

## REVIEW ARTICLE

# Fish-Nutritious Food For Human Health in Eliminating Hunger and Malnutrition by 2030

E. Lakshmi

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## ABSTRACT

Sustainable Development Goal 2 of eliminating hunger and malnutrition by 2030 requires dietary changes increasing the consumption of nutrient-rich foods among people in low and middle-income countries. The ongoing crisis due to the pandemic, apart from being a health catastrophe is also aggravating the menace of hunger, poverty and malnutrition. Fish, being the most important sources of proteins and micronutrients, has the potential to be a powerful weapon in India's fight against malnutrition. This manuscript reviews the evidence related to fish with respect to a number of nutrients of interest to human health with searches from google scholar and pubmed using the search terms Fish protein, Sustainable Development Goal.

## KEYWORDS

• Fish protein • Sustainable Development Goal • Nutrient-Rich Foods

## INTRODUCTION

Of the 21 Sustainable Development Goals (SDGs) the goal 2 aims to end hunger and all forms of malnutrition by the year 2030. As stated by FAO around 2.5 million people die of hunger every year. The combined death tolls of AIDS, malaria, and tuberculosis" (United Nations) out numbers people who die of hunger.

The FAO has stated that over 800 million people remain chronically undernourished.

One fourth of the population i.e. approximately 200 million are from India.<sup>1</sup> The Global Hunger Index 2024 ranked India at 105<sup>th</sup> position out of a total 127 countries. India is among the 42 countries where hunger has been identified as important problem.<sup>2</sup> The growth of population in developing countries is expected to increase by 2.4 billion by the year 2050. It is estimated that many will rely on agriculture as a livelihood. Food production in the past decade has grown significantly. However, a paradox exists that almost one

## AUTHOR'S AFFILIATION:

<sup>1</sup> Associate Professor, Department of Clinical Nutrition, SRM Medical College Hospital and Research Centre, SRMIST Kattankulathur, Chennai, India.

## CORRESPONDING AUTHOR:

E. Lakshmi, Associate Professor, Department of Clinical Nutrition, SRM Medical College Hospital and Research Centre, SRMIST, Kattankulathur, Chennai, India.

E-mail: elakshmi20@gmail.com

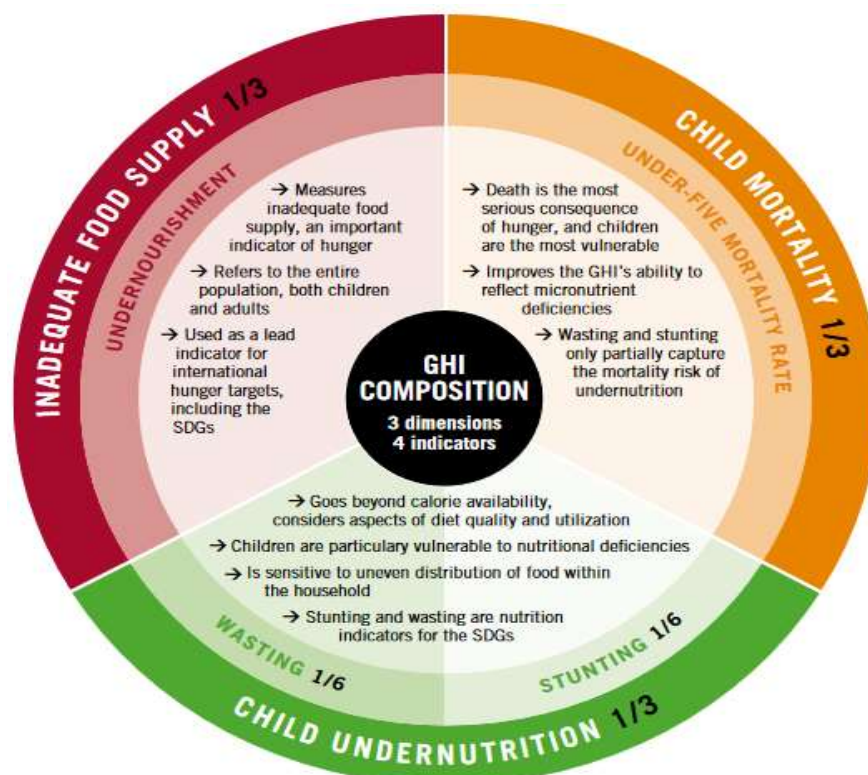
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billion people still lack access to adequate nutritious food (FAO, Fisheries, 2018). A major obstacle to sustainable food production

systems is lack of agricultural land, partly caused by urbanization, salinization, and desertification.<sup>3</sup>



**Figure 1:** Composition of the global hunger index

Source: Wiesmann *et al.* (2015)

Fisheries and aquaculture are regarded as critical to the future of food production, health, and nutrient-dense food systems. Aquaculture is becoming a more important source of fish, particularly in developing nations. Fish accounts for over 20% of the average per capita animal protein consumption of approximately 3.2 billion people, and these figures are still rising. Protein deficiency is considered globally as the major cause of nutritional problems. Lack of high-quality protein in the diets of young children has been thought as a potential cause of stunting, rekindling an interest in animal sourced foods. Fish can also be administered in the form of powder and added to the Mid Day Meal Scheme or the Integrated Child Development Services centre to tackle malnutrition.<sup>4</sup>

Fish is a good source of high biological value protein especially the essential amino acids lysine and methionine. Hence fish is considered as an important nutrient source in human diet. fish muscle contain about 16

to 21% of proteins, Unlike other source of animal-based foods, like eggs, milk, and meat, Fish, has a high protein content. It is also highly digestible, with a 90% digestion rate. Fish is considered as poor man's protein especially with the intake of low-value fishes that are readily available like pomfret, prawns, and a variety of aquacultured freshwater fish. It can also be a delicacy for the table

### FISH PROTEIN AS A NATURAL THERAPEUTIC INTERVENTION

According to a study conducted by Shaw 1990 a portion of 150 g of fish provides about 50–60% of the daily protein requirements for an adult. The lipid content of fish varies depending on the species and seasonal variation. The fat content of fish is lesser than meats and poultry. The fat content ranges usually from 0.2 to 25%.

Fatty fish are a good source of long chain polyunsaturated omega-3 fatty acids (PUFA)

including EPA and DHA.<sup>5</sup>

Fish nutrition have several beneficial effects on human health. They decrease the risk of myocardial infarction lower blood pressure and triglyceride concentration in blood enhance the immune system and helps to sustain proper brain function in human body. Fish nutrients also protect against various psychological disorders, depression and attention deficit hyperactivity disorder in particular and cancer.

Studies have proved that consumption of long chain omega-3 PUFA during pregnancy results in improved cognitive development scores.

Supplementation of fish oil during pregnancy significantly increases the levels of Omega-3 docosahexaenoic acid (DHA; 22:6n-3) and eicosapentaenoic acid (EPA; 20:5n-3) in breast milk. Maternal fish oil supplementation during pregnancy is safe for the fetus and infant, and may have potentially beneficial effects on the child's eye and hand coordination.<sup>6</sup>

The effect of supplementation with fish oil during pregnancy on breast milk immunoglobulin A, soluble CD14, cytokine levels and fatty acid composition.

Research conducted in high income groups have also found associations between consumption of fatty fish and/or supplementation with long chain omega-3s and reduced risk of myocardial infarction and coronary heart disease, With a precaution of presence of heterogeneity in these findings Fish powder is protein-rich source and contributes to a low glycemic index. studies have shown that it has several beneficial health effects, including in managing obesity, hypertension, and cardiovascular disease.<sup>7</sup>

Almost all the minerals present in seawater are present in fish and the value range from 0.4 to 1.5% (wet basis). The mineral present in fish are iron, calcium, zinc (from marine fish), phosphorus, selenium fluorine, iodine. The bioavailability of these minerals are high meaning that they are easily absorbed by the body.

Fish has a low saturated fat content and is a rich source of protein. The two types of omega-3 fatty acids known to be cardioprotective are EPA and DHA, are abundant in fish, particularly oily species like mackerel, lake

trout, herring, sardines, albacore tuna, and salmon. As per the American Heart Association guidelines adults should consume fish (fatty fish) at least twice a week.<sup>8</sup>

Fish is an abundant source of Vitamin D a critical nutrient for mental growth and bone health. Fish nutrients are rich in calcium, zinc and other minerals. calcium and zinc Deficiency can result in reduced child's development.

Iodine and selenium are important minerals in marine sources their availability as food source is nutritionally significant. Iodine is an important mineral present in marine sources iodine helps to regulate body metabolism and neurodevelopment as a component of thyroid hormone. In children it is an important micro mineral required for growth and mental development. Selenium is an important trace element along with vitamin E it acts as an essential antioxidant.

Iron is an important mineral for synthesis of haemoglobin in red blood cells and transport oxygen to all parts of the body. Calcium is required for mineralization of bones and for the normal functioning of muscles and the nervous system. The intake of calcium, phosphorus and fluorine is higher when small fish are consumed with their bones instead of discarding fish bones. Studies by Warren Harvey 1945 have shown that The Eskimos of the Pacific northwest have superb teeth and their diet includes soft fish bones which contain fluorine to the extent of 250 parts per million.<sup>9</sup>

## CONCLUSION

India is a country with heterogenic population having diverse food habits. The present review revealed that fish protein has potential for being a 'wonder food supplement'. Fish in the form of value-added product can be introduced in day to day diet and served in interesting ways, in noodles, as masala fish, grilled fish, fish pakora, fish samosa, etc. Fish intake in diet is considered as poor man's protein. Consumption of small fishes like carps, which are easily available. Fish recipes are thought as a delicacy for the table, e.g the pomfret, prawns and some variety of fresh water fish, which are expensive. Considerable potential exists for fish protein to be used as a food supplement, in therapeutic management.

**Support:** NIL

**Conflicts of interest:** NIL

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