

# Ageing and Nutritional Issues

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## The Later Years

- The way you live and think in your early years affects your life at 50 or 70 years
- In Malawi life expectancy is 40 yrs (UNICEF 2005)
- Possible life span for human species 130 years
- There is no specific diet or nutrient supplement that will prolong life beyond this *best before date!*



## Status of Nutrition among the Ageing

- **Paucity of information** in research, policies & programmes
- Nutrition intervention programmes primarily **not targeted for elderly**
- **YET, we know less about**
  - Energy requirements and dietary guidelines in elderly
  - Effect of decrease in muscle mass and decreased basal metabolic rate
  - Energy requirements and activity interactions
  - Micronutrient needs especially, Vitamin B12 and iron, Vitamin D,
  - Antioxidants: Vitamin C & Vitamin E importance for vision- importance of non-nutrient carotenoids (dark green leafy vegetables)
  - Minerals; Calcium prevent bone fractures;
  - Zinc: immune response; appetite and taste



## 1. What we Know

- Physical changes of ageing affecting nutrition
  - **Digestive tract:** sluggish motility = constipation; reduced acid output impairs digestion & absorption; discomfort
  - **Hormones:** less insulin secretion leading to abnormal glucose metabolism
  - **Dentition:** Tooth loss; gum disease; reduced saliva = choking
  - **Sensory Organs;** diminished acuity especially taste & smell
  - **Body Composition:** weight loss; reduced in lean body mass can be overcome with physical activity



## 2. What we Know - other factors affecting dietary intake

- Mobility & Physical activity limits access
- Drug and nutrient interactions especially in treating chronic diseases
- Access to water and fluids
- Poverty and economic uncertainty



### Nutrition – Infection Complex

- The double burden of malnutrition
  - Dietary inadequacy and overnutrition
- Dietary inadequacy studies in Malawi
  - Body mass index <18,5
  - Men more under nourished 36,1%
  - Women less under nourished 27%
  - Mid-upper arm circumference (accounting for change in muscle)
    - <21.7 cm = severe malnutrition
  - Undernutrition associated with functional ability; hand grip strength; psychomotor speed; co-ordination, mobility etc.. (Chilima & Ismail, 2000)



### Malnutrition in elderly men – who cares for them?



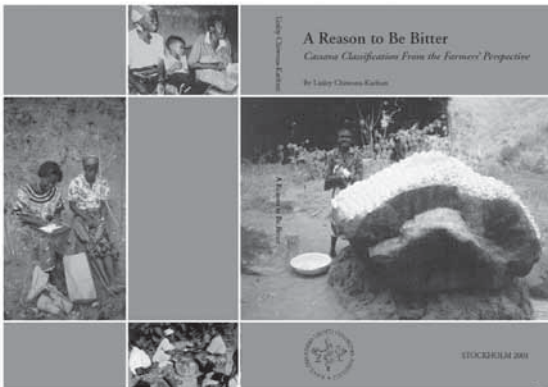
### Nutrition – Infection Complex cont.

- Dietary patterns & inadequacy
  - Meals not nutrient dense
  - Very little fresh fruit consumption
  - High cereal diet with a low mean protein intake
  - Meals comprise: maize nsima and vegetables with protein meal maybe once a week



### Nutrition – Infection Complex

- Nutrition Transition
  - Moving away from traditional unrefined carbohydrate and fiber rich dietary habits to highly refined carbohydrates, more fat and sugars
  - More visible in urban areas but also in economically well-off rural households
  - Body mass index  $\geq 30$  four times higher in urban blacks in Cape Town than rural area and different between ethnic groups (Charlton & Rose 2001)
  - The interesting question is if the pattern would be different between ethnic groups in Malawi; or rural vs urban



### Cassava field on Likoma Island Is farming still an option?



### Nutrient density

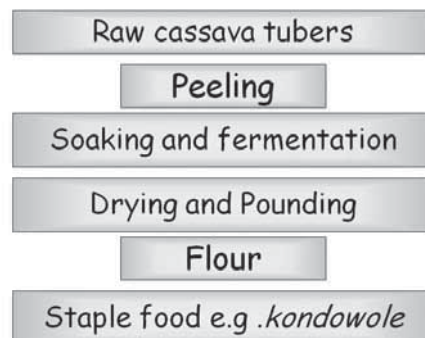
Table 3. Approximate composition (% of fresh weight) of cassava leaf, amaranth leaf, soybean and yellow maize. (In brackets the percentage on dry matter basis)

	Moisture	Protein	Fat	Carbohydrates	Fibre	Ash
Cassava leaf	72.0	7.0 (25.0)	1.0 (3.6)	14.0 (50.0)	4.0 (14.3)	2.0 (7.1)
Amaranth leaf	84.0	4.6 (8.8)	0.2 (1.3)	7.0 (43.8)	1.8 (11.3)	2.9 (18.1)
Soybean	11.0	34.0 (38.2)	18.0 (20.2)	29.0 (32.6)	4.7 (5.3)	5.0 (5.6)
Maize (yellow)	10.0	10.0 (11.1)	4.8 (5.3)	72.0 (80.0)	2.0 (2.2)	1.2 (1.3)

Source: West et al., 1998



### “Bitter-toxic” Cassava Safe by Processing – food safety knowledge





## Frequent consumption of cassava but low exposure

Table 5. The mean age and household size of the different kondowole consumption frequencies were compared by t-test at the 95% significance level. Means followed by the same letter are not significantly different from each other.

	Kondowole consumption frequency			
	Daily n=98	Weekly n=44	Never n=33	Total n=175
Mean Age	44.6±1.5 <sup>a</sup>	32.5±1.3 <sup>b</sup>	37.4±2.7 <sup>a</sup>	
Mean Household size	6.0(±0.3) <sup>a</sup>	4.9(±0.3) <sup>b</sup>	5.4(±0.5) <sup>a</sup>	
Head of Household	47 (48%) <sup>a</sup>	10 (23%) <sup>b</sup>	10 (30%) <sup>c</sup>	67 (39%)
Low Wealth Status	80 (82%) <sup>a</sup>	33 (75%) <sup>b</sup>	20 (60%) <sup>c</sup>	133 (76%)
Thiocyanate (µmol/L) Lecithin (µmol/L)	57 (±7) <sup>a</sup> 14 (±1) <sup>a</sup>	48 (±6) <sup>b</sup> 13 (±1) <sup>a</sup>	29 (±5) <sup>c</sup> 13 (±1) <sup>a</sup>	50 (±4) 14 (±1)

Means followed by different letters are significantly different from each other by chi square or t-test ( $P < 0.01$ ).



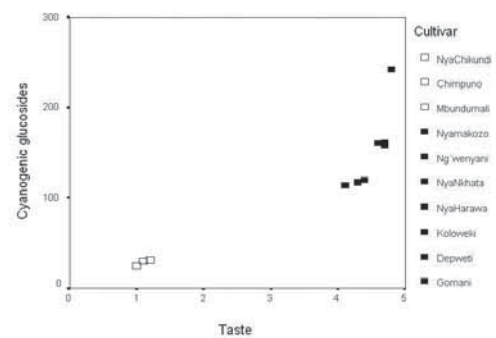
## Food Safety, Food Processing, Food Security & Preservation of Knowledge



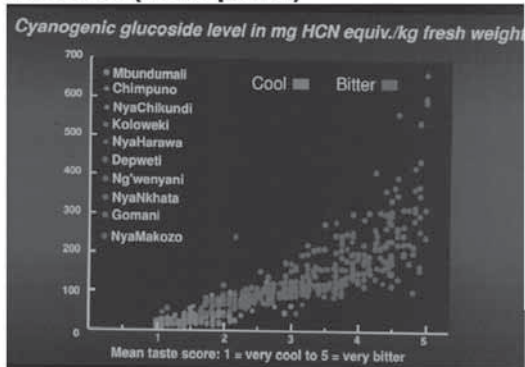
"leaders of academic institutions should be asking themselves how their organisations can do more to combat poverty" (*Nature* 25 Oct, 2007)



## Farmers' ethno-classification



## Correlation taste - cyanogenic glucosides (taste panel)



## Demographic ageing – infectious diseases patterns

- Malaria –immunological protection low in elderly = higher mortality especially if poor nutrition
- Helminthiasis e.g. hookworm egg count increases with age and exacerbated with anaemia
- HIV/AIDS – symptoms wasting, weight loss, diarrhoea, fever (catabolic processes) = higher mortality in >50 years in rural Malawi (Crampin et al 2002)
- Impact of HIV/AIDS deaths on elderly



## Mental Depression & Premature Deaths



## Demographic ageing – infectious diseases patterns cont.

- Diarrhoea
  - second cause of death for >60 years in low income countries (WHO 2002)
- Causes:
  - bacteria e.g. salmonella; viruses e.g. rota virus and protozoa e.g. giardia
- Prevalence reflects level of hygiene & sanitation
- Influenza: poor surveillance = high morbidity, high mortality vaccination effective

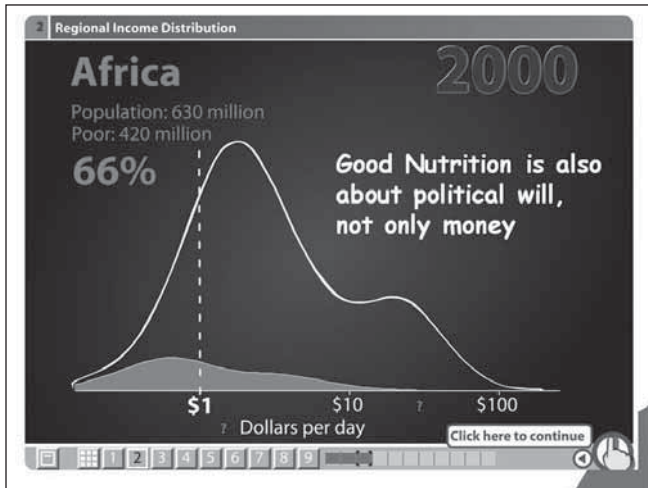
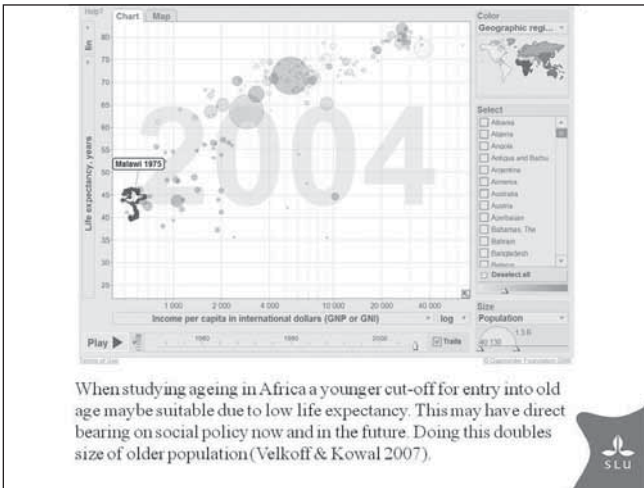
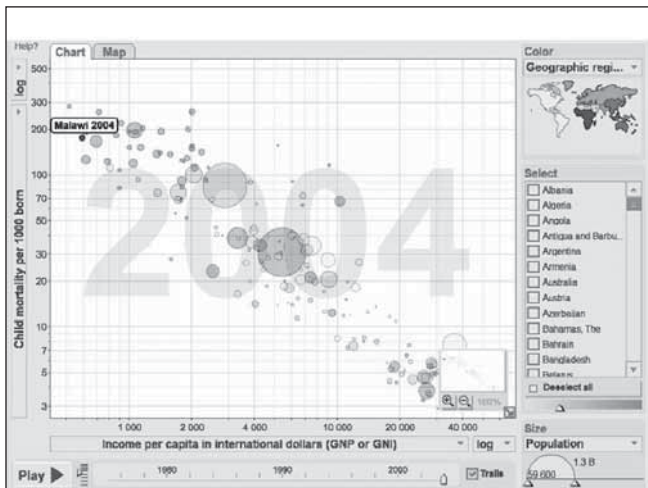
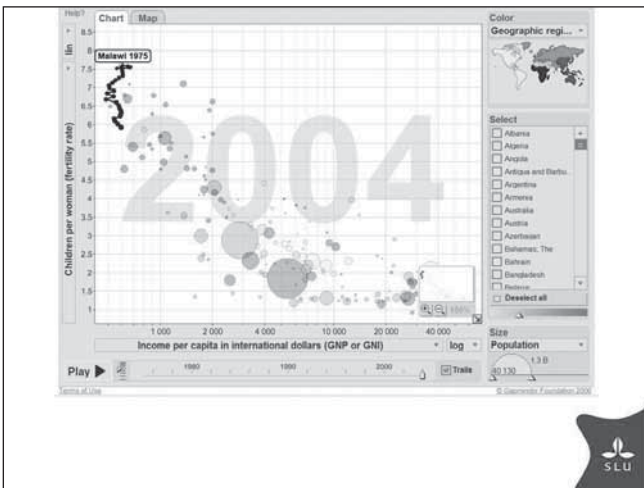
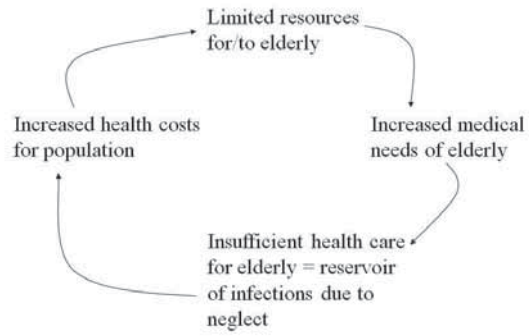


## Demographic ageing & non-infectious diseases

- Changes in metabolism and insulin sensitivity = diabetes
- Nutrition transition
  - Obesity
  - Hypertension
  - Cardiovascular complications
  - Diabetes
  - Gout
- Isolation & depression, mental ill-health, dementia
- Poverty
  - Hygiene
  - Water & food sanitation
  - Veterinary surveillance
  - Access to drugs & health services



## Public health, the elderly & socio-economic impact



## Its about - Reducing drudgery, workload



## Keeping the elderly physically active & mobile



**About Preserving Knowledge & Dignity**  
**“When an old man dies, a library burns**  
**down”** *Amadou Hampate Ba, Malian poet*

