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COMMENTARY

# Why is Alzheimer's Disease More Prevalent in the Hispanic Community?

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## Introduction

Hispanics are one of the largest and fastest-growing populations in the US. Their life expectancy will increase to age 87 by 2050, surpassing all other ethnic groups in the United States (1). There are many diseases that affect older Americans however, Hispanic Americans are reported to have a higher risk for Alzheimer's Disease, making Hispanics one of the largest groups of Alzheimer's disease in the country (2). Latinos are one and a half times more likely to develop Alzheimer's disease than non-Hispanic Whites. Evidence indicates that vascular disease, including diabetes, may also be a risk factor for Alzheimer's disease (1). Alzheimer's disease is an abundance of genetic and environmental factors, but with the limited research, we are far from knowing an effective treatment, a reliable way to manage it, and some prevention from getting this disease. Levels of education have been shown to be a factor in those who are diagnosed with Alzheimer's. Hispanics have the lowest education levels of any cultural group in the United States. One in 10 Hispanic elders have no formal education and over half have 8 years or less (1). While education, or lack thereof, may not be the end-all cure for Alzheimer's, the research shows that a large number of Hispanics are suffering from it. About 13% of Hispanics are suffering from Alzheimer's disease at this moment (3). Among these, women are nearly two times more likely to be affected by Alzheimer's disease than men (3). So then begs the question, why is Alzheimer's more prevalent in the Hispanic community? Is it solely a lack of education, is it gender-specific, are there enough treatment options, or what does the future look like for Alzheimer's?

## What is Alzheimer's Disease?

In a world where humans are facing major health issues and viruses like COVID-19, some people are lucky to survive with proper treatment and care. Unfortunately, we also have other diseases such as diabetes, cancer and, especially, Alzheimer's that have no proven cure and will slowly cause death. Alzheimers is a disease named after Alois Alzheimer; a doctor who first discovered it after a 51-year-old woman had experienced progressive memory loss (4). This woman's story sparked an interest in Alzheimer, and he started to investigate the pathology of the

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nervous system. His finding earned him the recognition for naming the disease after him. He witnessed how the disease caused the brain to deteriorate and eventually would cause a death in each of its' victims. It is a progressive neurological disorder that causes the brain to shrink and kill the brain cells (5). Symptoms eventually grow severe enough to interfere with daily tasks. Currently, there are limited treatment options available with medications such as, cholinesterase inhibitors, which aim to increase communication between the nerve cells to try to improve the symptoms and slow down the progression (6). However, these drugs have only been approved for use in mild to moderate Alzheimer's disease. After the disease has increased, the brain becomes too damaged to combat the illness. Symptomatic therapy is another form of treatment which, basically, is only a supportive care treatment that helps deal with the known symptoms but isn't a curative treatment or prevents Alzheimer's adequately.

## Alzheimer's: Signs, Symptoms, Risks, and Its Factors

Memories, the gift of holding onto the things we love most. That's the one thing nobody ever wants to forget. Unfortunately, having Alzheimer's makes that happen. There are many other signs and symptoms besides memory loss. A lot of people don't know the signs and how to know once it has hit you completely.

### *Risk factors*

The risk factors for getting Alzheimer's are very common for older people (7). High cholesterol levels, high blood pressure levels, are major risk factors (7). Age and gender are also some major risk factors. Family history takes a very big part in this disease as well.

### *Signs*

The signs may not be easily recognizable because they usually start out with small instances of memory lapses. Forgetting recent conversations, events, names, places, people (8). Misplacing your items frequently and asking questions repeatedly is also one of the signs of this disease. Another sign that that can be missed is poor judgment choices (9). The individual begins to lose the ability to make rational, informed decisions. Once the individual reaches the point where decision making is affected, the disease has begun to take over.

### *Symptoms*

The first side effects and symptoms are memory loss and confusion like I mentioned in the beginning. There are 4 different types of symptoms, cognitive, behavioral, moods, and psychological (9). Cognitive symptoms are mental denial and decline (9). The individual does not want to accept that they now have a disease and are ill. The individual will begin to have difficulty thinking and this will become more apparent in the evenings. Recognizing new things will begin to become more difficult. These types of instances can become frustrating for someone experiencing symptoms of Alzheimer. Behavioral symptoms start to become more apparent over time. Aggression, irritability, repetition of words, personality changes, and loss of appetite are all symptoms (10). Moods are another symptom that become more apparent when they realize they are getting this horrible disease. Anger, loneliness, tiredness, exhaustion, and depression (10). All of these symptoms lead to psychological problems. Depression is one of the more common parts of Alzheimer's that greatly affects the psychological outlook for the individual (10). Individuals start to display signs of paranoia. Having this side effect will cause the individual to not believe anyone or what they're telling you. Hallucinations and delusions are also side effects of psychological symptoms. Hallucinations will cause you to hear and see things that don't exist. Delusions are false beliefs that the person with Alzheimer thinks is real.

Each of these affect the individual in many ways. While the risk factors that put people at risk are very common in Hispanics, the symptoms that they begin to display may vary by gender and age.

## What Age/Gender is More Prone to Alzheimer's?

Studies show that apolipoprotein E (APOE) epsilon 4 impact is present at any and all ages between 40 and 90 years, although it disappears after age 70, and the risk of AD linked with a particular genotype alters with a gender (11) An individual has a higher chance of getting late-onset Alzheimer's if they have the epsilon4 variant of the APOE gene (11). Inheriting APOE4 does not guarantee that a person will develop Alzheimer's disease, it is the highest risk factor gene for the condition. According to the study, lipid abnormalities in brain cells may be the root cause of dementia (12).

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In comparison to males, women are more likely than men to have Alzheimer's disease. The disease affects 0.7% of women and 0.6% of males between the ages of 65 and 69, and its prevalence rises to 14.2% and 8.8% in those between the ages of 85 and 89 (12). Additionally, it is more common in women with dementia. In Austria, women make up 74.1 percent of Alzheimer's patients over 60 (12). Aggression is more common in males than in women, although women have a wider range of behavioral symptoms associated with dementia, and with a predominance of sadness (13). Different brain architecture and function, with a higher vulnerability for pathological lesions in women and larger cognitive reserve in men, are scientific reasons for gender-specific variations on the phenotype of Alzheimer's disease (13). Additionally, there were found to be sex variations in the production of antioxidant enzymes and post-menopausal hormonal alterations (14).

According to the vast majority of research conducted in the United States, well after the age of 85, there is no gender difference in the prevalence of AD dementia (14). Women do seem to experience this condition more frequently in different parts of the world. The frequency of dementia varies among racial and ethnic groups in the United States, according to some of the research. Despite variations in study designs, sample techniques, and definitions of dementia, it has consistently been demonstrated that African Americans and Hispanics are more likely to develop dementia than white people (15). Alzheimer's disease has a disproportionately negative impact on women (AD). Women make up almost two-thirds of the much more than 5 million Americans who have Alzheimer's disease, and they account for roughly two-thirds of the more than 15 million Americans who provide care and assistance for someone with the illness (16). Above people aged 65 make up the majority of those who have the condition. Alzheimer's disease risk increases every five years beyond the age of 65. Above age 85, this risk increases to over one-third. Alzheimer's disease is a common cause of dementia, which affects one in six individuals over the age of 80. Alzheimer's disease or related dementia affects around 13% of Hispanics who are 65 or older (16).

## Prevalence in the Hispanic Community for Alzheimer's Disease

As mentioned above, Alzheimer's disease is the most common type of dementia among individuals 65 and older. Several reports indicate that AD is more prevalent among Latinos (17). Like any other demographic group, Hispanic Americans have a variety of backgrounds, races, ethnicities and experiences. One-third of Hispanic Americans report that they have experienced discrimination when seeking health care. Latinos are considered an underserved group because they are less likely to obtain regular health care services and have higher rates of chronic diseases (18). Almost 85% say it is important for Alzheimer's and dementia care providers to understand their ethnic or racial background and experiences. Almost 57% believe that a significant loss of memory or cognitive abilities is a normal part of aging (19). The Centers for Disease Control and Prevention (CDC) claims that by 2060 the number of Latinos ages 65 and older are expected to nearly quadruple, and Latinos will face the largest increase in AD (13). Beyond age, there are more risks including low socioeconomic, lots of cardiovascular disease, and a higher prevalence of conditions like diabetes, high blood pressure, obesity, and depression (20). Claims have been made stating that education plays a significant role in determining the risk of AD. Researchers found that higher dementia prevalence among Latinos compared to non-Latino was associated with lower levels of education. For Latinos in the study sample, those who did not complete high school had on average of only three years of education (21). Even for people with just a few years of formal schooling, every additional year of education decreased dementia risk.

## Alzheimer' Treatment

Currently, there are various types of treatment-based drug options for Alzheimer's disease, but only 5 have been approved in the United States (22). These treatments include cholinesterase inhibitors like donepezil, galantamine, rivastigmine, and metamine (22). As of now, the most effective drug available is Aducanumab. The reason behind this is that it's a type of antibody therapy that targets a certain protein in the brain that gathers in lumps. Researchers believe these clumps play a role in damaging brain cells, ultimately causing the brain to stop working and become fatal (23). While it is most effective, only one of the 5 drugs approved is used to treat both mild and severe Alzheimer's disease. Donepezil, which is FDA approved, is used for all stages of this disease. It is most commonly used to improve memory function, awareness, physical function, and thinking ability (24). Although these drugs won't cure the disease, they have made a big impact on Alzheimer's as a whole.

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Another type of treatment includes combination therapy. This may involve music therapy, physical therapy, or art therapy. Although, the most studied treatment has been musical therapy, due to the objective response given by patients, as a result of the treatment (25). During this treatment, a qualified music therapist evaluates a patient to mediate the treatment according to the patient at hand. For example, listening to familiar Spanish songs was found to stabilize or improve the consciousness of patients with mild to severe Alzheimer's disease, according to a study conducted by Arroyo-Anilo (25). As a result of the popularity of this treatment, different clinical trials and studies have used musical elements to treat the effects of Alzheimer's.

Another form of musical therapy is background music. An example of this is Vivaldi's Spring movement from 'The Four Seasons' that was previously used during the recall tests in mild Alzheimer's Disease patients (25). In the study, it was found that music could improve autobiographical memory and reduce anxiety and emotions. It is unknown, however, what directly causes the effects of background music. Although, researchers believe that the change in mood, such as a reduction in anxiety, is the cause, and scientists have speculated that music may enhance memory by the arousal to the sound (25). Although these options are just placeholders for the cure, they play a role in future studies and possible groundbreaking discoveries.

## What is Needed for the Future of Alzheimer's Prevention?

While scientists are still busy trying different drug treatments and alternative options, there is still much work to be done. Scientists do not fully understand how cholinesterase inhibitors work to treat Alzheimer's disease, but research indicates that a person living with Alzheimer's may respond better to one drug versus another (26). A growing understanding of how the disease disrupts the brain has led to potential Alzheimer's treatments that short-circuit basic disease processes. Future Alzheimer's treatments may include a combination of medications, similar to how treatments for many cancers or HIV/AIDS include more than a single drug (27). The first drug that was approved by the food and drug administration (FDA) in 2021 was called aducanumab (26). This drug targeted the underlying cause of Alzheimer's in patients. Clinical studies to determine the effectiveness of aducanub were conducted only in people with early-stage Alzheimer's or mild cognitive impairment (27). Researchers are continuing to study whether this medication works to affect a person's rate of cognitive decline over time. Aducanub is reported to slow the decline in cognitive skills and functional ability (26). It does this by clearing amyloid beta that builds up in the brain, which is thought to result in Alzheimer's. Alzheimer's is a disease that will not disappear, but there are some ways that we can help to lower the number of people who have been diagnosed with Alzheimer's. Physical activity can help prevent the disease as well as aerobic exercise (27). Aerobic exercise in particular may help slow shrinkage in the hippocampus, which is a spot in the brain that deals with memory.

## Conclusion

To answer the question, "Why is Alzheimer's more prevalent in the Hispanic community?", one would need more extensive research. We have the data to show that the prevalence is high, but not enough to show why. There are factors such as lack of education and socioeconomic disparities that have shown to be factors, but there are not enough Hispanic individuals that are participating in research studies to prove any others that are affecting them. Treatments and nonmedical therapies may give the individual a slightly longer life expectancy but will not offer a cure as of yet.

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