



Nutrition for Family Living

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June, 2000 Topics

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Update on Maternal Nutrition

From the desk of Sherry T.

A summary of the May 2000 supplement to the American Journal of Clinical Nutrition (AJCN) on "Maternal Nutrition: New Developments and Implications."

From the beginning of time women have become pregnant, but we are still learning more and more about optimal maternal needs during pregnancy. Accumulating data suggest that even genetic makeup may play a role in micronutrient requirements. Moreover, a woman's nutritional status at the time of conception as well as her basic lifestyle may play a role in the outcome of her pregnancy.

Many amazing changes and different demands occur in a woman's body during pregnancy. The first amazing occurrence is that her body has to make an entire new organ: the placenta. While we do not know all of the intricacies of the placenta, we do know that the hormones that it secretes affect the metabolism of nutrients. Secondly, some very interesting changes occur in the maternal macro- and micronutrient profiles. For example, serum protein falls while serum lipids (fats) rise. In addition, vitamin E concentration in the serum increases while vitamin A concentration decreases. During pregnancy, a woman's blood volume increases and this increase can explain decreases in blood concentrations of some nutrients (this is a dilution effect also known as 'hemodilution'). Conversely, increases in some nutrients can be explained by the increased needs of the fetus and mother.

Research to date suggests that pregnancy represents the most nutritionally sensitive period in the life cycle for the fetus and the time when nutrition intervention can reap the greatest benefits. This includes intergenerational effects. A current research concept suggests that major diseases originate from impaired intrauterine growth and development (low birth weight). Research has suggested that coronary heart disease, hypertension and type 2 diabetes in adulthood are linked to low birth weight as an infant. Therefore, a crucial role exists for prenatal nutrition education in our communities.

Low prenatal weight gain, associated with poor pregnancy outcome, continues to be a problem for a significant proportion of underweight and average weight women enrolled in a variety of health, nutrition education and food assistance programs. This varies by ethnic group, education, marital status, age, number of pregnancies, pregnancy intendedness and prenatal care. Other risk factors include smoking, alcohol and substance abuse and a low intake of micronutrients. The obligate (necessary) weight gain is approximately 17 pounds and this does not include fat storage for the lactation period. Adverse pregnancy outcomes are 2- to 3- fold more common among infants born to poor urban women in the U.S. than to women of better socioeconomic status.



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Several recommendations were made in the AJCN supplement regarding specific nutrients:

Vitamin A: During pregnancy, a daily supplement should not exceed 10,000 IU and a weekly supplement should not exceed 25,000 IU. Fortunately, some prenatal vitamins have actually decreased the amount of vitamin A to 50% of the recommended daily allowance. In some recent animal model studies, teratogenic (harmful to fetus) effects have been observed with very low doses of vitamin A during pregnancy.

Calcium: Pregnant women should be encouraged to achieve 1200 mg of calcium each day. A woman's body adapts to the increased calcium demands of pregnancy and lactation. Therefore, a woman should not worry that pregnancy and breast-feeding contribute to postmenopausal osteoporosis.

Folic Acid (folate): We may need to start thinking "outside of the box" with regard to some nutrient requirements. For example, a new dietary reference intake has been established recently for folic acid, i.e. 600 µg/day during pregnancy and 400 µg prior to conception. Many women may have to take a supplement to achieve this goal prior to conception and during pregnancy. Folate is critically important for fetal development, as it is a helper in many essential reactions and is necessary for cell division. Formation of the neural tube, which becomes the spine in the infant, occurs during the fourth week after conception, when most women are just learning that they are pregnant. An insufficient intake of folate prior to pregnancy can lead to malformation of the neural tube, also known as neural tube defect (NTD). Considering that 50% of all pregnancies in the U.S. are unplanned, women need to follow folic acid recommendations before conception, including teen-age girls.

While fortification of enriched grains with folic acid (mandated by law since January 1998) is estimated to reduce NTD's by about 20%, current folic acid recommendations for pregnant women are predicted to reduce NTD's by 47%. Folic acid intake needs to be maintained during pregnancy because an inadequate folate intake during pregnancy can result in a form of anemia (megaloblastic anemia). An added bonus to increased folic acid consumption for everyone is a significant decrease in heart disease risk (by maintaining normal blood homocysteine concentrations).

Iron: Another amazing adaptation that the pregnant woman makes is her ability to absorb non-heme (free) iron. During a normal pregnancy the percentage of non-heme iron absorbed from the total amount eaten in food increases from 7% at 12 weeks to 36% at 24 weeks to 66% by 36 weeks of gestation. Even with this adaptation, hemoglobin concentrations almost always fall during pregnancy because of hemodilution. Moreover, iron deficiency continues to be the leading deficiency in the world. Therefore, most of the evidence in regards to iron status during pregnancy suggests that routine iron supplementation during pregnancy is advisable even for women who are not anemic before pregnancy. Iron deficiency anemia is a risk factor for low birth weight infants and for low fetal iron stores that can last well into the first year of life. Extensive human studies have shown that iron deficiency in early life is likely to have negative consequences for normal brain development and function.

In conclusion, future guidelines for nutrition during pregnancy need to come from research conducted in populations of healthy women who enter into pregnancy with a good overall nutritional status. Most research done to date, has been in populations of women who have potential risk factors and have an unknown pre-pregnancy nutritional status. Moreover, public health policies should be established to ensure good maternal nutrition during all phases of the reproductive cycle- pre-pregnancy, pregnancy, lactation and post-weaning.

As nutrition educators, we need to continue giving sound, research-based nutrition advice to our clients. The Food Guide Pyramid and the Dietary Guidelines for Americans are the foundation for most of our educational messages on nutrition. We need to emphasize folate-rich foods, enriched grains and the importance of calcium-rich foods to all women of child-bearing age.



Do Women Who Follow Dietary Recommendations Actually Live Longer?

Following the *pattern* of eating that is recommended by government dietary guidelines appears to reduce the risk of mortality, according to a recent study of women over the age of 40.

The data behind this research comes from the Breast Cancer Detection and Demonstration Project, which was sponsored by the National Cancer Institute and the American Cancer Society. Between 1973 and 1979, 283,222 women between the ages of 35 and 74 were screened for breast cancer throughout the United States. Between 1979 and 1986, the National Cancer Institute conducted Phase 1 of a follow-up study, which involved a subset of 64,182 women who were contacted for telephone interviews up to 7 times during that seven-year period. Of this subset, 7% were confirmed to have breast cancer during the initial screening.

Phase 2 of this prospective follow-up study is where the data begins for the topic of this article. Between 1987 and 1989 (Phase 2), a 62-item food frequency questionnaire was mailed to the same subset of women as were involved in Phase 1. Another food frequency questionnaire was mailed to these women between 1993 and 1995.

Researchers used the items from the food frequency questionnaire to develop a Recommended Foods Score (RFS). The RFS is calculated by the number of items that subjects mentioned they consumed at least once a week (without regard to portion size). These are the 23 items included in the RFS - so possible scores range from 0-23:

apples or pears	carrots or mixed vegetables with carrots
oranges	sweet potatoes, yams
cantaloupe	other potatoes
orange or grapefruit juice	baked or stewed chicken or turkey
grapefruit	baked or broiled fish
other fruit juices	dark breads like whole wheat, rye, or pumpernickel
dried beans	cornbread, tortillas, and grits
tomatoes	high-fiber cereals like bran, granola, or shredded wheat
broccoli	cooked cereals
spinach	2% milk and beverages with 2% milk
mustard, turnip, or collard greens	1% or skim milk
green salad	

A high RFS was used to indicate greater compliance with the pattern of eating recommended in governmental dietary guidelines. Women with the highest RFS were found to have a 30% lower risk of death from cancer, heart disease, and stroke than women with the lowest RFS had. The average age of the women studied was 61 years old; 87% of them were white and had at least a high school education. The study used complicated statistics to account for the fact that women with higher RFS scores were slightly older, more educated, physically active, likely to drink alcohol, likely to use supplements regularly, and less likely to smoke at the time the questionnaire was administered. Women with a higher RFS also ate more total calories and protein, more carbohydrates as a percentage of total calories, more micronutrients, and less fat as a percentage of total calories than women with a lower RFS.

What does this mean? Consuming a diet rich in fruits, vegetables, whole grains, low-fat dairy, and lean meats may be one of several lifestyle factors that reduce the risk of death for women over the age of 40. The study supports the appropriateness of using messages in the Food Guide Pyramid and Dietary Guidelines for Americans for educational programs.

This study appears in the *Journal of the American Medical Association* 283 (16): pp. 2109-2115, and can be accessed online at <http://jama.ama-assn.org/issues/v283n16/pdf/joc91695.pdf>



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Upcoming Videoconference on Diabetes

Just a reminder that the compressed videoconference on Diabetes will be held on **Tuesday June 20th from 10:00 to 12:00**. Susan Nitzke, Nutrition Specialist and Professor, UW-Madison Department of Nutritional Sciences, will be presenting information about Diabetes and Extension's role in teaching people who have Diabetes.

Registration Information (per a 5/26/00 email announcement from Gloria Green)

1. Decide what location you will be attending for the videoconference and email the site coordinator for that location (see table below). Include in the email the names of individuals who will be attending the videoconference at that location on June 20th.
2. **Registration deadline is June 12th.**

SITE LOCATION	SITE COORDINATOR	EMAIL ADDRESS
UW-Green Bay	John Pinkart	JOHN.PINKART@CES.UWEX.EDU
UW- Extension/DNR	Pam Cira	PAM.CIRA@CES.UWEX.EDU
UW-Superior	Jeanette Rantala	JEANETTE.RANTALA@CES.UWEX.EDU
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Nutrition for Family Living **June, 2000**

Recipes and Tips for Healthy Thrifty Meals

The USDA has produced a cookbook of recipes based on the Thrifty Food Plan (TFP). The TFP serves as a national standard for creating a nutritious diet at minimal cost, and is used as the basis for Food Stamp allotments. The new cookbook is called "Recipes and Tips for Healthy, Thrifty Meals," and the recipes are those which were released with the 1999 revision of the TFP.

For ordering information, go to <http://www.usda.gov/cnpp/Pubs/Cookbook/ckbookhow2get.htm>
The books are \$4.25 each. There is also a pdf version of the cookbook, which prints easily from the website as well.



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Final Version of Dietary Guidelines for Americans, 5th edition, Released

On May 30-31, the National Nutrition Summit was held in Washington DC. This Summit, jointly sponsored by the US Department of Agriculture and the US Department of Health and Human Services, addressed progress and continuing challenges since the White House Conference on Food, Nutrition, and Health, held in 1969.

Among the issues receiving careful attention from both public and private sectors involved in nutrition and health were: the continuing problem of hunger; the dramatic increase in the prevalence of overweight and obesity; and the role of nutrition and physical activity in health promotion and chronic disease prevention.

As part of the National Nutrition Summit, the fifth edition of the Dietary Guidelines for Americans was released. The *proposed* revision of the Dietary Guidelines had been available for viewing and comment since February. The *final* version is now available for downloading at www.usda.gov/cnpp. To order single copies, send your name and address with 50 cents by check or money order to: Consumer Information Center, Department 378-C, Pueblo CO 81009. UW-Extension will be placing a bulk order and you will receive more specific ordering information when details are made available to us.

To access the press release regarding the availability of the revised Dietary Guidelines, as well as other related documents - including a White House Fact Sheet and the text of President Clinton's Saturday radio address concerning the Guidelines - visit: <http://www.health.gov/dietaryguidelines/>

For more information about the development of the fifth edition of the Dietary Guidelines for Americans, see the March 2000 issue of Nutrition for Family Living at <http://www.uwex.edu/ces/wnep/p3/mmpdfs/0003.pdf#page=4>



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Welcome to Betsy and Julie

As you know, Amy Rettammel is now filling the interim position vacancy that was created when Bev Phillips moved to the Extension Building as the Assistant Coordinator for WNEP. Amy's "old job" has now been split into two part time positions. Betsy Kelley, M.S., R.D., is helping us in providing resources for Extension nutrition education programs, training, and evaluation and Julie Allington, M.S., R.D., C.D., will be helping us update our publications and prepare for this fall's "Jump 'n Jive" campaign as well as other network activities.

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Julie can be reached at allinjk@nutrisci.wisc.edu or julie.allington@ces.uwex.edu