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Ariana Lim

University of Puget Sound, alim@pugetsound.edu

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Alzheimer's Disease: A Historical Perspective

Ariana Lim

Of the many degenerative diseases affecting the American population, Alzheimer's disease is one of the most devastating diseases. According to Joan K. Glickstein (1), "Alzheimer's disease is one of many forms of dementia." Glickstein describes dementia as having the "...hallmarks [of] memory loss, acquired intellectual deficit, and persistence" (1) while Cutler and Sramek describe dementia as, "...a group of symptoms that may accompany certain diseases or conditions" (2). The National Institute of Health reports that Alzheimer's disease affects an estimated, "...2.6 million and 5.1 million Americans aged 65 years and older... suffer from [Alzheimer's Disease]" (3). Despite the fact that Alzheimer's Disease has been researched, it was not always a commonly known disease and many aspects of Alzheimer's Disease remain elusive. Enclosed is a summary of the history and discovery of Alzheimer's disease, what current research shows about it today, what is not known about Alzheimer's disease, and the future of exploring and slowing the progression of Alzheimer's disease.

To begin, Alzheimer's disease was not discovered until about a hundred years ago. In 1901, a patient in her fifties, known as Auguste D, was admitted to the Frankfurt hospital because of "...progressive cognitive impairment, focal symptoms, hallucinations, delusions, and psychosocial incompetence" (4). August D was studied for five years by Alzheimer before her death in 1906 (4). Shortly after, Alzheimer did an autopsy on August D and found unusual characteristics such as fiber tangles and what is known today as "amyloid plaques" (5). Thus, Alzheimer's disease was officially discovered by Alois Alzheimer in 1906. With regards to treatment, early Alzheimer's disease patients were not treated. Alzheimer's disease, or more specifically, loss of memory, was a process deemed to eventually happen to every individual (1). Early on, Alzheimer's disease was considered "old age" or "senility" (3). Therefore, when it was discovered, Alzheimer's disease was disregarded as a new type of mental disorder (1). This idea was similar to the concept that it is inevitable for each person to age.

Today, there are aspects of Alzheimer's disease that are known based off of research. Through research, it has been shown that Alzheimer's disease is characterized by decreased brain activity, "brain atrophy," "neuron death," "neurofibrillary tangles" (2) and overall cognitive ability (6). In addition, Alzheimer's disease is thought to be caused by various factors and can be treated to a certain extent. One major factor is genetics. Cummings and Khachaturian found that, "Alzheimer's disease...can be produced by mutations of chromosomes 21, 14 and 1..." (7). Furthermore, Cutler and Sramek report, "Researchers have found evidence that people who carry a gene for...*apolipoprotein E₄*, are at a significantly greater risk for developing Alzheimer's disease than people who carry genes for other forms of the protein" (2). Even more alarming, Cutler and Sramek report, "In familial Alzheimer's disease, the children of an Alzheimer's patient have a 50-50 chance of...developing dementia. If both parents have it, this chance increases to 75 percent" (2). With regards to treatment, Alzheimer's disease cannot be cured. Positively, it can be treated and the progression slowed. Alzheimer's disease can be treated in a variety of ways including medication and music therapy. Medications such as Razadyne, Exelon, and Aricept are used to increase or keep intact the amount of acetylcholine in the brain and decrease

symptoms of Alzheimer's disease (8). Alternatively, music can be used to help stop the progression of Alzheimer's disease. Deason et al. found that Alzheimer patients showed enhanced memory when subjected to music on a regular basis (9). It was also found that music helped Alzheimer patients more than individuals with regular brain function (9).

Unfortunately, even though Alzheimer's disease has been researched, there are aspects that still remain mysterious. Researchers still do not know specifically how genetics affects Alzheimer's disease (2). Even though certain gene mutations (1) and proteins (2) have been found to cause Alzheimer's disease, these are not definite signs that a person will manifest the symptoms of the disease. Furthermore, it is not known how exactly Alzheimer's disease is caused (11).

In the future, scientists hope to have a fuller understanding of Alzheimer's disease.

Researchers do not know what combination of factors contribute to the onset and progression of the disease. Main future goals include finding out more about the causes and effects of Alzheimer's disease as well as halting the progression of the disease completely. Looking towards the future, scientists are using MRI scans to analyze structures and functions that are degenerated because of Alzheimer's disease. PET scans evaluate how the brain uses glucose in the presence of Alzheimer's disease and a technique called "Lumbar Punctures," looks at fluid surrounding the brain and sees how brain chemistry works (10). Additionally, researchers hope to use these techniques to analyze how signaling in the brain works and what pathways the brain decides to use to carry out functions (10). Yet another area of research scientists hope to forward is the study of how pharmaceuticals affect brain function (10). The medications prescribed today have not been on the market for a solid amount of time and more research is needed on the medications (10). More importantly, scientists in the more recent years have been conducting genetic counseling. Goldman et al. elaborates on how individuals may be tested for Alzheimer's disease (13). Goldman et al. states that all evaluations must be by consent, that couples may seek genetic counselors to find out the chances of their child getting Alzheimer's disease, and that persons in the Alzheimer's disease age range may be tested (13).

In summary, Alzheimer's disease is not just a degenerative disease. It is a form of dementia and is not a disease that occurs just due to old age (1). Alzheimer's disease is a disease that has been discovered in relatively recent times and, despite a good amount of research since its discovery, still does not have a cure (4). Alzheimer's disease is irreversible and affects not only the individual suffering from the disease, but can also affect those caring for the suffering individual. The disease can be very personal as it can be passed to the next generation genetically (2). For those suffering with the disease, a cure or halt of the disease couldn't come soon enough. For those with Alzheimer's disease in their family history, a scientific breakthrough is needed. This area of research is especially pertinent today as it affects many elderly. In the near future, research may help many baby boomers that are currently entering their later years.

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