NUTRITION IN ELDERLY

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OUTLINE

A. DEFINITION

B. AGEING AND MALNUTRITION

C. NUTRITION SCREENING AND ASSESSMENT

D. NUTRITIONAL REQUIREMENTS

E. NUTRITIONAL MANAGEMENT
A. DEFINITION
WHO ARE THE OLDER POPULATION?

THE UN AGREED CUTOFF IS 60+ YEARS
NUTRITION IN ELDERLY

IT APPLIES NUTRITION PRINCIPLES

➢ TO DELAY EFFECTS OF AGING AND DISEASE

➢ TO AID IN MANAGEMENT OF THE PHYSICAL, PSYCHOLOGICAL, AND PSYCHOSOCIAL CHANGES COMMONLY ASSOCIATED WITH GROWING OLD
B. AGEING AND MALNUTRITION
STARTING AT MIDDLE AGE, OPERATIONS OF THE HUMAN BODY BEGIN TO BE MORE VULNERABLE TO DAILY WEAR AND TEAR

GENERAL DECLINE IN PHYSICAL, AND POSSIBLY MENTAL, FUNCTIONING

THE OLDER WE GET, THE GREATER THE RISK OF DISEASES AND LIMITATIONS

THE MOST COMMON DISEASES OF AGEING INCLUDE ALZHEIMER'S, ARTHRITIS, CANCER, DIABETES, DEPRESSION, AND HEART DISEASE
# Elderly Patients Admitted to Medical Ward, NYGH from May to October 2016

<table>
<thead>
<tr>
<th>Disease Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory diseases</td>
<td>30%</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>13.7%</td>
</tr>
<tr>
<td>Neurological diseases</td>
<td>12.5%</td>
</tr>
<tr>
<td>Infection</td>
<td>12.5%</td>
</tr>
<tr>
<td>Renal diseases</td>
<td>8.75%</td>
</tr>
<tr>
<td>GI and Liver problems</td>
<td>8.75%</td>
</tr>
<tr>
<td>Malignancy</td>
<td>7.5%</td>
</tr>
<tr>
<td>Endocrine diseases</td>
<td>6.25%</td>
</tr>
<tr>
<td>Hematological diseases</td>
<td>3.75%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1.25%</td>
</tr>
</tbody>
</table>

Ref: Data collected for Nutrition Screening and Assessment at New Yangon General Hospital: Professor Zaw Lynn Aung, 18th GP Conference presentation
DISEASE CO-MORBIDITY OF ELDERLY HOSPITALIZED PATIENTS

Ref; Data collected from Min Zaw Oo (2017) Usefulness of Mini Nutritional Assessment in elderly hospitalized patients with serum vitamin D deficiency, UM1, Yangon
FACTORS CONTRIBUTE TO NUTRITIONAL STATUS

- Genetic Predisposition
- Physiological Changes
- Medical Conditions
- Physical Disability and Mental Disorders
- Socioeconomic Status
### EFFECTS OF AGING ON NUTRITION

<table>
<thead>
<tr>
<th>Change</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory Impairment</td>
<td></td>
</tr>
<tr>
<td>• Decreased sense of taste</td>
<td>→ Reduced appetite</td>
</tr>
<tr>
<td>• Decreased sense of smell</td>
<td>→ Reduced appetite</td>
</tr>
<tr>
<td>• Loss of vision and hearing</td>
<td>→ Decreased ability to purchase and prepare food</td>
</tr>
<tr>
<td>• Oral health / dental problems</td>
<td>→ Difficulty chewing, inflammation, poor quality diet</td>
</tr>
<tr>
<td>Altered energy need</td>
<td>→ Diet lacking in essential nutrients</td>
</tr>
<tr>
<td>Decreased physical activity</td>
<td>→ Progressive depletion of LBM and loss of appetite</td>
</tr>
<tr>
<td>Muscle loss (sarcopenia)</td>
<td>→ Decreased functional ability, assistance needed with ADLs</td>
</tr>
<tr>
<td>Psychosocial (isolation)</td>
<td>→ Decreased appetite</td>
</tr>
<tr>
<td>Environmental (financial)</td>
<td>→ Limited access to food; poor quality diet</td>
</tr>
</tbody>
</table>

**Cumulative Effect** → **Progressive Undernutrition**
Malnutrition refers to condition resulting from imbalance between nutrient needs and actual intake.

It results from either under- or over-nutrition.

Both have negative effects on healthy aging and longevity.
MALNUTRITION

Community dwelling older adults (ASPEN criteria)
(2 of the following)

- INSUFFICIENT ENERGY INTAKE
- LOSS OF MUSCLE MASS
- FLUID ACCUMULATION
- LOSS OF SUBCUTANEOUS FAT
- DIMINISHED FUNCTION BY HAND GRIP STRENGTH
- INVOLUNTARY WEIGHT LOSS
MALNUTRITION

Nursing home patients

➢ Weight loss of ≥5% in past 30 days: ≥10% in 180 days

➢ Dietary intake <75% of most meals

Hospital patients

➢ Dietary intake (<50% of estimated needed caloric intake)

➢ Hypoalbuminemia

➢ hypocholesterolemia
CLINICAL EFFECTS OF MALNUTRITION

- Ventilation - loss of muscle & hypoxic responses
- Psychology - depression & apathy
- Immunity - Increased risk of infection
- Decreased Cardiac output
- Renal function - loss of ability to excrete Na & H₂O
- Hypothermia
- Loss of strength
- Anorexia
- Impaired wound healing
- Impaired gut integrity and immunity
- Liver fatty change, functional decline necrosis, fibrosis
MALNUTRITION AT HOSPITAL ADMISSION IS COMMON IN OLDER PATIENTS

PREVALENCE IN HOSPITALS

<table>
<thead>
<tr>
<th>Country</th>
<th>Prevalence</th>
<th>Number surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherland 1</td>
<td>26%</td>
<td>8028</td>
</tr>
<tr>
<td>Switzerland 2</td>
<td>22-28%</td>
<td>32,837</td>
</tr>
<tr>
<td>UK 3</td>
<td>25%</td>
<td>7541</td>
</tr>
<tr>
<td>Belgium 4</td>
<td>33%</td>
<td>2329</td>
</tr>
<tr>
<td>Europe 5</td>
<td>39%</td>
<td>1384</td>
</tr>
<tr>
<td>Cuba 6</td>
<td>51%</td>
<td>704</td>
</tr>
<tr>
<td>Brazil 7</td>
<td>53%</td>
<td>4000</td>
</tr>
</tbody>
</table>

ELDERLY PATIENTS ADMITTED TO MEDICAL WARD, NYGH (FROM MAY TO OCTOBER 2016)

SGA WAS DONE IN SEVENTY ELDERLY PATIENTS

<table>
<thead>
<tr>
<th>SGA grading</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Well nourished)</td>
<td>28</td>
<td>40%</td>
</tr>
<tr>
<td>B (Moderately malnourished)</td>
<td>40</td>
<td>57%</td>
</tr>
<tr>
<td>C (Severely malnourished)</td>
<td>2</td>
<td>3%</td>
</tr>
</tbody>
</table>

Ref: Data collected for Nutrition Screening and Assessment at New Yangon General Hospital: Professor Zaw Lynn Aung, 18th GP Conference presentation
Ref: Data collected from Min Zaw Oo (2017) Usefulness of Mini Nutritional Assessment in elderly hospitalized patients with serum vitamin D deficiency, UM1, Yangon
C. NUTRITION SCREENING AND ASSESSMENT
NUTRITION SCREENING AND ASSESSMENT ARE NOT THE SAME

NUTRITION SCREENING

• Use to identify who are malnourished or at risk for malnutrition
• Whole population or simply defined at-risk groups
• Short instruments
• Simple and single step

OUTCOME
• Need for assessment

NUTRITION ASSESSMENT

• Use to confirm if a patient is malnourished or not
• Centered in individuals
• Longer instruments
• Several steps, continuous process

OUTCOME
• Diagnosis of malnutrition and planning for intervention

NUTRITION SCREENING IS INDICATED IN ELDERLY

At hospital or rehabilitation admission

For frail patients or those with multiple diseases

At nursing home admission

Possibly for all people over 65 years
SCREENING TOOLS FOR ELDERLY

- Malnutrition Universal Screening Tool (MUST)
- Malnutrition Screening Tool (MST)
- Subjective Global Assessment (SGA)
- Mini Nutrition Assessment (MNA)
USUAL NUTRITION ASSESSMENT METHODS

Medical history and physical Examination

Anthropometry

Body composition

Laboratory measures

USE MEDICAL HISTORY TO IDENTIFY RISKS OR DIAGNOSE MALNUTRITION

<table>
<thead>
<tr>
<th>Healthy issues of aging</th>
<th>Disease, disability And pain</th>
<th>Unhealthy behaviors</th>
<th>Financial and Social issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral and dental issues</td>
<td>Diseases</td>
<td>Limited Lack Food</td>
<td>Poverty</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>Drugs, Polypharmacy</td>
<td>Preferences</td>
<td>Social isolation</td>
</tr>
<tr>
<td>GI problems</td>
<td>Dementia</td>
<td>Physical inactivity</td>
<td>Limited access to food</td>
</tr>
<tr>
<td>Anorexia of aging</td>
<td>Mental illness</td>
<td>of knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Of healthy eating</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alcohol abuse</td>
<td></td>
</tr>
</tbody>
</table>

DIAGNOSING MALNUTRITION FROM PHYSICAL EXAMINATION

- WEIGHT LOSS
- LOSS OF SUBCUTANEOUS FAT
- LOCALIZED OR GENERALIZED FLUID ACCUMULATION THAT MAY MASK WEIGHT LOSS
- LOSS OF MUSCLE MASS
- DIMINISHED FUNCTIONAL STATUS, INDICATED BY LOW HAND GRIP STRENGTH
- MOUTH, HAIR, EYE, SKIN OR NAILS WITH SIGNS OF ABNORMALITY
ANTHROPOMETRIC MEASUREMENTS OF NUTRITIONAL STATUS

- WEIGHT
- HEIGHT
- ARM CIRCUMFERENCE
- CALF CIRCUMFERENCE
- SKIN FOLD MEASUREMENTS
MEASURE WEIGHT IN ALL PATIENTS

➢ WEIGHT

WELL-CALIBRATED STANDING, BED, OR CHAIR SCALE

ADJUST WEIGHT FOR PATIENTS WITH AMPUTATIONS

➢ IDEAL BODY WEIGHT (IBW)

MEN: 50KG FOR 152CM+0.9KG/CM FOR HEIGHT>152CM

WOMEN: 45.5 KG FOR 152CM+0.9KG/CM FOR HEIGHT>152CM

➢ IBW IS POORLY VALIDATED IN OLDER ADULTS AND IS NOT RECOMMENDED
WEIGHT LOSS IS A KEY COMPONENT OF NUTRITION ASSESSMENT

Malnutrition

Unintentional weight loss up to 5% over 1 month or up to 7.5% over 3 months

Severe malnutrition

Unintentional weight loss 5% over 1 month or 7.5% over 3 months

HOW TO MEASURE HEIGHT

IF STANDING HEIGHT COULD NOT BE MEASURED,

**Height (cm) computed from knee Height**

Women: $84.88 - (0.24 \times \text{age, years}) + (1.83 \times \text{knee height, cm})$

Men: $64.19 - (0.04 \times \text{age, years}) + (2.02 \times \text{knee height, cm})$

**Height (cm) computed from demi-span (sternum to fingertip)**

Women: $1.35 \times \text{demi-span (cm)} + 60.1$

Men: $1.40 \times \text{demi-span (cm)} + 57.8$
Calf Circumference: A Simple Anthropometric Measure

- Most sensitive method to determine muscle mass in older adults
- Significant correlation with other parameters of nutritional status
- 30.5 cm is optimal cut-off value
SOME LABORATORY DATA MAY HELP DIAGNOSE MALNUTRITION

- THEY CAN BE A PROGNOSTIC INDICATOR OF MALNUTRITION:
  - SERUM ALBUMIN  HALF-LIFE: 20 DAYS
  - PRE ALBUMIN  HALF-LIFE: 48 HOURS
  - TRANSTHYRETIN  HALF-LIFE: 2 DAYS
  - TRANSFERRIN  HALF-LIFE: 7 DAYS

- OTHERS:  HB, LYMPHOCYTE COUNT, SERUM IRON, CHOLESTEROL, AND SOME INFLAMMATORY MARKERS

BIOCHEMISTRY ALONE DOES NOT DIAGNOSE MALNUTRITION
WHEN TO SCREEN AND RESCREEN

<table>
<thead>
<tr>
<th>Population</th>
<th>Usual initial screening</th>
<th>Usual rescreening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital in-patient</td>
<td>Within 24 hours of admission</td>
<td>At least weekly</td>
</tr>
<tr>
<td>Hospital out-patient</td>
<td>At first clinical appointment</td>
<td>When clinical or nutritional status changes</td>
</tr>
<tr>
<td>Long-term care residents</td>
<td>at admission or within 14 days of admission</td>
<td>Once monthly or When there is a clinical concern</td>
</tr>
</tbody>
</table>

Monitor more frequently than usual if there is worsening clinical status or high risk of malnutrition
### WHEN TO SCREEN OR RESCREEN

<table>
<thead>
<tr>
<th>Population</th>
<th>Initial Screening</th>
<th>Rescreening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home-care individual</td>
<td>On initial home care nurse visit</td>
<td>When clinical or nutritional status changes</td>
</tr>
<tr>
<td>Community-dwelling individual</td>
<td>At initial visit with physician</td>
<td>At least once yearly as part of a geriatric assessment</td>
</tr>
</tbody>
</table>

Monitor more frequently when indicated by clinical status and degree of malnutrition risk
D. NUTRITIONAL REQUIREMENTS
ENERGY NEEDS ARE MAINLY DETERMINED BY ENERGY USED

- Basal energy expenditure
- Physical activity
- Thermogenesis

Heat production in response to eating and environment

For normal functioning of cells and organs, mostly for maintenance of fat-free mass

20-30%

30-60%

60-70%

10%
SIMPLE FORMULA FOR ESTIMATING ENERGY, PROTEIN AND FLUIDS

- USE **ACTUAL WEIGHT** FOR NORMAL OR UNDER WEIGHT
- USE **IDEAL BODY WEIGHT** FOR OVERWEIGHT OR OBESE PATIENTS

<table>
<thead>
<tr>
<th>Protein</th>
<th>Energy</th>
<th>Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 1-1.5g/kg/day</td>
<td>• 25-30 Kcal/Kg/day</td>
<td>• 30ml/Kg/day</td>
</tr>
</tbody>
</table>

May 3, 2019
Geriatric Training Course
### OLDER PEOPLE NEED HIGHER PROTEIN INTAKE

Protein intake recommendations from the PROT-AGE study group

*Not apply to those with severe kidney disease*

<table>
<thead>
<tr>
<th>Category</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy old</td>
<td>• 1.0 to 1.2G/Kg/day</td>
</tr>
<tr>
<td>Old who are active or exercise</td>
<td>• &gt;1.2G/Kg/day</td>
</tr>
<tr>
<td>Old with acute or chronic diseases</td>
<td>• 1.2-1.5G/Kg/day</td>
</tr>
</tbody>
</table>

Geriatric Training Course

May 3, 2019
Reduced ability to use available protein (e.g. insulin resistance, immobility)

Decreased usual protein intake (e.g. Anorexia, GI problems)

Greater need for protein (e.g. Inflammatory disease)

Loss of functionality (muscle, bone, immune systems)
### RECOMMENDED VITAMIN INTAKE FOR ELDERLY

<table>
<thead>
<tr>
<th>Vitamins</th>
<th>Recommended intakes for adults &gt;70 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B12</td>
<td>2.4 Microgram/day</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>90 mg/day for men</td>
</tr>
<tr>
<td></td>
<td>75mg/day for women</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>20 microgram/day</td>
</tr>
<tr>
<td>Folate</td>
<td>400 microgram/day</td>
</tr>
</tbody>
</table>

## Recomended Mineral Intake for Elderly

<table>
<thead>
<tr>
<th>Mineral and trace elements</th>
<th>Recommended intakes for adults &gt;70 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1200 mg/day</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>700 mg/day</td>
</tr>
<tr>
<td>Magnesium</td>
<td>420 mg/day for men</td>
</tr>
<tr>
<td></td>
<td>320 mg/day for women</td>
</tr>
<tr>
<td>Iron</td>
<td>8 mg/day</td>
</tr>
<tr>
<td>Zinc</td>
<td>11 mg/day for men</td>
</tr>
<tr>
<td></td>
<td>8 mg/day for women</td>
</tr>
<tr>
<td>Selenium</td>
<td>55 microgram/day</td>
</tr>
</tbody>
</table>

GOOD NUTRITION BENEFITS AGEING ADULTS

- HELPS MAINTAIN HEALTH
- HELPS REDUCE RISK OF DISEASE
- COMPLEMENTS CHRONIC DISEASE TREATMENT
- SUPPORTS HEALTHY RECOVERY AND IMPROVES OUTCOMES AFTER AN ACUTE MEDICAL EPISODE

It is important to meet the nutrition needs of ageing adults.
NUTRITIONAL RECOMMENDATIONS FOR THE ELDERLY

• LIMIT THE USE OF PRODUCTS WITH A HIGH ENERGY DENSITY, SUCH AS SOFT DRINKS, ALCOHOL AND SNACKS

• EAT MORE FOOD WITH A FAVOURABLE NUTRIENT DENSITY

• EAT PLENTY OF FRUIT, VEGETABLES, WHOLE-GRAIN PRODUCTS EACH DAY

• EAT FISH TWICE A WEEK, INCLUDING OILY FISH ONCE A WEEK
E. NUTRITIONAL MANAGEMENT
Screen for malnutrition risk
Decreased food intake, Weight loss, any injury or illness that has malnutrition risk

Assess nutritional status (SGA or other tools) for diagnosis of malnutrition

Implement nutrition intervention
1. Set nutrition goals 2. Decide route, access, timing 3. Select a formula

Treat underlying cause of malnutrition at every stage
USE A STEPWISE APPROACH FOR NUTRITION INTERVENTION

- Nutrition counseling, dietary enrichment
- Counseling + oral nutritional supplement (ONS)
- Enteral nutrition by tube feeding
- Parenteral nutrition with or without EN

Treat underlying causes of malnutrition at every stage
DETERMINING THE FEEDING ROUTE: ORAL, ENTERAL OR PARENTERAL FEEDING

MyPlate for Older Adults

Choose MyPlate.gov

Vegetables: Choose fiber-rich foods often.

Fruits: Drink water and other beverages that are low in added sugars.

Grains: Use fortified foods or supplements to meet your vitamin D and vitamin B₁₂ needs.

Protein Foods:

Dairy:
MYANMAR FOOD
Oily Food
Dyed Food
SUMMARY

➢ MALNUTRITION IS COMMON IN OLDER ADULTS, AND PREVALENCE INCREASES WITH AGE

➢ PHYSIOLOGIC CHANGES OF AGEING CAN AFFECT NUTRITIONAL STATUS

➢ DISEASES AND OTHER MEDICAL AND SOCIOECONOMIC FACTORS CAN PUT OLDER ADULTS AT HIGHER RISK FOR MALNUTRITION

➢ DISEASES AND DISABILITY MAY NEGATIVELY AFFECT NUTRITIONAL STATUS, AND ALTER NUTRITIONAL REQUIREMENTS
Age-related changes affect nutrition needs and intakes

Malnutrition-related weight loss and frailty are preventable in many cases

Older adults are at risk for malnutrition and need higher dietary protein intake

Nutrition screening is a simple, one-step process which determines whether a nutrition assessment is required
The result of a nutrition assessment determines whether malnutrition is present and help understand the causes and risk factors related to this.

A nutrition care pathway can be used to guide decision-making for nutrition therapy.

Good nutrition throughout life span is key to healthy ageing and longevity.
REFERENCES

- TOTAL NUTRITION THERAPY, GERIATRIC: EUROPEAN UNION GERIATRIC MEDICINE SOCIETY (EUGMS)

- 18TH EDITION: GERITRICS AT YOUR FINGERTIPS

- NUTRITION SCREENING AND ASSESSMENT AT NYGH: PROFESSOR ZAW LYNN AUNG, 18TH GP CONFERENCE

- MIN ZAW OO (2017) USEFULNESS OF MINI NUTRITIONAL ASSESSMENT IN ELDERLY HOSPITALIZED PATIENTS WITH SERUM VITAMIN D DEFICIENCY
THANK YOU