Consumption of Fish From Polluted Waters by WIC Participants in East Harlem

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ABSTRACT  To minimize exposure to neurotoxins such as mercury, polychlorinated biphenyls (PCBs), dioxins, and pesticide residues, the New York State Department of Health issues health advisories about consumption of certain fish and shellfish caught from polluted local waters. Fetal exposure causes cognitive developmental deficits in children. Consumption of fish was assessed. We surveyed 220 WIC (Special Supplemental Nutrition Program for Women, Infants, and Children) participants. Of the participants, 10% ate fish and shellfish caught in local polluted waters. Statistically significant factors associated with eating local, noncommercial fish included male gender and knowledge of the health advisory. Locally caught fish and crabs are consumed; thus, in utero and childhood exposure to these neurotoxins occurs. Interventions to promote safer choices of fish are needed.

KEYWORDS  Contaminants, Dioxin, Health advisory, Neurotoxins, Noncommercial, Polychlorinated biphenyls.

INTRODUCTION

The federal government sets standards for permissible levels of contaminants in commercially sold food, including fish. For fish caught and consumed from non-commercial sources, the New York State Department of Health (DOH) publishes annual health advisories when sport fish have contaminant levels greater than the federal standards. In New York State, the Department of Environmental Conservation (DEC) monitors contaminant levels in fish.1

The DOH health advisories are not intended to discourage fish consumption, but rather to minimize exposure to contaminants and health risks that are associated with exposure to contaminants. Fish has nutritional properties that make it an ideal protein source when prepared properly. Fish may acquire contaminants from the water in which they live and the food they eat. Some contaminants build up over time in fish and in people who consume fish.1

Long-lasting contaminants, such as polychlorinated biphenyls (PCBs), 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (DDT), and cadmium, remain in the body. It may take months or years of eating contaminated fish to accumulate a body burden of health concern. A specific advisory for infants, children younger than 15 years of age, and women of childbearing age is to eat no fish from the bodies of water listed in the advisory. Mothers who eat contaminated fish before becoming pregnant may have children with developmental and learning problems, birth de-
The contaminants in sport fish include PCBs, a family of man-made chemicals used in many commercial and electrical products. In the United States, most PCBs were sold as mixtures called aroclors. PCBs are stored in the fatty tissues of fish, birds, and mammals. Some studies of pregnant women suggest a link between increased exposure to PCBs and slight effects on their child’s birth weight, short-term memory, and learning. Laboratory animals had reduction of birth weight and changes in the behavior of the offspring of animals exposed before, during, and after pregnancy. Some types of PCBs cause cancer in laboratory animals. Whether PCBs cause cancer in humans is unknown.

Prior to the mid-1970s, when PCB manufacturing was banned in New York, General Electric manufactured components using PCBs at its factories north of Albany. The decades of leaks, spills, and permitted drainage of chemicals made the Hudson River one of the nation’s most PCB-contaminated rivers. In 1984, a 200-mile stretch of the river from Hudson Falls to the Battery in New York City was added to the government’s Superfund priority cleanup list.

The objective of our project was to determine if WIC (Special Supplemental Nutrition Program for Women, Infants, and Children) participants were eating local, noncommercial fish and crabs from waters that are contaminated with chemicals that may be harmful to their health.

**METHODS**

Institutional review board approval was obtained with exemption of written consent prior to beginning the project. Face-to-face interviews were conducted during 12 days between July 22 and August 11, 1999. The interviews were conducted at sites administering WIC while the participants waited to see a nutritionist. Three WIC centers in East Harlem were the sites for the interviews: a building at 96th Street and Lexington Avenue next to the subway station, another affiliated with a community health center located at 104th Street and 2nd Avenue, and a hospital-based center at North General Hospital. Interviews were conducted in English and Spanish by one of six people trained to conduct the interview. The interviews took less than 5 minutes, and the interviewer filled out a survey with the responses given and gave the participant a fact sheet.

A fact sheet, “A Mother’s Guide to Eating Fish in New York City,” was prepared in English and Spanish to give to participants at the time of the interview. The fact sheets and survey instrument were developed in consultation with WIC directors and nutritionists, New York State DOH educators working on fish advisory outreach programs, and a community organization in West Harlem.

Of the WIC recipients, 95% agreed to participate. Primary reasons for nonparticipation included time constraints and language barriers.

Chi-square, $t$ test, and binary logistic regression analyses were used to determine factors associated with eating local, noncommercial fish. Data were analyzed with SPSS (Version 10) statistical software.

**RESULTS**

Characteristics of the study participants are presented in Table 1. Women comprised 98% of the respondents; however, in one case a couple presented together,