

Nutrition Perspectives

University of California at Davis, Department of Nutrition, Cooperative Extension, and Center for Health and Nutrition Research

New Analysis Suggests Whole Diet Approach to Lower Cardiovascular Risk Has More Evidence Than Low-Fat Diets

A study published in the *American Journal of Medicine* reveals that a whole diet approach, which focuses on increased intake of fruits, vegetables, nuts, and fish, has more evidence for reducing cardiovascular risk than strategies that focus exclusively on reduced dietary fat (1). This new study explains that while strictly low-fat diets have the ability to lower cholesterol, they are not as conclusive in reducing cardiac deaths. By analyzing major diet and heart disease studies conducted over the last several decades, investigators found that participants directed to adopt a whole diet approach instead of limiting fat intake had a greater reduction in cardiovascular death and non-fatal myocardial

infarction.

Early investigations of the relationship between food and heart disease linked high levels of serum cholesterol to increased intake of saturated fat, and



An approach that focuses on increasing healthier foods instead of reducing fat was shown to be more effective in lowering risk.

subsequently, an increased rate of coronary heart disease. This led to the American Heart Association's recommendation to limit fat intake to less than 30% of daily calories, saturated fat to 10%, and cholesterol to less than 300 mg per day.

"Nearly all clinical trials in the 1960s, 70s and 80s compared usual diets to those characterized by low total fat, low saturated fat, low dietary cholesterol, and increased polyunsaturated fats," says study co-author James E.

Whole Diet continued on page 2

Table of Contents

New Analysis Suggests Whole Diet Approach to Lower Cardiovascular Risk Has More Evidence Than Low-Fat Diets	1
Better Eating Habits, Not Bad Economy, Stabilized Obesity Rates, Study Finds	3
High Cost of Fruits, Vegetables Linked to Higher Body Fat in Young Children	4
Parents Fail to Recognize if Their Kids are Overweight	6
Most Students Exposed to School-Based Food Commercialism	7
Healthy Food is Good for You—and Can Sell, Too	8
Vitamin D Status Associated With Multiple Sclerosis Activity, Progression	10
Claim that Raw Milk Reduces Lactose Intolerance Doesn't Pass Smell Test, Study Finds	11
Iron Deficiency May Increase Stroke Risk Through Sticky Blood	14

Whole Diet (Continued from page 1)

Dalen, MD, MPH, Weil Foundation, and University of Arizona College of Medicine. "These diets did reduce cholesterol levels. However they did not reduce the incidence of myocardial infarction or coronary heart disease deaths."

Carefully analyzing studies and trials from 1957 to the present, investigators found that the whole diet approach, and specifically Mediterranean-style diets, are effective in preventing heart disease, even though they may not lower total serum or LDL cholesterol. The Mediterranean-style diet is low in animal products and saturated fat, and encourages intake of monounsaturated fats found in nuts and olive oil. In particular, the diet emphasizes consumption of vegetables, fruit, legumes, whole grains, and fish.

"The potency of combining individual cardioprotective foods is substantial – and perhaps even stronger than many of the medications and procedures that have been the focus of modern cardiology," explains co-author Stephen Devries, MD, FACC, Gaples Institute for Integrative Cardiology (Deerfield, IL) and Division of Cardiology,

Northwestern University (Chicago, IL). "Results from trials emphasizing dietary fat reduction were a disappointment, prompting subsequent studies incorporating a whole diet approach with a more nuanced recommendation for fat intake."



The Mediterranean diet emphasizes consumption of vegetables, fruit, legumes, whole grains, and fish.

Based on the data from several influential studies, which are reviewed in the article, Dalen and Devries concluded that emphasizing certain food groups, while encouraging people to decrease others, is more cardioprotective and overall better at preventing heart disease than a blanket low-fat diet. Encouraging the consumption of olive oil over butter and cream, while increasing the amount of vegetables, fruits, whole grains, nuts, and fish promises to be more effective.

"The last fifty years of epidemiology and clinical trials have established a clear link between diet, atherosclerosis, and cardiovascular events," concludes Dr. Dalen. "Nutritional interventions have proven that a 'whole diet' approach with equal attention to what is consumed as well as what is excluded is more effective in preventing cardiovascular disease than low fat, low cholesterol diets."

Reference:

1. Dalen JE, Devries S. Diets to prevent coronary heart disease 1957-2013: what have we learned? Am J Med. 2014 May;127(5):364-9.

Source: Elsevier Press Releases; <http://www.elsevier.com/about/press-releases/research-and-journals/new-analysis-suggests-whole-diet-approach-to-lower-cardiovascular-risk-has-more-evidence-than-low-fat-diets>

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Sheri Zidenberg-Cherr, Ph.D., Nutrition Specialist, Anna Jones, Ph.D., and staff prepare NUTRITION PERSPECTIVES. This newsletter is designed to provide research-based information on ongoing nutrition and food-related programs. It is published quarterly (four times annually) as a service of the UC Davis Center for Health and Nutrition Research, the University of California Cooperative Extension and the United States Department of Agriculture. NUTRITION PERSPECTIVES is available online, free of charge, at <http://nutrition.ucdavis.edu/perspectives>. Questions or comments on articles may be addressed to: NUTRITION PERSPECTIVES, Department of Nutrition, University of California, Davis, CA 95616-8669. Phone:(530) 752-3387; FAX: (530) 752-8905.

Better Eating Habits, Not Bad Economy, Stabilized Obesity Rates, Study Finds

All those people who've been telling us for years that we should eat more healthy foods and cut our calories – stop, take a moment, and celebrate.

It appears that we actually listened.

A new, extensive study from The University of North Carolina at Chapel Hill's Gillings School of Global Public Health claims that it wasn't the Great Recession or any economic downturn that created a leveling of U.S. obesity rates (with some declines in certain subpopulations), as other scholars have suggested. Rather, the leveling and decline started well before that — in good economic times — and has continued. The reason likely is not economics as much as the result of more information and efforts aimed at producing healthier food choices and eating habits.

The study, "Turning point for US diets? Recessionary effects or behavioral shifts in foods purchased and consumed," was published in the *American Journal of Clinical Nutrition*.

"We found U.S. consumers changed their eating and food purchasing habits significantly beginning in 2003, when the economy was robust, and continued these habits to the present," said Shu-wen Ng, PhD, research assistant professor of nutrition at UNC's Gillings School of Global Public Health and the study's first author.

"These changes in food habits persisted independent of economic conditions linked with the

Great Recession or food prices," Ng said. "Between 2003 and 2010, the calorie consumption was

declining at an average annual rate of about 34 calories per day among children ages 2 to 18 years (compared to an average annual rate of decline of only 14 calories per day among adults). The declines in food purchases between 2000 and 2011, after adjusting for all the economic changes, was also at an average annual rate of 34 calories/capita/day per year among households with children."

Ng added that this dramatic turn in dietary behavior is more likely the outcome of sustained and persistent public health efforts aimed at raising awareness about the importance of healthy eating, providing better information about food choices and discouraging unhealthy dietary choices. Additionally, the researchers found that the proportional decline in calories was greatest among calories from beverages.

The researchers utilized both nationally representative dietary intake data along with longitudinal data on daily food purchases from hundreds of thousands of Americans. The study samples included combined data sets from the National Health and Nutrition Examination Survey (NHANES), which covered households comprising 13,422 children and 10,791 adults from 2003 to 2011; and the Nielsen Homescan Panel, which contains food purchase data from 57,298 households with children and 108,932 households without children.



The change in dietary behavior is more likely the outcome of raising awareness about the importance of healthy eating, providing better information about food choices, and discouraging unhealthy dietary choices.

Eating Habits *continued on page 4*

Eating Habits (continued from page 3)

Researchers then analyzed how much of the decline was the result of the Great Recession and the year of large increases in food prices preceding the recession. If one only considered the impact of recession-related increases in unemployment, the study showed that each 1 percent increase in the unemployment rate in the area where respondents lived was associated with a two to four kcal/capita/day increase in calories purchased. This is small relative to the major declines that occurred over time.



The largest declines in calorie intake were among children.

“This analysis is significant as we found the largest declines were among children, said Barry Popkin, PhD, W.R. Kenan Jr. Distinguished Professor of nutrition at the UNC Gillings School and co-author of the study. “However, these declines did not occur

uniformly. There were no significant declines in caloric intake observed among adolescents (ages 12 to 18 years), non-Hispanic black children and those whose parents did not complete high school. This suggests that certain subpopulations are still unable or unwilling to make these dietary changes.”

While Popkin noted that the specific contributors for these changes in behavior are not quantifiable, he suggested that greater attention by the public health community and journalists to obesity overall, particularly to soft drinks and other high-calorie sugary beverages and the changes made by food companies or retailers may have produced a significant rise in awareness among consumers about the role of food, particularly when it comes to caloric beverages in affecting obesity and health.

Reference:

1. Ng SW, Slining MM, Popkin BM. Turning point for US diets? Recessionary effects or behavioral shifts in foods purchased and consumed. *Am J Clin Nutr.* 2014 Mar;99(3):609-16.

Source: UNC Gillings School of Global Public Health News; Jan. 23, 2014; <http://sph.unc.edu/sph-news/better-eating-habits-not-bad-economy-stabilized-obesity-rates-study-finds/>

High Cost of Fruits, Vegetables Linked to Higher Body Fat in Young Children

High prices for fresh fruits and vegetables are associated with higher Body Mass Index (BMI) in young children in low- and middle-income households, according to American University researchers in the journal *Pediatrics*.

“There is a small, but significant, association between the prices of fruit and vegetables and higher child BMI,” said Taryn Morrissey, the study’s lead author and assistant professor of public



High Cost continued on page 5

High Cost (Continued from page 4)

administration and policy at AU's School of Public Affairs (SPA).

Morrissey said that when the prices of fruits and vegetables go up, families may buy less of them and substitute cheaper foods that may not be as healthy and have more calories.

"These associations are driven by changes in the prices of fresh fruits and vegetables rather than frozen or canned," said Alison Jacknowitz, a co-author of the study and an associate professor of public administration and policy at SPA.

BMI is a reliable indicator of total body fat, which is related to the risk of life-threatening diseases. More than 26 percent of 2- to 5-year-old children nationwide were considered overweight, defined as having a BMI above the 85th percentile, in 2009 and 2010, up from 21 percent a decade earlier.

The researchers linked data from the Early Childhood Longitudinal Study-Birth Cohort, a nationally representative study of children from infancy to age 5, to local food price data from the Council for Community and Economic Research (C2ER) Cost-of-Living Index. The study focused on

households under 300 percent of the federal poverty line, or a family of four earning \$70,650 in 2013.

While, in general, food prices have trended downward in recent decades, particularly the prices of snacks and sugar-sweetened beverages, the real prices of restaurant meals and fruits and vegetables have increased. Fruit and vegetable prices increased by 17 percent between 1997 and 2003 alone. Children living in areas with higher-priced fruits and vegetables averaged higher measures of BMI scores compared with their peers in areas with lower-priced fruits and vegetables.

Another surprising finding was an association between higher fast food prices and an increase in obesity. Morrissey said local fast food outlets may have more freedom than grocery stores to increase their prices in response to higher demand for their products.

The study also identified a small association between higher-priced soft drinks and a lower likelihood of obesity among young children. The study did not find strong associations between food prices and food insecurity, meaning families forced by a lack of money to skip meals, cut portions or otherwise forgo food at some point.



Children living in areas with higher-priced fruits and vegetables averaged higher measures of BMI scores compared with their peers in areas with lower-priced fruits and vegetables.

Reference:

1. Morrissey TW, Jacknowitz A, Vinopal K. Local food prices and their associations with children's weight and food security. *Pediatrics*. 2014 Mar; 133(3):422-30.

Source: Dave DeFusco. American University SPA News; Feb. 12, 2014; <http://www.american.edu/spa/news/fruits-vegetables-children-study.cfm>

Parents Fail to Recognize if Their Kids are Overweight

In Garrison Keillor's idyllic town of Lake Wobegon, all the children are above average. And, judging by a new study by University of Nebraska-Lincoln researchers, none are obese.

Though childhood obesity rates in the United States have tripled in the last 30 years, more than half of parents do not recognize that their child is overweight, according to a new meta-analysis study conducted by UNL graduate student Alyssa Lundahl and Timothy Nelson, assistant professor of psychology.

Seeking a clear answer on when and whether parents realize their children are overweight, Lundahl combined and analyzed data from 69 studies conducted worldwide between 1990 and 2012 that involved children ages 2 to 18. In an article published in the journal *Pediatrics*, Lundahl found that more than 50 percent of parents underestimate the weight of their overweight or obese child.

"This is a topic that has a lot of implications for children and their weight," Lundahl said. "Parents who underestimate their children's weight may not encourage healthy eating and physical activities that can optimize their children's health and reduce their risk of obesity."

Surprisingly, parents' perceptions about whether their children are overweight have not changed as childhood obesity rates increased, Lundahl found. Nor are they influenced by obesity

rates in the place where they live.

"No matter where you are and no matter what the rate of obesity is in that area, parents are still underestimating the weight of their overweight children," she said.



More than 50 percent of parents underestimate the weight of their overweight or obese child.

Parents of younger children, ages 2 to 5, are less likely to perceive their children as overweight or obese, the study found.

"Perceptions grow more accurate with age," Lundahl said. "Parents realize it's not just baby fat any more and they're not going to grow out of it."

Parents also are less accurate in judging the size of their sons, believing that normal weight sons are actually underweight.

"There is a belief that boys are supposed to be big and strong," she said. "If they're not a little bit bigger, they're seen as being too small."

Parents who are overweight also are less likely to accurately assess their children's weight, the study found.

The study has important implications for pediatricians, Nelson said. Overweight 2- to 5-year-olds are five times more likely than their non-overweight counterparts to be overweight at age 12. Obesity in adolescence is highly predictive of adult weight problems.

"The cases that are missed by parents are actually really unfortunate because those are the

Overweight continued on page 7

Overweight (Continued from page 6)

cases where early intervention can have some good effects,” Nelson said.

If pediatricians recognize that many parents don't accurately judge whether their child has a weight problem, they can help parents improve their children's health by encouraging healthy eating and physical activity, Lundahl said.

Lundahl, who is pursuing a doctorate in clinical psychology, spent about a year on the study. Katherine Kidwell, a fellow UNL graduate student, assisted Lundahl in coding data for the research.

Reference:

1. Lundahl A, Kidwell KM, Nelson TD. Parental underestimates of child weight: a meta-analysis. *Pediatrics*. 2014 Mar;133(3):e689-703.

Source: Reed L. UNL News Releases; Feb. 4, 2014;

<http://newsroom.unl.edu/releases/2014/02/04/UNL+study%3A+Most+parents+fail+to+recognize+if+their+kids+are+overweight>



Parents can improve their children's health by encouraging healthy eating and physical activity.

Most Students Exposed to School-Based Food Commercialism



In addition to math, language arts, and science, most students in elementary, middle, and high schools are exposed to food commercialism at school.

Most students in elementary, middle and high schools are exposed to food commercialism (including exclusive beverage contracts and the associated incentives, profits and advertising) at school, although there has been a decrease in beverage vending, according to a study by Yvonne Terry-McElrath, M.S.A., of the University of Michigan, Ann Arbor, and colleagues.

Schools are desirable marketing areas for food and beverage companies, although many of the products marketed to students are nutritionally poor, according to the study background.

Researchers estimated exposure to school-based commercialism for elementary, middle and high school students from 2007 to 2012 using a survey of school administrators.

The percentage of students attending

Students continued on page 8

Students (Continued from page 7)

schools with exclusive beverage contracts (EBCs), incentive programs and profits (money from beverage sales) decreased from 2007 to 2012 for all grades. By 2012, 2.9 percent of elementary school students attended schools with EBCs compared with 10.2 percent in 2007; 49.5 percent of middle school and 69.8 percent of high school students attended schools with EBCs in 2012 compared with rates of 67.4 percent and 74.5 percent, respectively, in 2007. For food vending, 24.5 percent of middle school and 51.4 percent of high school students attended schools with company-sold food vending, the results indicate.

Study findings also show that fast food was available to students at least once a week in 2012 in schools attended by 10.2 percent of elementary

students, 18.3 percent of middle school students and 30.1 percent of high school students.



The new USDA Smart Snacks in Schools regulations limit foods sold on campus to those that meet nutrition requirements.

Overall, food coupons were the most frequent type of commercialism for 63.7 percent of elementary schools students. For middle and high school students, EBCs were most prevalent in schools, with 49.5 percent of middle school and 69.8 percent of high school students attending schools with EBCs, according to the study.

“Although there were significant decreases over time in many of the measures examined, the continuing high prevalence of school-based commercialism supports calls for, at minimum, clear and enforceable standards on the nutritional content of all foods and beverages marketed to youth in school settings,” the authors conclude.

Reference:

1. Terry-McElrath YM, Turner L, Sandoval A, et al. Commercialism in US elementary and secondary school nutrition environments: trends from 2007 to 2012. *JAMA Pediatr.* 2014 Mar;168(3):234-42.

Source: JAMA Pediatrics Releases; Jan. 13, 2014; <http://media.jamanetwork.com/news-item/most-students-exposed-to-school-based-food-commercialism/>

Healthy Food is Good for You—and Can Sell, Too

In the fall of 2008, the booster club in Muscatine, Iowa took a chance. Researchers from the University of Iowa asked whether the club would add healthy foods—from apples to string cheese—to its concessions menu. And, by the way, would it also consider putting healthier ingredients in big

sellers like nachos and popcorn?

These were no idle requests. Booster clubs across the United States directly support schools’ athletic and extra-curricular programs like band and choir. The Muskie Boosters, for instance, raise \$90,000 annually for athletics and other outside

Healthy Food continued on page 9

Healthy Food (Continued from page 8)

school activities. With crucial dollars at stake, clubs can be reluctant to tinker with a reliable cash generator like concession sales.

“I don't think without [revenue from] booster clubs, especially with how schools are cutting things, how they'd be able to do it,” says Kate Hansen a former president of the Muskie Boosters.

The little gamble paid off for the Muskies. According to a new study published this week in the *Journal of Public Health*, the club netted stable sales and revenues with the healthy-food additions over one full season. Profits remained intact as well. Average sales per varsity football game rose to \$6,849 in 2009 from \$6,599 the year before, an increase of 4 percent. Moreover, the healthy foods made up 9.2 percent of concession sales, signaling the new products could boost overall sales. Parents and students also said they were happy with the healthy-food choices, according to surveys cited in the study.

“This study is the first to evaluate the results on satisfaction and sales of making changes to concession-stand offerings in school settings,” writes the research team, led by Helena Laroche, assistant professor in internal medicine and pediatrics at the UI and the study's corresponding author. “It provides preliminary evidence that altering offerings and adding healthy options can be done by working in concert with parent groups. Furthermore, these

modifications can provide reasonable revenue and profit margins without negative effects on customer satisfaction.”

To date, six other school booster clubs in Iowa have added healthy foods to their concession menus, following a how-to guide written by Laroche based on her experience in Muscatine. She hopes the concept will expand nationwide.

“Booster groups have worried that healthier items wouldn't sell, and it's important for them to make money to support student activities,” Laroche says. “This shows it can be done.”

The Muskie Boosters offered eight healthy foods: Apples, carrots and dip, chicken sandwiches, granola bars, pickles, soft pretzels, string cheese, and trail mix. The items were sold during the 2009 fall season at Muscatine High football games, volleyball matches, and swim meets. Additionally, boosters substituted canola oil for coconut oil bars in the popcorn, and swapped the cheese in the nachos for a healthier version, eliminating trans fat from the products. The group advertised the new offerings in a poster and marketing campaign with the slogan, “Great taste, more variety.”

While all the healthy foods sold, chicken sandwiches and pretzels dominated, accounting for 7.6 percent of all food sales, sales data showed. Sales of other items varied according to weather, venue, and product visibility. Granola bars and trail mix sold better indoors, while carrots and dip were popular



In addition to stocking healthier options, such as string cheese and apples, healthier ingredients were used in concession favorites like popcorn and nachos.

Healthy Food continued on page 10

Healthy Food (Continued from page 9)

in benign, outdoor weather. String cheese suffered from being tucked away in a refrigerator. Pickles were especially popular with students. And, no one noticed the healthier changes to the popcorn and nachos, which continued to sell briskly.

Researchers from Cornell University's Food and Brand Lab analyzed the sales data.

"If you're a concession-stand sponsor, and you want people to eat better, and you want to make more money, add at least five healthy items," says Brian Wansink, the Cornell lab's director and a marketing professor. "There's got to be a critical mass, and we find that five's a very lucky number,

and ten is even better."

To be sure, classic concession items—hot dogs, pizza, and candy bars—continued to sell well. But Hansen says she noticed a shift in people's perception and attitudes about the new offerings.

"I think what it comes down to is people want to have choices," says Hansen, who was the Muscatine booster club president during the study. "We still sell hot dogs, we still sell pizza, we still sell candy bars. But everything in life is about choices, and it's important to put choices out there that meets everybody's needs and wants, and more people, it seems, want to lead healthier lives."

Reference:

1. Laroche HH, Ford C, Hansen K, et al. Concession stand makeovers: a pilot study of offering healthy foods at high school concession stands. *J Public Health (Oxf)*. 2014 Mar 12. [Epub ahead of print]

Source: Richard C. Lewis. *IowaNow*; Mar. 11, 2014; <http://now.uiowa.edu/2014/03/healthy-food-good-you%E2%80%93and-can-sell-too>

Vitamin D Status Associated With Multiple Sclerosis Activity, Progression

Vitamin D status appears to be associated with reduced disease activity in patients with multiple sclerosis (MS) and a slower rate of disease progression, according to a study by Alberto Ascherio, M.D., Dr.P.H., of the Harvard School of Public Health, Boston, and colleagues.

MS is a common cause of neurological disability and vitamin D status may be related to the disease process, according to the study background.

Researchers examined whether blood concentration of 25-hydroxyvitamin D (25[OH]D), a marker of vitamin D status, was associated with MS disease activity and progression in patients with a first episode suggestive of MS.

Blood 25[OH]D levels were measured as part of a randomized trial originally designed to study patients given interferon beta-1b treatment. A total of 465 patients (of the 468 enrolled) had at least one 25[OH]D measurement. Patients were



Sun exposure can provide an importance source of vitamin D by promoting the generation of vitamin D in the skin.

Vitamin D continued on page 11

Vitamin D (Continued from page 10)

followed for up to five years with magnetic resonance imaging.

Increases of 50-nmol/L in average blood 25[OH]D levels within the first 12 months appeared to be associated with a 57 percent lower risk of new active brain lesions, 57 percent lower risk of relapse, 25 percent lower yearly increase in T2 lesion volume

and 0.41 percent lower yearly loss in brain volume from months 12 to 60.

“Among patients with MS mainly treated with interferon beta-1b, low 25[OH]D levels early in the disease course are a strong risk factor for long-term MS activity and progression,” the study concludes.

Reference:

1. Ascherio A, Munger KL, White R, et al. Vitamin D as an early predictor of multiple sclerosis activity and progression. *JAMA Neurol.* 2014 Mar;71(3):306-14.

Source: JAMA Neurology Releases; Jan. 20, 2014; <http://media.jamanetwork.com/news-item/vitamin-d-status-associated-with-multiple-sclerosis-activity-progression/>

Claim that Raw Milk Reduces Lactose Intolerance Doesn't Pass Smell Test, Study Finds

Despite claims that people who are lactose-intolerant can digest raw milk more easily than pasteurized milk, a Stanford study found no difference between the two.

Some sour news for lactose-intolerant people who hoped that raw milk might prove easier to stomach than pasteurized milk: A pilot study from the Stanford University School of Medicine shows little difference in digestibility between the two.

The study was small — it involved 16 participants — but the lead investigator said the results were highly consistent among all the participants and deflate some of the claims surrounding raw, or unpasteurized, milk.

"It's not that there was a trend toward a benefit from raw milk and our study wasn't big enough to capture it; it's that there was no hint of any benefit," said nutrition expert Christopher Gardner, PhD, professor of medicine at the Stanford Prevention Research Center and senior author of the study, published in the *Annals of Family Medicine*.

Although relatively few people drink raw milk — it's thought to comprise less than 1 percent of milk consumed nationwide — Gardner said he believes in making sure that the claims regarding foods or

supplements are based on sound science. "When



In recent years, proponents of raw milk have claimed that because raw milk is unpasteurized, it contains "good" bacteria that can increase lactose absorption.

Raw Milk continued on page 12

Raw Milk (Continued from page 11)

claims about 'all-natural' foods are merely anecdotal, it works against the food movement and undermines nutrition science," he said. "Let's get to the part that's real and do away with myths and anecdotes."

For people who are lactose-intolerant, eating dairy products can be painful. Their bodies lack enough lactase, which is the enzyme that breaks down lactose, the sugar in milk and milk products. This digestion difficulty can cause stomach cramps and diarrhea, among other symptoms. But many people who report discomfort after consuming dairy products haven't been formally tested for the condition, making it difficult to know how many meet the clinical standards for lactose-intolerance, Gardner said.

Although many strategies for coping with the condition exist — taking lactase enzyme tablets, choosing lactose-free foods — none of them fully eliminates the problem. In recent years, proponents of raw milk have cited examples of lactose-intolerant people who were able to drink raw milk without consequences. Some raw-milk producers claim that because the product isn't pasteurized, it contains "good" bacteria that can increase lactose absorption.

"When I heard that claim it didn't make sense to me because, regardless of the bacteria, raw milk and pasteurized milk have the same amount of lactose in them," Gardner said. "But I liked the idea of taking this on since it seemed like a relatively

straightforward and answerable question because the symptoms of lactose-intolerance are immediate. If drinking milk makes you uncomfortable, you will know within two hours. You either have cramps and diarrhea or you don't."

For the pilot study, Gardner's team recruited 16 participants who were tested to confirm their lactose-intolerant status. The test measures the amount of hydrogen in a person's breath after drinking a beverage that contains lactose. Higher levels of hydrogen, as set by a National Institutes of Health panel, are present when undigested lactose

ferments in the colon, which occurs for "malabsorbers." (Of the 63 potential study participants who reported having mild to moderate symptoms and who were screened, only 43 percent actually met the malabsorption standard, Gardner noted.)

The trial had a "crossover" design, meaning the participants each consumed three different types of milk during the course of

the study: pasteurized milk, raw milk and soy milk, which doesn't have lactose and served as a control. "The crossover design is really compelling because it means each participant can evaluate their symptoms in the same way as they drink the different kinds of milk," Gardner said.

The participants were randomly assigned the order in which to consume the different milks, which



The participants didn't notice a difference in the severity of their symptoms when drinking raw versus pasteurized milk.

Raw Milk continued on page 13

Raw Milk (Continued from page 12)

were provided in unlabeled containers. Additionally, small amounts of sugar-free vanilla syrup were added to all three milks to make it more difficult for the participants to know which one they were drinking.

For eight days, the participants consumed one type of milk, with the quantities increasing between days two (4 ounces of milk) and seven (24 ounces). On the first and eighth days, they consumed 16 ounces of milk and underwent breath tests days to gauge the amount of hydrogen they were exhaling. They had the option of consuming none or a smaller portion of the milk on any of the days if their symptoms became too severe. After a one-week clearing-out period in which they consumed no milk products, the participants repeated the process for the two other types of milk.

The participants were also given a log in which to record the severity of four symptoms — gas, diarrhea, audible bowel sounds and abdominal cramping — on a scale of 0 to 10, with 10 being the most severe.

When the team compared the hydrogen breath test results, they found little difference between the consumption of raw milk and pasteurized milk. In fact, the hydrogen levels on the first day of the eight-day period were higher for raw milk than for pasteurized milk, but those differences were no longer present on the eighth day, Gardner said.



Raw milk does not undergo pasteurization, and has been linked to several food-borne illness outbreaks in recent years.

The participants also didn't notice a difference in the severity of their symptoms when drinking raw versus pasteurized milk. Unsurprisingly, they reported the most discomfort on the seventh day of two portions of the trial when they consumed the largest amount — 24 ounces in one

sitting — of either raw or pasteurized milk. In rating their symptoms on the 0-to-10 scale, the participants put their discomfort levels at an average of 4 when drinking the most of both types of dairy milk.

In the final tally, Gardner noted that 13 of the 16 participants were willing to drink the full 24 ounces of both raw milk and pasteurized milk. "I was stunned that so many of them tolerated that much milk because these were people who are clinically lactose-intolerant," he said.

Irene Gabashvili of Sunnyvale, Calif., said she happily volunteered for the trial. She remembers drinking raw milk as a young girl at her grandmother's farm, but said that in her 30s she began developing discomfort when she drank milk.

"By participating in this trial, I realized that milk is everywhere — it's in salad dressing, it's even in bread," Gabashvili said. She used to purchase lactose-free products, but has since stopped because she found she liked soy milk after drinking it during the trial and she also discovered she could tolerate small amounts of pasteurized milk.

Although the number of participants was

Raw Milk continued on page 14

Raw Milk (Continued from page 13)

small, Gardner said the pilot study is a solid first step and provides meaningful evidence that could be pursued in a larger trial. He said future studies should note that the participants were willing to tolerate the discomforts of drinking milk for eight days, which he believed was long enough to determine whether their digestive systems adapted to the additional bacteria in raw milk.

Reference:

1. Mummah S, Oelrich B, Hope J, et al. Effect of raw milk on lactose intolerance: a randomized controlled pilot study. *Ann Fam Med*. 2014 Mar-Apr;12(2):134-41.

Source: Susan Ipaktchian. Stanford Medicine News Center; Mar. 10 2014; <http://med.stanford.edu/news/all-news/2014/03/claim-that-raw-milk-reduces-lactose-intolerance-doesnt-pass-smell-test-study-finds.html>

Iron Deficiency May Increase Stroke Risk Through Sticky Blood

Scientists at Imperial College London have discovered that iron deficiency may increase stroke risk by making the blood more sticky.

The findings, published in the journal *PLOS ONE*, could ultimately help with stroke prevention.

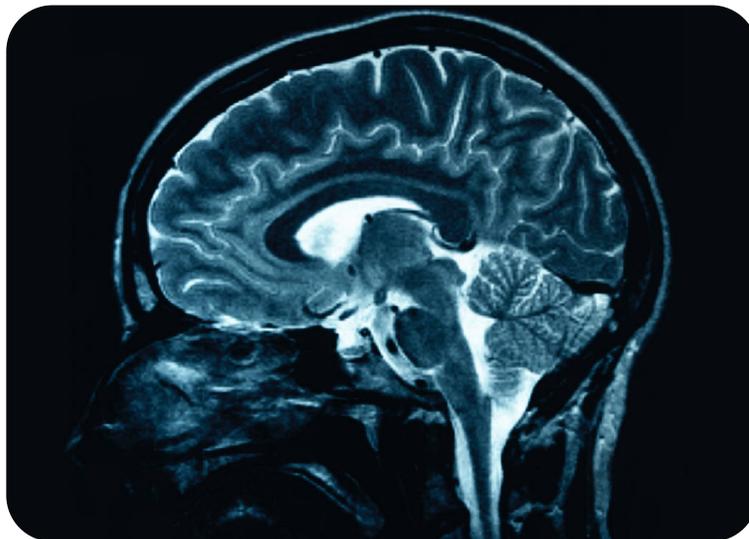
Every year, 15 million people worldwide suffer a stroke. Nearly six million die and another five million are left permanently disabled. The most common type, ischemic stroke, occurs because the blood supply to the brain is interrupted by small clots.

In the last few years, several studies have

shown that iron deficiency, which affects around two billion people worldwide, may be a risk factor for ischemic stroke in adults and in children. How iron deficiency could raise stroke risk has been a puzzle for researchers.

The Imperial team found that iron deficiency increases the stickiness of small blood cells called platelets, which initiate blood clotting when they stick together. Although a link between iron deficiency and sticky platelets was first discovered almost 40 years ago, its role has

been overlooked until now.



Every year, 15 million people worldwide suffer a stroke, the most common type being when small clots block blood supply to the brain.

Iron Deficiency continued on page 15

Iron Deficiency (Continued from page 14)

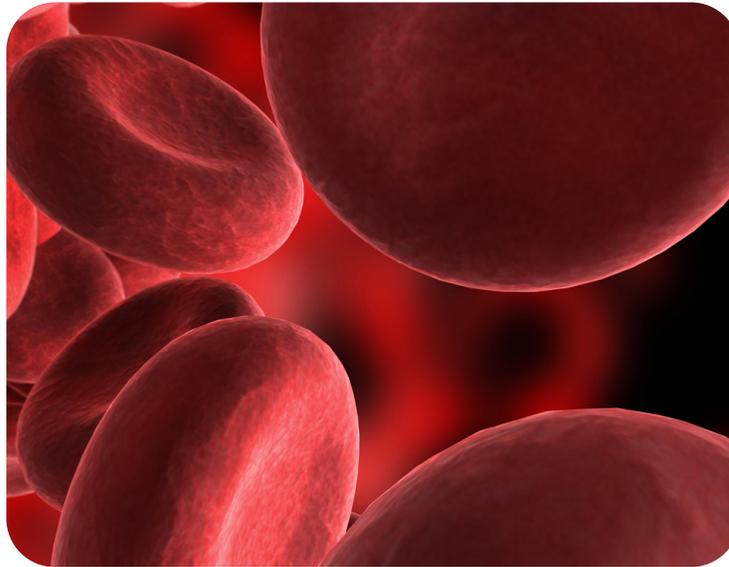
The researchers studied a group of patients with a rare disease called hereditary hemorrhagic telangiectasia (HHT) that often leads to enlarged blood vessels in the lungs, similar to varicose veins. Normally, the lungs' blood vessels act as a filter to remove small clots before blood goes into arteries. In patients with abnormal lung vessels, blood is able to bypass the filter, so small blood clots can travel to the brain.

The patients in the study who were short of iron were more likely to have a stroke. In addition, the researchers looked at platelets in the lab and found that when they treated these with a substance that triggers clotting, platelets from people with low iron levels clumped together more quickly.

Dr. Claire Shovlin, from the National Heart and Lung Institute at Imperial College London, said: "Since platelets in the blood stick together more if you are short of iron, we think this may explain why being short of iron can lead to strokes, though much more research will be needed to prove this link.

"The next step is to test whether we can reduce high-risk patients' chances of having a stroke by treating their iron deficiency. We will be able to

look at whether their platelets become less sticky. There are many additional steps from a clot blocking a blood vessel to the final stroke developing, so it is still unclear just how important sticky platelets are to the overall process. We would certainly encourage more studies to investigate this link."



Platelets from people with low iron levels clumped together more quickly which may explain why being short of iron can lead to strokes.

The researchers studied data on 497 patients with abnormal blood vessels in the lung, known as pulmonary arteriovenous malformations, who were treated at a specialist HHT clinic at Hammersmith Hospital. The study found that even moderately low iron levels, around 6 micromoles per liter, approximately doubled the risk of stroke compared with levels in the middle of the

normal range of 7-27 micromoles per liter.

Besides this group of patients, many other people have conditions that can allow blood clots to bypass the filter in the lungs. One in four people have a hole in the heart called a patent foramen ovale. Holes in the heart also allow blood to bypass the lung filter from time to time, though not as often as for the lung patients.

Reference:

1. Shovlin CL, Chamali B, Santhirapala V, et al. Ischaemic strokes in patients with pulmonary arteriovenous malformations and hereditary hemorrhagic telangiectasia: associations with iron deficiency and platelets. PLoS One. 2014 Feb 19;9(2):e88812.

Source: Wong, Sam. Feb. 19, 2014; Imperial College London News and Events; http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newssummary/news_19-2-2014-16-18-37

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