

THE BETTER HEALTH NEWS

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According to the "Global Prevalence of Dementia: a Delphi Consensus Study", appearing in the *Lancet* (2005; 366(9503): 2112-7), the number of people with dementia in developed countries will double between 2001 and 2040. There are over 23 million people with dementia worldwide, with a new case coming

every seven seconds. There are 4.6 million new cases every year.

There is evidence that physical activity reduces the risk for developing dementia. A prospective, cohort study appearing in the *Archives of Internal Medicine* (2006; 144(2): 73-81) looked at the exercise habits in 1,740 subjects over the age of 65. Over the course of the study, those who exercised three or more times each week had a lower incidence of dementia.

Other research appearing in *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* (2008; 63(5): 529-35) also found that exercise decreased the likelihood of developing dementia. The subjects in this cohort study were 2,263 men between the ages of 71 and 92.



In the *Archives of Neurology* (March 2001;58:498-504) 9,008 men and women over the age of 65 and without any cognitive impairment or dementia were studied.

Of that number, 4,615 were available for a five-year follow-up. In the five year follow-up 436 of the subjects were found to be cognitively impaired and 285 were found to have actual dementia. It was found that regular exercise decreased the risk for both cognitive impairment and dementia. Also, the protection was proportional—the greater the amount of activity, the lower the incidence of cognitive impairment or dementia.

DEMENTIA AND VITAMIN B₁₂

Good nutrition may play a role in preventing Alzheimer's disease and other forms of dementia. A recent study, appearing in the *American Journal of Clinical Nutrition* (Nov. 2007, Vol 86, Number 5, pp. 1384-1391) followed over 1600 subjects for 10 years and found that high levels of Vitamin B₁₂ (measured as holotranscobalamin) reduced. The researchers measured Vitamin B₁₂ levels (by testing methylmalonic acid and holotranscobalamin—both are indicators of Vitamin B₁₂ status). They measured cognitive function three times over the ten year course of the study. Doubling the holotranscobalamin levels resulted in a reduction in the rate of cognitive decline of 30%. Mark Goodman Ph.D. believes that many patients diagnosed with Alzheimer's disease actually have dementia caused by a lack of vitamin B₁₂. Dr. Goodman has an accredited Ph.D. in behavioral medicine (with a specialization in clinical neuropsychology) from the University of Maryland School of Medicine.

Dr. Goodman is quoted in an interview by Kirk Hamilton that appeared in *Clinical Pearls*. Dr. Goodman says, "I initially suspected vitamin B₁₂ limits

were too low, when I encountered on consultation, geriatric patients admitted with Alzheimer's diagnosis whose frontal lobe functioning was obviously intact. This is inconsistent with Alzheimer's diagnosis. They were exhibiting other global neuropsychological deficits with a systemic/metabolic profile. They were all following cardiac lipid-lowering diets."

He went on to say that he believed that there are many elderly individuals who are sub clinically B₁₂ deficient. Many times these patients have normal blood levels of B₁₂. He points out that people who are B₁₂ deficient experience neurological changes before there is changes in their blood count (pernicious anemia) and that a good dietary history is an important part of the evaluation. According to Dr. Goodman, "In the convalescent facility diet there is little red meat due to expense and the desire to have residents on a lipid lowering regime. Also, there is a normal increase in gastric atrophy in the elderly which reduces vitamin B₁₂ absorption. Thirdly, there is a down-regulation of the enzymes required for the formation and the manufacture of vitamin B₁₂ when

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less vitamin B₁₂ is consumed.” Dr. Goodman points out that if there is no frontal lobe degeneration, the dementia is not Alzheimer’s disease.

Dr. Goodman says that high doses of vitamin B₁₂ are without any serious adverse side-effects. Some reports of reversible symptoms of diarrhea, cutaneous rash, polycythemia and possibly peripheral vascular thrombosis, but these are minor and reversible.

Vitamin B₁₂ deficiency is fairly common in older people. Even when the tests for B₁₂ levels are normal, symptoms like forgetfulness, fatigue and depression respond to B₁₂ supplementation. Dr. Goodman’s point is that the symptoms of this deficiency can be so severe that the patient is often diagnosed with

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HIGH HOMOCYSTEINE INCREASES RISK OF DEMENTIA AND ALZHEIMER'S DISEASE

Homocysteine is an amino acid that has shown to be linked to heart disease and osteoporosis. Homocysteine is normally converted by the body to cysteine and eventually taurine; amino acids that do not have the same negative implications. The conversion reactions that change homocysteine to the more benign amino acids are dependent on vitamins B₆, B₁₂ and folic acid. Taking these nutrients can lower homocysteine levels.

Now, according to research published in the February 14, 2002 *New England Journal of Medicine* shows high homocysteine levels can also double the risk of dementia and Alzheimer's disease. The data was taken from the Framingham Study and published in a report from scientists from Boston University. The researchers were able to follow a large number of patients over several years, beginning long before any of the subjects showed any signs of memory-loss or dementia.

Homocysteine levels higher than 14 mmol/liter doubled the chance that a subject would develop Alzheimer's Disease and each additional 5 mmol/liter elevation increased the risk of Alzheimer's Disease by 40 %. People with consistently high levels of homocysteine throughout the period of the study were at highest risk for dementia and Alzheimer's.

"The evidence is beginning to mount regarding homocysteine's role in dementia," according to Neil Buckholtz, Ph.D., chief of the Dementias of Aging program at the NIA. "The good news is that we may have found a potential risk factor for AD (Alzheimer's Disease) that is modifiable. We don't know yet whether

reducing homocysteine levels will reduce dementia risk, but this is something that can and will be tested in clinical trials."

This is supported by two studies published in the May 28, 2002 issue of *Neurology*, the scientific journal of the American Academy of Neurology. Both brain atrophy and vascular disease are related to the development of dementia, including Alzheimer's disease. Brain atrophy and vascular disease are also associated with elevated blood levels of the amino acid homocysteine.

There is also a possible connection between Parkinson's disease and low folic acid levels. Scientists at the National Institute on Aging have conducted experiments with mice that suggest that folic acid deficiency could increase the brain's susceptibility to Parkinson's disease. This finding was published in the January 2002 issue of the *Journal of Neurochemistry*. The scientists found that mice with low amounts of dietary folic acid had elevated levels of homocysteine in the blood and brain. They suspect that increased levels of homocysteine in the brain caused damage to the DNA of nerve cells in the substantia nigra, an important brain structure that produces dopamine. "This is the first direct evidence that folic acid may have a key role in protecting adult nerve cells against age-related disease," said Mark Mattson, Ph.D., chief of the NIA's Laboratory of Neurosciences. "It is clear from this study that a deficiency of this vitamin is associated with increased toxin-induced damage to the dopamine-producing neurons in the mouse brain."

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ANTIOXIDANTS AND DEMENTIA

In some cases, there may be a connection between oxidative stress and dementia. A study appearing in the *Archives of Gerontology and Geriatrics* (2001;Suppl. 7:325-331) compared 30 subjects between the ages of 90 and 107 years with dementia to 32 healthy people in the same age range and found that men with dementia had higher thiobarbituric acid-reactive substances and lower vitamin E levels (indicators of oxidative stress). Lipid peroxidation seemed to play a role in dementia in men, but not in women. Research published in *Neurobiology and Aging* (2005; 26(7): 987-94) looked at 1033 subjects over the age of 65 and found that a low level of vitamin E in the blood was associated with an increased incidence of dementia.

Another study that appeared in the *American Journal of Geriatric Psychiatry* (e-published ahead of print, Nov 10, 2009) looked at dementia in Swedish twins. There were 3,779 subjects; 355 of whom were diagnosed with dementia. The study found that greater consumption of fruits and vegetables reduced the chance of developing dementia. Another study, appearing in *Neurology* (2000;54:1265-1272) looked at 3,385 men between the ages of 71 and 93, found that taking a combination of vitamins A and C had a protective effect against vascular dementia. The supplementation also had some protective effect against mixed or other dementia, but not against Alzheimer's disease.