

Ageing Brain and Dementia in 21st Century Sri Lanka: points to ponder



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Objective



To sensitize on,

- population trends in Sri Lanka
- concepts of ageing
- how ageing affects life
- healthy ageing
- introduction to dementia
- detection and management of dementia
- future directions for ageing in Sri Lanka

Defining “Old” – World Health Organization



- ❑ In the developed world > 65
- ❑ UN agreed cut off 60+

- 1870 Britain – the friendly societies act defined old age as any age after 50

- In many developing countries old age begins at point when active contribution is no longer possible (Gorman, 2000)

Definition for developing countries



Three main categories

- Chronologically
 - Change in social role (e. g. work patterns, adult states of children and menopause)
 - Change in capabilities (i.e. invalid status, senility, changes in physical characteristics)
- Self definition of “old” often include health related changes

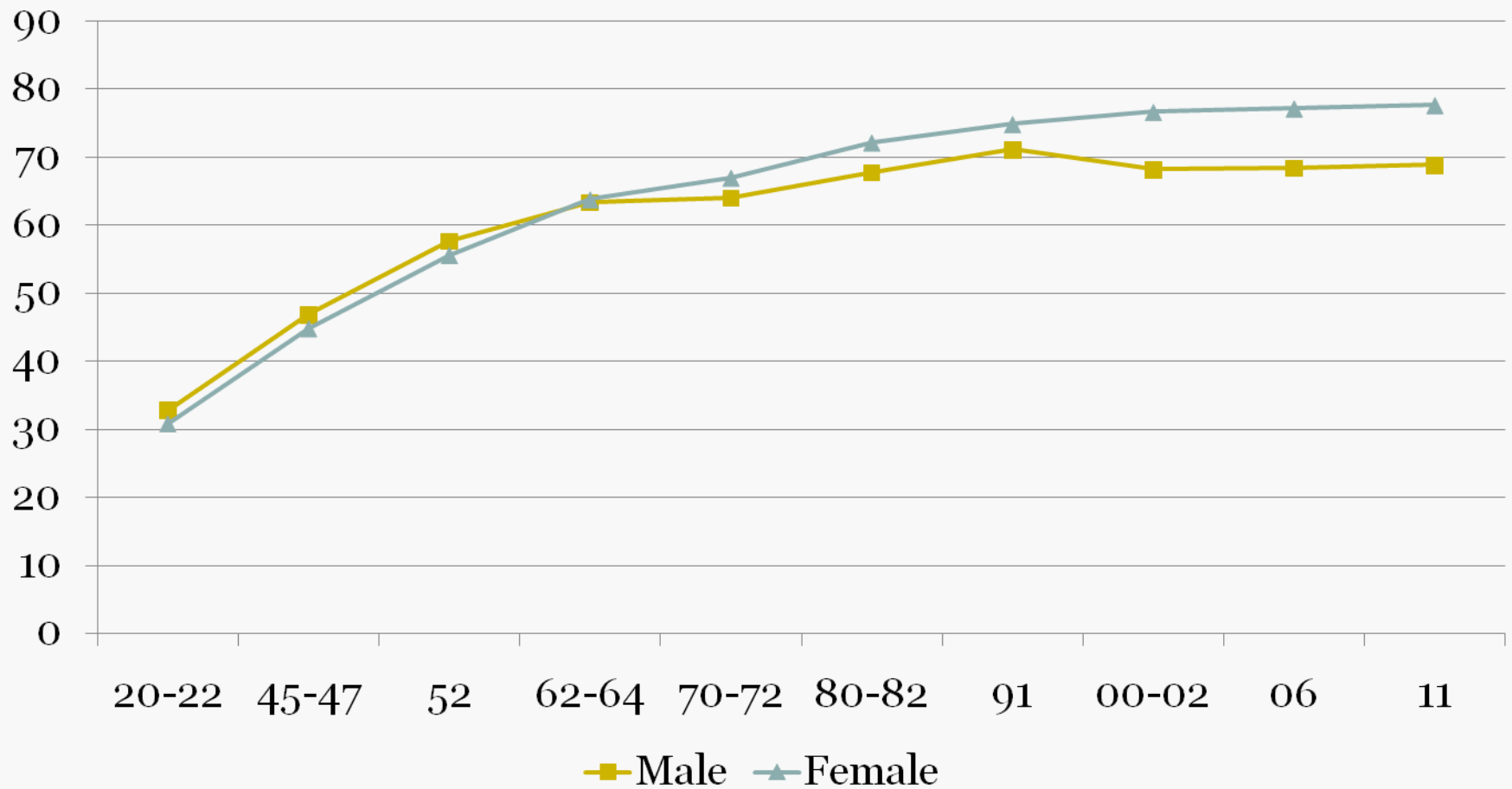
Terms used



- Elderly person
- Old person
- Senior citizen
- Late adulthood
- Life expectancy - LE
- Active life expectancy - ALE
- Disability adjusted life expectancy - DALE
- Quality adjusted life years – QALY
- Disability adjusted life years - DALY

Life expectancy at birth-Sri Lanka

1920-2011



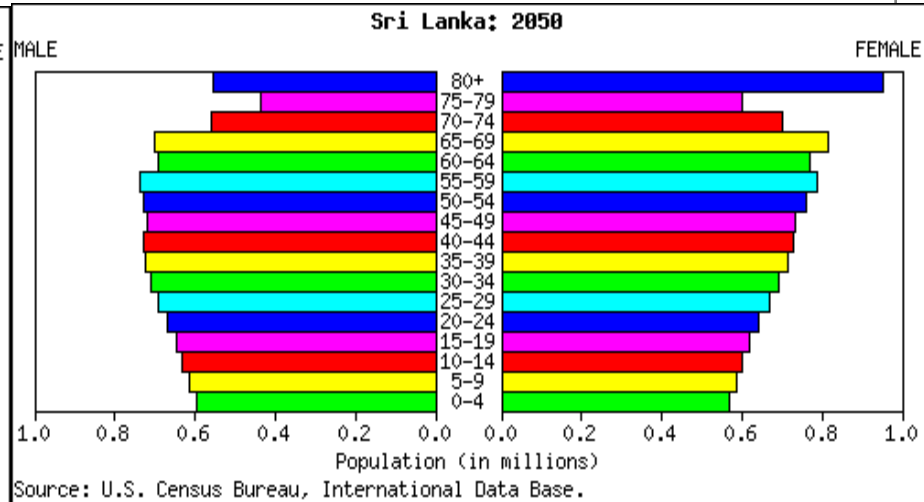
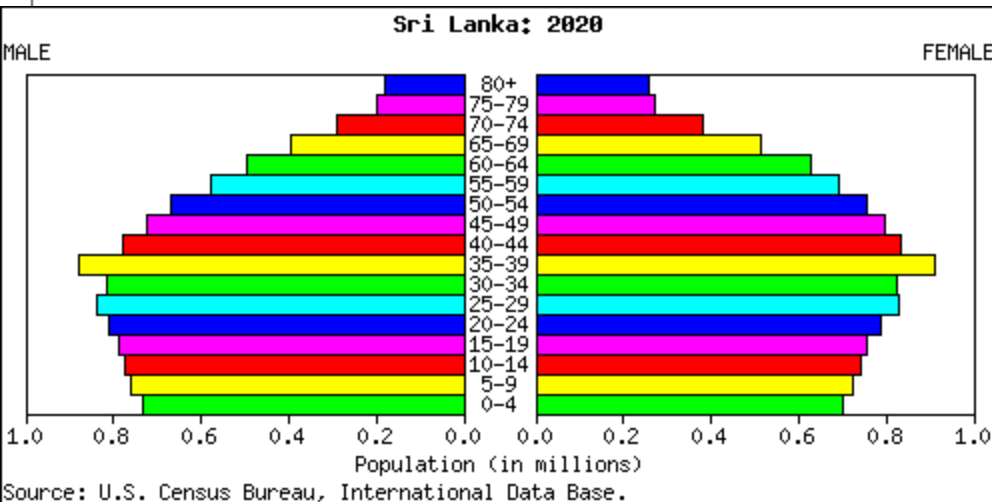
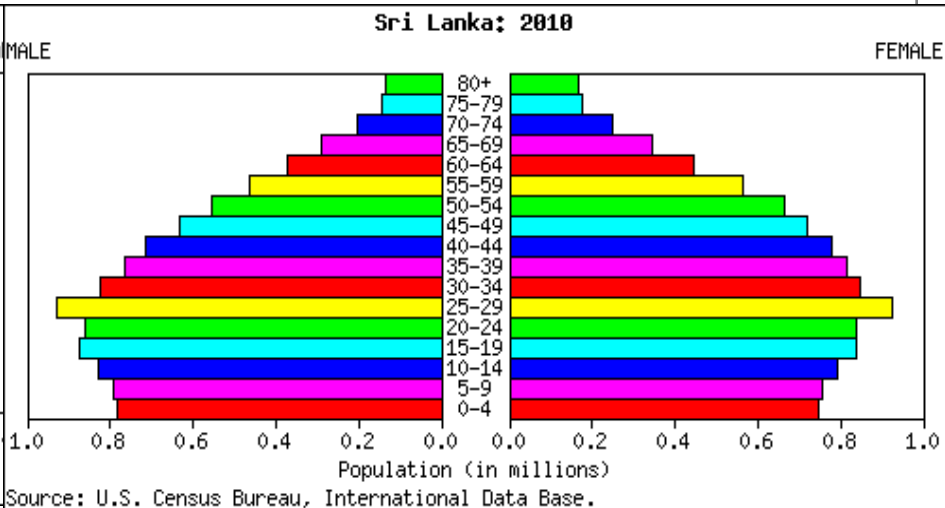
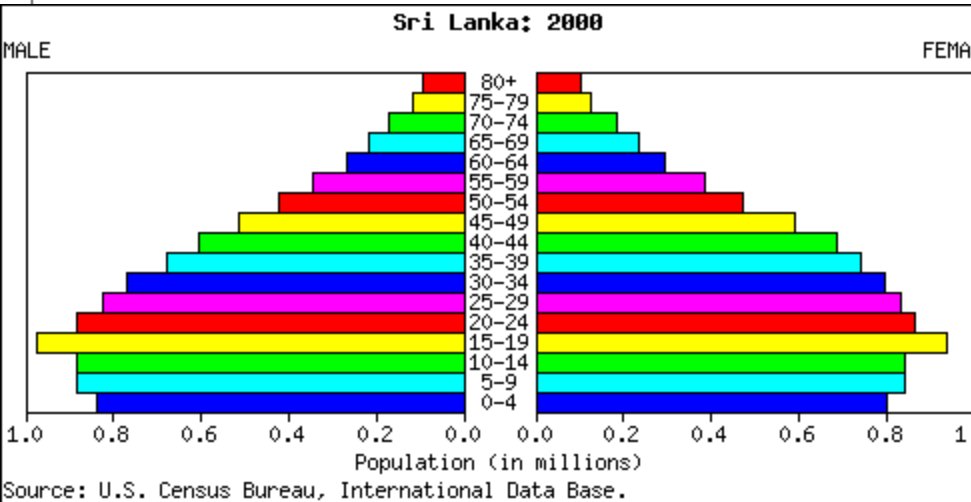
Life expectancy at birth

1920-2011



Year	Male(years)	Female(year)
1920- 22	32.7	30.7
1945- 47	46.8	44.7
1952	57.6	55.5
1962- 64	63.3	63.7
1970- 72	64.0	66.9
1980- 82	67.7	72.1
1991	71.1	74.8
2000-02	68.1	76.6
2006	68.4	77.1
2011	68.8	77.6

Population pyramids for Sri Lanka



Ageing



- How to define?
 - Chronologically - easy
 - Biologically - difficult
 - Sociologically - more difficult

Ageing – Biological approach



Theories of Ageing

- Programmed theory of ageing
- Running out of program theory
- Mutation theory of ageing
- Autoimmune theory of ageing
- Cross-linking theory
- Free radical theory
- Cycling/non cycling cell theory
- Error catastrophe theory
- DNA repair mechanisms
- Other Theories

ageing – Biological approach



- Ageing process is determined by,
 genes - 25%-33%
 external factors e.g. life style

Ageing – Sociological approach



Theoretical perspective	Major assumption
Disengagement functionalist explanation	To enable younger people to assume important roles, a society must encourage its older people to disengage from their previous roles and to take on roles more appropriate to their physical and mental decline.
Activity theory interactionist explanation	Older people benefit themselves and their society if they continue to be active. Their positive perceptions of the ageing process are crucial for their ability to remain active.
Conflict theory	Older people experience age-based prejudice and discrimination. Inequalities among the aged exist along the lines of gender, race and ethnicity, and social class

Ageing – Sociological Approach



- ❑ Structuring the life course through age
 - Age links memories(past) with anticipation(future)
 - Interaction with younger selves and older selves
 - Continuities and discontinuities that has to be negotiated
 - retirement
 - widowhood
 - other aspects
 - Life transition as an expression of life course through age
- ❑ Generation and cohort
- ❑ complementary perspective
 - narrative gerontology, social constructionist approach

Changes in the ageing brain



- Weight reduction
 - after 30 years 5% - till 70 years
 - afterwards - dramatic loss
- Ventricles enlarge
- Meninges thicken
- Loss of neurons
- Reduction in synapses and dendrites
- Appearance of Lipofuscin, senile plaques, neurofibrillary tangles and Lewy bodies

Changes are much more in dementia

Why the longevity?

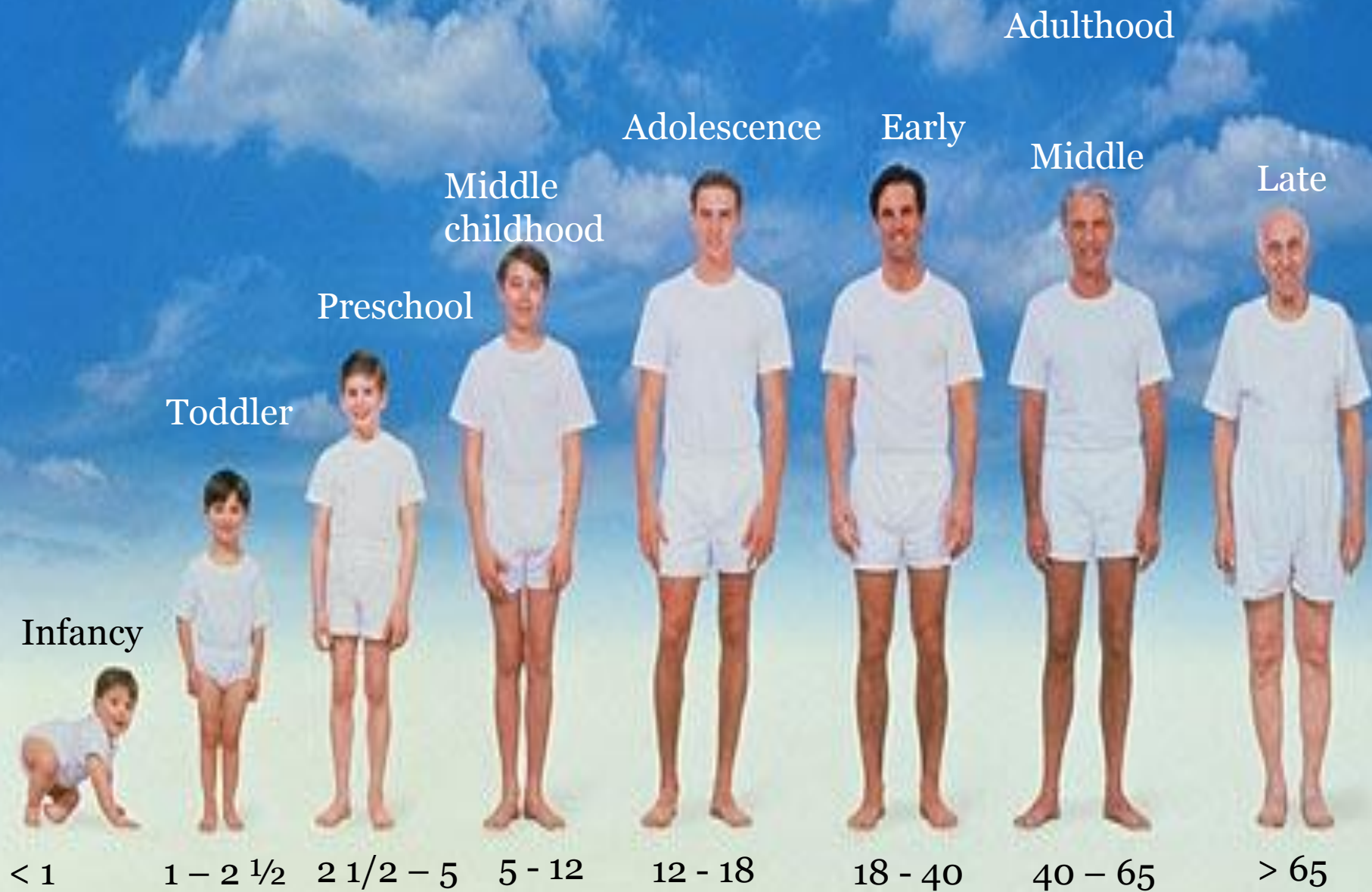


- Overall slowing of ageing process

OR

- Resistance to major life threatening pathologies
 - Sanitation
 - Improved medical treatment
 - Improved diagnosis
 - Memory and disease modifications
 - Alzheimer's
 - Cancer

Life cycle approach to ageing



Middle Adulthood



- Physical changes
 - loss of elasticity in the skin
 - changes to the texture and color of hair
 - decreased ability in seeing and hearing and
- Cognitive changes
 - slowing of fluid intelligence (speed of thought processing)
 - increase of crystallized intelligence
 - loss in working memory
 - gain in semantic memory
- Social changes
 - variation in employment
 - caring for elderly relatives
 - children leaving home
 - difference in parental responsibilities

Late adulthood



- Physical changes
 - progressively weakened immunity and physical abilities
- Cognitive changes
 - sharp decrease in intellectual functioning
- Social changes
 - decrease in quality of social interactions due to age discrimination or stereotyping
 - social segregation due to cultural differences
 - loss of a comfortable network of co-workers, friends, family, and community members due to relocation, death

Despite above limitations late adulthood can be the prime time of life to those who are ready for it

Healthy ageing



- Physical health
- Mental health
- Social networks
- Economic security

- Physical and mental activities
- Physical contact
- Being involved
- Keeping busy
- Focused on the present and the future
- Keep old friends and develop new ties

E.g. Over fifty club

- Birds of a feather flock together
E.g. Retirement villages
- Retirement plans

Delaying ageing



- Calorie restriction and otherwise nutritionally adequate diet - only proven method to expand lifespan of mammals
- Calorie restriction together with exercise – beneficial
- ‘late life capabilities have their genesis in early life’

Retirement



- Retirement most often is defined with reference to two characteristics:
 - nonparticipation in the paid labour force
 - and
 - receipt of income from pensions, social security, and other retirement plans

Purcell, P.J. (2003, Spring). Older workers: Recent trends in employment and retirement. *Journal of Deferred Compensation*, 8(3), 30 – 53

‘Retirement is a life event with major life style adjustments’

Successful ageing



Three major processes

- Selection, limiting focus to a few areas of expertise or interest
- Optimization
- Compensation- using a window when the door is shut (resourcefulness)

These processes are helpful for people in the late adulthood stage because they experience more losses than when they were younger

(Broderick & Blewitt, 2003).

Ageing - points to ponder...



- Today young adults are tomorrow elders
- Preparation is the key to success
- Modifiable factors of longevity are related to life style
- Habits and many relationships are continuations of younger life

Dementia



Acquired global impairment of intellect, memory and personality, without impairment of consciousness.

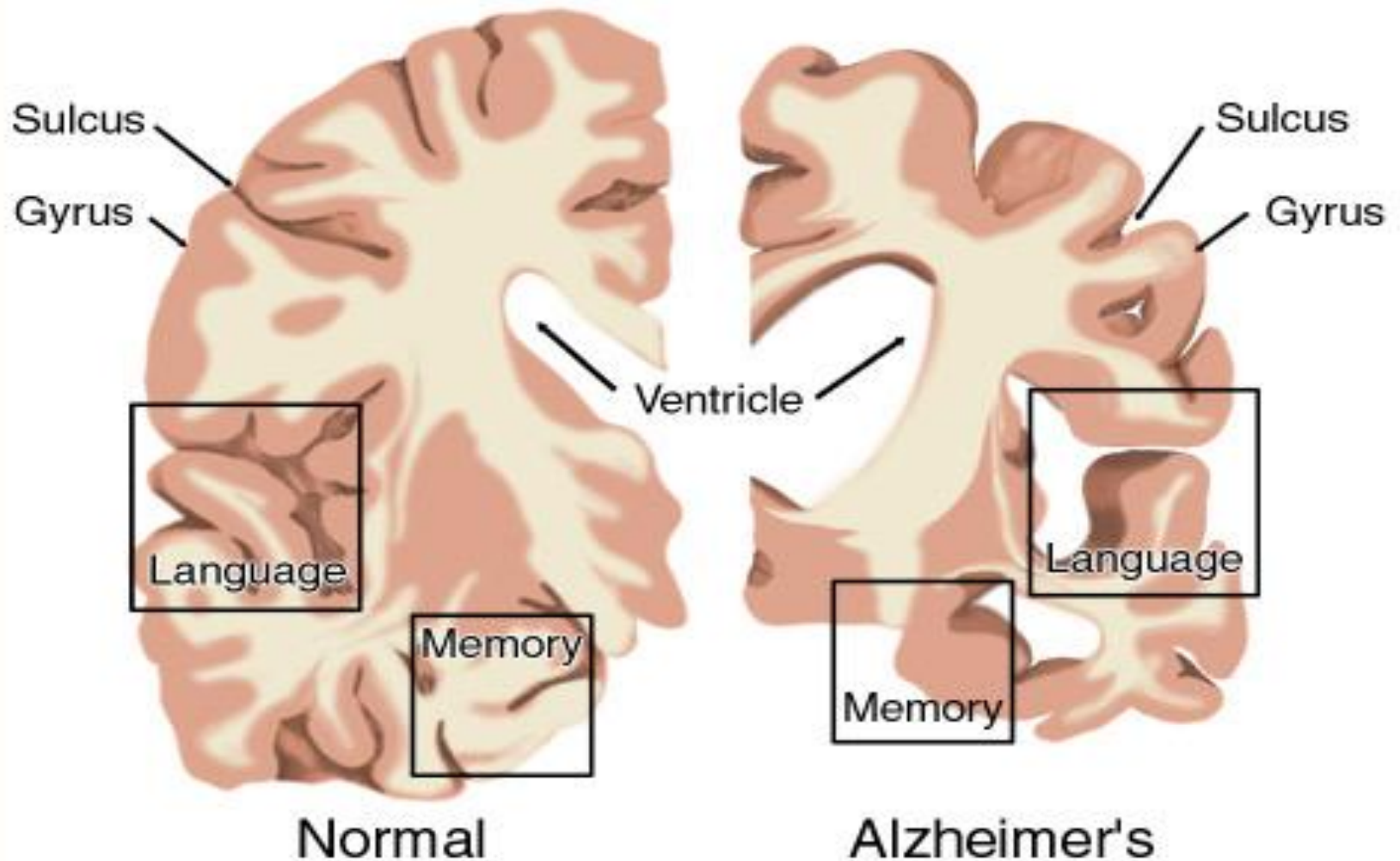


Dementia

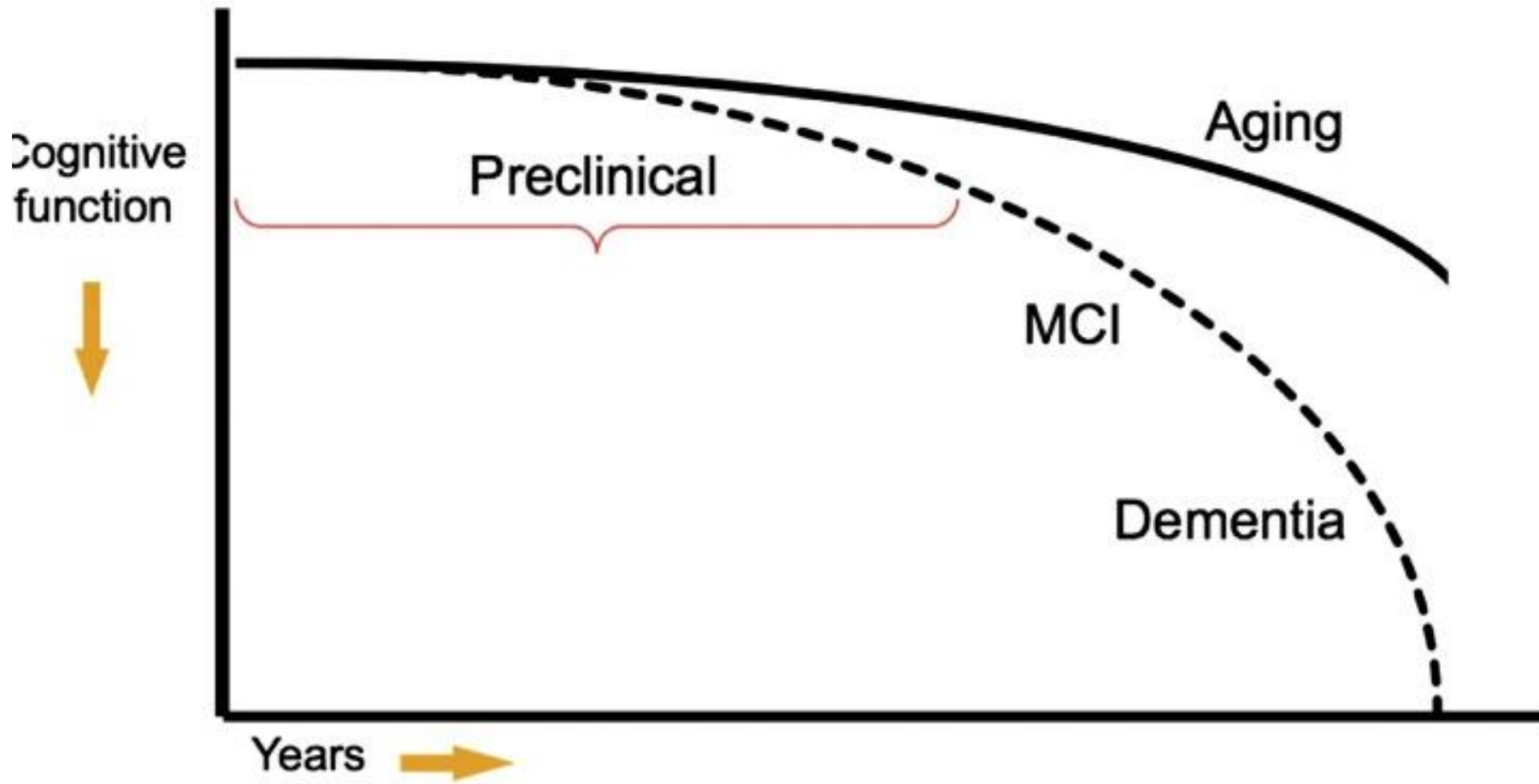


Alzheimer's disease	50-60%
Vascular dementia	20-25%
Dementia with Lewy bodies	15-20%
Dementia in other diseases	
• Picks' disease	
• Creutzfeld-Jacob disease	
• Parkinson's disease	
• Huntington's disease	
• Human immunodeficiency Virus (HIV)	

Brain Cross-Sections



The continuum of dementia

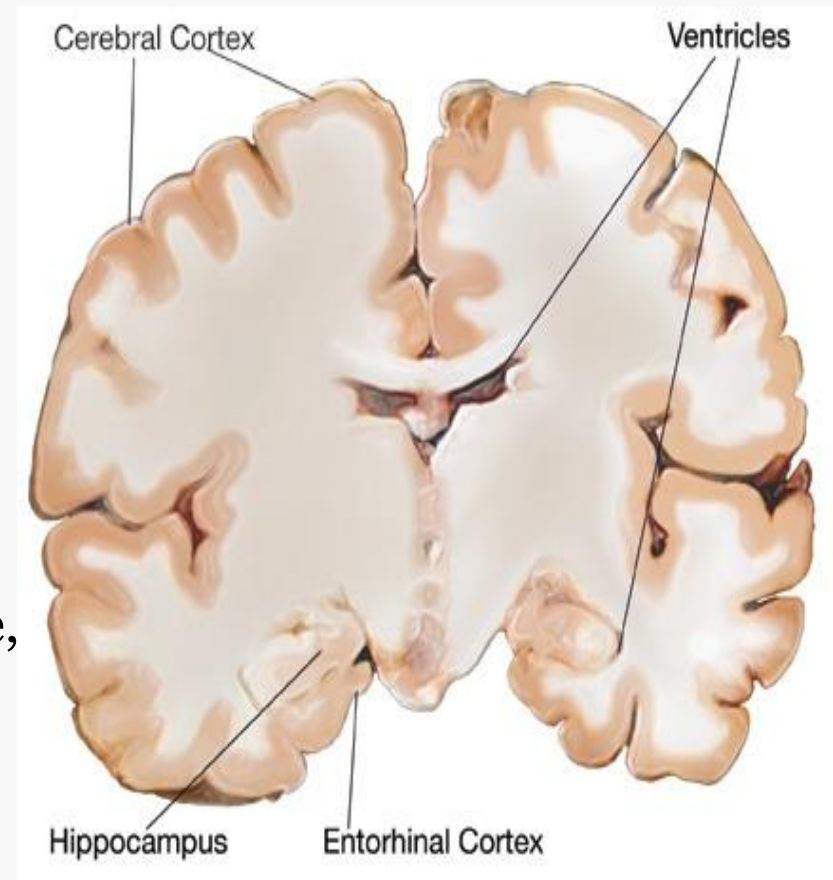


Mild Cognitive Impairment (MCI)

Symptomatic, prodementia phase

- Degree of cognitive impairment is not normal for age
- Can be considered as a subset of the many causes of cognitive impairment that are not dementia (CIND)

E.g: head trauma, substance abuse, or metabolic disturbance



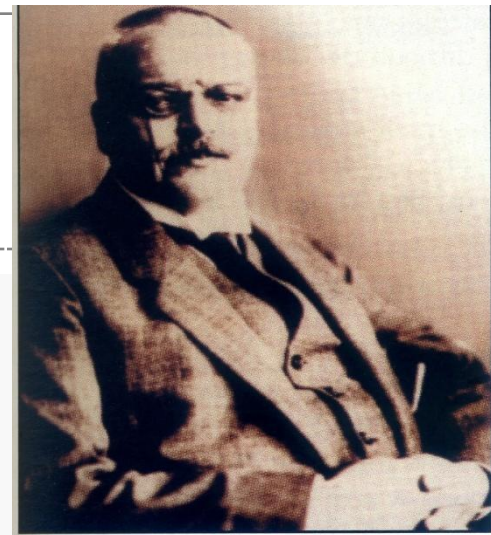
Diagnosis of dementia



- Delay in diagnosis:
- Symptoms attributed to normal ageing
- Delay in seeking help
- Low priority in diagnosis
- Family's response to stigma
- Other health systems



Alzheimer's Disease



Alois Alzheimer



- 1906 - by Alzheimer
- Prevalence
 - 5% of > 65 yrs
 - 20% of > 80yrs
- Pathology-
 - ✦ Brain is shrunken
 - ✦ Widened sulci and enlarged ventricles
 - ✦ Dendritic cell loss
 - ✦ Proliferation of astrocytes
 - ✦ Increased gliosis
 - ✦ Senile plaques and neurofibrillary tangles in cortical and sub cortical grey matter
- Aetiology
 - ❖ Genetic

Clinical features of dementia



- **Cognition**

- ✦ poor memory
- ✦ impaired attention
- ✦ aphasia, agnosia, apraxia
- ✦ disorientation

- **Behaviour**

- ✦ odd and disorganised
- ✦ restless, wandering
- ✦ self-neglect
- ✦ disinhibition

- **Mood**

- ✦ anxiety
- ✦ depression

- **Thinking**

- ✦ slow, impoverished
- ✦ delusions

- **Perception**

- ✦ illusions
- ✦ hallucinations

- **Insight**

- ✦ impaired

Dementia Management

- **Diagnosis**

- By a specialist

- **Management**

- Commenced by a specialist
- Could be carried out by a family physician



Diagnosis

- History - collateral history
- MSE- points to diagnosis
“depressive pseudo-dementia”
- Extended cognitive function tests- lobar functions, MMSE
- Investigations – to detect treatable causes
- Multidisciplinary team assessment – for proper management

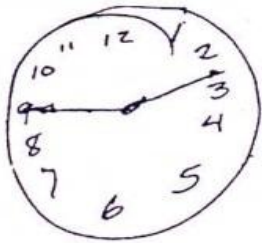


Mental State Examination

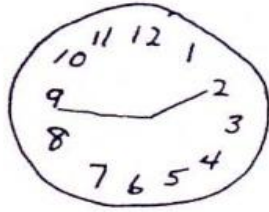


- Appearance and behaviour
- Speech
- Mood
- Thought content
- Perception
- Cognitive functions
 - Orientation- time, place, person
 - Attention –digit span
 - Concentration- days of the week backward
 - Recent memory- 5 item address/ three unrelated items
 - Remote memory- personal and non personal information
- Insight

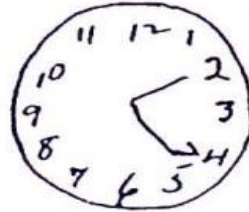
Clock Drawing Test



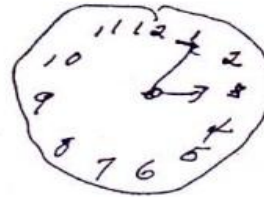
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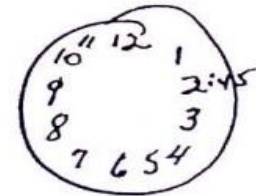
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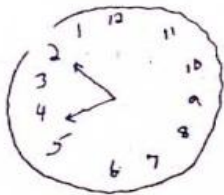
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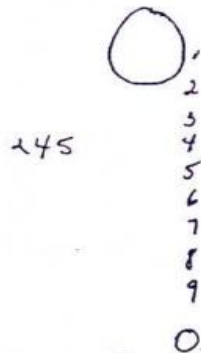
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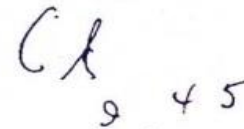
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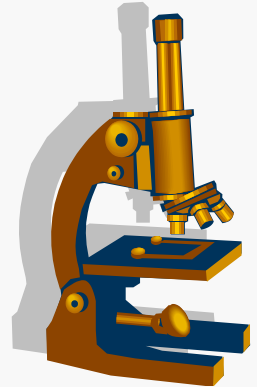
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Investigations

- Urine full report
 - Liver
 - Renal
 - Thyroid
 - FBC
 - FBS
 - Vitamin B12, folate levels
 - Chest X ray
- } profiles



When indicated
VDRL
CT/MRI
HIV/AIDS

Management



Depends on the

- *severity*
 - *cause*
 - *impact* - on the family
- } of the
disease



Management issues..



- treat the *cause* (if found)
- retaining abilities
- prevent progression as much as possible
- improving *quality of life*
- reducing complications / treat complications
- preparing for the future
- improving care givers health
- networking



Treat the cause



E.g.

- ✦ Hypothyroidism
- ✦ Vascular dementia
- ✦ HIV/AIDS
- ✦ Other metabolic disorders
- ✦ Vitamin deficiencies



Drug therapy



- General considerations:
- Avoid poly-pharmacy
- Consider drug interactions
- Simplify regime



Drug treatment of Alzheimer's disease



- Delay disease progression in some
- Reduce care giver's burden
- With treatment:
 - 1/3- better
 - 1/3- prevent progression



Approved anti-dementia drugs



- Donepezil
- Rivastigmine
- Galantamine
- Memantine

Donepezil



- Piperidine derivative
- Reversibly inhibits acetyl cholinesterase
- Starting and minimal effective dose - 5 mg once;
- maximum: 10 mg /day

Rivastigmine



- Carbamate derivative
- Reversibly inhibits both AChE and BChE
- Starting dose is 1.5 mg bd
- Minimal effective dose is 3 mg bd
- Maximum : 6 mg bd

Galantamine



- Tertiary alkaloid
- Reversibly inhibits AChE
- Starting and subsequent doses are 8 mg, 16 mg and 24 mg daily

Memantine



- Non competitive NMDA glutamate receptor antagonist
- Starting dose is 5 mg daily
- Maximal dose is 20 mg daily

Adverse effects of AChE inhibitors



- nausea, vomiting
- diarrhea
- anorexia
- muscle cramps
- vivid dreams
- cardiac rhythm abnormalities

Treatment expectations of anti dementia drugs



- Repetitive questioning – Often met; signifies robust response to treatment
- Temporal disorientation – common and often met
- Having better initiative – commonly met; signifies robust treatment response
- Spatial disorientation – Inconstantly met
- Misplacing objects – very uncommonly responds to treatment

Retaining abilities



- Safe activities
- Preparing lists of daily activities
- Educating care givers to encourage activities
- Providing support

Prevent progression



- Treat cause
- Treat co-morbidities
- Monitor and treat complications
 - e.g.
 - urinary tract infections
 - respiratory tract infections
 - constipation
- Early use of anti dementia drugs for Alzheimers disease

Improve quality of life



- Physical
 - ✦ nutrition
 - ✦ hygiene
 - ✦ co-morbidities
 - ✦ medication e.g. side effects
- Psychological
- Social “supportive persons”
- Spiritual



Prepare for the future



Involve patient in decision making

- The will
- “Advanced directive”
- Financial handling ‘capacity’
- Legal aspects
- Improving quality of life

Caregiver's Health



- Share responsibilities among the family
- Time off for caregivers without feeling guilty
- Meet their emotional needs
- Time off for pleasurable activities

- Care giver's support groups

Networking



- Local agencies
 - Psychiatrist
 - ✦ General Practitioner
 - ✦ Physician
 - ✦ Neurologist
 - ✦ Social worker
 - ✦ Care Homes
 - ✦ NGO's
 - ✦ Primary health care team

Know limits and boundaries

Prevention of Dementia



Alzheimer's

- Risk factors
 - Low education
 - Head injury
 - Cerebrovascular disease
 - Depression
 - High homocysteine
 - Diabetes
 - ApoE4
- Protective factors
 - NSAIDs
 - HRT
 - Statins
 - Cognitive activity
 - Physical activity

Vascular

- Risk factors
 - Vascular disease
 - Metabolic disease
- Protective factors
 - Healthy diet
 - Exercise
 - Weight control
 - Moderate alcohol
 - No smoking
 - Blood pressure control
 - Control of diabetes

Parkinson's

- Risk factors
 - Toxins
 - Solvents
 - CO
 - Well water
- Protective factors
 - Smoking
 - Caffeine

Most are not proven...

Research on healthy elderly



- Numerous studies - cognitive training benefits healthy elderly individuals
- Commercially available computerized brain-training programs lacks empirical support
- The SIMA (Maintaining and Supporting Independent Living in Old Age) study demonstrated that a combination of memory and psychomotor training significantly improved cognitive status in healthy elderly people (75-89 years) after 1 year of training
- All participants (aged 65-94 years) in the ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly) study showed significant improvements in distinct cognitive functions—memory, reasoning, problem solving and speed of processing

Research on dementia



Pharmacological

- AchE- I ? Similar efficacy, ? Donepezil better
- Memantine, for severe dementia
- LASER – AD - Mild AchE - I less mortality
- Vascular contributions to cognitive impairment and dementia
 - ✦ smoking, alcohol, Donepezil – good evidence
 - ✦ antioxidants, rivastigmine, galantamine – poor evidence

Non pharmacological

- Adaptation and Coping Strategies and Psychosocial Treatments - effects are medium and comparable to the effects on cognition of anti-Alzheimer's disease medication

Treatment of behavioural and psychological symptoms of dementia

- CATIE – AD study
- Mortality of antipsychotic use – Haloperidol 20%, Olanzapine 12.6%

Ongoing and future research



- **Symptoms**
 - ✦ Study of social behavior and emotion in frontotemporal dementia, Alzheimer's disease and controls
- **Pharmacological**
 - ✦ Clinical trial of donepezil between the patients with Alzheimer's disease and mixed dementia
- **Non pharmacological therapies**
 - ✦ Evaluating the effects of music interventions on hospitalized people with dementia
- **To find associative and causative factors**
 - ✦ Evaluation of a diet in patients with senile dementia

Dementia in Sri Lanka - future directions

Clinical

- Early detection and proper management – management protocols
- Psycho geriatric units in hospitals
- Disease modifying drugs
- Day centers
- Caregivers' support groups

Social

- Community support for those who live at home
- Support to live with dignity
- Financial assistance
- Respite admission units
- Shelter for demented

Policy

- Legal framework to safeguard rights
- Policy for community care

Research

- Brain research
- Clinical research

Dementia in Sri Lanka future directions



Points to ponder

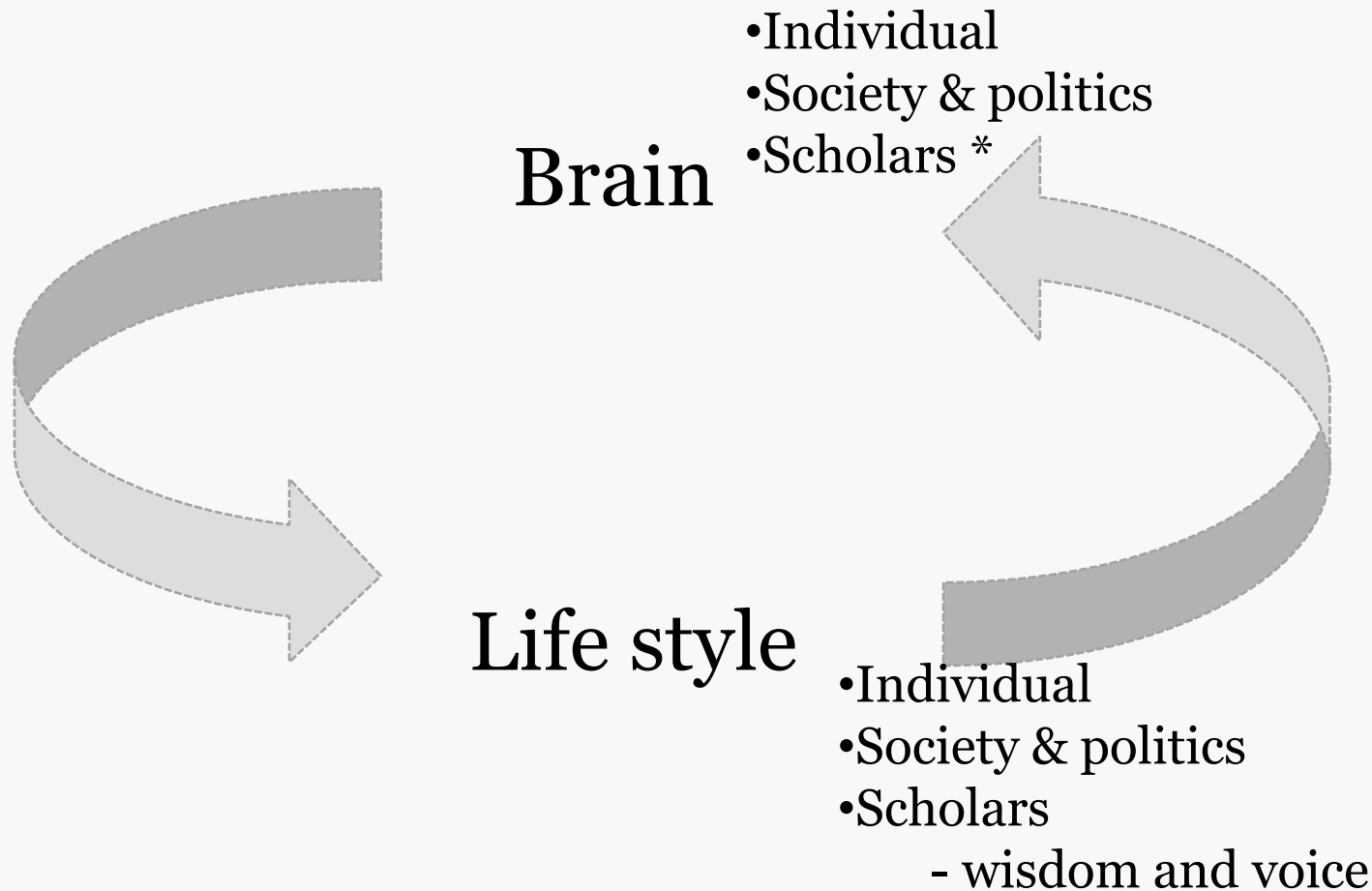
- Diversity of population
- Varying needs
- Service planning according to diverse needs
 - participatory
 - affordable
 - respectful
 - sensitive to caregiver needs

Research

Healthy life style - health promotion

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‘Late life capabilities have their genesis in early life’



Objectives



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- To sensitize on concepts of ageing
- How ageing affects life
- Healthy ageing
- Introduction on dementia
- Detection of dementia
- Management of dementia
- Future directions for ageing and dementia in Sri Lanka

"Add life to years that had been added to life...." (WHO)

*THANK
YOU!*

