Clinical Nutrition 32 (2013) 1007–1011

Contents lists available at SciVerse ScienceDirect

Clinical Nutrition

journal homepage: http://www.elsevier.com/locate/clnu

Original article

Prevalence and determinants for malnutrition in geriatric outpatients

Marian A.E. van Bokhorst-de van der Schueren [a,*], Sabine Lonterman-Monasch [b,d], Oscar J. de Vries [c,e], Sven A. Danner [c,e], Mark H.H. Kramer [c,e], Majon Muller [c,e]

[a] Department of Nutrition and Dietetics, Internal Medicine, VU University Medical Center, PO Box 7057, 1007 MB Amsterdam, The Netherlands
[b] Department of Internal Medicine, Haga Hospital, Leyweg 275, 2454 CH The Hague, The Netherlands
[c] Department of Internal Medicine, VU University Medical Center, PO Box 7057, 1007 MB Amsterdam, The Netherlands

ARTICLE INFO

Article history:
Received 13 February 2013
Accepted 13 May 2013

Keywords:
Geriatric outpatients
Nutritional status
Mini nutritional assessment
Malnutrition

SUMMARY

Background & aims: Few data is available on the nutritional status of geriatric outpatients. The aim of this study is to describe the nutritional status and its clinical correlates of independently living geriatric older individuals visiting a geriatric outpatient department.
Methods: From 2005 to 2010, all consecutive patients visiting a geriatric outpatient department in the Netherlands were screened for malnutrition. Nutritional status was assessed by the Mini Nutritional Assessment (MNA). Determinants of malnutrition were categorized into somatic factors (medicine use, comorbidity, walking aid, falls, urinary incontinence), psychological factors (GDS-15 depression scale, MMSE cognition scale), functional status (Activities of Daily Life (ADL), Instrumental ADL (IADL)), social factors (children, marital status), and life style factors (smoking, alcohol use). Univariate and multivariate logistic regression analyses, adjusted for age and sex and all other risk factors were performed to identify correlates of malnutrition (MNA < 17).
Results: Included were 448 outpatients, mean (SD) age was 80 (7) years and 38% was men. Prevalence of malnutrition and risk for malnutrition were 17% and 58%. Depression, being IADL dependent, and smoking were independently associated with an increased risk of malnutrition with OR's (95%CI) of 2.6 (1.3–5.3), 2.8 (1.3–6.4), 5.5 (1.9–16.4) respectively. Alcohol use was associated with a decreased risk (OR 0.4 (0.2–0.9)).
Conclusion: Malnutrition is highly prevalent among geriatric outpatients and is independently associated with depressive symptoms, poor functional status, and life style factors. Our results emphasize the importance of integrating nutritional assessment within a comprehensive geriatric assessment. Future longitudinal studies should be performed to examine the effects of causal relationships and multifactorial interventions.

1. Introduction

Aging may come with an accumulation of diseases and impairments, including cognitive and physical decline, depressive symptoms and emotional changes, all of which may directly influence the balance between nutritional needs and intake.[1] Dietary behavior of older individuals may change because of health or social reasons, decrease in taste and smell, or a reduced ability to purchase and prepare food. This combination of symptoms or conditions put older individuals at a higher risk of malnutrition.[1,2] Malnutrition is a prognostic factor associated with morbidity, mortality and costs of care.[3,4] It is therefore important to detect those older individuals who are at risk for malnutrition.

The reported prevalence rates of malnutrition in the Netherlands are relatively low in community dwelling older persons (2%–12%), but rise considerably in older individuals receiving home care (18%–35%) or in the hospitalized or institutionalized older patients (30%–60%).[5–9]

Data on the prevalence of malnutrition and clinical correlates of nutritional status of geriatric patients who visit geriatric outpatient departments is not available. These patients are referred to an outpatient clinic with multiple problems in somatic functioning, psychological functioning, and/or with functional or social problems.[10] Multimorbidity is thought to have a direct influence on the balance between nutritional needs and nutritional intake and to contribute to a high prevalence of malnutrition.[11]

* Corresponding author. Tel.: +31 20 4443410.
E-mail addresses: m.vanbokhorst@vumc.nl (M.A.E. van Bokhorst-de van der Schueren), s.lonterman-monasch@hagaziekenhuis.nl (S. Lonterman-Monasch), oj.devries@vumc.nl (O.J. de Vries), s.danner@vumc.nl (S.A. Danner), m.kramer@vumc.nl (M.H.H. Kramer), m.muller@vumc.nl (M. Muller).
[d] Tel.: +31 70 2100000.
[e] Tel.: +31 20 44443009.

0261-5614/$ – see front matter
http://dx.doi.org/10.1016/j.clnu.2013.05.007

In this study we aimed to investigate the malnutrition prevalence rates among older patients visiting a geriatric outpatient department of a large teaching hospital in the Netherlands. Furthermore, we investigated which somatic, psychological, functional, social or life style characteristics were associated with malnutrition.

2. Methods

2.1. Study design and population

For this cross-sectional study, aiming to investigate the clinical correlates of nutritional status of geriatric patients, we included 448 consecutive patients at their first visit to a geriatric outpatient clinic of a large teaching hospital in the Netherlands between October 2005 and March 2010. All patients were living independently (in their own home or in an assisted care facility). Patients living in a nursing home were excluded. Patients were referred for multiple problems in the somatic, psychological, social or functional domain. Data collection was performed prospectively as part of the routine measurements during the outpatient visits. All patients underwent a comprehensive geriatric assessment including physical examination, laboratory tests and functional screening. Nutritional status, cognitive functioning and depressive symptoms were assessed with questionnaires. Furthermore, patients were asked about demographics, medical history, medication use, and life style.

2.2. Nutritional status

Nutritional status was assessed with the Mini-Nutritional Assessment (MNA), a validated questionnaire for older individuals,[12] recommended by the European Society for Clinical Nutrition and Metabolism (ESPEN).[13] The questionnaire consists of 18 questions clustered in four sections: anthropometric assessment (weight, height, weight loss); general assessment (living situation, medicine use, mobility); dietary assessment (number of meals, food and fluid intake, and autonomy of feeding), and subjective assessment (self-perception of health and nutritional status). A maximum score of 30 can be obtained. A score below 17 indicates malnutrition, a score of 17–23.5 indicates a risk of malnutrition and a score of 24 or higher indicates a satisfactory nutritional status. If the patient was suspected not to be able to give reliable answers, the MNA questionnaire was confirmed by proxy.

2.3. Conditions associated with malnutrition

Possible clinical determinants of malnutrition were classified as somatic, psychological, functional, social, and life style factors.

Somatic characteristics included medication use, co-morbidity, fall-events, use of a walking aid, and urinary incontinence. The number of drugs was derived from the patients' medical records and was checked by asking the patient or the caregiver. Both prescription drugs and over-the counter-drugs were included. Polypharmacy was classified as using <6 drugs vs. ≥ 6 drugs (6 being the median number of drugs taken). Comorbidity was assessed by summing the numbers of underlying chronic diseases of a patient. Multimorbidity was classified as having <4 vs. ≥ 4 chronic diseases (divided by median number of comorbidities). Information about underlying diseases was obtained from the patients' medical records. The following chronic diseases were classified: hypertension, diabetes mellitus, cardiovascular disease, cerebrovascular disease, renal impairment, osteoporosis, chronic obstructive pulmonary disease (COPD), and malignancy. The use of a walking aid was classified as none vs. use of a walking stick/trolley walker/wheelchair. Falls were classified as never vs. ever. Urinary incontinence was classified as absent vs. present.

Psychological characteristics included depressive symptoms and cognitive functioning. Depressive symptoms were assessed by the Geriatric Depression Scale with 15 items (GDS-15). A higher score indicates more depressive symptoms.[14] A cut-off value of ≥ 5 was used to indicate clinically important depressive symptoms. Global cognitive functioning was assessed with the Mini Mental State Examination (MMSE). Cognitive dysfunction was defined as an MMSE score <24.[15]

Functional characteristics included activities of daily life (ADL) and instrumental ADL (IADL). ADL was assessed by asking if the patient was able to dress or wash himself independently, partly independent, or with help only. IADL was assessed by asking the patient if he/she was able to do the shopping, finances and cleaning the household independently, partly independent, or with help only. Both ADL and IADL were classified as independent or partly independent vs. dependent.

Social characteristics included education, marital status, and whether the patient had children. Education was classified as low (no education/primary school), middle (lower vocational education/intermediate vocational education), or higher education (pre-university education/higher vocational education/university). Marital status was classified as married/living together or unmarried/divorced vs. widow (-er). Presence of children was classified as zero vs. ≥ 1 child(ren).

Finally, it was inquired whether a patient was a current smoker (vs. former smoker or never smoker) or a current alcohol user (vs. former or never alcohol user).

2.4. Other variables

Height was measured with a stadiometer to the nearest centimetre (cm) and weight was assessed by a non-electronically scale (Seca, model 761) to the nearest kilogram (kg). Patients were weighed with their clothes on and the measured body weight was corrected for clothing (-2 kg). BMI was calculated as weight in kg divided by the square of height in meters (kg/m^2). Waist circumference was measured to the nearest cm with a flexible tape measured while the patient was in standing position. The tape was placed approximately 3 cm below the belly button of the patient.

2.5. Statistical analyses

Patient characteristics were calculated for the nutritional status categories (MNA <17.0, 17.0–23.5, and >23.5). Differences across categories were tested with ANOVA for normally distributed variables, Kruskall–Wallis tests for not normally distributed variables, and with χ^2 tests for categorical variables.

Logistic regression analyses were performed to assess the independent association of the clinical covariates with presence of malnutrition (MNA < 17). Somatic, psychological, functional, social and life style characteristics were separately included as covariates in the model. Regression analyses were adjusted for age and sex. To assess the independent association of the clinical characteristics with presence of malnutrition, all covariates for malnutrition (somatic, psychological, functional, social, and life style) were included in one logistic regression model using backward elimination.

Finally, all somatic, psychological, functional, and social correlates were summed and mean adjusted MNA scores were calculated for categories of number of clinical problems (≤ 2, 3–4, 5–6, ≥ 7) using analysis of covariance (ANCOVA).

Statistical analyses were performed with Statistical Package for the Social Sciences (SPSS Inc, Chicago, IL) version 20.0 for Windows.