Malnutrition in Elderly Population: Screening Tools and Management

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Abstract

Malnutrition is a common, potentially serious, and frequently under-diagnosed condition among elderly people. Age-related physiologic changes in combination with organic and psychological disease processes contribute to the development of malnutrition in older adults. Profound malnutrition and serious illnesses often present concurrently, and each can accelerate the progression of the other. Early detection and careful interventions are very important to prevent further deterioration. However, Prompt diagnosis relies on physicians' clinical suspicion and available screening tools. We consider that systematic screening and early treatment of malnutrition are integral parts of global geriatric care. Hence, this paper aims to review the prevalence and aetiology of malnutrition among ageing population with a special focus on some of the commonly used screening tools in clinical practice. Some of the non-pharmacologic and pharmacologic interventions are also highlighted that are used to manage malnutrition in elderly patients.

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Introduction

Nutrition is an important determinant of health status in the elderly people because it affects the ageing process.[1] Unfortunately, elderly people are at an increased risk of inadequate diet and malnutrition; paradoxically, in the industrialized countries, malnutrition is very frequent especially in hospitalized elderly patients or in older adults living in old home or in log-term care facilities.[2-5] Malnutrition and risk of malnutrition are associated with increased mortality in elderly people regardless of the cause of death, which emphasises the need for nutritional screening to identify older adults who may require nutritional support in order to avoid preterm death.[1-3] A protracted decline in nutritional status results in a catabolic metabolism and chronic low-grade inflammation, potentially leading to several harmful consequences, such as loss of fat-free mass, immune dysfunction, higher complications and mortality rates, reduced quality of life, and prolonged hospital stays – all of these are evident in elderly people.[5-8]

Malnutrition should be considered and treated as an additional disease, as it has been shown to worsen clinical outcomes and to increase morbidity, mortality, and complication rates, thus causing additional costs.[3]

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However, malnutrition is preventable and mostly reversible with early adequate nutritional therapy.[1,2,6-8] It often remains undetected due to lack of awareness, knowledge, and clinical protocols to identify and treat this problem within outpatient practice as well as in the hospitals. The present paper aims to review the prevalence and aetiology of malnutrition in the ageing population with a special focus on some of the commonly used screening tools in clinical practice. Besides, some of the non-pharmacologic and pharmacologic interventions are also discussed.

Epidemiology and Aetiology of Malnutrition in Elderly

According to the World Health Organization (WHO), the prevalence of undernutrition in older people living in the community ranges between 1.3% and 47.8%. The reported prevalence is much higher in studies from low- and middle-income countries than high-income countries.[9] Data suggest that near about 15% of community-dwelling and home-bound elderly, 23% to 62% of hospitalized subjects and up to 85% of nursing home residents are malnourished in the western countries.[3-5] Looking at South Asia region, in Sri Lanka, The prevalence of malnutrition and risk of malnutrition are 12.5% and 52.4% respectively, while in Pakistan, 8.0% and 43.3% respectively.[10,11] In Nepal, the prevalence of malnutrition and risk of malnutrition among the elderly are 24.8% and 49.6% respectively, while in India, they are 18.29% and 48.17% respectively.[12,13] Our another neighbouring country, Myanmar, has reported 21.7% and 59.4% malnutrition and at risk for malnutrition among elderlies respectively.[14] However, there are only few reported data available for our country to date. A study done in a rural area of Bangladesh revealed a prevalence of 26% for protein-energy malnutrition (PEM) and 62% for risk of malnutrition.[15] Another study done in four districts of the country revealed that overall malnutrition rate is 25.5%, and more than half of the elderly population is at risk of malnutrition.[16]

The aetiological approach must be exhaustive (medico-psychosocial problems) and integrate difficulties related to the physiological ageing.[17,18] Malnutrition, e.g. undernutrition, may be caused by compromised intake or assimilation of nutrients but there is growing appreciation that malnutrition may also be caused by disease-associated inflammatory or other mechanisms.[3,18-20] The physiological decrease in food intake with ageing, referred to as “anorexia of ageing”, may be attributed to several factors.[17] There is a marked decline in the ability to smell and taste and ageing is associated with several changes in both the central feeding system and the peripheral satiety system which lead to release of neurotransmitters modulating food intake.[17,21-23] Swallowing disorders are also crucial and associated with increased risk of aspiration and food aversion, which may be conscious or subconscious.[24] Diseases that interfere with the ability of the person to eat or to prepare food, such as stroke, tremors, or arthritis, can all lead to decreased food intake.[18,20,23]

Cancer and infections are important factors resulting in confusion, anorexia, and negative nitrogen balance, all of which may contribute to anorexia and weight loss.[3,18,20] Besides, any gastrointestinal disorder, pancreatic insufficiency and gluten enteropathy may cause weight loss through malabsorption and diarrhoea.[18,20,23] Among psychological issues, depression and dementia have been shown to be the most

common causes of weight loss in older adults, as depressed patients have many symptoms including weakness, stomach pains, nausea, anorexia, and diarrhoea that can ultimately lead to weight loss.[17,18,23]

Screening Tools for Malnutrition

There is no gold standard for identifying nutritional risk or malnutrition. Physicians, nurses, nutritionists, or other healthcare professionals predict nutritional risk through various screening tools, preceding a full nutritional assessment. Since no single physical finding, historical fact, or biochemical test is a sufficient predictor or determinant of malnutrition, several screening tools have been developed to better document and monitor malnutrition. Some common and best-evaluated screening tools are discussed below.

The Instant Nutritional Assessment (INA):

The INA is one of the simplest, most practical, and widely used nutrition screening tools, which was introduced by Seltzer and coworkers in 1979.[25] It combines three easily obtainable laboratory elements: lymphocyte count, albumin, and weight change (often referred to as “LAW”). Individually each item shows low predictive value, but when used together can predict the risk for malnutrition with a high degree of accuracy.[25,26]

The Subjective Global Assessment (SGA):

The SGA relies mostly on functional capacity and physical signs of malnutrition. It combines information from the patient's history (such as weight loss, dietary intake, functional status), physical examination (such as muscle and fat distribution, edema), and the clinician's judgment. Hence, it is highly dependent on the competences of the clinicians to prove its accuracy.[27,28]

The ‘Determine your Nutritional Health’ checklist:

The ‘Determine your Nutritional Health’ checklist was developed in 1991 by the Nutritional Screening Initiative (NSI), a collaborative effort between The American Dietetic Association, the American Academy of Family Physicians, and the National Council on the Aging, that compiled a 10-item checklist to screen elderly people.[29] The self-administered questionnaire has four questions cover dietary concerns, four questions cover general health assessment, and two questions cover social and economic issues. Patients with a total score of six or higher (highest score is 21, with higher being worse), are directed to various follow up and assessment.[30] However, it served more the purpose as a tool for screening, education, and public awareness rather than a diagnostic one in terms of its reliability.[31]

The malnutrition risk scale (SCALES):

The malnutrition risk scale was developed mainly as an outpatient screening tool.[20] The acronym SCALES represents the six elements in this screening tool (Sadness, Cholesterol, Albumin, Loss of weight, Eating problems, and Shopping) that cover common known risk factors for malnutrition, including depression, which has emerged as crucial risk factor (but often overlooked) for malnutrition and death.20 However, for the SCALES screening, the user does not need to be a trained or experienced professional. A score of three or higher suggests high risk for malnutrition.[20,32]

The Mini-Nutritional Assessment (MNA):

The MNA is a simple, rapid, and reliable tool for assessing nutrition in the elderly, as introduced by Guigoz and colleagues in 1994.[33] It is composed of 18 items in total distributed in four sections: anthropometric, general, dietary, and self assessment.[33,34]

The tool shows better accuracy comparing with the other tools and needs no laboratory tests. Hence, it has rapidly become the screening tool of choice for many geriatric clinicians, as well in public health settings.[35-37]

Malnutrition Universal Screening Tool (MUST):

'MUST' is a five-step screening tool to identify adults, who are malnourished, at risk of malnutrition (undernutrition), or obese. It also includes a management guideline which can be used to develop a care plan. 'MUST' was developed by the multi-disciplinary Malnutrition Advisory Group of the British Association for Parenteral and Enteral Nutrition.[38]

The Global Leadership Initiative on Malnutrition (GLIM) criteria:

GLIM framework is a recent approach that offers a framework for diagnosing malnutrition in adult patients. A two-step approach for the malnutrition diagnosis was selected, i.e., first screening to identify "at risk" status by the use of any validated screening tool, and second, assessment for diagnosis and grading the severity of malnutrition.[19]

The Canadian Nutrition Screening Tool (CNST):

In 2010, the Canadian Malnutrition Task Force proposed this simple tool that included three key items: weight loss, food intake and BMI. Any positive findings in at least one of these three items classified the patient at nutrition risk.[39]

Management of Malnutrition

Nutritional disorders are of specific relevance for the elderly. The treatment of malnutrition requires early identification and multimodal intervention, in hospitalized patients as well as community dwelling older adults.[40] Special attention should be given to treating depression or other similar illness and eliminating anorexogenic medications.[20,23,41] Dietary restrictions should be eliminated, when possible, with the diet liberalized to patient preferences. Delivering hot meals through programs such as Meals on Wheels and providing feeding assistance to patients with disabilities or dementia often helps maintain food intake to adequate levels.[18,42] Older patients with dysphagia can often be taught by a speech pathologist the correct swallowing techniques and positioning for swallowing safely.[24,42] Dietary manipulation, such as thickened liquids, is an important component of dysphagia management.[42,43]

Nutritional therapy:

Nutritional therapy is an important component in the management of malnourished individuals. Nutrition therapy can take one of three forms: oral caloric supplementation, tube feeding, or parenteral feeding. Numerous oral and enteral feeding formulas are available and differ in source and percent proteins and fat, lactose content, osmolality, calorie per unit volume, and cost.[44] There is emerging evidence that oral supplementation improves outcome in elderly persons with hip fractures, pressure ulcers, and pneumonia.[45-47] In some hospitals and nursing home settings, "medication pass" supplementation is practiced, which is a provision of liquid caloric supplementation at the time medications are passed, and in the malnourished elderly such a practice may increase the daily caloric intake by up to 15%.[48]

Pharmacologic interventions:

Megestrol acetate has been used successfully to stimulate appetite and promote mild weight gain in elderly malnourished nursing home residents, while several side effects including delirium, megacolon, oedema and congestive heart failure has been reported.[49] Similarly, growth hormone

has been shown to stimulate weight gain in severely malnourished older patients. However, growth hormone treatment is extremely expensive, and treatment for more than six months has been associated with a variety of side effects including arthralgias, carpal tunnel syndrome, and gynecomastia.[50] Besides, testosterone also increase muscle strength and decreased leptin levels in older persons.[51] Similar effects have been observed with oral anabolic androgenic steroids like nandrolone and oxandrolone.[52] Metoclopramide, a very well-known prokinetic agent, has been used to treat early satiation and anorexia; however, it may result in dystonic reactions and worsening of parkinsonian symptoms.[53] Cyproheptadine, an antiserotonergic agent, has also been shown to have a mild positive effect on appetite in malnourished adults.[53] Dronabinol is an antiemetic that promotes weight gain; however, its adverse effects include euphoria, somnolence, and fatigue.[54]

Conclusion

Poor nutritional status and malnutrition in the elderly population are important areas of concern. The elderly population is affected by many causes of malnutrition, which can be reversed if it is addressed early. We consider that systematic screening and early treatment of malnutrition are integral parts of global geriatric care. Management of malnutrition in the elderly population requires a multidisciplinary approach that treats the underlying pathology and uses both social and dietary forms of interventions. However, sometimes pharmacologic interventions are also necessary. However, those drugs are neither sufficiently cost effective for routine use nor sufficiently tolerated for long term use.

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