

SPORTFISH CONSUMPTION: SOCIO-CULTURAL AND ECONOMIC ASPECTS, ETHNICITY AND EFFECTIVENESS OF HEALTH ADVISORIES

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Summary

Fish consumption pattern and behavior can vary with ethnicity and social-cultural differences. While it is generally believed that some anglers fish for subsistence, it is very difficult to define and characterize this population. There is no clear indication that fishing or fish consumption has a direct correlation with economic factors. Effectiveness of fish advisories can be measured as compliance with the advisories, on the other hand compliance is affected by awareness of the advisories, public perception of risk and whether alternatives are available for fishing as a recreational activity or for dietary intake. Several studies have shown successful or partial compliance with advisories, while others found that anglers were consuming fish at higher than the recommended rates and/or that the recommended methods for preparing fish to reduce chemical contaminant levels were not followed. Compliance with advisories based on health concerns relating to mercury contamination has resulted in negative impacts in a Canadian aboriginal community, as it has caused disruptions in traditional lifestyle, culture and eating patterns. Such a trade-off reflects the importance to realize the possible undesirable consequence and the reality, and to balance the risk versus benefits of such advisories. A survey of anglers to evaluate the effectiveness of an advisory issued for fish in San Francisco Bay due to a health concern on mercury showed that two thirds of 520 anglers interviewed had an awareness of the advisory and that posting

signs is probably the single most effective way to reach anglers with information about fish consumption advisories. Targeted efforts to specific local fishing and fish-eating populations and government credibility are needed in order to ensure the effectiveness of advisories through increased public awareness of advisories and enhanced communication and outreach. New legislation with funding would help to provide activities in relation to ensuring safe consumption of sportfish.

1. Introduction

Fish is a part of the regular diet for many people. The fish constituting this regular diet may be sport-caught fish or commercial fish that may or may not be taken from the same aquatic resources

Sportfish may contain chemicals as a result of their presence in the environment originating from natural occurrence or as a result of human activities, or both. There are no existing legal limits or regulatory standards for chemicals in sportfish, and no published criteria to determine at what critical level of a chemical when the fish is considered contaminated, or when a health concern exists, although general references are often made to “chemical contaminants in fish” or “fish contamination”. Various states in the U.S. have used the Food and Drug Administration’s Action Levels in fish available for a limited number of chemicals as the reference values and basis for issuing health advisories for sportfish.

Health advisories for sportfish intended for human consumption are a form of guidance on fish consumption limits to inform and protect the consumers from the adverse health effects of chemicals found in the fish. It is a risk management or risk reduction tool to minimize the ingestion of chemicals and the associated health risks. These advisories are not enforceable and the success is dependent on voluntary compliance of the consumers. The Office of Environmental Health Hazard Assessment (OEHHA) has issued a number of health advisories based on findings of chemicals in fish, such as mercury (total mercury is generally measured and the chemical form of concern in fish is for methylmercury), selenium, DDT’s, and polychlorinated biphenyls (PCBs), in areas including the San Joaquin Valley, Lake County, Alameda County, San Francisco Bay, and Southern California (www.oehha.ca.gov). These advisories were developed using risk assessment methodology and were issued in the California Sport Fishing Regulations booklet and recently as an OEHHA brochure. Technical support documents are available separately.

One of the early and major advisories in California was issued in 1971 for mercury in fish in San Francisco Bay. This was followed by increased activities in the evaluation of chemicals in fish and the issuance of new or updated advisories between the mid-1980s and the early 1990s. In the early 1990s, concerns were raised regarding whether the existing advisory for fish in the San Francisco Bay that was based on mercury findings was reaching the appropriate sportfish-eating populations. Following discussions among interested parties, several related issues arose regarding the following aspects:

- That some ethnic populations may have a disproportionately high consumption rate of the fish (therefore, a higher health risk)

- That differing populations may have different fish consumption pattern or behavior and fish preparation and cooking methods
- That some populations may have a disproportionately high consumption rate of the fish due to social, cultural or economic factors (e.g., subsistence anglers)
- That the advisory should be provided in languages used by the major populations who eat the fish (e.g., multilingual advisory)
- That the advisory be disseminated or communicated to the appropriate populations
- Who is eating the fish?
- Who are the target populations? (Including sensitive populations: fetus/pregnant women, children; ethnic groups)
- Effectiveness of advisories
- What is the level of awareness of the advisory?
- What is the level of compliance of the advisory?
- What is the risk perception among interested parties?
- What are the most appropriate means of disseminating or communicating the advisory?

The present discussion addresses the above issues in general as they apply to all sportfish advisories rather than just the specific advisory for the San Francisco Bay. It will not discuss the health risks associated with the chemical contaminants found in fish as there has been extensive literature published on the health risk aspects but less on these other factors relating to fish consumption and advisory. The discussion is organized into the following sections:

- Introduction
- Ethnicity/social-cultural considerations of fish consumption
- Economics of fishing and fish consumption
- Effectiveness of health advisories
- Compliance with advisories and public perception
- Impact of compliance with advisories and reality
- Public awareness of advisories, communication and outreach
- California experience and summary

The issues covered under each section are not mutually exclusive, but rather they often interrelate with each other. The review is based on information obtained from an updated review of the pertinent literature and it draws upon the experience specific to California. Results from relevant studies are presented, but no attempt was made to evaluate the quality of the studies or the differences in design and methodology used for the different studies, the latter of which would preclude direct comparisons to be made for different studies reviewed.

2. Ethnicity/Social-cultural considerations of fish consumption

The attention specifically given to certain subpopulations, subsistence consumption of fish, race, national origin and income levels for areas surrounding sites expected to have a human health effect on surrounding populations can be seen in the Presidential Executive Order on Environmental Justice issued in 1994 (Executive Order No. 12898,

1994).

This Executive Order indicates a strong interest at the Federal level to look at the effects of environmental contaminants on certain subpopulations and to be concerned with subsistence consumption of fish and wildlife. The executive order states: In order to assist the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, Federal agencies, whenever practical and appropriate, shall collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Federal agencies shall communicate to the public the risks of those consumption patterns....". It also states, "...whenever practical and appropriate, [federal agencies] shall collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on surrounding populations...."

As part of a major research undertaken to develop knowledge of problems regarding assessing health risks and benefits posed by consumption of chemically contaminated fish and determine a method to evaluate risks and benefits of fish consumption, the socio-cultural considerations of fish consumption was examined. The populations considered included several different ethnic and other groups of people who consume more fish than others, consume different parts of fish, or may fish more in contaminated waters. These groups included Asian-Americans, Native Americans, subsistence anglers, and low-income, urban anglers (including African-American and Latino anglers). It was stated that these group designations are not mutually exclusive, but rather refer to dominant cultural identity (as in Asian-Americans and Native Americans), and socioeconomic and residence status (as in subsistence anglers and low-income, urban anglers). In this report "Asian-American/Pacific Islanders" includes individuals who trace their ancestry to the indigenous peoples of Australia and New Zealand. "Native Americans" includes all indigenous people of the Americas, including the Inuit. Subsistence anglers are considered those who fish primarily to meet or supplement household food needs. Low-income urban anglers were included on the basis that they form an at-risk population. Limited research data was found regarding Latino and African-American fishing and consumption behavior; this is included under low income, urban anglers, where "Latino" refers to individuals whose primary language is Spanish or Portuguese and/or to those individuals who trace heir ancestry to predominantly Spanish or Portuguese-speaking populations.

For the present discussion, socio-cultural aspects and ethnicity are included here as they are intimately related to each other. Economic aspects, although mentioned above, will be addressed separately.

It is generally recognized that food is an important part of a culture. It holds a prominent place in social functions and food habits, and is often an expression of cultural identity. Fish consumption is a long-standing tradition for many individuals and fish may hold a prominent place in social ceremonies and rituals. As for the fishing activity itself, it often involves the intergenerational transfer of knowledge, and may contribute to sharing and social bonding within the family and community. As fish (as among foods)

is incorporated into a complex socio-cultural phenomena, changes in eating-habits often have multiple, complex (sometime unforeseen) consequences within a particular family, community or ethnic group (see Section on Compliance/ non-compliance of advisories – Impacts, perceptions and reality); special considerations should be given to sub-cultural groups known to have special behaviors in regards to fish consumption (as in the four groups noted above).

Asian-Americans

Several studies have examined fishing and fish consumption activities among Asian Americans. These included the studies in Santa Monica bay area in southern California, San Francisco Bay in northern California, Puget Sound area of Washington State, the Midwest, the general U.S., Contra Costa County of California, King County of Washington, and San Francisco Bay. Note that the designation of “Asian-Americans” actually includes a diverse range of different ethnic populations each of which is likely to have its own different characteristics.

The characteristics reported and believed to distinguish this group of Asian-Americans from the majority of the U.S. population included higher rates of fish consumption, greater likelihood to eat whole (gutted) fish, consumption of a greater variety of fish species or preference for a wide range of seafood, and/or consumption of more fish body parts. In a survey of 228 people at central and north San Francisco bay locations, it was reported that the majority of responders were persons of color (over 70%) and males (86%). Asians were the most numerous group on the piers (36%). African Americans tended to fish most frequently out of all groups categorized by race and age. Forty percent of the respondents ate fish from the Bay in the past month; of these 80% were people of color. Asians and Latinos had the highest median consumption rate, and Asians ate most frequently from the bay. The commonly consumed species were often cooked with the skin on, with frying as the most common cooking method.

Fishing and/or fish foods were identified as providing a sense of cultural continuity or ethnic identity, and may be a coping mechanism to ease the difficult transition into U.S. society and culture for new immigrants (Cambodians and Hmong residents that were studied), particularly for those who do not speak English, experience high level of trauma or stress and who cannot compete well in the U.S. job market.

Around the same time when the OEHHA advisory for San Francisco Bay was issued in 1994, much attention was given to examining fishing activities and fish consumption in California.

In a report on the only survey that examines the seafood consumption practices of a San Francisco Bay area Southeast Asian refuge community, the Laotian community in west contra Costa County, cited studies that suggested that Asians and Pacific Islanders (APIs) fish more and consume greater quantities of self-caught fish than white people. Two surveys at local bay fishing piers found that API's made up 48% and 40% of the surveyed populations. The APEN report stated that “many people of color, including Southeast Asians, fish local waters for food, practicing a healthy, traditional way of life in oftentimes unhealthy environment. Main stream media is not readily accessible to

immigrant and refugee communities made up of a large number of non-English speaking people, which leaves a significant population unaware of environmental hazards.” Thus a community is placed at a greater risk than the general population because of cultural practices, English language ability, and socio-economic status. The survey focused on the Laotian community, a group that is poor, non-English-speaking and predominantly people of color. Results showed that 40% of the surveyed population fish with 87% eating fish. About 25% fish in the San Francisco bay and over 50% of the responding report catching the fish their family eats.

A study of a group of researchers described Asian and Pacific Islanders (API) seafood consumption rates, species and seafood parts commonly consumed and cooking methods. The information was collected to provide the API community in the Pacific Northwest to determine risks from seafood and to balance such risks with the health and cultural benefits associated with seafood consumption. The ethnic groups included Cambodian, Hmong, Laotian, Mien, Samoan, Vietnamese, Chinese, Filipino, Japanese and Korean. The majority of the 202 respondents (89%) were first generation (i.e., born outside of the U.S.). Seafood consumption based on gender, age, income and “fishermen” status did not differ significantly. In general, members of the Vietnamese and Japanese communities had the highest overall consumption of seafood; and the Mien, Hmong and Samoan consumed the least amount of seafood. The Japanese community reported the largest amount of consumption of anadromous fish, pelagic fish, and other seafood. Members of the Vietnamese community had the largest consumption of shellfish and fresh water fish.

To further evaluate fish consumption related aspects related to ethnicity, a study on San Francisco Bay Seafood Consumption was conducted over a 12-month period in 1998 and 1999 (DHS 2001). Over 1,300 San Francisco Bay anglers aged over 18 on fishing piers and shorelines, and those fishing from private and party boats, were interviewed. The interview included questions about the angler’s ethnicity, education, household income, the amount and type of fish they consumed from the Bay, what parts of the fish they ate, and their awareness of the health advisory for SF Bay fish. Interviewers were able to speak English as well as at least one other language, including Spanish, Vietnamese, Cantonese, or Mandarin.

Eighty-seven percent of anglers ate fish from the Bay with Caucasians being the largest group followed by Asians (including Filipinos), Latinos, and African Americans. Many reported that women of childbearing age (between 18 and 45 years of age) and young children in the household also ate their catch. Among anglers who had eaten fish in the last four weeks, African-Americans and Filipinos ate the most fish and Caucasians ate the least. One in ten anglers ate more than the advisory limits; though these came from all ethnic groups and backgrounds, Asians and African Americans were more likely to eat above the limit.

An earlier study evaluated various socio-demographic and economic factors of seafood consumption, and compared data from four national studies and found that in general, blacks and orientals consume more than whites.

Native American communities

For Native American communities, taste, availability and harvest time affects the particular species preferred, and the natives of the Northwest are among the most fish-dependent populations in North America. Fish is a primary staple food in Alaska; fish consumption is six times the national average and the majority of protein consumed is derived from local fish sources. The importance of the social aspects of sharing the fish harvest was well noted and it was also pointed out that traditional harvesting activities provides meaningful work, promote self-reliance, help maintain social bonds, provide economic benefits, enhance cultural identity, and help to sustain intergenerational transfer of local knowledge. Even when subsistence fishing is not a primary activity, fishing may still be an important social function for certain occasions, such as spring spearfishing, and sharing of the catch among the Chippewa of Wisconsin. In certain Native American communities, fish hold an important cultural meaning and are inextricably linked to traditional religious and cosmological concepts regarding the place of humans within local systems and the health of the environment.

A major concern is that serious negative socio-cultural and health related impacts have been reported in Canadian aboriginal peoples following the advisories on consumption of fish from certain water bodies due to findings of high levels of methylmercury. This is described below under the discussion on impact of compliance with advisories and reality.

White and non-white subpopulations

Other surveys revealed higher consumption by non-whites and by lower education and economic groups. One study reported that non-white anglers, mostly African-American in his study of the Detroit River, were more likely to view fishing as a food source than were white anglers and to eat species with higher contaminant levels. Further research on fish consumption by minorities in Michigan revealed that the differences between minorities and whites exist on a state-wide basis. Overall, Native Americans consumed more fish than blacks, and both groups consume more than whites. When considering race and age, black anglers in the age 51-91 group and Native Americans in the age 31-50 group had a very high rate of consumption. It has also been noted that blacks had higher risk behavior, that is, high consumption and less likely to use preparation and cooking methods that reduce contaminants. It has also been reported that non-white respondents ate more sportfish than whites, with blacks and Asians among the highest consumers; however, Native Americans and blacks made relatively more changes in overall behavior than whites or “Asian/others.” Blacks were less likely to fillet the fish or remove the skin although they were as likely to use other contaminant risk-reducing preparation methods, and were also more likely to reuse the oil or fat from cooking than other racial or ethnic groups. It has been reported that Blacks were less likely to know about health advisories than other ethnic groups in their work on food consumption from the Everglades of Florida. Fishing plays a significant social role within some black communities (e.g., Mississippi Delta) and fish consumption levels were higher among Blacks compared to Whites. In a study of fishing rates and consumption among people fishing on the Savannah River, South Carolina, it was found that ethnicity and education contributed significantly to explaining variations in fishing behavior and consumption.

Blacks fished more often, ate more fish meals of slightly larger serving sizes and consumed more fish per year than did Whites.

In a study of fin-fishing and crabbing activities in the New York City area, it was found that most anglers were employed in blue-collar jobs or service occupations and were “white”. Nearly 60% reported that they eat the catch and many shared the catch with families, friends and neighbors. Finfish were mostly fried. A study in Michigan found angling activities while there was existing warning for a portion of the Tittibawassee River where most anglers were low-income, blue-collar and unemployed or underemployed. In surveys in the New York City area, it was found that most anglers in the study were African-American or Latino. A similar study in the New York/New Jersey area showed that African-American respondents who fished in Arthur Kill and who had a preference for porgies, which are small fish that are consumed fish as fried and frequently whole. Self-caught fish was preferred as they were fresher than those purchased in stores.

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