MALNUTRITION IN THE OLDER ADULT

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Objectives

- Identify risk factors of malnutrition in the older adult
- Review nutrition screening tools in clinical practice
- Develop a treatment plan for the management of malnutrition
Background

- Malnutrition, or undernutrition, is a common syndrome in older adults
- Cause is multifactorial and cannot be diagnosed by a single lab finding or physical finding
- Requires a comprehensive assessment including functional and environmental evaluations

Prevalence

- Community dwelling older adults: 5-44% (rate is higher in homebound older adults)
- Long-term care residents: 23-85%
- Hospitalized older adults: 20-65%
- Up to 70% in the cognitively impaired older adult

Physiological Changes Associated with Malnutrition

- Thinning of tooth enamel
- Bone loss in oral structure leading to loosened teeth
- Thinning of oral mucosa leading to decreased saliva production
- Decreased number of taste buds
- Sense of smell is diminished or absent

Despite the high prevalence of malnutrition in older adults, it often remains undiagnosed

Bocock et al, 2009; Skates et al., 2012
Physiological Changes Associated with Malnutrition

- Aging also leads to increased body fat and decreased lean muscle mass.
- The result is a decreased metabolic rate, which may result in less food intake.

- Medication and disease contribute to a decrease in hydrochloric acid production and a subsequent decline in the absorption of micronutrients.
- Although the size of the liver decreases with age, it should not decline in function; decreased serum albumin should not be considered a normal age-related change.

Other Etiologies Associated with Malnutrition

- There is a relationship between inflammation and malnutrition.
  - Due to metabolic stressors in the body during an inflammatory state.
  - Inflammation due to acute injury or illness can hinder nutritional interventions in the healing process.
  - Contributes to the development or worsening of malnutrition.

White et al., 2012
Risk Factors

- Age alone is a risk factor
- The independent, healthy, older adult is at low risk for malnutrition
- However, chronic diseases are common in this age group and place older adults at risk for malnutrition
- Cardiac and pulmonary disease can result in decreased appetite

- Social factors
- Older adults are more likely to eat alone
- ~⅓ of persons age 65+ and ~½ over age 85 live alone
- Studies have shown that those who eat in the presence of others consume more food than those who eat alone
- Financial limitations can affect food acquisition
- May lack transportation

- Psychological factors
- Depression and dysphoria often remain unrecognized and undertreated
- Behavioral and Psychological Symptoms of Dementia (BPSD) can also play a factor
- Apathy, depression, irritability, agitation and anxiety
- In some instances may include euphoria, hallucinations, and disinhibition
Risk Factors

Medical
- Malignancy: GI tract malignancies are the most common.
- Dysphagia: Occurs in patients with a history of CVA or Parkinson’s Disease.
- Endocrine disorders: hyperthyroidism, new-onset DM.
- End-organ disease: CHF, ESRD, COPD, hepatic failure.
- GI disorders: Celiac disease, ischemic bowel, inflammatory bowel disease, pancreatic insufficiency, PUD, GERD.
- Rheumatological disorders: PMR, RA.
- Neurological conditions: Parkinson’s Disease, chronic pain.
- Alzheimer’s Disease.
- Drug or alcohol dependence.
- Medication side effects: Digoxin, opioids, SSRI s, diuretics, topiramate.

Risk Factors

Functional limitations
- Immobility.
- Poor dexterity.
- Tremors.

Consequences of Malnutrition

Malnourished older adults are more likely to experience:
- progressive decline in health.
- increased mortality.
- Demand for protein can exceed protein available and lead to protein catabolism.
  this can include catabolism of respiratory muscles which increases the risk for pneumonia.
- Suppression of the immune response including delayed healing.
  greater risk of infection.
  longer time for recovery.
  increased risk for hospitalization or surgery.

Duffy, 2008; Skates et al., 2012.
Consequences of Malnutrition

In comparison with well-nourished older adults, malnourished institutionalized older adults are more likely:
- to be admitted to the hospital
- to have a longer length of stay
- to die during an acute care admission

Bocock et al., 2009; Duffy, 2008; Skates et al., 2012

Screening for Nutritional Status

Criteria for the diagnosis of malnutrition recommended by the Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition (ASPEN):
- Two or more of the following characteristics:
  - Insufficient energy intake
  - weight loss
  - loss of muscle mass
  - loss of subcutaneous fat
  - localized or generalized fluid accumulation that may mask weight loss
  - diminished functional status as measured by handgrip strength

Mueller et al., 2011

Screening Tools

Numerous tools are available for nutritional screening and assessment:
- Twenty specifically developed for use in older adults
- The Mini Nutritional Assessment – Short Form (MNA-SF) has good validity and reliability and is free to use
- The Simplified Nutrition Assessment Questionnaire (SNAQ) has versions for long-term care, hospitalized patients, and community-dwelling older adults (≥65 years)
Screening Tools

Consider screening for depression in older adults who are malnourished

- Geriatric Depression Scale (GDS)

Dementia may be helpful, if indicated

- Mini Cog or the Montreal Cognitive Assessment (MoCA)

Height & Weight

- Severe weight loss is defined as greater than 5% weight loss in 1 month, 7.5% weight loss in 3 months or 10% weight loss in 6 months

- Failure to thrive is defined as 25% weight loss with no identifiable cause

- A BMI of 21 or less is often consistent with malnutrition in older adults and has been linked to higher mortality

Muscle Mass

Mid-arm circumference provides additional information about muscle mass as is included in the MNA

- Measurement correlates with total muscle mass and protein status

- Used to monitor nutritional therapy

- Measure in the non-dominant upper arm as it hangs freely at the patient's side

- Tape measure should be placed around the midpoint of the upper arm between the acromion of the scapula and the olecranon or the ulna
Health History
- Past medical and surgical history focusing on chronic diseases
- Medication and supplement use
- Review of systems should focus on complaints related to poor nutrition such as mouth pain, chronic constipation can cause loss of appetite
- Dietary history - 24 hour recall
- Inquire about dietary preferences
- Ask about dentures - Do they fit well? Does the patient wear them?

Physical Examination
- Many systems can be connected to malnutrition
- Observe clothing - does it seem too large?
- Assess complaints reported in the review of systems
- Areas that we often omit should be examined such as taste and smell
- Note temporal muscle wasting, nail abnormalities, brittle hair/nails, bruises, skin color (pallor/jaundice), loss of subcutaneous body fat, and edema

Physical Examination
- Musculoskeletal examination should include range of motion and strength in the upper and lower extremities
- Assessment of function
- Neurological examination should include pain, vibratory sensation, and reflexes
Diagnostic Studies

- There is no gold standard test for malnutrition
- CBC - infection, anemia (megaloblastic anemia)
- Thyroid panel - hypo- hyperthyroidism
- CMP - total protein, albumin, electrolytes
- Urinalysis - infection
- Stool sample - fecal occult blood

Diagnostic Studies

- Albumin and prealbumin
  - Can give an indication as to how long malnutrition has been present
  - Albumin has a half-life of 15-20 days
  - Prealbumin has a half-life of 1-2 days (helpful in evaluation of short-term malnutrition)
- Total cholesterol
  - If the older adult is not on lipid-lowering therapy, a TC level of <150 mg/dL may also be considered a marker for malnutrition and is associated with increased mortality

Diagnostic Studies

- Micronutrients
  - Vitamin B12
    - Patients with low normal Vitamin B12 levels may actually be deficient
    - Diagnosis may need to be made by measuring methylmalonic acid levels (elevated in B12 deficiency)
  - Vitamin D
    - Many older adults have low Vitamin D levels (<20 ng/mL)
    - USPSTF concluded that there was insufficient evidence for routine testing of Vitamin D levels in asymptomatic adults, however, high-risk patients should be monitored
Guidelines and Tools for Managing Malnutrition

- ASPEN Guideline: Mueller et al., 2011
- National Guideline Clearinghouse: DiMaria-Ghalili, 2012
- American Medical Directors Association (AMDA): AMDA, 2010
- Gerontological Advanced Practice Nurses Association (GAPNA) Toolkit: https://www.gapna.org/resources/toolkit-gerontology-resources-advanced-practice-nurses
- The Hartford Institute for Geriatric Nursing: http://consufgeri.org/patient-symptoms/unintentional-weight-loss

Management

- Cater to food preferences and remove dietary restrictions
- Enhance patient’s preparedness for meal; provide assistance if needed
- Enhance comfort, taste, appearance of food
- Enhance social aspect; provide adequate time
- Offer assistance with shopping, cooking, and feeding including the home delivery of meals
- Address dental/oral complaints of chewing discomfort/dysfunction

Address any reversible causes of malnutrition - MEALS ON WHEELS acronym

- Medications (e.g. digoxin, theophylline, SSRIs, antibiotics)
- Emotional (e.g. depression, anxiety)
- Alcoholism, elder abuse
- Late life paranoia or bereavement
- Swallowing problems
- Oral factors (tooth loss, xerostomia)
- Nosocomial infections (e.g. TB, pneumonia)
- Malnutrition and other dementia related factors
- Hypertension, hypercoagulase, hypoadrenalism
- Mental problems (e.g. esophageal stricture, gluten enteropathy)
- Eating problems
- Low salt, low cholesterol and other therapeutic diets
- Social isolation, stones (chronic cholecystitis)
Management
Correct Micronutrient deficiency
- Vitamin B12
  - Prevent deficiency with B12 fortified foods or oral Vitamin B12 (10-15 mg daily)
  - B12 deficiency should be treated with oral Vitamin B12 1000 mcg daily
- Vitamin D
  - The Recommended Daily Allowance (RDA) is 600 IU through age 70, but increases to 800 IU for age 71+
- Calcium
  - The RDA for calcium is 1200 mg for people >51 years of age

Management
- Determine caloric needs
  - Caloric requirements decline with aging, but required nutrients remain unchanged or increase
  - The Harris Benedict equation is a method for calculating caloric need that includes height, weight, age, activity and stress levels
  - http://www.nafwa.org/harrisbenedict.php

Management
- Consider Dietician referral
- Offer or suggest finger foods if use of utensils is compromised by physical or mental limitations
- Consider Occupational Therapy (OT) referral for adaptive equipment
- Provide undernourished patients with foods they want may stimulate appetite
- Nutritional supplements offered between meals can increase nutritional status, but they should not be offered in place of meals
Management

- Increase the nutrient content of food
  - Protein content can be increased by adding milk powder, whey protein, egg whites, or tofu
  - Fat content can be increased by adding olive oil in the preparation of sauces, fresh or cooked vegetables, and grains or pasta
  - Offer daytime snacks

Management

- Liquid products
  - Can be cost prohibitive to older adults on limited incomes
  - Powdered breakfast drinks added to milk may be an adequate substitute
- Flavor enhancers
  - May improve dietary intake and lead to weight gain, but research has been inconsistent with some studies demonstrating no effect

Management

- Feeding tube placement
  - Micronutrient deficiencies and malnutrition may still exist despite providing adequate calories
  - Does not eliminate the risk of aspiration
  - American Geriatrics Society (AGS) position statement: tube feeding generally does not prolong life or improve outcomes in patients with advanced dementia
  - Increased risk of agitation and subsequent use of restraints (e.g., physical, medications) as well as other complications, such as pressure ulcers and
Management

- Appetite Stimulants
  - May be considered, but there are few studies on the use of these medications in older adults with weight loss.
  - There is also inadequate information to determine appropriate use in cachexia.

- Megestrol
  - Progestational agent
    - Studies have shown weight gain in patients with anorexia, cachexia, and patients with cancer.
    - RCT used megestrol 800 mg daily for 12 weeks. Results: Improved appetite and sense of well-being in a group of nursing home residents. However, weight gain was not found to be significant (<4 lbs.) until 3 months after starting treatment.
    - May have an adverse effect on muscles. RCT of exercise training and megestrol in older veterans had less muscle strength or functional performance.
    - Avoid in non-ambulatory older adults due to risk of DVT. Monitor closely for edema and worsening of CHF.
    - Other adverse events: glucose intolerance, nausea, and adrenal insufficiency.

- Dronabinol
  - Indicated for anorexia/weight loss. AIDS associated; Contains active ingredient in marijuana
  - Has not been well-studied in older adults
  - A nonrandomized trial showed dronabinol may be useful for anorexia, weight gain, and behavior problems in patients with advanced Alzheimer’s Disease who were refusing food.
  - Has significant CNS side effects. May cause delirium.
**Mirtazapine**

- Indicated for major depressive disorder
- Few studies have been performed to evaluate the impact of mirtazapine on weight loss in older adults
- Two studies in nursing home residents did not show conclusive benefit of mirtazapine over other nontricyclic antidepressants
- A retrospective study in patients with Alzheimer’s Disease and weight loss found that patients treated with mirtazapine for 3 months gained an average of 2 kg compared with baseline

**Cyproheptadine**

- Indicated for allergic rhinitis and urticaria, but used off-label for anorexia nervosa; 1st generation antihistamine
- Has been used for appetite stimulation in the long term care setting, but no studies have evaluated the benefit of this drug in this population
- Anticholinergic properties

**Oxandrolone**

- Indicated as an adjunct treatment for weight gain; synthetic anabolic steroid
- Helps restore lean muscle mass and increase visceral protein stores
- Oxandrolone was found to improve appetite and increase weight gain in patients with COPD associated weight loss
- Oxandrolone has also been found to demonstrate a significant improvement in wound healing over a 12 week period in eight out of eight patients with weight loss and non-healing chronic wounds
- Contraindicated for use in patients with prostate or breast cancer and may lead to hirsutism and fluid retention
- Use with caution in patients with hepatic disease
Ghrelin mimentics

- Ghrelin is an endogenous growth hormone secretagogue (GHS)
- Stimulate appetite and increases fat-free mass
- Two randomized trials of GHS in healthy older adults demonstrated increases in lean mass (average gain of 1.6 kg) and improvement in strength and function compared with placebo
- One trial also found improvement in functional abilities (tandem gait distance and stair climbing)
- Adverse events include hyperglycemia, dizziness, and nausea
- Further trials are needed to assess the benefit and safety of GHS in the treatment of older adults with cachexia and weight loss

Clinical Implications

- Older adults are at higher risk for malnutrition due to multiple factors including comorbidities, functional decline, and social factors
- Malnutrition is associated with a higher risk of complications including increased mortality
- Nurse Practitioners need to perform a comprehensive evaluation for malnutrition in older adults and intervene early
- There is limited data for use of pharmacological agents for malnutrition in older adults. Pharmacological agents should be used cautiously.

References

References


