Dietary Intake of Long-Chained Polyunsaturated Omega-3 Fatty Acids During Pregnancy

Elizabeth D. Loosemore, M.B.A., Ph.D., R.D., L.D.N.

Introduction

The importance of essential fatty acids (EFA) and their functional long-chained polyunsaturated fatty acid (LC-PUFA) products in humans, particularly arachidonic acid (AA, 20:4n-6) and docosahexaenoic acid (DHA, 22:6n-3), has seen a renewed interest in recent years. Their roles in growth, the development of the retina and brain, and as precursors of prostaglandins are well documented. Recent reports support the theory that deficiencies of EFA and PUFA, particularly LC-PUFA, play a role in the development of cardiovascular disease, Type 2 diabetes mellitus, osteoporosis, and brain related diseases such as Parkinson's, dementia, and attention deficit disorders. They are also increasingly recognized as important intracellular mediators of gene expression. Further, Waterland and Jirtle's recent report notes the influence of nutrient modifications made during the prenatal period on the probability of developing the aforementioned long-term health problems in the adult, in addition to the well known effects on birth outcomes.

The objectives of this article are to (1) demonstrate the importance of LC-PUFA, especially DHA, during pregnancy and lactation and (2) encourage Registered Dietitians to promote the consumption of food sources of preformed DHA during pregnancy and lactation.

Fatty Acids in Humans: Background Information

The human body is unable to synthesize n-3 and n-6 fatty acids; therefore, these essential nutrients must be obtained from the diet. Maternal plasma levels of each are dependent upon dietary consumption, either as preformed AA or DHA or their precursors, linoleic acid (LA, 18:2n-6), and α-linolenic acid (LNA, 18:3n-3). These two EFAs are elongated and desaturated to metabolically active LC-PUFA, AA and DHA, respectively. There is competition between n-6 and n-3 EFAs for enzymes used during the process, thus affecting the availability of the respective LC-PUFA. Eicosapentaenoic Acid (EPA) is the precursor of series 3 prostaglandins (PG E3), involved in producing contractions of uterine smooth muscle. Historically, the ratio of n-6 to n-3 fatty acids was 1:1 or 2:1. Today's dietary patterns provide a ratio as high as 50:1, thereby limiting the availability of n-3 LC-PUFA. While foods containing the precursor EFAs are important contributors to LC-PUFA status, recent evidence points to preformed dietary DHA as a critical factor contributing to maternal levels during pregnancy.

Fatty Acids in Pregnancy

The nutritional status of the fetus is dependent upon maternal transfer of nutrients, including LC-PUFA, via the placenta. While there is evidence the fetus and neonate can elongate and desaturate EFA to form LC-PUFA, the capacity to do this is extremely limited. Hornstra noted preterm infants (n = 43 preterm infants, 43 full-term infants) had a significantly lower PUFA status than that of term infants, a result of missing the period of gestation when the largest transfer of PUFA occurs. The importance of the maternal diet is clear. Dietary intake of preformed DHA and AA is preferential to meet the high demands of pregnancy. Vegetarians can (continued on page 6)
ABOUT THE AUTHORS

Dietary Intake of Long-Chained Polyunsaturated Omega-3 Fatty Acids During Pregnancy ............................................... Page 1
Elizabeth D. Loosemore, MBA, PhD, RD, LDN, completed her dissertation in 2004, Pregnancy Complicated with Gestational Diabetes Mellitus: Long Chain Polyunsaturated Fatty Acids and Infant Neurodevelopment. She currently is a per diem dietitian at University of Massachusetts Memorial Health Care and Jewish Health Care Centers, both in Worcester, MA. She is also on the adjunct facility of Worcester State College and the University of Connecticut.

Professional Applications: Omega-3 Fatty Acids .................. Page 6
Carol J. Lammi-Keefe, PhD, RD, is professor of nutrition and University Research Fellow at the University of Connecticut. She has a very long history with the DHA story as her father was a commercial fisherman on the New England coast--Maine and Massachusetts. When she is not thinking about DHA, pregnancy and infant outcome she enjoys walking the beaches on the Maine coast, skiing the mountains of northern New England and cooking and reading.

WIC Learning Online ....................................................... Page 4
Kathleen Pellechia, RD, is a nutrition information specialist for the National Agricultural Library's Food and Nutrition Information Center. She works on a team that manages the WIC Works Resource System, an online education and training center for staff of the WIC program.

WHRN Member Wins Women’s Health Award .................. Page 5
Allison Starr is working on her RD and master’s degree in Clinical Nutrition at New York University. She has always been interested in reproductive nutrition and plans to work in the area after graduation. Currently she is involved in two unique projects in New York City, developing recipes and educational materials for the food-stamp eligible population.

The Reduced Leave Schedule: A Well Kept Secret ............... Page 8
Pat Katepoo, RD, is the founder of WorkOptions.com (http://workptions.com) and CareerCoachRD.com (http://CareerCoachRD.com). She lives and works in Hawaii—home of the 2006 FNCE.

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What Do you Know About Twins, Triplets, or Quads? ..........Page 14
Barbara Luke, ScD, MPH, RD is a Professor of Nursing and Health Studies, with joint appointments in the Department of Obstetrics and Gynecology and the Department of Pediatrics at the University of Miami, Florida. She is the 2005 recipient of the March of Dimes Agnes Higgins Award for lifetime achievement in maternal nutrition.
From the Chairs

Theresa Romano, RD  
WHRN Chair, 2005-06  

As I review my six-year involvement with the Women's Health and Reproductive Nutrition DPG and reflect on the past tasks, accomplishments, colleagues and friends I have met, I look back with great admiration at those leaders who have come before me. Each chair of this DPG has had a specific goal for WHRN. Now, moving forward and looking to the year lying ahead, I know there will be many growing pains. However, with growing pains comes knowledge. I also know there will be many challenges, however they are welcome challenges. A common goal of each Executive Committee over the past 10-years of this DPG has been to provide cutting-edge information to its members, to provide diverse reading on a quarterly basis through the DPG newsletter, and to enable members to network amongst the DPG. The WHRN DPG promotes expansion of knowledge relating to women's health and reproductive nutrition issues. I will proudly continue this endeavor.

Many words come to mind when I think of the WHRN DPG. Fascinating. Intriguing. Educational. Powerful Fun. Friendly. Scientific. . . the list goes on and on. I encourage each of you who are reading this welcome letter to contact me and to get involved on the board level of this DPG. For there is strength in numbers, and the larger our network is, the more we can accomplish in Women's Health and Reproductive Nutrition.

Darlene Husch, MA, RD, CDE  
WHRN Chair, 2004-2005  

As I write my farewell Chair's Column, I want to thank each and every one of you for giving me the opportunity to serve ADA. It has been a privilege and honor to represent you. My personal highlight for this year has been meeting wonderful people, some of whom I would never have known if I did not volunteer with ADA.

The true success of the ADA is due to the energy and dedication of my colleagues who volunteer. I would like to thank all the WHRN DPG members who have volunteered this year especially the Executive Committee; Theresa Romano, Dr. Barbara Luke, Cathy Fagen and Dr. Maria Duarte-Gardea. Thank you also to WHRN's Coordinators and Committee Chairs; Claire Dalidowitz, Jeanne Blankenship, Selina Mkandawire, Miri Rotkovitz, Jamillah Hoy-Rosas, Kimberly Slominsky, Lori Yenesel, Ursula Harry, Margarette Williamson and Megan Wolfe. I would like to thank Kathy Scalzo and the Editorial Review Board in continuing to make our newsletter of such high quality. A special thank you to Susan DuPraw (our ADA liaison 2002-2005), Dr. Barbara Luke (our outgoing Past Chair and Industry Relations) and Alyce Thomas (Chair 2002-2003) for all your mentoring and encouragement. Lastly, thank you to Dr. Garry Frisoli, a wonderful perinatalogist whom I enjoyed learning from for the past 15 years!

We can be proud of the many accomplishments that occurred in the past year. Our major accomplishment was the development and presentation of two successful FNCE Sessions (Facts about Women’s Heart Health as well as Bariatric Surgery: Nutrition Considerations for Women of Reproductive Age). In addition, we continued to expand our mission to be an expert resource for accurate and timely nutrition information on women’s health, along with advocating for the improvement of nutrition across the lifespan. Throughout the year, ADA was recognized as an expert. We were consistently contacted for expert advice on patient care issues, book reviews, JADA publications and ADA position papers. We also responded to the request for comment from the National Center on Birth Defects and Developmental Disabilities, a branch of the CDC, on how to lower the risk of Neural Tube Defects in the Hispanic population.

It is now my time to hand over the leadership of WHRN DPG to our new Chair, Theresa Romano. Theresa comes with a wealth of experience with WHRN DPG as she has served many years on this Executive Board. Again, thank you for your guidance and support. It has truly been a rewarding year.

THE EXPERTS WITHIN

Coming Soon- A New Networking Tool

WHRN is creating an electronic library of our collective professional accomplishments to serve as a resource for our members. Identifying the publications, educational tools, and skills of our DPG 'experts within' will help to make networking more productive and enjoyable!

You can be a part of this exciting project in two ways

1. **Brainstorm with us.** Organizing the talent of our ever-growing DPG will be a challenge. Send your ideas on the project and feedback to Ali Starr at: alibstarr@msn.com

2. **Share your talents.** Send Ali Starr (alibstarr@msn.com) information on your accomplishments-professional or lay publications; speaking expertise; educational tools-whatever you are proud of! Content of the publications submitted should focus on issues in the field of women's health and reproductive nutrition.

Any questions or comments should be forwarded to: alibstarr@msn.com.
Online Continuing Education Resource: Access WIC Learning Online

Kathleen Pellechia, RD

The USDA/Food and Nutrition Service (FNS) and the USDA National Agricultural Library/Food and Nutrition Information Center are pleased to announce the launch of WIC Learning Online (WLOL), available from the WIC Works Resource System at http://www.nal.usda.gov/wic works.

WLOL is a free web-based course providing continuing education, training and resources for all levels of WIC staff. The course is approved by the American Dietetic Association for four CPE hours for Registered Dietitians. It was developed as part of FNS’s continuing efforts to Revitalize Quality Nutrition Services (RQNS) in the WIC program. WLOL is designed to supplement traditional training methods to increase competencies needed by WIC staff to provide quality nutrition services.

This self-paced, interactive course is composed of 12 modules, organized into 4 lessons. The modules present techniques and resources to enhance job skills and update staff knowledge. Each module takes less than 30 minutes to complete and is designed to give background information on a specific topic, as well as provide tips for practical application. Topics covered include communicating with participants, counseling skills, outreach and marketing of WIC and feeding infants and children safely. It can be utilized as a tool for providing orientation and training to employees and/or for continuing education to build and refresh skills.

The course includes an online tutorial, bookmark feature allowing the user to re-enter the course at the same point at which they stopped and job aids that can be printed for future reference. Supporting resources are also available on the WIC Works Web site. Once a user has successfully completed the assessments at the end of each lesson with a score of 70% or better, a personalized certificate of completion can be printed.

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MISSING SOMETHING?

The WHRN newsletter is one of the highest rated member benefits. Many members report saving their newsletters and referring to them in their daily practice. If you missed an issue, here’s an update on how to access past-issues, dependent on the year of publication.

1. Visit our webpage at www.whrndpg.org to find our 2005 issues in .pdf format. These issues are free on our members only page.

2. The webpage also lists the article topics included in each of our archived issues from 2002-2004. These are available for purchase - $5/issue members; $10/issue non-members. To order, please contact our DPG secretary, Cathy Fagen at cfagen@memorialcare.org.

3. Individual articles from our older issues are available for $10 each through the ADA Knowledge Center, which can be accessed at www.eatright.org

WHRN MEMBER WINS 2005 Women's Health Award

A look at the career of Yolanda Gutierrez, PhD, RD, Past-Chair WHRN DPG, 2000-2002

By Allison Starr

Yolanda is overjoyed about being selected to receive the 2005 ADA's Women's Health Award. This prestigious award is given to an individual who has made significant contributions to understanding the importance of nutrition in women's lives. Yolanda feels extremely honored to be recognized by the ADA, an organization that she has tremendous affection and respect for.

During my conversation with Yolanda, she could not say enough about all of the friends and mentors who have helped her get to where she is today. She is especially grateful to Cathy Fagen, who is responsible for nominating her for the award. Cathy Fagen, MA, RD is the current secretary of the ADA's Women's Health and Reproduction Nutrition Dietetic Practice Group.

Yolanda started her career in women's health forty years ago at UCSF. Her first position was in their Young Women's Clinic, guiding pregnant teens in achieving healthy pregnancy outcomes. After leaving the Young Women's Clinic, she became the lead RD for the California Diabetes & Pregnancy Program, and although she no longer plays a central role there, she has continued her involvement in a consultant role.

Over the past couple of years, Yolanda's has been working as a co-investigator on a five-year longitudinal study at UCSF focusing on women's health before menopause, during menopause and after menopause. The study looks at health changes associated with the different periods of the female life cycle. The study has concluded, but they are in the process of analyzing the data and working on related articles.

Although the study has been a major focus over the past couple of years, Yolanda now spends much of her time working in the Lipid Clinic at UCSF. The Lipid Clinic is housed in UCSF's School of Medicine, and is part of their Cardiovascular Research Institute.

Yolanda has also just finished writing a book for the ADA: The ADA's Guide to Gestational Diabetes Mellitus. This publication will be available starting September 2005. It will be available for purchase via the ADA's website: www.eatright.org.

Yolanda is truly an inspiration to future RD's, like myself. She believes young RD's should partner with senior practitioners, who share the same kinds of passions, and who can act as motivational mentors. Yolanda believes that as RD's, we are the experts, and therefore, responsible for continuing to train health care providers in the importance of nutrition, especially as it relates to women's health. If health care providers understand the importance of nutrition and its relationship to women's health, then the important messages will be relayed and the family as a whole will benefit. Standardizing nutrition messages is one step in the right direction. Yolanda encourages young RD's to utilize their fresh visions and innovative approaches in achieving this worthy and important goal.

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utilize the plant-based sources of LA and LNA, as listed in Table 1 but should be made aware the synthesis of DHA and AA may not be sufficient to meet the needs of the developing fetus.

**Arachidonic Acid (AA)**

AA is essential for fetal growth and development. It is a major structural component of cell membranes and serves as the precursor for series-2 eicosanoids which play an important role in maintenance of blood flow. Researchers have shown significant positive associations of maternal and fetal AA status to fetal growth, as measured by birth weight and head circumference, in term and preterm infants. Preterm infants (n = 59 infants; < 30 weeks gestation) studied through nine months of age, normalized based on estimated due date, showed a relative AA deficiency led to significant growth failure.

**DHA**

DHA is important in both the gestational and postnatal periods. Besides contributing to gestational length, and the development and function of the CNS, it is also an important component of breast milk, and lately, of infant formulas.

**Gestational Length and Labor**

A primary role of n-3 EFA/LC-PUFA in gestation is as a factor contributing to the length of gestation and the onset of labor. The exact mechanism is unknown. Increases in uterine and placental vascular tone favoring increased blood flow could contribute to increased uterine growth and birth weight observed in n-3 supplementation and dietary intake studies. In a randomized, double-blind clinical trial with 291 subjects, the duration of gestation increased significantly (6.0 ± 2.3 days, p = 0.009) when DHA intake was increased during the last trimester of pregnancy using DHA rich eggs from the time of enrollment at 24 to 28 weeks of gestation through parturition.

**Central Nervous System**

The distribution and concentration of the LC-PUFA, especially DHA, in the central nervous system (CNS) during fetal development has led investigators to speculate alterations in the dietary supply of DHA could affect behavioral and functional outcomes for the neonate and young child. DHA is a major structural component of the developing fetal central nervous system (CNS) and is deposited in large quantities in the fetal brain and retina. The critical period of brain growth and CNS development occurs during the third trimester of gestation and continues for about 18 months after birth. Damage to the CNS during this time due to inadequate accretion of LC-PUFA is unlikely to be subsequently corrected. The evidence for a developmental advantage of supplemental DHA after birth, especially for the preterm infant, has been convincingly demonstrated. The advantages for the term infant have been more slowly demonstrated, but reports have provided convincing evidence for a developmental advantage when postnatal supplemental DHA is offered, even for the infant carried to term.

**PROFESSIONAL APPLICATIONS**

**Common Questions From the Public**

By Carol J. Lammi-Keefe, Ph.D., R.D.

**Q:** I am pregnant and a friend has told me that I should make sure to include fish in my diet. Why is this a good idea?

**A:** Cold-water marine fish are a good source of an omega-3 fatty acid (DHA) that is needed for your infant’s eye and brain development.

**Q:** How much fish should I consume?

**A:** The recommendation is for 3-4 servings per week, or 12 oz. per week.

**Q:** Can you tell me which fish I should look for?

**A:** First, remember you should use the general rule to eat a variety of fish. Salmon (fresh and canned), canned tuna (light, not albacore), smelts, halibut, herring, mackerel, trout, sardines, flounder and sole are all excellent to good sources of this fat. Try a couple of tuna sandwiches for lunch twice during the week with a serving of one of these other fish once a week.

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deficiencies during gestation, in both animal and human models, suggest impairments in cognitive functions and visual performance in the offspring. While research to support or refute this suggestion is limited to date, current research by Cheruku examined the relationships between maternal dietary AA and DHA, breast milk AA and DHA concentrations, and infant erythrocyte AA and DHA levels. The results indicate that while infant AA status does not depend on maternal AA status, breastfed infants appear dependent on maternal DHA intake during the first 20 weeks of breastfeeding.

Breast Feeding Benefits

The neonate also depends upon its mother for EFA/LC-PUFA. Breast milk provides LC-PUFA, including DHA. Cheruku et al identified correlations between a more mature sleep pattern in neonates and higher maternal levels of DHA than in those with lower maternal levels, supporting the concept that DHA deficiencies do result in postnatal impairment. Further research re DHA deficiencies during gestation is needed to clarify the extent of impairment in cognitive functions and visual performance in the offspring.

Fortified Infant Formulas

Salem et al. show that while infants have the capability to convert precursor EFA to LC-PUFA by approximately one week postpartum, the amounts produced in vivo from LNA may be inadequate to support the DHA levels observed in breast-fed infants. This research underscores the importance of having optimal amounts of DHA transferred to the fetus since it may be difficult to provide optimal levels of dietary DHA for those infants who are not breast-fed postpartum. Preterm formulas supplemented with LC-PUFA have been available for quite some time; however, formulas used for term infants in the United States have only recently included LC-PUFA as well as EFA.

PROFESSIONAL APPLICATIONS

Common Questions from Dietitians

By Carol J. Lammi-Keefe, Ph.D., R.D

Q: Should I recommend omega-3 supplements to my clients who are not getting enough from foods?

A supplement is probably a good idea for the woman planning a pregnancy or for the woman who is pregnant if she is not getting much from her diet. Currently, the recommendation is for 300 mg/day of DHA; this may change in the future as we learn more about the role and benefits of different amounts of DHA. A review of the usual diet may disclose that tuna fish is a food that the woman seems to like but is just not eating with a frequency that can be beneficial because she is not thinking about the benefits that is provides. Also, methods of preparing fish may really be the deterrent to consumption. Try to sort this out and perhaps refer her to www.brainfood.uconn.edu or some other resources for some ideas about preparation.

Q: What should I tell my clients who are already choosing to take the supplements?

If a client is already choosing to take supplements, you should review with them if the supplement of choice is really providing DHA (and not just omega-3s, which are not synonymous with DHA) and if the amount being consumed is in line with the current thinking.

Q: What is the recommended dosage in supplement form?

As far as we know it does not matter if the omega-3 fatty acids are being provided by food or by supplements in the amounts that are currently being recommended. The recommended amount for the pregnant woman is around 300 mg of DHA per day and 200 to 300 for the breastfeeding woman. This means that women who choose to take supplements should scrutinize labels carefully so that they can be assured of how much DHA they are consuming in supplement form. The supplements that are on the market shelves do differ—one may not be the same as the next.

Gestational Diabetes and DHA

One of the major complications of pregnancy, occurring in up to 14% of all pregnancies, is gestational diabetes mellitus (GDM), a pathological condition in which glucose intolerance is recognized for the first time. GDM is associated with poor perinatal outcomes, with higher incidence of macrosomia being the most frequently reported adverse neonatal outcome.

Insulin resistance, the underlying cause of the glucose intolerance, affects the ability of the skeletal muscle, white adipose tissue and liver cells to take up glucose, resulting in high plasma glucose levels. Decreased suppression of endogenous glucose production also contributes to high plasma glucose levels. The plasma glucose is easily transported across the placenta to the developing fetus, contributing to the development of infant macrosomia. The aberration in glucose metabolism affects maternal lipid and protein metabolism as well. Insulin resistance results in the inability of insulin to suppress lipolysis, causing an increase in maternal free fatty acids.

Maternal free fatty acids have also been associated with macrosomia. In an uncomplicated pregnancy there is a...
THE REDUCED LEAVE SCHEDULE:
A Well Kept Secret

Pat Katepoo, RD

Did you know working mothers in Canada are allowed 50 weeks of partially paid maternity leave? In several European countries, new mothers enjoy generous lengths of time at home with 70 - 100% pay. But here in the USA, social and tax structures don’t support this level of coverage. Instead, women cobble together short-term disability, employer-paid vacation and sick leave, paid parental leave (uncommon), and unpaid leave to make up a mixed bag of "time off."

The Family & Medical Leave Act (FMLA) allows 12 weeks of unpaid job-protected leave to new mothers under certain conditions, yet roughly half of American employees work for FMLA-exempt employers. Once any employer-paid leave is used, the remainder of the allowed time is generally unpaid; many new mothers cannot afford unpaid leave.

Where does this leave dietetics professionals who encourage clients to exclusively breastfeed for the first six months of life, as recommended by the American Academy of Pediatrics? Half of all mothers of infants in the USA work outside of the home and most of them return to work by the third month. These realities impact breastfeeding duration. One study showed a return to full-time working at three months post-partum decreased breastfeeding duration by about eight weeks, relative to not working.

The Journal of Human Lactation cited flexible work arrangements as an important approach to overcome the barriers to breastfeeding for working women. A part-time schedule in particular is an effective strategy to help mothers combine breastfeeding and employment. Using a rarely-publicized provision of the FMLA called a reduced leave schedule may allow your employed clients to follow their initial six weeks of at-home disability leave with a temporary part-time work schedule. This schedule makes it easier for a new mother to continue breastfeeding. It also allows her to retain partial earnings even as she enjoys more time to bond with her baby.

Dietetics professionals often encounter working pregnant clients who report their intention to introduce human milk substitutes after six weeks, when they must resume their full-time work schedule. In addition to education and support for breast pumping, the reduced leave schedule offers another option for your clients, especially if a long-term unpaid leave is unaffordable.

**Developing a Reduced Leave Schedule**

To use this provision of FMLA, your client must first get her employer’s agreement if medical necessity is not a factor. (Medical necessity does not require employer agreement). Approval is often granted by making the request armed with a detailed written proposal presenting the schedule and the work coverage plan. A free maternity leave proposal template available off the Web provides the structure and scripted language for making the request. This template has also been used to develop similar transition plans for those not eligible for leave under FMLA.

The box above demonstrates how Amy, an accountant who needed her full-time income, devised her own reduced leave schedule based on her decision that she would be able to survive at 60% of her salary for five or six months. Amy’s disability policy provided that level of income for only six weeks.

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SUMMARY: As healthcare providers who understand and appreciate the wide-ranging and far-reaching benefits of breastfeeding on maternal and infant health, dietetic professionals can encourage working mothers to look beyond the traditional maternity leave options and help them consider a reduced leave schedule or other flexible work arrangements to foster breastfeeding duration.

References:


Interest in Women's Health and Nutrition Programming Increasing
Mary Hager, PhD, RD, FADA

The Women's Health program at the Maternal and Child Health Bureau funds a demonstration program focusing on reducing the risk of overweight/obesity in women entitled, Innovative Approaches to Promoting a Healthy Weight in Women. The goal of the demonstration program is to develop and demonstrate creative, innovative approaches that are effective in reducing the incidence and prevalence of overweight/obesity in women by increasing the number of women who adopt positive, healthy lifestyles.

On September 1, 2004, HRSA’s (Health Resources and Services Administration) Maternal and Child Health Bureau funded three demonstration grants. Each site focuses on women of color who are disproportionately affected by overweight/obesity: African-Americans in Ohio, Mexicans in Texas, and Puerto Ricans in Massachusetts. Each will be funded for 3 years, at $140,000/year. The response from this solicitation was the biggest ever since women’s health programming began in the Bureau five years ago with 46 applicants, so clearly the need is there, but resources are scarce.

Division of Healthy Start and Perinatal Services
Maternal and Child Health Bureau, HRSA

Innovative Approaches to Promoting a Healthy Weight in Women Grantee Directory

Texas
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“The response from this solicitation was the biggest ever since women’s health programming began...”
Q: What is the inclusion of fish going to do to my food budget?

A: Including fish in your diet doesn’t have to break the bank. Canned tuna is very affordable. Also, canned salmon is another good affordable option. If you use the suggestion to include a can of tuna or a couple of servings of canned salmon coupled with a fresh fish once a week, you will not notice a significant difference in your weekly food bill. Check out www.brainfood.uconn.edu for some recipes and preparation ideas.

Q: Another friend said she read pregnant women should avoid eating fish. Why would there be such a caution for pregnant women and what should I do?

A: The precaution is to protect the developing fetus from mercury and other toxins that can accumulate in the fat of some fish and damage the infant’s neurological system. If you do not eat fish from rivers and streams and if you limit your consumption of fish to 3 to 4 times per week there is no evidence your baby is put at risk for harm. In fact, it seems there really is a benefit to the developing baby to have some fish included in your diet. Also, during pregnancy it is what are called the predator fish, such as shark, swordfish and large tuna (like you would eat as a tuna steak), that should be completely avoided by the pregnant woman. The bottom line is to include fish in the diet, using the guidelines provided here.

Q: I’ve seen ads for other omega-3 containing foods. I assume I can substitute those for the fish in my diet.

A: While substitution might seem like a reasonable approach, the evidence from several or more studies indicates the omega-3 fatty acids from plants cannot substitute for the fish fatty acids in the baby's eye or brain.

Q: Are there other sources for these beneficial fats that are found in fish?

A: You can find fish oil capsules on the supermarket shelves. Also, there are some eggs being marketed that are higher in DHA than the traditional egg. The hens are fed a diet which increases the amounts of DHA in the eggs they lay. Still, fish are higher than eggs in their DHA content. Also, there are other good reasons to consume fish. For example fish are a good source of good quality protein, minerals and vitamins.

Summary: Unanswered questions include whether increasing maternal intake of DHA during pregnancy complicated with GDM would increase the transfer of DHA to the fetus and thus improve the infant sleep/wake patterns, representing a better developed CNS, of those neonates. Additionally, at this time it is unknown whether, or at what dosage, the amount of DHA consumed might maximize the development of the CNS, whether or not the pregnancy is complicated by GDM. In the United States the average intake of DHA (50 mg/d) is low compared to countries where fish is a dietary staple and women consume up to 1.5 - 2.0 g/d. Until these questions have been answered, the prudent approach would be to assure all pregnant and lactating women consume a minimum of two to three servings of DHA rich foods weekly, to meet the recommended intake of 300 - 500 mg/day for pregnant women.

Practice Recommendations:

1. DHA should be increased in the last trimester of pregnancy, ideally by consuming two to three servings of DHA-rich foods per week.

2. Breastfeeding is the optimal source of postpartum dietary DHA for both pre- and full-term infants. Artificial infant formulas with added DHA are available for the non-breastfed infant and should be encouraged for all non-breastfed infants unless medically contraindicated.

3. The transfer of LC-PUFA to the fetus of GDM patients is reduced. Practitioners should encourage the consumption of a minimum of two to three servings per week of DHA-rich foods.

REFERENCES:


11. Al MD, Hornstra G, VanDerSchouw YT, Bulstra-Ramakers MT, Huidjes HJ.


There are so many reasons why women choose to breastfeed or not to that it's hard to single out any one causative factor. But the question above was posed to me by Kathy Scalzo, WHRN Newsletter Editor and in response, I searched the available literature. Although I didn't find a definite cause and effect, I've summarized the existing research theories for you below. I found it interesting to see how many of the titles are questions themselves; evidence of how little is known in this area to date.


After they gave birth, women whose pre-pregnancy weight was considered "average" (123-143 pounds) were more positive about their experiences breastfeeding than lighter or heavier women. Women whose breast size increased by two cup sizes were more positive than women with no change or a large change (>2 cup sizes) in breast size.

Why are teenagers in the United States less likely to breastfeed than older women? Peterson CE, DaVanzo J. Demography 1992;29:431-450.

Teenage mothers who don't breastfeed are similar to mothers over 20 who don't breastfeed: they tend to be less educated, poorer, of color, and unmarried. But when controlled for these factors, teenage mothers breastfeed less than expected, possibly due to "developmental aspects of adolescence, such as greater egocentricity [breast-feeding may take up time that the mother wants/needs for other activities] and greater concern about body image [self-consciousness about breastfeeding in public and/or preserving the appearance of breasts]."


Overweight mothers had less success initiating breastfeeding, and discontinued breastfeeding more than "normal weight" mothers.


During pregnancy, women who were more satisfied with their body weight were more likely to intend to breastfeed, and women who were preoccupied with their body shape were less likely to intend to breastfeed. In the first post-partum week, women who were less concerned about body shape were more likely to breastfeed.


Mothers with BMI>26 one month post-partum were more likely to have stopped breastfeeding earlier than lighter mothers.

Women with many concerns about body shape and weight were less likely to breastfeed. Women who intended to breastfeed reported more satisfaction with their body shape.


Something to Think About...

Breastfeeding and Body Image: Is there a connection?

There are so many reasons why women choose to breastfeed or not that it's hard to single out any one causative factor. But the question above was posed to me by Kathy Scalzo, WHRN Newsletter Editor and in response, I searched the available literature. Although I didn't find a definite cause and effect, I've summarized the existing research theories for you below. I found it interesting to see how many of the titles are questions themselves; evidence of how little is known in this area to date.


After they gave birth, women whose pre-pregnancy weight was considered "average" (123-143 pounds) were more positive about their experiences breastfeeding than lighter or heavier women. Women whose breast size increased by two cup sizes were more positive than women with no change or a large change (>2 cup sizes) in breast size.

Why are teenagers in the United States less likely to breastfeed than older women? Peterson CE, DaVanzo J. Demography 1992;29:431-450.

Teenage mothers who don't breastfeed are similar to mothers over 20 who don't breastfeed: they tend to be less educated, poorer, of color, and unmarried. But when controlled for these factors, teenage mothers breastfeed less than expected, possibly due to "developmental aspects of adolescence, such as greater egocentricity [breast-feeding may take up time that the mother wants/needs for other activities] and greater concern about body image [self-consciousness about breastfeeding in public and/or preserving the appearance of breasts]."


Overweight mothers had less success initiating breastfeeding, and discontinued breastfeeding more than "normal weight" mothers.


During pregnancy, women who were more satisfied with their body weight were more likely to intend to breastfeed, and women who were preoccupied with their body shape were less likely to intend to breastfeed. In the first post-partum week, women who were less concerned about body shape were more likely to breastfeed.


Mothers with BMI>26 one month post-partum were more likely to have stopped breastfeeding earlier than lighter mothers.

Women with many concerns about body shape and weight were less likely to breastfeed. Women who intended to breastfeed reported more satisfaction with their body shape.

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Regardless of weight gain during pregnancy, obese women were less likely to breastfeed than women with a "normal" pre-pregnancy BMI. Obese women who did breastfeed discontinued breastfeeding earlier than their counterparts. Women who gained less than or more than the recommended weight during pregnancy breastfed the shortest duration.


Higher pre-pregnancy weight predicted more negative body image during pregnancy. Women who breastfed had more positive pre-pregnancy body images than women who bottle fed. In groups, the trends indicate that weight plays a role in choice to breastfeed or not, along with many other factors. And there is some indication that body image (which can affect self-confidence and self-efficacy) may also play a role. But in individuals, the extent that weight affects body image is a whole other issue. There are women with such severe body image disturbance that no matter how low their weight, they never have a positive body image. There are women who are "overweight" in society's terms with very positive body images.

There is much more to learn in this area, in order to provide appropriate advice to mothers of all shapes and sizes. And the rule of individualized care designed for each patient remains undisputed. But the patterns seem to show that women in certain groups, possibly but not conclusively because of their risk for poor body image, may need special attention in their efforts to breastfeed: young teenage mothers, women who are unhappy with their weight pre-pregnancy, obese women, women with a BMI >26 one month post-partum, and women who gain less or far more than the recommended amount of weight during pregnancy. As dietetics professionals, we can encourage all mothers and future mothers to embrace their body's capabilities to both bring forth a child and to nourish that child, regardless of shape, size, or style.

“Dietetics professionals can encourage all mothers...to embrace their body's capabilities to...nourish their children, regardless of shape, size or style”


Barbara Luke, ScD, MPH, RD

Are you seeing double (or triple) every time you go to the grocery store or the shopping mall? You are—twins, triplets, and even quadruplets are much more common these days than just a decade ago. In the US, the number of twin births has risen by 67% and the number of triplet and higher order births by 548% since 1980. Although triplets and higher-order multiples are increasing at a faster rate, twins account for more than 93% of all multiple births each year. One-fourth of this increase is attributed to delaying childbearing and the naturally higher occurrence of multiple births to older mothers, but the majority is the result of fertility-enhancing agents and assisted reproductive technologies.

Half of all multiple births today are to women ages 30 and older, twice as many as in 1980.

Three times as many women ages 35 and older, and four times as many women ages 40 and older are having twins today compared to 1980. Five times as many women ages 35 and older, and ten times as many women ages 40 and older are having triplets or quadruplets today compared to 1980.

The following questionnaire will test your knowledge about twins, triplets, and quadruplets. Remember, knowledge is power - learning as much as you can about these unique pregnancies will help your clients have a healthier pregnancy and deliver healthier children.

What Do You Know About Twins, Triplets, or Quads?

1. What is the average birthweight and length of gestation for a twin pregnancy?
   A. 3 lbs 12 oz at 32 weeks
   B. 4 lbs 7 oz at 34 weeks
   C. 5 lbs 5 oz at 36 weeks
   D. 6 lbs 4 oz at 38 weeks

2. What is the average birthweight and length of gestation for a triplet pregnancy?
   A. 3 lbs 12 oz at 32 weeks
   B. 4 lbs 7 oz at 34 weeks
   C. 5 lbs 5 oz at 36 weeks
   D. 6 lbs 4 oz at 38 weeks

3. What percentage of twins are identical vs fraternal?
   A. 50% and 50%
   B. 33% and 67%
   C. 25% and 75%
   D. 10% and 90%

4. What percent of identical twins have separate amniotic sacs and placentas?
   A. 20%
   B. 35%
   C. 50%
   D. 65%

5. Women who conceive twins spontaneously are more likely to be...
   A. athletic
   B. first-time mothers
   C. vegetarians
   D. taller

6. For a woman of normal weight pregnant with twins, how much should she gain by 24 weeks?
   A. at least 24 lbs
   B. at least 20 lbs
   C. at least 16 lbs
   D. at least 12 lbs

7. For a woman pregnant with triplets, how much should she gain by 24 weeks?
   A. at least 42 lbs
   B. at least 36 lbs
   C. at least 30 lbs
   D. at least 24 lbs

8. For a woman pregnant with quads, how much should she gain by 24 weeks?
   A. at least 30 lbs
   B. at least 40 lbs
   C. at least 50 lbs
   D. at least 60 lbs

9. An unborn babies’ heads at 32 weeks of pregnancy are about the size of...
   A. an apricot
   B. a lemon
   C. an orange
   D. a cantaloupe

10. What is the best exercise you can do when you’re pregnant with multiples?
    A. vaccuuming
    B. swimming
    C. walking
    D. biking

Answers: 1-c, 2-a, 3-b, 4-d, 5-d, 6-a, 7-b, 8-c, 9-c, 10-b.

How did you score? If you missed only one or two, you know more than most experts! If you missed three or more, it’s time to learn more about these unique, high-risk pregnancies. For specifics on what makes multiple pregnancies special, guidelines on prenatal care and nutrition, and strategies for lowering your risks for complications, read When You’re Expecting Twins, Triplets, or Quads.

Editors Note: Barbara’s full-length article "Improving Outcomes in Multiple Pregnancies with Nutritional Interventions" appeared in the Spring 2005 issue of the WHRN report, available on-line on our members-only webpage. A review of the book, When You’re Expecting Twins, Triplets, or Quads, can be found in the Summer 2004 issue. See page 5 for ordering information.~KS
POSITION OPENING

WHRN is seeking a member who would like to become more involved in the DPG. We are currently looking for someone to fill the position of website/listserv coordinator. For more information and a job description, please contact Theresa Romano, at 516-659-8773.

CALL FOR NOMINATIONS

The WHRN-DPG will be electing new officers in February. Preparations are underway to provide an outstanding ballot for the membership. According to our Guiding Principles, because 2006 is an even numbered election year, our ballot will present the following new officers:

1. Chair-Elect (3-year commitment to the DPG Board: Chair-Elect, Chair, Past Chair)
2. Secretary (2-year term)
3. Industry Relations
4. Chair-Elect, Nominating Committee (2-year commitment: Chair-Elect, Chair)
5. Ad Hoc member, Nominating Committee

Please give these positions your serious consideration and pass along any names you think would be a qualified candidate. Many of you work with extremely talented and knowledgeable colleagues that would make wonderful leaders for our organization. Sometimes all they need to accept a nomination is a request to run. You can make a difference! If you are willing to submit your own name, that would also be appreciated and completely acceptable. There is a requirement that all nominees be current members of WHRN-DPG.

Please submit names with contact information (including phone number) and the office you are nominating the candidate for to: Ginger Carney, Nominating Chair, carneyg@lebonheur.org or (901)572-3140 by September 15, 2005.

2005-2006 EXECUTIVE COMMITTEE

Chair-Elect
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516/932-7976 Fax
fooddiva@aol.com

Chair-Elect
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Past Chair and Industry Relations
Darlene Husch, MA, RD, CDE
darhusch@verizon.net

Secretary
Cathy Fagen, MA, RD
cfagen@memorialcare.org

Treasurer
Jamillah Hoy-Rosas, MPH, RD
jhoyrosas@betances.org

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Chair-Elect
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Ajohnson@eatright.org

ADA Professional Issues Delegate
Phyllis Bowen, PhD, RD
pbowen@uic.edu
### Calendar of Events

**By Allison Starr**

The Fall is such a busy time of the year—back to school, back to regular work schedules, back to reality! Instead of providing you with a list of upcoming conferences, this issue features opportunities for WHRN members to get directly involved in women's health issues. Please let me know if you participate in any special activities related to these, or other, national observances.

#### September:

**National Menopause Awareness Month**  
Office of Women's Health  
(888) 463-6332 or (301) 827-0350  
www.fda.gov/womens-menopause

**Ovarian Cancer Awareness Month**  
The National Ovarian Cancer Coalition  
(888) OVARIAN or (561) 393-0005  
nocc@ovarian.org  
www.ovarian.org  
Contact: Shelly Rozenburg

**National Women's Health and Fitness Day**  
Health Information Resource Center  
(800) 828-8225  
info@fitnessday.com  
www.fitnessday.com  
Contact: Tina Godin

#### October:

**National Breast Cancer Awareness Month**  
National Breast Cancer Awareness Month Board of Sponsors  
(312) 596-3557  
kathryn.mckemzie2@astrazeneca.com  
www.nbcam.org  
Contact: Kathryn Mckemzie

**National Spina Bifida Awareness Month**  
Spina Bifida Association of America  
(800) 621-3141 or (202) 944-3285  
sbaa@sbaa.org  
www.sbaa.org  
Contact: Maya House

**National Health Education Week (Healthy Choices: Family Life Education)**  
National Center for Health Education  
Society for Public Health Education  
(212) 463-4053  
elaine@ncshe.org  
www.ncshe.org  
Contact: Elaine Sheehan

#### November:

**Prematurity Awareness Month**  
March of Dimes Birth Defects Foundation  
(888) MODIMES (663-4637)  
askus@marchofdimes.com  
www.marchofdimes.com  
Contact: Pregnancy and Newborn Health Education Center

**National Alzheimer's Disease Awareness Month**  
Alzheimer's Disease and Related Disorders Association  
(800) 272-3900 or (312) 335-8882 TDD  
info@alz.org  
www.alz.org  
Contact: Local Chapters or National Office

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**The American Dietetic Association web site**  
http://www.eatright.org

**The Women's Health and Reproductive Nutrition DPG web site**  
http://www.whrndpg.org

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Cathy Fagen, MA, RD  
11411 Wembley Road  
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