Calorie Restricting Diets Help Slow Aging Process

Low carbohydrate, calorie-reduced diets affect 900 different genes linked to aging and memory formation in the brain. Dietary restriction has been known for decades to extend life in a range of animals, but it has proved difficult to achieve in practice and the mechanisms involved have eluded scientists. A recent collaborative study conducted by neuroscientists at NYU Langone Medical Center and the Nathan S. Kline Institute for Psychiatric Research has revealed that calorie counting diets help slow the process of aging in the human brain.

Dr. Stephen Ginsberg, a neuroscientist at the Nathan Kline Institute and NYU Medical Center who led the study, said: “Our study shows how calorie restriction practically arrests gene expression levels involved in the aging phenotype - how some genes determine the behavior of mice, people, and other mammals as they get old.” However, he warned it does not mean calorie restriction is the ‘fountain of youth,’ although it will ‘add evidence for the role of diet in delaying the effects of aging and age-related disease.’

Dr. Stephen Ginsberg

Dr. Ginsberg said the benefits of such diets have been touted to include reduced risk of human heart disease, high blood pressure and stroke, but the widespread genetic impact on the memory and learning regions of aging brains has not before been shown.

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A recent study conducted at the Center for Cognitive Neurology shows that for persons with Alzheimer’s disease, in the moderately severe stage who are on the medication, memantine, an individualized patient management approach including teaching caregivers how to handle behavioral and other problems, produces nine times added benefit -- helping to dramatically decrease the behavioral and functional impairment that is often prevalent in patients with Alzheimer’s disease (AD).

More than a decade ago, Drs. Barry Reisberg and Steven Ferris at the NYU Alzheimer’s Disease Center designed and directed a pivotal trial which resulted in the approval of the first medication for the treatment of advanced Alzheimer’s disease in the US, the EU, and elsewhere. The advent of medication treatment for advanced AD served to highlight the continuing needs of these persons. Therefore, Dr. Reisberg, working with Dr. Sunnie Kenowsky at the Zachary and Elizabeth M. Fisher Alzheimer’s Disease Education and Resources Program and others, developed a science of AD management, based on a process termed retrogenesis*.

Dr. Ginsberg and his colleagues gathered their findings using two groups of female mice who were either fed regular food pellets or food pellets with 30 percent fewer calories. Like female humans, female mice are more prone to dementia development compared to male mice. Researchers also gathered tissue samples from the area of the brain affected earliest by Alzheimer’s disease, also known as the hippocampal region. Reducing the amount of calories in the diets of female mice stopped the normal rise and fall in activity levels of around 900 different genes that are associated with brain function, including aging and memory formation. Researchers concluded that diets with fewer calories from carbohydrates can help slow certain aspects of aging and chronic disease in humans. Ginsberg said their work “widens the door to further study into calorie restriction and anti-aging genetics.”
which Dr. Reisberg had identified in AD persons. Dr. Kenowsky developed a Comprehensive Individualized Person Centered Management Program (CIPCM), based in part, on the earlier advances. The program consisted of caregiver training, patient home visits and caregiver support group sessions. This CIPCM approach was tested in a 28 week controlled trial.

At a meeting of the American College of Neuropsychopharmacology (ACNP), Drs. Reisberg and Kenowsky and their collaborators reported on the added benefits of the CIPCM program over the benefits of medication (memantine), treatment alone. They found that the management program produced a 900% (9 x) added benefit on a comprehensive (global) assessment in addition to the benefit which was seen with memantine treatment alone in the original study which had been published in the New England Journal of Medicine in 2003 (see Figure).

Further analyses found that the improvements which were observed were in the areas of less behavioral disturbances in the patient as reported by the caregivers and in improvements in subject functioning. For example, patients were better able to perform activities such as dressing, bathing and toileting independently. There were no significant improvements observed in thinking abilities on this measure with the management program.

The investigators observed that the added benefits of the Comprehensive Individualized Person Centered Management Program appeared to make a rather large difference to the subjects and their care providers. Presently, Dr. Kenowsky and Dr. Reisberg are studying the effects of the program after 52 weeks of treatment and follow-up.

This work was generously supported in 2013 by a grant of $125,000 from the Zachary and Elizabeth M. Fisher Center for Alzheimer’s Research Foundation. The Foundation and the late Mr. and Mrs. Fisher, have generously contributed over $2 million to support research conducted at the Fisher Education and Resources Program at the NYU School of Medicine. Additional support has been provided by the Forest Research Institute.

*Retrogenesis is the loss of mental abilities in persons with AD in the opposite order in which they are gained in childhood and other stages of life."
Clinical News
Depression and Alzheimer's Disease

Experts estimate that up to 40 percent of people with Alzheimer’s disease suffer from significant depression.

Depression is one of the most common psychiatric symptoms in Alzheimer's disease, occurring at all stages of the disease. Some of the symptoms common to both Alzheimer’s and depression include: loss of interest in once enjoyable activities and hobbies; social withdrawal; memory problems; sleeping too much or too little; and impaired concentration.

Depression, by itself can cause memory problems that typically follow the course of the mood disturbance – when depression is worse, memory is worse; when depression is better, memory is better. Memory problems caused by Alzheimer’s disease on the other hand, are less likely to have fluctuations.

Recent studies have also found that depression is associated with other forms of neurocognitive disorders as well. A recent report, published in the British Journal of Psychiatry, is a meta-analysis of 23 previous studies that followed nearly 50,000 older adults over a median of five years. The researchers found that depressed older adults (defined as those over age 50) were more than twice as likely to develop vascular dementia and 65 percent more likely to develop Alzheimer’s disease than similarly aged people who weren’t depressed.

People who are depressed can have elevated levels of cortisol, a hormone related to the stress response, and a smaller hippocampus, a brain structure critically important for memory. Other evidence suggests that depression may contribute to chronic inflammatory changes that can damage the walls of blood vessels, impede blood flow in the brain, and lead to the deterioration of neural networks.

With so much overlap in symptoms, it can be difficult to distinguish between the two disorders, especially since they so often occur together. A thorough physical exam and neuropsychological evaluation can be helpful in determining whether one or both conditions are present. This includes asking surveys of patients and family members. Even in the more advanced stages of Alzheimer’s disease, patients can usually answer structured questions about their mood, even if they have some difficulty expressing how they feel. In addition, clinicians rely heavily on nonverbal cues and body language to determine the presence of depressive symptoms.

The National Institute of Mental Health has established a formal set of guidelines for diagnosing the depression in people with Alzheimer’s disease. Although the criteria are similar to general diagnostic standards for major depression, they reduce emphasis on verbal expression and include irritability and social isolation.

For a person to be diagnosed with depression in Alzheimer’s, he or she must have either depressed mood (sad, hopeless, discouraged or tearful) or decreased pleasure in usual activities, along with two or more of the following symptoms for two weeks or longer:

- Social isolation or withdrawal
- Disruption in appetite that is not related to another medical condition
- Disruption in sleep
- Agitation or slowed behavior
- Irritability
- Fatigue or loss of energy
- Feelings of worthlessness or hopelessness, or inappropriate or excessive guilt
- Recurrent thoughts of death, suicide plans or a suicide attempt

We aren’t certain of the exact relationship between Alzheimer’s disease and depression.
Some research has found that the biological changes caused by Alzheimer's may intensify a pre-disposition to depression. Other studies suggest that the presence of depression may increase your chances of developing Alzheimer's disease. What we are certain about is that depression has a strong effect on quality of life for people with Alzheimer's disease.

It is important to point out that people with Alzheimer's disease may experience depression differently from that of people without Alzheimer's. For example, individuals diagnosed with Alzheimer's disease may have symptoms of depression that are less severe; may experience episodes of depression that don’t last as long or come back as frequently; talk of suicide and attempt suicide less often; and/or experience hallucinations or delusions. In general, if the clinician feels that depression is playing a major role in the memory disturbance, it may be worthwhile aggressively treating the mood disorder before addressing the memory disturbance.

A large body of research has linked late-life depression to social isolation, worse health outcomes and an increased risk of death. Depression can lead to faster cognitive decline; greater disability involving daily living skills; increased dependence on caregivers; and earlier placement in nursing homes.

**Treatment options**

Educating the caregiver about depression in dementia is of primary importance in addressing the problem. Caregivers need to understand the need for structure and comfort in the patient’s daily activities, as well as the importance of including activities that the patient finds enjoyable and trying to convey a sense of pleasure themselves. Caregivers also need an opportunity to “vent” and to understand and express when they have exceeded their ability to address the patient’s needs.

Several options are available to treat people diagnosed with Alzheimer’s disease and depression:

- **Antidepressants.** Selective serotonin reuptake inhibitors (SSRIs) are the first antidepressants used for people who have depression and Alzheimer’s because of the low risk of side effects and drug interactions. Examples of these medications include sertraline, citalopram, and paroxetine. Other classes of antidepressants also may be used.
- **Physical exercise.** Regular physical exercise, particularly in the morning, may help ease the symptoms of depression.
- **Support groups and counseling.** Support groups and professional counseling may help people with depression in the early stages of Alzheimer’s disease.

Making the right diagnosis and getting appropriate treatment can help make life easier and more enjoyable for both the person with Alzheimer’s and caregivers. It is not clear that depression later in life causes dementia, but depression appears to be a contributing factor and will add to the overall burden of symptoms. Thus, depression is a treatable symptom and needs to be actively addressed.

Sources: Alzheimer’s Association (alz.org) and alzforum.org
DID YOU KNOW?

Physical Activity Can Boost Mental Wellness … and Add Years to your Life

As an older adult, regular physical activity is one of the most important things you can do for your health. It can prevent many of the health problems that seem to come with age. It also helps your muscles grow stronger so you can keep doing your day-to-day activities without becoming dependent on others.

The American Heart Association recommends 30-minutes of moderate activity, but three 10-minute periods of activity are almost as beneficial to your overall fitness as one 30-minute session.

Physical activity boosts mental wellness: Exercise increases the flow of oxygen which directly affects the brain. Your mental acuity and memory can be improved with physical activity. Regular physical activity can relieve tension, anxiety, depression and anger.

Physical activity improves physical wellness: It enhances your immune system and decreases the risk of developing diseases such as cancer and heart disease. Becoming more active can lower your blood pressure and also boost your levels of good cholesterol.

Physical activity prolongs your optimal health: Without regular physical activity, the body slowly loses its strength, stamina and ability to function well. And for each hour of regular exercise you get, you'll gain about two hours of additional life expectancy, even if you don't start until middle age. Moderate exercise, such as brisk walking, for as little as 30 minutes a day has proven health benefits and helps delay or prevent chronic illnesses and diseases associated with aging.

Sources: Centers for Disease Control and Prevention; National

Nutrition and Education

Make Mealtimes Simpler

Regular, nutritious meals may become a challenge for people with dementia. As a person’s cognitive function declines, he or she may become overwhelmed with too many food choices, forget to eat, or have difficulty with eating utensils.

Make mealtimes easier

During the middle and late stages of Alzheimer’s, distractions, too many choices, and changes in perception, taste and smell can make eating more difficult. The following tips can help:

- **Limit distractions.** Serve meals in quiet surroundings, away from the television and other distractions.

- **Keep the table setting simple.** Avoid placing decorative items on the table and use only the utensils needed for the meal.

- **Distinguish food from the plate.** Changes in visual and spatial abilities may make it tough for someone with dementia to distinguish food from the plate or the plate from the table. It can help to use white plates or bowls with a contrasting color placemat. Avoid patterned dishes, tablecloths and placemats.

- **Check the food temperature.** A person with dementia might not be able to tell if something is too hot to eat or drink. Always test the temperature of foods and beverages before serving.

- **Serve only one or two foods at a time.** Too many foods at once may be
In addition to clinical trials and research studies offered at the NYU Alzheimer’s Disease Center, our Center has an active clinical practice, the Pearl I. Barlow Center for Memory Evaluation and Treatment. One of the services we offer is psychotherapeutic groups for patients and their relatives. Our groups are facilitated by social workers who offer participants a place where they can feel free to express fears, hopes and share stories, as well as, unfortunate events surrounding their condition. Conversations provide practical advice. Emotional support is part of the groups’ general atmosphere. There is a camaraderie evolving around participants’ interactions. Regardless of their role as a relative or patient, group members find strength as they encourage one another, and value “how good it is to feel less alone” while dealing with the repercussions of cognitive impairment.

The weekly groups are facilitated by a licensed clinical social worker. Both groups, for patients and caregivers consist of 8 to 12 individuals. In the patients’ groups, members are encouraged to set the tone and the content of each meeting. The facilitator then encourages each participant to contribute according to his or her emotional availability and cognitive ability.

Whether you are dealing with a diagnosis of dementia or caring for someone with dementia, you are welcome to join our supportive network. Please call 212-263-3210, if you or someone you know might benefit from participating in our groups. We accept most commercial insurances and Medicare.

NYU Support Groups

In addition to clinical trials and research studies offered at the NYU Alzheimer’s Disease Center, our Center has an active clinical practice, the Pearl I. Barlow Center for Memory Evaluation and Treatment. One of the services we offer is psychotherapeutic groups for patients and their relatives.

Our groups are facilitated by social workers who offer participants a place where they can feel free to express fears, hopes and share stories, as well as foods that were liked in the past.

- **Give the person plenty of time to eat.** Remind him or her to chew and swallow carefully. Keep in mind that it may take an hour or longer to finish eating.

- **Eat together.** Make meals an enjoyable social event. Research suggests that people eat better when they are in the company of others.

- **Be flexible to food preferences.** Keep long-standing personal preferences in mind when preparing food, and be aware that a person with dementia may suddenly develop new food preferences or reject foods that were liked in the past.

- **Keep in mind the person may not remember when or if he or she ate.** If the person continues to ask about eating breakfast, consider serving several breakfasts — juice, followed by toast, followed by cereal.

Source: Alzheimer’s Association (www.alz.org)
NYU LANGONE
ALZHEIMER’S DISEASE
ASSISTANCE CENTER
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STATE DEPARTMENT OF HEALTH

Alzheimer’s Disease Assistance Center
NYU Langone Medical Center
145 East 32 Street
2nd Floor
New York, NY 10016

Visit our Website at
www.nyulmc.org/adac

Editor
Camy Sleeman
camy.sleeman@nyumc.org