NUTRITIONAL STATUS OF THE ELDERLY IN MALAYSIA: PAST, CURRENT AND FUTURE

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Malaysia is moving towards becoming an ageing country with 14% of elderly population in the year 2035.

- **0-14 yo**
  - 2010: 27.4%
  - 2040: 18.6%

- **15-64 yo**
  - 2010: 67.6%
  - 2040: 66.9%

- **≥65 yo**
  - 2010: 5.0%
  - 2040: 14.5%

Source: Department of Statistics Malaysia, Population Projection (Revised), Malaysia, 2010-2040
Introduction

- Increase of age $\rightarrow$ increase of life expectancy
- DOSM:

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>2016</td>
<td>14.8 years</td>
<td>16.9 years</td>
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<tr>
<td>2017</td>
<td>15.0 years</td>
<td>17.1 years</td>
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- 65$^{th}$ birthday plus the expected year to live $\rightarrow$ increase the octogenarian population

Source: Department of Statistics Malaysia, Selected Demographic Estimates Malaysia 2016
Nutritional status of the elderly
The past

- In the early 90’s: reports on health and nutritional observation among elderly in rural populations Malaysia

- Zaitun & Terry (1991)
  - Underweight and obesity appear to be prevalent
  - WHR: excess body fat deposited in the abdominal region

- Suriah et al. (1996)
  - Mean energy intake was less than the recommendation by Malaysian RDA.
  - Total mean energy intake decline with age increment for both sexes.

- Shahar et al. (2000)
  - Mean intake of energy & other studied nutrients were below Malaysian RDA except for protein & vitamin C
  - Despite meal intakes, the dietary intake was inadequate.
The past

- Study among elderly from in 9 publicly funded shelter homes in Peninsular Malaysia (N=1081):
  
  **Parameters:**
  - Survey using questionnaires: demographics, nutritional & cognitive status, physical function & psychological well-being.

  **Findings:**
  - BMI <18.5 kg/m²: 14.3%
  - BMI 18.5 to 20 kg/m²: 18.2%
  - 26.6% were at high risk of undernutrition according to the Nutritional Health Checklist

Visvanathan et al. (2005)
The past: summary

- Increase in mean BMI over time
- Majority of Malaysian elderly were still in their normal range of BMI, however, overweight and obesity had preceded underweight
- Overweight & obesity at the rise, but reduced with advancing age
Prevalence of overweight increased by two folds from 15.6% (1996) → 29.8% (2006)

Prevalence of obesity increased by three folds from 3.1% (1996) → 10.8% (2006)

Prevalence of underweight & normal was reduced within 10 years period.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Study population</th>
<th>Parameters</th>
<th>Findings</th>
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</table>
| Suzana et al. (2012) | N=4746, elderly (NHMS III)                | BMI & WC            | • In men, prevalence of overweight & obesity were 29.2% & 7.4% decreased with age  
• In women, prevalence of overweight & obesity were 30.3% & 13.8%  
• Prevalence of abdominal obesity was 21.4% (7.7%: men & 33.4% in women) |
| Chen et al. (2012)  | N=236, elderly resided in government-funded shelter home | Weight, height, BMI, MUAC, WC | • Underweight: 17.4%  
• Overweight: 28.4%  
• A significant decline anthropometric measurements elderly at 60-69 years & ≥80 years. |
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| Shahar et al. (2013) | N=160, elderly Malays in an agricultural settlement, i.e. FELDA Sungai Tengi, Selangor | Malnutrition risk & appetite (MNA-SF & SNAQ), functional status (IADL, EMS & handgrip strength), MMSE, GDS & De Jong Gierveld Loneliness Scale | • 42.5%: at risk of malnutrition  
• 61.2%: poor appetite  
• Lower mean scores of IADL and EMS among subjects at risk of malnutrition |
| Singh et al. (2014) | N=47, undernourished elderly from 2 residential institutions | A battery of physical performance tests, biochemical profiles, falls risk, functional test & GDS | • Elderly scored poorly on the physical performance tests, had depression & at high risk of falls.  
• 10.9 % were anemic & 21.7 % were at risk of PEM |
NHMS (2015)

Risk of malnutrition

- Muscle wasting → measured by calf circumference
- Prevalence: 20%

Normal weight
- 60-64 yo
- 65-69 yo
- 70-74 yo
- 75+

- Prevalence: 40.4 to 55.9% (increase with age)
- Highest among elderly (≥75 years old)

Overweight*
- Prevalence: 27.1 to 35.7%
- Highest: 70-74 years old

Obese*
- Prevalence: 6.1 to 20.5%
- Highest: 60-64 years old

Physically active:
30-60.9% (reduce with age)

*Classification by WHO (1998)
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<td>Vanoh et al. (2016)</td>
<td>N=1993, elderly from 4 states in Malaysia (Perak, Selangor, Kelantan, Johor)</td>
<td>Socio-demographic, cognitive function, functional status, dietary intake, lifestyle &amp; psychosocial status</td>
<td>• Underweight: 4.7 %</td>
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<td>• Normal: 45.9 %</td>
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<td></td>
<td>• Overweight: 35 %</td>
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<td></td>
<td></td>
<td></td>
<td>• Obese: 14.4 %</td>
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<tr>
<td>Saleh Hudin et al. (2017)</td>
<td>N=289, elderly from (FELDA) at Lubuk Merbau, Kedah</td>
<td>Weight, height, food insecurity, depressive symptoms, stress, social support &amp; functional status</td>
<td>• Underweight: 7.6 %</td>
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<td></td>
<td></td>
<td></td>
<td>• Normal: 40.8 %</td>
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<td>• Overweight: 36.7 %</td>
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<td>• Obese: 14.9 %</td>
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<tr>
<td>Zainuddin et al. (2017)</td>
<td>N=72, elderly in Klang Valley</td>
<td>Anthropometrics parameters, socio-demographic, health status, food insecurity, cognitive status &amp; frailty assessments</td>
<td>• Underweight: 15.3%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Normal: 43.0%</td>
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<td></td>
<td>• Overweight: 41.7%</td>
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<td></td>
<td>• Abdominal obesity: 75.0%</td>
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<td>• Pre-frail (58.3%), frail (27.8%) &amp; non-frail (13.9%)</td>
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Consequences of obesity

- Increased the risk of chronic diseases, immobility & frailty\(^1\)
- Physical dysfunction and are predictive of a decline in functional status and future disability\(^2\)
- Low & middle cost housing area in Cheras: obesity was the risk factors of mild cognitive impairment (MCI) among women\(^3\)
- TUA study: risk factors of cognitive decline, especially among women\(^4\)

\(^1\)Houston et al. (2009); \(^2\)Davison et al. (2002); \(^3\)Lee et al. (2012); \(^4\)Won et al. (2015)
Malnutrition is still a concern: sarcopenia, frailty & pre-frailty

Norshafarina et al. (2013)
- Study in Cheras
- Almost half of the respondents were sarcopenic ➔ lean sarcopenia (36.3%) & obese sarcopenia (23.5%).

Sathasivam et al. (2015)
- Study in urban areas
- Frailty: 5.7%; pre-frailty: 67.7%
- Cognitive function, physical disability and history of falls were the risk factors

Badrasawi, Shahar, & Singh (2016)
- Study in Klang Valley
- Frailty: 8.9%; pre-frailty: 61.7%
- Obesity and physical disability were the risk factors
Nutrient intake

- Nutrients of concern:
  - Energy, vitamin A, B1, B2, B3, calcium, iron (Azirah & Suriah, 1992)
  - Energy, B2, B3, calcium (Zainorni, 1992)
  - Energy, vitamin A, B1, B2, B3, calcium, iron (Shahar et al., 2000)
  - Vitamin B1, B2 & calcium (Shahar et al. (2007))
  - Vitamin B1, B3, folic acid, vitamin E & calcium (Fakhruddin et al., 2016)
The future: challenges

- Coexistent of chronic diseases → have effect on nutritional status
- Underdeveloped geriatric care: could not meet the rapidly increasing demand
- Provision of adequate social protection → financial support, depression & loneliness
- Planning & implementation of intervention for the elderly: data on health, nutrition, social, functional, cognitive, physical fitness
Moving forward

- The need to change our perspective on elderly

Elderly: aged but not helpless
Take home messages

- Overweight & obesity is prevalent among elderly.
- We need a collaborative effort among multidisciplinary experts to plan and implement sustainable intervention program to improve the health and well-being of the elderly.
References

- Department of Statistics Malaysia.