Development of Nutrient Standards and Dietary Guidelines for Older Persons: Philippine Experience

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Outline
1. Current protein intake of Filipino older persons
2. Dietary standards: NBDS and FBDG
3. Philippine Dietary Reference Intakes 2015: Protein requirements for older persons
5. Concluding remarks

Disclosure
No actual or potential conflict of interest in relation to this presentation

Current protein intake of Filipino older persons

2013 National Nutrition Survey
What Older Filipinos Eat
8th National Nutrition Survey (2013)

- 656 g total daily food intake of Filipinos aged ≥ 60 y (raw as purchased form)

- **Cereals and cereal products (39%)** represent the bulk of older persons’ diet

- Highest consumers of **fish and fish products** and **starchy roots and tubers** across all age/population groups

<table>
<thead>
<tr>
<th>Mean one-day food consumption of individuals aged ≥ 60 y by age group: Philippines, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Group/Sub-group</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>Cereals and cereal products</td>
</tr>
<tr>
<td>Starchy roots and tubers</td>
</tr>
<tr>
<td>Sugars and syrups</td>
</tr>
<tr>
<td>Fats and oils</td>
</tr>
</tbody>
</table>

**Daily food intake decreases with age among older persons**

<table>
<thead>
<tr>
<th>Mean one-day food consumption of individuals aged ≥ 60 y by sex: Philippines, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Group/Sub-group</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>Mean intake in grams</td>
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<td>Cereals and cereal products</td>
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<tr>
<td>Starchy roots and tubers</td>
</tr>
<tr>
<td>Sugars and syrups</td>
</tr>
<tr>
<td>Fats and oils</td>
</tr>
<tr>
<td>Fish, meat and poultry</td>
</tr>
<tr>
<td>Eggs</td>
</tr>
<tr>
<td>Milk and milk products</td>
</tr>
<tr>
<td>Dried beans, nuts and seeds</td>
</tr>
<tr>
<td>Vegetables</td>
</tr>
<tr>
<td>Fruits</td>
</tr>
<tr>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Beverages</td>
</tr>
<tr>
<td>Condiments and spices</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

**Protein intakes of older persons**

<table>
<thead>
<tr>
<th>Mean one-day protein intake of individuals aged ≥ 60 y: Philippines, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Group</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>60–70 y</td>
</tr>
<tr>
<td>71–80 y</td>
</tr>
<tr>
<td>&gt; 81 y</td>
</tr>
<tr>
<td>All (≥ 60 y)</td>
</tr>
</tbody>
</table>

**Inadequate protein intake is notable in older persons**
Dietary standards

Nutrient-based dietary standards
Food-based dietary guidelines

Definition of terms

Nutrient-based dietary standards
- Uniform, evidence-based, quantitative data on nutrient needs
- Can be used for dietary assessment and planning for groups and individuals
- Dietary reference intakes, nutrient reference values

Food-based dietary guidelines
- Evidence-based, country-specific recommendations for food patterns that promote good health while reducing the risk of chronic diseases
- Translate nutrient recommendations to food intake
- Dietary guidelines, nutritional guidelines

Relationship between nutrient standards and dietary guidelines

The Philippines

The DOST-FNRI is the lead agency in the review and revision of nutrient standards since 1953

EVOLUTION OF STANDARDS
1941 - Recommended Dietary Allowances, 1st edition (NRCP)
1947 - RDA, 1st revision (PAN)
2002 - Recommended Energy and Nutrient Intakes (FNRI)
Developments since 2002:

- New WHO/FAO and IOM guidelines on energy and nutrient intakes
  - IOM-FNB: Calcium and Vitamin D (2011)
- WHO Child Growth Standards 2006
- NNS 2003, 2008 and 2013:
  - New reference weights
  - Deficiencies in dietary intakes of energy and nutrients
  - Persisting problems of MN deficiencies
- Increase in prevalence of NCDs

Review Committee

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- Ma. Isis V. Marcos
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WATER AND ELECTROLYTES

Dr. Celeste C. Tanchoco
Ma. Jovina A. Sandoval
The PDRI Committee adopted a multi-level approach based on the US-Canadian Dietary Reference Intakes (DRIs) and the FAO/WHO/UNU Recommended Nutrient Intakes.

**Nutrients Reviewed**

<table>
<thead>
<tr>
<th>Macronutrients</th>
<th>Vitamins</th>
<th>Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Vitamin A</td>
<td>Calcium</td>
</tr>
<tr>
<td>Protein</td>
<td>Vitamin D</td>
<td>Phosphorous</td>
</tr>
<tr>
<td>Total fat</td>
<td>Vitamin E</td>
<td>Magnesium</td>
</tr>
<tr>
<td>n-6 fatty acid</td>
<td>Vitamin K</td>
<td>Iron</td>
</tr>
<tr>
<td>n-3 fatty acid</td>
<td>Thiamin</td>
<td>Iodine</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>Riboflavin</td>
<td>Zinc</td>
</tr>
<tr>
<td>Dietary fiber</td>
<td>Niacin</td>
<td>Selenium</td>
</tr>
<tr>
<td>Water</td>
<td>Vitamin B12</td>
<td>Folicide</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>Vitamin B12</td>
<td>Potassium</td>
</tr>
<tr>
<td>Folate</td>
<td>Vitamin C</td>
<td>Chloride</td>
</tr>
</tbody>
</table>

Nutrients in RENI 2002 retained:
- Removed: Manganese
- Added: Polyunsaturated fatty acids

**Summary of DRIs for Nutrients**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>EAR</th>
<th>RNI</th>
<th>AI</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Thiamin</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Niacin</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Total</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Calcium</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Iron</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Zinc</td>
<td>+</td>
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<td>+</td>
<td>+</td>
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<tr>
<td>Iodine</td>
<td>+</td>
<td>+</td>
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<td>+</td>
</tr>
<tr>
<td>Selenium</td>
<td>+</td>
<td>+</td>
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<td>+</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Folicide</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Protein requirements of older persons

Philippine Dietary Reference Intakes 2015

2007 Joint WHO/FAO/UNU Expert Consultation

• Primary basis of the 2007 report involved nitrogen balance studies on healthy adults
• N balance technique is considered the “gold standard” for determining protein requirement in adults because there is no validated or accepted alternative
• The overall conclusion is that the physiological protein requirement among adults does not increase with age

Protein requirements

2005 IOM-FNB Dietary Reference Intakes for Macronutrients

• The current dietary recommendations for protein intake:
  - Estimated average requirement (EAR)
  - Recommended dietary allowance (RDA)
  - Acceptable macronutrient distribution range (AMDR)
• The EAR for dietary protein is 0.66 g/kg/day and the RDA is 0.8 g/kg/day for all adults over 18 years of age
• The RDA for protein was based on all available studies that estimate the minimum protein intake necessary to avoid loss of lean body mass as determined by nitrogen balance

Protein requirements

2005 IOM-FNB Dietary Reference Intakes for Macronutrients

• The IOM-FNB recognizes a distinction between the RDA and the level of protein intake needed for optimal health
• The AMDR includes a range of optimal protein intakes in the context of a complete diet (10%-35% of total energy intake)
Protein requirements for older people

2007 WHO/FAO/UNU Expert Consultation

• Sedentary older people are the population group most at risk from protein deficiency
• The low energy requirement of older people means that the **protein:energy ratio** of their requirement is higher than for younger age groups
• The most appropriate response is to encourage:
  ✓ increased activity
  ✓ Increased energy expenditure
  ✓ increased food intake

PDRI 2015: Requirements for older persons

• The requirement estimates for both sexes throughout adulthood are set at **0.94 g/kg/d**, which is derived from the median requirement of 0.66 g/kg/d corrected for 70% PDCAAS
• An approximate CV of **12%** was used to arrive at the RNI of **1.17 g/kg/d**

<table>
<thead>
<tr>
<th>Adult</th>
<th>Reference weight (kg)</th>
<th>Average requirement $a$ (g/kg/d)</th>
<th>Average requirement corrected for 70% PDCAAS (g/kg/d)</th>
<th>EAR (g/d)</th>
<th>Safe level of intake (RNI) (g/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>60.5</td>
<td>0.66</td>
<td>0.94</td>
<td>57</td>
<td>71</td>
</tr>
<tr>
<td>Women</td>
<td>52.5</td>
<td>0.66</td>
<td>0.94</td>
<td>50</td>
<td>62</td>
</tr>
</tbody>
</table>

$^a$ Average requirements adopted from 2007 FAO/WHO/UNU Protein and Amino Acid Requirements

$^b$ Safe level is obtained from EAR plus twice the CV (12%)

Philippine Dietary Reference Intakes 2015

• The 2015 protein requirements for all age and physiologic groups of Filipinos were based on the 2007 Joint WHO/FAO/UNU Expert Consultation Report, with due consideration of the **protein quality of rice-based diets**
• A PDCAAS value of 70% has been used to better characterize the adult Filipino diet
• The 2015 PDRI Committee adopts the protein quality index of **70%** for all age groups. This correction factor is applied to all age and physiologic groups, except for young infants

Dietary guidelines for older persons

Nutritional Guidelines for Filipinos and **Pinggang Pinoy** (Filipino food plate)
Nutritional Guidelines for Filipinos 2012

- Developed by an inter-agency and multi-disciplinary TWG chaired by DOST-FNRI
- Still has 10 messages but now has nutritional and health rationale for each message
- Mandated by National Nutrition Council Governing Board Resolution No. 6, s. 2012

NGF 2012 Development Process

- Formation of TWG
- Agreement of the TOR
- Review of Current Health and Nutrition Situation
- Formation of Goals and Objectives
- Formulation of the Draft NGF
- Pre-testing of Draft among Various Users
- Assessment of the Appropriateness of the NGF
- Finalization of the NGF
- Submission to the NNC-DOH for Adoption
Special nutritional needs for older persons

- Chewing may become more difficult
- Nutrient absorption is less effective
- Immune system gets weaker
- Thirst sensation is depressed
- More prone to dehydration and dryness in the mouth
- Difficulty in bowel movement

Pinggang Pinoy food guides
Summary points

- Filipino older persons have protein-deficit diet
- The indicator of adequacy used in developing the protein requirements for Filipino older persons is nitrogen balance, adjusted for protein quality of Filipino diet (70%)
- The NGF 2012 and Pinggang Pinoy translate the protein requirements from PDRI 2015 to recommendations on food intake
“Beautiful young people are accidents of nature, but beautiful old people are works of art.”

Eleanor Roosevelt

Photo grabbed from https://www.pinterest.com/pin/267612402829833165/

Acknowledgments

Dr. Mario V. Capanzana
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Mr. Robby Carlo A. Tan
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Nutritional Assessment and Monitoring Division, DOST-FNRI
Technology Diffusion and S&T Services Division, DOST-FNRI

Thank you for the kind attention!

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