The Efficacy of Supplementary Feeding among 6 to 8 years old Schoolchildren in Selected Elementary Schools in Cavite
Connecting the dots between supplementary feeding and school gardens

Introduction

The Philippine National Nutrition Survey conducted by the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) in 2008 reported that about 4 million children were undernourished. The survey noted that the proportion of undernourished children aged 5 and below increased by 1.6 percentage points from 24.6% in 2005 to 26.2% in 2008 or about 3.35 million children (Philippine Progress Report MDG 2010). Stunting in the same age group was 32.4% in 2008. There was also a significant increase in the prevalence of underweight children from 22.8% in 2005 to 25.6% in 2008 among children of 6-10 years age which translates into 2.6 million children (FNRI-DOST, 2008). The 2013 national data on underweight children of 5-10 years age is 29.0%, 29.9% for stunting, and 8.6% for wasting. Anemia prevalence among schoolchildren aged 6–12 years is 20% (FNRI-DOST, 2008). These statistics are alarming and are even more disturbing when viewed at the household level. More than half of the households in the country are still not able to meet their daily nutrient and energy requirements. During the 2013 national survey, anemia among 6-12 year old children was reported at 11.1%.

The Philippine government has adopted a three-pronged strategy to prevent micronutrient deficiencies: (1) diet diversification or promoting the consumption of a variety of foods rich in micronutrients; (2) food fortification or addition of nutrients to staples (rice, flour, cooking oil, and sugar) in salt and processed food products; and (3) micronutrient supplementation with vitamin A, iron and iodine.

Food fortification has gained popularity as an intervention to reduce micronutrient deficiencies. Food fortification is a “process whereby nutrients are added to foods to maintain or improve the quality of the diet of a group, a community, or a population. Examples are flour fortified with Vitamin A and iron, oil with Vitamin A, rice with iron, and salt with iodine. To encourage supplementation, the Department of Health (DOH)-issued Administrative Order No. 2010-0010 (Revised Policy and Guide on Micronutrient Supplementation) to support the achievement of the 2015 Millennium Development Goal targets aimed at reducing under-five and maternal deaths and addressing the micronutrient needs of other population groups.

To address undernutrition among schoolchildren, the current School-Based Feeding Program (SBFP) of the Department of Education (DepEd), targets the severely wasted children from kindergarten to Grade 6. The 120-day feeding program is designed to improve the nutritional status of the children, raise classroom attendance to 85 to 100% and improve children’s health and nutrition values and behavior (DepEd Order No. 37 S. 2014). A major gap identified in past efforts of the DepEd program is a disconnect or the lack of effective integration between school gardens and the school based feeding programs. The utilization of garden produce in school-based feeding programs was not emphasized enough and was rarely practiced. The teachers responsible for feeding programs rarely work in tandem with agricultural teachers in schools. Supplementary feeding programs emphasized mostly rice-based
meals. With supplementary feeding programs relying on commercially acquired food, sustainability has been a major issue.

In the supplementary feeding guidelines developed for the World Food Programme and United Nations Children’s Fund (WFP & UNICEF, 1980) school gardens, have an important role to play in connection with a school feeding program, although rarely it is possible for school gardens to produce enough to fully supplement feeding needs. While the value of gardens in providing diverse products is noted, it is also recognized that gardens alone cannot sustain feeding programs.

Recently, school gardens are promoted for learning about and as a complement to feeding programs. Despite a favorable policy framework, the disconnect between feeding programs and school gardens remains. If national nutritional alleviation is to be desired, more coordinated interventions and integrated efforts to enhance food security and address malnutrition in a national level is fundamental.

This study aimed to model a supplementary feeding activity linking food fortification and the use of school garden produce to address under-nutrition among 6-8 years old schoolchildren.

This supplementary feeding program was a collaborative effort of the (FNRI), the International Institute of Rural Reconstruction (IIRR) and DepEd with funding support from the International Development Research Centre (IDRC), Canada.

**Methods**

This study was a randomized–double blind, controlled trial. Intervention products were not known both by the researchers and participants of the study. From 27 DepEd Cavite districts, two schools were selected to be part of the supplementary feeding. Two schools in Cavite, Philippines, were randomly selected to serve as research areas for the integrated approach. School one (1) was Felipe Calderon Elementary School, from the municipality of Tanza and school two (2) was Gen. Aloha Elementary School from the municipality of Gen. Trias.

The sample size for the study was 40 male and 40 female 6-8 years old schoolchildren from each school. Gender considerations were included in the research design. A total of 221 underweight and/or anemic schoolchildren from the three schools qualified as study participants (73 schoolchildren in school with IFR; 73 children in school with ordinary rice; 75 children in control school).

The study participants from the intervention schools (School 1 and 2) received the same lunch feeding, the only difference was that School 1 was served with iron fortified rice (school with IFR) while School 2 got ordinary white rice. School 3 served as the control group with the usual DepEd school feeding (control school). The feeding duration was 120 days.

Face-to-face interviews of the parents/caregivers of study participants were conducted using pre-tested structured questionnaires to obtain the household socio-economic and demographic data. Data on
weight, height, mid-upper arm circumference (MUAC), body mass index (BMI) and dietary intake, hemoglobin, serum ferritin and vitamin A levels were collected before and after the study.

Results

Results showed that:

- Highest reduction of wasting (17.8-13.7%) and stunting (11.0-4.1%) prevalence with a significant decrease in underweight children (63.0-34.2%) in the school with IFR as compared with the prevalence of wasting (8.2-11.0%), stunting (6.8-1.4%) and underweight (35.6-34.2%) in school with ordinary rice and control school (wasting – 17.3% to 21.3%; stunting – 2.7% to no reduction; underweight – 62.7% to 49.3%).

- Significant decrease in anemia prevalence from 20.8% to 4.2% in the school with IFR compared with school with ordinary rice (19.2-16.4%) and control school (15.1-13.7%).

- Significant increase in mean hemoglobin level (12.60±.96 to 13.09±.07 g/dL) in the school with IFR compared with school with OR (12.52±.77 to 12.64±.86 g/dL) and control school (12.75±.91 to 12.93±.84 g/dL).

- The IFR school had the least reduced mean energy intake with 1,359.07±455.63 to 1,340.36±598.33 kcal from baseline to endline compared with school with ordinary rice (1,298.48±433.78 to 1,205.77±480.45) and control school (1331.12±503.54 to 1307.75±500.66).

- The total cost saved when indigenous vegetables from school gardens were used for 6 months by the two schools for supplementary feeding benefiting 146 schoolchildren was Php 8,851.53.

Conclusion

School-based supplementary feeding using produce from school gardens effectively improved nutritional status and reduced anemia rates. This can also help lower the cost of foods to be served. The use of iron fortified rice resulted to higher improvements in iron status of schoolchildren.

Recommendations

- Indigenous vegetables from school gardens and iron-fortified rice are good food combination that could be used in school-based supplementary feeding programs to improve the nutritional status of schoolchildren.

- Its benefits can be further augmented when appropriate population targeting, intervention timing and a carefully designed supplementary feeding program is observed.
• Menus in a school feeding program using indigenous vegetables should consider the seasonality of vegetables to ensure optimal usage and save costs.

• Deworming and nutrition education should be included as major components of the feeding program.

• Localized self-sufficiency programs like establishment of school gardens with diverse crops can be promoted to support the needs of the school feeding program.

### Implications

• School-based supplementary feeding programs can be implemented with the strong commitment and support of school administrators.

• Existing DepEd policies should be implemented to maximized benefits: examples are those governing the Gulayan sa Paaralan Program (GPP), the use of canteen proceeds for feeding, proper targeting of beneficiaries, and proper use of climate-smart gardening practices.

• School lunch feeding program should be institutionalized in the school system with the support from Parent-Teachers Association (PTA) members and other stakeholders.

### References


