common in older hospitalised patients. As the aetiology is multifactorial, nutritional care should involve a multidisciplinary team. However, the knowledge of the effectiveness of this strategy is limited. This systematic review aims at investigating the effectiveness of multidisciplinary nutritional support on mortality, readmissions and quality of life (QoL) in patients aged 65 years and above during hospitalisation and after discharge compared to usual practise.

We conducted a series of systematic literature search from 2013 to 2017, with additional studies hand-searched from reference lists of retrieved publications. Eligible studies were controlled trials with a multidisciplinary nutritional intervention during hospitalisation and after discharge in older (65+) patients. A intervention by more than one profession incorporating a nutritional component was defined as "Multidisciplinary". The nutritional intervention included use of oral nutritional supplements (ONS), improved nutritional care, and/or dietary counselling. For quality assessment of studies, "Cochrane Collaboration's tool for assessing risk of bias" was used. Conduction of meta-analyses were by combining data from homogenous trials.

The search resulted in five studies fulfilling the inclusion criteria, but varied in quality and type of interventions used. 598 patients were included. Meta-analyses found improved QoL (MD 0.13 (0.02, 0.23), P = 0.01) and indicated tendencies towards lower mortality (OR 0.50 (0.22, 1.14), P = 0.10), in the intervention group vs. control group. Meta-analysis showed no difference between intervention and control group regarding readmissions during intervention (OR 1.04 (0.40, 2.70)) or at a 26 weeks follow-up (OR 0.84 (0.18, 3.82))

Although a small number of studies and a relatively small sample size, a suggestion is that provision of multidisciplinary nutritional support may have a positive effect on mortality and improves quality of life in older patients. There is a need for more high-quality studies including multidisciplinary nutritional support to verify these findings. Study registration in PROSPERO is no. CRD42016047997.

1. Introduction

Malnutrition is a common problem among hospitalised older patients, which has been associated with decreased functional status, higher mortality and impaired quality of life [1,2]. During hospitalisation, nutritional status often deteriorates further; however, as the length of stay in hospital is generally getting

☆ An abstract at ESPEN Congress 2016 has presented some of the results.

* Corresponding author.
E-mail address: ambe@phmetropol.dk (A.M. Beck).

https://doi.org/10.1016/j.clnesp.2018.07.002
2405-4577/

shorter, it can be a challenge to improve nutritional status within the hospital [3,4]. In addition, previous research reports that many older people continue to lose weight during the first six months after hospital discharge, which in turn increases the risk of readmissions [2,5]. Therefore, it seems important to provide effective nutritional support during hospital admissions as well as in the period after discharge. Until recently, research on the effectiveness of managing malnutrition has primarily used oral nutritional supplements (ONS) or other nutrition interventions in isolation. The evidence for beneficial effects of ONS on nutritional intake, weight and some clinical outcomes in old patients is strong but the effects on functional status and patient-centred outcomes are less clear [3,6]. One explanation could be reduced adherence with increased age, due to the severity of the clinical condition, which may reduce appetite and limit the physical ability to manage to take ONS or any other form of oral nutritional support [7]. Multiple factors contribute to undernutrition in the old hospital population [8–10]. Therefore, strategies that target these underlying causes may be more effective than interventions just increasing nutritional intake by supplementation [11]. A combination of interventions, focussing also on other modifiable factors such as symptom management, may be a cost-effective way to improve oral intake and nutritional status with further benefits on quality of life, clinical outcome and functional status. One approach to address the multifactorial aetiology of malnutrition is to involve more than one profession (e.g. dietitians, nurses and physicians) as providers of the interventions [8].

There have been attempts to improve nutritional status in malnourished patients using multidisciplinary interventions. In a systematic review, Thorne & Baldwin [11] investigated the beneficial effects of multidisciplinary interventions on nutritional status, quality of life, functionality, performance status, and survival in malnourished patients or at risk of malnutrition. The authors reported no significant effect of multidisciplinary intervention on relevant nutritional, functional and clinical outcomes [11]. However, the studies included a broad range of patients, thus the conclusions may not be relevant for older hospitalised patients. In a recent Cochrane review, Feinberg and co-authors focussed specifically of adult hospitalised patients, but did not find enough evidence to conclude specifically in mixed nutrition support [12].

Therefore, we systematically reviewed controlled trials with the aim of investigating the evidence for effectiveness of multidisciplinary nutritional support on mortality, readmissions and quality of life in older patients (>65 years) during hospitalisation and/or after discharge, compared to usual care.

2. Materials and methods

The searches undertaken to identify the studies for this analysis derives from a series of searches conducted from 2013 to 2018.

2.1. Eligibility criteria

Studies were included in the systematic review when fulfilling the pre-defined criteria based on the standard elements of the review questions, PICO (Patient - Intervention - Comparison - Outcome), presented in Table 1.

An intervention was considered to provide multidisciplinary nutritional support when incorporating nutrition as a clearly identified integral component addressed by more than one profession e.g. dietitian, nurse, physician or others. The nutritional intervention could include ONS, improved nutritional care and/or dietary counselling.

We excluded publications in a language other than English, Danish, Norwegian or Swedish.

Table 1
Eligibility criteria based on PICOS.

Patient (*P*): Elderly patients, 65 years or older who were hospitalised
Intervention (*I*): Multidisciplinary nutritional interventions, defined as interventions incorporating nutrition as a clearly identified integral component by more than one profession
Comparison (*C*): Usual care
Outcomes (*O*): Critical: Mortality, readmissions, and quality of life, Important: nutritional status, drop outs and adverse events
Study design (*S*): Controlled trial

Outcomes were defined as “critical” or “important” as described in the “Grading of Recommendations Assessment, Development and Evaluation system” [13].

Critical outcomes were readmissions, mortality, and quality of life. Definition of readmissions were as prevalence of all readmissions after discharge. If there were no specific reporting of mortality or readmissions in the publications, these data were extracted from the information regarding the ‘flow of the participants during the study’, described in the text and/or illustrated as figures with flow diagrams.

Important outcomes were nutritional status (defined as weight at the end of the intervention), dropouts and adverse events (e.g. gastrointestinal complains). Assessment of all outcomes were, respectively, at the end of the intervention and at the latest follow-up.

We excluded studies not assessing any of the critical outcomes. In addition we excluded studies; with a preventive approach aimed at healthy older people; using exclusively enteral or parenteral nutrition; targeting a specific disease population where malnutrition is often not prevalent (e.g. diabetes, Ischaemic heart disease); having limited duration (less than 4 weeks, based on the findings of Milne and co-authors [3]); and solely including supplements like fish oils, essential amino acids or antioxidants. Furthermore, we excluded study protocols.

2.2. Search strategy

Studies were identified from a search on three time-points, with last author (AB) involved in all three searches, and a research librarian involved in the first two

1) An initial search conducted in literature published from January 2007 to November 2013. This search identified relevant controlled studies and systematic reviews by searching in six web-based databases: “The Cochrane Library”, “PubMed”, “Cumulative Index to nursing and Allied Health Literature (CINAHL)”, “Campbell Collaboration Library”, “Occupational Therapy Seeker” and “Centre for International Rehabilitation Research Information and Exchange Databases”. 2) The first search was part of another project and therefore updated with a new search in November 2014, to conduct this systematic review. In addition contact were made to expert in the fields about ongoing studies to identify grey literature 3) finally, a PubMed citation search was conducted on all the studies included in the review (to 23th June 2018). Appendix 1 presents the electronic search strategy for the updated search in PubMed. Details can be found in Beck et al., 2016 [14].

2.3. Identification of studies

Initially in step 1) and 2) two persons (AB and a research librarian VRG) screened the titles of studies for relevance. As a next step; based on inclusion and exclusion criteria, one person (AB) selected abstracts from potentially relevant titles. In the new search in November 2014 all authors participated in study selection i.e. two independent and blinded reviewers with a third for arbitration

Please cite this article in press as: Rasmussen NML, et al., Effectiveness of multidisciplinary nutritional support in older hospitalised patients: A systematic review and meta-analyses, Clinical Nutrition ESPEN (2018), https://doi.org/10.1016/j.clnesp.2018.07.002