The word Dementia comes from the Latin de meaning “without” and mens meaning “mind”. Dementia is a significant loss of intellectual abilities such as memory capacity, severe enough to interfere with social or occupational functioning. It affects memory, language, perception, behaviour and cognitive skills such as judgement and abstract thinking. Dementia usually first appears as forgetfulness. But as the dementia progresses and becomes worse, symptoms are more obvious and interfere with the ability of individuals to take care of themselves and ADL’s (Activities of Daily Living). Depression affects 20–30% of people who have dementia, and about 20% have anxiety.

A recent survey done by Harvard University School of Public Health and the Alzheimer’s Europe consortium revealed that the second leading health concern (after cancer) among adults is Dementia. Prevalence of dementia increases with age over the age of 65, its prevalence is 5-10% and at 85 it is 25-50%. Most types of dementia are non-reversible which means the change in the brain that are causing the dementia can’t be stopped or turned back. Alzheimer’s disease is the most common type of dementia.

Types of Dementia

1. **Cortical Dementia**: Where the brain damage primarily affects the brain’s cortex or outer layer. It tends to cause problems with memory, language, thinking and social behaviour.

2. **Sub cortical Dementia**: Part of the brain below the cortex is affected. It tends to cause changes in emotions and movement in addition to problems with memory.

3. **Progressive Dementia**: It gets worse overtime, gradually interfering with more and more cognitive abilities.

4. **Primary Dementia**: That does not result from any other disease e.g. Alzheimer’s disease, vascular dementia, lewy body dementia, HIV associated dementia.

5. **Secondary Dementia**: That occur as a result of a physical disease or injury e.g. progressive supranuclear palsy, Multiple Sclerosis, ALS (Amyotrophic Lateral Sclerosis) Dementia.

Diagnostic Criteria

According to DSM-IV, diagnostic criteria for Dementia is:

1. Memory impairment: impaired ability to learn new information or to recall old information.

2. One or more of the following:
   - aphasia (language disturbance);
   - apraxia (impaired ability to carry out motor activities despite intact motor function);
   - agnosia (failure to recognize or identify objects despite intact sensory function);
   - disturbance in executive functioning-impaired ability to plan, organize, sequence, abstract

3. The cognitive deficits result in functional impairment (social/occupational).

4. The cognitive deficits do not occur exclusively solely during a delirium.

5. Not due to other medical or psychiatric conditions.

Interventions In Dementia

This includes following:

1. **Physiotherapy**: It helps in improving physical function (mobility, balance, coordination and strength), in treating difficulties associated with ageing such as...
limited range of movement, swelling, pain and increased risk of falling and thus improves independence with ADL’s and quality of life. It also plays an important role in advising and supporting family and carers to live easier lives by reducing stress levels.\(^4\)^\(^5\)

2. **Behaviour Modification Techniques:** BMT is a psychotherapy that seeks to extinguish or inhibit abnormal or maladaptive behaviour by reinforcing desired behaviour and extinguishing undesired behaviour. Ullman and Krasner\(^6\) have described the essential nature of the behavioural approach as using ‘systematic environmental contingencies’ to alter directly the subject’s reactions to situations.

3. **Reality Orientation Therapy:** Reality Orientation Therapy (RO) originated in 1958 when James Folsom set up an ‘aide centred activity program for elderly patients’ at the Veterans Administration Hospital in Kansas.

4. **Environmental design:** The environment should be supportive and therapeutic. Mobility aids or equipment should be advised for the home to ensure safety and promote mobility and function. Attention should be paid to: lighting, colour schemes, floor coverings, assistive technology, signage, garden design, and the access to and safety of the external environment. Designing should comply with the Disability Discrimination Acts 1995 and 2005, because dementia is defined as a disability within the meaning of the Acts.

5. **Care and Equality:** People with dementia should not be excluded from any services because of their diagnosis, age or coexisting learning disabilities. People with dementia and their carers should be treated with respect at all times. Health and social care staff should identify and address the specific needs of people with dementia and their family members arising from gender, age, religion, ill health, physical disability, sensory impairment, communication difficulties, problems with nutrition, poor oral health and learning disabilities.

6. **Psychological interventions:** Psychological interventions for people with dementia should include assessment and monitoring for depression and/or anxiety. For people with dementia who have depression and/or anxiety, cognitive behavioural therapy, which may involve the active participation of their attendents, may be considered as part of treatment. A range of tailored interventions, such as reminiscence therapy, multisensory stimulation, animal-assisted therapy and exercise, should be available for people with dementia who have depression and/or anxiety.

**Physiotherapy Interventions**

**Aims of Physiotherapy**

1. **To improve physical function** (mobility, balance, coordination and strength).
2. **To reduce risk of falls** - changes in judgement and spatial control contribute to tendency to fall. Exercises improve balance and reduce the fear of falling.
3. **To lift mood, ease stress and add calm** – Exercises help to reduce the incidence of depression, agitation and aggression symptoms that are common with dementia patient.
4. **To improve general cardiovascular health.**
5. **To pass time in enjoyable way** - provide a sense of accomplishment from the person with dementia.
6. **To improve sleep** - sleep disorders are common in dementia patients. Exercise can help them get into normal sleep routine.
7. **To slow mental decline** – exercise seems to slow brain atrophy especially in the hippocampus, which influence memory and spatial navigation.

**An exercise routine should be composed of:**

1. **Flexibility exercises for Musculoskeletal System:** Exercises increases joint range of movement and muscle strength making daily tasks easier.\(^4\) It includes:

   - **Both active and passive ROM (Range of Movement) exercises**
     - Exercises should focus on strengthening the
patient weak elongated extensor muscles while ranging the shortened tight flexors muscles.
- ROM exercise should be also emphasize restoring range in the neck and trunk and can be performed in combination with rotational exercises to promote relaxation.

II. PNF (Proprioceptive Neuromuscular Facilitation) Pattern: Muscle inhibition techniques Hold Relax or Contract Relax. Contract Relax is the preferred technique because it combines autogenic inhibition from isometric contraction of the tight agonist muscles with active rotation of the limb.

III. Traditional Stretching Techniques :
- Gentle stretching of elbow flexors, hip, knee flexors and ankle plantar flexors.
- Stretching can be combined with joint mobilisation techniques to reduce tightness of the joint’s capsule or of ligaments around a joint.
- Autostretching or Self-stretching.
- Maintain the stretch force atleast 15 – 30 seconds. Ideally the stretches are repeated atleast 3-5 times.
- Ballistic stretches (high intensity bounding stretches) and aggressive stretch should be avoided.

2. Balance Training: It is important in patients with dementia to improve confidence and reduce the risk of falling. As balance is position specific so both standing and sitting balance exercises are encouraged. Right movement and frequency of exercises are suggested by trained physical therapist. They help the patient in improving general body coordination and provide better sense of surrounding space and environment.
- The balance training always begin from lower COG (Centre of Gravity) to higher COG.
- Training should begin with weight shifts in both sitting and standing in order to help the patient develop an appreciation of his limits of stability.
- By giving the slight push to patient and patient tries to maintain the balance.
- Reaching activities.
- Activities on Swiss ball.
- Kitchen sink exercises: The patient can be instructed heel-toe standing, partial wall squats and chair rises, single limb stance with side kicks or back kicks and marching in place, all while maintaining light touch down support of the hands.

3. Strength Training: It helps in building lean muscle mass, increasing metabolism, controlling blood sugar levels. Ideally 10-15 repetitions of 8-10 exercises should be performed thrice a week. Resistance may be applied with therabands, light weight dumbbells etc.

4. Gait Training: Gait re-education helps in improving mobility and functional ability without support.
- The major goals are to lengthen stride, broaden BOS (Base of Support), improve stepping, improve heel–toe gait pattern, increase contralateral movement and arm swing and provide a programme of regular walking.
- Weight transfer; standing on single limb.
- High stepping to strengthen the flexors.
- Side stepping or crossed stepping with or without support.
- PNF activity of braiding, which combines side to side stepping with alternate crossed stepping to improve the lower trunk rotation with stepping movement.
- Normal heel-toe progression.
- To overcome shuffling pattern, draw foot marks or parallel lines with red or yellow colours; then ask the patient to walk on it.
- The patient should practice stopping, starting, changing direction.
- Auditory cues can be effective in improving gait. Turning of 180 degree should be practiced first then 360 degree.

5. Aerobic Exercises: aerobic training helps in improving cardiovascular health, strength the hormones immune system. As physical activity decreases beta-amyloid proteins leading to decreased amyloid plaque. Neural disruption, hence improving brain health. Aerobic exercise includes jogging, cycling, swimming or any physical activity that rejuvenate the patients pulmonary and cardiac capacity. For maximum benefits 30 minutes session thrice a week is advised. Patients can start with 10 -20 minutes sessions depending on fitness levels and can progress accordingly. Alternative exercise
form such as dancing could be included in aerobic exercises. It is good for people who find standard exercises and weight training boring. It can help dementia patient in reducing some of the mobility problems that arise due to other ailments.

6. **Improve urinary incontinence**: Etiology of incontinence in dementia is multi-factorial. Comprehensive assessment of factors within and outside the urinary tract is essential. Management techniques include toileting, medication, physiotherapy, surgery, and other devices. Physiotherapy includes pelvic floor muscle exercises, biofeedback, and electrical stimulation.

Conclusions

It is well known that dementia is one of the most feared illness of ageing. People don’t want to lose their independence and quality of life as a consequence of ageing. Exercise has a positive effect on older patients with dementia and results in a significant improvement in cognitive and functional activity.

References

4. en.wikipedia.org/wiki/Dementia