

Can Alzheimer's disease be prevented?

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Summary

Alzheimer's disease (AD) is the most common form of dementia. Survival time for an AD patient is generally 4 to 6 years after diagnosis, however, survival time can be as long as 20 years from the detection of initial symptoms, which can surface in the 30s, 40s, and beyond. This window of opportunity suggests that many people can prolong their life with life-changing choices related to diet, exercise, nutritional supplements, and nutraceuticals. This was emphasized in many recent studies and was described in detail in the book "Minimizing the Risk of Alzheimer's Disease" published in the USA in 2012.

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Due to the aging population globally, there are currently an estimated 35.6 million people with dementia, according to the World Health Organization, Geneva, Switzerland. That number is expected to almost double every 20 years, reaching 65.7 million in 2030, and 115.4 million in 2050 (1). Alzheimer's disease (AD) is the most common form of dementia, with others being multi-infarct dementia (vascular dementia/post-stroke), Creutzfeldt-Jacob disease, Pick's disease, Parkinson's disease, Lewy body disease, Huntington's disease, and others, reported by the Alzheimer's Association, Chicago, Illinois (2).

The prevalence of AD in Brazil, China, Cuba, Egypt, India, Nigeria, Republic of Korea, and Sri Lanka was addressed in a study, and it ranged from 1.3% in India to 8.0% in Korea. Survival time for an AD patient is generally 4 to 6 years after diagnosis, however, survival time can be as long as 20 years from the detection of initial symptoms, which can surface in the 30s, 40s, and beyond. This window of opportunity suggests that many people can prolong their life with life-changing choices related to diet, exercise, nutritional supplements, and nutraceuticals, and was emphasized by the book "Minimizing the Risk of Alzheimer's Disease" (Algora Publishers, New York, USA, 2012).

In the September 22, 2013 issue of the Journal of Alzheimer's Disease, Hiroko H. Dodge, Ph.D., assistant

professor of Neurology at Oregon Health and Sciences University in Portland, the lead researcher, reported dramatic increases in AD in Japan and other countries which are linked to changes in national diets (3). In Japan, for those who are over 65 years of age, AD rose from 1% in 1985 to 7% in 2008, Dodge said. She has been conducting a cohort study on Okinawa in collaboration with a research team from the Okinawa Centenarian Study. The prevalence of vascular dementia was almost constant at 4% to 5% during the previously named period. In data she quoted from the Food and Agricultural Organization of the United Nations, the largest changes in Japan between 1961 and 1965 are, as follows: *i*) alcohol, from 29.6 kg/person/year to 57.4; *ii*) animal fat, from 5 kg/person/year to 35; *iii*) meat, from 7.6 kg/person/year to 33.7; *iv*) energy from animal products, from 249 kcal/person/day to 580; and *v*) rice, 113 kg/person/year to 89. Dr. Dodge added that the data linked animal products and meat to AD because of the iron in meat, which increases oxidative stress; arachidonic acid in meat, which increases inflammation in the brain; and cholesterol from animal products. She said that, since dietary factors haven't changed appreciably since 1985, perhaps AD prevalence rates has peaked, and will not increase in the future. "It is important to prevent or delay the onset of AD", she continued. "If we pay attention to what we eat, and do at least moderate exercise, we can significantly reduce the societal burden of dementia in the future".

In the book "Minimizing the Risk of Alzheimer's Disease", it was reported that over half of the AD cases in the world could be prevented if we eliminated those risk factors that we have control over, such as

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depression, obesity, and smoking, either with lifestyle changes or treatment of the underlying conditions (4). That was the conclusion of researchers at the Alzheimer's Association International Conference, held July 19, 2011 in Paris, France. In addition, a 25% reduction in 7 common risk factors could prevent up to 3 million AD cases around the world. Some of the risk factors have a greater impact on AD risk than others, according to Deborah Barnes, M.D., the University of California at San Francisco. Worldwide, she added, 19% of the AD cases can be linked to low education; 14% to smoking; 13% to physical inactivity; 10% to depression; 5% to hypertension; 2.4% to diabetes; and 2% to obesity.

It is not surprising that smoking is high on the "don't do" list. Compared with non-smokers, those who smoked 2 packs of cigarettes a day had more than a 15% risk of AD, and a 172% increased risk of vascular dementia, during the 23 years of follow-up in their study, according to a research team at the Kaiser-Permanente Division of Research in Oakland, California (5). Tobacco smoke contains over 4,000 chemicals, many of which are free-radicals, which are highly reactive compounds that damage cells and initiate a cascade of health problems (6). Antioxidant nutrients, including vitamin A, beta-carotene (pro-vitamin A), vitamin C, and vitamin E, help to neutralize these damaging reactions caused by tobacco smoke, but, unfortunately, antioxidant defenses are overwhelmed by the amount of free-radicals in tobacco.

Total dietary fat is a high risk factor for AD, while high intakes of monounsaturated fatty acids, found in the Mediterranean diet, have been shown to reduce cognitive decline, according to W. B. Grant, M.D. (7). Fish reduces the risk of developing AD, and linolenic acid, an omega-3 fatty acid, also found in nuts and seeds (flaxseed), has been inversely associated with AD, he said. Omega-6 fatty acids are found in vegetables. A sensible diet later in life appears to be more important than a diet earlier in life, Grant added. As an example, a proper diet 4 years prior to the onset of AD showed the best results. Also, a diet rich in cereals and grains is strongly inversely related to AD. In addition, the genetic predisposition to AD through apoprotein-E (ApoE) and diet are both important in the etiology of the disease. Grant added that vitamin E supplements have been shown to reduce the risk of AD, since this fat-soluble vitamin protects lipids/fats from nitric oxide-initiated peroxidative damage. An excess of nitric oxide, which is a free-radical, is toxic to brain cells. A colorless gas, NO is thought to affect immune reactions and memory. Homocysteine is normally a benign amino acid, but it can build to toxic levels and cause serious health problems. Over 20 case-controlled and cross-sectional studies, involving 15,000 patients, support the role of elevated homocysteine levels and vascular disease, reported Ramon Diaz-Arrestia, M.D. (8). In another

study, it was found that the upper one-third of serum homocysteine distribution had at least a 3-fold increased risk of developing AD. There was also an inverse relationship between blood levels of folic acid, the B vitamin, and vitamin B12, and the risk of AD.

The Mediterranean diet - high in vegetables, legumes, fruit, nuts, cereals, fish, olive oil, and low in saturated fats - has been linked to a lower risk of AD, according to James M. Ellison, M.D., of the Harvard Medical School in Boston, Massachusetts (9). White rice is a leading carbohydrate in many national diets, however, in a study involving 39,765 men and 157,463 women, who were enrolled in the Professional Follow-Up Study and the Nurses' Health Study I and II, a research team at the Harvard School of Public Health in Boston, reported that substituting brown rice for white rice may reduce the risk of Type 2 diabetes (10). Five or more servings of white rice per week brought a 17% increase in Type 2 diabetes, when compared with less than 1 serving per month. Most carbohydrate intake should come from whole grains rather than refined grains to prevent diabetes, they said. A study at Hanyang University in Seoul, Korea, reported that the consumption of 4 to 6 servings of vegetables daily brought a 32% reduced risk of stroke. Six servings daily brought a 69% reduced risk of that disease, after adjusting for potential cofactors (11).

Regular exercise during midlife may reduce the risk of AD and other dementias later in life, according to a research team in Sweden and Finland. The study involved 1,449 volunteers - ranging in age from 65 to 79 (12). Those who exercised at least twice a week for 20 to 30 minutes during midlife were at least 50% less likely to develop AD and other dementias, compared to those who were more sedentary, even after adjustments for vascular disorders, smoking, ApoE genotype, and other factors.

The book "Minimizing the Risk of Alzheimer's Disease" provides additional data on the importance of diet, exercise, nutraceuticals, drugs (the good, the bad, the ugly), the dangers of smoking, the complicated aspects of AD and how they are being addressed, how to prevent depression, how to get some sleep, the dangers of toxic metals, and more.

(Frank Murray, a former editor of 3 prominent nutrition magazines, the author/coauthor of 54 books on health and nutrition published in the U.S., India, and China. He is also a member of the New York Academy of Sciences and lives in New York.)

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