Module 2
Functionality and Quality of life

Learning objectives:

By the end of the chapter, non-specialist medical officers should be able to:

- Know the relevance of functionality and quality of life in the elderly
- Use simple scales for assessment of functional status and quality of life
- Identify and address impairments in functional status in the elderly
- Interact with other professionals to optimize quality of life for elderly

Introduction:

The goal of health care is to improve the health of individuals and the population. A good state of health or improvement in health status is perceived by the individual as fewer symptoms and signs of disease, better functioning, better quality of life and improved survival. Unlike younger patients, where medical care is centered on the management of acute and chronic physical illnesses, geriatric care is oriented towards helping the elderly patient attain a better functional status and quality of life.

Disease related changes result in impairments (anatomic or physiological) including symptoms (which are a conscious recognition of abnormality). These may further limit the performance of a task (i.e. function) leading to disability. The term “health outcomes” refers to all possible results that emerge from a disease or condition.

WHO Organizational Model for Health outcomes: Health Condition (Disease / Disorder) results in impairment of structure or function, limitation of activity, ability to participate which occurs in the context of environment and personal characteristics.

Wilson and Cleary Model: In this model, a disease leads to symptoms resulting in functional limitation, perception of health and influencing overall quality of life. These factors are modified by characteristics of the individual, biological and physiological variables, psychological, social and economic support as well as individual values and preferences.

Successful aging is a commonly used term that consists of: low risk of disease and disability, high mental and physical function, and an active engagement in life.

Clinical Implications of Functionality and Quality of Life in the Elderly:

With reference to an elderly person, the goals of management shift towards identifying and managing those factors which are responsible for or contributory towards poor functional status and a poor quality of life. The focus is on restoring them to the previous level of functional status and improving quality of life i.e. it shifts from cure to care.

The Comprehensive Geriatric Assessment (CGA) [discussed later] is a multidimensional structured tool for evaluation of elderly patient's global health (including medical and functional problems) as well as available resources, capacities and preferences. In the primary care setting it is undertaken by a geriatrician and /or a trained gerontological nurse, and usually takes more than 60 minutes to complete. Being time and resource dependent, it is not easy to apply in the primary care setting where a simpler and quicker assessment of these parameters is needed. Clinical decisions in elderly also require knowledge of their life expectancy, personal values and preferences. The examples below will clarify some of these complex issues:

1. Life expectancy can be predicted from age in healthy elderly e.g. less than 25% men aged 95 years will live 5 years while 75% women aged 70 years will live 10 years.

2. In community based elderly, the prognostic factors and 4 year mortality for can be predicted from a set of parameters including age, gender, co-morbid disorders and functional status. (Lee SJ et al. Development and Validation of a prognostic index for 4-year mortality in older adults. JAMA 2006; 295: 801-8).

3. For patients discharged from hospital, the prognostic factors for patients discharged from hospital include gender; co-morbid conditions and laboratory parameters i.e. Cancer, Serum Creatinine and Serum albumin levels; and Activities of daily living which help in predicting one year mortality. (Walter LC et al. Development and Validation of a prognostic index for one year mortality in older adults after hospitalization. JAMA 2001; 285: 2987-94.)

4. In an ambulatory care setting, decision making for an elderly patient with severe disabling knee osteoarthritis may vary depending on various factors. A retired armed forces officer with financial stability, an active social life, playing golf regularly would probably opt for knee replacement surgery and be willing to accept the short period of hospitalization and pain but a labourer living with his old wife and a daily wager son with no social support may approach the same problem differently.

5. A patient with disseminated cancer and a poor prognosis may opt not to undergo aggressive interventional management for co-existing coronary artery disease as it will not prolong life or improve quality of life. The procedure may add to morbidity by increased the duration of hospitalization, pain and complications

related to the procedure as well as the need to take multiple additional medications.

6. In ambulatory care, knowledge of life expectancy helps in decision making:

    a. If an elderly patient has a life expectancy of ten years, then it is appropriate to order investigations and treatment as per guidelines devised for the general population.

    b. If the elderly patient has a life expectancy of less than 10 years, then the investigative and therapeutic plan can be modified based on two further questions:
        i. Will it improve prognosis?
        ii. Will it improve quality of life?

    c. As an example, a male patient aged 80 years, with diabetes mellitus and heart failure, difficulty in bathing independently has a 4 year mortality of 53 percent. This can help in deciding whether aggressive management of another medical condition should be considered or not.

Therefore, the measures of prognostic indices including functional status and the patient's perception of quality of life determine further investigations and management.

Terms and Definitions

The two terms in the above discussion are functional status and quality of life which play important roles in the decision making process that is central to the care of the elderly.

A. Functionality:

Function includes physical, mental, social and role functioning. Physical functioning refers to tasks needing movements, strength and dexterity. Mental functioning includes mood, and tasks needing memory and concentration. Social functioning refers to development and maintenance of social relations. Role function includes work.

1. Risk factors for functional decline include:

a. Non-modifiable

i. Increasing age
ii. Gender

b. Modifiable

i. **General:**

a. Limitations in physical activity (including gait speed)
b. Falls
c. Auditory , visual deficits and speech difficulty
d. Greater number of co-morbidities
e. Poly-pharmacy
f. Transient episodes of disability due to self-limited illness
g. Hospitalizations

ii. **Psychosocial:**
a. Living alone
b. Economic dependence
c. Depression
d. Lower social interactions
e. Substance abuse

iii. **Nutritional:**
a. Obesity or low body weight
b. Malnutrition including vitamin deficiency
c. Dehydration

2. **Components of Functionality**:

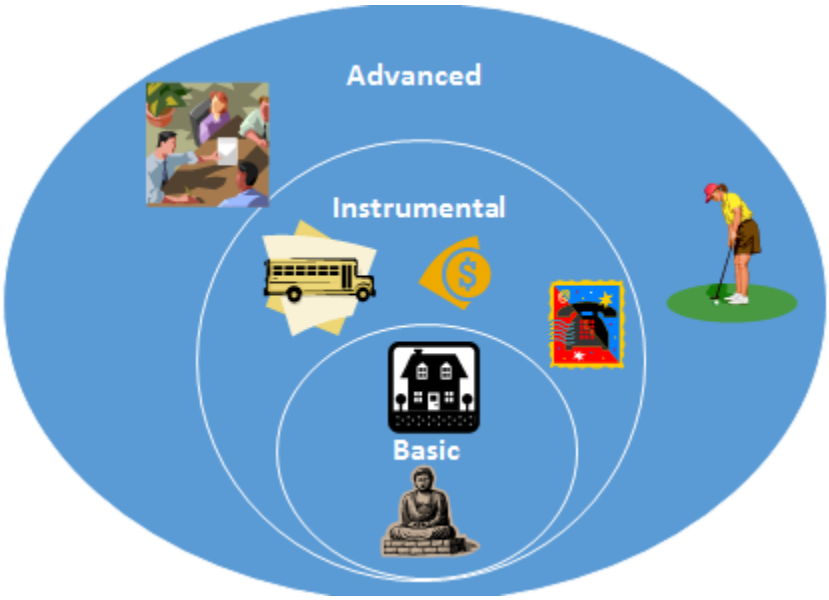

Figure 1: Components of functionality

a. **Basic activities of daily living (ADL)-** These include capacities required for personal care such as walking, dressing, bathing,

using the toilet, grooming, eating and transferring from a bed to a chair.

b. **Instrumental activities of daily living (IADL)-** These are necessary for living independently in the community such as shopping, housework, transportation, using the telephone, managing finances and medications.

c. **Advanced activities of daily living (AADL) -** It is an ability to participate actively in social and recreational activities. It is what an older individual needs to be capable of and may be individual preferences or approach to life or engendered in one's occupation or social status.

B. **Quality of Life**

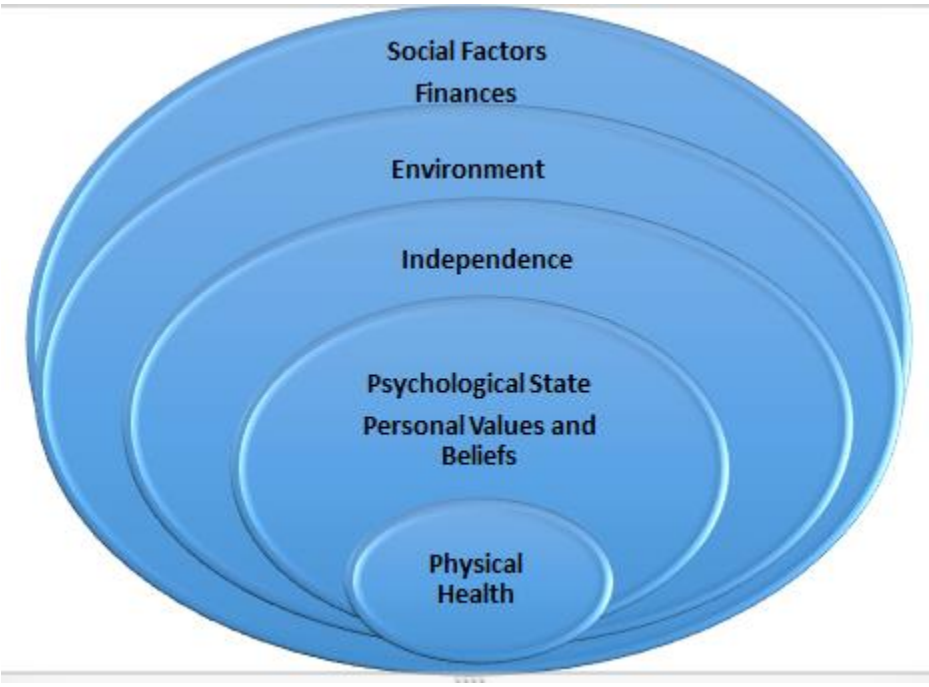

Figure 2: Components of Quality of Life

Quality of life is highly individualistic. However, there are some group specific attributes which enable us to assess it in quantitative terms. The WHO definition: "…an individual's perception of their position in life in context of the cultural and value systems in which they live and in relation to their goals, expectations, standards, and concerns

… affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" attempts to encompass major aspects of this entity. Many aspects of this definition are not related to health or modifiable by health related interventions.

It is a complex concept as different people perceive quality of life differently. As can be seen from the WHO definition, it has several domains and is influenced by family, social, economic, political and environmental factors. It may also change with circumstances or experiences of the patient. Positive perception of quality of life derives from comparison with others, maintenance of social contacts, health, material circumstances and activities. Negative perception related to dependency, functional limitation, bereavement, reduced social contacts and unhappiness. Quality of life derived from family, social contacts and activities or functionality.

There is a high degree of adaptability and resilience in elderly which, despite limitation in function, results in reporting of a high level of well-being. Therefore, both functionality and quality of life are interrelated in a complex way.

1. **Some questions to identify Health related quality of Life problems include:**
    a. Do you think you enjoy an overall good quality of life?
    b. Do you generally feel happy and look at the bright side of things?
    c. Do you have any troublesome or distressing symptoms?
    d. Are you often in pain?
    e. Are you disturbed or anxious often?
    f. Are you able to do your activities at home comfortably and without support? If not, do you have a dependable support system at home?
    g. Are you able to participate in pleasurable activities, hobbies, social or other wise
    h. Do you live in the company of your near and dear ones?
    i. Do you have close dependable family relationships?
    j. Are you happy with the health care system management of your illness?
    k. Are you financially sound and are you able to manage with your finances?
    l. Is your environment safe and conducive to your physical, social, cultural and functional state?
    m. Are you able to participate in your cultural, religious and other activities?

2. **Factors that influence Quality of life:**
    i. Disability
    ii. Chronic symptoms
    iii. Deterioration in Functional status
    iv. Social isolation including loss of spouse, partner, family member or contemporaries.

v. Hospitalization
vi. Reduced life expectancy
vii. Cognitive impairment
viii. Falls and other Geriatric syndromes
ix. Social and financial determinants including pension
x. Personal values and beliefs

C. **Assessment:**

1. Functionality

Functional status and quality of life assessment of elderly is best achieved by a team of specialists ranging from the geriatrician to a nutritionist, nurse practitioner, physiotherapist to a clinical pharmacologist. However, several simple to use self-administered or proxy/ physician administered scales have been developed for assessment of functional status.

The decline in functional status is measured by tracking the performance of basic, instrumental and advanced activities of daily living by older adults.

The earliest decline in the elderly occurs in activities limited to specific body systems or parts such as difficulty in bending the knees as in an osteoarthritis patient and these gradually progress to involve the AADL and subsequently the IADL and the ADL. Cognitive impairment and recurrent transient episodes of acute illness can accelerate functional decline. Therefore, functional loss may be an early indicator of disease in the elderly.

Functional scales aid in monitoring the older person, early identification of the disease process, and making strategies for effective intervention.

Some commonly used scales are given below. At primary care level, a few of them can be used easily and are elaborated.

a. Katz Index of ADL: This Index of Independence in Activities of Daily Living, commonly referred to as the Katz ADL, is a simple instrument to assess functional status as a measure of the elderly person's ability to perform basic activities of daily living independently. The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring, continence, and feeding. Scoring is yes/no for independence in each of the six functions. A score of 6 indicates full function, Score 4 indicates moderate impairment, and 2 or less indicates severe functional impairment. Katz index of ADL has been included in the Facilitator Guide.

b. Lawton IADL Index: The Lawton Instrumental Activities of Daily Living Scale (IADL) is an appropriate instrument to assess independent living skills. These skills are considered more complex than the basic activities of daily living as measured by the Katz Index of ADLs. The instrument is most useful for identifying how a person is functioning at the present time, and to identify improvement or deterioration over time. There are eight domains of function measured. Women are scored on all 8 areas; for men, the areas of food preparation, housekeeping, laundering are excluded. Older persons are scored according to their highest level of functioning in that category. A summary score ranges from 0 (low function, dependent) to 8 (high function, independent) for women, and 0 through 5 for men. Lawton IADL Index has been included as annex.

Table 1: How to assess functional status of a person

Activities of Daily Living	**Instrumental Activities of Daily Living**
Bathing	Taking medicines
Toileting	Preparing meals
Dressing	Shopping for grocery
Grooming	Using a telephone
Transferring	Driving and using transport
Feeding	Managing finances
	Housekeeping
	Laundry

c. Timed Up-and-Go Test- This test is used for assessment of function in elderly living in the community and especially for those with gait instability or falls. The process includes the following:

a. For conducting this test you need an armchair, a line drawn 10 feet from the chair, a timer with a second hand or a stopwatch.
b. The patient should sit correctly (hips all of the way to the back of the seat) in a stable chair with arm rests.
c. The patient should use regular footwear, spectacles, walking aid but is not to be assisted physically.
d. The instructions are: Rise from the chair, walk to the line 10 feet away, turn, walk back and sit down again. The patient should walk at the regular pace.
e. The patient may rehearse the process once to get familiarized with it.
f. During the actual performance, the whole process is timed.
g. Normal time is < 10 seconds. Those with > 20 seconds should undergo further evaluation.

Timed Up and Go Test has been attached as annex

2. Quality of Life

a. **WHO QOL-** It is a general quality of life instrument administered through the individual's self-report or through interview. WHO-QOL has been developed cross-culturally and is available in several languages including a Hindi version. The individual's appraisal on the six domains of quality of life and twenty-four facets is covered within each domain. There is a WHOQOL-Bref with one from each of the 24 facets. All items are rated on a five point scale (1-5). WHOQOL (both 100 and Bref) are validated scales but difficult to use in the busy clinical practice set-up unlike the ADL and IADL scales.

Table 2: Broad issues covered in WHOQOL 100:

Physical Health	Fatigue Discomfort Sleep
Psychological Health	Appearance Feelings: positive and negative Self-esteem Cognition
Independence	Activities of daily Living Work capacity
Social relations	Personal relationships Social Support Sexuality
Environment	Safety Accessibility : Health , social Recreation : Pollution, Noise Transport
Personal beliefs	Spiritual , Religious , Other

D. Management: Like diagnosis, management of functional decline and quality of life in the elderly also needs the coordinated action of a multidimensional team.

Table 3 provides the basic principles to be taken by the primary care clinician:

Table 3: Risks factors or Contributors to poor Quality of Life and functional status

1. Increasing age	It is a non-modifiable risk factor but as age progresses, the physician must be on the lookout for changes in functional status especially the Advanced Activities of living and IADL as well as general mood of the patient.
2. Female gender	The physician must identify important personal, socio-economic and physical factors which may need to be addressed. Especially important is loss of role (decision making and respect) and of spouse. Financial, social, nutritional status as well as physical and psychological abuse and security issues needs to be addressed.
3. Limitations in physical mobility	This can be identified by self-reporting or TUG. Performance testing by six-minute walk test. Encourage physical activity, participation in resistance training and aerobic exercise, balance training. An individualized protocol or group exercise therapy may be considered in the community. Complex cases may need physiotherapist and occupational therapist referral. Yoga and tai chi can be encouraged.
4. Auditory , visual and speech deficits	These require specialist referral for evaluation and correction of the deficit.
5. Co-morbidities and Polypharmacy	Patients may need a CGA and identify all medical aspects using the principles of rational drug policy, avoidance of polypharmacy, encourage non-pharmacological approaches and focused specialist referral.
7. Hospitalization	Identify the reason for hospitalization and start discharge planning at the earliest. Identify problems directly related to hospital admission like bed sores, catheters, incontinence, immobilization, venous thrombosis delirium and initiate corrective measures. Use of air mattresses, DVT prophylaxis, appropriate sedation, maintenance of hydration and nutrition, minimize use of catheters and invasive lines, encourage gradual mobilization, and shift to dischargeable condition.
8. Psychosocial factors including depression and Substance abuse	Using common geriatric psychiatric assessment scales such as the GDS- short form and basic counseling followed by pharmacotherapy. Complex cases may need psychiatrist referral.

9. Lower social interactions	Create elderly communities and other novel approaches may be tried. Reinforce family support.
10. Obesity , low body weight, Malnutrition, dehydration, Vitamin Deficiency	Provide general dietary advice and refer to a Dietician.
11. Poor lifestyle	Encourage lifestyle modification
12. Pain	Step-up analgesic therapy through the analgesic ladder. Refer the cases to a pain clinic.
13. Recurrent transient episodes of disability	Identify and treat the precipitating illness.

Case scenario:

1. An elderly male of age 70 years, professional sitar player, develops essential tremors. How would you approach the case?
2. A retired bank employee has stopped going to social functions and participating in his favorite hobby i.e. gardening. How will you approach the case?
3. An elderly female of 65 years admitted to the tertiary hospital with pyrexia of unknown origin is diagnosed on extensive investigation to have a psoas abscess-most likely tubercular in etiology. She is bed-ridden with bilateral lower limb swelling and poor appetite. Kindly suggest the functional improvement plan.

Key messages:

1. Functional and Quality of Life assessment in the elderly is a very important component in management planning.
2. A primary care physician should be able to evaluate elderly functional status using scales for activities for daily living / IADL / AADL.
3. The quality of life is an important aspect in the life of elderly patients and has to be accorded high priority. Hence, the wishes of older adults with respect to treatment options must be respected.

4. The management of an elderly patient must be carried out by a team of different specialists but basic components of all care must be within the domain of primary care physician.

Summary:

The importance of functional assessment cannot be underestimated in the elderly in whom attainment and maintenance of good functional status is often more relevant than simple treatment of a disease. Several well validated scales are available to gauge functionality and quality of life in an older adult. The primary care physician should be aware of the simpler scales and questions in routine practice to track the course of an older patient. Further, the management plan should involve multi-dimensional interventions and the help of specialists and involvement of family members as well as social support as needed.

Further reading:

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