An Overview on Dementia: A Major Symptom of Alzheimer's Disease

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1. Introduction:
Dementia is a term used to describe an acquired illness that results in the loss of two or more cognitive abilities as a result of a brain disease or injury 1,2. Dementia is traditionally linked to degenerative illnesses of the cerebral cortex, with AD being the most prominent example. Dementia is also seen in neurologic disorders that involve predominately subcortical areas such as the basal ganglia and brain stem 3,4. It is mostly connected with the more than one neuropathology, usually Alzheimer disease (AD) with cerebrovascular pathology and Parkinson’s diseases 1. Dementia is a clinical diagnosis that requires new technology to treat the cognitive abilities in the patient that will lead to the decline in cases. In terms of social, physical, and mental health, people with dementia are more reliant and insecure, highlighting the issues that society and health care facilities face 5. Dementia is a symptom that affects daily functioning and cognition, primarily disrupting the patient’s independence. Dementia is better described as a syndrome rather than a single disease because it encompasses a variety of neurodegenerative conditions that can be classified as AD dementia (DAT). Dementia has a variety of origins, including neurological, neuropsychiatric, and medical problems. Alzheimer disease and dementia with Lewy bodies are the most frequent neurodegenerative dementias in the elderly, but traumatic brain injury and brain tumours are common causes in younger adults 2. Parkinson’s disease symptoms come later in the disease’s progression, but it’s called dementia with Lewy bodies’ symptoms if they appear early on with cognitive impairment and early signs of psychosis. The patient progresses from moderate to severe stages of disease when they exhibit symptoms like risk of aspiration with unsafe swallowing, malnutrition, deep venous thrombosis, infections, and immobility with associated risks for bedsores, eventually becoming incontinent, mute, and bedridden at the end of the phase, demonstrating that these complications are the direct cause of death in the patient with Alzheimer’s disease.

2. Pathophysiology:
Dementia of Alzheimer type (DAT) is most common example for the Neurodegenerative disease. The Pathophysiology of Alzheimer disease is mostly based on the Cortical and Subcortical areas. Cortical areas include the frontal lobe, parietal lobe, temporal lobe and occipital lobe and sub-cortical areas include diencephalon, pituitary gland, limbic structures and the basal ganglia.
Both are regarded the same in dementia, but there are some clinical differences. Memory impairment and advancing intellectuality are more severe and fast in DAT than in sub-cortical disorders. Sub-cortical dementias are often devoid of cortical dementia symptoms such as aphasia, agnosia, and apraxia. People with sub-cortical illnesses are described as apathetic (uninterested) and frequently depressed, whereas patients with DAT have little insight and are rarely depressed. Plaques and tangles are mostly involved in the dementia because plaques are considered as the neuro-pathological tombstones of amyloid cored, dying pinched off cholinergic nerve endings that are observed in the outer layer of al cortical lobes except in the occipital, the hippocampus, the amygdale, the hypothalamus and the granular layer of the cerebellum where Tangles are the silver-staining twisted cords that one find in a larger cortical neurons are most active in the younger ones s in the elder patients with SDAT[Senile Dementia Alzheimer Type], Acc. to the reports no one yet has been able to report the tangles cells predestined for an early death although this seems likely since the tangles are occurred in the large pyramidal cells of the cortex which are selectively die out in SDAT.

Alzheimer disease (AD) results from the overproduction and impairment of the Beta-amyloid. The Downstream events are tau hyperphosphorylation and neuronal toxicity. Pathological features of AD include:

1. Brain atrophy from regional neuronal and synaptic loss,
2. Extracellular Beta-amyloid deposition in the form of neuritic plaques,
3. Intraneuronal tau protein deposition in the form of intraneuronal neurofibrillary tangles.

Beta-amyloid gets deposited on the cerebral blood vessels. In this, the small amount of amyloid to major amount gets deposited which distort the artery architecture and cause cortical micro-infarcts, micro-aneurysms, and cerebral micro-hemorrhages or macro-hemorrhages (multiple small hemorrhages in the occipital lobes in the patient). Amyloid deposition is start begin years prior for the developing the symptoms that will lead to the dementia Alzheimer type. The performance of patients with DAT was different as compared to the patients with PD. In patients with DAT, overall mental functioning, memory performance and visuospatial skills were more severely impaired as compared to the patients with PD. There was a significant disturbance on
all language related tasks and evidence of apraxia and depression was also evident. The qualitative and quantitative functions differ in the dementia syndromes which are associated with the Parkinson’s disease and DAT. The similarities do exist in the dementia of PD and DAT and pathological similarities are there which have been noted down and tells about the similar performance of cortical degeneration in Parkinson’s disease and Dementia of Alzheimer’s Type 7 & performance of subcortical degeneration in the patients with both the disorders 10 (Figure 1).

3. Epidemiology:

Like Alzheimer disease, Parkinson’s disease, Dementia etc. that lead to the cognitive inabilities in the patient. There are so many cases generated by the Neurodegenerative diseases that states that;

1. Acc. to the researches, it only shows impact on the 65 years older people i.e., AD Dementia will increase from 63 to 137 million in America, from 113 to 170 million in Europe, from 172 to 435 million in Asia 5,9.

2. The factors include alcohol consumption, traumatic brain injury (TBI) and Air Pollution are the most risky factors that increase 12% dementia in the patient 11.

3. In UK, the changes in the factors suggest that there is 57% increase in the number of the Dementia patients in 2016 and as expected from the researches it estimated that there will be 70% increase in the year 2040 lead to 1.2 million people (Table 1) 11–13.

4. In 2013-2014, there were 19,765 people found with dementia in Northern Ireland 5.

5. Globally, It estimated that every 20 years there is an increase in the patient of the dementia which is based on the shifting population demographic, the aging population 5.

6. From 2013 to 2050 it is estimated that there will be 115 million patients that will affected by the Dementia 5.

7. In Swedish, they have registered the 78,346 patients of Dementia in SveDem (Swedish Dementia Registry) from 2007 to 2017 and in those patients, most common dementia types were Alzheimer Dementia (31%) and mixed Alzheimer Dementia (19%), followed by unspecified Dementia (23%), Vascular Dementia, Lewy Body Dementia (2%), Frontotemporal Dementia (2%), Parkinson’s with Dementia (2%) and other (2%) 14.

4. Subtypes of Dementia:

Dementia can be divided into four categories (Table 2);

5. Factors involved in Dementia:

Mostly Less education, High blood pressure, obesity, hearing loss, depression, physical inactivity, smoking and social isolation are the major nine potential risk factors of dementia which are associated with 35% of Population Attributable Fraction (PAF) 30. Risk factors associated in early life (education), midlife (hypertension, obesity, hearing loss, TBI and alcohol misuse) and late life (smoking, depression, physical inactivity, social isolation, diabetes, and air pollution) can contribute to increased dementia risk 20–29 (Figure 2).

Table 1: Gender specific age-related prevalence (%) of dementia in the UK (estimates from Dementia UK 2014) 7

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Age (Years)</th>
<th>Female</th>
<th>Male</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60–64</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>2</td>
<td>65–69</td>
<td>1.8</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>3</td>
<td>70–74</td>
<td>3.0</td>
<td>3.1</td>
<td>3.0</td>
</tr>
<tr>
<td>4</td>
<td>75–79</td>
<td>6.6</td>
<td>5.3</td>
<td>6.0</td>
</tr>
<tr>
<td>5</td>
<td>80–84</td>
<td>11.7</td>
<td>10.3</td>
<td>11.1</td>
</tr>
<tr>
<td>6</td>
<td>85–89</td>
<td>20.2</td>
<td>15.1</td>
<td>18.3</td>
</tr>
<tr>
<td>7</td>
<td>90–94</td>
<td>33.0</td>
<td>22.6</td>
<td>29.9</td>
</tr>
<tr>
<td>8</td>
<td>95+</td>
<td>44.2</td>
<td>28.8</td>
<td>41.4</td>
</tr>
</tbody>
</table>

Table 2: Subtypes of dementia

<table>
<thead>
<tr>
<th>S No.</th>
<th>Contents</th>
<th>Alzheimer’s</th>
<th>Vascular</th>
<th>Lewy body</th>
<th>Fronto-temporal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mechanism</td>
<td>Accumulation of β-amyloid plaques and neurofibrillary tangles in the brain’s entorhinal cortex and hippocampus, resulting in neuronal damage and death</td>
<td>Other disorders that interrupt or restrict blood flow to the brain cause neuronal depletion of oxygen levels. As a result of various conditions that disrupt or restrict blood flow to the brain, neuronal depletion of oxygen levels occurs</td>
<td>Dementia caused by abnormal insertion of alpha-synuclein protein into neurons</td>
<td>Occur when nerve cells in the frontal and temporal lobes of the brain are lost</td>
</tr>
<tr>
<td>2</td>
<td>Prevalence</td>
<td>60 to 80%</td>
<td>10-20%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>Severity</td>
<td>More severe</td>
<td>Less severe than alzheimer’s dementia</td>
<td>Mild to moderate</td>
<td>Less but can be seen in younger people</td>
</tr>
<tr>
<td>4</td>
<td>Major parts affected</td>
<td>Neurons and their connections in parts of the brain involved in memory, including the entorhinal cortex and hippocampus</td>
<td>Widespread damage to white matter beneath the cortex</td>
<td>Abnormal deposits of a protein called alpha-synuclein in the brain that can lead to problems with thinking, movement, behavior, and mood</td>
<td>Frontal and temporal lobes</td>
</tr>
<tr>
<td>5</td>
<td>Factors</td>
<td>Hypertension, excessive alcohol consumption, heart disease, diabetes</td>
<td>Diabetes, smoking, Hypercholesterolemia, Hypertension</td>
<td>Mental retardation, Bradykinesia, rapid eye movement (REM), sleep disturbances</td>
<td>Personality changes, behavioral disorders, visuospatial function affected</td>
</tr>
</tbody>
</table>
5.1 Education and Midlife and Late-Life cognitive stimulation: In today’s scenario, the education is very important for the reduction of the Dementia risk and this will have life-long higher educational attainment 20,24,31,32. Because of the new abilities, it appears that cognitive ability grows with education, implying that cognitive stimulation is more important in early life. Much of the apparent later effect could be due to people with higher cognitive function seeking out cognitively stimulating activities and education 33. It is difficult to separate out the specific impact of education from the effect of overall cognitive ability 33,34, and the specific impact of later-life cognitive activity from lifelong cognitive function and activity 34,35 (Figure 2).

5.2 Hypertension: It is a serious factor that is associated with increased risk of later-life dementia 36. In Framingham, offspring cohort study comprised about the 1440 people where the systolic blood pressure (2140 mm Hg in midlife: mean age 55 yrs.) had connected with the symptom which increased the risk of dementia over an 18 year follow-up period 37. A cohort study focuses on the mechanisms by which they reported that midlife hypertension, defined as from age 40 yrs., was associated with decreased volumes and increased white matter hyper-intensity volume but not amyloid deposition 38. It noted that blood pressure declines in later-life and this decline is caused by the dementia development 37,39,40 (Figure 2).

5.3 Diabetes: In 2017 commission, reported that diabetes is one of the risk factors for the dementia and to study the diabetes in the treated and non-treated patient is challenging in the observational studies. When the 14 cohort studies were performed on the 2-3 million people with type-2 diabetes, in a pooled meta-analysis it was observed that diabetes was highly risk factor for any type of dementia 41. According To Sabia et al., 2019, People who are using the medicine metformin to treat dementia, which lowers the prevalence of cognitive impairment, were compared to those who were on another medication or no treatment, according to one meta-analysis of cohort studies of diabetes 11,42. Following the completion of the analysis, it has been determined that Type-2 diabetes is a clear risk factor for the development of dementia; however, it is uncertain if diabetic medication reduces this risk. Dementia risk is not reduced by strict diabetes control 11 (Figure 2).

5.4 Excessive Alcohol Consumption: Excessive drinking is always associated with the brain changes, cognitive impairment and dementia i.e., known for the centuries 43. Increased alcohol use in the body generates a complex association with cognition and dementia, according to thorough cohorts and large-scale record-based research. It will be difficult to comprehend alcohol because it is largely associated with cultural patterns and other socio-cultural and health-related aspects. During a 5-year longitudinal research in France, almost 31 million patients were admitted to hospitals, and it was discovered that patients who used alcohol increased their risk of dementia, and men and women ratios for these risks were determined separately 44 (Figure 2).

5.5 Smoking: Smokers have higher rate of risk of dementia than non-smokers 20, and at a higher risk of premature death before the age at which they might have developed dementia, introducing some bias and uncertainty in the association between smoking and risk of dementia 45,46. STOPping smoking at older will reduce the chances of risk of dementia in the people. Among 50,000 men stopping the smoking at the age older than the 60 years for more than 4 years has subsequently reduced the risk for dementia 47. Globally, it was estimated that 35% non-smoking adults and 40% of children are exposed to second hand smoke 48; understandably the literature of this exposure and dementia risk was scary. Even after controlling for the other confounding factors, one of the study showed that in women of age 55-64 years, second hand smoke exposure was associated with the memory deterioration and the risk increased with the exposure duration 49 (Figure 2).

5.6 Depression: Depression may be linked to a range of psychological or physiological factors that increase the risk of dementia. The development of a disease is indicated by early symptoms and stages of dementia, and depressive symptoms are a result of dementia onset. Few studies have shown that depression is a risk factor for dementia in the context of diabetes, and none have discriminated between treated and untreated depression. Depression was found to be a risk factor for dementia in a meta-analysis of 32 trials involving 62,598 participants and follow-up ranging from 2 to 17 years 50. When the period of follow-up was greater, meta-regression analysis revealed a non-significant trend for the link between depression and dementia to be weaker 51. The Australian Longitudinal AD Neuroimaging Initiative studied 755 persons with mild cognitive impairment and a history of depression to see if selective serotonin reuptake inhibitors (SSRIs), such as citalopram, may reduce amyloid plaque development and formation in animal models 52 (Figure 2).

5.7 Air-Pollutants: Pollutants in the air and particulate matter have been linked to poor health outcomes, including non-communicable diseases 53,54. It is the increased levels of dementia risk from air pollutants are still being the mixed effects of them and the impact on animal models are clearly evidences of physiological effects over and above those driven by life-course deprived high nitrogen dioxide (NO2) concentration, fine ambient particulate matter (PM2.5) from traffic exhaust 55-57 and PM2.5 from residential wood burning are associate with increase in the cases of dementia. The traffic on the roads also produces NO2 and PM2.5 and it is very hard to separate out the additive effects of different types of pollutants 55-57. A systematic review of studies until 2018 including 13 longitudinal studies with 1-15 years follow-up of air pollutants exposure and dementia, found exposure to PM2.5, NO2 and carbon monoxide were all associated with increased dementia risk 58. There is lots of burden of dementia and excessive death because of the PM2.5 in 10-year US study was particularly high in black or African American individuals and socio-economically disadvantaged communities and related to particulate PM2.5 concentrations above the US guidelines 59 (Figure 2).

5.8 Sleep: Sleep is a factor to affect the dementia, mechanisms is unclear but sleep disturbance has been linked with β-amyloid deposition 60,61, reduced the activation of glial fibrillary clear pathways 62, low-grade inflammation, increased tau, hypoxia 60,63 and cardiovascular disease 64. Sleep disturbance is speculated to increase the inflammation by which it raises β-amyloid deposition, it leads to the AD and further it causes the sleep disturbance 65. The results of two meta-analyses were similar: the first was a synthesis of longitudinal studies with an average of 9.5 years of follow-up, while the second revealed mixed-quality cross-sectional and prospective cohort studies with various ways of assessing sleep. Sleep disturbances were defined broadly, including the short and long sleep duration, poor sleep quality,
obstructive sleep apnoea, insomnia and circadian rhythm abnormality. All these symptoms were associated with the higher risk of all types of dementia, and clinically diagnosed AD compared with no sleep disturbances, at the baseline from their analysis, not all the cohort studies excluded those with cognitive impairment or dementia 67 (Figure 2).

6 Symptoms:
The symptoms like cognitive decline, behavioral symptoms, functional decline, and cognitive testing remain used for the further clinical diagnosis and staging of patients with Alzheimer Disease (Figure 3).

6.1 Cognitive Decline: Memory impairment is the most prevalent feature of Alzheimer Disease and in non-memory cognitive decline such as executive dysfunction, apathy or personality changes, aphasia (a disorder that damage the part of the brain which produce and process language) is presently seen in many people, in general, memory decline is most popular symptom i.e., language disturbances, it is a symptom of Alzheimer disease which in the mild stages of dementia and progresses throughout other course of the disease. Executive dysfunction is also a major symptom that is shown during the pre-dementia stages and these were similar to all other cognitive domains, it become serious over the disease course (Figure 3).

6.2 Neuropsychiatric symptoms: Dementia patients exhibit a wide range of neuropsychiatric symptoms. Behavioral symptoms are serious over the course of the disease; however, because these are fluctuating symptoms, they are not present at every visit. Excess morbidity has a significant impact on caregiver burden and is the major cause of institutionalization, thus it’s crucial to pay attention to these treatable components 68. Apathy, anxiety, and irritability are the early neuropsychiatric symptoms of AD, and later, there are two symptoms that become hard for the patient and worsen the disease. Disturbances in appetite, sleep, disinhibition, and disturbances in perception (hallucination) or thought are all symptoms of depression in the later stages of dementia (delusions). There are also more neuropsychiatric symptoms such as anosognosia (loss of vision) and irrelevant conduct, which creates a challenging management dilemma (Figure 3).

6.3 Other illnesses in Dementia: Multimorphism is a challenge in dementia, not just because persons with dementia often have other conditions that increase their risk of developing disorders, but also because finding better treatments for dementia patients will be tough. People with dementia sometimes have problems that they don’t understand, such as not knowing what to eat or drink, increased falling and infection rates, and they may forget to tell their doctor or family members about their symptoms. They may also struggle to understand the disease because they are unaware of the disease’s symptoms 69. Professionally, the healthcare system requires an education system that allows them to speak and understand persons with dementia more easily 70. Compared to the previous history older population, people with dementia have increased chances for cerebrovascular disease 71-74, stroke 75, Parkinson’s Disease 71,73, diabetes 73,75, skin ulcers, anxiety and depression 71,73, pneumonia, incontinence and electrolyte imbalance 73 (Figure 3).

7 Causes of dementia:
The death rate from dementia is rising every day, but there is little data for end-of-life care.
Figure 2: Factors involved in dementia

Figure 3: Symptoms of Dementia
8. Diagnosis:

The diagnostic standard for dementia is the Diagnostic and Standard Manual of Mental Disorders, Fifth Edition (DSM-5) 97.

8.1 History Examination or Evaluation: There are so many risky factors in which the history focuses on that include the medical conditions, medication complications, existing brain disorder which leads to the another disorders those are linked to it and it includes risky factors (as mentioned in the factors involved in the dementia), vascular disease risk factors (like hypertension, diabetes 98,99) brain disorder (Parkinson’s disease, stroke, trauma etc.) and other medication complications like anxiolytics (benzodiazepines) 10, anticholinergics (tricyclic antidepressant, anti-muscarinic) 11, analgesics (codeine containing agents) which causes the cognitive impairment (like sleep aids 100) 11,6,101,102.

8.2 Impair cognition examination: This examination requires the identification of the cognitive impairment which includes the factors like anxiety, sleeping problems etc. There are some tests that used to detect the disease is the Montreal Cognitive Assessment (MoCA) 5,103, Mini-Mental State Exam (MMSE) 104, Abbreviated Mental Test Score (AMTS), Clock Drawing Test (CDT), Memory Impairment Screen (MIS) & General Practitioner Assessment of Cognition (GPCOG) 105-108 (Figure 4).

8.3 Neurological Examination: Neurologic examination examines objective evidence of neurocognitive disorders such as aphasia, apraxia, and agnosia. Common tests include physical examinations for diagnosing vascular disease and systemic symptoms 109 that may be associated with abnormal cause’s dementia (e.g., Wilson’s gold eye color [Kayser-Fleischer rings] disease). Neuroimaging to diagnose cortical and hippocampal atrophy (as seen in AD), or neuropathology that combines possible treatable causes of dementia (e.g., dislocated tumor, or normal pressure of hydrocephalus (which can be blocked) 110, using brain thinking as well MRI or CT scan 111-118.

8.4 Cerebrospinal Fluid testing and Genetic testing: Cerebrospinal fluid (CSF) tests can be performed to find evidence of AD (low amyloid and high levels of tau), another neurodegenerative disease (e.g., high protein 14-3-3 Creutzfeldt-Jakob disease or other causes) 119-123. Genetic examination is generally common in the younger patients because this process is generally connected with the families or relatives who have the history of dementia and this examination always shows the rare autosomal dominant forms of dementia in which giving the families a warrant genetic counseling to know more about the disorder in which they need to be examined 124,125.
### Tools For Impair Cognition Examination

<table>
<thead>
<tr>
<th>SERIAL NO.</th>
<th>TOOLS</th>
<th>SENSITIVITY</th>
<th>SPECIFICITY</th>
<th>TIME ADMINISTERED</th>
<th>AREAS OF ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mini-Mental State Examination (MMSE)</td>
<td>0.87</td>
<td>0.82</td>
<td>5-10 min.</td>
<td>Orientation, registration, recall, attention &amp; language</td>
</tr>
<tr>
<td>2</td>
<td>Abbreviated Mental Test Score (AMTS)</td>
<td>0.81/0.91</td>
<td>0.85/0.75</td>
<td>5 min.</td>
<td>Orientation, registration, memory, general knowledge</td>
</tr>
<tr>
<td>3</td>
<td>Montreal Cognitive Assessment (MoCA)</td>
<td>1</td>
<td>0.87</td>
<td>10-15 min.</td>
<td>Memory, attention &amp; concentration, executive functions, language, visuconstructional skills, conceptual thinking, orientation &amp; calculations</td>
</tr>
<tr>
<td>4</td>
<td>Clock Drawing Test (CDT)</td>
<td>0.86</td>
<td>0.96</td>
<td>3 min.</td>
<td>clock drawing</td>
</tr>
<tr>
<td>5</td>
<td>General Practitioner Assessment of Cognition (GPCOG)</td>
<td>0.82</td>
<td>0.83</td>
<td>6 min.</td>
<td>Recall, Time orientation, clock drawing, information</td>
</tr>
<tr>
<td>6</td>
<td>Memory Impairment Screen (MIS)</td>
<td>0.86</td>
<td>0.91</td>
<td>5 min.</td>
<td>Recall</td>
</tr>
</tbody>
</table>

Figure 4: Tools for Impair Cognition Examination: (1) MMSE 104,126, (2) AMTS 127,128, (3) MoCA 104,129, (4) CDT 130, (5) GPCOG 130, (6) MIS 131
9. Prevention And Care

To treat this type of disorders we need to be careful about their activities and there are some preventive methods in which a patient can be cured and that are:

9.1 Cognitive Training in people with Dementia: A Cochrane found in the 33 trials of cognitive training around 2000 participants' mild to moderate dementia and sometimes it is more severe at the risk of bias 132. The people with in trials are compared with the treated patient to know the cognition changes in the body whether they improved or not. The cognitive abilities include the fluency and improvement in the body and these changes will not show the direct evidence to suggest that cognitive training was better than cognitive stimulation therapy.

9.2 Exercise and Physical activity: Dementia and Physical Activity RCT 133, rated moderate to high aerobic intensity and strength training did not delay mental retardation in humans and moderate to severe dementia firmness. US Reduces Disability in Psychological Study 134, we have implemented multicomponent interventions at home which includes exercise education, training to increase fun events, and how to solve activator-behavior-sequence problem in 6 weeks by case managers. There are 255 people living in the community with adult dementia for more than 60 years with their family caregiver and able follow 140 (54 · 9%). The research found increased physical activity; days of taking 30 minutes or more exercise before and again after comparing the intervention.

9.3 Hospitalization: Hospitalization for people with dementia is associated with adverse, unintended consequences, including stress, declining performance and understanding, and high economic costs 135–137. People with dementia feeling long and regular intake again repatriation; the cost of health care for four people moderate dementia is almost double that people without dementia 138–140. Early detection of physical illness in people with dementia, especially pain, falls, diabetes, incontinence, and sensory impairment, are significant 141–143.

9.4 Prevent Abuse, reduce in dementia: Abuse may go unnoticed if families or professional staff feel that there is no better management options are therefore not properly recognized and reported 144. The good evidence is sure to make the interventions which increase the knowledge about the abuse behavior which help to maintain and detect the disorder and reporting the abusive behavior is an major step to stop it 145,146. Management of the most serious cases of abuse, which includes financial abuse, physical violence, and occasional murder, involves criminal justice systems. In California, medical professionals had a crime was indicted and sentenced under anti-adult abuse laws for the illegal chemical prevention of patients.

9.5 Family Support: For dementia patients, the families have difficulties to handle them because when the dementia progressively increases the mental illness also increases that made difficult for them to take complex decisions in the daily life, so, at that time families are major support for them to take the decisions. A person with mild dementia, decisions about daily life, social care, and treatment can usually be done by a person with dementia, usually with family support. As dementia progresses, the person with it dementia loses the ability to do more complex decisions and the caregiver becomes a substitute decision maker, changing partner relationships and reversing the role of parents and children 147–149.

9.6 Prevent Post-Stroke dementia: Stroke and dementia are related to each other which increase the risk and stroke increases the chances of dementia in which principally 90% stroke and 35% of dementia have been estimated to be preventable. According to the study, strokes doubles the chances of developing dementia and stroke is more common disease than the dementia. Previously psychological testing (<7 days) by the Montreal Cognitive Assessment predicts longevity cognitive outcome, functional outcome, and death after stroke and should be the case part of the treatment method 150.

10 Curative approaches for dementia:

Both non-pharmacologic and pharmacologic methods are used to treat the dementia patients as explained below:

10.1 Non-Pharmacological Management/ Treatment: It is a management which uses the socially interaction with the patients to help them to build the confidence and supervise the situations. As mentioned in the Table 3.

10.2 Pharmacological Evaluation: Types of treatment are used as mentioned below (Table 4):

10.2.1 Acetycholine-Estrase Inhibitors : Treatment with ACE inhibitors used to manage the mild-to-moderate dementia in the patients and these are classified into three drugs which recognized by the FDA and marketed in US i.e., Galantamine, Rivastigamine, Donepezil 155,156,151–158 (Table 4). The drug Memantine is also used as approved by the FDA 146,159,160 (Table 4.). Medications for Behavioral Changes: Symptoms of depression are treated with serotonin reuptake inhibitors (SSRIs) selected due to low propensity to create anticholinergics effects. New "Atypical" antipsychotic drugs (Quetiapine, risperidone, olanzapine) they are often used in low doses. Normal and atypical antipsychotic agents, however, carry a Black box warning label for associated with an increase in cardiovascular disease and death and cerebrovascular adverse events in the elderly with psychosis related to dementia 153–155.

10.2.2 Future Management for Dementia: The majority of current therapeutic trials are focusing on therapies that directly influence the pathologic cascade pathway in Alzheimer's disease. Because of the development of neuroinflammation in a subset of lessons, one that works immunization testing in people was disturbed. There was something extraordinary about the elimination of amyloid from the cortex in many of the study's deceased participants, implying that amyloid deposits can be eliminated. Active vaccinations (i.e., injections) and diseases caused by the development of "β- amyloid and tau and polymerization" are the focus of current research 161,162.
Randomized trials suggest that these interventions may have a "sent..." and "...le test is associated for..."

Table 4

Table 3: NON-PHARMACOLOGICAL TREATMENT

<table>
<thead>
<tr>
<th>Name</th>
<th>Therapy and Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Therapy</td>
<td>Psychological training and activities such as learning and playing games that involve the mind (e.g., chess, bridge) can help maintain comprehension and performance, as shown in random tests.</td>
</tr>
<tr>
<td>Relaxation therapy</td>
<td>Frustration and stress resulting from challenging activities should be avoided. Music or art therapy, and more methods of experience, can help maintain understanding or improve the quality of life.</td>
</tr>
<tr>
<td>Social</td>
<td>Because old childhood memories are kept for a long time, reminiscent, inclusive treatments psychotherapy uses personal history of news and early human life events, may improve mental well-being.</td>
</tr>
<tr>
<td>Exercise</td>
<td>Exercise, both aerobic (e.g., walking, swimming) and non-aerobic / conditioning (e.g., weights), improves cardiovascular health with the benefits of blood pressure and stroke risk, as well as randomized trials suggest that these interventions may have a positive psychological impact as well physical activity. However, not all randomized trials have shown the benefits of exercise cognition.</td>
</tr>
<tr>
<td>Biological clock</td>
<td>Security, including the patient’s mental, physical and financial well-being, should be monitored by a caregiver, with regard to home safety, such as the risk of kitchen fires that may be associated with it burns of the patient. Behavioral problems, such as physical abuse, are a major cause of the emergency room visits and facility facilities, and are associated with adverse patient outcomes (e.g., psychological and medical complications).</td>
</tr>
<tr>
<td>Diet</td>
<td>A random the clinical trial found that combined diet, exercise, mental training, and vascular risk intervention interventions improve understanding in people at risk for dementia.</td>
</tr>
<tr>
<td>Socio-Economic activity</td>
<td>Outdoor safety home includes work, where the caregiver may facilitate the patient to reduce or to suspend work, for example when handling equipment or making decisions about a company finances. Also, driving may need to be adjusted, which includes driving restrictions neighborhood and daytime driving to avoid getting lost. Although no single test is associated for better driving safety, driving ability should be re-tested periodically and discontinued based on the severity of dementia, accident prevention and injury.</td>
</tr>
</tbody>
</table>

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Table 4: Pharmacological treatment for Dementia

<table>
<thead>
<tr>
<th>Stage Modification</th>
<th>Brand Name</th>
<th>Dosage Modifications</th>
<th>Acetylcholine-Esterase Inhibitors</th>
<th>Glutamate Receptor Modulators</th>
<th>Combination Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild-to-Moderate</td>
<td>Razadyne, Reminyl</td>
<td>Extended Release Capsule: Starting dose: 8mg once daily for 4 weeks; If tolerated it will be increased to 16mg once daily for ≥4 weeks; If immediately needed, dose increase to the 24mg once daily.</td>
<td>Galantamine, Rivastigmine</td>
<td>Arixcept, Arixcept RDT</td>
<td>Nomazrac, Namzaric</td>
</tr>
<tr>
<td>Mild-to-Moderate</td>
<td></td>
<td>Transdermal Patch: Starting Dose: 4mg twice daily for 4 weeks; If tolerated it will be increased to 8mg twice daily for ≥4 weeks; If immediately needed, dose increased to 12mg twice daily.</td>
<td>Donepezil</td>
<td>Memantine</td>
<td>Memantine and Donepezil</td>
</tr>
</tbody>
</table>

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References:

### 11 Dementia and COVID-19:

During COVID-19 pandemic, the mentally ill people have suffered a lot because of their needs, works, having problems with lifestyles etc. Suffering and death are related disease (COVID-19) is exacerbated by an increase of 172 years with pre-existing conditions such as hypertension as well diabetes, 173 so many people with dementia are present some accident. People with dementia may find it difficult to stick to it measures to reduce transmission of the virus, as possible not understanding or remembering the changes needed to behavior, such as physical isolation and hygiene, leading to an increased risk to them and their caregivers. 174 Thus, people with dementia are at greater risk in COVID-19 because of their age, high flexibility, and difficulty in maintaining physical distance. 172,173,175. A social guide to dementia the COVID-19 epidemic highlighted important things and actions and was given guidance and resources among the six stages of dementia: Good prevention, good diagnosis, good given guidance and resources among the six stages of epidemic highlighted important things and actions and was given guidance and resources among the six stages of dementia: Good prevention, good diagnosis, good

### References

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### 12 Conclusion:

Dementia defined as an acquired syndrome that leads to the loss of two or more cognitive abilities caused by brain disease or injury. Mainly the cause of dementia can be detected by various methods those are history examination, physical
examination, laboratory testing and brain imaging (MRI). Dementia can be treated by the pharmacological and non-pharmacological methods in which their efficacy of treatment remains limited. But During COVID-19 pandemic, the people mostly have face this problem in which the treatment lack at sometime so in future, its need to promote and generate more therapies to treat the dementia that helps the people to manage their mental illness.

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References:


