

# **Health Care for Older People**

## **Holistic Approach**

### **Gerontology**

**Sri Lankan Association of Geriatric Medicine**  
**2024**





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An attempt to develop and promote multidisciplinary mutual coordination and collaboration among the teams involved in care of older patients at various levels in the health and social services sector.

**‘Teamwork divides the task and multiplies the success’**

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## Editorial

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The long-aspired launch of a bulletin on Gerontology has been now brought to fruition at the Annual Academic Sessions of the Sri Lankan Association of Geriatric Medicine. We are proud to present this work as the association passes its 10th year of existence.

Gerontology, the science of ageing is an important discipline which goes hand in hand with geriatrics as well as clinical medicine. This field concentrates on the biological, psychological and social aspects of ageing. It does not have any boundaries, but its environs reach out to medical, nursing and allied health professionals as well as patients and caretakers. The purpose of this discipline is not to extend life but to improve its quality. This is done by reducing the burden of disease and its impact on age-related diseases and conditions. There are unique necessities of older adults which need to be addressed in an individualised manner. The duties of the health care professional include addressing the clinical aspect along with the socioeconomic and cultural aspects as well. All health care professionals need to be devoted to helping older adults maintain their health and independence as they transition from one stage of life to the next.

This bulletin serves as a platform to explore the convergence of geriatric medicine with various specialities within the broader landscape of healthcare. Within these pages, you will find a rich tapestry of articles that highlight the interconnectedness of geriatrics with gerontology, sociology jurisprudence and ethics.

We are indebted to the authors who have contributed their insights and expertise to this issue. Their dedication to advancing the field of geriatric medicine is evident in the quality and depth of their contributions.

**Dr Shehan Silva**  
**Dr Achala Balasuriya**

27th June 2024

The 10<sup>th</sup> Anniversary Annual Academic Sessions of the  
SLAGM



# 1. The Process of Ageing

Dr Shehan Silva & Dr Madushani Dias

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Ageing is a phenomenon that is common to all living organisms. It has fascinated man ever since the dawn of the civilisation. Humans have attempted to understand and describe the characteristics and mechanisms of ageing in science and art (even in philosophy and religion). Cicero (44 BC) in *Cato Maior de Senectute* portrays 84-year-old Cato the Elder speaking about old age to two young men. At the beginning of his long account, he says *"As I give thought to the matter, I find four causes for the apparent misery of old age; first, it withdraws us from active accomplishments; second, it renders the body less powerful; third, it deprives us of almost all forms of enjoyment; fourth, it stands not far from death."*

In Judeo-Christian tradition, Methuselah is considered the oldest person to have ever lived on earth with a span of 969 years. The oldest recorded female and male ever lived have been Jean Calment (122 years 164 days) and Jiroemon Kimura (116 years 54 days).

Geras (Roman equivalent – Senectus) is considered as the Greek god of ageing often portrayed as a tiny, shrivelled old man. Although he had immortality he was deprived of agelessness. However, there were attributes of virtue such as fame (kleos) and excellence with courage (arete) that were associated with him. Words related to ageing in science and art are derived from Geras.



*Figure 1.1 Geras (Senectus)*

Some disciplines and domains focus on the ageing and the aged, such as the organic processes of ageing (senescence), medical studies of the ageing process (gerontology), diseases that afflict older adults and its management (geriatrics), technology to support the aging society (gerotechnology) and leisure and sport activities adapted to older people (senior sport science). It was in 1909 that Ignatz Nascher coined the term 'geriatrics', a baptism of a field of medicine which specifically deals with older adults. Nascher considered senility as a distinct period of life, a physiological entity as much so as the period of childhood thus emphasising the importance of such field like paediatrics.

Old age is a range for those in proximity and surpassing life expectancy. Terms such as old people, older adults are used and are preferred to elderly and elders. The term 'senior citizen' is euphemistic for an old person used both in American and British English (more frequently in the former) with implication that the person being referred to is retired. This in turn usually

implies that the person is over the retirement age, which varies according to country.

Synonyms include pensioner or pensioner in British English and retiree and senior in American English. The term senior citizen is often used for legal or policy-related reasons in determining who is eligible for certain benefits available to the age group. In general usage a form of courtesy and to signify continuing relevance of and respect for this population group as citizens of the society and senior rank.

Most of the developed countries consider the retirement age at region of 65. This signals the transition from middle to old age. Many people in their later 60s and 70s (frequently called 'early old age') are still fit, active, and able to care for themselves. However, old age is not universally defined due to context-sensitivity. The United Nations considers old age to be 60 years or older. A joint report by the U.S. National Institute on Ageing and the World Health Organisation Regional Office for Africa in 2001 set the beginning of old age in Sub-Saharan Africa at 50. This lower threshold generates from a different perspective about old age in developing nations. Unlike in the developed countries, where the chronological age determines retirement, the developing world determine according to the ability to make active contributions to society. This number is also significantly affected by lower life expectancy throughout the developing world.

Gerontologists have recognized the diversity of old age by defining sub-groups rather than putting them *en masse*. Studies have varied in their classification

- Young-old (60 to 69), Middle-old (70 to 79) Very old (80+)

- Young-old (65 to 74), Middle-old (75 to 84) Oldest-old (85+)
- Young-old (65 to 74), Old (74 to 84), Old-old (85+)

Describing sub-groups in those 65 and above enables a more accurate portrayal of significant life changes. The 'third age' is considered as the period in life of active retirement, following middle age. Higgs and Gilleard introduced the term the 'fourth age'. It is an arena of inactive, unhealthy, unproductive, and ultimately unsuccessful ageing.

Ageing is a pattern of life that occurs when one advances with time. It is a process of change occurring over time associated with a gradual decline in function and an increasing risk of failure. The time-related deterioration of functions is those that are required for survival and fertility. Failure may encompass injury, illness or even death. There is increased risk and manifestations of impairment of physiological and psychological functions. If the risk of failure is non-advancing, 'old' will be as good as 'new'. This utopian feature which ensures absence of ageing unfortunately does not exist.

Ageing as described by Strehler has four attributes: universality, intrinsicity, progression and deleteriousness. Humans as well as all living beings are subjected to the inevitability of ageing which is an objective observation. The process of ageing originates within the corpus and therefore is endogenous. Although this is not dependent on external factors, extrinsicity affects its course. Furthermore, this process is progressive and additive with harmful effects accumulating with time during

lifespan. Subjectively, one may perceive a change in behaviour and self-perception.

There are 5 domains in ageing.

- a) Chronological ageing is the advancement of the numerical value of time (temporal) since birth. In other words, the actual days or years a person has been alive.
- b) Biological ageing or *Senescence* refers to the physical changes leading to deterioration of functioning in an individual. These pertain to the attributes that 'slow down' a person.
- c) Psychological ageing characterises the changes in mental functions and personality. It may be seen as a continuous struggle for identity or a sense of coherence and meaning in thought, words and deeds. Success depends on the synchronisation of changes in different parts of the self.
- d) Cognitive ageing relates to a decline in cognitive processes. Age-related impairment in reasoning, memory and processing speed can arise during adulthood and progress to older phases.
- e) Social ageing marks the changes in one's social roles, responsibilities and relationships with ageing. This is profoundly influenced by the perception of ageing which is a part of society's culture. If a society views ageing positively, social ageing experienced by those individuals will be more positive and enjoyable, and vice versa.

It should be noted that these ageing processes are not universal and are subject to many individual variations.

The intrinsic capacity of an individual is composed of mobility, vitality, sensory perception, psychological domains and cognition. All these physiological and psychological functions lose efficiency and the capacity for homeostasis. This may happen at varied rates and varied times. Some of them may be explicitly manifest while others may be concealed. Thus, there is a disparity of the concepts of chronological and biological ages. This discrepancy is indeed the hallmark of ageing.

Primary ageing is considered as the number of years one has lived while secondary ageing is the accumulation of effects of environment, disease and injuries.

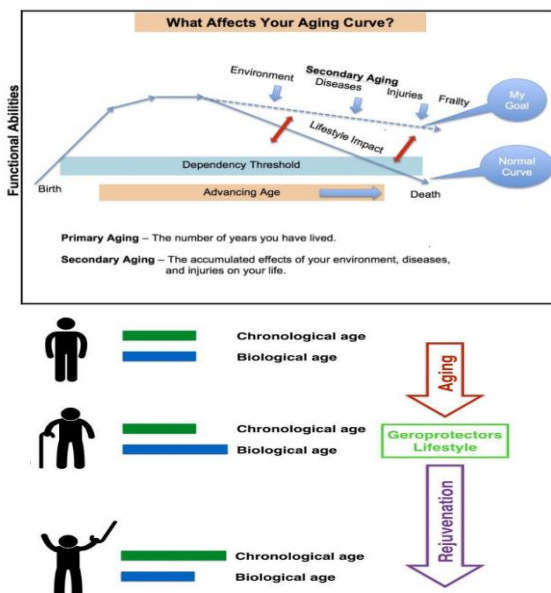


Figure 1.2 The Trajectory of Life and the Disparity between Chronological and Biological Age

## **MORTALITY, APOPTOSIS AND SENESCENCE**

Humans and most species age and die. Some species are considered potentially immortal. These include bacteria that undergoes binary fission, plants such as strawberries that have runners and animals such as *Hydra sp.* that have a regenerative potential. Mortality of species can be described with sexual reproduction where genetic material was transferred to new members of the species making the parents disposable. Thus, the Darwinian principle of survival of the fittest is ensured. However, in recent times organisms such as *Escherichia coli* split into daughter cells which has kindled thoughts of age classes in bacteria. Humans too have cells with potentials cells of immortality. Stem cells, germ cells and cell lines such as HeLa (Cancer cells of Henrietta Lacks from 1951) are some examples.

Cells, tissues and organs all change with ageing and eventually, the function begins to deteriorate. Whereas an injured cell will swell, burst and release its contents resulting in cascading inflammatory and immune processes, a cell that dies a normal death shrivels and is consumed by neighbouring cells rapidly. This process is termed apoptosis (Greek – falling off). An array of intracellular and extracellular signals triggers the cell to enter this programmed cell death. Apoptosis is seen in earlier development (e.g. interdigital separation). It is also an active process of growth that persists throughout life. Aberrant regulation of apoptosis leads to malignancy, neurodegeneration and systemic infection.

Ageing as a predetermined genetically continued process is seen in different organisms at different times. A single gene mutation of the roundworm *Caenorhabditis elegans* doubles the life expectancy to 6 weeks. This gene *daf-2* codes for a primitive insulin receptor and regulates other genes which determine longevity. This is a mechanism by which the worm suspends its development in adverse environmental factors. Analogous but complex is the status in humans, however with the insulin pathway in the pathogenesis of diabetes and cancer with links to ageing.

Cell senescence is a process that occurs in cells that have stopped division but are metabolically active in the initiation of a pro-inflammatory state. This contrasts with the coordinated removal of biological material seen in apoptosis. Cells with senescence are seen in tissues of those with age-related diseases such as osteoarthritis, pulmonary fibrosis, atherosclerosis and Alzheimer's disease. The exact mechanism of this activity is an enigma. Senescence does not always occur with ageing or pathology. As an example, the myofibroblasts undergo senescence to ensure the prevention of excess fibrosis. Senescence in ageing however is uncoordinated and unscheduled, more random and less efficient.

Although no genes have been found to double lifespan in man, a study of genomes of more than 1,000 centenarians scoring about 300,000 sequence variations for possible links to longevity has identified around 150 variations of DBN sequence that can predict with 77% accuracy whether a person has the genetic background to live up to 100.



## PROGERIA

Single genetic disorders causing premature ageing are known as progeria. These syndromes that occur as ageing do not manifest in all typical features of ageing but by certain mechanisms that are relevant to normal ageing.

*Hutchison-Gilford Syndrome* is a rare sporadic autosomal dominant condition giving rise to death by early teens by vascular disease. The normal protein prelamin A is altered to progerin by a silent substitution of a glycine codon. The lamin A deficient cells increase apoptosis and exhaust stem cell-driven regeneration.

In *Werner Syndrome*, there is autosomal recessive progeria of adulthood caused by mutation of a gene on 8p coding a member of a RecQ helicase family. There is premature greying, skeletal changes and death by 50 years. The Werner protein unwinds, separates and repairs damaged DNA.

### Werner's Disease

Six cardinal symptoms:  
premature graying of the hair or hair loss, presence of bilateral cataracts  
atrophied or tight skin, soft tissue calcification, sharp facial features, and an  
Abnormal high-pitched voice



### Hutchison Gilford Syndrome

Features:  
Limited growth, distinctive appearance, Wrinkled skin, atherosclerosis, kidney failure,  
loss of eyesight, and cardiovascular problems. Musculoskeletal problems.



Figure 1.3 Progeria syndromes

## **BIOLOGICAL THEORIES OF AGEING**

Biological theories can be further classified as theories related to cell replication limitation and those related to evolution.

### **l) Theories related to limited cell replication**

#### **a) Programmed Theory**

Weismann described in 1822 that every person has a 'Biological Clock' that starts ticking even from the moment of conception. There are genetically predetermined but unknown numbers of cell divisions. Thus, an internal timetable directs each individual to manifest the effects of ageing. This results in predictable changes such as thymic atrophy, menopause, and skin or hair changes. The theory proposes that this is a mechanism of evolution to remove older and frail animals to increase resources for the young and robust.

#### **b) Run out of Program Theory**

Everyone has a limited amount of genetic material that will run out or get wasted over time. All events are programmed in the genome and are sequentially activated. After maturation, genes are activated, and no more programs are played. As cells age there may be a chance of inactivation of genes that thereafter cannot be turned on.

#### **c) Gene Theory**

Some genes support growth and vitality as well as those facilitating senescence and deterioration. In the concept of the Gene Theory of ageing the second type of genes get activated over time resulting in changes that are seen with ageing,

limiting the age of an individual. Failure of organisms occurs later in life due to the presence of imperfect genes activated over lengthy periods

d) Hayflick Theory

Telomeres are end caps of chromosomes that have a protective function. Cells enter senescence when telomeres are limited and wasted. It was conceptualised in 1961 that longer telomeres are associated with a longer lifespan and lower incidence of disease. Studies have shown that the length of the telomeres can be affected by adequate folate and vitamin D levels, fibre-rich food, good exercise and controlled levels of stress. Normal human cells die after about 50 cell divisions in laboratory culture.

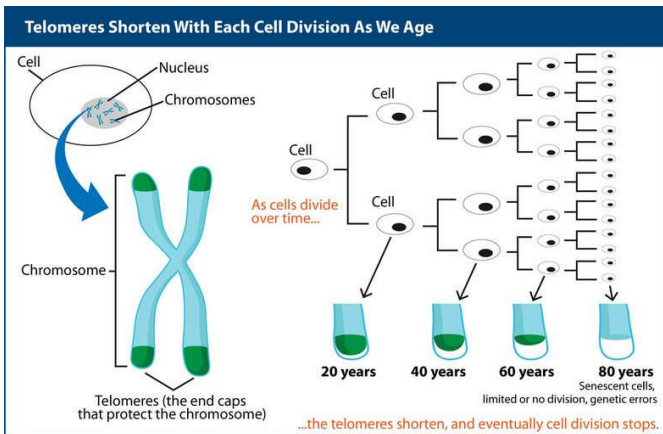


Figure 1.4 Hayflick Theory

e) Cell Senescence

Senescent cells are resistant to apoptosis or programmed cell death. Thus, they are cleared by macrophages as such damaged cells release proinflammatory substances such as IL-1, IL-6, Chemokines, TGF-B1, IGF-BP, Growth factors, proteases, and SASP. There is paracrine or local communication to nearby cells warning of stress stimulating the immune system to clear the injured

f) Damage Accumulation Theory

Faults and injuries accumulate at the cellular and molecular level. These include DNA damage, oxidative stress and glycosylation. There are limitations to maintenance and repair mechanisms.

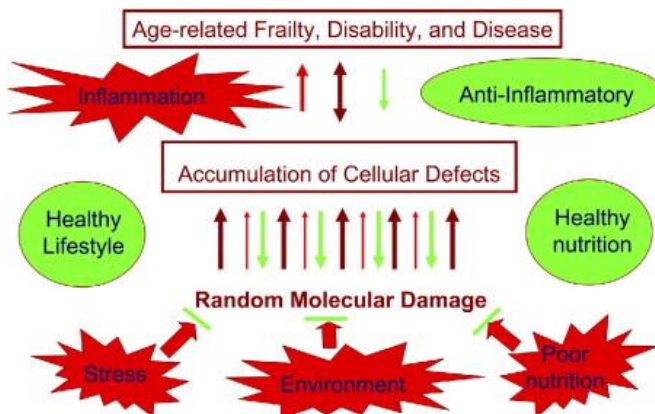


Figure 1.5 Damage Accumulation Theory

#### g) Free Radical Theory

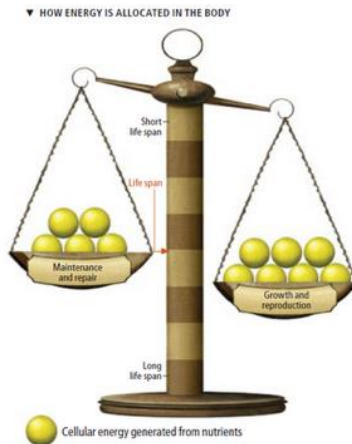
This theory introduced by Harmon in 1956 demonstrates that there is evidence for free radicals to damage DNA leading to mutation, lipid peroxidation, protein alteration and mitochondrial damage. This leads to the acceleration of the ageing process. Longer-lived species are less susceptible to oxidative stress.

### II) Theories related to evolution

These concepts are because biological processes associated with ageing provide an advantage earlier in terms of reproduction and survival of species. As humans more and more survive beyond the fertile age, individual negative biological impacts later in life may be perceived as payback for group advantage.

#### a) Disposable Soma Theory

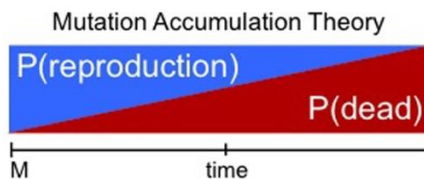
Kirkwood & Holaday in 1997 conceptualised that the longevity of the body is attributed to 'soma'. An organism must budget resources and preferentially use them for reproduction rather than the maintenance of 'soma' (the mature body for longevity) leading to inefficiencies in cell replication in later phases.



*Figure 1.6 Disposable Soma Theory*

b) Mutation Accumulation Theory

This theory by Medawar (1952) supports the Disposable Soma Theory. DNA mutation which takes place after the reproductive age group cannot affect future generations. There are no evolutionary corrective mechanisms. Natural selection is the most powerful of those robust for reproduction.



*Figure 1.7 Mutation Accumulation Theory*

### c) Antagonistic Pleiotropy Theory

It is an extension of the mutation accumulation theory. Pleiotropy is beneficial for survival and reproduction and harmful for age. Genes that are protective or beneficial in early life become detrimental later. Sex hormones useful in reproduction have been shown in later life to be carcinogenic. The P53 cancer-preventer gene accelerates ageing.

However, there is a misconception that natural selection has negligible or negative influences on ageing.

### a) Grandmother Hypothesis

This theory by Hamilton states that the survival of multiple dependent offspring beyond the capacity and resources of parents has been supported by long-lived grandparents who have a major impact on survival. In Sri Lanka, many of the older generation assume a new role in rearing their children's children who are considered jewels in the crown. (i.e. 'LL.B. phenomenon')

### b) Mother's Curse

Natural selection can only act on the evolution of mitochondrial DNA in females. Mitochondria have their DNA and are passed from mother to child. Therefore, females live longer and age slower than males.

### c) Adaptive Senescence or Reverse Antagonistic Pleiotropy

Le Couere et al stated that traits that are harmful in younger individuals seem to be associated with greater survival and function in old age. These include obesity, hypertension and oxidative stress.

## **PSYCHOSOCIAL THEORIES OF AGEING**

Psychosocial theories try to predict and explain the changes in attitudes, behaviour, social interactions and relationships that occur as an individual ages and contribute to successful adjustment to old age.

### **a) Disengagement theory**

Cummings and Henry—argued that older people tend to disengage themselves from society and engage in more self-focused activities. This results in introspective and self-focused activities. The society also tends to exclude older people from social responsibilities. This leads to a new social equilibrium, and the continuous functioning of society is maintained for a perceived benefit for the same. However, this theory is much criticized.

### **b) Activity theory**

The Activist Theory of Havighurst and Albrecht in 1963 was more received than the disengagement theory. This proposes that participation in purposeful activities is crucial for satisfying and successful ageing. Active participation facilitates the functioning of the individual purposeful tasks and interactions promoting self-esteem and improvement of overall satisfaction. The theory further states that society expects older people to remain active in their later life. The idea that remaining active leads to healthy ageing is widely supported by research.



### c) Continuation Theory

Havighurst et al in the 1960s hypothesized that a person's choices of roles and how they enact these roles are a product of their personality remaining the same and behaviour more predictable. This was put forward as the activist and disengagement theories did not explain adequately successful ageing. Personality is already fully developed by the time an individual reaches old age and it tends to remain largely unchanged over time. Personality is a critical factor in the relationship between role activity and satisfaction. Coping style, prior ability to adapt, expectations of life, income, health, social interactions, freedom and constraints. The theory suggests that one's personality type decides whether he or she will adjust to the ageing process successfully.

The authors of this theory identified four personality types. People with integrated personality types show good adjustment to ageing and actively engage in things. Armoured-defended individuals usually continue the activities that they have been doing in middle age to old age. Passive dependent persons may be highly dependent on others or show disinterest in the external environment while the disintegrated type fails to adjust to ageing successfully. The authors suggest that identifying personality type can provide a clue to how well they will adjust to the changes in older life.

### d) Subculture Theory

Rose (1965) suggested that older adults form a unique subculture as a defence against the loss of their status and the

negative attitudes of society. Furthermore, there is a preference to stay connected to themselves rather than other age groups.

## PSYCHOLOGICAL THEORIES OF AGEING

Psychological theories of ageing are more focused on the psychosocial development of a person throughout the lifespan, extending into old age.

a) Theory of Hierarchy of Needs (Maslow's theory)  
Maslow described the *hierarchy of needs theory* around the same as the activity theory. According to this theory, people are motivated to fulfil different levels of needs hierarchically, starting with basic human needs and gradually moving towards personal growth needs. The ultimate level, self-actualization refers to feeling fulfilled, or feeling that one has lived up to their potential. Maslow stated that failing to grow can lead to feelings of failure and depression.

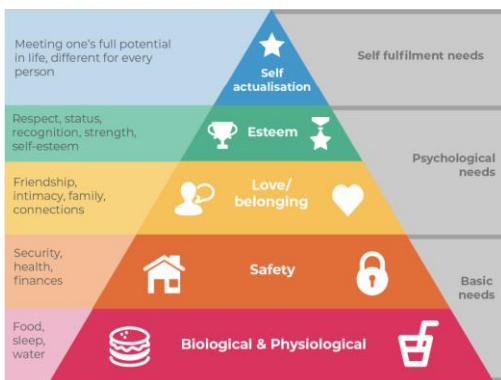


Figure 1.8 Maslow's Hierarchy of Needs

b) The Staged Theory of Psychosocial Development

Erikson proposed this staged theory over the life span of a human in the 1930s. An individual goes through eight successive stages of psychological conflicts, starting from infancy. In the final stage commencing around the age of 65 years, there is an internal conflict between integrity versus despair. Individuals in this stage tend to reflect on their lives. They either view their life as successful and accomplished and feel a sense of integrity or, regret for being unproductive and not achieving their goals and experience despair, bitterness and depression. Successful resolution of this crisis gives rise to the virtue of wisdom, enabling the person to view life as complete and accept death



*Figure 1.9 Staged Theory of Psychosocial Development*

c) The Stage Theory of Cognition

This theory presented by Schaie and Willis proposes that in later years of life, people go through a 'reintegration' phase, where

the acquisition of information and application of knowledge becomes a function of integration of their interests, attitudes, and values, in a more self-directed manner.

d) Theory of Individualism

In the 1960s, Jung shed optimism on ageing by stating that old age is a phase of 'turning inwards', where an individual's focus shifts from outside (social position, views of others etc.) to inside. Development continues throughout life by searching, questioning and setting goals. At a point in life, individuals realise the things not done. At this 'mid-life crisis' individuals begin questioning the decision and choices have been right. Late life is a process of psychologically turning inward. This enables the individual to explore, discover and accept own self, and form new values and goals for life.

e) Gero-transcendence Theory

Tornstam in 1994, based on psychological perspectives stated that ageing is a natural developmental process towards maturity and wisdom, where a person shifts his perspective of life from a materialistic and rational one to a more cosmic and transcendent one. A successful shift is marked by a spiritual transformation, acceptance of death without anxiety, prominence on relationships, connectedness with other generations, and a more external focus.

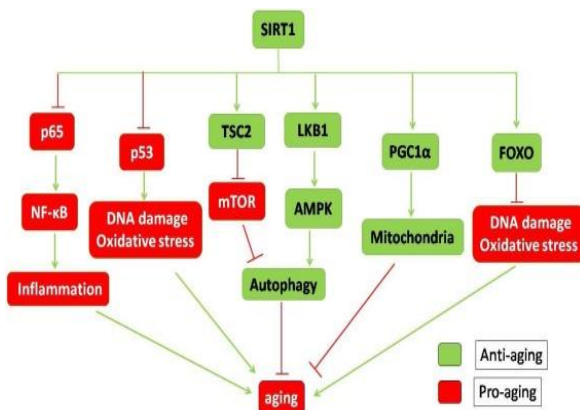
## **IN SEARCH OF ELIXIR OF LIFE**

Since time immemorial from the *ambrosia* of Greco-Roman culture and *amrita* of Vedic tradition to the search for the

'Fountain of Youth' by Juan Ponce de Leon in the Age of Discovery, man has attempted to find an Elixir of Life.

Sirtuins are nicotinamide adenine dinucleotide (NAD+) dependent protein deacetylases that increase the lifespan of yeast, worms, and flies and may be involved in caloric restriction to increase the lifespan of animals. There are 7 sirtuins (SIRT1 – SIRT7) which have complex roles in metabolism homeostasis and stress response. Research has been done on the development of sirtuin activators aiming at the treatment of metabolic syndrome, neurodegeneration and ageing itself. Resveratrol a compound in red grapes and wines is thought to be a SIRT1 activator. Hence the *French paradox*: wine reduces the cardiometabolic risk of a high fat diet. However, the results are not strong and not generalisable.

The mammalian target of the rapamycin (mTOR) pathway is inhibitory for autophagy which ultimately leads to ageing. Rapamycin, an mTOR antagonist is an agent which is currently been investigated with regards to antiaging properties. Spermidine also has the potential to inhibit autophagy.



*Figure 1.10. Molecular Pathways related to Ageing*

The theory of caloric restriction is considered to prolong life expectancy mediated via reduced oxidative damage and anti-inflammatory benefits. These include reduction of GH, insulin, IGF-1. Reduction of calories by up to 30% without malnutrition has shown anti-ageing potential. This principle was based upon the dietary pattern in Okinawa, Japan where the highest prevalence of centenarians is met. However, caloric restriction has insufficient evidence to be generalised for influence of ageing. Mediterranean diet is associated with low risk of cardiovascular events and death. Considerable consumption of vegetables, fish, fruits, nuts and olive oil (monounsaturated fatty acids) are associated with this.

Aerobic exercises also have favourable effects of reducing ageing-related processes e.g. blood pressure, and metabolic intolerance. At least 150 min/week of moderate-intensity aerobic activity and muscle-strengthening activities on 2 or

more days a week are advocated. Those who engage in moderate to high levels of physical exercise have lower mortality than those inactive. The majority of benefits are reached with 3500 MET (metabolic equivalent) minutes per week. Exercise is the only element that protects against reverse sarcopaenia. Hormesis or paradoxical protective effects of low-dose stressors/ toxins lead to adaptive stress responses at higher levels of resistance by preconditioning. This aligns with Nietzsche's philosophy of *'that which does not kill one makes one stronger'*.

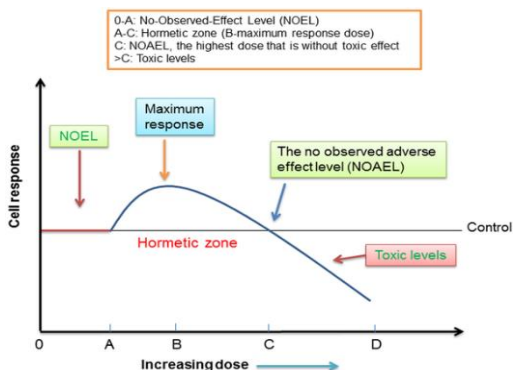


Figure 11. Hormesis

At the end Cicero yet quotes *"My old age sits light upon me..., and not only is not burdensome but is even happy. For as nature has marked the bounds of everything else, so she has marked the bounds of life. Moreover, old age is the final scene, as it were, in life's drama, from which we ought to escape when it grows wearisome and, certainly, when we have had our fill."*

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## 2. Global & Sri Lankan Demographic Changes in Ageing Population

Dr Prasad Thilakarathna & Dr Duncan Forsyth

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Throughout the past century, there have been notable demographic shifts in the numbers and characteristics of older individuals globally. The expansion of the older adult population can be attributed not only to a general rise in overall population figures but also to significant reductions in several primary causes of mortality. Furthermore, prolonged survival among older demographics has coincided with declining birth rates, leading to a substantial increase in the proportion of individuals aged 65 and above. This trend is projected to persist for the next five decades. These demographic transitions wield far-reaching societal implications that extend beyond the heightened demand for medical care associated with an ageing populace.

The United Nations report World Population Ageing 2009 describes four aspects of population ageing. Firstly, it is *unprecedented*, experienced without parallel in the history of human civilization. Ageing is *pervasive*, observed in all countries in the world except for those countries affected by AIDS and wars. The phenomenon of *profoundness*, with major consequences and implications for all aspects of life is evident. Finally, ageing is *enduring* as it cannot be reversed.

## **GLOBAL CHANGES**

It is imperative to grasp the global perspective concerning older individuals, who often contend with multiple chronic conditions, declining functional abilities, and various social and psychological challenges that can significantly impact their health and overall quality of life.

Beyond merely tracking and projecting the demographic trends of ageing populations, epidemiology has made substantial contributions to elucidating the health status and functional trajectories of older adults. Over the past 25 years, epidemiological researchers have either utilized existing cohort studies with participants ageing during the study period or initiated new cohorts specifically focusing on older individuals. These epidemiological investigations have examined the distribution and determinants of specific diseases, as well as addressed pertinent issues for ageing populations, such as quality of life, geriatric syndromes, comorbidity, functional status, disability and end-of-life considerations.

When examining global trends, it is evident that in America, the proportion of individuals aged 65 and older has increased significantly over time. In 1950, more than 8% of the total population fell into this age group, rising to 12.4% by 2000. Projections by the US Census Bureau, based on middle mortality assumptions, suggest that by 2050, the number of individuals aged 65 and older will reach 84 million. However, if mortality rates decline faster than anticipated, this figure could be even higher. By 2050, approximately one in five Americans

will be aged 65 or older, with a particularly notable increase in the population aged 85 and older, often referred to as the 'oldest old'. It is projected that by 2050, 18 million individuals, representing nearly a quarter of the population aged 65 and older, will fall into this age bracket. This represents a substantial increase compared to previous decades, with the number of individuals aged 85 and older expected to be more than four times higher than current figures and nearly 200 times higher than in 1900.

In contrast, European countries boast some of the oldest populations globally, attributed to improved survival rates at older ages and low birth rates. The Population Reference Bureau estimates that 24 out of the world's 25 countries with the oldest populations are in Europe. Notably, Italy and Germany have approximately 21% of their populations aged 65 or older, making them the oldest populations in Europe and the second and third oldest in the world, respectively. Japan has surpassed Italy as the oldest major country globally, with 26% of its population aged 65 or older. Despite being the only major non-European country on the list of the oldest populations, Japan remains the leader in this demographic.

Furthermore, Monaco ranks second to Japan, with around 24% of its population aged 65 or older. Europe is projected to maintain its status as the region with the oldest population, with nearly one in four Europeans expected to be aged 65 or older by 2030. Conversely, regions such as Latin America, the Caribbean, Asia, the Near East, and North Africa currently have relatively low percentages of individuals aged 65 years and

older, ranging from about 4% to 7%. However, rapid growth in the older population is anticipated in these regions, with projections suggesting that by 2030, the proportion of their populations in this age range will double.

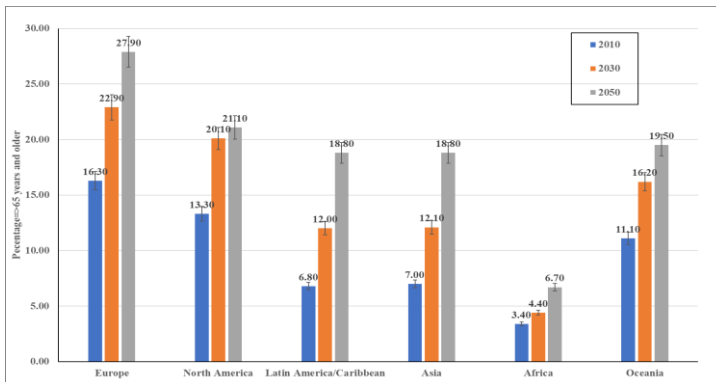


Figure 2.1 Percentage of population age 65 years and older in 2010 and projected for 2030 and 2050 (Source- US Census Bureau)

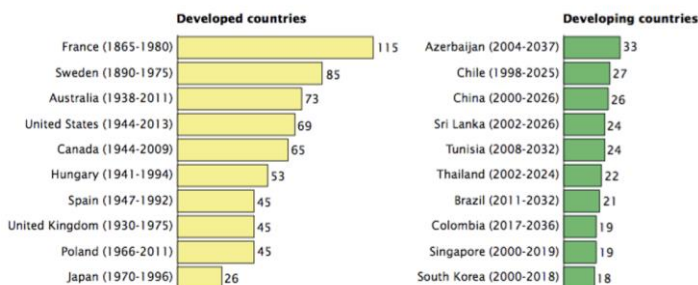


Figure 2.2 The speed of population ageing in selected countries (Source - US Census Bureau)

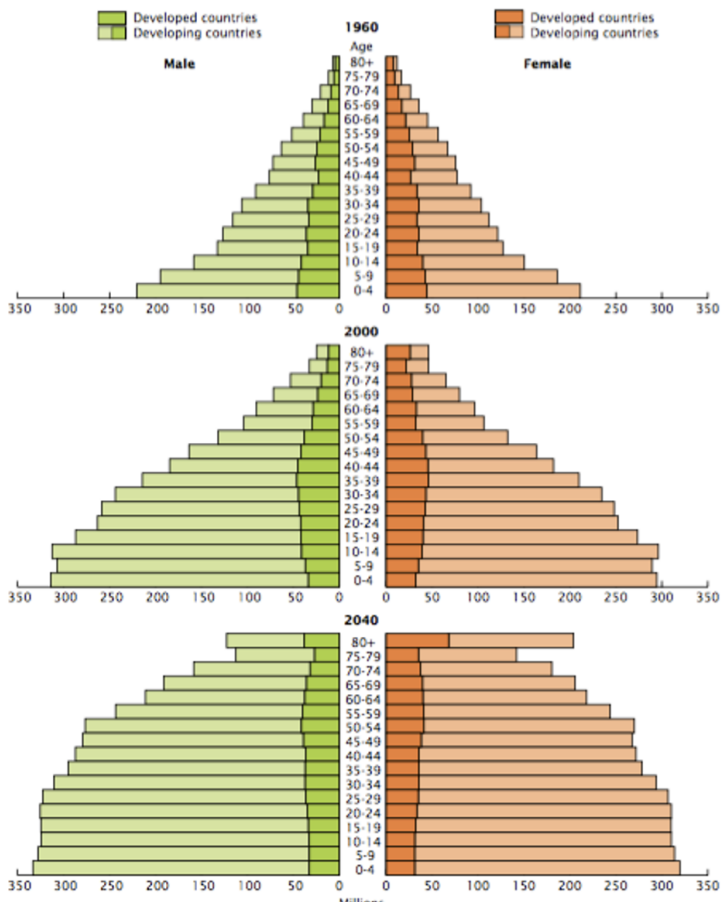


Figure 2.3 Population in developed and developing countries by age and sex (Source - US Census Bureau)

Many developed nations have had ample time to adjust to shifting age demographics, with France's population aged 65 and over taking over a century to increase from 7 per cent to 14 per cent of the total population. However, Japan stands out among developed countries due to its rapid ageing process, with the percentage of the population aged 65 and over doubling from 7 per cent to 14 per cent within just 26 years, from 1970 to 1996.

Conversely, many developing countries are facing or will soon face a sudden surge in the number and proportion of older individuals, often within a single generation. Particularly swift increases are anticipated in China and other parts of eastern and southeastern Asia, driven by significant declines in fertility rates over the past few decades. Similar rapid demographic shifts are expected in other developing countries; what took over a century for France to experience in terms of demographic ageing is likely to occur within two decades in countries like Brazil and Colombia.

Moreover, the pace of population ageing in many countries is accelerating at a much faster rate than observed in the past. While France had nearly 150 years to adapt to a transition from 10% to 20% of the population being older than 60 years, countries such as Brazil, China, and India will have slightly over 20 years to undergo the same adaptation. This means that the necessary adjustments in these countries must occur much more rapidly than was typically the case in the past.

## **CHANGES IN SRI LANKA**

Sri Lanka is experiencing a rapid ageing trend within Southeast Asia, marking profound changes in its demographic structure as the older population continues to grow throughout the 21st century. This demographic shift sheds light on various aspects, including income sources, living arrangements, susceptibility to poverty, labour market participation, social security, healthcare, and long-term care.

The implications of an ageing population are multifaceted, impacting the labour force through changes in participation and productivity, altering saving and consumption behaviours over the life cycle, and affecting the costs of healthcare and long-term care.

Remarkably, Sri Lanka's demographic transition to an ageing population is occurring at a faster pace compared to many countries at similar levels of development, aligning with the speed observed in nations with higher per capita income. In terms of demographic transition, Sri Lanka stands ahead of other South Asian countries.

Population projections for Sri Lanka indicate a tapering off of population growth. According to United Nations projections, the country's population, which stood at 22.16 million in 2020, is expected to peak at around 22.2 million by 2038 before starting to decline. This decline is attributed to low fertility rates and minimal inward migration. Consequently, Sri Lanka's population is shifting from a pyramid shape to an inverted pyramid shape, with a notable increase in the share of the

population aged over 65 years, projected to rise from 9.4% in 2015 to 21% by 2045 and to 35.6% by 2100. Consequently, the number of older individuals, aged 65 and above, is anticipated to double by 2040 compared to 2015.

The Sri Lanka Population and Housing Census in 2012 showed that among the total population of 20,359,439, older adults (60 years and above) accounted for 12.4%. With improving infant mortality rates, rising life expectancy and declining birth rates the population structure of Sri Lanka has been changing rapidly. This has been further magnified due to the large outmigration of workers after the recent economic downfall. Statistical data sheet for 2023 issued by the Department of Census and Statistics showed that 311,056 persons left the country in 2022 seeking foreign employment.

The old-age dependency ratio, which is the ratio of over 60-year-olds to the 15–59-year-olds, is expected to double from 2020 to 2050. The ratio is the number of persons of working age (i.e., aged 15 to 64 years) per person aged 65 years or over. It is said there will be five people of working age per older person in 2030 and by the middle of the century; this number is likely to decrease to just 3.

A crucial aspect of Sri Lanka's demographic landscape is the stagnation of male life expectancy for two to three decades since the 1970s, despite rapid increases in female life expectancy. This stagnation was initially attributed to high rates of smoking among Sri Lankan men, followed by limited access to treatment for non-communicable diseases (NCDs) since the



1990s. However, recent data suggests that this stagnation has ceased, possibly due to improved access to NCD care. Failure to sustain this improvement in male life expectancy may result in a predominantly female ageing population compared to current projections. Additionally, there is a notable rise in the proportion of individuals categorized as very old, aged 80 or above, contributing to the ageing demographic profile of Sri Lanka.

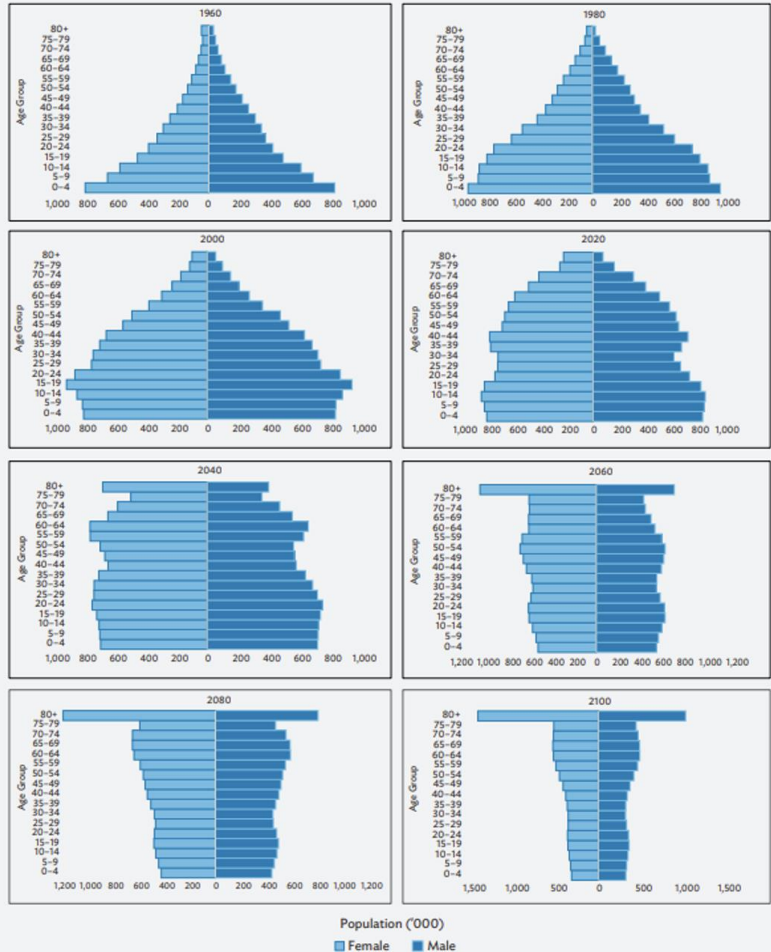


Figure 2.4 Population pyramids of Sri Lanka

When examining the effect of global ageing on the healthcare systems, epidemiological evidence indicates a progressive, exponential rise in the prevalence of most chronic, degenerative, and progressive diseases as age advances. This includes conditions such as cardiovascular disease, cancer, chronic obstructive pulmonary disease, dementia, and other degenerative disorders. Moreover, there is an escalation in the co-occurrence of these ailments, leading to comorbidity.

The confluence of these conditions results in varying degrees of functional impairments, cognitive decline, nutritional deficiencies, and geriatric syndromes such as delirium, falls, and incontinence. These challenges often manifest in the absence of sufficient social support and financial resources. Consequently, there is a surge in the number of senior individuals living with disabilities and an elevated dependency ratio, which is expected to further increase over time.

The Global Burden of Disease project was undertaken to delineate the primary causes of years of healthy life lost due to disability among individuals aged over 60 years. The data, stratified by countries according to their economic development level, provides insights into both the incidence and severity of various conditions, along with the duration an individual is expected to be impacted by them. According to these findings, the most significant burden of disability is attributed to sensory impairments, particularly prevalent in low- and lower-middle-income countries, alongside back and neck pain, chronic obstructive pulmonary disease (especially

prevalent in such economies), depressive disorders, falls, diabetes, dementia (with heightened prevalence in high-income nations), and osteoarthritis.<sup>11</sup>

The heightened burden of dementia in high-income settings likely reflects both the older average age of the populace and increased awareness and diagnostic practices for such conditions. Similarly, the amplified burden of sensory impairments in low- and lower-middle-income countries is likely influenced by factors such as prolonged exposure to environmental elements like noise and sunlight across the lifespan. Moreover, elevated rates of chronic obstructive pulmonary disease in these countries are attributed to heightened exposure to indoor and outdoor air pollutants throughout life.

Consequently, healthcare professionals now encounter a distinct cohort of patients presenting with a constellation of concurrent multiple clinical conditions. These combinations of ailments engender varying degrees of functional impairment, cognitive decline, nutritional deficiencies, and geriatric syndromes (including delirium, falls, and incontinence), often in the context of inadequate social support and financial means.

In conclusion, Sri Lanka is ageing rapidly with the share of those aged 65 years and above set to increase from 7% to 21% in just between 2007 to 2045, much faster than other south-east Asian countries. Ageing, if not in a healthy manner will pose significant challenges to healthcare systems, the working population and the economy. A multidimensional policy

response is needed to face this mammoth challenge with intersectoral collaboration to promote healthy and active ageing.

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### 3. Physiology of Ageing

Dr Chamila Dalpatadu

Humans are not exempted from the universal forces of ageing. Ageing affects almost every biological system in a human being. Furthermore, ageing affects the psycho-social aspects of human lives as well. Ageing is characterized by the gradual decline in the ability to respond to stress, homeostatic balance, organ mass and functional reserve. Physiological changes due to ageing happen across all the body systems. Some of these changes directly account for symptoms and signs associated with many geriatric syndromes.

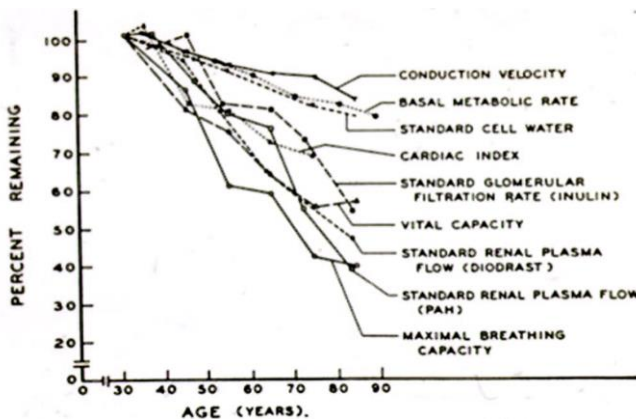


Figure 3.1. Decline in physiological parameters with ageing

#### BODY COMPOSITION AND MUSCULOSKELETAL SYSTEM

One of the key changes in body composition is a decline in the total body water percentage with age. There is also an increase in the total fat content especially centripetally (i.e. pot belly).

Furthermore, skeletal muscle mass after peaking in adulthood gradually declines from the fourth decade onwards. In addition bones, tendons and joints also undergo physiological changes. The bone mineral density peaks in the 30s and declines afterwards with a rapid decline seen in women after menopause compared to men. Ligaments, tendons and cartilage atrophy with ageing leading to degenerative diseases such as osteoarthritis. Weight loss is also common with ageing accompanied by physiological anorexia of ageing and loss of lean muscle mass (sarcopaenia).

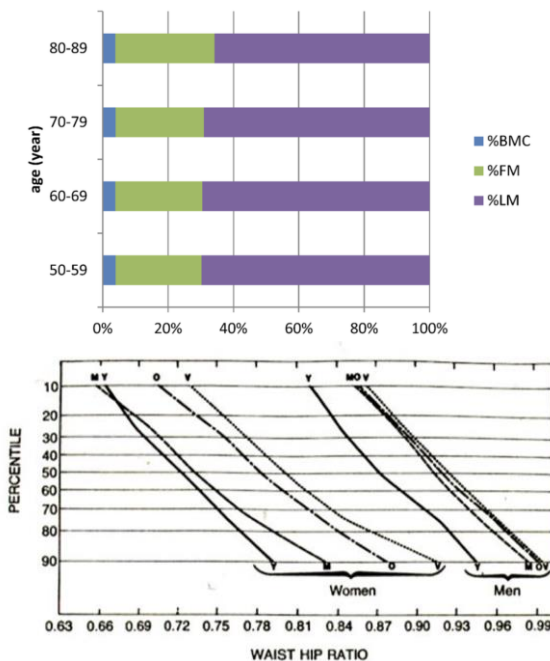


Figure 3.2 Body composition changes with ageing (BMC – Bone Mineral Content, FM – Fat Mass, LM – Lean Mass)

The joints undergo changes resulting in degenerative arthritis. Pain and reduction of mobility are its consequences. Furthermore, degenerative conditions associated with the spine generate spondylosis in the cervical and lumbar regions. Bones and joints become deformed further influencing immobility and pain. Prominent bony regions in the musculoskeletal system also contribute to the breakdown of the skin and the generation of pressure sores.

Often the cause of gait abnormalities seen in older adults is a result of all these changes in the musculoskeletal system. However, sarcopenia is a pathological entity which is due to many pathophysiological processes such as anorexia of ageing, increased cytokines, reduced levels of growth hormone, decreased physical activity, decreased neuronal motor units and vascular supply. Unfortunately, all these effects lead to adverse outcomes namely increased frailty, motor slowing, increased fall risk and risk of fragility or pathological fractures, functional disability, and loss of independence which ultimately increase healthcare costs.

There is also a general decline in organ functions as well as an increased risk of contracting infectious diseases, acquiring non-communicable diseases, development of malignancy as well pathological weight loss (cachexia).

## **INTEGUMENTARY SYSTEM**

Skin atrophy, wrinkling, thinning of skin, pigmentary changes, alopecia (hair loss), nail dystrophy and loss of fatty layers leading to alterations in skin contour are important effects. Although cosmetically challenged older adults are prone to diseases. Skin ageing decreases mitogenic (replicative)



potential and cells lack responsiveness to growth stimulators. Therefore, the life span of main skin cells including fibroblasts, melanocytes and keratinocytes decreases with age. Additionally, photo-ageing tilts the balance of cell differentiation and proliferation increasing the risk of photocarcinogenesis.

Intrinsic ageing affects nucleic acid, cellular proteins (collagen, elastin, fibronectin) intercellular ground substances, membrane compositions and catalase (antioxidant preventing free radical damage). Photoaging increases solar elastosis resulting in dermal deposition of elastin and decreases collagenase. Elastin is only partly crosslinked by desmosome, so skin loses its elasticity. These changes predispose aged skin to bruising, easy tearing and wrinkling. Epidermal melanocyte density declines by 10-20% each decade giving rise to poor tanning, decreasing melanocytic naevi, and increasing guttate hypomelanosis. However, in areas of increased photo exposure, melanocyte density of the skin could increase as in lentigines and melasma. Langerhans' cells also act as intraepidermal macrophages. The density of intraepidermal macrophages decreases with age. Therefore, immune responsiveness to ultraviolet damage decreases and increases the risk of skin malignancies.

The dermis becomes less dense, relatively avascular, and acellular. In sun-damaged skin function of elastic tissues decreases in the papillary dermis. The number of inflammatory cells and granulated mast cells increases. This chronic heliodermatitis stimulates fibroblasts to produce solar elastotic materials. A decrease in collagen and altered ground

substances increases the risk of skin tearing leading to stellate pseudo

scars and purpura. Capillary density decreases and venules become fragile. This leads to increased bruising, pallor and poor thermoregulation.

Decreasing the number of Pacinian corpuscles (pressure receptors) and Meissner corpuscles decreases sensation and increases the risk of burns and *erythema ab igne*. There is a decrease in the function of both apocrine and eccrine sweat glands. Secretion of lipofuscin increases while thermoregulation decreases and body odour changes. Sebum production from sebaceous glands decreases but there is hyperplasia of sebaceous glands increasing the risk of rhinophyma and asteatotic eczema.

Hair growth rate and shaft diameter can change to varying degrees. Androgenic alopecia is the most common condition related to this. Nails also have a decline in growth with decreased lunular (matrix) size which makes them soft and brittle. Decreased epidermal turnover time may decrease the risk of hyperproliferative disorders like psoriasis and seborrheic dermatitis. Wound healing, DNA repair mechanisms and immune surveillance by Langerhans cells decrease. This increases the risk of infections.

Further reduced number of melanocytes decreases pigment protection and reduced inflammatory cells affect the destruction of neoplastic cells. Decreased T cells and increased

autoantibodies also increase the risk of malignancy and autoimmune bullous diseases.

With ageing, the appearance and structure of teeth change. Continuation of physiological dentine formation leads to yellowing or darkening of the teeth. Physiological tooth wear also contributes to changes in tooth appearance. In addition, crack lines may appear over the tooth surface which may not be symptomatic.



*Figure 3.3 Changes in the skin with ageing*

Like the skin, age changes are evident in the oral mucosa with ageing. The mucosal epithelium becomes thinner and less keratinized. Collagen and elastin contents decreased. The number of minor salivary glands gets reduced. Consequently, oral mucosal lesions in older adults heal slowly. Alveolar bone develops with the eruption of teeth. Similarly, it will get resorbed with the loss of teeth. This leads to loss of soft tissue support and the ultimate 'aged' appearance. Malabsorptive states and nutritional insufficiencies leading to calcium and

vitamin D deficiency interfere with the repair of the alveolar bone.

## **IMMUNE SYSTEM**

Remodelling of the immune system associated with ageing which leads to a decline in immune function is defined as immunosenescence. It is a multifactorial and multifaceted process. There is a huge intra and inter-individual variability of the immune response. Acquired immunity is more affected than innate immunity. The effects of immunosenescence are many, among which the following are noteworthy. Increased susceptibility to viral and bacterial infections, reduced efficacy of vaccines, re-emergence of latent viruses (varicella zoster virus etc), reduced immune surveillance, increased cancer incidence and increase in systemic inflammation (inflammageing). Due to the decreased number of peripheral naïve T and B cells, there is impaired humoral immunity. Which results in decreased production of long-term immunoglobulin-producing B lymphocytes and loss of immunoglobulin diversity and affinity. Furthermore, the quality and quantity of the T and B cell responses change with increasing age. There is a reversal of the CD4/CD 8 T-cell ratio (normally 2:1). When the T helper cells (CD4) are reduced there is reduced ability to trigger an immune response. All of these factors make older adults more susceptible to infections and all the adverse outcomes associated with them.

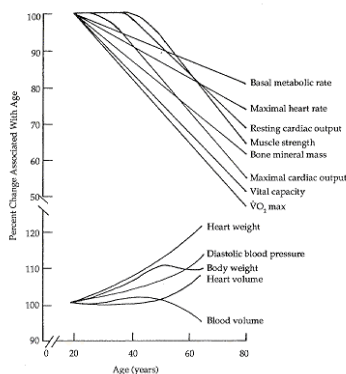
## **CARDIOVASCULAR SYSTEM**

Cardiovascular diseases are the number one cause of mortality worldwide. It is well known that ageing is a risk factor in the development of atherosclerosis and cardiovascular diseases.

Vascular ageing leads to intimal and medial thickening. Furthermore, it leads to a gradual loss of arterial elasticity, resulting in vascular stiffness. This process occurs even in the absence of atherosclerosis. Ageing vessels demonstrate increased collagen deposition, increased collagen and decreased elastin content, increases in glycated proteins, matrix metalloproteinase enzyme activity, and trophic stimuli such as angiotensin II signalling. These all lead to impaired vessel elasticity and increased vascular stiffness leading to the development of hypertension and thereby left ventricular strain and hypertrophy. Left ventricular hypertrophy gives rise to a reduction of early diastolic cardiac filling and increased cardiac filling pressure, lowering the threshold for dyspnoea. Increased left atrial size is followed by the tendency to have atrial fibrillation.

Hypertension in turn stimulates collagen production and endothelial cell dysfunction. Cellular senescence has been implicated in the development of atherosclerosis as elevated DNA damage, extensive telomere shortening, and dysfunction have been demonstrated in cells from atherosclerotic plaques.

There is a reduction in exercise tolerance due to a fall in cardiac output by 3% per decade. This is also contributed by a decrease in maximum heart rate achieved during exercise due to myocardial beta receptor downregulation. Degeneration of



*Figure 3.4 Changes in cardiovascular functions with ageing*

cardiac conducting cells leads to an increase in ectopic burden and heart blocks. Myocardial fibrosis, necrosis and poor regeneration lead to poor contractility and heart failure. Postural ensues due to impaired autonomic homeostasis baroreceptor response and vascular compliance.

## RESPIRATORY SYSTEM

There are numerous changes which occur in the respiratory system due to ageing which can be categorised into anatomical, physiological and immunological changes. Kyphosis and scoliosis due to ageing result in chest wall and thoracic spine deformities. These cause a reduction in lung compliance and increased work of breathing. Degeneration in the parenchymal support leads to dilation of air spaces causing

'senile emphysema'. It is known that reduction of respiratory muscle strength which occurs more in men than women lead to impaired effective cough. Furthermore, the alveolar dead space increases with age, and the airway receptors undergo functional changes with age. One of the factors which leads to poor outcomes in functionally demanding situations such as heart failure and pneumonia, is the fact that there is decreased sensation of dyspnoea and diminished ventilatory response to hypoxia and hypercapnia.

All these changes lead to changes in the lung function test parameters such as reduced vital capacity, total lung capacity and reduced forced expiratory volume for the first second (FEV1). Furthermore, there is more tendency to have V/Q mismatch and reduced arterial oxygen tension with ageing. The loss of elastic tissue around the oropharynx leads to collapse of the upper airway and obstructive sleep apnoea which is further aggravated by obesity and sedatives.

## **GASTROINTESTINAL SYSTEM**

The changes in the gastrointestinal system due to ageing have not received a lot of prominence, however, these changes make older adults more vulnerable to certain diseases as well as aggravate geriatric syndromes such as frailty. There are many causes of anorexia of ageing and some of it can be attributed to the changes which occur in olfaction and taste. It is known that with ageing there is increased odour threshold and decreased odour identification. This is due to a decrease in nasal olfactory cells as humans age. Similarly, there are changes in taste perception. There is an increased threshold for salt,

sweet, sour and umami and a decrease in taste intensity perception. Furthermore, the perception of irritating tastes increases and there is difficulty in distinguishing taste mixtures.

Pathophysiology of anorexia associated with ageing also involves an altered response of the upper gastrointestinal tract to food which leads to altered release of gastrointestinal hormones. There seems to be an increase in satiety as we age more in men than women. One of the reasons is decreased gastric fundal compliance. In men reduced testosterone secretion leads to an increase in leptin which causes an increase in satiety. Delayed gastric emptying and an increase in cholecystokinin levels also contribute to anorexia of ageing and acceleration of sarcopenia.

Further adding to the problem is swallowing difficulties which occur due to ageing due to a multitude of factors namely a decrease in saliva production, alterations in dentition, increase in oral transit time, impairment in tongue function, decreased peristalsis in the pharynx and delay in the relaxation and opening of the upper oesophageal sphincter. Thus, impaired swallowing and impaired cough reflex lead to an increase in the risk of aspiration in older adults.

Due to a decrease in enteric neurons with ageing, there are many changes in gastrointestinal motility namely delayed gastric emptying, reduction in peristalsis and increase in colonic transit time. Constipation is a common problem in older adults and a decrease in fluid intake and exercise further contributes to the problem.

Gastrointestinal absorption also changes due to ageing namely an increase in lactose intolerance, reduction in calcium and iron



absorption. All of these physiological changes ultimately account for malnutrition and sarcopenia.

## **ENDOCRINE SYSTEM**

Due to alterations in the body composition, nutritional status and hormone metabolism, many physiological changes occur with ageing. However, these changes are highly individualised. Often TSH is elevated and free T4 is also elevated, but in some individuals, T4 and T3 decrease with ageing. Overall, the thyroid axis activity seems to decline with age. The hypothalamic-pituitary–somatotrophic axis also suffers and growth hormone concentration declines with ageing. Changes in the adrenal lead to late-day and evening increases in cortisol concentrations, an earlier morning cortisol concentration peak, lower circadian cortisol amplitudes, and more irregular cortisol secretion patterns. It is noteworthy to mention that with ageing there is disequilibrium in the glucose metabolism due to the characteristic reduction of pulsatile secretion of insulin. Oestrogen deficiency due to menopause causes an imbalance between bone formation and resorption which affects both trabecular bone and cortical bone, which increases the risk of osteoporosis. Andropause is associated with increased bone resorption due to a reduction in testosterone levels. Furthermore, declining concentrations of growth hormone and IGF-1 with ageing are associated with bone loss.

## **GENITOURINARY SYSTEM**

There is a steady decline in the nephron mass with ageing which leads to a reduction of renal clearance. This is further accelerated by glomerulosclerosis and reduced renal perfusion due to atheroma and reduced cardiac output. All of these

account for the reduction of glomerular filtration rate (GFR) with ageing which occurs at 1% every year after the age of 20. A small rise in creatinine may indicate significant renal impairment. It is therefore imperative that estimated GFR (eGFR) is calculated for the patient's age, weight and sex to identify this. Filtration membrane abnormalities result in microalbuminuria and even gross proteinuria. Tubulointerstitial fibrosis and the development of diverticular cysts in distal convoluted tubules may lead to impaired reabsorption, polyuria, acidosis and electrolyte imbalance. Susceptibility to fluid load or losses and drug toxicity are also notable changes

Advancing age is associated with a reduced bladder capacity as evidenced by clinical urodynamic studies. There is an increase in uninhibited contractions, decreased urinary flow rate, diminished urethral pressure profile, and increased post-voidal residual urine volume which are particularly more common among women. Pathophysiological changes causing these changes are detrusor overactivity and impaired contractility therefore, bladder compliance is reduced with ageing. Increased sensitivity to norepinephrine has been implicated in voiding dysfunction which commonly occurs in older adults. These changes lead to lower urinary tract symptoms particularly urinary frequency and urgency in older adults which are aggravated by medication side effects and prostatic enlargement in males.

The fertility of females declines rapidly around 35 years of age., Menopause occurs by 50 years of age. With menopause, there are many physiological changes in the genitourinary system due to oestrogen deficiency. Genitourinary syndrome of menopause is the current terminology used to describe the symptoms and signs associated with decreased oestrogen

levels. These can involve the labia, introitus, clitoris, vagina, urethra, and bladder. Common symptoms include lower urinary tract symptoms, vaginal dryness, sexual dysfunction and dyspareunia. In comparison andropause or age-related testosterone deficiency sets in which is more slowly progressive than in males.

## **NERVOUS SYSTEM**

Anatomical and functional changes associated with ageing can result in neurodegenerative disorders which ultimately lead to cognitive decline. However, there are many interpersonal variations. Brain ageing shows several pathological hallmarks such as mitochondrial dysfunction, intracellular accumulation of oxidatively damaged proteins, nucleic acids, and lipids, dysregulated energy metabolism, impaired adaptive stress response signalling, compromised DNA repair, aberrant neuronal network activity, dysregulated neuronal  $\text{Ca}^{2+}$  handling, stem cell exhaustion and inflammation. Gross anatomical changes include cerebral atrophy, grey and white matter changes which lead to volume loss, ventricular enlargement, and sulci widening. The volume of the brain and its weight decreases with age at a rate of nearly 5% per decade after 40 years of age.

Grey matter changes include morphological alterations in the complexity of dendrite arborization, dendritic shortening, reduction in synaptic density and synaptic transmission which has an impact on cognitive decline. White matter changes include loss of myelin, axons, oligodendroglial cells, and mild

reactive astrocytic gliosis. These changes are sometimes related to arteriolosclerosis of small vessels, resulting in ischemia and cell death.

One of the factors crucial for cerebral autoregulation is cerebrovascular reactivity and cerebral blood flow over a large range of arterial pressures. However, due to ageing, complex interactions between the brain parenchyma and cerebrovascular system are affected which has a negative impact on cognition. Arterial inflammation and arteriosclerosis have also been implicated in this process.

Microscopic changes include accumulation of lipofuscins, neurofibrillary tangles, and senile plaques which increase with age. Lipofuscin which contains peroxidised proteins and lipids that accumulate in some neurons may cause failure of cells to clear products of peroxidation-induced cell damage.

Accumulation of toxic proteins, such as amyloid-beta ( $A\beta$ ) protein in Alzheimer's dementia and tau proteins in frontotemporal dementia, are considered pathological hallmarks of these diseases. However, it has been noted that amyloid plaques and neurofibrillary tangles are observed during normal ageing as well. Furthermore,  $A\beta$  protein deposition is higher in some individuals with mild cognitive impairment than in normal older adults. Ageing is also associated with several biochemical and metabolic changes. Various neurotransmitters and receptors change various regions of the brain due to ageing namely, monoamine systems (catecholamine: norepinephrine and dopamine, and serotonin),

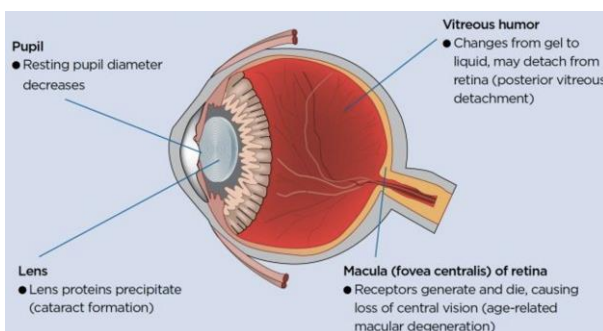
amino acids, nitro oxide, and hormones. Electrophysiological mechanisms are controlled by the homeostasis of electrolytes. Due to senescence, this is disturbed by the alteration of channel expression and the modification of the conductive rate of currents. Calcium alteration is detrimental to neurons, and its regulation is tightly regulated through NMDAR, VDCC, mitochondria, ER, and  $\text{Ca}^{2+}$ -related proteins. However, because of ageing, homeostasis is altered concerning ion exchange systems. These ultimately lead to abnormal neuronal functions.

## **SPECIAL SENSES**

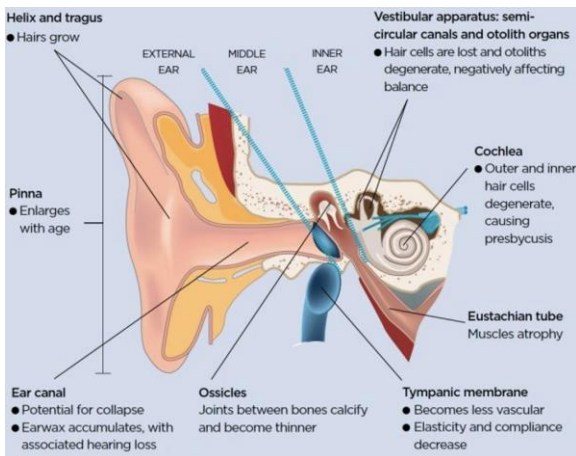
With ageing the muscles of the iris weaken resulting in small (miotic) pupils. This causes less light to reach the retina. However, this may compensate for the impairment of depth perception and near vision. Furthermore, the pupil becomes slow in reacting to light and accommodations become impaired. Dark adaptation retards due to reduced rate of regeneration of rhodopsin. The lens gradually becomes opaque leading to gradual onset loss of vision. The sclera appears to be yellowish due to dehydration and deposition of lipids. The conjunctiva becomes drier due to reduced mucus-secreting cells. Conjunctival blood vessels become more fragile leading to conjunctival haemorrhage. The vitreous contains more floaters and cholesterol deposits. It may also become more liquid, increasing the risk of retinal detachment.

As a patient ages, ear wax becomes more viscous and difficult to naturally or manually remove from the external auditory canal. Age-related hearing loss (presbycusis) occurs due to changes in the organ of Corti. Furthermore, the brain is slower at processing auditory information. Other than hearing, there is a progressive loss of hair cells in semi-circular canals and degeneration of otoliths in the saccule that affects balance. There is also a reduction in the number of vestibular nerve cells that affects the risk of dizziness.

Many physiological changes due to ageing lead to functional decline and contribute to geriatric syndromes which we often encounter. Some symptoms and signs may be directly attributed to physiological changes due to ageing but some may very well be due to pathological processes. Sometimes the distinction between these two entities remains a challenge for health care professionals. A deeper understanding of the physiology of ageing is a cornerstone in the successful management of geriatric patients.



*Figure 3.5 Age related changes in eyes*



*Figure 3.6 Age related changes in ears*

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## 4. Cognitive Changes Across Lifespan

Dr Madhushani Dias & Dr Malsha Gunathilake

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### COGNITIVE FUNCTIONS

Human cognitive functions are defined as intellectual processes by which an individual becomes aware of, perceives or comprehends ideas that involve all aspects of perception, thinking, reasoning and remembering. These functions are crucial to independent living at any age. There is a considerable variation between cognitive trajectories of different people across their lifespan.

Cognitive functions are classified into different domains to facilitate their clinical utility. Each of these domains indicates the function of a specific set of brain areas or neuronal circuits. The following gives a brief account of different neurocognitive domains.

*Memory* is the process of encoding, storing and retrieval of information or events. Two main types of memory have been described.

- a) Explicit/declarative memory - This handles information that is recalled consciously. It is further divided into two subtypes: episodic memory (memory of events and personal experiences) and semantic memory (general knowledge and meaning of words and objects).
- b) Implicit/procedural memory - This refers to learned actions or processes which are automatically retrieved.

*Working Memory* is a limited capacity system that involves temporary storage and active processing of a limited amount of information. It is considered a basic function which is essential for other more complex cognitive tasks.

*Attention* is the ability to generate, direct, and maintain an appropriate state of alertness to correctly process information. It allows for maintaining awareness of what is happening in the environment. There are four different types of attentional processes:

- a) Selective attention: the ability to focus on a task without interruption or interference from external or internal stimuli.
- b) Sustained attention: the ability to maintain focus continuously on a task over a long period.
- c) Alternating attention: the ability to shift the focus rapidly from one task to another.
- d) Divided attention: the ability to pay attention to two or more tasks at the same time.

*Processing speed* is the rate at which the brain performs a task. It is measured by the elapsed time between the onset of a stimulus and the individual's response.

*Executive Functions* are complex cognitive processes necessary for planning, organizing, guiding, revising, regulating, and evaluating behaviour necessary to adapt effectively to the environment and to achieve goals. They consist of vital processes and abilities necessary for daily living. The following are the different components of executive functions-

- a) Planning: the ability to form goals, develop action plans to achieve those goals and then select the appropriate actions.
- b) Reasoning: problem-solving by establishing causal relationships.
- c) Decision making: consideration of consequences of different options and finally selecting the most appropriate one.
- d) Flexibility: the ability to adjust behaviour to the changing environmental circumstances.
- e) Inhibition: the ability to suppress impulses or irrelevant information.
- f) Multitasking: the ability to perform multiple tasks simultaneously by combining them, while keeping in mind the goal of each task.

*Language* is defined as the production of spoken or written signs that symbolize objects, ideas, etc. per a linguistic community's convention. There are various aspects to the language function.

- a) Expression: the ability to generate ideas coherently.
- b) Comprehension: the ability to understand the meaning of words and ideas.
- c) Naming: the ability to name objects, persons, activities or actions.
- d) Fluency: the ability to produce linguistic content rapidly and effectively.
- e) Repetition: the ability to reproduce the sounds which are heard.
- f) Writing: the ability to transform ideas into characters, symbols and images.

- g) Reading: the ability to interpret written characters, symbols and images and then transform them into speech.

*Visuospatial skills* involve the ability to represent, analyse, and mentally manipulate objects. Two main concepts have been described relating to visuospatial skills.

- a) Spatial relations - involve two-dimensional objects.
- b) Spatial visualization - involves three-dimensional objects.

*Social Cognition* refers to how individuals think about themselves, others and their behaviour and behave accordingly.

For the ease of conceptualisation, human cognitive abilities have been divided into two broad groups: crystallized and fluid cognitive abilities. Crystallized cognitive abilities result from cognitive processing that has taken place in the past. This usually happens in the form of acquired knowledge, for example, vocabulary, general knowledge, and historical information and mainly relies upon long-term memory. Fluid Cognitive abilities require effortful cognitive processing; manipulation and transformation of information at present. They include working memory, abstract thinking, perceptual speed, and visuospatial skills.

## **COGNITIVE CHANGES THROUGH ADULTHOOD**

In healthy individuals, cognitive abilities rapidly grow throughout their childhood. By the age of 18, executive

functions are thought to be mature, although research suggests that some executive processes continue to develop during early adulthood. Most researchers agree that cognitive abilities peak during young adulthood, however, there is large variability across different cognitive functions.

Population studies have shown that the average fluid abilities peak in the mid-twenties and then gradually decline over adulthood, followed by a faster decline from the sixties. In contrast, crystallized cognitive abilities tend to increase throughout adulthood, because of education and occupational and cultural experience, until approximately the seventh decade of life. It has been observed that fluid cognitive abilities are more sensitive to the neurobiological changes that happen with ageing as well as pathological processes.

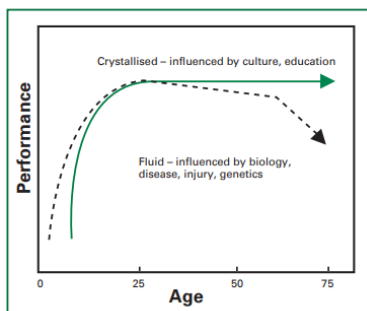


Figure 1. The change in fluid and crystallised abilities with age

## CHANGES IN COGNITIVE ABILITIES IN NORMAL AGEING

When interpreting the studies on cognitive changes in normal ageing, one needs to appreciate that these studies are affected by various biases and confounding factors and a significant

inconsistency has been observed among different studies. Compared to younger adults, older people show deficits in attention, working memory and episodic memory.

A decline in the speed of cognitive processing has been a consistent finding in many studies, which is thought to be a result of white matter changes that take place during the normal ageing process. Slowing of cognitive processing can affect the functioning of other cognitive domains to varying degrees and performance at cognitive assessments, especially the ones that require timed responses.

When attention is considered, complex attentional tasks such as divided attention and selective attention are most affected, while simple attentional tasks such as digit span remain largely stable. A decline in working memory with increasing age has been consistently shown. This could result from impaired divided attention, slowed information processing or lack of inhibitory control. Deficits in working memory can be a source of impairment of other cognitive domains like long-term memory and executive functioning.

There is a considerable variation in how different types of memory are affected. Some studies have shown deficits in immediate and delayed recall of newly learnt information, while according to others, immediate memory remains unaffected unless the task at hand requires a larger capacity. Delayed recall can be further affected if the task involves the use of working memory and complex attention.

According to the studies, episodic memory is more affected by ageing than semantic memory, and when present, semantic memory impairment is more likely to indicate a pathological ageing process. Where episodic memory is concerned, autobiographical and historical memories may show minor impairment, however, a significant decline in the degree of detail and the accuracy of knowing the source of the information has been observed. This could result from deficits at any stage of memory processing, however defects at encoding and retrieval are greater than that of storage, and older individuals may need more cueing for recall.

Normal ageing may also result in difficulties in retrieving information from semantic memory with a loss of ability to retrieve names, accompanied by a "feeling-of-knowing" or a "tip-of-the-tongue" state; however, this defect is somewhat compensated by intact recognition memory.

Procedural memories are relatively well preserved with advancing age.

Visuo-perceptual skills, in general, are not greatly affected in old age, and older adults can visually recognize objects, shapes, conventional signs and gestures. However, they can have deficits in visuospatial abilities, such as perception of spatial orientation and visuo-perceptual judgement. It should be noted that sensory impairment can have a significant effect on the performance of visuo-perceptual tasks. Older people usually retain visuo-constructional abilities to complete simple tasks, but not complex ones.

With increasing age, a decline in executive functions also takes place in many, impairing the ability of the person to complete a novel, complex task. Cognitive flexibility and abstract thinking may decline after the seventh decade.

Language functions remain largely stable into advanced age, with fairly stable vocabulary and verbal reasoning. Some researchers have even found vocabulary and certain semantic skills to potentially improve with advancing age. Speech comprehension also remains well preserved, although it can become impaired if there is lots of background noise or if the content of the speech is ambiguous. Some researchers have observed older people to be more repetitive, less talkative, and less specific in selecting words. Some decline has also been shown in verbal fluency and verbal retrieval.

The decline in the connectivity and integrity of neuronal networks that happens with advancing age correlates with these cognitive changes. In neurodegenerative disorders, these changes are aggravated.

An association between depression and faster cognitive decline in old age is well established. Poor physical health, lack of physical activity, and smoking have also been associated. According to some research, women show a slower decline compared to men. Studies on the association between formal education and cognitive decline in late life have yielded mixed results. Education is associated with cognitive development in the early years of life. Several researches suggest that the number of years of formal education correlates positively with



cognitive functioning and reduces cognitive ageing and the risk of dementia. However, some indicate that education does not appear to have a significant effect on cognitive decline in old age.

## **COGNITIVE CHANGES DUE TO AGE-ASSOCIATED NEURODEGENERATIVE CONDITIONS**

The ageing brain may undergo pathological changes due to ischemic brain disease, neurodegenerative disorders such as Alzheimer's Disease, traumatic brain injury, toxins such as alcohol, or other conditions.

Alzheimer's Disease is the most common cause of pathological cognitive decline in old age. The prevalence of Alzheimer's disease shows a linear relationship with increasing age. The earliest cognitive changes are a subtle decline in memory and new learning. Mild executive function decline can be observed as the disease progresses and during the latter part of the course of the illness, changes in language and visuospatial abilities can take place. These changes are much more severe than the impairment seen in normal ageing and affect the independent functioning of the person.

## **MITIGATING THE COGNITIVE DECLINE ASSOCIATED WITH AGEING**

Age-related cognitive decline can be mitigated by reducing the degree and impact of neurodegeneration as well as by increasing neuroplasticity. There has been a great degree of interest among researchers in preventing age-related cognitive

impairment, in the recent past. The emerging evidence suggests that lifestyle modification including a healthy diet, regular physical exercise, avoiding excessive consumption of alcohol, engaging in cognitively stimulating activities, remaining socially active and controlling vascular risk factors and depression can potentially prevent or mitigate cognitive decline and dementia.

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## 5. Frailty

Dr Shehan Silva

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Frailty (Latin – *Fragilita* – Brittleness) is the most distressing and problematic expression of the process of ageing. It is a common condition in later life in which minor stressors may result in serious changes in health. The main contributory factor for age-related decline in multiple physiological systems is the collective result in vulnerability to sudden health status changes triggered by a trivial insult. Most population studies conducted in the USA and Canada have estimated that the prevalence of frailty by whatever measure lies between 4% and 16% in men and women aged 65 and older, although the prevalence of frailty varies with the tool used to define frailty and with the population studied.

The concept of frailty emanated in the 1950s and was studied by geriatricians and gerontologists thereafter. However, it was defined efficiently by Linda Fried and others in 2001.

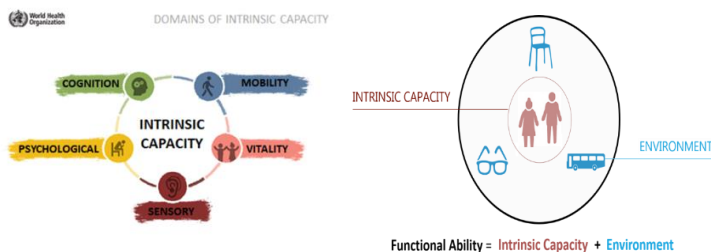
### **RESILIENCE**

Reserve is considered the potential capacity of a cell, tissue or organ system to function beyond its basal level in response to demands and stressors. Resilience is a concept that has sprung up parallel to frailty being considered as its mirror image. It is the human ability to adapt withstand or recover from functional decline in the face of tragedy, trauma, adversity, hardship and ongoing life stressors. Resilience explains why two apparent individuals may react differently to the same stimulus *ceteris paribus*. The one able to better cope with stressors is

considered to have a higher degree of resilience which is the external resource such as social network and a higher degree of socioeconomic status which an organism has to counteract negative forces challenging its homeostasis.

Resilience is dynamic and dependent on the context of circumstances. A combination of risk factors stemming from multiple stressful life events and protective factors that decrease the negative influence of risk. There is a balance of stress and the ability to cope.

Intrinsic capacity is the composite of all physical and mental capabilities of an individual. The functional ability is all the health-related attributes that enable people to be and to do what they have reason to value. It is a combination of the interaction of intrinsic capacity with the environment (Figure 5.1).

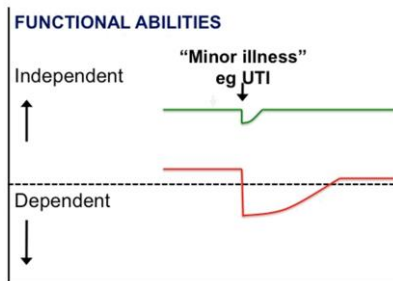


*Figure 5.1 Intrinsic Capacity and Functional Ability*

## **FRAILITY**

Frailty is a distinctive health condition that is characterised by the gradual decline of biological reserves, failure of homeostatic mechanisms and vulnerability to a range of adverse outcomes. These adverse events include falls, delirium and disability. In frail individuals, a minor stressor such as an infection, metabolic disturbance or even a new medication could trigger a dramatic impact on an older person's functional ability. Thus, the nature of frailty causes changes in the intrinsic capacity or environment that can lead to adverse outcomes. People living with frailty experience a greater degree of disability, hospitalization, institutionalisation and mortality than people who do not have frailty.

This is shown diagrammatically in Figure 5.2. A minor insult results in a dramatic and disproportionate change in the health state. This leads them to become dependent on in an dependent state, immobile from a mobile state, postural instability and delirium. A person who is a non-frail older person would bounce back to his normal functionality even with a minor stressful event (green line). A frail older person whose baseline itself is at a lower level and demonstrates a larger deterioration with a minor insult without returning to the previous level or even taking a longer time to establish a new equilibrium (red line).



*Figure 5.2 Outcome of frailty in vulnerable older people*

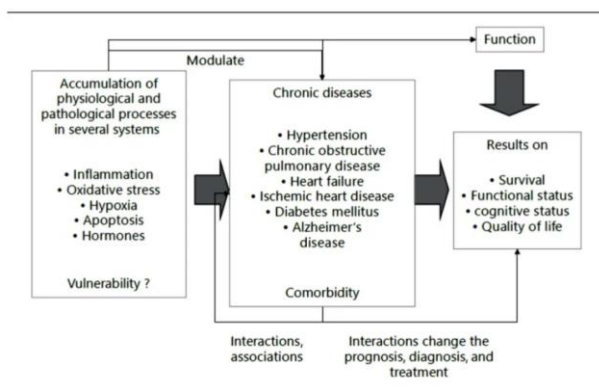
Disability suggests chronic limitation or dependence on mobility with or without the involvement of activities and instrumental activities of daily living. While many but not all frail individuals are disabled, not all disabled persons are frail. As an example, an older patient who has a disability due to a major accident or stroke may maintain relatively good function in physiological systems, not demonstrating frailty. Frailty is usually considered as a state preceding disability. It contrasts with disability by being able to be modified by treatment. Studies have shown that there is a wide range of risk factors for disability which are potential targets for preventative interventions. These include health behaviours, environmental exposures, diseases and life events. An accumulating body of literature prefers framing frailty as a pre-disability condition. Thus, frailty of a special target condition for preventative interventions.

Multiple operational definitions are found for capturing the risk profile of frail elders, but a gold standard is missing currently. Frailty is one complex term with multiple and slippery

meanings. It can be defined as a clinical state where there is an increase in vulnerability to developing negative health-related events when exposed to endogenous and exogenous stressors. These negative health-related events include disability, hospitalization, institutionalisation and death. Frailty can be considered a progressive age-related decline in physiological systems. Age-associated decline in physiological reserves and functions across multiorgan systems leads to increased vulnerability to adverse health outcomes.

The ageing process is associated with progressive loss of functional reserves. This starts at the culmination of the maturational phase leading up to death. Frailty or disability experiences occur when an individual loses 70% of functional capacity. The risk of mortality occurs when the loss is 80%. Functionality declines at a rate of 0.5% annually in all systems. This rate is accelerated by extrinsic conditions.

It is important to understand by clinicians that frailty is not a static phenomenon, which could be either worse or better in an individual and it can be reversed. This is a long-term condition.



*Figure 5.3 Relationship between ageing and disease to produce frailty and functional decline*

Older age, poorer educational level, smoking, being single, depression, and being of African American or Hispanic origin are all associated with frailty. Several chronic illness conditions, such as diabetes mellitus, hypertension, peripheral artery disease, and congestive heart failure are also significantly related to physical frailty.

The two most used approaches to conceptualise and define frailty are phenotypic and deficit accumulation perspectives. The phenotypic definition sees frailty as a biological syndrome while the deficit accumulation approach views it as a multidimensional risk state.



## **PHENOTYPIC FRAILITY**

A cycle of physiological decline was hypothesized to include an interrelated and reinforcing decline in metabolism, nutrition utilisation and skeletal muscle wastage to drive worsening vulnerability. Triggers of this decline include acute illness, some medication and age-related biological changes. The process is related often to disability and death but can develop independently from disease states and disability due to hypothesized biology.

Fried et al proposed that signs and symptoms of frailty result from dysregulated energy resulting in multiple molecular and physiological pathways leading to sarcopenia, inflammation, decreased cardiovascular functions, altered clotting, altered insulin resistance, anaemia, altered hormone levels and micronutrient deficiency. These physiological impairments result in the five clinical characteristics of frailty

- A) Weakness
- B) Low energy
- C) Slow walking speed
- D) Low physical activity
- E) Weight loss

The presence of three of these phenotypes indicates that a person is frail. One or two phenotypes indicate that he is pre-frail. The absence of these characteristics indicates robustness.

## **CUMULATIVE MODEL**

Rockwood et al described the accumulation of deficits of symptoms, signs, abnormal laboratory values, disease states, and disabilities. Cognitive, psychological and social factors are also considered as deficits. The frailty index is measured using the total number of deficits present in the individual divided by the total number of deficits measured in the community.

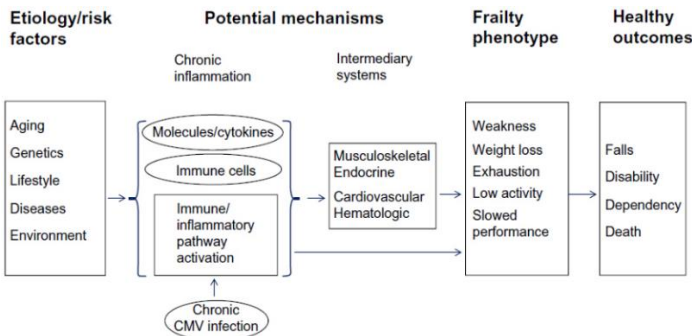
$$\text{Frailty Index} = \frac{\text{Number of deficits in an individual}}{\text{The total number of deficits measured}}$$

Even though a single deficit would not carry an increased rate of mortality, but cumulative number of deficits contributes to an increased risk of death. More importantly cumulative deficit model facilitates grading the frailty and comparing it in a temporal pattern or aid in progress.

## **PATHOPHYSIOLOGY OF FRAILITY**

Ageing results from lifelong accumulation of damages by numerous mechanisms. The precise level of molecular and cellular damage needed to cause depletion of physiological reserve is enigmatic. However, many organ systems show significant redundancy to provide considerable compensation to maintain the physiological reserve. The number of abnormal systems is more predictive of frailty than abnormalities in one system.

The brain, endocrine, immune system and skeletal muscles are intrinsically interrelated and are the main organ systems relating to frailty. However, there is a loss of physiological reserves of cardiovascular, respiratory, renal, haemopoietic and clotting systems as well as the nutritional status of older adults. There is a complex mechanism of accumulation of molecular and cellular damage in multiple systems under the influence of genetic, epigenetic and environmental factors that occur throughout life.



*Figure 5.4 Pathophysiology of Frailty*

### *Central nervous system*

There is a loss of neurons in highly metabolically active regions such as the hippocampal pyramidal system. The hippocampus is considered as an intermediary of cognitive decline including Alzheimer's dementia. There are structural and functional changes occurring in brain microglial cells that mediate

immunity. There is priming or hyperresponsiveness to stimuli due to activation secondary to brain injury or inflammation. This can cause damage and neuronal death with ageing. Such primed microglia have an intimate relationship with the pathophysiology of delirium.

### *Endocrine System*

The hypothalamic-pituitary axis (HPA) is an integral nexus of the brain and endocrine system. It influences metabolism and energy expenditure. With ageing there is a decline in three major hormones: growth hormone (GH), oestradiol/testosterone and dehydroepiandrosterone (DHEA)/DHEA sulphate (DHEAS). Reduced production of GH leads to low levels of circulating insulin-like growth factor 1(IGF-1), a major anabolic hormone. IGF-1 promotes neuronal plasticity and skeletal muscle strength. Low levels of oestradiol/testosterone cause increased production of luteinizing hormone (LH) and follicular stimulation hormone (FSH) levels. Low levels of DHEA result in higher concentrations of cortisol. The gradual increase of cortisol level plays a central role in the pathophysiology of frailty by increasing catabolism, leading to loss of muscle mass, anorexia, weight loss and reduced energy expenditure.

### *Immune System*

A frail immune system is associated with a reduced number of stem cells, alteration in the T-cell production, blunted B-cell-led antibody production and reduced phagocytic activity of macrophages. Thus, a frail immune system will fail to act in the

usual manner to an acute inflammation. Inflammation has a key role in the pathophysiology of frailty. Older people with frailty live with a prolonged low-grade inflammatory response which is hyper-responsive to stimuli. There are several inflammatory cytokines identified as associated with frailty. Some of them are interleukin-6 (IL-6), c-reactive protein (CRP), tumour necrosis factor  $\alpha$  (TNF- $\alpha$ ) and CXCL chemokine ligand -10. Inflammation is associated with loss of appetite and breakdown of skeletal muscle and adipose tissue, which may contribute to the nutritional compromise, sarcopenia and weight loss are common characteristics of frailty.

### *Skeletal Muscles*

With ageing there is a progressive loss of skeletal muscle mass, power and strength. This is described as sarcopaenia. In normal muscle homeostasis, there is a fine balance between new muscle cell formation, hypertrophy and protein loss which is contributed by the central nervous, endocrine and immune systems along with nutritional status and physical activity of the individual.

There are important interactions that promote the generation of frailty. These are pervasive and result in a self-propagating vicious cycle that even spirals up to an increased risk of decline towards disability and higher levels of frailty (figure 5.5).

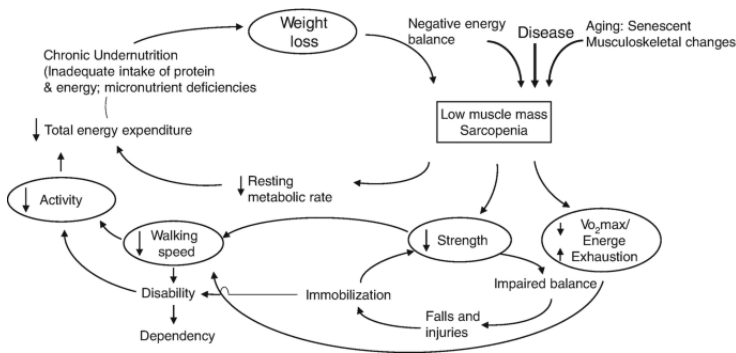


Figure 5.5 Cycle of Frailty

## DETECTING FRAILITY

Frailty should be proactively identified to improve outcomes and avoid unnecessary harm. Every encounter with an older adult should be considered opportunistic and screen them for frailty to plan long-term care. Some circumstances that can be considered as key moments include

1. Routine out-patient care set-up
2. Primary care review of older adults
3. Community care teams once referred from acute settings
4. Home caregivers in the community
5. Social service assessment for care and support
6. Paramedics in acute setting

### a) Walking Speed

This performance-based assessment requires the patient to walk a set of 4 m and timing is done. The cut-off value is considered 0.8 m/s to identify a high risk of frailty.

b) Timed Up and Go (TUG) Test

The time taken to stand up from a standard chair, walk a distance of 3 meters, turn, walk back to the chair and sit down is measured. Time less than 10 s is considered normal. Those with good mobility can go out alone/ mobilise without a gait aid. A score of more than or equal to fourteen seconds has been shown to indicate a high risk of falls.

c) Self-Related Health

This is assessed with the question 'How would you rate your health on a scale of 0-10'. A cut-off of less than 6 is used to identify frailty.

d) Fried Criteria

This is a mixed type of assessment with a questionnaire and performance assessment. As stated above, 3 of these phenotypes indicate that a person is frail while one or two indicate pre-frailty. The absence of these characteristics indicates robustness.

<b>Frailty Phenotype Variables</b>	<b>Diagnostic Criteria</b>
Weight loss	Unintentional loss of > 4.5 kg in the past 12 months and/or BMI of < 18.5 kg/m <sup>2</sup>
Weakness	Hand grip strength (Jamar Hand Dynamometer) for sex and BMI. A measurement < 25 kg is considered weak

Exhaustion	A little or none of the time responses for the Short Form 12 item Survey (SF-12) question, "How much of the time during the past 4 weeks did you have a lot of energy?"
Slowness	The average of 2 readings in a 6m fast gait speed test and a gait speed <0.65 m/s; the lowest quintile values stratified for gender and height considered as 'slow'
Low physical activity	A score of <73 on the Physical Activity Score for Elderly (PASE) Questionnaire

*Table 5.1 Fried Criteria of Frailty*

e) FRAIL Questionnaire

The FRAIL Questionnaire employs a mnemonic. The cutoffs are similar to the FRIED Phenotype assessment.

- Fatigue
- Resistance (ability to climb up one flight of stairs)
- Ambulation (ability to walk one block)
- Illness (> 5 comorbidities)
- Loss of weight (> 5%)

f) FiND questionnaire

The Frail Non-Disabled (FiND) tool has been designed to differentiate frailty from disability, two conditions that may overlap but need different management strategies



Domain	Question	Answer	Score
Disability	A. Have you any difficulties at walking 400 m?	No or some difficulties	0
		A lot of difficulties or unable	1
	B. Have you any difficulties at climbing up a flight of stairs?	No or some difficulties	0
		A lot of difficulties or unable	1
Frailty	C. During the last year, have you involuntarily lost more than 4.5 kg?	No	0
		Yes	1
	D. How often in the last week did you feel that everything you did was an effort or that you could not get going	Rarely or sometimes (twice or less/week)	0
		Often or almost always	0
		Regular physical activity (at least 2-4 h/week)	0
	E. Which is your level of physical activity?	None or mainly sedentary	1

Key:

If questions A + B  $\geq 1$ , the individual is considered as 'disabled'.

If questions A + B = 0 and C + D + E  $\geq 1$ , the individual is considered as 'frail'

If A + B + C + D + E = 0, the individual is considered as 'robust'

*Table 5.2 FiND Questionnaire*

#### g) PRISMA 7 questionnaire

This is a seven-item questionnaire that considers frailty if a patient scores 3 or more, he will be frail.

1. Are you 85 years old or older ?	yes	no
2. Male ?	yes	no
3. In general, do you have any health problems that require you to limit your activities ?	yes	no
4. Do you need someone to help you on a regular basis ?	yes	no
5. In general, do you have any health problems that require you to stay at home ?	yes	no
6. In case of need, can you count on someone close to you ?	yes	no
7. Do you regularly use a cane, a walker or a wheelchair to move about ?	yes	no

*Table 5.3 PRISMA 7 Questionnaire*

## h) Groningen Frailty Indicator

This is a questionnaire composed of a 15 item clinician administered assessment of 4 domains: physical, social, psychological and cognitive. Frailty is scored when a value is more than 4.

	YES	NO	
<b>Mobility.</b>			
Can the patient perform the following tasks without assistance from another person ( walking aids such as a can or a wheelchair are allowed)			
1. Grocery shopping	0	1	
2. Walk outside house ( around house or to neighbour)	0	1	
3. Getting (un)dressed	0	1	
4. Visiting restroom	0	1	
<b>Vision</b>			
5. Does the patient encounter problems in daily life because of impaired vision?	1	0	
<b>Hearing</b>			
6. Does the patient encounter problems in daily life because of impaired hearing?	1	0	
<b>Nutrition</b>			
7. Has the patient unintentionally lost a lot of weight in the past 6 months (6kg in 6 months or 3kg in 3 months)?	1	0	
<b>Co-morbidity</b>			
8. Does the patient use 4 or more different types of medication?	1	0	
	YES	NO	SOMETIMES
<b>Cognition</b>			
9. Does the patient have any complaints on his/her memory (or diagnosed with dementia)?	1	0	0
<b>Psychosocial</b>			
10. Does the patient ever experience emptiness around him? <i>e.g. You feel so sad that you have no interest in your surroundings. Or if someone you love no longer love you, how do you feel?</i>	1	0	1
11. Does the patient ever miss the presence of other people around him? <i>Or do you miss anyone you love?</i>	1	0	1
12. Does the patient ever feel left alone? <i>e.g. You wish there is someone to go with you for something important.</i>	1	0	1
13. Has the patient been feeling down or depressed lately?	1	0	1
14. Has the patient felt nervous or anxious lately?	1	0	1
<b>Physical Fitness</b>			
15. How would the patient rate his/her own physical fitness? (0-10 ; 0 is very bad, 10 is very good)    0 – 6 = 1    7 – 10 = 0	1	0	
<b>TOTAL SCORE GFI</b>			

Table 5.4 Groningen Frailty Indicator

i) Edmonton Scale

Frailty domain	Item	0 point	1 point	2 points
Cognition	Please imagine that this pre-drawn circle is a clock. I would like you to place the numbers in the correct positions then place the hands to indicate a time of 'ten after eleven'	No errors	Minor spacing errors	Other errors
General health status	In the past year, how many times have you been admitted to a hospital?	0	1–2	≥2
	In general, how would you describe your health?	'Excellent', 'Very good', 'Good'	'Fair'	'Poor'
Functional independence	With how many of the following activities do you require help? (meal preparation, shopping, transportation, telephone, housekeeping, laundry, managing money, taking medications)	0–1	2–4	5–8
Social support	When you need help, can you count on someone who is willing and able to meet your needs?	Always	Sometimes	Never
Medication use	Do you use five or more different prescription medications on a regular basis?	No	Yes	
	At times, do you forget to take your prescription medications?	No	Yes	
Nutrition	Have you recently lost weight such that your clothing has become looser?	No	Yes	
Mood	Do you often feel sad or depressed?	No	Yes	
Continence	Do you have a problem with losing control of urine when you don't want to?	No	Yes	
Functional performance	I would like you to sit in this chair with your back and arms resting. Then, when I say 'GO', please stand up and walk at a safe and comfortable pace to the mark on the floor (approximately 3 m away), return to the chair and sit down'	0–10 s	11–20 s	One of : >20 s , or patient unwilling , or requires assistance
Totals	Final score is the sum of column totals			

**Scoring :**  
 0 - 5 = Not Frail  
 6 - 7 = Vulnerable  
 8 - 9 = Mild Frailty  
 10-11 = Moderate Frailty  
 12-17 = Severe Frailty

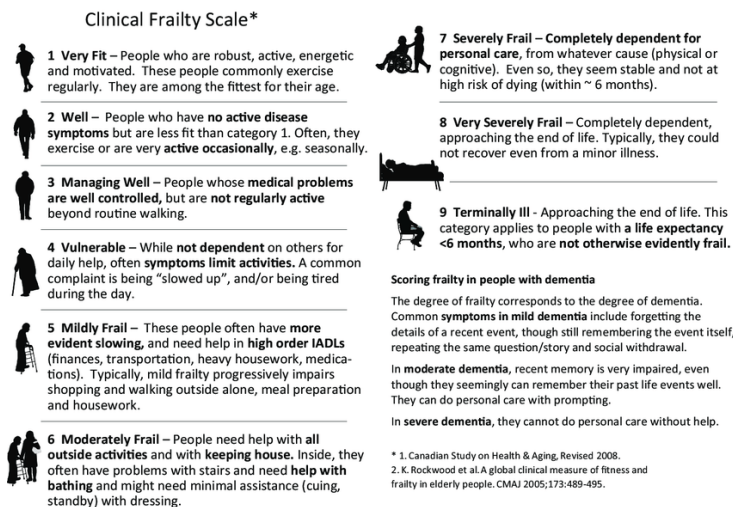
**TOTAL**

/17

Table 5.5 Edmonton Scale

## j) Clinical Frailty Scale

The Clinical Frailty Scale is a judgement-based assessment made upon a visual chart of 9 pictures covering the frailty spectrum with the corresponding explanation text.



*Figure 5.6 Clinical Frailty Scale*

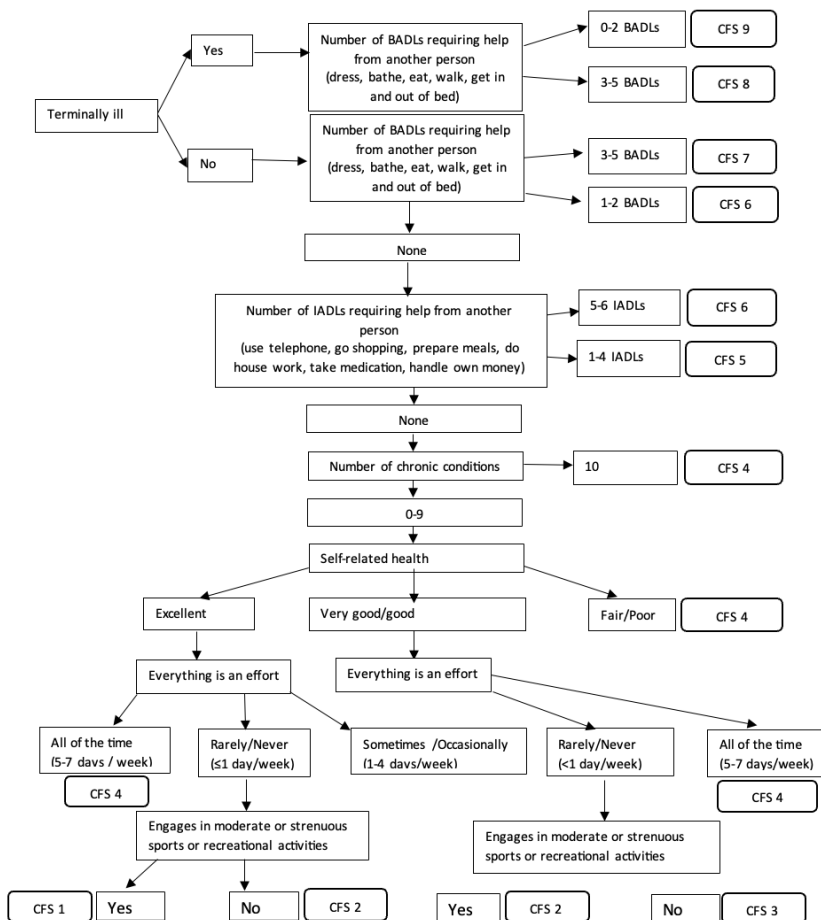


Figure 5.7 Algorithmic Approach to Clinical Frailty Scale

## MANAGEMENT

Frail elderly people receiving inpatient comprehensive geriatric assessment in specialist elderly care wards are shown more likely to return home and have a low likelihood of having cognitive or functional decline and lower in-hospital mortality rates than those who are admitted to a general medical ward setting.

Reversible medical conditions need to be addressed aggressively. The clinician needs to consider referral to geriatric medicine and other relevant fields if there is significant complexity, diagnostic uncertainty or challenging symptom control. Old age psychiatry will help with complex co-existing psychiatric problems including challenging behaviour in dementia.

Setting targets in collaboration with the patient, his family/caretakers and fellow healthcare team members is an important task to formulate priorities after looking at the benefits and risks of interventions. This decision of the 'aggressiveness' of care is based on a CGA. When an individual becomes older the degree of frailty progresses while developing severe diseases and disability. The medical care to the needs of the vulnerable should be based on values and goals in an individualized manner for both prefrail and frail. In those moderate to severe frailty, aggressive approaches for non-life-threatening conditions may conflict with complications. Furthermore, redundant procedures as well as hospitalization will be accompanied by further burden and reduced quality of life.

Physical training has demonstrated improvement in mobility and gait, reduction of falls, enhancement of activities of daily living and generalized well-being. These include yoga, tai chi or any other form of exercise. Functionally challenged patients although may never reach minimum recommended activity levels have been shown to improve their progression of

**Frailty Strength Training Prescription**

Nonconsecutive 2-3 days/week

Moderate intensity (5-6 on a 10-point scale)

Target major muscle groups – 8-10 exercises/session

8-15 repetitions per exercise

Gradual increase of weight and repetitions on tolerability

*Table 5.6 Frailty Strength Training Prescription*

**Frailty Balance Training Prescription**

Two or more hours/week supervised

Initially with less challenging positions to progress to advanced difficulty

Maintain each exercise for 5-10 seconds with at least one repetition/exercise

Flat surface exercise (initially)

Side by side stance, semi-tandem stance, tandem stance, single limb stance, heel stance and toes stance

Uneven surface exercises

Step up and down without hand support, forward and backward walking, sidewise walking

Complex task

Navigate obstacles/ pick up objects/ carry objects while walking, head turns in different directions, conversations/ simple mathematical

*Table 5.7 Frailty Balance Training Prescription*

Weight loss is a key area that should be attended to. Factors such as adverse effects of medication, psychiatric conditions (e.g. depression), masticatory difficulties (e.g. ventilation, dental and gingival disease), dysgeusia, dysosmia, and dysphagia should be addressed. Furthermore, dependency on caretakers at mealtimes and irrational dietary restrictions should be addressed. Nutritional supplementation in frail malnourished older adults is of limited use. However oral supplementations between main meals and low-volume high caloric snacks are helpful. Data from metanalysis have provided evidence that supplementation of vitamin D will improve balance and muscle strength and reduce falls in those who are deficient. An intake of 800 – 1000 units is advocated.

There is limited data on the success of anti-inflammatory mediators and endocrinological intervention. These include the replacement of growth hormone, dehydroepiandrosterone and testosterone. At present due to inadequate data, no pharmacological agent specifically to address frailty can be recommended. Another benefit of frailty detection is to screen those who have unfavourable health outcomes. Patients being contemplated for chemotherapy or major surgery can be assessed for the appropriateness of those interventions based on mortality and quality of life. Patients with progressive multiple diseases with advanced frailty and those who have failed to thrive will require palliative care approval with the identification of set goals.



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## 6. Multimorbidity

Dr Shehan Silva

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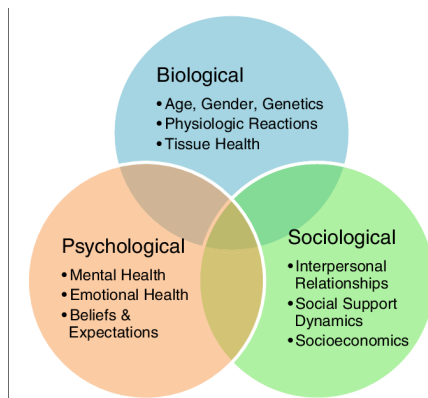
The pathogenesis of disease occurs due to the interplay of biological, psychological and sociological factors (figure 6.1). A disease is *a disorder of structure or function in a human, animal, or plant, especially one that has a known cause and a distinctive group of symptoms, signs, or anatomical changes. It is an internal state which results from to impairment of normal functional ability or a limitation on functional ability caused by the external environment. An illness has embodiment, meaning and being in the world as aspects of disease. Thus, a patient with a disease may not be ill and vice versa. Sickness on the other hand* is a state defined by society which categorises a person being sick to delineate who may receive what care and support from the community.

Marjorie Warren, the mother of geriatrics in Britain described the purpose of the field of geriatrics. The field should endeavour to prevent disease whenever possible and reduce medical disability to a minimum. Furthermore, it should obtain and maintain maximum independence and teach the patient to adjust himself intelligently to his residual disability.

### **MULTIMORBIDITY**

Multimorbidity is considered as the co-existence of more than two long conditions (LTC). The burden of multimorbidity rises with the progression of age. Almost 50% of persons 65-69 have 2 or more chronic conditions while this rises to almost 75% in those above 85 years of age. The proportion of multimorbid

adults has risen by 22% over the last decade. This may be attributed to improved public health interventions, technology and the overall population ageing. Multimorbidity is also associated with socioeconomic status with low levels of socioeconomic status having a higher prevalence of the problem. There is an inverse relationship between physical activity good lifestyle practices and multimorbidity.



*Figure 6.1. Biopsychosocial Theory or disease*

Bernard Isaacs, the father of geriatric medicine described 5 'geriatric giants'. These 5 'I's are umbrella terms of diseases and disease conditions that are commonly and widely observed among older adults.

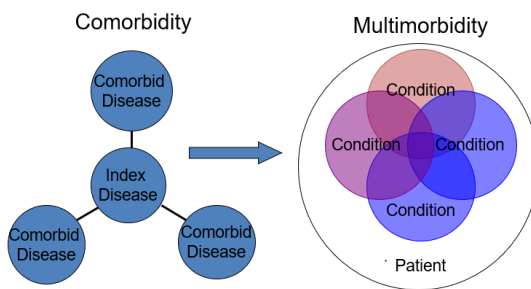
- Immobility – post-stroke, fractures, orthopaedic/rheumatological conditions
- Instability – vertigo, proximal muscle weakness, orthopaedic/rheumatological conditions
- Incontinence – urinary and faecal
- Impaired cognition - delirium, dementia
- Iatrogenic – adverse drug reactions, etc.

New entities have been added to this list such as frailty, sarcopaenia, anorexia of ageing (inanition) and impoverishment. The 5M framework in geriatrics also speaks about elements that need to be considered in improving the quality of life in older adults. These include *medication, mind, mobility, multicomplexity* and what *matters most* (table 1).

Mind	Maintaining mental activity Helping manage dementia Helping treat and prevent delirium Working to evaluate and treat depression
Mobility	Maintaining the ability to walk and/or maintain balance Preventing falls and other types of common injuries
Medications	Reducing polypharmacy (the medical term for taking several medications) De-prescribing (the opportunity to stop unnecessary medications) Prescribing treatments exactly for an older person's needs Helping build awareness of harmful medication effects
Multicomplexity	Helping older adults manage a variety of health conditions Assessing living conditions when they are impacted by age, health conditions, and social concerns
Matters Most	Coordinating advance care planning Helping manage goals of care Making sure that a person's individual, personally meaningful health outcomes, goals, and care preferences are reflected in treatment plans

*Table 6.1 The 5M framework in geriatrics*

The word 'comorbidity' is used interchangeably with multimorbidity. Comorbidity is the coexistence of medical conditions alongside an index disease (figure 6.2). As an example, in a patient with an inoperable bladder carcinoma (index disease), atrial fibrillation may be considered as a comorbidity. However, when such a person is on an oral anticoagulant for atrial fibrillation, elevates the concerns to the level of multimorbidity. Therefore it has been more imperative to consider disease and sickness in the view of multimorbidity.



*Figure 6.2 Multimorbidity evolving from comorbidity*

Multimorbidity includes more than 2 of the following permutations.

- a) Defined physical and mental health conditions e.g. Diabetes or Schizophrenia
- b) Ongoing conditions e.g. learning disability
- c) Symptom complexes e.g. frailty or chronic pain
- d) Sensory impairment
- e) Alcohol and substance misuse

There are some clinical implications of multimorbidity.

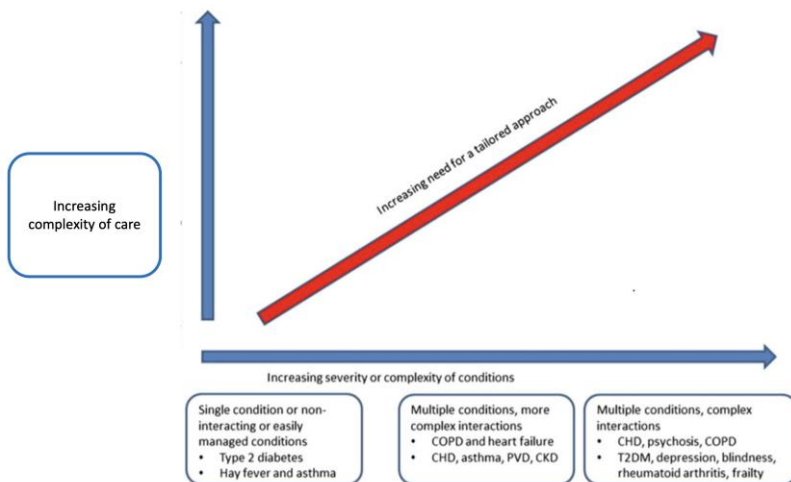
- a) Some chronic diseases have complications in multiple systems. As an example, diabetes may be complicated by microvascular disease with nephropathy, neuropathy and retinopathy.
- b) Certain chronic diseases may predispose to other diseases. It is well known that diabetes mellitus is associated with infections, ischaemic heart disease and cerebrovascular disease.
- c) A single risk factor can predispose to multiple diseases. Smoking leads to chronic obstructive pulmonary disease (COPD), lung malignancy, ischaemic heart disease and gangrene.
- d) One problem may be attributed to several diseases. For example, falls may manifest due to neurological, cognitive, sensory (e.g. poor vision) and rheumatological infirmities separately or in combination.
- e) Multiple diseases are accompanied by multiple drugs with multiple interactions as per the prescribing cascade.
- f) Two different disease entities may confuse interpreting results. As an example, iron deficiency along with vitamin B<sub>12</sub> deficiency may demonstrate a normocytic normochromic picture rather than microcytic or macrocytic red blood cell parameters.
- g) The risk benefits of treating one disease may be affected in the presence of another.  
The best description of this practicality is the use of anticoagulation in non-valvular atrial fibrillation based on CHA<sub>2</sub>DS<sub>2</sub>-VASc score. The pros and cons need to be weighed with the increased bleeding risk by HAS-

BLEED score in patients with chronic conditions such as liver disease

- h) Pharmacological treatment of a disease may be affected by abnormal physiology (pharmacokinetics). Oral frusemide is ineffective due to gut wall oedema in acute heart failure.

When there are four or more LTCs it is considered a complex multimorbidity. The complexity of care increases with increasing severity or complexity of multimorbidity. This requires a greater need for a customised approach for patients. With the increased complexity of the disease, there is an increased risk of functional decline and debility with frailty manifesting at severe levels. There is an inadvertent increase in adverse effects of treatment or interventions thus spiralling the manifestations of iatrogenesis. These include conditions such as falls and delirium. Higher emergency department and outpatient visits and avoidable inpatient encounters ensue. Ultimately there is a huge influence on poor quality of life, increased rates of morbidity and mortality as well as a greater burden on health care.





*Figure 6.3 Complexity of care in multimorbidity*

There are some challenges to clinicians due to multimorbidity. The lack of evidence for specific treatment of multimorbid patients is one of them. Clinical practice guidelines often do not account for or offer recommendations for multimorbidity. All or most existing guidelines are single-disease focused. Thus pathophysiological discordant conditions have no shared treatment other than an encounter between Scylla and Charybdis. The best approach to decision-making and clinical management of multimorbidity is unclear.

Multimorbid individuals have special management challenges with medical and social complexity leading to complicated regimens. Communication and coordination between interdisciplinary individuals, families and patients is important in setting specific goals. This may be challenged as a benefit in

disease A may be a burden in disease B. Furthermore, cognitive impairment and demand on time and resources may ultimately affect clinician frustration and incompetence and caregiver strain.

## **POLYPHARMACY**

Prescribing in older adults is accompanied by 4 paradigms which are based on treatment provision and chance of benefit (figure 6.4). The two extremely inappropriate prescriptions are potential ageism resulting in deprivation of care and overdiagnosis-overtreatment causing distress, inconvenience and wastage.

Patients are more vulnerable to the effects and adverse effects of interventions and their interactions. This is made complex by the increasing number of medications used to manage their multimorbidity. Polypharmacy is defined when more than 4 drugs are prescribed to a patient. It too is associated with adverse events and there may be drug-drug (e.g. enzyme induction and inhibition) as well as drug-disease interactions. Polypharmacy increases the possibility of a 'prescribing cascade', where an adverse drug effect (ADE) is misinterpreted as a new medical condition and drugs are added to treat it (figure 6.5).

	Treatment not provided	Treatment provided
Reasonable overall chance of Benefit	Potential Ageism <i>Unrealistic health gains</i>	Appropriate <b>Commission of Care</b>
Little chance of Benefit	Appropriate <b>Omission of Care</b>	<b>OVERDIAGNOSIS OVERTREATMENT</b> <i>Potential for Discomfort, Inconvenience, Wastage</i>

Figure 6.4 Paradigms of prescriptions with regards to benefit and treatment

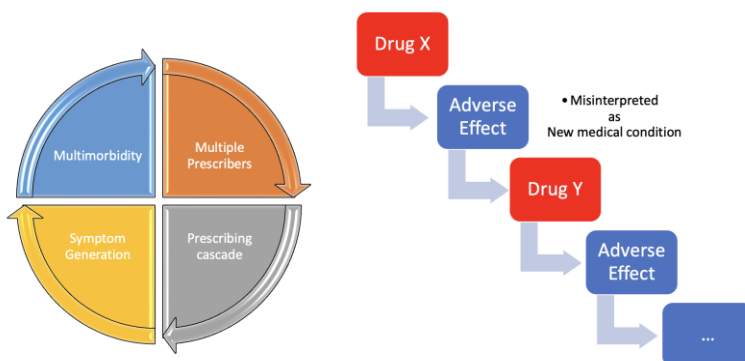


Figure 6.5 Prescribing Cascade

With multimorbidity, the circumstances are further compounded by the multiple prescriptions of many prescribers. All these may contribute to decreased physical and cognitive capabilities and in turn to poor quality of life. The escalation of costs to both the individual and the system cannot be taken for granted.

As older adults benefit from controlling the diseases they have, treatment should be offered for younger people. However, the goals and targets might differ, taking life expectancy, frailty and patient preferences into consideration. Premarketing drug trials often exclude older adults, and approved doses may not be appropriate for older adults.

Potentially inappropriate prescribing has an onus greater for risks than benefits. This includes the following

- 1) Over-prescription – excessive doses and duration, polypharmacy
- 2) Mis-prescription – inappropriate drugs, doses and duration
- 3) Under-prescription – not prescribing despite the absence of contraindication, and ageism.

## **STRATEGIES FOR MANAGEMENT OF MULTIMORBIDITY**

Medicine needs to be practised with common sense. Guidelines are mere guidance and not strict enforcement like the legislature. Thus, a personalised care plan needs to be carefully created.

- A) Proactive identification of adults who may benefit from a multimorbidity approach is important. These include opportunistic screening during routine care and by purpose-driven search using health records.
- B) Patient's goals and priorities are the true north of care. These should be elicited to understand the perceptions and perceived roles of the patient, the family and the care provider in the context of family and society. Independence should always be respected and maintained. One needs to recognise that patients have impairments and special requirements. Societal roles including paid work, charity and recreation should be considered. Preventative services and lifestyle changes should be geared. Decisions regarding drugs, hospitalization and other procedures should be actively discussed to reduce harm and treatment burden. This also includes end-of-life discussions. Preference of importance of one condition over another: state of burden acceptable to achieve another state should be considered for survival, cognition, pain, quality of life etc. Eliciting preferences facilitate good understanding and communication
- C) Coordinated care is essential in the form of multidisciplinary and electronic health records. Multimorbidity entails frequent clinical encounters with multiple service providers in multiple disciplines. Transition of care is associated with a high risk of medical errors. Furthermore, inconsistent recommendations along with duplicative care led to confusion, increased treatment burden and cost. This calls for comprehensive

geriatric assessment. The domains of physical health, mental health, functional, social and environment are probed by members of a multidisciplinary team. The key players include clinical pharmacists, therapists, dieticians and social care workers along with doctors and nurses. Regular meetings and reviews to formulate and renew care plans should occur. Thus, it is a dynamic process.

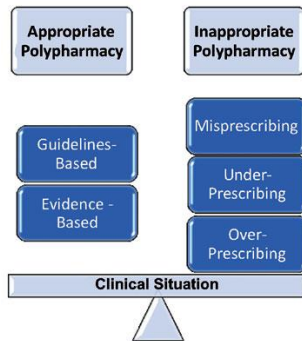
- D) The concept of less might be better is an important consideration. Every intervention entails harm and more permissive targets which are realistic are welcome. As an example, the cut-offs in diabetes and hypertension in multimorbidity and older adults should be loosened. Preventative screening may not be relevant and appropriate for persons of low life expectancy. The prescriber needs to interrogate himself whether the new medication is required or not. Medications that may be not of benefit as well as those that cause adverse effects will need to be stopped. Furthermore, those conditions that are undertreated will need to be addressed. There are guides such as Beer's criteria and START and STOPP tools that can be used in clinical practice. The practice of using a formulary even as a mobile application is commended.

Older patients may be on over the counter (OTC) medicines, dietary supplements, herbal preparations, complementary medications and even medicines shared or borrowed from kith and kin in addition. Thus, a careful drug history would be crucial. A regular review of medication is essential. These

include probing into the prescriptions of other clinicians and even carefully inspecting medication bags, pill boxes etc. (Brown Bag Analysis). Non-pharmacological approach to relief of symptoms is also a strategy that may be helpful in rationalising prescriptions.

When older adults encounter new symptoms, adverse effects due to drugs and their interactions need to be considered along with possible relationships to old or new diseases/complications. For example, constipation can occur because of calcium channel blockers and confusion can ensue due to drug-induced hyponatraemia (e.g. diuretics, ACE inhibitors, ARBs) In such instances, they need to be discontinued or reduced to minimally tolerated doses.

Rationalised prescription is an important strategy to consider. Polypharmacy is inevitable in most older adults. While it will have an impact on adherence, it is also essential to ensure that medicines that are of proven benefit are not withheld from these patients purely due to age. The medicines should be tailored to the needs of the individual and consideration of the medicines that can be substituted or discontinued is essential. Appropriate or rational polypharmacy is justifiable when the necessary medications are used according to evidence-based systems including guidelines. The motive of this is to achieve specific therapeutic objectives while preserving safety and well-being. Evidence-based medicine meets when the clinical judgement supported by scientific evidence meets the patients' values and preferences. By doing so the patient will be motivated and will adhere to the plan.



*Figure 6.6 The fine balance between appropriate and inappropriate polypharmacy*

When patients with complicated diseases are encountered, one medication at a time needs to be commenced at the lowest dose possible. The dose needs to be increased concerning response and adverse effects. This principle will effectively achieve improved tolerability and compliance

Consolidation of dosing schedules to morning, afternoon and night is useful. Further, consolidate treatment. As an example, ACEI could be used to address hypertension, renoprotection and heart failure. Always question whether an issue can be addressed without a prescription. e.g.

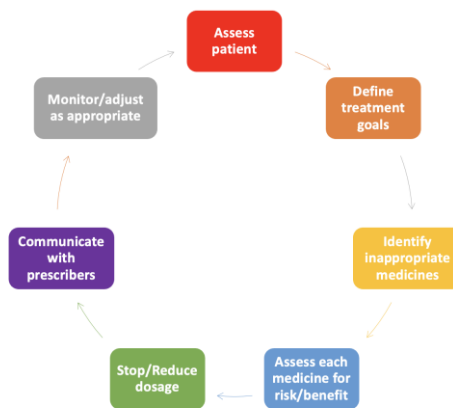
Sleep – improve sleep hygiene vs sedative

Incontinence – regular bladder care/referral to urogynaecology

Reflux & Oedema – raising relevant ends of the bed



Deprescription is a process that needs to be done actively. It is a cycle which entails conscientious placement of the patient with directed goals. Inappropriate medicines need to be struck off or altered from the prescription and medication load after assessment of risk and benefit. It is also important that the clinician documents these changes and communicates with other fellow prescribers so that they are not re-established. The patient needs to be monitored and followed up. (figure 6.7)



*Figure 6.7 The cycle of deprescription*

E) In multimorbidity, typical management strategies may be relevant. As an example, aggressive management of heart failure to reduce morbidity and hospitalisation is prudent. Although beta blockers are contraindicated in chronic obstructive pulmonary disease a trial of cardio-selective  $\beta$  blockers can be followed as many may tolerate. However, multimorbidity needs to adjust for individual conditions. The following are some examples

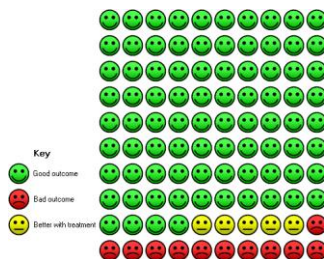
#### *Diabetes*

- The target of HbA1c 8% is appropriate in those with low life expectancy or at risk of hypoglycaemia
- Insulin may be inappropriate in those with cognitive or visual impairment
- When hypoglycaemia and its risk are frequent drugs with low risk can be employed (*e.g. metformin, short-acting sulphonylureas*)
- Electrolyte and renal functions need to be checked within 1-2 weeks of dose adjustment of ACEI/ARBs
- Regular foot care and preventative strategies for recurrent cellulitis are advocated

#### Hypertension

- Adaptation of non-pharmacological therapy *e.g.* salt restriction, and calorie restriction to reduce weight (if appropriate)
- High blood pressure is gradually reduced to no more than 20 mmHg at a time

- The tolerance to blood pressure reduction should be assessed e.g. orthostasis, postprandial, falls, activity restriction due to dizziness
- E) Prognostication is important. There is always tension between the benefit of one intervention and possible harm from complication/interaction with another. Prognosis is considered to concern function and quality of life and not survival only. This can provide appropriate contact for exploring preferences. For example, disease prevention, treatment by medication or device, screening for cancer, services for admission to hospital, hospice or no admission.
- F) General and health literacy is essential for compliance and concordance. The clinician needs to adapt this approach to the patient's socioeconomic and educational base. Sometimes the use of numerical likelihood is favourable rather than subjective qualitative words such as rarely or frequently. Provision of the likelihood of an event in both occurring and non-occurring as well as a description of absolute risks rather than relative risks are helpful. The other means of delivery include visual aids.



*Figure 6.8 Improving comprehension*

Physical (sensory & motor) impairment as well as psychological impediments can affect medication adherence. Cognition, vision, dysgeusia, dysosmia, manual dexterity and swallowing need to be assessed. The perception of the patient with regards to the disease and drug, and the health literacy also need to be carefully assessed. Compliance is the degree to which a person may follow the scribers advice and drug regimen. Poor or noncompliance ensues when the prescriber's philosophy does not intersect with that of the patient. The agreement of these two elements is termed concordance. Other determinants that need to be considered for adherence include drug availability and cost/affordability. Tools such as the Morisky Medication Adherence Scale are instrumental in looking at adherence. Clear communication, understanding and an uncomplicated drug regimen with directions will improve concordance

A holistic approach to tackling multimorbidity, especially in older adults is paramount. As per evidence-based medicine, one needs to be constantly reminded that the patient needs to be kept as the important 3<sup>rd</sup> element along with clinical acumen and present evidence. As quoted by William Osler, the good physician treats the disease while the great physician treats the patient who has the disease.

## Further Reading

American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity. Patient-centered care for older adults with multiple chronic conditions: a stepwise approach from the American Geriatrics Society:

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## 7. Long-Term Care for Older Adults

Dr Balakrishnan Gowrishanker & Dr Shehan Silva

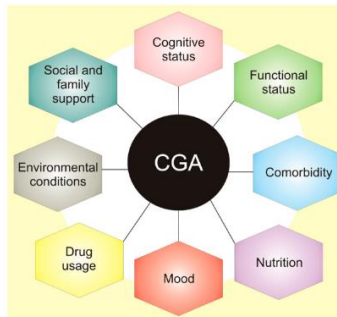
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Older people strive to have expectations of physical, psychological, and social well-being despite significant loss of functional and mental capacity with ageing. For older people who have suffered significant loss of physical or mental functions, long-term care (LTC) is essential in enabling them to maintain a lifestyle that respects their fundamental rights, freedom, and human dignity.

LTC for older adults refers to a range of services and support designed to meet the health and personal care needs of individuals who have difficulty performing everyday activities due to age-related limitations, chronic illness, disability, or cognitive impairment. It encompasses a continuum of care settings, including residential facilities, home-based care, and community services, to promote independence, and quality of life, and ensure dignified care for older adults over a long period.

Comprehensive Geriatric Assessment (CGA) is an important first step in the LTC of an older adult. It is an interdisciplinary approach, requiring significant time and effort. Along with the physical health and the mental capacity, it includes assessment of functional status, psychological well-being and available social support of an older person. CGA enables the care team to identify and manage the problems faced by older adults in LTC institutions.

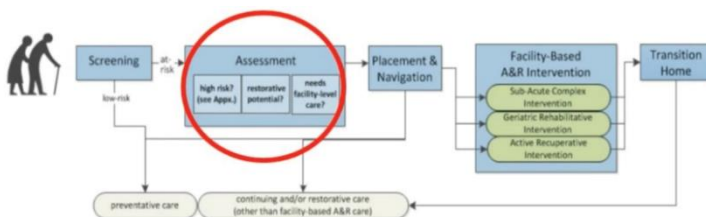
The complexity of health issues faced by older adults necessitates an interdisciplinary approach in CGA. CGA addresses the multifaceted needs of older individuals comprehensively by integrating expertise from various healthcare professionals such as geriatricians/physicians, nurses, social workers, physical therapists, and occupational therapists. Each discipline brings a unique perspective and set of skills to the assessment process, facilitating a holistic understanding of the patient's physical health, and mental and social well-being. Collaboration among the team members improves the accuracy of assessment outcomes, facilitates a tailored care plan, and optimises treatment strategies. Moreover, the interdisciplinary approach gives rise to a holistic view of the older adult, promoting person-centred care that respects individual preferences, values, and goals. By bringing together the collective expertise of professionals, interdisciplinary CGA ensures the delivery of high-quality, coordinated care that maximizes outcomes and enhances the overall well-being and independence of older adults. Key skills essential to conduct CGA include effective communication and observation skills, active listening, empathy, and non-verbal communication.



*Figure 7.1 Some aspects to be addressed in the Comprehensive Geriatric Assessment*

Problems faced by seniors are diverse as well as complex. Every individual older person would have different health and social problems requiring careful identification and management. It is thus vital to individualise the care plan for each elderly person to obtain the optimum outcome. Setting goals of care should be done with careful consideration of the person's and family's preferences or following the advance care plan if present, by the interdisciplinary team. Goals should be SMART: specific, measurable, achievable, relevant, and time-based. Interdisciplinary team members should have allocated roles in the care plan of the older person. When necessary, discussion about advanced care planning and end-of-life care should be done as early as possible.





*Figure 7.2 Pathway of Comprehensive Geriatric Assessment*

In LTC settings, healthcare services are tailored to address the multiple evolving needs of older adults, consisting of various facets of medical management, nursing care, rehabilitation services and end-of-life care. Medical management plays a crucial role in addressing multimorbidity. Medical management should be focused on comprehensive assessment, treatment, and continuous monitoring to optimise health outcomes and quality of life. This includes disease-specific interventions as well as medication management to ensure appropriate prescription, dosage, and monitoring of medications, considering the unique pharmacokinetics and potential adverse reactions and interactions in older adults.

Nursing care is another vital aspect of LTC. It facilitates domains beyond clinical tasks such as support in activities of daily living: aiding with tasks such as bathing, dressing, and mobility to promote independence and well-being. Additionally, skilled nursing staff deliver specialised wound care to prevent and manage pressure ulcers, and surgical wounds to promote healing and prevent complications. Nursing care is also

important in maintaining the older person's psychological well-being in LTC.

Rehabilitation services are essential to enhance functional abilities and promote independence, especially in older persons who have suffered diseases that limit their physical or cognitive capacity. Offering tailored programmes in physical therapy, occupational therapy and speech and language therapy to address mobility limitations, cognitive impairment, and communication difficulties. Incorporating rehabilitation services is vital for a successful LTC plan.

Palliative and hospice care services are another important part of LTC prioritising symptom management, psychosocial support, and family support to individuals with advanced illness or nearing end-of-life. Older adults suffer from disease-related and atypical symptoms towards the end of life such as breathlessness, nausea, non-specific pain, etc. Broad knowledge about the nature and management of these symptoms is essential to the members of the interdisciplinary teams involved in LTC. Beyond mere symptom management, palliative and hospice care teams offer psychosocial support to both patients and their families ensuring dignity, respect, and compassionate care throughout the journey of ageing.

Psychological support is pivotal for the overall well-being and happiness of older adults in LTC. Alongside physical health, it is crucial to address their emotional and social needs. Within these care settings, psychological support programs provide a comforting space where older adults can connect, share, and

find meaning despite the difficulties of ageing. These programs encourage socializing, cognitive stimulation, and emotional release, which help combat feelings of loneliness, sadness, and worry that many older adults experience. By fostering a sense of community, these initiatives promote emotional strength, mental health, and overall happiness. Additionally, they help older adults maintain a sense of who they are, their independence, and their dignity as they navigate age-related changes and challenges. In short, psychological support in LTC is crucial for meeting the diverse needs of older adults, and enriching their lives with meaning, relationships, and satisfaction.

Another important aspect of LTC is providing adequate social support to older persons. Social support requires the presence of friends, family, or other individuals who offer care, physical support, and emotional and practical assistance. It helps in reducing feelings of isolation and enhances the overall well-being of the older person. Financial support is equally critical, providing the resources necessary to cover essential expenses such as medical care, housing, and daily necessities. Without adequate financial resources, accessing necessary care becomes challenging for older adults. Moreover, caregiver support plays a pivotal role in LTC, whether provided by family members, friends, or professional caregivers. Caregivers assist with activities of daily living, medical appointments, and emotional support, ensuring the safety and well-being of older adults. Ensuring the caregiver's well-being promotes better

care and reduces the risk of abuse to older persons. It is something that is often overlooked in the LTC of older persons.

Physical environments designated to provide LTC should be safe and supportive and tailored to the physical and psychological needs to ensure the well-being and comfort of older adults. This involves designing facilities that minimize hazards and promote accessibility for individuals with mobility impairments. Features such as handrails, grab bars, non-slip flooring, and adequate lighting help prevent falls and accidents, which are common concerns among older adults. Additionally, LTC facilities should include communal spaces to encourage social interaction and engagement, supporting a sense of community among residents. Incorporating elements of nature, such as gardens and natural light, can have therapeutic benefits promoting relaxation and psychological health. By prioritizing safety and comfort in physical environments, LTC facilities create spaces where older adults can maintain their independence.

Recent advancements in assistive devices and technology have revolutionized LTC, offering solutions to support older adults in maintaining their independence and quality of life. From mobility aids like walkers and wheelchairs to specialized equipment for activities of daily living, assistive devices play an important role in LTC. Furthermore, technological innovations such as electronic health records, and telemedicine enhance efficiency and communication in care delivery, by helping in providing timely and coordinated services. Implementing assistive devices and technology requires comprehensive

assessment and training to match individual needs and preferences.

Access to transportation is a vital aspect of LTC, to enable older adults to participate in community activities, attend medical appointments, and maintain social connections outside the facility. LTC facilities should offer convenient transportation options. Additionally, the diverse mobility needs of older adults, including those with wheelchairs or mobility scooters, should be considered. Beyond logistical support, transportation services contribute to residents' overall quality of life by facilitating engagement with the community and reducing feelings of isolation. By prioritizing access to transportation, LTC facilities enhance residents' autonomy and well-being.

In LTC, upholding principles of informed consent and respecting decision-making capacity are essential components of ethical practice. When they can do so, older adults have the right to make autonomous decisions about their care, treatment, and daily living activities. Healthcare providers must ensure that residents are adequately informed about their options, including potential risks and benefits, before obtaining consent for medical procedures or interventions. Assessing decision-making capacity is crucial, particularly in cases where cognitive impairment or mental illness may affect an individual's ability to understand and evaluate information. In situations where capacity is compromised, and advanced directives are not made, healthcare providers should involve family members or legal representatives in decision-making processes upholding the older person's preferences.

In developed countries, in instances where older adults cannot make decisions for themselves, guardianship and surrogate decision-making mechanisms come into play to safeguard their interests. Guardianship is a legal process in which a court appoints a guardian to make medical and financial decisions on behalf of an individual who is deemed incapacitated. Surrogate decision-making involves identifying a surrogate decision-maker, typically a family member or close relative, to make healthcare decisions on behalf of the incapacitated individual. While both guardianship and surrogate decision-making frameworks aim to protect the rights and dignity of older adults, it is important to note that they are not legally accepted in Sri Lanka. Another vital but not-legalised framework is advanced care decisions including 'do not resuscitate' decisions. It ensures that a person's wishes are upheld even when the person cannot make medical decisions in critical situations such as the necessity of intensive care and cardiac arrest. In the future, it is essential to discuss the process of legalising guardianship, surrogate decision making and advanced care decisions in Sri Lanka, the country with the fastest ageing population in the South Asia region.

End-of-life care in LTC settings is a complex issue that requires clear knowledge of medical and medicolegal aspects. Ensuring that end-of-life care is guided by principles of dignity, respect, and compassion is paramount. Healthcare providers must engage in honest communication with residents and their families, discussing prognosis, treatment options, and goals of care in a sensitive manner. Upholding the resident's autonomy

and honouring their wishes regarding end-of-life care preferences is essential. Additionally, addressing spiritual and existential concerns, providing palliative care to alleviate suffering, and facilitating meaningful connections with loved ones are vital aspects of ethical end-of-life care. Healthcare providers must be capable of managing complex ethical dilemmas, such as balancing the pursuit of prolonging life with the relief of suffering, while always prioritizing the well-being and dignity of the residents in their final days.

The primary objective of establishing LTC facilities is to improve the quality of older adults. To ensure that this target is achieved every LTC facility should possess certain requirements. The most important requirement is employing qualified and compassionate healthcare professionals including physicians, nurses, therapists, and aids who are trained to provide specialised care for residents. This promotes not only overall resident satisfaction but also the identification and management of new medical and other problems that the residents may face. The care team should be able to quickly identify and address complex problems that may arise among residents comprehensively.

LTC facilities should employ safety measures to prevent accidents and injuries among residents and should have ready access to more advanced healthcare facilities such as hospital emergency departments. Furthermore, ensuring aspects such as nutritious meals, comfortable accommodation, availability of necessary care equipment and family involvement are essential

requirements of a good LTC facility. The cost must be bearable by the residents and family members.

To ensure maximum resident satisfaction and quality of care, LTC facilities must perform regular audits regarding various aspects of care. The audits may focus on the competency and knowledge of the carers, or they could directly assess the satisfaction among residents and families. Moreover, these facilities should allow inspection and assessment by various bodies such as medical teams and government organisations.

Although establishing well-functioning LTC facilities is essential, it is an immensely difficult task for developing countries like Sri Lanka. Geriatric medicine is a budding field in Sri Lanka and there are no nursing and paramedical staff specialised in elderly care. Staff shortage is an issue that should be addressed early to promote LTC as well as general elderly care. The recent trend of healthcare staff migrating out of the country not only exacerbates the existing problem of workforce shortage but also leaves behind their elderly parents, consequently adding to the burden of the remaining healthcare staff.

Establishing and maintaining LTC facilities would necessitate the allocation of a significant proportion of government funds. In the developing world, the usual belief is that the main portion of the country's economy should be guided towards the youth and the workforce. This cultural stigma is a major obstacle in establishing well-functioning LTC facilities and it is necessary to educate the public and policymakers regarding the importance of LTC to overcome this issue. This is another



issue that is exacerbated by healthcare workers migrating out of the country.

In Sri Lanka, there is no established system to refer patients to such LTC facilities. The existing elders' home in Sri Lanka admits patients who present themselves directly or are referred by social workers, hospital wards, or police. There is no integrated waiting list nor selection criteria for such homes. Discussion with the Social Services Department and other relevant authorities to establish a guideline for LTC facilities is mandatory.

Furthermore, LTC facilities necessitate the provision of essential equipment to ensure smooth operation and quality care delivery. This equipment plays a major role in reducing the caregiver burden among the carers in LTC facilities. The availability of such equipment and trained technical staff to install and maintain such equipment is another important limiting factor.

LTC for older adults encompasses a broad spectrum of services aimed at promoting health, well-being, and quality of life for individuals with complex care needs. CGA and healthcare services to psychosocial support and environmental considerations, LTC providers play a vital role in meeting the diverse needs of older adults and ensuring their dignity, autonomy, and comfort. However, the provision of LTC is not without challenges, including workforce shortages, financial barriers, cultural stigma, and the unavailability of a proper framework to establish and manage the facilities. Addressing

these challenges requires collaborative efforts from policymakers, healthcare providers, community organizations, and other stakeholders to improve access, quality, and equity in LTC services.

As the population ages and the demand for LTC services continues to grow, we must prioritize efforts to enhance the quality, accessibility, and affordability of care for older adults. This includes investing initiatives to recruit and retain skilled healthcare professionals, implementing policies to expand access to affordable care options, educating the general population and policymakers regarding demographic changes and future challenges, integrating technology to improve care delivery and outcomes, and advocating policies to establish and maintain LTC facilities. Moreover, addressing disparities in care and promoting health equity must be central to our efforts to ensure that all older adults receive the care and support they need to age with dignity and independence. By working together, a future where older adults have access to high-quality, person-centred care meets their unique needs and preferences throughout the continuum of ageing.

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Stuck AE, Siu AL, Wieland GD, Adams J, Rubenstein LZ. Comprehensive geriatric assessment: a meta-analysis of controlled trials. *Lancet*. 1993;342(8878):1032-1036. doi:10.1016/0140-6736(93)92884-v

World Health Organization "Providing Access to Long-Term Care for Older People" doi: <https://www.who.int/activities/providing-access-to-long-term-care-for-older-people>

## **8. Gerontological Nursing**

Dr Sarath Rathnayake & Prof Nirmala Rathnayake

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The nursing profession has a long history of providing healthcare to sick older people. In the current context, nurses' contribution is crucial in meeting the growing healthcare needs of older people globally. Today, gerontological nursing is one of the well-established nursing specialities that focus on providing care for older people. Gerontological nursing encompasses a broader spectrum of nursing care, including illness prevention, education, health promotion and managing the unique health challenges older people face. The scope of gerontological nursing includes health promotion, curative and rehabilitative dimensions, providing self-care and management of long-term health problems, providing care for frail older people, palliative care and end-of-life care.

### **GERONTOLOGICAL NURSE**

The gerontological nurse is defined as a nurse who works predominantly with older people, providing nursing care, as a full member of the multidisciplinary health and social care team, in a variety of settings where older people are cared for'. Such an individual plays a unique role as they strive to assist older people in managing their current state of health, to stay independent and active as long as possible. They perform different roles, including direct care provider, teacher, leader, client advocator, researcher and evidence-based practitioner. They practice in different care settings, including community,

home care settings, nursing homes or residential aged care facilities, acute care settings, adult daycare centres, respite care, retirement homes and hospice care. Gerontological nurses require specialised knowledge, skills, and a deep understanding of the unique needs and challenges faced by older people.

Older people present with different physical, psychological, environmental, social and financial issues. Therefore, providing care for this population is complex. In gerontological nursing, nurses should follow a holistic approach to the provision of patient-centred care (PCC). Unlike general nurses, gerontological nurses must possess specific skills, for example, effective verbal and non-verbal communication, empathy, compassion, patience, adaptability, flexibility and the ability to connect and engage with others.

Effective communication is one of the fundamental skills that a nurse should possess in gerontological nursing practice since their vision, hearing, and cognitive decline are prevalent problems, making communication difficult. Therefore, nurses should follow different approaches, for example, speaking louder, using non-verbal approaches like hand gestures, and providing large, printed materials or using brighter lighting for older people with vision impairment. The nurse needs to speak louder or use hand gestures when communicating with them. If a person struggles with vision, one may need to provide large print materials or use brighter lighting when communicating with them. It is important to listen to older people and provide information at a level that they can understand. Making communication a priority will serve the gerontological nurse well in achieving positive end goals for the patient.

Compassionate care helps older people to face the challenges that come along with ageing. Older people have great stories and lessons to share, only the nurse in the healthcare system comes to the older person's level, listens to and helps the older person to enjoy it while helping him/her to live with it which makes their quality of life improved. While closely living with the older person, nurses can understand the degree of cognitive decline and degeneration of all the other bodily structures and functions. Even the elderly people share their every single thought, change and experience with nurses then after building a trusting relationship which makes the healing process more effective.

Caring for older people is impossible if the carer does not have the quality of patience. It can be challenging and frustrating to establish a rapport with an older person for care due to cognitive and other degenerations. Therefore, providing additional time, moving at their speed and having patience always results in better outcomes in elderly patient care. This is much easier when the gerontological nurse appropriately understands the ageing process.

If the gerontological nurse can overcome the challenges coming, fluctuations of patients and other healthcare team members, and the ability to foresee the complex and unpredictable, ever-changing nature of patients, it makes the entire gerontological care unit a conducive environment for all.

Gerontological nursing assessment is a vital element in the care of older people. The Comprehensive Geriatric Assessment

(CGA) helps nurses to identify the health and nursing care needs, plan interventions and enhance the health and well-being of older people by fostering their independence, functional status, and quality of life.

## **CARING APPROACH**

Nurses are often the focal point of caring for older people in the gerontological care setting. As a practice standard, gerontological nurses are required to become competent in delivering evidence-based, person-centred and holistic health care for older people and their families.

Nursing care for older people must follow the following steps.

- Data gathering by CGA
- Bio-psychosocial assessment
- Discussions among the team
- Patient and/or caregiver as a member of the team involvement
- Treatment and nursing plan development, with the patient and/or caregiver
- Implementation of the treatment and nursing plan
- Monitoring response to the treatment and nursing plan
- Revising the treatment and nursing plan

The best approach for the delivery of care to older people is described as PCC. PCC is a complex and multi-dimensional approach. It mainly acknowledges that each older person is unique with their own life experiences, values, and preferences

and can make decisions and be involved with care planning to plan their health and well-being. Therefore, in PCC, older people are encouraged to actively participate in decision-making regarding their care and daily activities, empowering them to maintain control over their lives as much as possible. Apart from these, the family members, caregivers and significant others can be involved with the care planning and implementation.

Core principles of PCC include knowing and valuing the person, interpreting behaviours from the person's viewpoint, promoting a continuation of self and normality, and providing a positive social environment in which they can live well, with opportunities to establish relationships. Therefore, caring for older people with PCC allows older people to become more empowered to maintain their health and well-being. Older people's needs and wants are consistently changing. Therefore, continuous evaluation of patients and keeping flexibility in the care plan is essential. Accordingly, adjustments for care can be arranged.

In PCC, the nurse collaborates with other members of the healthcare team, including physicians, therapists, social workers etc. to develop a comprehensive care plan tailored to the individual's needs and preferences. Further, the nurse provides education and counselling to individuals and their caregivers regarding health promotion, disease prevention, self-management strategies, medication management, safety precautions, coping skills, and available support services.



## **MANAGING COMMON HEALTH PROBLEMS**

Chronic health problems are common among older people as a result of the natural ageing process, lifestyle factors, and the accumulation of health problems over time. Nurses play an essential role in providing care for older people with chronic health problems, including chronic diseases, functional limitations and psychological or psychogeriatric problems. The common chronic diseases include cardiovascular problems, diabetes, arthritis, osteoporosis, vision and hearing problems, respiratory diseases, gastrointestinal diseases, chronic pain, neurological disorders, chronic pain and skin diseases. The main psycho-geriatric problems associated with old age are depression, delirium and dementia. Nurses actively engage in screening, assessment, care planning and providing care, rehabilitation, counselling, health education, health promotion and research in managing chronic diseases by utilising specialised knowledge and unique skills in the PCC approach [4, 7].

## **INTERDISCIPLINARY COLLABORATION**

A gerontological nurse plays a vital role in various care settings while working closely with healthcare team members to provide PCC for older people. The formulation of care plans for older people involves the participation of other disciplines, with the nurse acting as a mediator.

Nurses collaborate with various ranges of medical practitioners and nurses from the assessment and planning of care to

providing and evaluating care. Nurses collaborate with social workers to address the social and emotional needs of older people. Assistance for planning of daily routines, counselling and coordination of various care activities are implemented. Gerontological nurses collaborate with physical and occupational therapists to promote mobility and independence among older people. They work together to develop exercise programs, assistive device recommendations, and fall prevention strategies to enhance the quality of life for older people. Furthermore, nutritionists and dietitians are an important part of the care planning of older people. Such professionals always collaborate with nurses to prepare meal plans for older people, address malnutrition issues, and educate older people and their caregivers about healthy eating habits.

Nurses must closely work with pharmacists to manage medication-related problems such as polypharmacy, poor adherence, and adverse drug reactions among older people. They work together to review medication regimens, identify potential drug interactions, and optimise medication adherence.

Apart from all these physical care, psychological and mental health-related problems in older people should be addressed. Therefore, nurses work together with psychologists, psychiatrists, and mental health counsellors. Gerontological nurses collaborate with these professionals to assess mental

health status, provide counselling and support services, and coordinate psychiatric care as needed.

## **PROMOTION OF HEALTH**

Among the five major responsibilities of a nurse, health promotion lies at the top. Gerontological nurses also play a significant role in promoting older people's functional, physical, and social engagement, and psychological well-being and providing high-quality safe care.

To promote the health of older people, nurses must have appropriate skills in the assessment of health status, including physical, mental, and social aspects which help to identify the areas necessary for health promotion interventions. Among the activities for health promotion, enhancing awareness and skills takes priority. Providing older people with information about healthy lifestyle choices, such as nutrition, exercise, medication management, chronic disease management, cessation of smoking and alcohol, prevention of falls, and preventive care (screening, immunization), is essential. This education empowers them to make informed decisions about their health. Encouraging older adults to participate in social activities and maintain connections with family and friends can reduce feelings of isolation and loneliness.

Cognitive decline is a devastating effect in old age. Health-promoting activities to enhance cognitive issues such as engaging older people in activities that stimulate cognitive function, such as puzzles, games, and lifelong learning

opportunities, can help maintain mental acuity and prevent cognitive decline. Furthermore, assisting older people in discussing and documenting their preferences for end-of-life care ensures that their wishes are respected and promotes dignity and autonomy also comes under the promotion of health.

## **PALLIATIVE CARE AND END-OF-LIFE CARE**

End-of-life care is an essential component of older people's care. Therefore, gerontological nurses often collaborate with hospice and palliative care teams to provide end-of-life care and support for older people with serious illnesses. End-of-life care is defined as the care offered during the period before death when all involved acknowledge that death is inevitable. Nurses face different difficulties when communicating with end-of-life care decisions; therefore, they should master the skills of breaking bad news. The main options for end-of-life care include life-prolonging care (curative services) and non-life-prolonging care (palliative care and hospice). In curative care, many deaths occur in hospital settings. It is a specialisation in nursing and focuses on improving the quality of life of individuals with life-limiting or terminal illnesses with little or no cure. Hospice care aims to provide a positive death experience or dignified death for individuals with terminal illnesses.

Nurses perform an essential role in providing care for people who receive palliative and end-of-life care focusing on maintaining communication, providing spiritual care and

managing symptoms. Nurses provide reassurance, support and education for families of life-limiting illnesses or terminal illnesses. They work together to manage pain and symptoms, facilitate advance care planning, and provide emotional support to patients and their families during the end-of-life process.

## **ETHICAL AND LEGAL CONCERNS**

Gerontological nurses face several ethical and legal issues while working with older people. They follow professional codes of ethics as a guideline for their actions, including several ethical principles such as beneficence and non-maleficence, justice, autonomy, fidelity and veracity concerning gerontological practice. These ethical concerns support ethical decision-making in the clinical practice of gerontological nurses. The primary legal concerns in gerontological practice pertain to patient rights, elderly rights, advanced directives, treatments and care, and autonomy. Nurses are responsible for ensuring patients' and elderly rights and providing standard care. They perform an essential role in client advocacy in gerontological nursing practice and should ensure safety of the older people. Nurses should pay special attention to prevent any negligence and malpractice. It is essential to ensure the confidentiality and security of patient health information, and nurses bear the responsibility of protecting client confidentiality.

Many gerontological nurses supervise the actions performed by junior health workers, for example, caregivers. They can assign duties to staff members who are competent and

qualified for the tasks. Consequently, gerontological nurses should have a better understanding of ethical and legal concerns in gerontological nursing practice.

## **CURRENT AND FUTURE CHALLENGES**

Advances in medical technology, changing healthcare needs, and demographic shifts present several issues for gerontological nurses today and in the future. These challenges still pertain to research, practice, and teaching. One of the major challenges is the shortage of nurses, especially nurses who are interested in gerontological nursing practice. Therefore, the development of the workforce in gerontological nursing practice is an essential strategy at the policy-making level. Furthermore, cultivating positive attitudes towards older people among nurses is an essential concern globally. Older people have multiple chronic diseases and disabilities which require complex care; therefore, preparing nurses with the necessary knowledge and skills is essential. Nursing curricula must be revised or updated to meet this requirement in nursing education. Nurses should start applying advances in gerontological nursing into their practice and expand research to enhance evidence-based nursing practice in gerontology. In Sri Lanka, gerontological nursing is not a well-established speciality; however, there is a trend in developing geriatric and gerontological nursing fields. With the current challenges, for example, the current economic crisis, urbanization and migration, and the breakdown of the extended traditional

family system, the development of gerontological nursing in Sri Lanka should be a priority need.

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## 9. Gerontological Rehabilitation

Dr Asha Wettasinghe, Ms Nadeesha Adhikari & Ms Nina Panterliyon

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Rehabilitation in older adults is critically important as it plays a pivotal role in maintaining and improving health, independence, and quality of life. It encompasses a wide range of therapies including physiotherapy, occupational therapy, speech therapy, and other forms of interventions tailored to meet the unique needs of older adults, helping them navigate the challenges of ageing more effectively.

### CHALLENGES IN FUNCTION

Older adults often face a range of challenges that can impact their ability to engage in meaningful activities. These challenges include the following:

- **Chronic health conditions:** Long-term health issues such as diabetes mellitus, heart disease, arthritis and osteoporosis can lead to distressful symptoms (e.g. pain and fatigue) and physical limitations, making it difficult to participate in various activities.
- **Visual decline:** Age-related loss of vision can hinder the ability to enjoy activities such as reading or watching television, working with electronic devices or engaging in conversations.
- **Hearing:** Age-related hearing loss or presbycusis may impact communication due to reduced auditory feedback of own and/or another person's speech. As a result, older persons may have articulation errors and



unintelligible speech leading to avoidance of communication and social isolation.

- Speech and articulation: Changes such as reduced muscle tone, strength, slow movements of the lips/tongue, and edentulism can set in resulting in slow speech, reduced clarity and increased response duration. Reduction of respiratory capacity may result in a reduced number of words per breath and reduced loudness of speech (Presbylarynx or Presbyphonia).
- Language: Difficulties in comprehending syntactically complex sentences, word retrieval, morphological errors, reduced breath capacity or muscular strength to complete the words may occur.
- Swallowing: There can be difficulty in mastication with poor dentition, dry mouth, increased oral preparatory time, delayed initiation of swallowing, wet and gurgle voice, frequent throat clearing or coughing while eating, and loss of appetite. Age-related changes happen at each stage of swallowing leading to presbyphagia. These include longer swallow reaction time, longer laryngeal vestibular closure duration, upper oesophageal sphincter opening duration, reduction in pharyngeal constriction and pharyngeal residue of food can be seen in healthy ageing.
- **Mobility issues:** Decreased muscle strength, balance, and coordination can result in difficulty walking, climbing stairs, or performing tasks that require physical exertion, thus limiting activity choices.
- **Pain:** Persistent pain from conditions such as arthritis or past injuries can be a significant detriment, discouraging individuals from engaging in both physical and sedentary activities due to discomfort.

- **Fatigue:** General tiredness or fatigue related to ageing or specific health conditions like anaemia can reduce energy levels and motivation, making it challenging to participate in previously enjoyable activities.
- **Cognitive impairment:** Dementia and other cognitive disorders can affect memory, problem-solving, and executive functioning.
- **Psychosocial factors:** Depression, anxiety, and social isolation can reduce motivation and participation in activities.
- **Environmental barriers:** Home environments may need modifications to accommodate physical limitations and ensure safety.

## CONCEPTS OF REHABILITATION

It is prudent to understand the concepts of impairment, disability and handicap. *Impairment* is considered as the loss or abnormality of structure or function. As an example, a weak leg or arm following a stroke relates to impairment. *Disability* results in loss of ability to perform daily functions in the usual manner (e.g. diminished ability to walk). The ensuing disadvantage in terms of fulfilment of individual roles is conceptualised as a *handicap*. The inability to cook, perform household chores or participate in leisure activities is a depiction of this state.

*Rehabilitation* is defined as the restoration of the individual to their fullest physical, mental and social capabilities. It can mould several forms.

- a) Restoration of full activity from a severe illness (e.g. surgery or critical illness)
- b) Restoration of maximum achievable function following a specific impairment (e.g. stroke and fractures)
- c) Facilitating achievement of as much independence as possible despite continuing impairment (e.g. Parkinsonism, stroke and arthritis)

The core rehabilitation principles focus on enabling participation in meaningful activities, enhancing functional independence, and improving overall well-being.

- Person and family-centred care: Interventions are tailored to the individual's preferences and needs with family and personal goals. This personalized approach ensures that therapy is relevant and motivating for the patient and the family.
- Holistic perspective: the physical, emotional, social, and environmental factors affecting the patient's ability to perform daily activities.
- Promoting independence: Home-based care programs and cognitive interventions are used to support older adults in maintaining instrumental activities of daily living (IADL) improvements, improving memory, executive function, and problem-solving, and mediating functional disability and performance satisfaction.
- Adaptation and compensation: Therapists work with patients to adapt activities or use assistive devices to overcome limitations.

- Evidence-based practice: Interventions are based on the latest research and best practices to ensure effectiveness and safety.

Rehabilitation can take place in varied settings from hospital inpatient care to the community and home. It is an active process where a multidisciplinary teamwork with the patient/individual and carer sharing common goals and objectives after a comprehensive geriatric assessment. Barriers and deterrents to interference the poor progression/improvement should be always looked upon. These include mood congruity, uncontrolled pain and hidden personal agendas.

Hospital admission is often required in acute illness for investigations and treatment as well as for support of weakness that makes them unable to attend to basic needs unassisted. Patients may feel unwell to get out of bed. Unless adequate support is provided problems such as pressure sores, contractures, constipation, incontinence, deconditioning and loss of confidence will fuel a vicious cycle leading to protracted rehabilitation. Remobilisation is achieved by suitable exercises (ranging from passive, assisted to resisted) combined with functional exercises such as transfers, sitting to standing and walking. Following discharge, the rehabilitation team may target promoting physical fitness which is known as 'reablement'. It is a concept that has been coined to describe lower-level rehabilitation that is needed to get an older adult back to their previous level of functioning.

The rehabilitation process consists of the following

- a) Recognition of potential
- b) Rehabilitation goal setting
- c) Re-ablement
- d) Regular review
- e) Resettlement
- f) Readjustment or empowerment

The rehabilitation goals should demonstrate attributes of the mnemonic SMART.

- Specific: Identification of each team's role
- Measurable: Clarity
- Achievable: Challenging enough to stretch
- Relevant: Patient's wishes
- Time-related: Focus on patient improvement.

*Geriatric physiotherapy*, also known as geriatric physical therapy, is a specialized branch of physiotherapy that focuses on assessing, managing and rehabilitating older adults. Geriatric physiotherapists use targeted interventions to help older adults maintain mobility, prevent falls, manage pain, optimize functional abilities, improve their overall quality of life and promote healthy ageing. By understanding the unique needs of the ageing population and the role of physiotherapy in promoting healthy ageing, we can better meet the needs of older adults and improve their overall well-being. *Occupational therapy* is a vital component of geriatric healthcare, to improve daily functioning to help senior citizens live happy, fulfilled lives. Occupational therapists help older people keep their independence, minimize their deterioration, and maximize their

quality of life by using a holistic approach to address these issues. *Speech and language therapy* in care for the older population includes evaluating and managing communication, cognition, and swallowing skills.

## **ASSESSMENT**

Geriatric physiotherapy assessment of older adults is a meticulous process designed to understand the unique needs and capabilities of older individuals. This assessment encompasses a comprehensive evaluation of physical function, mobility, balance, strength, flexibility and endurance. It aims to identify any impairments, disabilities or limitations that may affect the individual's ability to perform daily activities independently and safely. Additionally, assessments often include a review of medical history, medications, cognitive function and psychosocial factors to develop a holistic understanding of the patient's health status.

Furthermore, the assessment typically involves standardized tests and measures specifically tailored for older adults to gauge their functional abilities accurately. These assessments may include the Timed Up and Go test, Berg Balance Scale, Five Times Sit to Stand Test, Short Physical Performance Battery and others.

The key components of geriatric physiotherapy assessment include

### Physical Examination

- Vital Signs: Blood pressure, heart rate, respiratory rate, and temperature.
- Body Mass Index (BMI)
- Skin Integrity: pressure sores, wounds, or other skin conditions

### Mobility and Balance

- Gait Analysis: Walking patterns, stride length, and use of assistive devices.
- Balance Tests: Berg Balance Scale or Timed Up and Go (TUG) test.
- Functional Mobility: Ability to transfer (e.g., sit-to-stand), climb stairs, and move around different environments

### Muscle Strength and Endurance

- Manual Muscle Testing: Muscle strength with resistance.
- Functional Strength: Strength for functional tasks like lifting objects or rising from a chair.
- Endurance Tests: Six-Minute Walk Test.

### Range of Motion (ROM)

- Joint Mobility: Range of motion in major joints with limitations or pain.
- Flexibility: Muscle flexibility and any tightness that may affect movement.

### Pain Assessment

- Pain Location and Intensity: Visual Analog Scale (VAS) etc.
- Pain Characteristics: The type, duration, and triggers of pain.
- Impact of Pain: Effect on daily activities and participation.

### Cardiovascular and Respiratory Function

- Cardiovascular Health: Cardiac function, endurance, and response to physical activity.
- Respiratory Function: Lung capacity, breathing patterns and oxygen saturation.

### Cognitive Function

- Mental Status Examination: Mini-Mental State Examination (MMSE) or Montreal Cognitive Assessment (MoCA).
- Memory and Attention: Short-term and long-term memory, attention span, and problem-solving abilities.

### Functional Activities

- Activities of Daily Living (ADLs)
- Instrumental Activities of Daily Living (IADLs)
- Occupational and Leisure Activities: Participation in and satisfaction with leisure and social activities.

Personalized treatment plans are formulated to optimize the individual's physical function, promote independence, prevent falls, manage chronic conditions and enhance overall quality of life based on the above aspects. Geriatric physiotherapy plays



a crucial role in facilitating healthy ageing and maintaining functional independence by addressing the unique needs of older adults through comprehensive assessments,

The assessment phase in geriatric occupational therapy involves a thorough evaluation of the individual's abilities, needs, and environment. This comprehensive assessment helps in identifying areas where intervention is needed to support the older adult's functional independence.

#### Functional Assessment

- ADL and IADL
- Specific assessments such as fine motor assessments, handwriting assessments etc.

#### Cognitive and Psychosocial Assessment.

- Cognitive assessments: as above.
- Psychosocial assessments: depression, anxiety, and social isolation

#### Environmental Assessment

- Living environment: identify potential hazards and modifications

#### Sensory profile

- Deficiencies or sensitivities impacting day-to-day activities

Speech, language and swallowing assessment consists of the following.

### Social History

- Social life
- Communication opportunities, communication partners
- Support system

### Speech, language, voice, and cognitive skills

- Informal or standardized assessments
- Culturally relevant and language-specific assessment tools.
- Multilingual assessment

### Swallowing evaluation

- Detailed swallowing assessment
- Instrumental assessments: Functional endoscopic evaluation of swallowing (FEES) or video-fluoroscopic swallow study (VFS)
- Assessment with varied food and liquid consistencies according to the International Dysphagia Diet Standardization Initiative (IDDSI)

## **GERIATRIC REHABILITATION**

### ***Falls prevention and balance training***

As the global population ages, the importance of fall prevention and balance training for older adults becomes increasingly evident. Falls pose significant health risks for older individuals, often leading to injuries, loss of independence and decreased quality of life. Therapy emerges as a cornerstone in addressing these challenges, offering a multifaceted approach to fall prevention and balance training tailored to the unique needs of older adults.

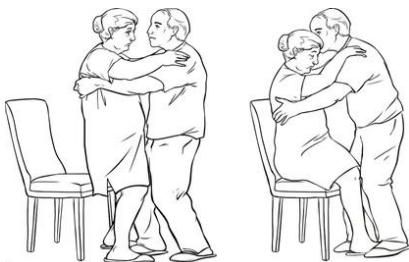


*Figure 9.1 Balance training exercises for fall prevention*

The role of a geriatric physiotherapist in falls prevention is paramount in mitigating the risks associated with falls among older adults. Through comprehensive assessments, they identify individual factors contributing to fall risk, including balance impairments, muscle weakness, gait abnormalities and environmental hazards. Armed with this knowledge, geriatric physiotherapists develop personalized intervention plans tailored to each older adult's specific needs and abilities. These plans typically incorporate a combination of balance and gait training, strength and conditioning exercises, environmental modifications and education on fall prevention strategies. By addressing both intrinsic and extrinsic factors contributing to falls, geriatric physiotherapists empower older adults to enhance their mobility, reduce their risk of falls and maintain their independence and quality of life as they age.

Occupational therapists recommend and implement home modifications to enhance safety and reduce fall risk. These modifications may include installing grab bars and handrails, removing tripping hazards such as loose rugs, improving lighting, and rearranging furniture to create clear pathways. Education and training for older adults and their caregivers are essential components of fall prevention. Occupational therapists teach strategies to improve balance and strength,

safe transfer techniques and the proper use of assistive devices. They also educate on how to recognize and address potential fall hazards in the home.



*Figure 9.2 Safe transfer technique*

The role of a geriatric physiotherapist in enhancing mobility and gait training is indispensable for older adults seeking to maintain independence and quality of life. With advancing age, individuals may experience a decline in mobility due to factors such as muscle weakness, joint stiffness, balance impairments and neurological conditions. Geriatric physiotherapists specialize in assessing these issues comprehensively, identifying specific limitations that hinder mobility and gait function. Through personalized intervention plans, they employ evidence-based techniques to address these impairments, focusing on improving strength, flexibility, balance, coordination and proprioception. These interventions may include a variety of exercises, manual therapy techniques, assistive devices and gait retraining strategies tailored to the unique needs and abilities of each older adult.



*Figure 9.3 Gait re-education*

Walking aids are also referred to as ambulatory assistive devices. Walking aids are essential tools that help older individuals maintain balance, improve mobility, and prevent falls. Additionally, these aids can help transfer weight from the upper limb to the ground, which is useful when reducing weight-bearing on the lower limb is desired.

The selection of an appropriate gait aid depends on the individual's specific needs, physical condition, and environment. Here are some common gait aids prescribed for the older adults:

#### 1. Canes:

- Standard Canes: Provide minimal support and are suitable for those with slight balance issues.
- Quad Canes: Have a wider base with four prongs, offering more stability than standard canes.
- Offset Canes: Designed with a bend in the shaft for better weight distribution and support.

## 2. Walkers:

- **Standard Walkers:** Four-legged frames that provide significant support but require the user to lift them while walking.
- **Two-Wheeled Walkers:** Front wheels for easier movement while the rear legs provide stability.
- **Four-Wheeled Walkers (Rollators):** Equipped with four wheels, hand brakes, and often a seat for resting. Suitable for those who need moderate to high support and want to maintain a faster pace.

## 3. Crutches:

- **Underarm (Axillary) Crutches:** Provide support under the armpits and are typically used for temporary conditions.
- **Forearm (Lofstrand) Crutches:** Have a cuff that fits around the forearm, offering more freedom of movement and are often used for long-term mobility issues.

## 4. Wheelchairs:

- **Manual Wheelchairs:** Require physical effort from the user or a caregiver to propel. Suitable for those with limited lower body strength or severe mobility issues.
- **Electric Wheelchairs:** Battery-operated and controlled with a joystick, providing independence to users with limited upper body strength.

5. Mobility Scooters:

- Similar to electric wheelchairs but designed more for outdoor use and covering longer distances. They are suitable for individuals who have difficulty walking long distances but still have some ability to walk short distances.

6. Knee Walkers:

- Also known as knee scooters, these are suitable for those recovering from lower leg injuries. They allow the user to rest the injured leg on a padded platform while propelling with the other leg.

7. Transfer Aids:

- Transfer Boards: Help individuals move from one seated position to another, such as from a wheelchair to a bed.
- Transfer Poles: Vertical poles installed in the home to provide support when standing up or moving from one place to another.

When selecting a walking aid for an older individual, geriatric physiotherapists consider the following factors:

- **Balance and Stability:** Assess the level of support needed based on the person's balance and stability.
- **Upper Body Strength:** Determine if the individual has sufficient strength to use certain aids like walkers or crutches.
- **Cognitive Function:** Ensure the person can understand and safely use the walking aid.

- Living Environment: Consider the layout of the home, including the presence of stairs, narrow doorways, and the need for outdoor mobility.
- Personal Preference: Consider the individual's comfort and willingness to use the aid regularly.

Consulting with a healthcare professional, such as a physiotherapist, can help in selecting the most appropriate gait aid tailored to the individual's specific needs and ensuring proper training on its use.



*Figure 9.4 Walking aids for older adults*

By working closely with older adults, geriatric physiotherapists facilitate the restoration of mobility and function, enabling them to navigate daily activities with greater ease and confidence. Through progressive training programs, individuals learn to optimize their movement patterns, regain independence in mobility tasks and reduce the risk of falls and injuries. Geriatric physiotherapists also provide education and support to older adults and their caregivers, empowering them to implement strategies for maintaining mobility and preventing functional decline.



Occupational therapists provide training and support to enhance the older adult's ability to perform ADLs and IADLs. This may involve practising tasks in a simulated or real environment, using adaptive equipment, and teaching energy conservation techniques to manage fatigue.

Occupational therapists employ a variety of interventions to address the unique needs of geriatric patients. These interventions include managing daily tasks such as bathing, dressing, cooking, and managing medications. Rehabilitation in geriatric occupational therapy focuses on restoring and optimizing functional abilities in ADL and IADL to enhance independence and quality of life. Assistive Devices and Technology would often be used in rehabilitation strategies.

Occupational therapists develop personalized remedial activity programs to improve muscle strength, flexibility, and endurance. These exercises may include resistance training, stretching, and aerobic activities, tailored to the individual's capabilities to achieve goals of functional participation.

### *Equipment for everyday living*

The occupational therapist gives advice and recommends equipment for reducing the strain on affected joints. Alternative methods of performing tasks which may be less stressful to joints are also suggested.

Bathing can be difficult when musculoskeletal disorders affect the upper and lower limbs. So, equipment such as bath boards,

bath seats and non-slip mats be considered with proper instructions to install in the bathroom.

If the commode is of a lower level, persons with musculoskeletal disorders may find it difficult to use. This can be eased by raising the commode seat height. A grab rail or frame may also be useful to hold when sitting and getting up from the commode. If a person uses a squatting type of toilet and finds it hard to use, that can be replaced with a commode chair or advised to install a commode. The Occupational therapists provide necessary technical advice to the person and family. If the person is having financial constraints, the occupational therapist liaises with the social service office to get the funds from the social service department.

The Occupational therapist trains the person to be seated at a comfortable height while dressing and to make use of assistive devices such as long handle reachers and easy fastening methods.



*Figure 9.5 Assistive and Adaptive Devices*

In musculoskeletal disorders, the ability to use fingers for eating and drinking is usually affected due to swelling, pain and deformities. These symptoms slow down the pace of eating and drinking as the disease progresses. Therefore, a person with

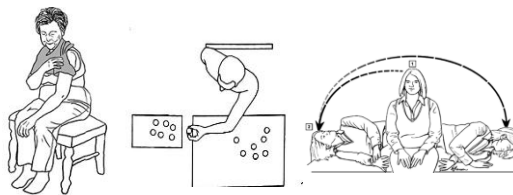
musculoskeletal disorders is supported with maintaining correct posture and movements. When deformities prevent proper use of fingers or cutlery to eat, assistive devices such as adapted spoons are fabricated (

Many people with musculoskeletal disorders who are still in employment find problems at work, especially with pain, mobility and hand function. If the person finds it difficult to hold a pen, the occupational therapist helps to increase the diameter of the pen by introducing pen grips or padding the pen to increase the diameter. Occupational therapists introduce labour-saving devices and environment modifications to create a comfortable work environment.

Occupational therapist encourages the maintenance of existing leisure activities and hobbies. These types of enjoyable activities enhance both physical and emotional well-being. In a leisure activity such as gardening, a person with musculoskeletal disorders is instructed to use a stool to sit instead of kneeling when weeding plants. Advice is given to use gloves to protect hands. Methods to distribute weight over the strong joints and large surface area and using raised flower beds or containers for easy planting and handling are taught.

For older adults experiencing cognitive decline, occupational therapists implement cognitive rehabilitation strategies. These may involve memory training exercises, problem-solving tasks, and activities that promote attention and executive function. Cognitive rehabilitation aims to maintain or improve cognitive

function and compensate for deficits through adaptive techniques. Social participation and mental health are essential components of overall well-being for older adults. Occupational therapists address these aspects through targeted interventions. Occupational therapists facilitate social engagement by encouraging participation in group activities, volunteer work, and community programs. They also help older adults reconnect with hobbies and interests that may have been neglected due to physical or cognitive limitations.



*Figure 9.6 Customised Remedial Activity and Activity Modifications*

### *Splinting & Joint Protection*

Splints are used to relieve pain and decrease local inflammation. Correctly positioned joints minimize joint contractures, increase joint stability, improve strength, range of movement, and function, and prevent or correct deformity. Splints can be divided into resting and dynamic splints (or orthoses). These are commonly provided in rheumatoid

arthritis. Occupational therapists use plastic prefabricated form materials and elastic materials to fabricate splints. There are two major types of splints.

Resting splints are usually worn at night and for short periods in the day if necessary for pain relief and inflammation reduction. Generally, the joints are supported in an anatomically correct position. Dynamic splints enhance the unstable joint to remain stable while assisting weak muscles to perform movements and function.



*Figure 9.7 Rest and Dynamic wrist splint*

Joint protection maintains functional ability by altering working methods and involves educating in proper joint and body mechanics and by the use of appropriate assistive devices. Theoretically, reducing the load and effort required to perform daily activities reduces strain on joint structures, pressure on pain receptors, localized inflammation, and fatigue.

### *Environment Modification and Safety*

Assistive devices and environmental modifications reduce dependence and maintain function by compensating for muscle weakness and movement limitations, as well as improving safety aspects.

Occupational therapists assess the home environment and provide suggestions to make the home a safe place for persons with musculoskeletal disorders. Loose rugs, worn carpets and slippery floor surfaces should be changed or eliminated to minimize falls. Stair rails and bannisters should be securely fixed. The rails should provide a comfortable grip. The height of the rail is decided by the height of the person and the requirement of the person with musculoskeletal disorders. Before providing guidelines to change the home environment, the occupational therapist should always adopt a sensitive approach with a clear explanation of the reasons for changing the person's own home. that can enhance safety and accessibility. This may include assessing for adequate lighting, the presence of grab bars in bathrooms, and the arrangement of furniture to reduce fall risks.

Whenever possible, the occupational therapist conducts a home visit to assess the accessibility issues. The front entrance should be accessible to the user. Steep steps can be made easier to negotiate by adding a half step and also by the use of a grab handle fixed near the door. If the person is unable to walk, then the occupational therapist assesses the entrance for a ramp to replace the steps. Mobility inside the home is also

assessed. Strategically placed grab rails can be helpful to prevent falls and also to support when walking. The Occupational therapist advises changing furniture arrangements to provide safe and comfortable mobility inside the home.

Some doorways may be exceptionally narrow to pass through with a walking frame or wheelchair. Bathroom and toilet doors are the most common examples. Occupational therapists consider adaptation or widening the doorway to provide access to such places.

Interventions for mental health may include mindfulness practices, relaxation techniques, and strategies to manage stress and anxiety. Occupational therapists also provide support for coping with life transitions, such as retirement or the loss of a loved one, which can impact mental health.

### *Enhancing pain relief*

The role of a geriatric physiotherapist in enhancing pain relief through physiotherapy interventions is pivotal for older adults experiencing chronic pain and discomfort. With age often comes an increased prevalence of musculoskeletal conditions, arthritis and other chronic pain conditions, which can significantly impact mobility, function and overall well-being. Geriatric physiotherapists employ a multifaceted approach to pain management, beginning with a comprehensive assessment to identify the underlying causes and contributors to the individual's pain. Through targeted interventions such as manual therapy, therapeutic exercises, modalities like heat or cold therapy and therapeutic ultrasound, they aim to alleviate

pain, reduce inflammation, and improve joint mobility and function.

Physiotherapy modalities encompass a range of therapeutic agents and technologies used to manage pain, reduce inflammation and promote tissue healing. Common modalities include heat therapy, cold therapy, electrotherapy, ultrasound and laser therapy. Heat therapy, such as hot packs or paraffin wax baths, increases blood flow to the affected area, promotes muscle relaxation and alleviates pain associated with muscle tension or stiffness. Cold therapy, such as ice packs or ice baths, reduces inflammation, numbs the affected area and provides temporary pain relief for acute injuries or inflammatory conditions. Electrotherapy modalities, such as transcutaneous electrical nerve stimulation (TENS) or electrical muscle stimulation (EMS), deliver electrical impulses to nerve fibres or muscle tissue, modulating pain perception and promoting muscle relaxation. Ultrasound therapy uses high-frequency sound waves to generate deep tissue heating, enhancing blood flow, reducing inflammation and promoting tissue repair. Laser therapy delivers low-level laser energy to stimulate cellular metabolism, reduce pain and accelerate tissue healing. By combining various modalities based on individual needs and preferences, physiotherapists can effectively manage pain, reduce inflammation and optimize rehabilitation outcomes for individuals with acute or chronic pain conditions.





*Figure 9.8 Physiotherapy modalities for pain relief (hot pack, transcutaneous electrical nerve stimulation, paraffin wax bath, ultrasound therapy)*

Pain management is a critical aspect of geriatric occupational therapy, as chronic pain can significantly impact an older adult's ability to perform daily activities and engage in meaningful occupations. Occupational therapists use a variety of therapeutic interventions to manage pain, including manual therapy, and physical agent modalities such as heat and cold applications. These interventions aim to reduce pain, improve joint mobility, and enhance overall function. Activity modification involves adapting tasks and environments to reduce pain and discomfort. This may include recommending ergonomic tools, altering task sequences, and teaching joint protection techniques to minimize strain.

## *Exercise*

Physical activity offers a multitude of benefits for the older population, promoting both physical and mental well-being. Regular physical activity helps to maintain and improve cardiovascular health, muscle strength, balance, mobility, flexibility and bone density, which are essential for maintaining independence and reducing the risk of falls and fractures in older adults. Engaging in physical activity can also help manage chronic conditions such as arthritis, diabetes and hypertension, by improving blood circulation, controlling blood sugar levels and reducing inflammation. Moreover, regular exercise has been shown to boost immune function, leading to a lower risk of infections and illnesses in older individuals.

Beyond the physical benefits, regular physical activity has profound positive effects on mental health and cognitive function in older adults. Exercise releases endorphins, neurotransmitters that promote feelings of happiness and well-being, which can help alleviate symptoms of depression and anxiety commonly experienced by older adults. Additionally, physical activity has been linked to improved cognitive function and a reduced risk of cognitive decline and dementia. By stimulating the brain and promoting the growth of new neural connections, exercise helps to maintain memory, attention and executive function in older individuals, contributing to a higher quality of life and overall mental health.

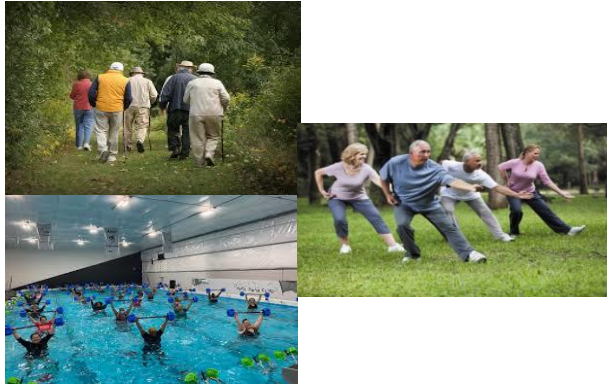
Exercise prescription for seniors should be individualized, considering factors such as health status, functional capacity, mobility limitations and personal preferences. Several key principles guide the development of effective exercise programs:

1. Specificity: Exercise programs should be tailored to address the unique needs and goals of older individuals. Activities should focus on improving mobility, strength, balance, flexibility and cardiovascular fitness, targeting areas of weakness or functional impairment.
2. Progression: Exercise programs should be progressive, gradually increasing in intensity, duration and complexity over time. Progression helps stimulate physiological adaptations, improve physical function and prevent injury.
3. Frequency: Older individuals should engage in regular physical activity on most days of the week, aiming for a minimum of 150 minutes of moderate-intensity aerobic activity per week, or 75 minutes of vigorous-intensity activity, in addition to muscle-strengthening activities on two or more days per week.
4. Intensity: Exercise intensity should be tailored to the individual's fitness level and health status. Moderate-intensity activities, such as brisk walking or swimming, should be encouraged for most older individuals, while those with higher fitness levels may engage in more vigorous activities.
5. Duration: Exercise duration should be appropriate for the individual's tolerance and preferences. Older individuals may start with shorter durations and gradually increase as they build endurance and confidence.
6. Mode: Exercise modalities should be varied and include a combination of aerobic, strength, balance and flexibility exercises. Examples include walking, cycling, water aerobics, resistance training, yoga and tai chi,

each offering unique benefits for physical function and overall health.

### *Promotion of physical activity*

Promoting physical activity among seniors requires a multifaceted approach that addresses both individual and environmental factors. One effective strategy is to offer tailored exercise programs that cater to the specific needs and preferences of older adults. These programs may include a variety of activities such as walking groups, chair exercises, Tai Chi and water aerobics, ensuring accessibility and inclusivity for individuals with varying levels of mobility and fitness. Community-based programs, such as walking groups, senior fitness classes, and recreational activities, provide opportunities for older adults to engage in regular physical activity in a social setting. These programs can help foster a sense of community and support among participants. By providing options that are enjoyable and engaging, older adults are more likely to participate consistently and experience the benefits of regular physical activity.



*Figure 9.9 Walking groups, water aerobics and Tai Chi*

Moreover, creating supportive environments that encourage and facilitate physical activity is essential for promoting active lifestyles among seniors. This involves making communities age-friendly by implementing infrastructure improvements such as accessible sidewalks, well-lit walking paths and outdoor exercise equipment in parks. Additionally, fostering social connections and peer support through group activities and community events can motivate older adults to stay active and maintain their exercise routines. By combining targeted exercise programs with environmental modifications and social support networks, we can empower older adults to lead healthier, more active lives, thereby enhancing their overall well-being and quality of life.

## *Energy conservation*

Energy conservation techniques can assist in reducing fatigue. The main principles of energy conservation are as follows.

- Balance rest and work by taking regular short breaks during prolonged periods of activity.
- Encouraging correct body positions. Good posture balances the weight of the head and limbs on the bony framework so that the force of gravity assists in keeping the correct joint position. More energy is used to maintain poor posture as muscles have to work against the effect of gravity to maintain the position. Hunched shoulders, craned necks and bent backs cause muscle tension, pain and tiredness.
- Avoiding staying in one position for a long period which can lead to stiffness. It is recommended to change the position every 20 – 30 minutes.
- It is important to have a correct work height which allows the head and neck to be held as straight as possible while sitting or standing. The work surface should be approximately two inches below the elbow when the shoulders are relaxed.
- Advice to avoid activities that cannot be stopped if they become too stressful and could, therefore, strain weakened muscles e.g. working with machinery in a production line of a factory.

### *Rehabilitation of communication and swallowing issues*

Rehabilitation of communication and swallowing of older people focus on improving the overall quality of life through improving activity participation (social gatherings, answering phone calls etc.). Based on the assessment findings, speech and language therapists would select intervention approaches aiming at,

a) Restoring or compensating speech, language, voice, cognitive, and swallowing functions.

b) Prevention of disability or life risks.

The communication and swallowing intervention program may have several goals, which are attributed to each area that was identified during the assessment process (Table 1).

*Table 9.1 General goals of a speech and language therapy program*

	Goals
Hearing	Encourage the use of hearing aids
Speech/articulation	Improving intelligibility and comprehensibility
Voice	Improving overall voice quality through vocal hygiene programs, vocal stretching, and loudness training.
Language	Improving comprehension of sentences with complex grammatical structure
Cognitive	Maintain working memory capacity and attention.
Swallowing	Prevent aspiration and maintain nutrition

Management of hearing, voice, and swallowing requires professional input from otolaryngologists, audiologists, radiographers and radiologists. When it comes to eating and drinking, physiotherapy input on postural support and occupational therapists' input on the independence of self-feeding is important to ensure the safety of swallowing.

Often, speech and language therapists provide direct (real-time) intervention to improve communication and swallowing skills. Indirect approaches like facilitating family members, friends and immediate caregivers to work on the intervention goals are utilized as well.

Depending on the assessment findings service receiver may assigned to one or both methods of intervention programs. While individual therapy focuses on improving skills, group therapy can focus on generalizing or practising the restored or compensated skills. Teletherapy: With the development of technology, intervention programs are delivered as teletherapy, allowing older persons with difficulty in mobility, to participate in therapy sessions.

By addressing the unique needs of older adults through comprehensive assessments, personalized interventions, and community support, therapy plays a vital role in promoting healthy ageing and enhancing the quality of life for the geriatric population.



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## 10. Ageing and Social Challenges

Dr Dilusha Lamabadusuriya

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The social environment in which people age is changing in Sri Lanka because of the changing size of families, the changing roles of traditional extended families and, most importantly, perceptions of intergenerational support and caring for older persons. There has been a shift from the dominance of the emotionally extended family to the emotionally nuclear family. It was shown that these informal protection mechanisms have been under increasing stress, owing not only to the process of population ageing but also to diminishing family economies, improved education of children, including women's education and higher female labour force participation, as well as the changing perceptions about caring for parents and older persons. This informal system of care has been put under further strain with the accelerated migration of working adults overseas, leaving behind older adults to manage on their own. Overall, the changes in family roles and their functioning have led to a reduction in the well-being of Sri Lankan older people.

In the present day, Sri Lankan older people have very limited access to formal mechanisms of social protection and hence rely mainly on their families and the local community for support. As the informal care system provided up to now by immediate and extended family is slowly disintegrating, the burden on the state to provide this care is rising. This area must be addressed by policymakers and planners.

The size of the older population living alone is of policy concern. Those living alone are

more likely to require external assistance in the case of illness or disability and are at

greater risk of social isolation. Furthermore, in Sri Lanka, a woman in 2001 was expected to live, on average an additional 21.6 years, compared to 17.7 years for men. Due to longer life expectancy, older women have a greater chance of exhausting their resources of income, thus making it difficult for them to bear age-related expenses. A significant number of them would be widowed. Hence, older women are likely to be more impoverished in their advanced ages.

## **CHALLENGES TO HEALTHCARE**

The healthcare needs of the seniors are unique and with the changing demographics, a robust healthcare system would have to be developed.

Increasing age is a risk factor for many non-communicable diseases such as diabetes, hypertension, dyslipidaemia and atherosclerotic disease. There are also many degenerative conditions associated with ageing such as osteoarthritis, osteoporosis, Parkinson's disease and dementia. Aside from these, conditions unique to older adults such as frailty and sarcopenia would be prevalent. In 2012, out of 2,520,573 older populations, 548,776 persons had had trouble in seeing (21.8%), 284,285 persons had experienced difficulty in hearing

(11.3%), 488,209 persons had experienced difficulty in walking (19.4%) and 208,657 persons (8.3%) had experienced difficulty related to cognition.

The older population are likely to be multi-morbid with complex interactions of health problems. The healthcare system will have to consist of multi-disciplinary teams including physicians trained in geriatric medicine, old age psychiatrists, nursing officers, physiotherapists, occupational therapists, speech and language therapists, nutrition specialists and social workers. These teams would have to be available in hospitals as well as in communities.

At present the health system is mainly geared for providing care for acute episodic conditions and not for holistic long-term care. The Postgraduate Institute for Medicine has been conducting a diploma course in geriatric medicine as well as a doctorate in geriatric medicine (MD). The Sri Lanka Association of Geriatric Medicine has been conducting a certificate course in geriatric medicine for nursing officers in collaboration with the Ministry of Health. All these programs would enable healthcare professionals to manage the health issues of older adults. An exclusive clinic for the geriatric population has been initiated and functioned in the Colombo South Teaching Hospital for the last few years but there are no other established units to provide care. The number and quality of caregivers are also not sufficient for current and future needs. While NVQ level 2 is established as a national qualification for

caregivers, Sri Lanka currently has no mandatory qualification requirements for caregivers, and it is possible to provide services to seniors without qualifications.

A robust family practitioner service, community care centres and institutes providing long-term care are sadly lacking. This requires investment in the training of more skilled professionals as well as substantial investment in infrastructure.

## **CHALLENGES TO SOCIAL SECURITY**

Economic inequalities exist both between older people and the rest of the population and among older people themselves, leaving many in financial hardship. Only a minority of the global population accumulates enough savings and other assets to provide for their economic security in old age. Many older people work until they are no longer able to or until they are legally required to retire, and then rely on family support and pensions, where they are available. According to the Census of Population and Housing 2012, the number of persons above 60 years and older who have been employed was 644,347. In other words, one in every four older people was employed while three-fourths of older people were economically inactive. For females and males aged 60 years or over who received pensions, monthly pension income averaged LKR 21,000 - 25,000 in 2016. Data from the Department of Pensions showed that in 2021 LKR 307,734 million has been paid as pension

gratuities. In 2015 this figure was LKR 127,288 million. Some pension income is also reported at younger ages by dependents entitled to survivor pensions, mostly from the Widows, Widowers, and Orphans Pension (WWOP) scheme paid to dependents of civil servants and armed forces after their death. The average total income received by a male aged 60 years or over was LKR 18,000 - 38,000 per month, while females aged 60 years or over received LKR 12,000 - LKR 19,000 in 2016. The 2006 Sri Lanka Ageing Survey revealed that more than half of EPF members spent their accumulated balances after withdrawal without keeping them for the future, while only 10% invested or saved the money. Most workers lack financial literacy and do not pay attention to old-age income security. A retirement planning survey in 2006 showed that around 58% of workers aged 29–59 were not planning for their retirement. This is particularly prevalent among casual workers and the self-employed. Despite the rapid rate of ageing in Sri Lanka, there appears to be little public awareness of the importance of saving for old age. In 2006, most older adults (87%) surveyed expected their children to provide financial support in their old age. Programs must be launched to educate young older adults regarding financial planning and prudent investment.

Government support for the economic well-being of the seniors is minimal. Table 1 summarises some support provided by the government for senior citizens.



<b>The financial aid</b>	<b>Financial aid provided by</b>	<b>The criteria to be fulfilled to become a beneficiary</b>	<b>Number benefitted</b>	<b>The amount given as financial aid</b>
Samurdhi (Flagship poverty alleviation transfer scheme) *	Department of Samurdhi Development	Families with incomes lower than LKR 6,000	18% of the population aged 65	
Pin-padi (Public assistance program) *	Ministry of Social Empowerment and Welfare	1. Older adults 2. Differently abled 3. Widows 4. Orphans		LKR 150-250 per household
Senior Citizens Allowance (Wadhiiti Saviyata Jeshta Purawasi Deemanawa)	Ministry of Social Empowerment and Welfare	1. Above the age of 70 years 2. Monthly household income of LKR 3,000 3. Living alone/ with a spouse 4. Without Children	13% (n=386,000) of people aged 60 and above	LKR 2000 a month
Senior Citizens Allowance for those aged 100 years and above (Siyawas Ayuu Sapiri Sri Lankeeya Jeshta Purawasi Pranama)	Ministry of Social Empowerment and Welfare	1. Above the age of 100 years		LKR 5000 / month
Welhai Amarena Kapakaru Sponsorship Scheme	Ministry of Social Empowerment and Welfare			Can receive LKR 500 from his/her
Awama Pahasukam Financial Assistance scheme		The beneficiaries are selected by the Divisional Secretary considering their needs		
Arogya Elder Medical Aid Scheme				
Diriya Piyasa Housing scheme		Age 60 and above with low income		LKR 700,000 per family

<b>Financial aid</b>	<b>Aid provided by</b>	<b>The criteria to be fulfilled to become a beneficiary</b>	<b>The amount allocated for the aid</b>
for elders	Ministry of Social Empowerment and Welfare	Age 60 and above	LKR 25,000 \ day centre
level elders' committees	Ministry of Social Empowerment and Welfare		LKR 5000 \ committee per month
pre-retirement seminars	Ministry of Social Empowerment and Welfare		
intraocular lenses for elderly cataract patients		1. Should receive less than LKR 3,000 per month 2. A prescription from a government eye surgeon	
of elders' homes			Providing financial aid to provisional councils
elders' identity cards	Ministry of Social Empowerment and Welfare	1. Aged 60 and above	
services for elders	Ministry of Social Empowerment and Welfare		Charges from elders 8h-day time-LKR 750 Night time-LKR 900
Maintenance board for elders	Ministry of Social Empowerment and Welfare	Those aged 60 and above	
Providing hearing aids	Ministry of Social Empowerment and Welfare	1. Age 60 years and above citizens with hearing defects 2. Should have an audiogram report	
Wedihiti Charika - Senior Citizens Pilgrimages travel program	Ministry of Social Empowerment and Welfare	1. Elder's association should apply for this program 2. A minimum of 50 people should participate	

\*Not specified for older population

## **CHALLENGES TO ECONOMY**

Although ageing will exert upward pressure on resource requirements and costs in the health sector, there is considerable uncertainty as to how large this will be. Health care spending forecasts developed for Sri Lanka suggest that ageing, the increase in the share of older adults in the population, would add at most 1% of GDP to Sri Lanka's health spending by 2101. These forecasts projected that older adults-induced cost increases would be partly offset by larger savings, from the reduction in the number of young children. Most studies postulate that the ageing population will have a negative influence on economic growth.

## **POSITIVE EFFECTS OF POPULATION AGEING**

Though Sri Lankan society is confronted with great social and economic issues associated with the rapid ageing process in providing better care and other social challenges, senior people still occupy a very significant place in the family and society. Most seniors are still cared for by the family and community because families as well as society consider the older adults not as a liability or burden to the children or family as a whole, but as a valuable asset to the family and society. Older people, especially those living in extended families, give considerable support to their families. Older parents continue to supplement family income and help with childcare or household work. In certain instances, old people are economic pillars of multi-generational families because they spend their pension incomes and savings on securing the livelihoods of their entire

family network. Moreover, in the social context, the seniors are wiser and have had considerable life experience to tackle family issues. Thus, they are consulted whenever important family decisions need to be taken, especially in rural areas. Hence, in traditional Sri Lankan families, the grandparents are still highly respected, and they are also consulted when important family events take. In particular, the young older adults (60-74) play key roles as chairmen or advisors to the social work activities in the community, mostly in rural areas, though this practice is not rare in urban areas, and they are highly respected as team leaders. In rural areas, most senior persons were selected unanimously as leaders of local communities and non-governmental organizations such as agricultural development societies, farmers' organizations, agricultural seasonal meetings, micro-credit union activities, irrigation and water management societies (*Wew Sabha*), village councils (*Grama Sabha*), unions for ladies' activities (*Mahila Samithi*) and other social welfare committees such as Death Benevolent Societies. Retired professionals are often called upon now to fill vacancies created by the migrating youth, especially in institutes of higher education. Therefore, the positive aspects of a large ageing population cannot be ignored, and maximum use of this precious resource must be made

## **CONCLUSION**

Addressing these ageing and social challenges in Sri Lanka requires a comprehensive approach involving government policies, community initiatives, and collaboration between various stakeholders, including government agencies, non-profit organizations, and the private sector. By recognizing the needs of older adults and implementing appropriate interventions, Sri Lanka can create a more inclusive and supportive society for people of all ages.

## **Further Reading**

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# 11. Impact of Gender in Ageing Communities

Dr Achala Balasuriya

Population ageing is accelerating substantially across the world, including that of the middle and low-income countries. The latest projections by the United Nations suggest that the global population could grow to around 8.5 billion in 2030, 9.7 billion in 2050 and 10.4 billion in 2100. In Sri Lanka, the population in 2021 was 22,156,000 according to the information available at the Department of Census.

In Sri Lanka, the population statistics show that 16.4% of the population is above the age of 60 years. Sri Lanka is witnessing an unprecedented rise of older people in the community. This demographic trend has major implications for the society and economy. As shown in Figure 11. 1 in Sri Lanka the population pyramid is shifting to a barrel shape with female preponderance in the community.

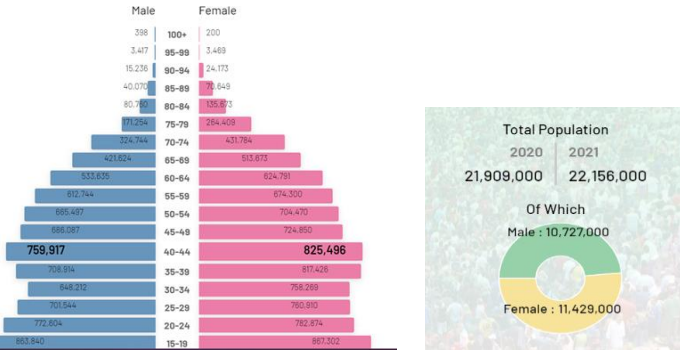


Figure 11.1  
(Data from Department of Census and Statistics Sri Lanka 2022)

The term sex refers to the biological differences that define male and female bodies. Men and women vary in many biological characteristics such as average height, weight, amount of body fat, amount of body hair and genitals. Biological differences between men and women are a universal concept. However, gender is a nonbiological, culturally and socially created distinction between men and women. Despite the advances that women have made in countries around the world, gender differences continue to serve as the basis for social inequalities.

Gender is a vital issue in economic power relations of the social institutions, the family, society, the state and even the world at large. Based on demographic data, older women outlive older men around the world. Gender differences in partnership status in later life have profound effects on the social and economic well-being of older men and women in gender-differentiated ways.

## **FEMINIZATION OF AGEING**

The world status of war had a bearing on the sex ratios favouring female predominance. The First and Second World Wars did have an impact on the sex ratios favouring female predominance both Globally as well as in Sri Lanka. Women continue to make up a growing majority of the older population. This marks the feminization of ageing.

Females accounted for about 56% of the total aged population; there were 289,000 older women than men in 2012. In the oldest-old group (80 or over), this proportion was 61%.

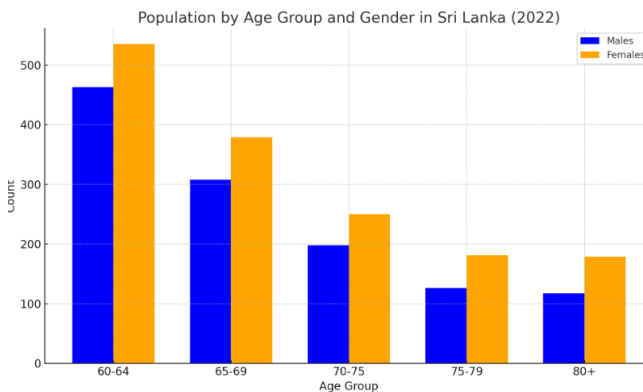
There were 94 males for every 100 females in the total population.

The current data (2022) shows that over 60 age group in Sri Lanka is 3,894,000 females 2,137,000 and males 1,757,000 (Figure 11.3). As the age advances gender disparity in survival shows female preponderance. The key feature observed in Sri Lanka is that females tend to live for an average of seven years longer than males, and in almost all older age cohorts; females outnumber males.

The demographic changes, the growing proportion of older women and men, and the related shrinking of the labour force bring opportunities as well as risks to the goal of gender equality.

While the demographic transition in the region is varied with some facing the change faster than others it is expected that by 2050 there will be an overall major change in the population structure with one in 4 people in the Asia Pacific region being older than 60 years.





*Figure 11.3 (Adapted from Registrar General's Department data 2022). Calibration in thousands.*

## **ROLE OF GENDER IN THE AGEING PROCESS**

Gender seems to influence ageing's physiological, anatomical, emotional, and cognitive aspects. Studies into the physiology of the ageing process show that gender differences influence it in biological processes of genetics and immunology. Certain studies show evidence that genetic polymorphisms like (A/C)-110 polymorphism in the promoter region of the HSP70-1 gene are associated with female longevity. Immunosenescence occurs earlier in men than women causing higher inflammatory responses associated with aging in men. Genetic differences also contribute to the differences in longevity between men and women. Men have one X and one Y chromosome, whereas women have two X chromosomes. Having two copies of genes of the X chromosome in women has been associated with longevity since it is thought to provide some protection from age-related disorders.

The role of the hormones becomes significant wherein testosterone delays immunological responses leading to faster deterioration of immunity in men. In women, oestrogen plays a protective role which delays atherosclerosis and has a better immune response. Women are also known to have a higher physiological reserve, i.e., higher capability to function under stress, than men, which causes them to accumulate more injuries over time, thus increasing morbidity. Research data has also shown disruption in metabolism and mitochondrial functioning in neuronal cells during the transition to the perimenopausal stage associated with lack of oestrogen. Hence, oestrogen may have a role in reducing the risk of dementia.

At the structural level, men, as they age, show greater volume reductions in the frontal lobes. In contrast, women tend to have prominent reductions in hippocampal and parietal lobe volumes leading to greater memory deficits. Generally, women perform better on tasks of verbal fluency and perceptual speed, while men have better visuospatial skills and mathematical reasoning. Nevertheless, these findings are inconsistent and heavily influenced by education and exposure to various literary and cultural activities. Regarding emotions, women experience more negative emotions such as nervousness, guilt, and hostility in old age compared to men. Emotional regulation strategies among older persons appear to show gender differences; suppression appears to be more common among women even though maladaptive strategies are seen equally among men and women. The emotional, cognitive, and

anatomical differences in ageing influence the further development of health problems in the older population.

## **GENDER AND HEALTH IN OLD AGE**

Frailty is a vital issue when considering healthy ageing in late life. Frailty is characterized by a progressive multisystem dysfunction that leads to physical and cognitive dysfunctions and increased vulnerability to adverse health outcomes associated with ageing. More than 10% of people above 65 years in the community are frail. A recent systematic review has shown that elderly females have a higher frailty index of 0.69 than men. This finding has been seen in a study from low- and middle-income countries, including India. The gender difference in frailty has been postulated factors like higher fatal comorbidities in men, a greater number of chronic health conditions in women, and higher accumulation of abdominal fat in women, which facilitates chronic inflammation. Besides, demands of pregnancy and child-rearing in women, or probable bias in reporting of poor health status by women are also contributory factors,

frailty is more prevalent in women (9 %) than in men. Moreover, the clinical manifestations of frailty differ between men and women. For example, men with frailty are more likely to experience sarcopenia, defined as loss of muscle mass and strength. Women, on the other hand, are more likely to experience a decrease in bone density and osteoporosis with age in addition to the functional decline, such as difficulty with activities of daily living (ADLs) and mobility. Additionally, men

and women experience different age-related comorbidities. For instance, while both men and women demonstrate cardiovascular pathologies with age, there is a clear difference in the prevalence of cardiovascular pathologies among the two sexes. For example, heart failure affects significantly fewer men than women. Comorbidities, defined as the simultaneous presence of two or more chronic medical conditions in an individual, can differ between older men and women. These comorbidities can increase the incidence of frailty, reduce longevity, and increase biological age. Socioeconomic factors can significantly affect the difference in frailty and longevity between men and women. Key socioeconomic factors include income and wealth, education, occupation, discrimination, sex-based violence, and health disparities and inequities.

## FACTORS AFFECTING LONGEVITY AND FRAILTY AMONG MEN AND WOMEN

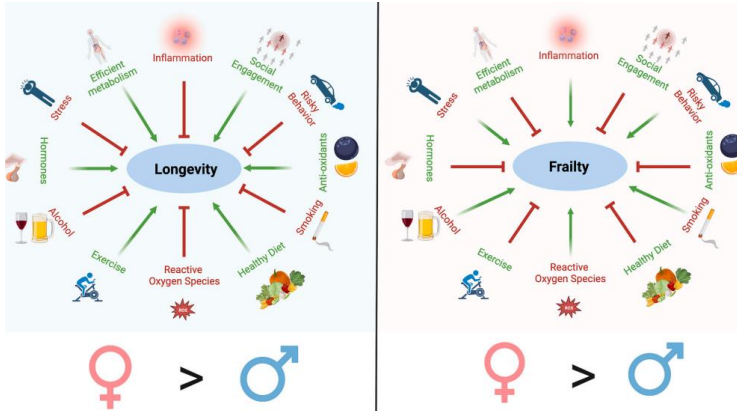


Figure 11.4 In general, women exhibit greater life expectancy or longevity than men. Various factors can impact longevity either positively or negatively in humans, as indicated by green and red arrows respectively. Frailty can also be influenced by multiple factors that can either positively or negatively affect it. Interestingly, it appears that factors that hurt longevity tend to have a positive effect on frailty and vice versa.

Multiple different factors affect longevity and frailty in men and women (Figure 11.4). Men and women have multiple differences in their biology, daily habits, hobbies and lifestyles, priorities, and life perceptions. The confluence of these dissimilarities collectively exerts an impact on the longevity and well-being (health and disease status or frailty) of an individual and, in a more general sense, on a particular sex.

Physical health problems form a major part of morbidity in the elderly. Noncommunicable diseases (NCD) form the major causes of disability-adjusted life years (DALY), more than 25000 per 100000 population. Even though NCDs were earlier considered mostly associated with men, current data shows that 75% of deaths and disabilities in women are attributed to NCD. In terms of major causes of mortality and morbidity, cardiovascular and cerebrovascular diseases are important in both genders. However, all the major causes of mortality like cardiovascular disease, neoplasms, stroke, and respiratory diseases show male preponderance (Table 11.1). Malignancies are another major health priority for ageing men and women. Lung, prostate, stomach, and colorectal cancer are the most common cancers in older males worldwide. However, in India, oral cancer has the highest incidence (57.6 per 100,000), followed by prostate, lung, and oesophagus in men. There are also chronic disabling conditions specific to men which need attention like urinary incontinence, benign prostate hyperplasia and erectile dysfunction. Breast, colorectal, lung, and stomach cancer form the four most common types of cancer among women. In India, breast cancer continues to be the most common cause (93.1/100,000), followed by the cervix, ovary, and oral cavity. Osteoarthritis and osteoporosis also form important causes of disability in ageing women.

Difference in Mortality Rates of Major Causes of Death Between Women and Men Between 60 Years – 64 Years Globally<sup>21</sup>

Major Causes of Mortality-Globally	Mortality Rate in Men Between 60 Years – 64 Years (Per 100,000)	Mortality Rate in Elderly Women Between 60 Years – 64 Years (Per 100,000)
1. Cardiovascular diseases	886.85	579.42
2. Ischemic heart disease	549.94	309.17
3. Malignant neoplasms	307.56	242.94
4. Stroke	270.61	198.70
5. Respiratory diseases	237.79	177.10

*Table 11.1*

Gender plays a crucial factor in mental health, with differences in incidence, clinical manifestation, and treatment outcomes. Common mental disorders such as depression, and anxiety are more prevalent in women than men. Older women report more depressive symptoms than men, even though depression decreases with age for both genders similarly. Depressed men have a higher risk of mortality compared to depressed women. Gender differences in depression could be attributed to differences in reporting, coping styles, and the influence of social and cultural norms.

In addition to the non-communicable diseases and mental health differences among the genders abuse in old age shows different patterns too. Elder abuse is defined as “a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person. It can be of various forms: physical, psychological, emotional, sexual, and financial, or reflect intentional or unintentional neglect, elder abuse is a major public health problem with a prevalence of 15.7% in

individuals above 60 years. While the limited data shows that older men and women are at equal risk of abuse, there are cultures where women have a higher risk of neglect and financial abuse with more severe forms of abuse.

## **GENDER DIMENSIONS IN LIVING ARRANGEMENTS WITH AGEING**

In most Asian countries the widely prevalent norm is for older adults to co-reside with children. This is rooted in the concept of filial obligations and reciprocity and is expected to enable the provision of direct support by family members to older adults. In recent years, however, there has been an increase in older adults living only with a spouse in two-member households. This results from adult children either having migrated for education or employment or having set up their independent households, as well as an increasing desire among older adults to maintain an independent household when their finances and health allow. Household surveys across Asia have shown that the proportion of older adults living alone, while still low, has increased in the past two decades. There are also gender differences in living arrangements, with studies finding that compared to older men, older women in various countries across South, Central, and Southeast Asia were more likely to live alone and less likely to live with a spouse.

A recent study done in Singapore assessing the living arrangements among older people shows that co-residence, with children in particular, has been found to contribute to improved physical and mental health through the receipt of



financial and material support, emotional support from kin, assistance with activities of daily living, greater access to health information and services, as well as cognitive stimulus received through grandparenting. It has also been shown that living alone is associated with adverse outcomes, such as greater depressive symptoms, short-term morbidities, unplanned and higher frequency of hospitalization, and a higher risk of falls. Research suggests that older adults who live alone have fewer sources of social support, decreased interaction with social network members, reduced life satisfaction and greater loneliness.

In Sri Lanka, the majority (67.6%) of adults over the age of 65, lived with their children and 19.1% lived with spouses only. Institutionalized older adults only consist of a very small part (1.2%) of the whole older adult population. Compared to male older adults, female older adults were less likely to live with their spouse only and were more likely to live with children. Similar trends were found in young-old aged 65–79 and oldest-old aged 80+ (Table 11.2).

## PERCENT DISTRIBUTIONS OF LIVING ARRANGEMENTS OF OLDER ADULTS, BASED ON 2012 CENSUS DATASETS, SRI LANKA

Age Groups Gender	65+			65-79			80+		
	Male	Female	Both Genders	Male	Female	Both Genders	Male	Female	Both Genders
Living alone	3.1	7.7	5.7	2.9	8.0	5.8	3.9	6.5	5.5
With spouse only	26.6	13.4	19.1	27.7	14.9	20.5	20.5	6.6	12.1
Subtotal of not living with children	29.7	21.0	24.8	30.6	22.8	26.2	24.5	13.0	17.5
Married, with children	57.3	40.5	47.7	58.2	41.4	48.7	52.2	36.5	42.7
Not married with children	6.7	29.9	19.9	5.1	27.7	17.8	14.9	40.2	30.2
Subtotal of living with children	63.9	70.4	67.6	63.3	69.0	66.5	67.0	76.6	72.9
Institutionalized	1.4	1.0	1.2	1.2	0.9	1.0	2.5	1.8	2.1
With others, not with spouse/child	5.0	7.5	6.5	4.9	7.3	6.2	6.0	8.6	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Table 11.2 (Source; micro sample datasets of the latest Population and Housing Census conducted in 2012).*

It is very interesting to note how the family arrangements will change in Sri Lanka in time to come as shown in the population projection. One generation households will steadily increase, and three generation households will gradually decrease with time. And the percentage of older adults living alone is on the rise (Tables 11.2 and 3).

	2012	2020	2030	2040	2050	2060	% inc. in 2060 vs. 2012
Living arrangements and population aging							
Percent of older adults aged 65+	7.87	10.64	13.70	16.01	18.79	20.61	161.9
Percent of oldest-old aged 80+	1.34	1.68	2.62	3.92	5.06	6.37	375.4
Percent of older adults aged 65+ not-living with child	0.45	0.83	1.09	1.24	1.38	1.46	224.4
Percent of oldest-old aged 80+ not-living with child	0.07	0.16	0.26	0.38	0.47	0.56	700.0
Percent of older adults aged 65+ living alone	1.50	2.20	2.79	3.29	4.00	4.49	199.3
Percent of oldest-old aged 80+ living alone	0.16	0.21	0.31	0.49	0.68	0.94	487.5
Number of older adults aged 65+ (million)	1.60	2.35	3.27	4.07	4.97	5.60	250.0
Number of oldest-old aged 80+ (million)	0.27	0.37	0.63	1.00	1.34	1.73	540.7
Total population size (million)	20.36	22.04	23.89	25.39	26.46	27.16	33.4
Households							
Total number of households (million)	1.07	1.30	1.73	2.13	2.50	2.84	165.4
Percent of households of older adults aged 65+	5.60	10.25	19.73	25.65	31.70	35.44	532.9
Average household size (persons)	3.73	3.54	3.34	3.18	3.05	2.95	-20.9
Percent of one-person households	7.18	8.52	9.87	10.52	11.06	11.52	60.4
Percent of one-person households of older adults aged 65+	2.23	3.13	3.83	4.20	4.59	4.84	117.0
Percent of one-generation households	20.36	21.33	24.83	27.26	29.46	31.50	54.7
Percent of two-generation households	60.75	62.88	62.93	62.99	62.65	62.00	2.1
Percent of three-generation households	18.89	15.79	12.23	9.75	7.89	6.50	-65.6

*Table 11.3 Source(s): micro sample datasets of the latest Population and Housing Census conducted in 2012.*

## HOUSEHOLDS AND LIVING ARRANGEMENTS PROJECTIONS IN SRI LANKA 2012-2060.

Traditionally the elderly have been cared for by family members, especially women. However, the changes in society such as the move to nuclear families, urbanization, migration, more women entering the labour force, etc. have affected this traditional system of care by family. Changing demographic factors (including higher divorce rates and the vanishing social norms that prescribe co-residence of old parents and adult children) contribute to smaller household size, and continuously and quickly increasing numbers of households in Sri Lanka.

## **INCOME SECURITY AND GENDER**

The gender dimensions of this demographic transition are stark. Although women in the Asia Pacific are less economically active than men and have less opportunity to accumulate savings, their life expectancy is longer, and therefore they have more years to support themselves with fewer accumulated assets. However, only about 20 per cent of women in the region are covered by pension schemes, compared to 35 per cent of women globally. Discriminatory retirement regulations in several countries also require women to retire earlier than men, further diminishing their chances to accumulate savings.

The report on the 'Gender pay gap in Sri Lanka' shows that women on average earn 27 per cent less than men for one hour of work. The gap is particularly large among women wage workers in the informal economy and among those with lower educational attainments. The gender pay gap in Sri Lanka is higher than the global average of about 20 per cent and higher than the average for lower-middle-income countries. The report further says that although differences in the endowments, job functions, and workplace characteristics contribute towards the observed gender pay gap in Sri Lanka it largely remains mostly unexplained and possibly driven by discrimination.

Due to entrenched social norms, women already shoulder most of the care responsibilities for other family members, and many older women in the region already care for grandchildren as well as ailing spouses. However, with limited savings and assets,

older women are less likely to be able to afford their health care and long-term care expenses, especially those living alone. Labour force participation declines with ageing and in males' employment rates are higher even with advancing age. This is reflected in skilled employment as well as in the unskilled labour market. Family commitments, caring for children and grandchildren and personal health issues may contribute towards this disparity.

In Sri Lanka, the labour force participation (LFP) for men is 74.5% while it is half that amount for women at 36.6%. Similarly, while the total unemployment rate is 4.2%, the unemployment rate for men is 2.9%, compared to 6.5% for women. A survey done in 2012 showed, one in every four older persons was employed while three-fourths of older persons were economically inactive. About 43% of older men were employed while only about 11% of older women were employed. One in every three older persons belonging to the young-old category was employed while middle-old and oldest-old were less likely to be employed which were approximately 15% and 8% respectively. Table 4 illustrates the gender pay gap that exists in selected countries in Asia. According to the information, it is evident that women's average earnings range from less than 50% in Japan to less than three-fourths in Countries like Thailand and Sri Lanka.

Although the literacy rates are high the employment prospects are still not equal in all fields for the females. Traditional cultural norms sometimes are a barrier for the females to engage in

certain employments and this trend continues to older age poverty and income security discrepancies among females.

### **GENDER PAY GAP- SELECTED ASIAN COUNTRIES**

<b>Economy</b>	<b>Year</b>	<b>Women's average monthly earnings as % of men's</b>
Hong Kong, China <sup>1</sup>	2006–2008	60
Japan <sup>2</sup>	2008	47
Malaysia <sup>2</sup>	2008	58
Republic of Korea	2006–2008	57
Singapore <sup>1</sup>	2006–2008	65
Sri Lanka <sup>1</sup>	2006–2008	77
Thailand <sup>1</sup>	2006–2008	75

*Table 11.4 Source- World Economic Forum United Nations*

Differences in income security in old age largely stem from the economic inequalities that individuals experience during their working lives. Strong evidence already exists to support the importance of the accumulation of advantages and disadvantages throughout the life course. Unlike in most highly industrialized countries, contributory pensions in middle-income countries have a minimal impact on income security in old age, particularly in contexts of high informality and non-standard employment.

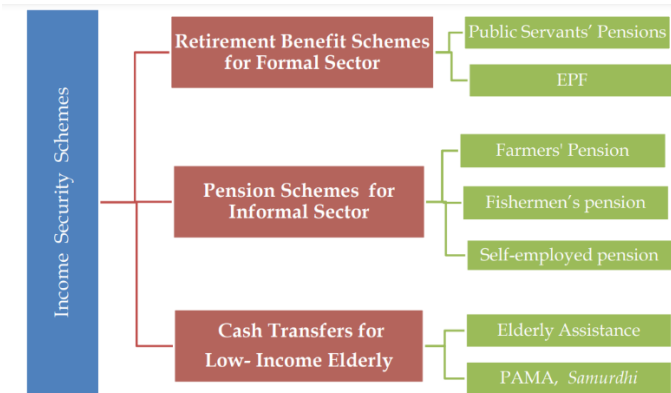
Employment prospects for older persons are influenced by the type of jobs that they can attain and by their workplace environment. Compared to prime-age workers, older workers are somewhat over-represented in self-employment, part-time work and unpaid family work. This situation appears to continue post-retirement age for those in work. Likewise, the

level of unemployment among persons nearing old age (55 to 64 years) can point to later vulnerability for those same groups in old age.

The type of pension schemes available can lead to large differences between countries in terms of income security and labour supply at older ages. Nearly half (48 per cent) of all persons over pensionable age do not receive a pension (ILO 2018). For many of those who do receive a pension, it is not adequate. As a result, the majority of the world's older women and men have no guarantee of income security and may continue working for as long as they can, often in badly paid and precarious conditions. Large differences also exist between countries and regions; residents of European countries are more likely to rely on pension income in old age, while those in Latin American and Asian countries have tended to rely more on work, personal capital and family networks.

In Sri Lanka, we do have a few pension schemes in place, but the coverage is only 50% for those above the age of 60 years. For the very low-income groups, we do have few pension schemes being implemented. However, the coverage is limited, and the amount paid is grossly insufficient to meet the daily requirements. The current pension schemes in Sri Lanka are shown in figure 11.5.

## PENSION SCHEMES IN SRI LANKA



*Figure 11.6 Source- Institute of Policy Studies Sri Lanka*

Social policy configurations can influence the distribution of opportunities in diverse ways, including women's participation in economic life. This can take the form of differences in paid employment, the skills and education acquired and the quality of jobs accessible, as well as differences in access to, and adequacy of, social protection. Non-standard work – typically part-time or temporary work, self-employment, and unpaid family work – is also more common among women and can widen gender-based inequality.

Although women live longer than men, they spend more years in bad health and are more economically dependent making them more vulnerable in their later years. Many women get married, have children and then become responsible for caring for their children and other family members throughout their lives. By the time they reach 60, they are unlikely to have been



employed for most of their life and therefore will have less financial security, with fewer savings and assets and no pension to support an adequate standard of living. They will become financially reliant on their families for an increasing period. This reliance can cause growing financial strain on families and can lead to the abuse, neglect, and sexual exploitation of elderly family members.

In Sri Lanka despite the current economic constraints government policies and planning should be revised to include more female labour force participation in all fields with no disparity among genders and also to cover low-income groups with pension schemes to minimize old age poverty and gender inequality in income. As women live much longer than males in Sri Lanka, female poverty among older people must be addressed as a matter of importance.

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## 12. Legislations, Policies and Social Services Related to Older Persons in Sri Lanka

Dr Shiromi Maduwage

### POLICIES AND LEGISLATIONS

The population of individuals aged 60 years and above were 12.4% in 2012 with an estimated rise to 25% by 2040, reflecting a notable demographic shift towards an ageing population. Therefore, one in every four persons in Sri Lanka will be an older person by 2040. The trends of the increasing older adult population have no exception from the global or regional trends. That is mainly due to the decline in fertility and mortality and the result of an increase in life expectancy.

*Figure 12.1. Number and percentage of population 60 years and over, 2012 to 2037, Standard Projection*

Year	Number	Percentage
2012	2,520,573	12.4
2017	3,130,740	14.6
2022	3,766,743	17.0
2027	4,320,258	19.0
2032	4,775,618	20.8
2037	5,118,094	22.1

Source: Dissanayake, 2016

Table 12.1 Population Projection of those above 60 years and above

The ageing population presents significant challenges, including escalating health and social care expenses. This phenomenon prioritizes income security, social protection health care and living conditions in old age as paramount social development priorities. Social consequences such as isolation, feminization of the ageing population and increased dependency levels are challenges that Sri Lanka is currently facing with the increasing ageing population. Health implications such as increasing non-communicable diseases, increasing disability rates, increased demands for health care facilities, increased rehabilitation and palliative care service needs and long-term care needs are on the rise. The National Survey on Self-Reported Health-2014 conducted by the Department of Census and Statistics (DCS) in Sri Lanka reported that almost 55% of its ageing population suffers from at least one chronic illness. Sri Lanka has a comprehensive healthcare system in the South Asian region, where the majority of the healthcare services are provided by the state sector, free of cost at the point of delivery.

The United Nations (UN) General Assembly adopted the UN principles for older persons and identified the global targets for ageing for the year 2001. These initiatives aim to incentivize national governments to develop tailored policies addressing the needs of the ageing population.

Since the ancient era legislative provisions were for the betterment of older adults The Vagrancy Ordinance No.5 of 1907, Widow and Orphan Pension Scheme Formulation of Act No. 83 Employees Provident Fund (EPF) in 1958 and the

Employees Trust Fund (ETF) were implemented during initial stages. For many years, the government of Sri Lanka has taken measures to address the social welfare of older persons on par with many policies, legislations and guidelines.

Sri Lanka has developed the National Policy for Older Persons and the Charter for Older Persons. These were adopted by the Cabinet in 2006. It was developed based on the Madrid Plan of Action focusing on ensuring an enabling and supportive environment and improving the health and well-being of older persons. Under those priority areas, seventeen strategies were identified. Almost all strategies are directly and indirectly involved in the prevention of elder abuse. The policy objective was to create a healthy environment for the older persons within the cultural mores, and religious practices, provide opportunities, removing barriers to people's participation and access to services across their life span. Further policy objective focusses on strengthening integration between generations young and old

Further to the National Policy for Older Persons, the National Plan of Action on Ageing was developed in 2010 from 2012 to 2021 focusing on the priority areas and strategies identified in the National Policy. At the same time to Protect the Rights of the Older Persons key document was developed. Act No. 9 of 2000 - Protection of the Rights of the Elders and amended in 2011 under Act No. 5

Act No. 9 of 2000 has established key components to enhance the social well-being of older persons. Such as the

establishment of the National Council for Elders (NCE) which comprises multisectoral representation of members from different ministries including Social Services, Health, Finance, older persons and community service organizations. Its key function is to promote and protect the welfare and rights of older persons maintaining UN principles of ageing.

The National Secretariat for Elders (NSE) is another key implementation of the act and is functioning as a decision implementation body of the National Council for Older Persons. Tasks are assisted at the community level by the Elder Rights Promotion officers who are attached to Divisional Secretariats and the Social Service Officers. The establishment of elders' committees at the village level, district level and provincial level was initially commenced by the National Elders Secretariat in 2003. It is progressing currently in the country having 12,000 village-level committees, 341 divisional-level committees, 25 district-level committees and 9 provincial-level committees. Engaging in activities related to the elderly committees helps to improve the physical, mental, and financial well-being of older people, ensuring improved quality of life.

Another key area highlighted in Act no 9 was the national fund and the maintenance board for older persons. The National Fund for Elders was established to address poverty among older persons and the maintenance board to look after the injustice or neglect of the older persons based on their claims.

The Directorate of Youth, Elderly and Disabled Persons Unit of the Ministry of Health, Sri Lanka developed the National Elderly Health Policy in 2017 for 07 years. It reflects the commitment of

the government to ensure comprehensive elderly health care services to all the older persons of Sri Lanka and it also supports other related policies and is intended to be complementary. The Elderly Health Policy has seven strategies which mainly focus on strengthening comprehensive health care services for older persons, establishing multi-sectoral collaboration for care at all levels, provision integrated services, promoting interventions to promote Healthy ageing, capacity building on service providers, promoting research and establishing information systems (Ministry of Health, 2017). This policy directs the activities carried out for service provision for older persons by the Ministry of Health with intersectoral collaboration. The National elderly health policy of Sri Lanka is supported by the elderly health care delivery plan and the results-based framework of the Directorate of the Youth, Elderly and Disability.

The major policy objectives of the National Elderly Health Policy of Sri Lanka are to ensure that:

1. a comprehensive package of health care services is available for elderly individuals so that ageing individuals maintain optimum levels of health.
2. health promotion and preventive health services are available throughout the life course for the entire population, so that ill health and disabilities are minimized during old age.
3. encouragement and guidance of all elderly health care providers including private sector and Non-Governmental Organizations.

4. elderly health care services are delivered equitably.
5. Well-trained human resources are available to manage elderly health care which includes preventive, curative, Palliative care, rehabilitative and long-term care.
6. empowering elderly care societies, volunteers, and the community at large, in all aspects of elderly care.

Demographic transitional changes have clearly stated that the population aged 80 years and above is increasing in the community and the prevalence of disabilities among them is high. Therefore, the identification of the priorities for disability care and rehabilitation among older persons has become a key consideration. To address the need National Disability Policy, The Protection of the Rights of Persons with Disabilities Act, No. 28 of 1996 and Disabled Persons (Accessibility) Regulations No. 1 of 2006 are already in place.

Care of older persons has many cross-cutting areas to be considered. Fulfilling the need some other policies such as the National Non-Communicable Diseases Prevention policy and strategic plans, cancer control, palliative care policy and strategic plans, and multisectoral action plan on injury prevention are already addressed the policy directions for older persons.



## **SOCIAL SERVICES**

The establishment of daycare centres at the community level is identified as a successful intervention for community elder care services. Establishing Elderly Day care centres will reduce the burden on informal caregivers. Elderly day-care centres will provide ageing adults with many activities to overcome their loneliness, and mental wellbeing with social interaction, educational activities, and opportunities to improve their health and wellbeing. Even some have facilities for income-generation activities. The establishment of day centres is promoted by the National Secretariat for Older Persons providing facilities including financial assistance and currently, there are more than 150 functioning day centres island wide.

Village-level committees for older persons operate across the island to assist older individuals in accessing these social services at the community level. Divisional-level committees for elders were established to expand and make the services of village-level committees more meaningful. Within these Elders Committees, older adults are empowered to protect their rights and promotion of well-being. Activities are implemented to empower older people to be strengthened in self-determination. NSE extends financial and technical assistance to elder committees at different levels. These elderly committees carry out many social activities such as pilgrimages, celebrating religious and cultural festivals and some income-generating activities and health & wellness activities.

In community settings mainly informal caregivers provide elder care services. Within and out-migration, globalization and urbanization elderly care in the community has become more

challenging. It is currently an unmet demand in the country due to a lack of infrastructure, human resources and the unavailability of a comprehensive sustainable service system in collaboration with all the stakeholders. Facilitation of informal caregiver capacity building on community setting care provision for older persons is in progress by the social welfare providers of the state sector. The rate of progress such priority-based services at the community level including home-based care has a long way to go to reach the goals within the country as most of the older persons are living in the community.

Evidence-based information confirms that 3% of older persons are living in long-term care facilities for older persons. Out of the registered long-term care facilities/ elderly homes, 349 only six are owned & managed by the state sector and out of those six three are managed by the central level administration and the rest of the three elderly homes are by the provincial authorities.

Regularization of the registration of long-term care facilities is the task of the National Secretariat for Older Persons. Improving the standards, registering process and monitoring & evaluation are some of the key concerns identified and actions are in progress to promote quality care and regulations to be in place of elderly homes in the country. Multi-stakeholder involvement in improving the quality-of-care provision in elderly homes is in progress. Nutritional guidelines have already been developed and advocacy programmes for the administration staff of elderly homes are progressing in collaboration with the Ministry of Health. Further mobile health

camps, informal caregiver programs and programmes to promote intergenerational solidarity are in place as collaborative activities.

In addition to state sector social care provision for older persons, many community-based volunteer organizations do many activities for the well-being of older persons. HelpAge Sri Lanka and Sarvodaya are some of the leading community-based organizations for the social well-being of older persons.

Older persons who are below the poverty are identified as the needy older persons for financial assistance and Needy elders across the country are paid an allowance of Rs. 2000 per month. In 2019, a total of 416,000 elders were paid this allowance. Social Security Fund has been established through a deduction of Rs. 100.00 from the Rs. 2000.00 allowance provided per person. Further, there are several social security schemes of the Ministry of Social Services of Sri Lanka for different categories of people to support them in their old age, such as Farmers' Pensions, Fishermen's Pensions and Self-Employed Persons' Pensions

A network of counsellors through the Social Services Department, who could be utilized for the provision of services for the elderly, as well as to their caregivers if needed.

Older persons were issued an identity card by the NSE to receive some identified benefits for them such as a 5% discount for their medicines from 'Osuhalu' pharmacies.

Under the provision of social welfare activities, NSE is in progress with giving allowances for the identified chronic diseases in older persons and assistive devices in collaboration with Social Service sectors and assistance for cataract surgeries for older persons.



*Figure 12.1 Integrated care model for older persons, Directorate of YED, Ministry of Health*

Sri Lanka has many policies, legislations, guidelines and protocols in relation well-being of older persons. Recommendations are in place to overcome the challenges for the implementation of the policies into action. But still turning policies, regulations, guidelines and protocols into action to address the needs of older persons is a challenge. The process of population ageing in Sri Lanka carries the potential to

impose a substantial burden on the economy, potentially hindering economic growth if appropriate policies and legislative measures are not enacted to effectively address the implications of ageing.

Some of the policies, acts and guidelines require urgent revisions to match the current demands and unmet needs of older persons. With the prevailing economic issues in the country, budget allocations are challenged as resources are often limited. Societal attitudes towards ageing may hinder policy implementation with ageism which potentially influences decision making. Addressing ageism requires a shift in cultural perceptions and commitments to promote dignity and respect for older persons. Further multisectoral coordination towards different services may be complex. The demographics of female older persons living alone is a matter of policy concern due to their heightened vulnerability to social isolation. Evidence shows that older women are particularly at risk of poverty compared to men often due to factors such as widowhood and lack of employment opportunities in later life. Though the existing policies and legislations have mentioned the fact the weight of the problem at present situation is high compared to earlier. Such issues and challenges need to be addressed in policies and regulations on par with the current demographic and epidemiological transitions of older persons.

The evolving dynamics within families have implications for intergenerational transfers between older and younger family members. Research indicates that such transfers are most pronounced in households where multiple generations reside

together. However further evidences are required to formulate comprehensive policy directives as current research in this area is limited. Therefore, there is a pressing need for policies that prioritize the promotion of research, particularly focusing on micro-economic aspects of the ageing population.

Tailoring policies to meet the unique needs of a diverse elderly population is essential for equitable outcomes. Factors such as ethnicity, socioeconomic status, and cultural background can significantly impact the experiences and requirements of older persons. These national and provincial level reforms on the care of older persons are important. To assess the impact and steps for further improvement in future policies, it is important to have updated information about the level of awareness and practical problems faced by older adults and care providers and professionals dealing with them. Therefore, it is important to focus the capacity building of all care providers on aged care in future reforms of policies and action plans.

Policymakers need to consider these factors to develop inclusive strategies to address specific challenges. Focusing towards innovative solutions through re-engineering systems via policies and regulations is a timely need to utilize existing resources to their maximum.

## Further Reading

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### 13. Legal and Ethical Considerations in Ageing

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#### **CAPACITY AND COMPETENCE**

As people advance in age, they experience gradual cognitive decline or may experience episodes of unconsciousness that might affect their ability to make decisions about their health, financial matters and personal matters. These are real challenges experienced by healthcare professionals. Hence the two terms, capacity and competency are very much applicable while managing elderly people. The terms capacity and competence may be used interchangeably, however, there are distinct differences as well.

The concept of autonomy should comprehensively be evaluated under ethical and legal principles in each elderly patient very similar to any other patient. Not only that there should be a balanced assessment of the emotional, cognitive and communicative abilities of the patient to arrive at the best decision. To achieve the best for the patient, there should be an accepted procedure to be followed. The patient's decision-making capacity is to be assessed by the treating healthcare professionals.

#### *Capacity*

Decision-making capacity (DMC) refers to an individual's ability to understand and remember information relevant to a particular decision and use this information to make and communicate a choice. During this process, it's crucial to provide support to the individual, such as assistance from family or friends and using simple language to aid comprehension. If the individual cannot fulfil one or more of these criteria, they are considered to lack capacity. Importantly, capacity assessment is both decision-specific and time-specific. This means that a person may have the capacity for certain decisions but not others, and their capacity may fluctuate over time, especially in cases of progressive conditions like dementia.

In Sri Lanka there are no stipulated laws to assess the DMC of the elderly, however, in Western countries, it has been recognized and special laws have been adopted. In England and Wales, the Mental Capacity Act (MCA, 2005), ensures the decision-making capacity of elderly people by themselves when the patient is capable enough. According to the Mental Capacity Act (MCA), the initial step in assessing capacity is to ascertain whether there exists "an impairment of, or a disturbance in the functioning of, the mind or brain" that could potentially impact a person's ability to make decisions. Subsequently, the assessment involves four key elements:

- *Understanding*: The individual must demonstrate the ability to comprehend the information relevant to the decision at hand.

- *Retention*: They should be capable of remembering the information provided.
- *Weighing*: The person needs to be able to evaluate the risks and benefits associated with the decision.
- *Communication*: They must be able to effectively communicate their decision to the assessor, using any means necessary.

Therefore, all relevant information must be disclosed to the subject, the subject must understand what has been conveyed, and the subject must make a voluntary choice either accepting or refusing what has been offered or proposed.

### *Competency*

Patient's competency in certain life situations should be thereafter analysed. This includes financial matters, living in solitude, driving, sexual matters, remarrying or companionship etc. The assessment goes beyond the expertise of health care professionals necessitating multifaceted evaluation. Determination of 'competence' in such instances at times is interconnected with long-term consequences, e.g. Guardianship arrangements in assets etc. While healthcare professionals, family members, and relatives may provide valuable input and evidence in the assessment of an individual's competence, ultimately, a legal determination must be made by a court to ensure legal validity and protection of the individual's rights. Medical assessment, functional assessment of the patient by an occupational therapist and then the totality of the picture is to be taken into consideration by the court

ensuring the individual's rights to protect the elderly patient and her best interest.

It is acknowledged that determining competency is usually outside the scope of work for healthcare providers. Nonetheless, these experts contribute important knowledge and insights to the assessment process, which makes them indispensable. Four components have been identified though there are no well-agreed guidelines.

1. Clinical and diagnostic interview

The clinical and diagnostic interview is one of the most important parts of competency evaluation. During this interview, the person's functional abilities, emotions, and relevant medical, social, and environmental aspects will all be thoroughly explored. The assessment procedure is further enhanced by feedback from collateral informants, such as family members or treating clinicians. Through the integration of structured competency interviews with regular clinical interviews, healthcare professionals aid in the development of a thorough awareness of each patient's situation, which in turn helps to make well-informed competent decisions.

2. Neuropsychological evaluation

Neuropsychological assessments play a central role in evaluating competency by targeting cognitive constructs relevant to specific capacities. While they can identify impairments or decline in certain

neurocognitive domains, their effectiveness is enhanced when combined with structured interviews or daily living scales. Importantly, individuals can still demonstrate competence in certain domains despite significant impairments in neuropsychological measures. For instance, even with declines in decision-making brain regions like executive function or working memory, individuals may compensate using intact cognitive abilities or external aids such as memory aids.

3. Functional ability assessment

This evaluation involves observing how well individuals meet daily living demands, such as personal independence and social interactions. Tools like the Vineland Adaptive Behaviour Interview and the Scales of Independent Behaviour-Revised assist in this assessment, though reliance on self-reports or informant scales is common. Given the challenge of accurate self-reporting, caregiver or family input is vital, emphasizing the collaborative nature of competency assessment.

4. Review of legal standards

Practitioners must understand state legal standards for determining competency, especially in the United States where adults are presumed competent unless proven otherwise. Clear and convincing evidence is required to establish incompetency, as competency

rulings have significant implications in civil and criminal matters. Balancing patient safety with respect for individual rights presents an ethical challenge, emphasizing the importance of upholding basic human rights while ensuring public safety.

### *Legal Standards*

Practitioners must possess a thorough understanding of the legal standards of a given country to determine the competency of a patient. In the United States, adults are presumed competent unless proven otherwise, and incompetent rulings carry significant legal ramifications. Balancing patient safety with respect for individual rights poses an ethical challenge for practitioners. Importantly, competency is not a fixed state but rather dynamic and subject to change. Interventions, such as environmental modifications or treatments, may enable compromised individuals to fulfil specific tasks. Therefore, clinicians may delay final capacity determinations until the potential benefits of interventions are evaluated. For instance, despite significant memory dysfunction, individuals might make successful decisions with the aid of written cues or environmental adjustments, underscoring the need for a cautious approach to capacity assessments.

### *General and Specific Competency*

General Competency is an individual's overall ability to manage their personal and financial affairs and make everyday

decisions. General competency is often assessed in broader terms, considering the individual's overall cognitive and functional status. It includes the ability to live independently, maintain personal hygiene, and manage routine financial transactions.

Specific Competency refers to the ability to make decisions or perform specific tasks. For example, a patient may be evaluated for their competence to consent to a surgical procedure, make complex financial decisions, or decide on living arrangements. Specific competency assessments are tailored to the particular decision at hand and often involve a detailed evaluation of the cognitive and functional abilities required for that decision.

Any adult should be considered to have intact capacity unless provided with appropriate assistance and background, it is obvious that they are unable to understand, retain, use or weigh up the information that is needed to come to a decision or to communicate their wishes. All medical professionals assume that every adult patient has the cognitive capability to make decisions about their care and treatment. It should not be presumed that a patient lacks capacity only based upon advanced age, disability, appearance, behaviour, medical condition, beliefs, apparent inability to communicate or for the reason that one can't come to the decision that others disagree with or consider unwise. In all circumstances, if there is uncertainty additional assessment may be obtained from a psychiatrist. Decisions should be made with the agreement of the patient or in the case where the patient lacks cognitive capacity, the doctor shall decide on behalf of the patient by acting in good faith and the best interests of the patient. Keeping the family and caregivers informed, is good clinical

practice. When multiple medical specialists are involved in the care of the patient, the decision should be the consensus decision of the multidisciplinary team.

If an adult patient cannot decide, it is the doctor primarily caring for the patient who should make medical decisions on behalf of the patient in concurrence with other members of the health care team. The decisions made on the patient's behalf must be based on whether treatment (including the option not to treat) would be in the best interest of the patient.

In patients with intact cognitive capacity, the doctor should assess the condition, taking into account the patient's medical history, views, experience and knowledge. Using specialist knowledge and experience with clinical judgement and taking the patient's views and understanding of their condition investigations or treatments which are likely to serve the best interests of the patient should be decided. The doctor then should explain these options to the patient, setting out the potential benefits, burdens and risks of each option. A particular option which they believe to be best in the given circumstances for the patient should be recommended. However, there must not be exertion of pressure on the patient to accept their advice. The patient then should weigh up the potential benefits, burdens and risks of the various options as well as any non-clinical issues that are relevant to them. The decision whether to accept any of the options and, if so, which is made thereby. Patients also have the right to accept or refuse an option for a reason that may seem irrational to the doctor



or for no reason at all. The patient may opt to involve his/her family in making decisions.

In patients who lack the cognitive capacity to make a decision, the doctor should assess the patient's condition taking into account the patient's medical history and spouse/guardian/next-of-kin's knowledge and experience of the condition. Specialist knowledge, experience and clinical judgement, together with any evidence about the patient's views (including advance statements, decisions or directives), to identify investigations or treatments that are clinically appropriate and are likely to result in overall benefit for the patient.

The next-of-kin may want information about the patient's diagnosis and the likely progression of the condition or disease, to help them provide care and recognise and respond to changes in the patient's condition. If a patient has the cognitive capacity to make decisions, the doctor should obtain consent from the patient to share such information. If a patient lacks cognitive capacity, it is reasonable to assume that, unless specified otherwise, the patient will want those closest to him/her to be kept informed of relevant information about their general condition and prognosis.

When discussing patient issues with people who do not have the legal authority to make decisions on behalf of a patient who lacks cognitive capacity, the doctor should make it clear that their role is to advise the healthcare team about the patient's known or likely wishes, preferences, feelings, beliefs and values. The doctor must not give them the impression that they are being asked to make the decision.

If the patient asks to request treatment that the doctor considers clinically inappropriate, the doctor should discuss the issues with him and explore the reasons for the request. If, after discussion, the doctor still considers that the treatment would not be clinically appropriate they need not have to provide the treatment. They should explain their reasons to the patient and explain any other available options, including the option to seek a second opinion and/or transfer care to another doctor with the proviso to terminate the existing doctor-patient relationship.

With the above description, it is clear that managing of elderly population needs a multidisciplinary approach. The decision-making capacity is related to health decisions, and it is performed by a physician while in the context of competency assessment, it is a legal decision that will be taken with the help of the clinicians, and family members based on the legal principles.

## **CONSENTING & REFUSAL**

Getting informed consent is essential to practice medicine, and it is the legal and ethical duty of all doctors to get consent from their patients before performing any kind of invasive medical procedure. The process by which patients' consent is obtained to a medical operation or treatment is known as informed consent. The procedure that is to be followed during the process of informed consent encompasses an in-depth dialogue between the physician and the patient, including all pertinent facets of the suggested course of action, side effects, alternatives, cost, etc. If consent is freely offered by a

competent upon a well-informed process without any undue pressure, it is considered legitimate.

Many ethical and legal challenges surround the informed consent of elderly people. The ultimate purpose of informed consent is to promote autonomy while protecting the rights of the elderly from getting undesired treatments and to obtain medical care decisions on par with his or her values.

The concept of informed consent is based on two concepts: firstly, the patient has the right to receive sufficient information to arrive at an informed choice regarding medical management and secondly the patient has the right to accept or to decline the physician's recommendations.

One important aspect of informed consent is determining how much information a doctor should divulge to the patient, especially concerning rare or very rare side effects or complications. On the other hand, there is a responsibility that lies on patients as well to inquire about their concerns. Health professionals are then strictly bound to provide comprehensive information understandable to the patient.

If a side effect is rare but potentially life-threatening, the doctor must inform the patient about this risk as an accepted practice based on the newer trends in medical practice. This practice may be under the purview of 'reasonable doctor practice'. According to the General Medical Council (GMC), there is a statement included 'while obtaining consent from patients a medical professional should act reasonably'. The GMC does

not, however, define reasonableness; instead, physicians are expected to ascertain the meaning of this directive. However, healthcare professionals must adhere to existing guidelines, ensuring that patients receive all relevant information to make informed decisions about their care.

Health professionals are shifting from 'medical paternalism' (the belief that the doctor knows what is best for the patient) towards new patient-centred standards. The greatest way to support high-quality healthcare decisions is through 'shared decision-making', a cooperative communication process between patients and physicians that combines the best available evidence with the patient's beliefs and preferences. This is the point where 'reasonable patient standards,' in contrast to 'reasonable physician standards,' become relevant during the process of informed consent.

However, the principle of informed consent emphasizes the balance between not overwhelming the patient with information and ensuring that they are aware of significant risks, no matter how rare where it is applicable to make their informed decision. By following this approach, medical professionals uphold their ethical responsibilities and in turn respect patients' autonomy when they happen to make their healthcare decisions.

It is a well-known truth that all bodily functions gradually decline as people age. Hence, obtaining consent is not as simple as obtaining consent from young people since they may be suffering from inherited disease entities that might go hand

in hand with advanced age. Dementia, mild cognitive impairments (cognitive impairments), vision problems and hearing loss (sensory deficits), language barriers and aphasia (language barriers), lack of health and general literacy (educational and literacy levels), factors such as fear, anxiety (psychological factors), lack of motor skills and dependency, isolation (social and family dynamics) are such barriers that may hinder the normal process of obtaining informed consent from elderly people.

As a result, for all elderly people where applicable the facilities available for communication should be developed appropriately, e.g. By providing adequate time with written materials, obtaining assistance with hearing aids, making an environment with empathy, paying attention to cultural sensitivity, the inclusion of family members when indicated while paying attention to capacity and competency as we have described earlier.

Another important aspect of informed consent is its adequacy. For informed consent to be considered satisfactory, three acceptable legal approaches must be met:

- (1) Subjective standard: What would this patient need to know and understand to make an informed decision?
- (2) Reasonable patient standard: What would the average patient need to know to be an informed participant in the decision?
- (3) Reasonable physician standard: What would a typical physician say about this procedure?"

However, all elderly people with legal and clinical capacity have the right to refuse any medical care. Informed refusal is defined as "where a person has refused a recommended medical treatment based upon an understanding of the facts and implications of not following the treatment". Though it is simple to be mentioned like this, imagine a situation with suicidal ideation but with sound legal and ethical capacity who wishes to go home before completing his treatments. Does he still have the right to refuse to leave or not? In such a situation, there may be limitations to his autonomy, if the patient decides without proper understanding of the situation at hand. If this patient is discharged and subsequently commits self-harm, health professionals may face legal and ethical repercussions, particularly if the patient's mental health status is not evaluated. On the other hand, if he is mentally sound, understands all the potential consequences, and still chooses to decline further treatment, this constitutes an informed refusal.

To elaborate further with an example: While a patient with an acute heart attack has the right to informed refusal, it is essential to ensure that this refusal is truly informed, and that the patient fully understands the life-threatening risks involved with his disease. The healthcare team must take all possible steps to persuade the patient to accept treatment, document the process thoroughly, and involve legal and ethical advisors if necessary. If the patient is assessed to have the capacity to make an informed decision and still refuses treatment, their autonomy must be respected, but with careful consideration and documentation of the entire process.

A health personnel cannot get away indicating that 'the patient refused the treatment'. Healthcare professionals must have a comprehensive discussion with patients who refuse treatment to comprehend their rationale. This conversation provides a chance to address any misunderstandings or false notions that could be addressed with more details or explanations. Patients may be suffering from marginal mental illness and hence a comprehensive examination is mandatory to diagnose such situations. Whatever the situation at hand medical professionals should ensure that the consent in old age should encompass ethical dimensions, being respectful, and the patient is legally sound.

Informed consent and informed refusal offer rightful opportunities for competent elderly patients to ensure that their health-related decisions are ethically, respectfully, and legally aligned with their well-being and autonomy.

## **ANTICIPATORY CARE**

The process of discussing the type of treatment and care that a patient would or would not wish to receive if they lose the cognitive capacity to decide or are unable to express a preference is considered anticipatory or advanced care planning. It ensures that the provision of medical and nursing care is consistent with their values, goals, and preferences. Generally, in a preferred place of care, the persons making decisions on their behalf and the extent of the intentions of treatment are addressed. A clear record ensures that care is planned and delivered in a way that meets their needs.

Emotional distress and other pressures present in situations approaching the end of their life need to be considered. These should be minimised by early, sensitive discussion. Each individual's physical, psychological, social and spiritual disposition and dimensions should be considered to consider the appropriate time to discuss anticipatory care.

Impairment of cognitive capacity can occur as it progresses or is otherwise threatened with loss or impairment of the same. This is a foreseeable possibility. The doctor should facilitate thoughts on what he/she might want in such a situation. These wishes and concerns need to be discussed with the healthcare team. The patient's wishes, preferences or fears concerning their future treatment and care including admission to intensive care and organ support should be addressed. Feelings, beliefs or values that may influence preferences and decisions need to be borne in mind. Family or any legal proxies that the patient would like to be involved in decisions about their care should be brought into the picture.

Interventions that may be considered or undertaken in an emergency, such as cardiopulmonary resuscitation (CPR), organ donation and requirements for religious, spiritual or other personal support should be addressed.

Some individuals may worry that they will be unreasonably denied certain treatments at the end of their life. They may wish to make an advance request for those treatments. Some approaching the end of life may want to retain as much control



as possible over the treatments they receive. They may want a treatment that has some prospects of prolonging their life, even if it has significant burdens and risks. Another set of patients may worry that towards the end of their life, they may be given medical treatments that they do not wish. They may want to make their wishes clear about treatments in circumstances that might arise during their future care. When discussing any proposed advance refusal, the doctor should explain to the patient and document how such refusals would be considered if they go on to lose the cognitive capacity to make decisions about their care.

If a patient loses cognitive capacity the doctor must provide any treatment that is in the best interest of the patient. This includes acting in good faith with diligence in the absence of collateral purposes and maleficence. When assessing overall benefit, the patient's previous requests/wishes, what is known about their preferences, and the goals of care at that stage

The doctor must make an explicit record of any discussion and the decisions made in the patient's medical notes (bed head ticket and clinic book). The record of the care plan should be made available to the patient and conveyed to the health care team. If the patient consents, they should be shared with others involved in their care, so that everyone is clear about what has been agreed. If a patient makes an advance refusal of treatment, the patient should be encouraged to share such information with the next-of-kin/legal proxy/legal guardian, with other doctors, and with key health and social care staff involved in their care.

Anticipatory care plans need to be reviewed and updated as the patient's situation or views change. A patient's condition may

improve unexpectedly or may not progress as expected. Furthermore, their views about the benefits, burdens and risks of treatment may change over time. There should be space and consideration to review decisions. New decisions about starting or continuing with treatment may be needed in light of changes in the patient's condition and circumstances. The doctor should not withhold information necessary for making decisions apart from circumstances in which a patient refuses information.

The family etc. may request the doctor not to disclose distressing information based on their desire to protect the patient or prevent the patient from losing hope. In such situations, the clinician should attempt to understand the family's perspective assuming that the request is based upon care and compassion for the patient. Every attempt should be taken to understand their reasoning, experiences, and goals associated with this request. They need to be explained about the harm of non-disclosure of information which often leads to an unfulfilled life and obscures the opportunity of a good death. It is important to inform the family that one acts in veracity if the patient asks directly for information, but will go slowly with caution, being sure you understand the question being asked.

CPR interventions are invasive with chest compressions, electric shock by an external or implanted defibrillator, injection of medicines to stimulate the heart and ventilation. If CPR is not successful in restarting the cardiac rhythm and restoring circulation in time, it may mean that the patient either dies in an undignified and traumatic manner or ends up with irreversible hypoxic brain damage.

If cardiac or respiratory arrest is an expected part of the dying process CPR will not be successful. Decision and recording of an advance decision not to attempt CPR ensure that the patient dies in a dignified and peaceful manner. There is also space to ensure that the last hours or days are spent in their preferred place of care by avoiding emergency admission from a community setting. These management plans are called 'Do Not Attempt CPR' (DNACPR) decisions. If a patient has an existing condition that makes cardiac or respiratory arrest likely, establishing a management plan in advance will help to ensure that the patient's wishes and preferences about treatment can be taken into account and that, if appropriate, a DNACPR decision is made and recorded.

Both CPR and DNACPR are medical decisions. These decisions are based upon the patient's medical condition, which would determine the consensus medical judgement as to which would be in the best interest of the patient. The onus of deciding the overall benefits and burdens of CPR lies with the doctor and the healthcare team.

If a patient is at a foreseeable risk of cardiorespiratory arrest and it is considered that CPR is not in the best interest of the patient, the doctor shall carefully consider whether it is necessary or appropriate to tell the patient that a DNACPR decision has been made. The doctor should never make assumptions about a patient's wishes but should explore sensitively how willing they might be to know about a DNACPR decision. While some patients may want to be told, others may find discussion about interventions that would not be clinically appropriate, burdensome and of little or no value.

In a patient with a life-limiting illness, if CPR may be successful in restarting a patient's heart and breathing and restoring circulation, the benefits of prolonging life must be weighed against the potential burdens and risks. The doctor should offer opportunities to discuss whether CPR should be attempted in the circumstances that may accompany a future cardiac or respiratory arrest. These discussions should be approached sensitively, and the patient should not be forced into a discussion or information if they do not want it. However, if they are prepared to talk about it, the doctor must provide them with accurate information about the burdens and risks of CPR interventions, including the likely clinical and other outcomes if CPR is successful.

Some patients may wish to receive CPR when there is only a small chance of success, despite the risk of distressing clinical and other outcomes. If it is the considered medical judgement that CPR would not be in the best interest of the patient, the doctor shall ensure that the patient has accurate information about the nature of possible CPR interventions and, for example, the length of survival and level of recovery that they might realistically expect if they were successfully resuscitated. The doctor shall explore the reasons for the patient's request for CPR and recheck that he/she understands the reasoning of the clinical judgement that CPR would not be in the best interest of the patient.

Any discussions with a patient and with next of kin/legal proxy/legal guardian, about whether to attempt CPR and any decisions made, shall be documented in the patient's record or advance care plan. If a DNACPR decision is made and there has been no discussion with the patient because they indicated a wish to avoid it, or because it was the considered view that

discussion with the patient was not in the best interest of the patient, this shall be noted in the patient's records. It shall be made clear to the healthcare team, the patient and next-of-kin/legal guardian that a DNACPR decision applies only to CPR, and it does not imply that other treatments will be withdrawn or withheld. Other treatment and care shall be provided if it is clinically appropriate and agreed to by a patient with cognitive capacity, or if it is in the best interest of the patient who lacks cognitive capacity.

A DNACPR decision should not override the clinical judgement about CPR if the patient experiences cardiac or respiratory arrest from a reversible cause or if the circumstances of the arrest are not those envisaged when the DNACPR decision was made. DNACPR decisions must be regularly reviewed and if appropriate, withdrawn if the patient's clinical status has improved. Such changes shall be communicated to all members of the healthcare team caring for the patient.

The goals of intensive care are to return patients to a quality of survival that is acceptable to them, to reduce disability and, if these are not possible, to compassionately support the dying process. At all times, the aim is to minimise suffering. Intensive care treatment is often lifesaving for patients with reversible critical illness. As predicting the survival of an individual critically ill patient is imprecise, all patients should receive simultaneous attention to both therapeutic medical interventions and to ensure their comfort and controlling distressing symptoms. The balance of attention may shift between these objectives during the patient's critical illness,

including the possibility that the only objective may be patient comfort and symptom control.

There is a moral obligation to inform the cognitively competent patient/legal guardian with honesty and clarity, the prognostic status of the patient when further aggressive support appears non-beneficial. The doctor is expected to initiate discussions on the treatment options available including the option of 'no specific treatment'. When the fully informed cognitively competent patient/ legal guardian of children desires to consider palliative care, the doctor should explicitly communicate the available modalities of limiting life-prolonging interventions.

When the diagnosis of dying or a decision has been made that active treatment is to be withheld or withdrawn, a palliative care plan shall be implemented, in consultation with the patient and/or family and the ICU health care team, with a focus on dignity and comfort, considering physical, psychosocial and spiritual needs.

If the consensus clinical judgement of the caring doctor and the health care team is that life-sustaining treatment does not fulfil the patient's goals and is not in the best interest of the patient, it would be reasonable to withdraw such treatment with the concurrence of the cognitively competent patient. In the case of a patient without cognitive capacity, it is good clinical practice for the doctor to seek information regarding the patient's wishes when the patient is cognitively competent from

the next-of-kin/legal proxy/legal guardian. In the absence of consensus regarding the benefit of life-sustaining treatment, the doctor may consider obtaining a second or expert opinion.

All decisions regarding the withdrawal or withholding of treatment shall be documented in the patient's clinical record. The documentation should include the basis for the decision, identify those with whom it has been agreed and specify the treatments to be withheld or withdrawn.

## **LEGALLY AUTHORIZED REPRESENTATION**

As people age, there may be times when they are unable to make sound decisions. In such circumstances, it is essential to have a legally authorized representative to assist them. This assistance is only required when the individual cannot make decisions regarding their health care or life situations. In Sri Lanka, there are no specific laws governing legal representation during healthcare decisions. Consequently, a sensible overview is applicable as long as it complies with the general law of the country. The most important consideration when introducing legal representation by a patient is to appoint a trustworthy person to represent their wish at all costs, even in the absence of his or her involvement.

Several methods can ensure proper representation. These include the appointment of a legal guardian, making power of attorney using advanced healthcare directives etc. Each approach provides a framework for decision-making on behalf

of the elderly person, ensuring their well-being when they are no longer capable of making decisions themselves.

When an elderly person loses the capacity to make decisions convincingly, a court can grant legal authority to an individual to act on their behalf concerning personal needs, such as medical care, shelter, nutrition, clothing, residence, and safety. This process is known as *legal guardianship*, and it is a legal determination rather than a medical one. Ideally, guardianship will continue until the stipulated dates are over or the person is restored to normal capacity or may extend up to his or her death.

There are several alternatives to guardianship for elderly individuals, each with its strengths to support the specific preferences, capacity, and autonomy of the elderly person. The options encompass the power of attorney, surrogate decision-making, advanced healthcare directives, representative attorney, or a person who can act as your surrogate. It is challenging to establish clear distinctions among these, as each has its commonalities, strengths and weaknesses. Many features overlap, making it difficult to categorize them distinctly. Each option is designed to provide tailored support while respecting the individual's wishes and legal rights. Some alternatives serve the individual by securing their future before they lose the capacity to make decisions. Here a person selects a reliable individual to act on their behalf, providing all necessary instructions. These arrangements are legally valid



documents, ensuring that the person's preferences are respected and followed even after the person is incapacitated.

A *power of attorney* is a legal document that is created beforehand an elderly person becoming unable to make choices for themselves. It designates a representative to act on behalf of the individual in situations about finances, healthcare, or other concerns. This can be a long-lasting, lifelong document, or one that is only valid for a predetermined amount of time. Its great degree of flexibility, which enables it to be customized to meet specific demands, is its greatest advantage. One of the benefits of it is the individual has complete control over the acts they wish to be carried out.

*Healthcare surrogacy* is a legal document typically established before an individual reaches old age or becomes incapacitated. This document grants authority to a chosen individual to make health-related decisions on behalf of the elder in question. Essentially, this designated person acts as a representative for the individual in matters concerning their health. Both the healthcare proxy and surrogacy arrangements possess shared characteristics, as outlined below, indicating their commonalities.

One might question the disparity between guardianship and healthcare surrogacy for elderly medical management. Both entail decision-making authority for the elderly, yet their scope and legal procedures differ. Guardianship is obtained through a court process, whereas surrogacy involves a legal document appointing an individual.

In addition to the methods mentioned earlier, one can *appoint an attorney at law* to work on behalf of the incapacitated elderly. This adds an extra layer of protection, as an attorney is a qualified individual who ensures the interests of the incapacitated elderly in complex health issues and other matters.

A *health care proxy* is a person who is designated by a person to handle his or her medical choices if the elderly become incapacitated or unconscious to the extent that he or she is unable to communicate the desire for medical care. This process is named as an advance directive, and it stands as a healthcare proxy. A health care proxy, sometimes also referred to as a health care power of attorney, grants someone the power to make medical decisions.

## **TESTAMENTARY CAPACITY, WILLS, TESTAMENTS AND INTESTATES AND UNDUE INFLUENCE**

Not only the health but possessions of elderly people should also be protected. Their wealth and possessions need to be properly managed upon incapacitation. It's critical to make sure that an elderly person's financial matters are managed honestly and in line with their desires, particularly in light of the decisions they would have taken at the time that they were competent. Hence, the decisions that will be taken at their incapacitation should be in line with the preferences of their choices.

*Testamentary capacity* refers to a person's legal and mental ability to make or alter a valid will. It is not just about being of

legal age to create a will but also about having the mental capacity to understand the implications of what a will represents and the decisions it entails. The assessment of testamentary capacity is conducted by health experts. The testator should comprehend the nature and consequences of their decisions, understand the extent of their assets, identify the beneficiaries, and should also effectively communicate their wishes regarding asset distribution. In addition, the testator's cognition and mental health should be such that they are free from any mental incapacitation. If there is any doubt about the person's mental health, the legitimacy of the will may be challenged since it was made without having a proper mindset.

On the other hand, wills and testaments are legal documents created by a competent adult, outlining their wishes regarding assets and estate after their death. The terms '*will*' and '*testament*' may be used interchangeably in this context, however, there are recognized differences as well which we are not going to discuss here. When working with elderly individuals, healthcare professionals may encounter situations where understanding testamentary matters is necessary, in addition to addressing health concerns.

Some elderly individuals may have created a last will before their passing, while others may not have done so. As a result, disputes over the distribution of their estates may arise. A last will is a legal document created by a person while they are capable, outlining how they wish to distribute their estate. If someone is unable to create a last will, their estate should then

be distributed among their dependents or heirs according to the civil law of the country. This situation is referred to as *intestacy*.

If an individual exerts pressure or coercion on an elderly person regarding their health issues, finances, or any other matter, it can simply be defined as undue influence on elderly people. It can be attempted in many forms, emotionally, psychologically, and/or physically to gain something that otherwise would be not possible. An already vulnerable elderly individual may further be influenced by such pressure or coercion, leading to biased outcomes that do not reflect their true wishes or best interests. The validity of a legal document may also be challenged based on the undue influence leading to issues related to free will and consent.

## **ELDER ABUSE**

Elder abuse is considered a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person (World Health Organisation, 2007). This happens in a relationship where there is the expectation of trust by the older person as opposed to a thief as there is no expectation of trust between the victim and the offender. The (WHO) estimated that 15.7% of older people 60 years or older are being subjected to abuse. The prevalence is greater in institutions such as homes and long-term care facilities. Two

out of 3 staff report that they have committed such offences. Furthermore, it is expected to rise with the rising population.

Elder abuse is categorised into 5 types. These include physical, psychological, financial, and sexual abuse and neglect. Psychological abuse is the most common form (11.6%), followed by financial abuse (6.8%), neglect (4.2%), physical abuse (2.6%) and sexual abuse (0.9%) in the community. In institutional settings, psychological abuse (32.5%) is the most common followed by neglect (12%), physical abuse (9.3%) and sexual abuse 0.7%. There is, however, insufficient data about financial abuse from institutional settings. The rates are higher as expected when considering reports by residents and their proxies. This is projected for psychological abuse 33.4%, physical abuse 14.5%, financial abuse 13.8% neglect 11.6% and sexual abuse 0.7%. These figures are the tip of the iceberg.

### *Psychological (Emotional) Abuse*

A person who is trusted to care for and protect, behaving in ways that cause anxiety, apprehension or distress to an older adult is psychological abuse. These could be verbal or non-verbal. It may range from uttering hurtful words, shouting, threatening, swearing, humiliating or repeated ignorance. Restricting a person from meeting acquaintances and pursuing delightful activities may be some other form.

This can be detected with ease in the presence of the abuser. The victim will demonstrate the emotions stated above. There will be poor eye contact with the offender. The disposition will be depressed, confused, withdrawn and may act agitated or violent. Signs of trauma like rocking back and forth may be present and may stop taking part in activities they used to enjoy. Difficulty in falling asleep or unintentional loss of weight are other physical symptoms.

### *Physical abuse*

The intentional use of physical force can manifest in skin abrasions, contusions, burns, cuts, tears, lacerations and scars of varying stages of healing can be detected by careful inspection. The injuries may be present at unusual sites such as the head, back, chest or abdomen. There will be inadequate explanation as to how they were sustained and may have multiple injuries of varied healing stages. The patient may have contributory evidence such as broken spectacles, torn clothes etc. Ligature marks may be present due to past physical restraint. Chemical restraints, even oversedation or overdosage are often used in care homes. Myoglobinuria and increased serum creatinine kinase (CPK) due to rhabdomyolysis are biochemical findings. Older people may attend with non-fragility fractures in long bones and ribs or spiral in shape. There could be a radiography of fractures of different temporality.

### *Financial Abuse*

The use of funds and assets allocated for the older person's care and/or protection being used for another person non-consensually amounts to financial abuse. An older person with intact mental capacity making decisions about their care, protection and finances can decide to give money and/or properties to another person. This is not financial abuse. Usually, healthcare professionals should not get involved in financial decisions but rather a bank manager or lawyer. An older person with financial stability accompanied by late bill payments interrupted utilities and a short supply of provisions and medication, may reflect the possibility of ongoing abuse.

Common examples of undue influence on the elderly may include

- Manipulative actions taken by acquaintances, family members, or caregivers to get ownership of the senior's assets or money.
- Strategies for persuasion that make use of an elderly person's declining mental capacity or cognitive decline to force them to make decisions against their will.
- The older person's isolation from their support system increases their reliance on the influencer and restricts their access to different viewpoints.
- Dishonest tactics to distort the older person's perception of the circumstances, such as lying or omitting facts.

### *Neglect*

Failure of a person who is in the role to protect and care for the older person failing to do so is defined as neglect. This could be intentional or unintentional. Older people may self-neglect as essentials cannot be acquired or due to abandonment. The victim will have a dishevelled appearance with unwashed and unkempt hair, body and clothes. Head and body lice, skin rashes (e.g. scabies), malnourishment and lack of medical aids such as spectacles, walkers, dentures, hearing aids or medication, pressure ulcers or other preventable conditions are noteworthy. Living conditions may be hazardous, unsafe, unclean and unsuitable for living. In extreme cases, there may be signs of dehydration like high sodium levels, high urea levels, high uric acid levels or haemoconcentration with false high haemoglobin and packed cell volumes. Low cholesterol levels may be due to malnutrition.

### *Sexual abuse*

Forced, unwanted or unconsented sexual acts could be verbal or behavioural.

An older person attending a healthcare facility complaining of pain, soreness, bleeding, bruising, lacerations of the anogenital region or showing venereal diseases in oral, anal, and genital regions should be assessed for sexual abuse. A detailed history including an explicit sexual aspect is essential.



Understanding the risk of being abused can help the adoption of safeguarding measures to protect them. According to data collated by WHO from all available studies, 20 sub-categories are recognised. These include the presence of physical impairments, mental and neurological disorders, cognitive impairment, poor health and substance abuse. Low socio-economic status, low level of education, female gender, ethnic minority, younger age, unmarried or single person, employed, behavioural problems, low life satisfaction, homeownership, history of violence perpetration, irreligiosity, previous violence victimisation, and traditional cultural values.

When reviewing an older person, it is ideal to review along with the carer and then without the carer in the consultation. This will help recognise the risk factors in a carer which places an older person at risk. The burden on the caregiver is the caregiver suffering from mental or neurological disorders. Carers with low levels of education and self-esteem, male gender, use of narcotics and a history of violence perpetration are more likely to abuse older person under their care.

In relationships, there can be identified risk factors. These include families with low social support, living with others or sharing accommodation, larger family size and poor family relationships. Older people living in urban communities are more likely to be abused than their counterparts.

## *Prevention*

Detection of elder abuse can be done by conducting a comprehensive geriatric assessment (CGA) for older patients attending clinical services. Recognition of the at-risk groups and intervening will prevent the physical and mental damage they sustain by being abused. Education of the healthcare workers in the community to conduct a CGA or referral to a team to perform and discuss on a multidisciplinary team (MDT). Geriatricians should take referrals from other specialities like orthopaedic, surgical, burns units, ambulance crew and general practitioners.

Support systems for care providers (caregiver support systems) will improve the care provided to older people and reduce the strain on families and carers. Education is the cornerstone of all these interventions. Furthermore, older people should be made aware of their legal rights; carers should also know their limits and how to ask for help when in trouble. The general public should also be educated about the limitations or problems older people are having and how they can help their neighbours, friends, and older relatives.

In Sri Lanka, the National Secretariat for Elders (NSE) leads welfare for older people. This is placed under the Department of Social Services. There are care homes, and daycare centres maintained by the central government as well as by the provincial governments. The NSE provides free eyeglasses, hearing aids, financial support towards noncommunicable disease prevention, and surgery of older persons with low

income may need. Programs to strengthen rural committees dedicated to the welfare of older people are conducted. The project includes building houses, and toilets for the disabled and supplying the equipment needed to improve functioning in the community like walking aid.

Most victims of abuse do not come forward due to various reasons. They may have cognitive impairment and may forget the abuse. There may be fear of punishment if they complain and/or repercussions to the perpetrator, who can be a family member. Therefore, it is important if we suspect elder abuse to investigate in an MDT and take immediate action to safeguard the victims. We may have to admit the person to a hospital or short-term care facility, or delay discharging until the investigation is complete. We may need our forensic medical colleague to help understand some situations better and should refer when appropriate.

### *Safeguarding team*

A multidisciplinary team led by a geriatrician to review the probable abuse could be carried out in the community or hospital. The team should aim to protect the health, well-being, and rights of older persons at risk, enabling them to live safely, free from abuse and neglect. Rejection of false accusations of loved ones and unnecessary separation, isolation and institutionalising of older people. We know certain conditions are commoner in older people. Fragility fractures are common and could occur with minimum trauma like turning in bed.

Another is pressure sores. These occur in acute hospital settings and are common in long-term care settings. Here it is important to decide beyond reasonable doubt whether the older person has suffered intentional neglect or whether there is a failure to follow standard care. In patients with pressure ulcers, there should be documented evidence of turning frequently to redistribute pressure points. Using pressure relieving mattresses and cushions as part of standard measures/care. Appropriate recognition and treatment of the ulcers when pressure damage is noticed. Poor nutrition can lead to poor wound healing and the dietician should consider this when reviewing. Wasting could be due to a chronic illness, malignancy, or frailty. If standard care is given, and medical causes are excluded it should not be considered as abuse. Standard care includes ensuring a person has teeth to bite and chew the food, or food is cut and given, or altered to a consistency that can be safely eaten. Weekly monitoring of weight, diet charts with nutritional supplements where needed and advice from a dietician.

A safeguarding team could include an elder's rights promoting officer or a representative of the NSE, a nursing officer, a mental health nurse, a psychiatrist, a dietician, a pharmacist and a physiotherapist. All medical notes from hospital admissions and community healthcare records should be accessible to the team. A safeguarding team should meet regularly and review all cases referred. A case handler or the lead person taking the referral should take time to talk to an older person, family, and carers as a fact-finding mission. Referrals should be encouraged

from the emergency department, ambulance crew, surgical wards, gynaecological wards, fracture clinics and forensic medical officers.

Improper influence on senior citizens may result in moral and legal transgressions. To stop these breaches, this problem must be identified and addressed. Older adults should be made aware of the possibility of excessive influence so they can take preventative action and reduce these dangers proactively. Undue influence leads to elder abuse, resulting in numerous negative consequences.

An aged person may suffer from financial exploitation, loss of autonomy, and mental pain as a result of undue influence. To safeguard the rights and welfare of senior citizens, healthcare providers, carers, and law enforcement must always be on the lookout for indications of undue influence and take appropriate action. This could entail carrying out in-depth evaluations of the senior's competence for making decisions, encouraging open lines of communication, and, if necessary, contacting protective services or attorneys to handle situations in which undue influence is suspected.

In Sri Lanka, there is significant legal protection for parents who are neglected by their children. According to Parliamentary Act No. 09 of 2000, known as the Protection of the Rights of Elders Act, children are legally obligated to care for their parents and meet their needs. This legislation allows parents who are not being reasonably cared for by their children to seek maintenance from them.

This law allows neglected elders to come forward and present their cases. Parents in these situations can file complaints at Legal Aid Commission offices, which are widely available throughout the country, including 77 centres nationwide and one in Colombo. This legal provision is a crucial support system for neglected elders, ensuring they can seek and receive the care they need.

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## 14. Improving Quality of Life and Healthy Aging

Dr Dilhar Samaraweera

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### HEALTHY AGEING AND ACTIVE AGEING

The United Nations Central Assembly declared 2021-2030 as the Decade of Healthy Ageing.

The World Health Organization (WHO) defines Healthy ageing as 'the process of developing and maintaining the functional ability that enables wellbeing in older age'. Functional ability is about having the capabilities that enable all people to be and do what they have reason to value. This includes a person's ability to,

- a) meet their basic needs
- b) learn, grow and make decisions
- c) be mobile; build and maintain relationships
- d) contribute to society.

The Decade of Healthy Ageing will focus on the following four key actions.

- a) A change in how we think, feel and act towards age and ageing
- b) Ensure that communities foster older people's abilities
- c) c) Deliver person-centred integrated care and services that respond to older people's needs
- d) d) Provide access to long-term care for older people who need it.



All these 4 key areas are equally important in achieving healthy ageing and improving quality of life during old age. These efforts are supported by four 'enablers': meaningful engagement with older people, families, caregivers and others, building capacity for integrated

action across sectors, linking stakeholders to share experiences and learn from others and strengthening data, research and innovation to accelerate implementation.

The pathway brings these enablers together to accelerate implementation and optimize functional ability.

The WHO further defines active ageing as 'the process of optimizing opportunities for health, participation security to enhance quality of life as people age. Being 'active' is continuing participation in social, cultural, spiritual and civic affairs and not merely just the ability to participate in the labour force.

## AGEING AND LIFE COURSE

Ageing is not merely a decline in the physical state but a progressive decline in the physical, psychological and social structure of an individual. Ageing begins before birth and ends with death. Thus, it is a process occurring throughout the life course from womb to tomb. Nutrition, exercise, and lifestyle modifications are important during the life course to have a successful old age.

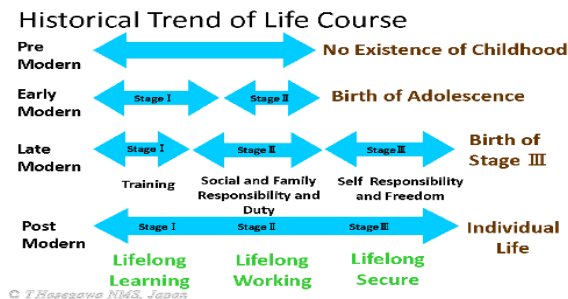


Figure 14.1 Life Course

Life courses were divided into three stages in the late modern era. The first stage is from birth to 18 to 20 years. This period leading to adulthood is accepted as a period for learning, training and education. At the end of this stage comes a crisis where one has to face a transition from childhood to adulthood. This is the adolescent period of sexual transformation with changes in the hormonal state occurs. It is also a period with many facets of life such as passing hurdles to assuming new responsibilities, going up the ladder in life with professional and financial gains, commencement of a married life, having children etc. This transition period is considered a pleasant and

sweet challenge although very stressful and challenging to the individual.

The next stage in life is from 20 to 55-60 years. This is considered as the most productive stage. A person contributes most to his society and the family through his profession, raising kids, leadership in social activities etc. This is a period accepted for working. At the end of this period is another transition period where the individual faces the challenge of retirement, handing over the realms of power and responsibilities to the younger generation. Unlike the first challenge, this is not a challenge accepted with open arms but rather with despair. Thus, the period leading from this transition to death is considered the third stage of life which is accepted as a period for freedom and self-responsibility. Traditionally this was a dependent period where there was no gain to the society like an outdated coin. The way one portrays the third stage in life is as a frail old person with a hunchback holding onto a walking stick, living within the confounds of a dark room in a corner of a house. Therefore, it is essential to rethink old age in a new perspective and change the traditional norms. An elderly-friendly attitude needs to be harnessed to make life brighter in this third stage of life.

The traditional way of life course approach has changed in the post-modern era where lifelong learning, education, working and security are norms no longer restricted to certain stages of life. Retirement is not considered a step-down but a period to explore new ventures, learn new facts, engage in travel and leisure activities, and develop and display talents and skills such

as dancing, and singing. An employee who has been working without rest will have time for cinema or painting during retirement, which he or she yearned to do but could not do due to time constraints. Retirement provides a person an opportunity to explore the unfulfilled dreams in life. This is the change that needs to be inculcated in our society to create a more positive and productive old age.

## **ADDING YEARS TO LIFE**

Current society has an ageing population and the proportion of the very old is ever increasing. If one assumes a person would live till 90 years a person may need to survive for one-third of his or her life without much reserve and resources. The retirement age is 60 years, with only very few having the privilege of a pension it thus will become a challenge for the older person spending this last stage of life. Poverty in old age and the need to spend out of pocket for health, food and other basic needs will indeed lead to loss of quality of life in this vulnerable stage. The extended families and the older person living together in the same household have eased this burden. The extension of life with more years of life could lead to older children looking after their parents with minimal savings.

Migration of populations confounded by nuclear families and urbanization has further fuelled the crisis of living to old age in poverty. Countries in Southeast Asia share similarities in terms of nuclear families, migration and economic instability due to the effects of global inflation. A negative attitude towards

growing into old age is developing in these countries due to the perception in the health system that the increasing expenditure on health care is due to the ageing of the population and that older patients are responsible for the nonavailability of hospital beds and rising demand for services and long waiting lists.

## **POPULATION AGEING AND IMPACT ON HEALTHY AGING**

Population ageing is defined as the increasing share of older persons in the population. The definition of older adults differs from country to country. In Sri Lanka, the age cut-off to determine the is 60 years as 55- 60 years is considered as age of retirement. Sri Lanka is moving rapidly from 'ageing' (the share of 65+ in the total population is reaching 7%) to 'aged' (the share of 65+ in the total population is 14%) to 'super-aged' (the share of 65+ in the total population is 21% or over). The old-age dependency ratio is the proportion of the population aged 60 years or more versus the proportion aged 15-59 years. The rise of this has an impact on the economy of the country. Another feature in this demographic transition in our country is the sharp increase in the proportion of people who are very old (age 80 years and over). Older people who are greater than 80 years of age are more likely to be frail and need support and long-term care plans. The projected increase in the very old segment of the population is further implicated by the increasing trend of migration of the younger population and

poverty in old age due to the lack of social security systems in place and the dwindling economy.

By 2050, Sri Lanka will go through an unprecedented demographic transition into an ageing population at a lower level of per capita income than other ageing economies. The state needs to allocate capital to prevent marginalization of the older people with decreased economic, physical and socio-political clout. Furthermore, the sharing of an ageing population who are non-productive could lead to a further drop in the gross domestic product, efforts should be taken to increase the participation of older persons in the labour force by increasing the age of retirement in both public and private sector which eases the strain on the economy of the country and the individual. Engaging the older person in the labour force will also result in promoting active healthy ageing by promoting the older person's participation and engagement in socio-economic and civic activities

Sri Lanka still is a patriarchal society where gender equality is not a norm. Women are still a socially deprived segment with poor access to health unemployment and lesser income with fewer chances of health insurance and post-retirement entitlements. However, the life expectancy of a woman is 79 years as opposed to 72 years for a man. The key feature observed in Sri

Lanka is that females tend to live for an average of seven years longer than males, and in almost all older age cohorts; females outnumber males. In 2012, one in 3 older women were

widowed in Sri Lanka. In the young-old category (age 60-69 years) one in every four females was widowed, while among the middle-old category (age 70-79 years) about 42% of females were widowed. Among the oldest-old category, half of the female population were widowed. Widows face social stigma and are marginalized and discriminated against in society. Although women outlive men, they spend most of their life years in bad health and are more economically dependent making them vulnerable in their old age to harassment and sexual exploitation. Women have fewer employment opportunities and most of them have less financial security with less savings and assets with no pension to support a standard of living. Thus, women who have suffered throughout life with gender inequalities live longer and become dependent on their families for a longer period making them susceptible to exploitation and abuse depriving them of the much-needed peace and quality of life in their latter stages of life. Ageing and widowhood should not deprive women of having intimacy, sex and companionship. Social and cultural barriers, ageist stereotypes, and myths restrict their desires and behaviours in these areas. A survey conducted among a group of ageing females attending OPD revealed that 80% were sexually inactive and the reasons for this were the death of their husband, lack of interest/desire, and the belief that sexual activities are not appropriate for their age. (4) Open dialogues about sexual life in older women are needed, the media needs to address these aspects of life changing the attitudes and cultural beliefs acknowledging the rights of older women. Health is key to sexual life in old age; thus, women must take

routine checks (e.g. pap smears, and cervical and breast cancer screening). Investment in initiatives to increase female labour force participation is critical to improve income security in older women.

## **ACHIEVEMENT OF HEALTHY AGEING**

Health is the physical, mental, social and spiritual well-being of a person. It is not merely the absence of disease. Nutrition, exercise and a healthy lifestyle are the most important. Eating a well-balanced diet with adequate carbohydrates, fat and protein fortified with minerals and vitamins should be exercised at an early stage starting from maternal nutrition to childhood leading into old age. The dietary modifications for healthy living are reducing salt to 5 grams per day for an individual, having less oily food, fruits or vegetables 5 times a day, one portion of fruits/vegetables would equal 400 grams. Prevention of sarcopaenia is vital in achieving mobility in old age which would lead to physical and mental stability. Frailty could be prevented by adequate protein in diet combined with exercises. Older people should consume an average daily intake in the range of 1.0 to 1.2 g/kg BW per day (VS. the recommended dietary intake of protein of adults is 0.8g/kg/d). Whey is a natural, leucine-rich, high-quality protein source, it offers benefits as a fuel for muscle in older age. Older adults should be encouraged to consume more protein in their diet, cultural and social beliefs which promote vegetarianism in older age led to avoidance of animal proteins which is a rich source of proteins. A sufficient



intake of Vitamin D is also essential for maintaining muscle mass in ageing people. Exposure to sunlight in the morning hours, which is abundant in our country, enables vitamin D production in the body. However, supplementation of vitamin D has been proven to reduce falls in frail who are confined to institutions. Multidomain approach with supplementation (high energy and protein) and physical training, cognitive exercises, and social services have proven to modify frailty risk.

Maintaining physical activity with regular exercises will enable you to have a very good functional state in old age with better physical and mental functions. Increase muscle size, muscle strength, endurance, balance and stability. Exercises also help to prevent falls and restore independence. Exercise and good nutrition will reduce the incidence of communicable diseases like hypertension, ischaemic heart diseases, stroke and diabetes mellitus and the incidence of osteoporosis and thereby fractures in old age.

Successful ageing is sought out by all. This encompasses the 3 components

1. Low probability of disease and disease-related disability
2. High cognitive and physical functional capacity
3. Active engagement with life.

It is about minimizing age-related diseases and achieving optimal outcomes in older age by modifying risk factors.

One who ages successfully is not only free of diseases but also can maintain emotional vitality with a good mental state and will engage actively with life socially and spiritually. The Silver age should be spent with happiness and dignity. One should take care of himself and live a healthy life actively engaging in physical, mental and social activities throughout the life course to achieve a successful silver age.

## **PREVENTION OF NON-COMMUNICABLE DISEASES**

There are many physical, mental and social problems associated with ageing. Mental health problems common in older adults are depression, delirium and dementia. Physical problems common in old age are impairments in vision, and hearing, problems in gait, balance and falls, incontinence in bladder, bowels, osteoarthritis, osteoporosis, neurodegenerative diseases like Parkinson's disease and other non-communicable diseases. Out of 2,520,573 aged 60 or overpopulation in 2012, 548,776 persons had experienced difficulty in seeing (21.8 %), 284,285 persons had experienced difficulty in hearing (11.3 %), 488,209 persons had experienced difficulty in walking (19.4 %) and 208,657 persons (or 8.3 %) had experienced difficulty related to cognition. All types of difficulties are concerned, more than one-third of the oldest-old population had seeing, hearing and walking difficulties, while one-fourth of them had difficulty in cognition.

In 2016, NCDs accounted for 90% of deaths of people over 60 years old in Sri Lanka, compared with 6% due to communicable diseases, maternal, and perinatal conditions; and 5% due to injuries. The majority of NCD deaths were from cardiovascular disease (39% of all deaths), cancer (13% of all deaths), and diabetes (10% of all deaths).

Social problems are due to isolation, decreased communication, disrespect, elder abuse and financial difficulties. These problems should not be taken for granted, identification of these problems particularly in frail older people and managing them to improve their quality of life is essential. The comprehensive assessment (CGA) of seniors which includes assessment and management of physical, psychological and social problems by an interdisciplinary team is the best way to address these problems.

The sedentary lifestyle adopted by most of us with rapidly advancing technology taking over most of the manually handled tasks complemented by unhealthy diet and smoking has resulted in increasing incidences of communicable diseases such as hypertension, ischemic heart disease, stroke, chronic lung diseases, cancer and diabetes mellitus. Lifestyle modification includes avoiding harmful habits such as smoking and consumption of alcohol. The prevalence of smoking among adults in Sri Lanka is low compared to other developed and developing economies. Less than one in seven adults smoke in Sri Lanka according to the most recent data from the 2019 SLHAS, and earlier studies have shown a low consumption of cigarettes per capita and a declining trend.

## **INTEGRATED CARE OF OLDER PERSONS (ICOPE) FRAMEWORK BY WHO**

The WHO has been leading international action plans under the United Nations 2021-2030 Decade of Healthy Ageing. It promotes a holistic perception of healthy living, which is developing and maintaining functional ability to enable active healthy living in old age. The WHO implemented the Integrated Care of the Older Persons (ICOPE) Framework in 2017-2019. It is an integrated framework for the screening, assessment and management of the decline of mobility, vision, hearing, vitality, memory and depression which are the composite of intrinsic capacity.

The WHO defines Intrinsic capacity as the combination of physical and mental capacity. As a person ages a decline in intrinsic capacity and functional ability occurs. Functional ability is defined as the combination and interaction between intrinsic capacity and the environment the older person inhabits. The functional capacity of a person can be improved by increasing the intrinsic capacity and improving the environment of a person's life. Primary care needs to be strengthened to prevent slow or reverse decline in intrinsic capacity and where declines are unavoidable the environment needs to be adjusted to maximize their functional abilities. The provision of spectacles having direction boards with big letters for persons with reduced vision or installing ramps for persons with reduced mobility are some examples of environmental compensations to increase functional ability.

## Public-health framework for healthy ageing

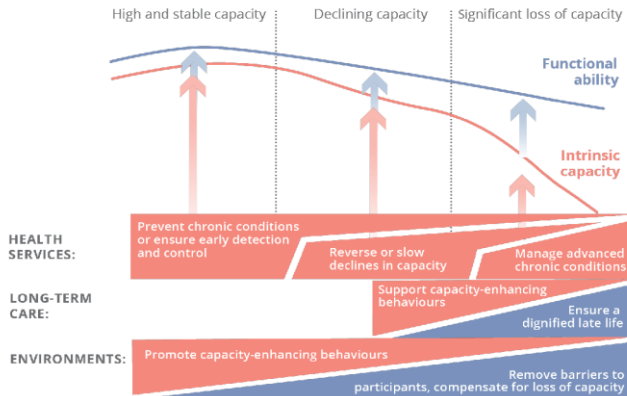


Figure 14.2

Older persons can be grouped as persons with

1. High and stable capacity
2. Declining capacity
3. Significant loss of capacity.

A public health framework should focus on all three categories of older persons in the development of health services, environment and long-term care services. The health services need to be reoriented and strengthened to prevent chronic conditions or ensure early detection and control in older persons with high and stable capacity. Traditional methods of assessment did not detect problems specific to old age, thus

primary care needs to be strengthened to screen for problems specific to the older adults which could lead to a decline in physical and mental capacity. Measures to reverse or slow the decline in capacity should be the focus of persons with declining capacity. Persons who have significant loss of capacity would need management of their chronic diseases, looking after them in the community would be a challenge and the development of community older persons services would need to be strengthened. Long-term care services would need to be in place for the second and third categories and would be very costly, thus sharing of care utilizing informal caregivers, family and non-governmental organizations would need to be considered. The focus of long-term care services will shift from supporting capacity-enhancing behaviours to ensuring a dignified late life as a person's capacity further declines and approaches the end-of-life stage. Priority should be given by the government in building an elderly friendly environment ensuring a society for all ages. Promotion of capacity-enhancing behaviours should be focused on the people who still have the capacity and environmental changes need to be implemented to remove barriers to participants and compensate for loss of capacity. The combination of these strategies in a public health framework would result in improvement in intrinsic capacity and functional ability ensuring active healthy ageing. Therefore, it is my opinion that our country needs to align with these proposed changes in the ICOPE public health framework by the WHO to achieve active healthy ageing and improve the quality of life of older persons.

## **Further Reading**

Ageing Population of Sri Lanka Emerging issues, needs and policy implications

Decade of Healthy Aging- Baseline Report by WHO

Feminization of Aging;December 2019;UNFPA Sri Lanka

Growing Old Before Becoming Rich - Challenges of an Aging Population in Sri Lanka;2019 Asian Development Bank

Integrated Care of Older People- Guidelines on Community-level Interventions to manage Declines in intrinsic capacity; World Health Organization

Thematic Report based on Census of Population and Housing 2012 E. L. Sunethra J. Perera

