2016

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A Multimodal Approach to Preventing and Treating Alzheimer’s Disease
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Abstract

Alzheimer’s dementia is the leading cause of dementia worldwide (Sindi, Mangialasche, & Kivipelto, 2015). Many older individuals have memory complaints, and some decline in memory is normal with aging (Vellas & Oustric, 2014). The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Alzheimer’s Disease (FINGER) is an ongoing randomized clinical trial that found a positive impact on cognitive and functional outcomes (McCauley & Hauser, 2014). The MIND diet study demonstrated that assisting patients at risk for, or who have Alzheimer’s disease (AD), with certain lifestyle changes improved cognitive outcomes (Ehret & Chamberlin, 2015). This will impart significant emotional and financial stress on those affected, family members, and the healthcare system. The pathophysiology and clinical manifestations of AD address approximately 60–70% of all cases of dementia (Sindi, Mangialasche, & Kivipelto, 2015). AD is clinically diagnosed after some sources of dementia have been ruled out. Current pharmacologic therapy can only be definitively diagnosed post-mortem (McCauley & Hauser, 2014).

The Pathophysiology and Clinical Manifestations of AD

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• AD is clinically diagnosed after some sources of dementia have been ruled out. Current pharmacologic therapy can only be definitively diagnosed post-mortem (McCauley & Hauser, 2014).

• The exact pathophysiology of AD is unknown, however key features of beta-amyloid plaques and neurofibrillary tangles are found in the affected brain (McCauley & Hauser, 2014).

• Beta-amyloid plaques and neurofibrillary tangles disrupt normal neuronal and synaptic activity and deterioration of the mind (McCauley & Hauser, 2014).

The exact pathophysiology of AD is unknown, however key features of beta-amyloid plaques and neurofibrillary tangles are found in the affected brain (McCauley & Hauser, 2014).

• Beta-amyloid plaques and neurofibrillary tangles disrupt normal neuronal and synaptic activity and deterioration of the mind (McCauley & Hauser, 2014).

• In the end stages of the disease, all cognitive function is lost, as well as the ability to ambulate and feed oneself (McCauley & Hauser, 2014).

Current Pharmacologic Therapy used to Treat AD

There are four medications approved by the FDA for the treatment of AD. These are donepezil, rivastigmine, and galantamine–acetylcholinesterase inhibitors (AChEIs), and memantine–N-methyl-D-aspartate (NMDA) receptor antagonist (Ehret & Chamberlin, 2015).

The American Academy of Neurology and the National Institute for Health and Care Excellence recommend the use of 1 of 3 AChEIs for treating mild to moderate AD (Ehret & Chamberlin, 2015).

In 2015, the Canadian Academy of Neurological Sciences (CANAD) developed a data repository called CODR (Woo-Sheng et al., 2015). The journal of Alzheimer’s Association, 2014). The Canadian Academy of Neurological Sciences (CODR) developed a data repository called CAMD developed a data repository called C (Davies et al., 2015). However, the study was performed in older, at-risk elderly people compared to the general population (Neville et al., 2015).

A Multimodal Approach-The Mind diet study

The Mediterranean-DASH Intervention for Neuroscientists of Generation (MIND) diet incorporates several plant-based foods and small amounts of natural and saturated fats. The diet emphasizes the consumption of high amounts of green leafy vegetables and berries. Olives oil is the main component (Mortimer et al., 2015).

The MIND diet study found participants who adhered to the MIND diet significantly reduced risk of developing AD over an average of 4.5 years by 95% (HR=0.04; 95% CI=0.02 to 0.09) compared to those who did not follow the diet. The FINGER study compared four factors between an intervention and control group. Naguda et al. (2015) found NTFB scores revealed a mean difference between groups of 0.02 (95% CI=0.00 to 0.04; P=0.004) per year with the intervention group scoring 27% higher at 24 months. The intervention group revealed differences in executive functioning (P=0.002) 15% higher, and processing speed (P=0.02) 19% higher than the control group. Memory scores analysis revealed a mean difference in memory decline between the intervention and control groups 1.31 (95% CI=1.01 to 1.71; P=0.014) after 24 months. Drug therapy alone provides no cure and can only treat symptoms of cognitive functioning.

A multimodal approach can improve or maintain cognitive functioning in those who are at risk for, or who already have AD. Primary care providers should consider a multimodal approach to treating patients whose AD is early cognitive decline. Utilizing a multiprhythmy health care team to work with older adults may be beneficial in treating the individual who is at risk for, or who already have AD. As the prevalence of AD is expected to triple by 2050, no effective intervention is in existence (Baumgart et al., 2015).

Recent studies have revealed that employing a multimodal approach may delay the onset of AD. Studies have also revealed that a multimodal approach may slow the rate of cognitive decline or even improve cognitive functioning in those who are at risk for developing AD.

Statement of the Problem

• As the population ages, AD will continue to increase in prevalence.

• This will impart significant emotional and financial stress on those affected, family members, and the healthcare system.

• There are currently no disease-modifying treatments, or cure for AD.

• AD

Features

• Alzheimer’s dementia is the leading cause of dementia worldwide (Sindi, Mangialasche, & Kivipelto, 2015).

• It is estimated that 4 million people are diagnosed with AD as of 2015 with the prevalence expected to triple by 2050 of no effective intervention in existence (Baumgart et al., 2015).

• Recent studies have revealed that employing a multimodal approach may delay the onset of AD.

• Studies have also revealed that a multimodal approach may slow the rate of cognitive decline or even improve cognitive functioning in those who are at risk for developing AD.

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Research Question

In patients who are at risk for, or who have been diagnosed with AD, could modifiable risk factors such as diet, exercise, and cognitive stimulation be more effective in preventing and treating AD than current pharmacologic treatment or no treatment at all?

• Can lifestyle modification create a significant improvement in cognition and quality of life?