

Food Fortification in the Philippines



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MANY OF THE WORLD'S POOREST ARE SUFFERING FROM WHAT IS KNOWN AS "HIDDEN HUNGER": DEFICIENCIES OF PROPER VITAMINS AND MINERALS. THE PHILIPPINES IS CONSIDERED A MODEL IN ITS COMPREHENSIVE INTERVENTIONS, ESPECIALLY IN FOOD FORTIFICATION. THROUGH INVESTIGATION OF THIS MODEL, ITS ACHIEVEMENTS AND ITS SHORTCOMINGS, OTHER COUNTRIES MAY ALSO BE ABLE TO BETTER NOURISH THEIR CITIZENS.

Many of the world's poorest are suffering not from starvation but from *hidden hunger*, the glaring deficiency of vitamins and minerals. The consequences of these deficiencies are staggering, especially in vitamin A, iodine and iron. Resulting diseases span from night blindness to impaired cognitive development, weakened immunity and shortened life expectancy (Befeki, 2006). Estimates of the number of people affected by MNM are high, with up to five billion people suffering from iron deficiency and about a quarter of all pre-school children (about 130 million) suffering from vitamin A deficiency (UN, 2005). In 1992, 159 countries endorsed a World Declaration on Nutrition, pledging to make "all efforts to eliminate iodine and vitamin A deficiencies" (FAO, 1992).

The need to reduce malnutrition was highlighted in the first Millennium Development Goal "to eradicate extreme poverty and hunger" and underpins several others. Attaining goals in primary education, reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria and other diseases rely upon good nutrition. The World Health Organisation (WHO) has outlined four main strategies to alleviate MNM. These include increased nutrition education, access to micronutrient-rich foods, micronutrient supplementation, and

food fortification - each strategy with its advantages and disadvantages.

Increased diet diversification is an obvious goal, requiring availability and consumption of micronutrient-rich foods. Unfortunately, the intervention is not always feasible for all countries, especially those are constrained in what they can grow and lack purchasing power.

Though nutrition education is essential to a sustainable reversal of MNM, it is insufficient. Even with the most widespread nutrition education campaigns, reaching all constituents can be difficult. Nutrition education stipulates changes in purchasing behaviour which may not be possible depending on an individual's resources. Alternatively, supplementation entails the provision of micronutrients in pills or capsules to supply an optimal amount of nutrients. Unfortunately, supplementation can be expensive and is reliant on strong distribution systems and consumer compliance which may not always be in place.

Finally, fortification, the addition of one or more essential nutrients to a food, can be used to combat MNM. Fortification requires appropriate food vehicles that are widely consumed and accessible. It is recognized as an ideal strategy because of its social acceptability and the fact that it requires less change in consumer

behaviours and food habits. As fortified foods can be introduced quickly into markets and reach target populations easily, fortification is the most cost effective mechanism to combat MNM. Unfortunately, fortification is limited to the food vehicles that support certain vitamins and minerals. As well, there are instances in which deficiencies are too severe to correct with fortification (Allen, 2006).

"[...] up to five billion people suffering from iron deficiency [...]"

THE PHILIPPINES CASE STUDY

The Philippines is a model in its approach to comprehensive food based interventions, especially in the area of food fortification. Stemming from partnerships in public and private sectors as well as with researchers and policy makers, the Philippines is the only country in Asia to legally mandate fortification of vitamin A and iron (Solon, 2009). The Food and Nutrition Research Institute (FNRI) initiated the nutrition planning program in the 1970s, several motions were ratified throughout this decade to this end (Corazon, 2002; Solon,

2006).

Additionally, the issue of proper nutrition entered homes. In 1970, through an initiative called “Operation Weighing”, the weights of preschool children were collected across the country to provide underweight children with immediate assistance. It also served to raise awareness about local nutrition problems. Officials were appointed at municipal levels to ensure that nutrition programs could be mobilised from grassroots. Strong nutrition planning and public-private partnerships is integral in the stability of the Philippine fortification program.

FORTIFICATION IN THE PHILIPPINES

Fortification has become a large part of the country’s fight against MNM as it is far-reaching and cost effective. The growth of the program was most substantial in the 1990s when sugar and oil were both fortified with vitamin A, salt with iodine, rice with iron and flour double-fortified with both vitamin A and iron (Philippine Food Fortification, 2005). Challenges exist in identifying foodstuffs that are compatible with a desired fortificant. One of the first substances to be considered for fortification was monosodium glutamate (MSG). In the 1970s, researchers discovered that MSG was an excellent vehicle for vitamin A fortification; the results from a field trial demonstrated a decrease in xerophthalmia, the inability to generate tears due to vitamin A deficiency and an increase in serum retinol levels. Unfortunately due to a color change, prominent producers of MSG were reluctant to sacrifice the marketability of their product (Solon, 2000).

Fortunately there have been significant developments as well. In 1995, studies were conducted by the NCP to measure the stability of vitamin A alone and combined with iron (double fortification) in flour used to make bread. The results demonstrated that fortificants either alone or in combination were stable in flour and met the required shelf life. This information became vital in passing legislature relating to the requirement of fortifying flour in later years. As of May 2005, 42 brands produced by six different companies fortify flour with vitamin A (Philippine Food Fortification, 2005).

Another element that sets the Philippines apart is the use of the “Sangkap Pinoy Seal” (SPS), a type of label identifying fortified foods. The program has been used by the Department of Health (DOH) to “encourage manufacturers to fortify their products with any one, or a combination of Vitamin A, Iron and/or Iodine”, thereby aligning corporate interests with a public health service (Solon 2000).

The SPS was introduced in 1996 but gained extensive legal backing in 2000 with the introduction of the Food Fortification Act (FFA). This act enforces that all of the following products be fortified:

- Rice with Iron
- Wheat flour with Vitamin A and Iron
- Refined Sugar with Vitamin A
- Cooking oil with Vitamin A

All imports of these food substances must also be fortified. The packaging of these products is granted the Diamond SPS, demonstrating that the product was mandatorily fortified and complies with standards outlined by the Department of Health.

With mandatory fortification as the main objective of the FFA, factors like monetary sanctions for non-compliance were also considered. The Act highlights the support of government agencies in the implementation of fortification programs through various mechanisms including helping manufacturers upgrade their technologies, acquiring loans, as well as implementing programs for the acquisition, design and manufacture of machines and technologies (Congress of the Philippines, 2000).

However, the government does not *subsidise* fortification programs. As outlined in a 2005 report from the Department of Health, “a purely government undertaking on food fortification that involves the donation of fortified products to the affected

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groups is not sustainable and results in waste of time and resources without any impact” (Philippine Food Fortification, 2005). This is reiterated by various experts in the field who report that sustainable programs are those that are multi-sectoral (Corazon, 2002). Because micronutrient malnutrition is “hidden,” deficiencies are not apparent to those who are deficient, necessitating government action. That is not to say that consumers are excluded from the fortification conversation. Undeniably, the primary factor contributing to long term sustainability of food fortification is consumer awareness of the deficiency and their demand for fortified food (Darton-Hill, 1998). Governments play a pivotal role in setting regulations and making fortification possible, but it is the manufacturer who must be convinced to bear the cost of fortification. Enter academics who supply the scientific proof that fortification is feasible in food vehicles and effective in target populations. These partnerships working together are essential to creating strong fortification strategies.



Courtesy of the McMaster Photography Club

Figure 1 "A quarter of all pre-school children suffer from vitamin A deficiency"

THE CURRENT MICRONUTRIENT SITUATION IN THE PHILIPPINES

Despite all of the efforts by the Philippine Nutrition Program, in 2003, 3.5 million preschool children were still underweight, a prevalence of 27%. The prevalence had been reduced by less than one percent per year for the previous ten years. Additionally, 30 percent of preschool-aged children were stunted. A considerable portion of the Filipino population still suffers from anaemia and vitamin A deficiency. Vitamin A deficiency, a key contributor to mortality and morbidity in children, continues in roughly four out of ten children, despite biannual vitamin A supplementation. Alternatively, notable reductions in iodine deficiency among school children have been noted over the last ten years. These mixed results cannot be attributed to any one part of the program. The Philippines continues to undergo serious political and economic changes as well as natural disasters; the accumulation of which can


significantly affect nutrition and health overall (Pedro, 2006).

The results of the most recent NNS are reported in the country's Medium-Term Philippine Plan of Action for Nutrition (MTPPAN). This is a plan which is revisited every five to ten years by the NNC as new data emerges. The MTPPAN, from 2005 to 2010, has made the Millennium Development Goals its priority to reduce the prevalence of underweight status in children aged zero to five years by 17.2 percent by 2015. It also aims to decrease rates of stunting and micronutrient deficiency, particularly nutritional anaemia and vitamin A deficiency, in children under ten years of age. Finally, MTPPAN also outlines multiple approaches to combat malnutrition including increased food production, nutrition education, micronutrient supplementation, food assistance and micronutrient fortification. The hope is that through tackling malnutrition at different levels, significant achievements can be made for the nation's population (Pedro, 2006).

CONCLUSION

Micronutrient malnutrition is a serious problem afflicting developing nations. Dietary diversification is not always an option for poorer populations and government and external programming must be relied upon to remedy these deficiencies. Fortification has been used extensively in the Philippines, a country which has invested heavily in nutrition programming through its various branches. The Philippines has implemented regulations with respect to supplementation, fortification and a variety of other initiatives. It is one of the first countries in Asia to mandate fortification of staple foods, the success of this can largely be attributed to extensive building of vertical infrastructure and partnerships with industry, and various academic agencies.

Despite all of the progress the Philippine fortification program has seen, the sustainability of this solution remains in question. Is fortification a mere band-aid solution to alleviate the real issues at hand? Should efforts be pulled from this endeavour and be reallocated to factors that may be predictive of micronutrient malnutrition, such as poverty reduction?

Perhaps fortification can evolve into different and newer forms. As biofortification, or genetic modification, gains momentum, plants are being modified to produce various vitamins that they normally would not. Thus, there are many possibilities in which one crop can be modified into a "superfood" that provides daily requirements to address deficiencies in a single bowl of rice. One day, fortification may not be necessary in ensuring stable micronutrient intake but, for now it is here to stay. 

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REFERENCES

- Allen L, Benoist B, Dary O, Hurrell R. (2006). Guidelines on food fortification with micronutrients. World Health Organization and Food and Agriculture Organization of the United Nations. *World Health Organization*, Geneva.
- Bekefi, T. (2006). Business as a Partner in Tackling Micronutrient Deficiency: Lessons in Multisector Partnership. Business and International Development. Harvard University, Cambridge, Mass.
- Congress of the Philippines, (2000). *Food fortification act 2000* (Republic Act 8976). Metro Manila, Philippines.
- Darnton-Hill I. (1998). Overview: rationale and elements of a successful food fortification program. *Food Nutr Bull*, 19:92-100
- Food and Agricultural Organization. (1992). International Conference on Nutrition. World Declaration on Nutrition. *Food, Nutrition and Agriculture*. Retrieved January 2, 2010, from <<http://www.fao.org/docrep/u9920t/u9920t00.htm#Contents>>.
- Pedro MRV, Benavides RC, Barba CVC. (2006). Dietary changes and their health implications in the Philippines. From: The double burden of malnutrition: case studies from six developing countries. *FAO Food and Nutrition Paper*, 84: 205-243.
- Philippine Food Fortification Program (2005). History of Food Fortification and Lessons Learned. Department of Health. Accessed on July 19, 2009, from <http://www2.doh.gov.ph/foodfortification/downloads.htm>
- Solon FS. (2006). Good governance for nutrition in the Philippines: elements, experiences, and lessons learned. *Food Nutr Bull*, 27:343-352.
- Solon FS, Sanchez-Fermin LE and Wambangco LS. (2000). Strengths and weaknesses of the food fortification programme for the elimination of vitamin A deficiency in the Philippines. *Food Nutr Bull*, 21 (2): 239-245.
- United Nations, 2005 United Nations, Standing Committee on Nutrition (2005). *Fifth report on the world nutrition situation: nutrition for improved development outcomes*. Geneva.
- Wirakartakusumah MA, Hariyadi P. (1998) Technical aspects of food fortification. *Food Nutr Bull*, 19: 1-5