

ABSTRACT

The prevalence of protein-energy malnutrition in the elderly at long term institutions ranges from 23-85%. This is an area of great concern as the subsequent unintentional weight loss can lead to reduced physical and cognitive functional status, increased risk of falls, infection and complication rates which in turn leads to higher utilization of health care resources and increased mortality. Many Health Care Practitioners inadequately address the multifactorial issues that contribute to malnutrition in the Elderly. It is commonly assumed that nutritional deficiencies are an inevitable consequence of aging and disease and that intervention for these deficiencies has limited effect. This is not true and nutritional assessment and treatment should be routine part of care for all elderly persons. Dietitians have made addressing malnutrition a priority and we believe that routine screening of the Elderly for malnutrition or risk of malnutrition with the correspondent treatment plan should be carried out systematically from the GP setting to the long term institutional care setting.

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INTRODUCTION

Malnutrition is a silent epidemic with an estimated 30-45% of patients in Singapore hospitals. An Australian study found the prevalence of malnutrition across eight residential aged care facilities ranged from 32-72%. My own personal observation in Singapore shows that the prevalence of protein-energy malnutrition in Nursing Homes for the elderly ranges from 23-85%. The majority of patients with chronic or debilitating disease processes are often already malnourished on admission to Restructured Hospitals or Step-down Health Care Facilities. When underlying diseases are ruled out, weight loss in the institutionalized elderly is usually due to depression, use of anorexic drugs and dependency of staff for feeding.

The most common nutritional problems for residents in Aged Care facilities are weight loss and associated protein energy malnutrition¹ (Level II). The reasons for malnutrition in older persons are multi-faceted and can even be associated with the process of ageing, which affects food intake and body weight and can be intensified by illness or disease¹ (Level II). Depression and adverse medication side effects are the most common treatable causes of malnutrition². Advanced dementia, apathy,

fatigue, and late-life paranoia (e.g. where the resident believes that he / she is being poisoned via food or fluid intake) are other potential factors involved in poor nutritional and hydration status of older persons.¹ There are also specific issues relating to eating, feeding and nutrition for those with particular diseases or diagnoses. For example, Kumlien and Axelsson (2002)³ (Level QE) reported that a quarter of stroke patients suffered from dysphagia and 30% had poor food intake and poor appetite. Older persons who have had a hip fracture tend to have a poor nutritional status, as do residents with COPD or Parkinson's Disease^{4,5} (Level EO; Level III-3).

NUTRITION ASSESSMENT**Weight Loss**

As an important component of nutritional assessment, measurement of body weight and information regarding recent weight loss can identify patients in need of nutritional intervention. Weight status is usually assessed in comparison to usual (premorbid) weight or ideal body weight, taking into account the duration in which it occurred and the degree to which it was unintended. Severe weight loss is defined as >1% in one week, >5% in one month, >7.5% in three months, and >10% in six months. Current weight that is 20% or more below ideal body weight is also an indication of potential nutritional risk. However, weight status is frequently influenced by hydration status or the presence of edema and ascites and thus has serious limitations as an outcome measure or monitoring tool in hospitalized patients. For these reasons, weight profiles for nutritional assessment must be used in combination with other nutritional parameters.

Mini-Nutritional Assessment Form

One tool that has been validated for use for nutritional screening of Elderly patients and which does not require laboratory tests is the Mini-Nutritional Assessment (MNA)⁶. Table 1 shows the questions that should be asked as part of the Nutritional Assessment. YES to one or more questions means that nutritional risk exists.

Without appropriate nutrition support, malnourished patients continue to deteriorate in their nutritional status. If uncorrected, malnutrition may result in a prolonged and complicated recovery from illness or surgery. This, in turn, leads to a longer hospital stays with an associated increase in cost⁷.

Recognising the varied risk factors for poor nutritional status in the Elderly is the key to successful assessment and management strategies⁸ (Level EO). Therefore, an assessment of potential causes should be made with a view to identifying

malnutrition and reversing the causes⁸ (Level EO).

In 1995, Morley and Silver⁸ developed a mnemonic called “MEALS ON WHEELS” to assist aged care team members in identifying reversible causes of malnutrition in the Elderly. With some adaptation to the Singapore Aged Care context (see following table), this mnemonic may be appropriate for aged care team members to consider a multi-factorial approach to Elderly patients’ poor nutrition.

Why is nutritional assessment necessary?

When providing enteral nutrition support to a patient it is important to assess their nutrition status. A formal assessment based on anthropometry, biochemistry, clinical and diet history should be carried out by the dietitian. The nutrition assessment is used to determine priorities of nutritional management, estimate the patient’s nutritional requirements, and provide a baseline measure for monitoring the effectiveness of intervention. Based on this assessment, a treatment goal can be set and a nutrition care plan developed.

Inadequate food intake, food choices that lead to dietary deficiencies, illnesses that cause increased nutrient requirements, increased nutrient loss, poor nutrient absorption or a combination of these factors leads to malnutrition. Nutritional deficiency in the elderly can be the result of one or more factors – physiologic, pathologic, sociologic and physiologic. See Table 2. The difficulty lies in identifying these underlying factors that contribute to malnutrition and how the intervene effectively.

ADDRESSING INADEQUATE FOOD INTAKE

Inadequate food intake could be caused by any one of the following reasons:-

- Loss of interest in Food
- Unrealistic grading of Food by family/ health professionals
- Inappropriate Diet Restrictions
- Lack of taste/ taste alteration
- Poor dentition
- Mental disabilities

TABLE 1: Questions To Be Asked As Part Of Nutritional Assessment

	Yes	No
1 Obvious underweight-frailty?		
2 Unintentional weight loss?		
3 Reduced appetite or reduced food and fluid intake?		
4 Mouth or teeth or swallowing problem?		
5 Follows a special diet?		
6 Unable to shop for food?		
7 Unable to prepare food?		
8 Unable to feed self?		
9 Obvious overweight affecting life quality?		
10 Unintentional weight gain?		
Falls risk Q Does not receive direct sunlight on face, arms/legs, and hands for at least 10 mins a day on most days of the week?		

FIGURE 1: Meals on Wheels: Treatable Causes of Malnutrition in the Elderly⁸

Medication
Emotional problems (depression)
Anorexia tardive (nervosa);Alcoholism
Late-life paranoia
Swallowing disorders
Oral factors
Not culturally appropriate (with respect to the food; the presentation; the environment)
Wandering and other dementia-related behaviours
Hyperthyroidism, hyperparathyroidism, hypoadrenalism
Enteric problems (malabsorption)
Eating problems (resident’s inability to feed independently; tremors resulting in spillage)
Low-salt, low-cholesterol diets (therapeutic diets)
Socially inappropriate (the food; the environment; lack of interaction; inappropriate positioning of resident)

It is the position of the ADA (American Dietetic Association) that the quality of life and nutritional status of older residents in long-term institutions may be enhanced by liberalization of the diet prescription. ADA advocates the use of qualified dietetics professionals to assess the need for MNT (Medical Nutrition Therapy) according to each person’s individual medical condition, needs, desires and rights.¹⁰

Food is an essential component of quality of life; an unacceptable or palatable diet can lead to poor food and fluid intake. This will result in weight loss and under nutrition and a downward spiral of negative health effects. Nursing Homes that cater for the elderly on a long term basis should adopt new attitudes towards providing nutritional care. “Person-centred” or “Resident-centred care” involves the residents in decisions about feeding schedules, menus and dining locations. Allowing elderly residents to participate in diet-related decisions can provide nutrient needs, allow alterations contingent on medical conditions and simultaneously increase the desire to eat and the enjoyment of food, thus decreasing the risks of weight loss, under nutrition and other potential negative effects of poor nutrition and hydration.¹⁰

It has been found that most elderly residents with malnutrition were on restrictive diets that might discourage nutrient intake.¹¹ Barriers to adequate nutrition can be divided into 2 broad categories; namely physical problems and psychosocial concerns.

Common physical problems affecting nutritional status include poor appetite, weight loss, pressure ulcers, chronic diseases, eating dependency, sensory loss and poor oral health. Low salt, sugar and fat diet restrictions may make food less appetizing which will result in diminished intake and weight loss. Please note that while low salt, DM diet restrictions are lifted, mechanically altered (pureed to chopped) diets must still be given. 30-60% of long term elderly patients have dysphagia. However the highest level dysphagia diet tolerated must be given and prepared and served in as attractive and appetizing manner as possible.

TABLE 2: Factors Influencing Nutritional Inadequacies in the Elderly Population⁹

Physiologic	Pathologic	Sociologic	Psychological
Decreased taste	Dentition	Ability to shop for food	Depression
Decreased smell	Dysphagia	Ability to prepare food	Anxiety
Dysregulation of satiety	Diseases (cancer: CHF, COPD, diabetes, ESRF, thyroid)	Financial status	Loneliness
Decreased gastric emptying	Medications (diuretic, anti-hypertensive, antidepressant, antibiotic, antihistamine)	Low socioeconomic	
		Impaired activities of daily living skills	Emotionally stressful life events
Decreased gastric acid	Alcoholism	Lack of interaction with others at meal times	Grief
Decreased lean body mass	Dementia		Dysphoria

CHF =congestive heart failure; COPD =chronic obstructive pulmonary disease; ESRF = End Stage Renal Failure

Psychological concerns that must be addressed include cultural, ethnic and social aspects of food behaviours. An elderly patient should be served meals that reflect their ethnic background as they are familiar to them and provide comfort. The Dietitian should also be sensitive to individual Health Beliefs and try to incorporate them into the meals served as far as possible. The Yin and Yang dietary food principles should be incorporated for the elderly Asian patients otherwise they will be upset and get depressed and not pay attention to their nutritional needs.

Adequate Nursing Staff is needed to ensure that the elderly dependent patient receives adequate nutrition and fluid intake. A study done by Kayser-Jones indicates that a minimum of 20-30 minutes is needed to assist a dependent elderly patient with his or her meal and to promote a quality experience for the patient.¹² It is also very important that food is presented by staff in a positive manner. Staff attitude towards food served may also determine whether the elderly patient consumes the food provided. The Dietetic Professional must educate all levels of Nursing Staff that come in daily contact with the elderly resident. In addition, elderly residents who are able to should encourage their fellow residents to eat and drink.

NUTRITIONAL INTERVENTION: IMPROVEMENT OF FOOD & CARE

Nutritional Interventions for addressing nutritional deficiencies leading to malnutrition may include one or more of the following actions:-

- Liberalizing the patient's diet.
- Encouraging the use of flavour enhancers and frequent small meals
- Offering liquid nutritional supplements for use between meals or providing energy rich between meal snacks
- Increasing the protein intake with addition of eggs, meat, soya bean or modular protein powder
- Providing energy rich food and finger foods for the demented patient
- Providing preferred food and ensuring ethnic food preferences are catered to.

- Fortifying pureed meals when patient is on a pureed diet
- Having decentralized food portioning
- Verbal prompting for patient to eat especially when patient has dementia
- Provision of feeding assistance. To allow adequate time for chewing, swallowing and clearing the throat before another bite is taken
- Individualized nutritional care plans
- Improving the eating environment. Some Nursing Homes in Singapore serve meals in a dining hall stimulating an old Kopi-tiam.
- Family members are encouraged to be present at meal times and to assist in feeding the elderly patient

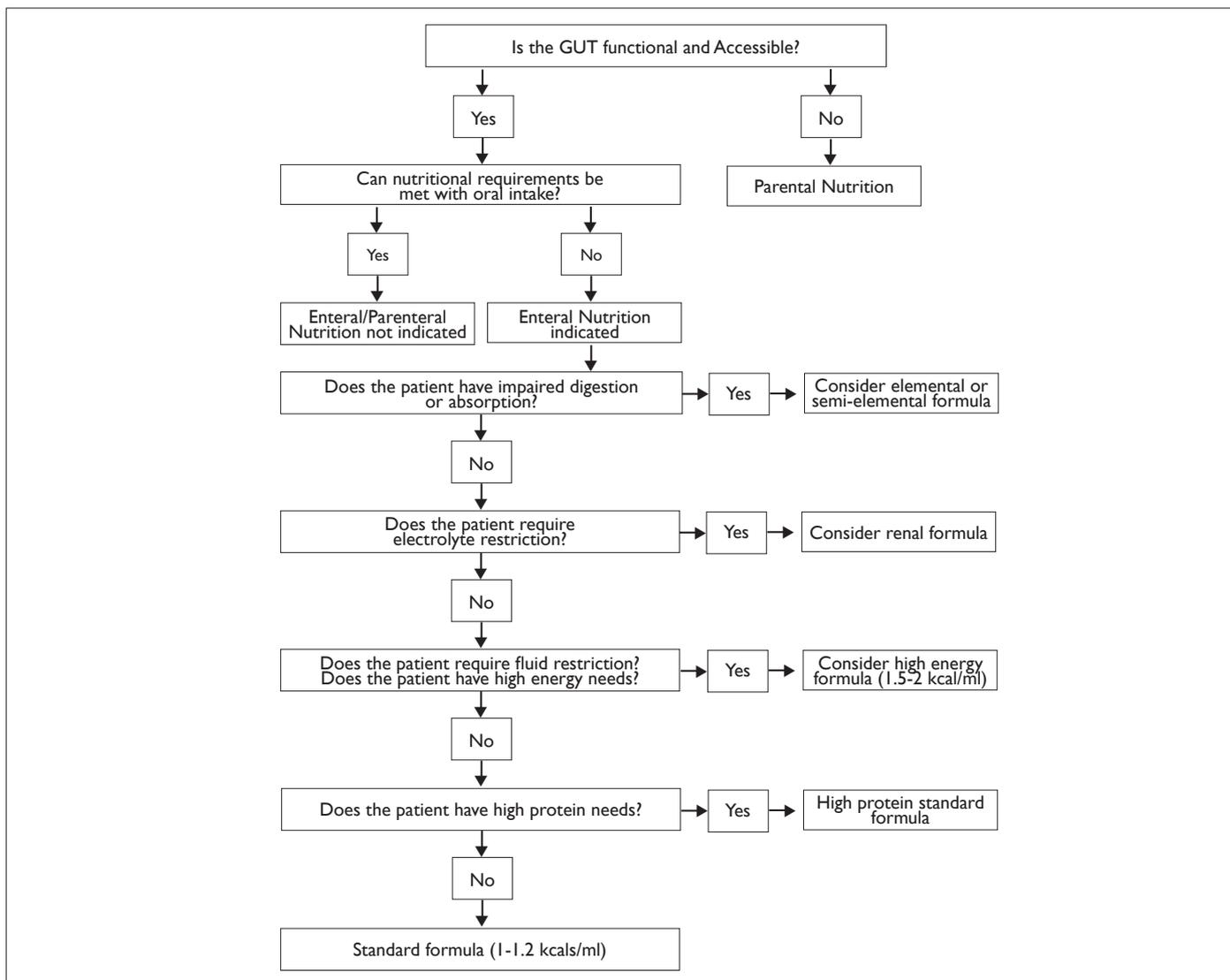
In addition, one must ensure that the elderly patient is equipped with all necessary sensory aids (glasses, dentures, hearing aids) and that the patient is seated upright at 90°, preferably out of bed and in a chair. It is very important that food and utensils are removed from their containers or wrappings and placed within the patient's reach. A slower pace of eating has to be factored in and meal trays should not be removed too quickly.

Good nutritional care requires an individualized approach that includes early recognition of weight loss and the identification and management of likely causes (e.g. adverse medication effects, poor oral health or depression). This careful attention to assessment and management of residents' nutritional requirements improves quality of life.¹ Grade II, IV evidence.

The following flow chart shows when to use enteral supplements and what type of enteral product to choose when deciding on an appropriate nutritional intervention for a malnourished elderly patient.

ELDERLY DIETS

The diets of the Elderly should also be considered as potential causes for nutritional problems. Studies have shown that weight loss, low albumin levels and postural changes (orthostatism) are associated with therapeutic diets¹⁴ (Level QE) and therefore

FIGURE 2: Flow Chart for Nutrition Support Planning¹³

these diets should be avoided whenever possible for the Elderly patient. Low blood levels for a variety of vitamins have been found in many Elderly residents in Nursing Homes⁸ (Level EO). Low levels of Vitamins B1, B2 and C have been associated with cognitive dysfunction. Supplementation of thiamine has improved cognitive function for the Elderly in Nursing Homes with vitamin deficiencies⁸ (Level EO). Routine assessment of blood levels for these vitamins in the Elderly is warranted as the treatment of these deficiencies is not aggressive and the potential benefits, such as increased cognitive function, are worthwhile.

Oral nutrition via a diligent hand-feeding program, rather than nasogastric enteral feeds, is best practice management for older persons¹ (Level II) however, a thorough assessment for dysphagia should first be undertaken¹⁷ (Level III-1). The preferences of the resident should guide the dietary selection and the amount of nourishment¹⁵ (Level IV). A multidisciplinary team is helpful in encouraging oral nutrition. For example, the Elderly care team and family members can provide information on the resident's likes and dislikes, lifelong food habits, and identification of swallowing problems⁸ (Level EO). A dietician,

in collaboration with other relevant members of the aged care team, can then plan meals in accordance with the resident's cultural diversity, preferences and swallowing ability.

ENTERAL FEEDING

Enteral prescriptions need to be individualized to meet the patient's requirements. Although most commercial formulas appear to contain adequate vitamin content to maintain long-term plasma and serum vitamin status, routine monitoring is still recommended as formulas may contain excesses of some micronutrients and minimal levels of others. In addition to micronutrient adequacy and fluid/water intake, the form, source, and amount of protein, carbohydrate, and fat need to be considered in the patient on home enteral nutrition therapy and in the feeding system.

A 1998 systematic review examined the benefits of protein energy supplementation in adults (predominantly aged 70+), which included studies of oral supplementation, modification of food constituents to increase energy density, and studies of enteral feeding¹⁶ (Level II). The reviewers concluded that

weight and nutritional indices of adults might be improved by routine nutritional supplementation. However, no reduction in mortality was found for nutritional supplementation.

When is enteral nutrition not used?

In some clinical conditions, such as gut failure, intestinal obstruction, or an inability to gain enteral access, it may be necessary to bypass the gut and deliver nutrients directly into the bloodstream (parenteral nutrition).

Aggressive nutrition support is not always appropriate in the care of palliative or elderly patients. Careful consideration should be given to patient and family wishes concerning the appropriateness of initiating or continuing enteral feeding. Potential benefits, including quality of life; possible complications and expected outcomes should be considered.

Giving elderly palliative residents oral foods and fluid, even in small amounts, is preferable to using more invasive enteral (e.g. nasogastric or PEG) feeding methods. However, a dysphagia assessment is essential to provide direction for oral feeding.¹ Grade II, III-1 evidence.

The aged care team member assisting with feeding should be seated at eye-level with the resident and take time to establish and maintain a relationship with the resident to create an atmosphere that is conducive to relaxing the resident. This approach to feeding enhances the resident's nutritional intake and improves his / her social well-being.¹⁷ Grade III-1 evidence.

CONCLUSIONS

The elderly population is affected by many causes of malnutrition. Malnutrition in the elderly can be reversed if addressed early using the appropriate nutritional assessment tools. Management of elderly malnutrition requires a multi-disciplinary approach that treats the root cause and uses both social and dietary forms of intervention. Nutritional deficiencies are more common in the hospitals or step-down centres for the aged. Dietitians are part of this multi-disciplinary team that plays a pivotal role in addressing malnutrition, including:

- Identifying and screening those at risk of or suffering from malnutrition
- Developing treatment plans to address malnutrition
- Educating other health professionals, including identifying, screening and referring those at risk.

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LEARNING POINTS

- **Malnutrition is a serious problem that has to be addressed early using weight profiles and mini-nutritional assessment questionnaires.**
- **Elderly patients with a recorded weight loss of greater than 5% of their body weight in one month, or greater than 10% of their body weight in six months, are identified as having experienced “too much” or “significant” weight loss and are considered to be at health risk.**
- **Nutritional intervention for the treatment of elderly malnutrition requires a multi-disciplinary approach that treats pathology and uses both dietary and social forms of intervention.**
- **Appropriate Enteral supplementation can improve weight and nutritional indices of elderly adults.**
- **Elderly diets should be liberalized from therapeutic dietary restrictions especially when the Elderly has diminished appetite and has unintentional weight loss.**