

What You Eat Can Kill You

Finding Answers to Diet-Related Illness in the Delta

Agricultural Research Service researchers and their collaborators are going directly to residents of small communities throughout a rural, impoverished region of the country to find the causes of nutrition-related diseases there and develop intervention strategies to help control this growing problem.

The Lower Mississippi Delta Nutrition Intervention Research Initiative (Delta NIRI) was established by Congress in 1995 to remedy the lack of research on dietary habits of the high-risk population of the Lower Mississippi Delta. Residents there suffer from unusually high occurrences of obesity, heart disease, stroke, and cancer, as well as low birth weight and high infant mortality rates. A diet of high-fat foods and a lack of variety may increase the risk of nutrition-related chronic disease. So too could cultural factors, lack of physical activity, and infrequent medical care.

ARS researchers want to evaluate the nutritional health of the residents, identify nutritionally responsive problems, then design and evaluate interventions to address the problems.

Combining science with community outreach, Delta NIRI has teamed up with six institutions of higher learning to form the Lower Mississippi Delta Nutrition Intervention Research Consortium. These institutions are the Arkansas Children's Hospital Research Institute; University of Arkansas at Pine Bluff; Alcorn State University in Mississippi; University of Southern Mississippi; Southern University and A&M College in Louisiana; and Pennington Biomedical Research Center in Louisiana.

Consortium researchers have partnered on several important studies to determine the foods consumed by the population bordering the Mississippi River in Arkansas, Louisiana, and Mississippi. They've used innovative public outreach to advance their goals, including developing a model for building collaboration between rural communities and university scientists to bring about nutritional, behavioral, and other lifestyle changes.

"Developing collaboration and partnerships among ARS, universities, and the rural communities of the Delta has been time consuming, but it's been rewarding from the standpoint of the enthusiasm and information coming from the communities," says Margaret Bogle, Delta NIRI's executive director. "Most know that their problems are

related to food and nutrition and are eager to learn how they can improve."

Before the researchers could plan interventions in communities, they needed to collect information about what people in the region were eating. National data did not provide a realistic snapshot of the area.

On average, people in the Lower Mississippi Delta eat less of what they should and more of what they shouldn't. For example, consortium researchers learned that Arkansas Delta residents eat 17 percent fewer vegetables than the rest of the nation. That number climbs to 22 percent in Mississippi and 24 percent in Louisiana. In all three states, fried potatoes account for about

At Castle Wood Park, in the Hollandale community school district in the Mississippi Delta region, study director Margaret Bogle, right, discusses a proposed walking trail to be built around the park with community liaison Demetric Warren, left, and Sonia Ellis, special services director of the community's school district.





Children at Castle Wood Park prepare to take a walk around the park's proposed new walking trail. In addition to regular exercise, access to good food can help prevent some diseases later in life. A survey found that children in the Delta region had lower intakes of several vitamins and minerals than the national average.

one-third of all vegetables eaten. The diet also includes substantially fewer fruits and dairy products, more added sugar, and more calories from fat than the national average.

Though diet-related diseases are more common in the Delta, a few residents who took part in a recent ARS-funded survey did not realize the extent of the problem and did not know there were screening programs in their communities. Only 16 percent of males and 22 percent of females identified diabetes as a significant health problem in the region. And only 20 percent overall knew there were places to go for quick diabetes testing.

Survey Says . . .

One of Delta NIRI's goals is to intervene where they find a need for increased awareness. A telephone survey collected self-reported food-intake data from a representative sample of households in 36 lower Delta counties in the 3 states to compare with national survey data. The Foods of Our Delta Study (FOODS 2000) provides baseline data that could be used to develop future nutrition interventions. Results showed that children and adults of all ethnic groups, but especially African Americans, have reasons to be concerned. For example, children had lower intakes of vitamins A, C, riboflavin, B6, calcium, and iron than the national average.

Another study used a USDA 18-question module to determine residents' "food security," or economical access to sufficient amounts of safe and nutritious food. The researchers hoped to confirm earlier studies that found food security to

be a good measure of child health, development, and behavior. They found that, indeed, children in households with poor food security scored much lower on measurements of health status and physical and psychosocial functioning than children in food-secure households.

The team also convened 37 focus groups to determine perceptions Delta residents have about buying and eating healthy foods and to determine which factors influence their behaviors. Researchers will use this data to find ways to help consumers there make healthier choices.

"Several themes were common to all focus groups: People needed food-preparation skills, many did not know what foods to eat, shopping in a supermarket was mostly once a month, 'healthy foods' were too expensive," Bogle says. "Others thought the solution to changing food choices was to have someone else prepare all the food for them or to eat out in restaurants."

In addition, 228 stores were chosen at random to determine the characteristics, availability, styles and package types, quality, and prices of 102 food items, including 67 on the USDA Thrifty Food Plan, a meal plan that demonstrates how a healthy diet can be achieved on a modest budget. (See www.cnpp.usda.gov/foodplans.html.) The stores were located throughout 18 of the 36 Delta counties or parishes in the 3-state partnership. The survey found that a lack of variety and poor nutritional quality of foods limits shoppers' ability to eat healthfully.

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Healthy habits begin in childhood. ARS community outreach researchers are encouraging Delta residents to develop better habits, like exercising and eating right.

One important finding was that convenience stores outnumber supermarkets and smaller grocery stores in the region. Most convenience stores have fewer healthy foods and higher prices. Many residents must travel long distances to a full-service grocery store.

What's Next?

Consortium researchers now know what the study population is eating. They also know the perceptions Delta residents have about buying and eating healthy foods. The next step is to determine the factors that influence their food choices and to help residents choose more healthful diets.

In one study, conducted by Delta NIRI partners at the University of Southern Mississippi, African American preteens (ages 10 to 13) were interviewed to find out how they preferred to learn about nutrition. They found that young boys wanted to have tasting parties and get the messages from popular cartoon characters, while girls preferred learning nutrition by cooking different foods themselves. The study showed that methods have to be active, involve family members, and possibly be different for boys and girls.

Discovering common perceptions in the Delta often involves the researchers going out to isolated communities and meeting with their leaders. Bogle says that leaders know there is a problem and can suggest ways to reach members of the community.

Bogle and Tim Kramer, an ARS nutritionist at Delta NIRI, worked with consortium members to develop a model for building collaboration between rural communities and university scientists. The model has proven effective for conducting nutrition-intervention research and has demonstrated how to keep community participation going while nutrition interventions are planned, implemented, and evaluated.

"Delta NIRI has used its resources to build capacity in these communities so they can sustain whatever gains are made through the nutrition-intervention research. "For instance, community research groups have completed training in community participatory planning and evaluation," Bogle says. "This has helped them to interact in our organization as well as with other groups with whom they may be connected."

Delta NIRI recently presented \$50,000 grants to three rural communities—one in each of the three study states. These local research groups, which also include ARS and university partners, have identified and prioritized food and nutrition problems in their communities and are designing nutrition interventions to determine how and why people make food choices and how those choices may be improved.

Another unique feature of these community research groups is the collaboration of Delta NIRI with each of the three state partners in USDA's Cooperative State Research, Education, and Extension Service. A regional cooperative extension person will coordinate the efforts of community research groups

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Margaret Bogle, left, discusses healthy food choices with Earline Strickland, center, ARS community consultant, and Barbara Winding, of the Hollandale community NIRI.

and encourage more citizens to participate, all of which will be valuable in helping sustain successful interventions after the research is completed.

"Community-based research techniques are new to human nutrition research in ARS and within the universities that are part of Delta NIRI. But it's state of the art for population research in rural areas and especially for attempting to change food behaviors so that they can be sustained into the future," Bogle says. "Delta NIRI will continue to share our research outcomes with other professionals through national and international meetings and publications."—By **Jim Core**, ARS.

This research is part of Human Nutrition, an ARS National Program (#107) described on the World Wide Web at www.nps.ars.usda.gov.

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