

Good Nutrition Vital for Preventing Disability in Older Women

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ITHACA, N.Y., Nov. 28 -- Poor nutrition may lead to increased disability among older community-dwelling women, researchers here said.

Women ages 65 and older who had the lowest serum levels of vitamin B₆, vitamin B₁₂ and selenium were most likely to lose the ability to perform activities of daily living, reported Benedetta Bartali, R.D., of Cornell University, and colleagues in the Nov. 27 issue of the *Archives of Internal Medicine*.

Their study examined baseline serum nutrient levels collected for 643 community-dwelling women in the larger Women's Health and Aging Study. Development of disability, defined as self-reported difficulty in managing two or more activities of daily living (bathing, dressing, using the toilet, getting in or out of bed or a chair, and eating), was monitored at six month intervals through 36 months of follow-up.

Those with the lowest serum concentrations of vitamin B₆ (hazard ratio 1.31, 95% confidence interval 1.03 to 1.67), vitamin B₁₂ (HR 1.40, 95% CI 1.12 to 1.74), and selenium (HR 1.38, 95% CI 1.12 to 1.71) had significantly higher risk of disability than those in the upper three quartiles.

Baseline serum selenium (hazard ratio 1.47, 95% confidence interval 1.19 to 1.83, $P < 0.001$) and vitamin B₁₂ (HR 1.36, 95% CI 1.08 to 1.72, $P = 0.009$) independently predicted development of disability during the three years of follow-up.

The researchers cautioned that the results should not be taken as support for a vitamin supplements but rather a recommendation for a healthy diet.

The "do not imply a beneficial effect of nutrient supplementation on the prevention of disability," they wrote, "but rather suggest that nutritional status is one of the key factors to be considered for the development of strategies aimed at preventing or delaying the onset of disability, and consequently for the improvement of health and the quality of life of older women living in the community."

The Women's Health and Aging Study recruited an age-stratified random sample of Medicare beneficiaries in an urban area. Participants were interviewed and their physical performance measured at home. Blood samples were taken and analyzed for a variety of micronutrients.

All the participants had difficulties performing two or more physical functions at baseline, but were not so disabled as to have difficulties with activities of daily living. During the study, 32.3% of the women developed disability in these activities for an overall incidence rate of 13.3 per 100 person-years.

Comparing disability rates for the lowest quartile to the upper three quartiles, the findings were:

Significant for selenium (21.6 versus 10.8 per 100 person-years, $P<0.001$),

Significant for vitamin B₆ (17.3 versus 12.8 per 100 person-years, $P=0.02$),

Significant for vitamin B₁₂ (16.7 versus 12.0 per 100 person-years, $P<0.001$),

Not significant for total carotenoids (4.5 versus 13.0 per 100 person-years, $P=0.58$),

Not significant for retinol (vitamin A, 13.9 versus 13.1 per 100 person-years, $P=0.57$),

Not significant for 25-hydroxyvitamin D (15.8 versus 12.5 per 100 person-years, $P=0.54$),

Not significant for folate (14.9 versus 12.5 per 100 person-years, $P=0.61$), and

Not significant for zinc (15.4 versus 12.6 per 100 person-years, $P=0.43$).

Adjusting for age, race, education, smoking status, multivitamin use, body mass index, physical activity, alcohol consumption, chronic obstructive pulmonary disease, osteoarthritis, cardiovascular diseases, and cancer results did not substantially change the results.

The exact mechanisms are unclear but may involve antioxidant activity, the researchers said.

"Low antioxidants may tip the balance between antioxidants and free radicals and allow increased oxidative stress," they wrote. "This imbalance may lead to disability through dysregulation of cellular function and up-regulation of proinflammatory cytokines, muscle and neuronal damage, and the exacerbation of degenerative diseases."

Selenium antioxidant enzymes such as glutathione peroxidase help prevent lipid peroxidation and cellular damage. Vitamins B₆ and B₁₂ are involved in protein and homocysteine metabolism.

They said further studies are needed to confirm the results, to examine whether there is a causal relationship between serum levels of nutrients and disability, and to verify whether these results can be generalized to older persons with good physical performance.

Because participants already had some physical function difficulties, they may have had a decreased ability to shop or prepare meals that would tend to exacerbate the risk of undernutrition. However, the study was unlikely biased by self-report because the investigators used serum measures of nutrients rather than questionnaires of estimated intake.

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