Medical Xpress

# Eskimo study suggests high consumption of omega-3s reduces obesity-related disease risk

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A study of Yup'ik Eskimos in Alaska, who on average consume 20 times more omega-3 fats from fish than people in the lower 48 states, suggests that a high intake of these fats helps prevent obesity-related chronic diseases such as diabetes and heart disease.

The study, led by researchers at Fred Hutchinson Cancer Research Center and conducted in collaboration with the Center for Alaska Native Health Research at the University of Alaska-Fairbanks, was published online March 23 in the European Journal of Clinical Nutrition.

"Because Yup'ik Eskimos have a traditional diet that includes large amounts of fatty fish and have a prevalence of overweight or obesity that is similar to that of the general U.S. population, this offered a unique opportunity to study whether omega-3 fats change the association between obesity and chronic disease risk," said lead author Zeina Makhoul, Ph.D., a postdoctoral researcher in the Cancer Prevention Program of the Public Health Sciences Division at the Hutchinson Center.

The fats the researchers were interested in measuring were those found in salmon, sardines and other fatty fish: docosahexaenoic acid, or DHA, and eicosapentaenoic acid, or EPA.

Researchers analyzed data from a community-based study of 330 people living in the Yukon Kuskokwim Delta region of southwest Alaska, 70 percent of whom were overweight or obese. As expected, the researchers

found that in participants with low blood levels of DHA and EPA, obesity strongly increased both blood triglycerides (a blood lipid abnormality) and C-reactive protein, or CRP (a measure of overall body inflammation). Elevated levels of triglycerides and CRP increase the risk of heart disease and, possibly, diabetes.

"These results mimic those found in populations living in the Lower 48 who have similarly low blood levels of EPA and DHA," said senior author Alan Kristal, Dr. P.H., a member of the Hutchinson Center's Public Health Sciences Division. "However, the new finding was that obesity did not increase these risk factors among study participants with high blood levels of omega-3 fats," he said.

"Interestingly, we found that obese persons with high blood levels of omega-3 fats had triglyceride and CRP concentrations that did not differ from those of normal-weight persons," Makhoul said. "It appeared that high intakes of omega-3-rich seafood protected Yup'ik Eskios from some of the harmful effects of obesity."

While Yup'ik Eskimos have overweight/obesity levels similar to those in the U.S. overall, their prevalence of type 2 diabetes is significantly lower – 3.3 percent versus 7.7 percent.

"While genetic, lifestyle and dietary factors may account for this difference," Makhoul said, "it is reasonable to ask, based on our findings, whether the lower prevalence of diabetes in this population might be attributed, at least in part, to their high consumption of omega-3-rich fish."

For the study, the participants provided blood samples and health information via in-person interviews and questionnaires. Diet was assessed by asking participants what they ate in the past 24 hours and asking them to keep a food log for three consecutive days. Height,

weight, percent body fat, blood pressure and physical activity were also measured.

The median age of the participants was 45 and slightly more than half were female. The women were more likely than the men to be heavy, and body mass index (height-to-weight ratio) for all increased with age.

"Residents of Yup'ik villages joined this research because they were interested in their communities' health and were particularly concerned about the health effects of moving away from their traditional ways and adopting lifestyle patterns similar to those of residents in the lower 48 states," Makhoul said.

Based on these findings, should overweight and obese people concerned about their chronic disease risk start popping fish oil supplements or eat more fatty fish?

"There are good reasons to increase intake of fatty fish, such as the well-established association of fish intake with reduced heart disease risk," Makhoul said. "But we have learned from many other studies that nutritional supplementation at very high doses is more often harmful than helpful."

Before making a public health recommendation, the researchers said that a randomized clinical trial is needed to test whether increasing omega-3 fat intake significantly reduces the effects of obesity on inflammation and blood triglycerides.

"If the results of such a trial were positive, it would strongly suggest that omega-3 fats could help prevent obesity-related diseases such as heart disease and diabetes," she said.