



ROLE OF FISH IN NUTRITION

Fish is a crucial part of the Bangladesh diet. A popular local expression, "Mache Bhate Bangali" - "fish and rice make a Bengali" - accurately reflects people's strong cultural attachment to it. In addition to being a nutrient-rich food, fish is also important commercially and as a source of income for rural households. Traditionally, fish production and consumption have a strong impact on food and nutrition security, poverty alleviation and fostering livelihoods in Bangladesh.

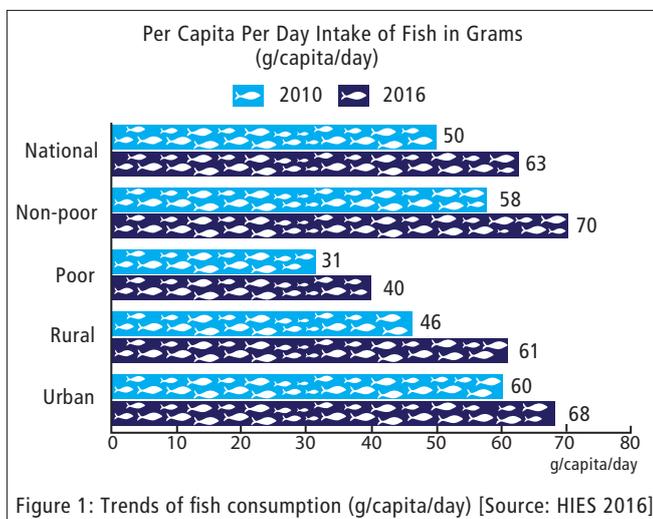
Introduction

In the last three decades, aquaculture has flourished in Bangladesh, especially polyculture of carp in ponds, and in recent years, production of pangasius catfish, tilapia and koi (climbing perch). The Government of Bangladesh in collaboration with development partners has focused on aquaculture with the aim to increase fish/shrimp production and productivity as well as to increase producer's income and household consumption.

Fish Consumption in Bangladesh

Fish remains by far the most important and frequently consumed animal source food in Bangladesh, although considerable differences are noted in consumption depending on location and economic status. The Household Income and Expenditure Survey (HIES) 2016 shows that the national average fish consumption per capita per day increased from 50g in 2010 to 63g in 2016. Likewise, the per capita consumption per day in urban areas increased from 60g in 2010 to 68g in 2016 which is higher than the national average. In the same period, consumption among the poor¹ was only 40g/capita/day, showing wide disparity between poor and non-poor (see figure 1). The national demand for fish is calculated at 60g/capita/day, uncovering a 29 percent deficit among the poor that needs to be addressed by increasing accessibility among the poor and improving fisheries value chains.

Pond aquaculture remains as one of the main sources of fish for the rural communities and serves as an important sub-sector in fisheries.



Aquaculture Needs to Embrace a Nutrition-Sensitive Approach

Though the fish consumption in Bangladesh increased over years, recent evidence has shown significant declines in micronutrient intake from fish, notably for iron and calcium with no change for vitamin A, B12 and zinc. The research pointed to an increase in



farmed fish consumption and a decline in non-farmed fish by 33 percent from 1991-2010. Evidence further revealed that farmed fish species are low in micronutrient content especially iron and zinc compared to non-farmed ones. This could be one of the factors for the lower micronutrient intake from fish. Aquaculture in Bangladesh needs to move beyond production and should include a nutrition-sensitive approach to enhance the consumption of nutrient-rich fish for a healthy and diversified diet. Emphasis on food safety and good aquaculture practices is central to the nutrition-sensitive approach along the fisheries value chain.

Nutritional Outcome of Integrated Agriculture and Health Based Interventions (2013-2015)

A nutrition-sensitive project on Integrated Agriculture and Health Based Interventions (IAHBI) for Improved Food and Nutrition Security covering 50,000 households in selected districts of South-eastern Bangladesh demonstrated the following selected outcomes.

- Overall, 55 percent of households were reported to be involved in pisciculture
- Types of beneficiary showed that about 75 percent Farmer Field Schools (FFSs), 55 percent Women Farmer Groups (WFGs) and 50 percent of other groups were involved in pisciculture
- Following nutrition education interventions, 67 percent of pregnant women reported knowledge on the importance of fish for growth
- Fish consumption among households increased from 65 percent at baseline to 78 percent at end line
- 98 percent of households reported that they consumed cultivated fish while 42 percent sold cultivated fish and 34 percent donated it to relatives and friends
- On average, 39 percent of households used fish in complementary foods with 59 percent of FFSs, 50 percent WFGs and 52 percent of others using fish in complementary foods
- Among households involved in cultivating fish, the average amount earned through sale of fish per year reportedly was BDT 30,000

¹ According to cost of basic needs method (CBN)

Contribution of Fish to Nutrition

- Fish is a nutritious, tasty and easily digestible food. It provides both good quality and quantity protein (16-22 percent) with the right proportion of essential amino-acids and bioavailable micronutrients.
- Small indigenous fish such as mola, dhela and puti are good sources of micronutrients and protein. If eaten whole (with heads, organs and bones), small fish are a good source of calcium, vitamin A, zinc and bioavailable iron. Studies show that the bioavailability of calcium from small fish is as high as that from milk. Addition of oil, vegetables and spices in fish preparation can help to improve dietary diversity and nutritional quality.
- Fish is also a good source of B complex vitamins while marine fish have a high content of iodine and unsaturated fatty acids (omega-3) that are important for brain development and cognition in early life.
- Dried fish which is commonly consumed in Bangladesh contributes to food security and nutrition, especially in the dry season and disaster-prone areas.

Strategies to Address Micronutrient Deficiencies Through Aquaculture

- The Department of Fisheries (DoF) has been implementing socio-eco-friendly interventions to achieve the sectoral vision of safe and nutritious fish and fishery products for all. One of the important objectives of the National Fisheries Policy 1998 is to meet the demand for animal protein and increase fish production. The National Nutrition Policy 2015 and the Second National Plan of Action for Nutrition (2016-2025) promote fish through its strategy 6.2, namely "Ensure availability of adequate, diversified and quality safe food and promote healthy practices" and sub-strategy 6.2.6 "Ensure the supply of the required amount of animal protein through the promotion of the cultivation of small fish such as mola, dhela and puti in homestead water bodies to meet the nutritional needs of rural families."
- The Second Country Investment Plan (CIP2, 2016-2020) also outlines strategies and activities for increasing the availability and access of fish through enhanced productivity and sustainable production of animal-source foods with improved value chains and consumption for adequate nutrition, especially of mothers and children.
- The promotion of fish production and consumption is integral to these policies, through extension and field programmes geared towards the diversification of diets and nutrition-oriented training.
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- Fish production also fosters economic security and improves livelihoods.
- Post-harvest utilization and product development using appropriate processing technologies such as pickling, drying, fermenting, canning and powdering will not only add value to fish but also increase shelf life, thereby creating income generation and increasing year-round availability, access and consumption at the household level.
- Nutrition education through cooking demonstrations at the community level can help build capacities of local women and others to diversify family meals. Correct fish cooking and handling techniques are also important elements of nutrition training to reduce nutrient losses.

- Fish can also be appropriately utilized in the diets of pregnant and lactating women, and in complementary foods for infants and young children.
- On the supply side, improved management of wetland and seasonal floodplains can lead to increased fish production.
- Investments in low cost technologies for production, management and conservation of indigenous fish species must be promoted at small and medium-scale to improve the availability, access and utilization for rural populations.

KEY MESSAGES

- Fish is a valuable source of good quality protein, bioavailable micronutrients and is easily digestible.
- Fish has an enhancing effect on the absorption of iron and zinc.
- Fish consumption should be promoted through pond aquaculture in rural household and communities
- Small fish eaten whole are particularly rich in calcium, vitamin A, iron and zinc
- The consumption of small indigenous fish and marine fish which are a rich source of bioavailable micronutrients, good quality protein and beneficial fatty acids
- Small fish species can be used as a cost effective and food-based strategy to enhance micronutrient intake of vulnerable groups
- Low-cost appropriate technologies should be promoted to preserve micronutrients from local fish and marine products
- Fish production and processing serve as an important means of income generation, women's empowerment and economic resilience

Key Sources

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