

SHORT REPORT

Assessment and treatment of malnutrition in Dutch geriatric practice: consensus through a modified Delphi study

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Abstract

Objective: scientific evidence regarding the optimal management of malnutrition in geriatric patients is scarce. Our aim was to develop a consensus statement for geriatric hospital practice concerning six elements: (i) definition of malnutrition, (ii) screening and assessment, (iii) treatment and monitoring, (iv) roles and responsibilities of involved health care professionals, (v) communication and coordination of care between hospital and community health care professionals, (vi) quality indicators for malnutrition management.

Design: a modified Delphi study.

Methods: eleven geriatricians with special interest in malnutrition participated. In four rounds the experts rated the relevance of 204 statements, which were based on a literature review, on a five-point Likert scale. From the responses, means and 95% CIs were calculated. Consensus was defined as a lower 95% confidence limit ≥ 4.0 .

Results: the panel reached consensus that malnutrition should be considered a geriatric syndrome. The nutritional status should be assessed using the Mini Nutritional Assessment combined with comprehensive geriatric assessment. Nutritional interventions should be combined with interventions targeting underlying factors. Specific goals for nutritional therapy and ways to achieve them were agreed upon. According to the experts, malnutrition is best managed by a multidisciplinary team for whom roles and responsibilities were specified. At discharge written information about the nutritional problem, treatment plan and goals should be provided to the patient, caregiver and community health care professionals.

Conclusion: this study shows that a qualitative study based on a modified Delphi technique can result in national consensus on essential ingredients for a practical malnutrition guideline for geriatric patients.

[†]These two authors share first authorship of this paper.

Keywords: consensus, malnutrition, geriatric patients, Delphi technique, guideline, elderly

Introduction

Malnutrition constitutes an important threat to the independence and quality of life of older people. Its prevalence among hospitalised Dutch geriatric patients is high, ranging from 32 to 61% [1, 2]. Prevalences in geriatric inpatients from other European countries range from 23 to 39% [3, 4].

Multi-morbidity is thought to be the most important cause of malnutrition in the older persons. With increasing age the burden of chronic and acute disease increases, which directly influences the balance of nutritional needs and intake. The consequences of malnutrition are potentially serious. Malnutrition is associated with functional decline during hospitalisation [5], with delayed or failing functional recovery after hospitalisation [6], an increased risk for life-threatening complications such as sepsis and delirium [7, 8, 9], longer hospital stay [10, 11], increased risk of non-elective hospital readmission [12], poor quality of life [13] and increased in-hospital and late mortality [10, 14, 15]. The cost of malnutrition moneywise is also high with an estimated cost in the Netherlands of €1.7 billion and £7.3 billion in the UK [16, 17].

These facts would imply that prevention, early recognition and prompt treatment of malnutrition rank high on the agenda for necessary innovations in health care for older patients. However, malnutrition often remains unrecognised and even more often inadequately treated [18, 19, 20, 21], despite the fact that it has been demonstrated that multi- and single-component nutritional interventions can be evidence-based interventions in maintaining weight, reducing the number of complications, improving function and lowering mortality in different populations of malnourished older patients [1, 22–24].

In 2003, a Dutch guideline on malnutrition in geriatric patients was published [1]. An update was considered necessary, on the one hand to implement recent scientific evidence, and on the other hand to incorporate concepts such as quality indicators, implementation strategies and communication to health care professionals in the community into nutritional care. As far as we know, guidelines that incorporate and synthesise evidence on the whole chain of components of nutritional care in geriatric patients are still lacking. We, therefore, decided to develop a practice-based nutritional guideline based on the consensus in a panel of experts with the use of a Delphi technique.

Methods

A Delphi study is a qualitative, systematic and interactive research method, which relies on a panel of experts [25, 26].

We used a modified Delphi method to measure and develop consensus on the following six elements:

- (i) definition of malnutrition;
- (ii) screening and assessment of malnutrition;
- (iii) treatment and monitoring of malnutrition;
- (iv) roles and responsibilities of involved health care professionals;
- (v) communication and coordination of care between health care professionals in hospital and community;
- (vi) quality indicators for malnutrition management.

Eleven geriatricians with special interest in malnutrition and practicing in the field under consideration participated in this Delphi study. A nutritionist supervised the process and analysed the data. The chair and nutritionist conducted a comprehensive literature search and compiled a list of 204 statements concerning the six items. The panel could suggest additional statements which were incorporated in the following round if two or more panellists suggested a similar statement. The panel was first asked to study selected literature. Subsequently, in four rounds, they judged the 204 statements on a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = do not agree/do not disagree, 4 = agree, 5 = strongly agree. After each round, means and 95% confidence interval (CI) for the answers to each statement were calculated. Statements were *accepted* when the 95% CI was ≥ 4 , *rejected* when the 95% CI was < 3.0 or regarded as still without consensus, and passed on to the next round [27]. We decided in advance to stop after four rounds, whether consensus had been reached or not.

Results

The response rate of the panel was 100% in all rounds. A summary of the findings is presented in Table 1. After four rounds, all six topics had been addressed and consensus had been reached on five. The process of developing quality indicators was started but consensus was not reached.

Discussion

A modified Delphi consensus method enabled an expert panel to measure and develop consensus on five essential elements in the management of malnutrition in geriatric patients where high level scientific evidence from literature was lacking. In a period of 6 months relevant recommendations, endorsed by the Dutch Geriatrics Society and the

Table 1. Summary of the results from the Dutch consensus on assessment and treatment of malnutrition in geriatric patients

Element in the management of malnutrition	Summary of consensus
Definition of malnutrition	<p>The following working definition was established:</p> <p>malnutrition is to be regarded as a geriatric syndrome, resulting from multiple diseases and risk factors malnutrition in geriatric patients has the following characteristics: involuntary weight loss and/or an acute or chronic discrepancy between nutritional needs and nutritional intake, and loss of function</p>
Screening and assessment of malnutrition	<p>To assess the nutritional status the combination of CGA and the full-MNA is advised. CGA provides insight in the underlying factors leading to malnutrition. The full-MNA reveals the presence of malnutrition and possible causes For quick-and-easy to do case finding the Dutch-SNAQ [37] or MUST [38] (inpatients) and MNA-sf [39] (outpatients) may be considered</p>
Treatment and monitoring of malnutrition	<p>Treatment of malnutrition always has two pillars: the treatment of the underlying cause of malnutrition (e.g. depression, self-neglect), and improvement of the nutritional status Goals of malnutrition treatment are:</p> <ul style="list-style-type: none"> stabilisation or improvement of nutritional status stabilisation or improvement of function stabilisation or improvement of activities stabilisation or improvement of quality of life a decrease of morbidity and mortality <p>Energy goals are calculated by an equation (e.g. the Harris and Benedict); intake should be usual intake to which with at least 400 kcal extra per day is added with a minimum of 1,500 kcal/day or higher Protein goals are 1.2–1.5 g/kg/day Micronutrients goals: in case of deficient nutrition, temporary supplementation with a micronutrient supplement is indicated. Oral nutritional support will provide adequate amounts of micronutrients Vitamin D goal is a minimum serum level of 65 nmol/l Fluid goal is at least 1,700 ml/day Ways to achieve these goals: an energy and protein enriched diet is the preferred way to improve the nutritional status, combined with in-between-meals or snacks, optimal meal ambiance, adaptation of meal consistency etc. Oral nutritional support is advised when an enriched diet is not effective in reaching the nutritional goals. The next step is tube feeding. Parenteral nutrition is seldom indicated and should be considered at individual level. For every form of nutritional therapy the wishes and safety of the patient should be considered Preferably, physical activity (e.g. walking for 15 min a day) should be part of the intervention In order to achieve the goals, the nutritional intervention is supposed to last at least 3 months Weight change is regarded a quick and easy parameter to monitor effects. In addition, changes in the full-MNA score can be used Malnutrition in geriatric patients should always be treated by a multidisciplinary team</p>
Involved health care professionals, their roles and responsibilities	<p>Geriatrician:</p> <ul style="list-style-type: none"> diagnoses malnutrition and underlying causes primary responsible for treatment of inpatients and outpatients on geriatric wards may be consulted for geriatric patients on other wards transfers responsibilities to a GP when appropriate <p>Geriatric nurse:</p> <ul style="list-style-type: none"> performs (parts of) CGA and full-MNA coordinates the treatment plan <p>Dietitian:</p> <ul style="list-style-type: none"> performs (parts of) the full-MNA evaluates nutritional intake determines nutritional goals determines the form of the nutritional intervention evaluates effects of nutritional intervention <p>Nutrition assistant:</p> <ul style="list-style-type: none"> dispenses the food, fluids, snacks, ONS etc, takes care of extrafood for hospitalised patients stimulates patients to eat or drink <p>Informal caregiver (e.g. partner, child, friend, other):</p> <ul style="list-style-type: none"> is involved in implementation and execution of the treatment plan, especially at home <p>Other health care professionals (e.g. physiotherapist, speech therapist):</p> <ul style="list-style-type: none"> may be consulted when needed

Continued

Table 1. Continued

Element in the management of malnutrition	Summary of consensus
Communication and coordination of nutritional care between health care professionals in hospital and the community	<p>For outpatients and patients discharged from hospital, clear (preferably written) information on the nutrition problem and treatment plan should be made available and discussed with both patient and informal caregiver</p> <p>At discharge from hospital, the following minimal information is required provided to health care professionals at transfer to caregivers in the community (e.g. GP, homecare workers, dietician):</p> <ul style="list-style-type: none"> diagnosis of malnutrition and underlying causes goals of nutritional intervention weight (changes) and weight at discharge arrangements of responsibilities between of the professionals in the hospital team and the community team are made (e.g. who takes care of arranging meals on wheels, reimbursement of medical nutrition) <p>In the community, interdisciplinary agreements about the roles and responsibilities of involved health care professionals should be made. These may differ between teams, depending on local collaborations</p>
Quality indicators	In Dutch health care, screening of malnutrition is now mandatory within all health care settings. However, outcome indicators, process indicators and structure indicators for the treatment of malnutrition in geriatric patients have not yet been defined. Some indicators were proposed, but were not yet established

CGA, comprehensive geriatric assessment; full-MNA, mini nutritional assessment; GP, general practitioner.

Dutch Malnutrition Steering Group, could be provided to Dutch geriatricians and their multidisciplinary teams.

The Delphi technique has been widely used in developing consensus on clinical and nursing problems [25]. The use of this method seemed justified by the shortage of randomised controlled trials relating to many of the relevant clinical questions. Therefore, a quantitative method such as meta-analysis as a means of synthesising information was not feasible and evidence-based guideline development would still leave too many questions unanswered. The methodology used, such as the selection of the panellists [25] and definitions of acceptable levels of consensus, was judged to be sufficiently sound to prevent bias. The Delphi method may especially fit for developing guidelines in geriatrics, where sufficient evidence is often failing.

How does this consensus compare to published guidelines on the management malnutrition in geriatric patients in Europe? This consensus is unique in offering recommendations on five crucial elements of nutritional geriatric care. The first element is the working definition of malnutrition as a geriatric syndrome. Until now there is no gold standard for malnutrition. In a recent review, malnutrition was not yet judged to be an evidence-based geriatric syndrome [28]. However, there is a mechanistic explanation for malnutrition as a geriatric syndrome, as with increasing age the burden of chronic and acute disease increases, which directly influences the balance of nutritional needs and intake.

From the definition of malnutrition as a geriatric syndrome, it was a logical step to recommend comprehensive geriatric assessment (CGA) (e.g. assessment from a bio-psycho-social perspective), as the appropriate method to assess malnutrition in geriatric patients. CGA will provide insight into the multiple co-morbidities and risk factors that underlie malnutrition on the somatic, mental, functional and social domain. In agreement with ESPEN [29], the panel advised the use of the full-MNA [30] as a

complementary assessment instrument. The full-MNA provides insight into the presence, severity and possible causes of malnutrition, is suitable for hospitalised and outpatients and can monitor the effects of nutritional interventions.

From the definition of malnutrition as a geriatric syndrome, it logically follows that the intervention should be multi-factorial and multidisciplinary. Such an intervention encompasses a nutritional intervention in combination with interventions on the possible risk factors and causes. While most guidelines mention that causes of malnutrition have to be addressed, they principally emphasise the nutritional intervention.

The form and specific goals for the nutritional interventions concerning energy and protein are in agreement with other nutritional guidelines. Protein need in older patients is suggested to be as high as 1.5 g/kg bodyweight/day [31]. We underline the importance of sufficient fluid intake, namely 1,700 ml/day. The panel set value on achieving a vitamin D level of at least 65 nmol/l but preferably higher, as vitamin D levels above 50 nmol/l are associated with a reduction in falls and fractures with approximately 20% [32, 33].

One important barrier in implementing good nutritional care in hospitals is the unclear assignment of responsibilities [34]. Aiming at removing this barrier the panel agreed upon which health care professionals should be involved in the care for malnourished geriatric patients. In addition, we reached consensus upon their specific tasks and responsibilities, both in and outside the hospital.

It has been demonstrated that malnutrition in hospitalised patients starts in the community [35]. With this in mind the panel formulated recommendations to ensure that nutritional interventions are continued after discharge from hospital.

The implementation of health care reforms can be measured with quality indicators. However, the development of quality indicators for malnutrition is problematic because the research on malnutrition has not focused on quality of

care [36]. The panel agreed that quality indicators for the nutritional care process are necessary, but we could not yet agree upon the formulation of them. In collaboration with the Dutch Geriatrics Society, the panel intends to complete this task in the near future.

It is evident that consensus is not a purpose on its own but may well be a way to improve nutritional care for geriatric patients. Therefore, the proof of the pudding will be in the eating. To promote quality improvement of clinical practice, we have written a practical guideline based on the consensus and organised regional workshops to enhance the dissemination and implementation of the guideline.

Absence of evidence on the best management of malnutrition among geriatric patients should not delay or stop quality improvement of nutritional care. As demonstrated, a qualitative research method such as the Delphi technique can efficiently produce relevant and practical recommendations.

Key points

- A qualitative study based on a modified Delphi technique resulted in national consensus regarding the management of malnutrition.
- Consensus was reached that malnutrition should be considered a geriatric syndrome.
- Nutritional status of geriatric patients should be assessed by comprehensive geriatric assessment.
- Malnutrition is best managed by a multidisciplinary team.
- Nutritional interventions should be combined with interventions targeting underlying factors and continued after discharge.

Conflicts of interest

The sponsor had no role in the design, methods, data collections, analysis and preparation of the paper.

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Supplementary data

Supplementary data mentioned in the text is available to subscribers in *Age and Ageing* online.

References

The very long list of references supporting this review has meant that only the most important are listed here and are represented by bold type throughout the text. The full list of references is available on the Supplementary data available in *Age and Ageing* online Appendix.

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