

FISH CONSUMPTION AND IMPLICATIONS FOR HOUSEHOLD NUTRITION AND FOOD SECURITY IN TANZANIA AND GHANA

AFRICA PROJECT: GHANA & TANZANIA

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Human Nutrition and Human Health Impacts of Aquaculture/Study/16HHI02PU

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Objectives

1. Measure household food security in terms of dietary diversity of households using indicator measures.
2. Analyze the determinants of household consumption practices of various food types that includes fish.
3. Formulate policy measures to improve aquaculture and fisheries practices and fish consumption to improve household food security.

Significance

The concept of food security has evolved over the years with initial focus on the volume and stability of food supplies. However, in 2001, the FAO redefined food security as “... a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2002). Thus, food security of households depends to some extent on the diversity in the diet. The more diverse the diet, the greater the probability that the nutritional needs of households are being met.

Fish and fishery products contribute significantly towards global food security and human nutritional needs in developing and developed countries. Fish is an important source of proteins, essential micronutrients and minerals in the diet of most African households, but supply is low so is the consumption levels of fish. The world per capita fish consumption has increased from an average of 9.9 kg in the 1960s to about 19.2 kg in 2012 (FAO, 2014). The global growth in fish consumption has occurred mainly in Asia and the developed world and not in sub-Saharan Africa. The sub-region has the lowest per capita fish consumption in the world, nevertheless, it is projected that, in order to maintain current levels of fish consumption in Africa, an additional 1.6 million tons of fish is needed (WorldFish, 2009). The FAO reports that per capita fish consumption either remained static or decreased in some sub-Saharan African countries such as the Congo, Gabon, Liberia, Malawi, and South Africa (FAO, 2014).

Many households in sub-Saharan Africa, especially those in rural settings are prone to food insecurity because of widespread poverty. The issue of food insecurity is heightened by the unstable and seasonal trends in domestic food and fish production. This results mainly from the scale of production; majority of farmers are small scale farmers and fishermen. Several developmental interventions related to fish consumption, aquaculture and capture fisheries have aimed at improving nutritional status of households through direct influence on dietary intake, from food production and an increase in household income (Kawarazuka, 2010). The nutritional impact pathways of fish could come from fish farming, where the household consumes fish harvested from their pond, and/or from other indirect ways such as selling the harvested fish to increase the food purchasing power (income effect) of the household to purchase nutritious foods. This study focuses on nutritional impact through direct fish consumption and the income

effect. Several factors are critical to the nutritional decisions of household. Some factors are income, tastes, education, family size and composition, and market price (Abdulai and Aubert, 2004). The income and price factors represent the purchasing power and availability of food in the house, tastes represent food preferences, education etc., family size and composition depicts the per capita purchasing power and food availability.

There are differences within countries in terms of quantity and variety of fish consumed and the subsequent contribution to food security. Dey et al., (2005) reported that though fish was a major source of protein for low income households in Asia, these households consumed less fish compared to rich households. In Bangladesh, poor households sold the fish from their ponds for cash rather than consuming it at home (Bene, 2003). Thilsted et al., (2014) reported that, in Bangladesh, even though fish is quite expensive, consumption in small quantities made a significant difference in contributing to the nutritional quality of the diets of poor people. In the central region of Malawi, a study of fish farming and non-fish farming households over a period of four weeks revealed no significant differences between the households in terms of their nutritional status because fish farming households cultured the fish mainly for selling and not for consumption (Thilsted et al., 2014). Karim (2006) also reported that, in Lake Chad, households that were plagued by chronic food shortages sold their fish from ponds compared to rich households (Karim, 2006). Studies by Abebaw et al., (2011) and Hailu (2012) have also reported that the level and intensity of food insecurity in developing countries is high and influenced by household socioeconomic factors and poor functioning of marketing systems. In Ethiopia, socioeconomic factors like age, location (whether urban or rural), marital status, educational level, religion, and employment status were found to be strong determinants of household food security (Teller and Yimar, 2000). Clearly, there are differences in household preferences and consumption of fish, which may depend on the availability, cost, disposable income, and other socio-economic and cultural factors.

Fish is an important contributor to food security in Ghana and Tanzania, especially when food security is defined beyond the confines of availability and accessibility to encompass the nutritional content of food. Fish accounts for about 30% of all animal protein, and is a major source of other important nutrients in many households in the Tanzania (FAO, 2007). Notwithstanding the importance of fish to Tanzanian households, growth in fish production has been very low since the early 1990s. Between 1990 and 2010 for instance, fish production increased by an average of only about 0.35% per annum; and per capita production declined by average of about 2.5% per annum, due to rising population. The poor growth in fish production had been attributed mainly to the dwindling trend in inland catch, the main source of fish in the country and an under developed aquaculture subsector. Fish is consumed more among subsistence groups and other low income households, accounting for about 25.7% of food expenditures (Essuman, 1992; FAO, 2004).

In Ghana, fish consumption is higher in coastal, riverine, and inland water areas. A greater percentage of fish consumed comes from marine sources and consumers prefer fresh fish especially those residing along the coast. However, majority of the fish available on the market is in processed forms such as smoked, fried, salted and dried to reduce post-harvest loses. Antwi (2006) reported that about 70% to 80% of all domestically produced marine and freshwater fish is consumed in the smoked form. Catfish and some small palegic species are almost exclusively consumed in the smoked state in most parts of Ghana.

This study examines household food security improvements through household dietary diversity in Ghana and Tanzania. The study examines food security using demand models and a household food security indicator. This is necessary because of the diverse and complex nature of food security (Cunningham, 2005).

Quantified Anticipated Benefits

1. Numerical measures of dietary diversity (proxy for food security) and classification of households into “food secure,” “borderline,” and food insecure” groups.
2. Identification of the determinants of household food security outcomes and factors that impact aquaculture and fisheries practices.
3. Identification of the factors that determine household consumption of various food types that includes fish.
4. Results will inform important policy and funding decisions and implications on fish consumption and food security in sub-Saharan Africa.
5. Information on how increased fish consumption through increased supply from aquaculture development and sustainable fisheries would improve food security of households through dietary diversity.

Research Design and Activity Plan

The World Food Program (WFP) among other organizations have over the years developed and validated some indicators for assessing food security. These include Coping Strategies Index (CSI), Reduced Coping Strategies Index (rCSI), Household Food Insecurity and Access Scale (HFIAS), The Household Hunger Scale (HHS), Food Consumption Score (FCS), Household Dietary Diversity Scale (HDDS) and a self-assessed measure of food security (SAFS) (Maxwell et al., 2003).

This study will adopt the FCS to assess food security in terms of fish consumption and food security. The FCS was developed by the WFP in response to problems concerning data analysis and reproduction of data. FCS involves the collection of information of food consumed by households and they are weighted differently according the energy content of food item (WFP, 2009). The food groups include cereals, roots and tubers, vegetables, fruits, meat, offal, poultry, eggs, fish and seafood, pulses/legumes/nuts, milk and milk products, sugar/honey, oils/fat, and condiments/miscellaneous. FCS uses the number of food items eaten and the frequency with which these foods are eaten over a period as a measure of how food secure the household is (Maxwell et al., 2003). FCS ranges over a scale of 0.5 to 112. The main advantage of FCS is that the weights are country specific making it highly correlated with other food security indicators particularly those measuring energy content as well as making it ideal for identifying the dietary pattern of specific foods (Kennedy et al., 2010). However, the indicator can mask differences in dietary patterns (WFP, 2008).

The data for the analysis will be a combination of survey data collected in Ghana and Tanzania under the 2013-2015 AquaFish Innovation Lab funding cycle and national survey datasets from both countries. The 2013-2015 AquaFish Innovation Lab funded dataset includes 126 households in Ghana and 55 in Tanzania in fish farming regions. The dataset provides information on some demographics, cultural, health, and lifestyle factors that reflect farming practices as well as seafood consumption patterns. The additional dataset includes the 2012/2013 Ghana Living Standards Survey (GLSS) data published in August 2014 and the 2011/12 Tanzania Household Budget Survey (THBS) data published in July 2014. The GLSS data has information on a range of factors including the living conditions and well-being of households in Ghana, demographic characteristics of households, education, health, employment, housing conditions, household agriculture, household expenditures, income and their components, access to financial services, and assets. There is information on a total of 16,772 households from all ten regions of Ghana. The combination of the two datasets will ensure that the analysis is constructive, robust, and comprehensive.

The THBS collected information on a range of household factors across Tanzania, which included demographics; economic activities; health factors; sanitation and utility services; household income; ownership of consumer goods and assets; housing structure and materials; and distance to services and facilities. Information is available on food items consumed that includes cereals and grains, animal

Research Project Investigations: Human Nutrition and Human Health Impacts of Aquaculture

products (including both fish, meat and other seafood), milk and dairy products, pulses (all legumes), vegetables fruits, fats and oils, and beverages (including alcohol). The information was collected using four main household questionnaires that recorded daily household purchase, consumption and expenditures for 28 days. There is information on a total of 10,186 households from all regions of Tanzania Mainland.

In assessing the impact of fish consumption and household food security outcomes, the main challenge is selectivity bias. This is because households that consume fish are self-selective, which poses a potential bias where the consumption decision is likely to be correlated with the error term in a regression analysis. The endogenous nature of the consumption decision will be addressed in the analysis.

Trainings and Deliverables

Policy recommendations for government and development agencies regarding measures to improve aquaculture and fisheries practices and fish consumption to enhance food security.

Beneficiaries

Policy makers, development agencies, academic researchers, scientific community, etc.

Schedule

Renew / Amend contracts and subcontracts with SUA	August – October 2016
Collation of data and information from the database on food consumption.	November 2016 – March 2017
Data Analysis	March 2017 – December 2017
Reporting	January – February 2018