

Who am I?

Alzheimer's Disease (AD)

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February 26, 2024

I. Background and Statistics of Alzheimer's Disease

Alzheimer's Disease (AD) is a condition that tampers with the cognitive abilities of a person. It is a progressive disorder that hinders the operational and behavioral aspects of an affected human - targeting their memory and thinking capacities heavily. AD plaques the hippocampus in the brain, as well as some parts of the cerebral cortex. The hippocampus is in charge of encoding memories - from spatial to long-term ones, and in the occurrence of Alzheimer's Disease, both hippocampi experience atrophy, which harms the carrier's ability to store and perceive their memories, especially its timelines. On the other hand, our cerebral cortex performs significant tasks involved in remembering, thinking, reasoning, emotions, and functions of the senses.

According to World Health Rankings and the tally of the World Health Organization (2020), the Philippines was ranked 172 globally based on Alzheimer's and Dementia deaths in the country. Two thousand ten deaths were tallied, which accounts for 0.30% of all deaths that year. Additionally, the age-adjusted death rate was revealed to be 3.10% per 100,00 of the population. As per Dominguez et al., the crude incidence rate of Dementia, a long-term cognitive disorder most often caused by Alzheimer's, was 16 per 1000 person-years (pyr) in the Philippines. Furthermore, the research has estimated 220,632 new cases in 2030, 295,066 in 2040, and 378,461 in 2050. Lastly, in 2018, it was concluded that dementia was prevalent in the country (de Guzman et al.); supported by a study that randomly sampled 1367 responses from Marikina City citizens 60 years and older, 10.6% was associated with dementia with the breakdown 85.5% AD, 11.7% VaD, and 2.7% other dementias.

II. Symptoms

Symptoms typically progress clinically in several stages; preclinical, mild or early-stage, moderate, and severe or late-stage.

In a study conducted by Bature et. al (2016), They found that the first symptoms to occur are depression and cognitive impairment. This is due to the fact that Alzheimer's disease patients have altered brain structure and function. Preclinical AD is caused by complex brain changes. This brain change includes the formation of amyloid plaques or tau tangles(Joe et. al, 2022; National Institute on Aging, 2022).

In mild Alzheimer's disease, a person is more troubled making sense of the world around them although they appear to be healthy. 12 years prior to clinically defined Alzheimer's disease dementia, patients experienced memory loss in their early days (Bature et al, 2016). Forgetting events and conversations that recently happened, finding the right words to say, trouble understanding visual images and spatial relationships, impaired reasoning or judgment, wandering or getting lost, taking longer to complete normal daily tasks, loss of sense of initiative and spontaneity, challenges in planning or solving problems, increased anxiety and/or aggression etc. are some signs leading towards alzheimer's disease (National Institute on Aging, 2022).

According to National Institute on Aging(2022), In moderate AD, patients may suffer increased confusion and memory loss, Inability to learn new things, difficulty with language associated with reading, writing and working with numbers, Shortened attention span, difficulty organizing thoughts, changes in sleeping pattern, difficulty in recognizing peers and family, withdrawal from social activities, restlessness, agitation, and impulsive behavior, Hallucinations, delusions, and paranoia.

As time passes, the disease progresses to more serious memory problems and leads to severe AD. Symptoms in these stages include inability to communicate, no awareness of recent experiences, weight loss with little interest in eating, seizures and general physical decline.

There is no treatment that cures Alzheimer's disease, only medicines that may improve or slow progression of symptoms and programs and services that help support people with the disease.

III. Consequences

Alzheimer's disease can impact one's quality of life in various ways.

A. Memory

People with Alzheimer's experience persistent memory loss that affects their ability to function at work or at home. They tend to struggle in communicating like forgetting conversations, repeating statements over and over, and finding it difficult to express their thoughts and finding the right words for everyday objects. Additionally, they might put items in random places and misplace them, wander and get lost in places they used to know well, and forget even their own family. In some cases, those suffering from this disease may become disoriented about time, possibly only recalling memories from their youth and believing they're 18 again, while forgetting the events of the rest of their lives. (*Alzheimer's Disease - Symptoms and Causes*, n.d.)

B. Thinking and Reasoning

Alzheimer's disease makes it difficult for people suffering with it to concentrate and think, particularly with abstract concepts like numbers. Handling money and paying bills may be

challenging because a person with this disease may not be able to recognize and deal with numbers.

Additionally, their ability to make sensible decisions and judgment deteriorate which makes it more difficult for them to respond to everyday problems. They might make poor choices in social settings or might not know how to decide when driving.

Doing more than one task or multi step activities also becomes a struggle for people with Alzheimer's disease. A person who suffers with it tends to forget how to do basic and familiar tasks such as cooking, dressing, and bathing.

C. Personality and Behavior

Moods and behaviors of people with Alzheimer's disease are affected by the changes of the brain. According to the National Institute of Aging, as a person's memory loss worsens, they may become paranoid when they forget. This causes distrust and aggression in others as they think that their caregiver or the people who have been introduced to them is a stranger and may cause them harm.

Brain changes also cause loss of interest in activities, isolation, depression, mood swings, loss of inhibitions, and delusions, such as believing something has been stolen. Hallucinations may also occur like seeing the face of their former friend in a wall or may see insects crawling in their body.

IV. Treatment

Currently, there is no permanent cure for those affected with Alzheimer's Disease. However, certain medications and interventions can temporarily slow the worsening of dementia symptoms and can further help with behavioral symptoms. Generally, four kinds of treatment and intervention can be labeled: Drugs or Medications, Intrapersonal Care or Lifestyle Changes and Home Remedies, Alternative Medications such as vitamins, and Interpersonal Care or

Coping and Support from your loved ones and family members. There can be more types that do not fall under the four; those mentioned earlier are only groups and generalize related treatments.

A. Drugs

As Alzheimer's Disease is highly individualized, the treatment also caters to the individual affected. Drugs are one of the treatments that can help manage cognitive functions (thinking and reasoning), and day-to-day functions. While there is no cure, medication can improve the quality of life and help prolong the independence of the patient (MayoClinic, 2023). Two types of medications are Food and Drug Administration (FDA) approved, those that can ease symptoms and those that can slow the progression of the disease. Further, some medications can lose their effectiveness over time; these drugs are most effective for those with early to moderate Alzheimer's. (Cleveland Clinic, 2022; MayoClinic, 2023)

The currently approved drugs of the FDA are Cholinesterase inhibitors, NMDA antagonists (specifically Memantine), and most recently, given accelerated approval, the Aducanumab (Aduhelm).

One of the ways that Alzheimer's harms the brain is by decreasing the amount of acetylcholine, a chemical messenger that is essential for cognitive functions such as memory, thought, and judgment. Cholinesterase inhibitors work by blocking the acetylcholinesterase or the enzyme that is responsible for destroying acetylcholine. By its name, they inhibit or block the enzymes to prevent the decrease of acetylcholine. Some cholinesterase inhibitors that are commonly prescribed are:

- Donepezil (Aricept) – for all stages of the disease; taken once a day as a pill.
- Galantamine (Razadyne) – for mild to moderate Alzheimer's; taken once a day as a pill or as an extended-release capsule twice a day.

- Rivastigmine (Exelon) – for mild to moderate Alzheimer’s; taken as a pill or skin patch.

Another treatment for Alzheimer’s is NMDA antagonists or Memantine (Namenda). This medication is used for moderate to severe stages of Alzheimer’s. It works by regulating the activity of glutamate, a messenger chemical widely involved in brain functions. Studies have shown that those who take memantine perform better in common activities such as eating, walking, bathing, and dressing.

B. Lifestyle Changes

Another treatment or intervention that we can do for patients is changing their lifestyles. Healthy lifestyle choices promote better health and can also play a role in maintaining brain health. Exercise, for example, has shown benefits that physical activity for individuals may help delay or slow a decline in cognitive functions, reduce stress, and help improve symptoms of depression. Some evidence also suggests that exercise directly benefits the brain cells through the increase of blood and oxygen flow. Aerobic exercise, which increases your heart rate by 20 to 30 minutes, provides the most benefit for physical and cognitive health. Some exercises involve vigorous walking, bicycle riding, or sports such as tennis and basketball (Alzheimer’s Association, n.d.).

C. Alternative Medicine

“Medical Food” is a term that can legally only refer to a food that treats a condition with a “distinctive nutritional requirement”. Alternative medicine or herbal remedies, such as vitamins and other supplements can also help promote cognitive health and prevent the delay of Alzheimer’s (Alzheimer’s Association, 2024). However, clinical trials have mixed results. Such alternative medicine include:

- Vitamin E – have mixed results and only shows modest benefits; can interfere with medicines with Alzheimer's so closely consult with a healthcare team.
- Omega-3 fatty acids – in fish or from supplements can help lower the risks. But some studies show no benefit
- Curcumin – comes from turmeric and has anti-inflammatory and antioxidant properties. Believed to affect the chemical processes in the brain but clinical trials found no benefit for treating Alzheimer's
- Ginkgo – a plant extract containing several compounds. Ginkgo biloba is thought to have both antioxidant and anti-inflammatory properties to protect cell membranes. However, results indicate that it is only a placebo effect.

D. Coping and Support

People with Alzheimer's experience a mixture of emotions. It can be confusing at first and the patient and their family may feel confusion, frustration, anger, fear, uncertainty, grief and depression.

One can help cope with a patient by providing care and support. Being there to listen, reassuring them, providing support, and helping the patient retain dignity and self-respect. Changes are often simple but can greatly impact a patient. Simply labeling your condiments, assuring that all the essential items are at one place such as car keys, house keys, cellphones, and the likes can decrease the need for the patient to search for them.

A soothing, calming atmosphere is helpful for everybody, especially for Alzheimer's patients as it can minimize confusion and help them to rest and concentrate better. Considering noise levels, lighting, and even colors can have minor effects on the patient. As patients become frustrated and upset, the ability to think clearly declines more (Health Direct, n.d.; MayoClinic 2023).

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