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August 2015 Media Alert:
The Journal of Nutrition

The following articles are being published in the August 2015 issue of *The Journal of Nutrition*, a publication of the American Society for Nutrition. Summaries of the selected articles appear below; the full text of each article is available by clicking on the links listed. Manuscripts published in
The Journal of Nutrition are embargoed until the article appears online either as in press (Articles in Press) or as a final version. The embargoes for the following articles have expired.

Supplements important sources of "one-carbon" B vitamins during pregnancy

Higher omega-3 fatty acid consumption related to lower levels of vascular calcification in older women - but not men

Improving overall dietary patterns consistent with US Dietary Guidelines recommendations related to less weight gain in US adults

Supplements important sources of "one-carbon" B vitamins during pregnancy
During pregnancy a woman's nutritional requirements increase to support growth and development of the infant she is carrying. Whereas dietary requirements of almost all nutrients increase during this time, some nutrients are particularly important because of their roles in cellular growth and brain development. Among these nutrients are several B vitamins (notably folate, vitamin B-6, and vitamin B-12), choline (a vitamin-like substance found primarily in eggs and meat), and methionine (an essential building block of proteins) which all shuttle carbon atoms from one molecule to another - a process critical for cell division. These "one-carbon nutrients" may also impact long-term health of the child turning on and off certain genes. Studies show that inadequate maternal intake of one-carbon nutrients during pregnancy is linked to increased risk for birth defects, suboptimal neural development, and increased likelihood for some childhood cancers. Conversely, there is speculation that very high maternal intakes might also lead to greater chance of asthma and obesity. Because no study has assessed overall one-carbon nutrient intake during this critical period of the lifecycle, Drs. Deborah O'Connor and Young-In Kim at the University of Toronto recently evaluated one-carbon nutrient intake in a cohort of 368 pregnant Canadian women. Their results are published in the August 2015 issue of *The Journal of Nutrition*.

This investigation was conducted in conjunction with a larger project referred to as the Prenatal Folic Acid Exposure on DNA Methylation in the newborn infant (PREFORM) study designed to evaluate the relationship between maternal folate intake and epigenetic modification of the infant's DNA. Women were enrolled prior to pregnancy and during their first and third trimesters asked to complete a 110-item food frequency questionnaire designed to quantify usual consumption of one-carbon nutrients from foods and beverages. Dietary supplement use was also carefully recorded.

Upcoming Events

December 4-6. Advances & Controversies in Clinical Nutrition. Long Beach, CA. Free passes for media!

Journal Links

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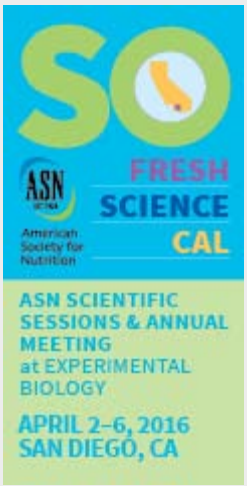

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Nearly all (~90%) women reported taking B-vitamin-containing dietary supplements while pregnant, although none of the supplements reportedly taken contained choline. The major dietary contributors of folate, vitamin B-6, and vitamin B-12 were green salad and orange juice, vegetarian soups and stews, and milk, respectively. Dietary supplements were also found to be important sources of B vitamins for most of the women. In fact, the researchers concluded that without supplements, many women would not have consumed quantities of folate and vitamin B-6 needed to reach national recommendations. And, as choline is not currently included in prenatal supplement formations, they urge additional research to determine whether this nutrient should be added.

Reference Masih SP, Plumptre L, Ly A, Berger H, Lausman AY, Croxford R, Kim Y-I, O'Connor DL. Pregnant Canadian women achieve recommended intakes of one-carbon nutrients through prenatal supplementation but the supplement composition, including choline, requires reconsideration. *Journal of Nutrition* 145: 1824-34, 2015.
For More Information To contact the corresponding author, Dr. Deborah O'Connor, please send an e-mail to Deborah.oconnor@utoronto.ca.

Higher omega-3 fatty acid consumption related to lower levels of vascular calcification in older women - but not men

International experts agree that what we eat (and choose to avoid) can influence both acute and chronic health, especially when it comes to keeping our cardiovascular systems in check. Perhaps some of the most well-studied dietary components in this regard are fats and oils, in particular the omega-3 fatty acids found in some cooking oils (such as those derived from canola and soybeans) and fatty fish (such as salmon and tuna). Researchers believe that higher consumption of these oils may impact heart health by fine-tuning the immune system and preventing chronic inflammation. In addition, results from animal studies suggest that omega-3 fatty acids might decrease calcification of blood vessels in the abdomen, a somewhat newly-discovered risk factor for cardiovascular disease. To date, however, there have been few studies related to this topic in humans. In an article published in the August 2015 issue of *The Journal of Nutrition*, an international collaboration of researchers led by Xianwen Shang from the University of Melbourne and the Australian Institute for Musculoskeletal Science report the results of a study they conducted to investigate whether omega-3 intake is related to calcification of our largest artery in the abdominal region.

This study was part of the larger Melbourne Collaborative Cohort Study and involved a total of 312 relatively healthy men and women between 45 and 64 years of age whose health was followed for 18 years after enrollment. Dietary omega-3 fatty acid intake was estimated at the beginning and end of the study via administration of questionnaires consisting of 121 and 98 commonly consumed foods, respectively. Extent of calcium deposits on the abdominal aorta was determined at the study's conclusion using imaging techniques.

In women, but not men, higher intake of the main plant-derived omega-3 fatty acid (alpha-linolenic acid) at the beginning of the study was associated with having the least abdominal aortic calcification at the study's conclusion. Similar results were found when total omega-3 fatty acid intake was considered. Both women and men had a relatively low intake of fish-derived omega-3 fats, and no association was reported with abdominal aortic calcification. The authors concluded that low dietary alpha-linolenic acid and total omega-3 fatty acid intake may predict increased cardiovascular disease risk in older women, but not in older men.

Reference Shang X, Sanders KM, Scott D, Khan B, Hodge A, Khan N, English DR, Giles GG, Ebeling PR. Dietary α-linolenic acid and total ω-3 fatty acids are inversely associated with abdominal aortic calcification in older women, but not in older men. *Journal of Nutrition* 145: 1778-86, 2015.

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Improving overall dietary patterns consistent with US Dietary Guidelines recommendations related to less weight gain in US adults

There is no "one-size-fits-all" solution when it comes to maintaining a healthy body weight. And although many would like us to believe that increasing consumption of *individual* foods and/or particular nutrients might miraculously help in this regard, an overwhelming amount of research suggests that overall dietary *patterns* are more important. For instance, the heart-healthy effects of the Mediterranean diet can't be attributed to single foods like olives or tomatoes. Instead, the healthy outcomes are likely due to multiple, complex benefits of the myriad foods common to Mediterranean-centric foods. Although many studies have documented statistical relationships between various eating patterns and health, few have followed what happens when people change their food choices to be more like one of the recommended patterns - like the US Dietary Guidelines for Americans. However, in a study published in the August 2015 issue of *The Journal of Nutrition*, a research team led by Dr. Teresa Fung (Simmons College and Harvard TH Chan School of Public Health, both in Boston) did just this with a very large cohort of American men and women.

Fung and colleagues leveraged their data from 3 sources: the ongoing Nurses' Health Study, the Health Professionals Follow-Up Study, and the Nurses' Health Study II. In total, data from more than 150,000 individuals were utilized. Dietary patterns were carefully evaluated every year for 4 years and then scored based on how similar they were to the recommended Mediterranean diet, the 2010 US Dietary Guidelines for Americans, and the Dietary Approaches to Stop Hypertension (DASH) diet. The researchers then used statistical modeling to determine whether changes in dietary pattern scores were related to changes in body weight during the duration of the study.

The data revealed consistent inverse relationships between improvements in diet score and weight gain. In other words, people who improved their food intake patterns the most during the 4-year period were the least likely to put on weight. This was true for both men and women but was most pronounced in younger women and participants who were already overweight when the study began.

Reference Fung TT, Pan A, Hou T, Chiuve SE, Tobias DK, Mozaffarian D, Willett WC, Hu FB. Long-term change in diet quality is associated with body weight change in men and women. *Journal of Nutrition* 145: 1850-6, 2015.

For More Information

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