

Improving the Diet Quality of Pregnant and Lactating Women in the Guatemalan Western Highlands

Validation of Food-Based Recommendations to Optimize Diets Using Local Foods

The prevalence of stunting in children under 5 years of age is high (up to 82%) in the Western Highlands of Guatemala and in part attributable to poor complementary feeding practices, but also to maternal nutritional status during pregnancy. While the quantity of food consumed by pregnant and lactating women in the Western Highlands of Guatemala is adequate, micronutrient deficiencies (particularly iron-deficiency anemia) affect approximately 20–35% of pregnant women (see Table 1).¹ The USAID-funded Food and Nutrition Technical Assistance III Project (FANTA) partnered with the Institute of Nutrition of Central America and Panama (INCAP) to use Optifood, a linear programming software package, to identify a set of evidence-based and population-specific dietary messages known as food-based recommendations (FBRs) specifically targeted for children 6–23 months of age and pregnant and lactating women.

Table 1. Prevalence of Anemia in Pregnant Women 15-49 Years of Age

	Pregnant Women %
National	29
Huehuetenango	18
Quetzaltenango	35
Quiché	30
San Marcos	34
Totonicapán	36

Source: Ministerio de Salud Pública y Asistencia Social. 2010. *Encuesta Nacional de Salud Materno Infantil 2008-2009*.

The results from the first phase of the Optifood study found that problem nutrients for pregnant women included iron, and in some cases, zinc and folate.² For pregnant women, iron needs could not be met by diets based on local foods, even if fortified foods were used, indicating that iron-folate supplements would be needed to achieve adequacy. For pregnant and lactating women, vitamin B12 adequacy could not be achieved without the consumption of liver, and zinc and folate adequacy could not be achieved without the consumption of a thick fortified drink (*atole espeso*) made with a fortified blended flour such as Incaparina or Vitacereal. The findings also noted that the consumption of animal protein was low relative to the total protein consumed, which was largely plant-based.

Based on this first phase of data, Optifood was used to develop a set of FBRs for pregnant and lactating women. Each FBR described the food being promoted—*atole espeso*, vegetables, potatoes, liver, and oranges—and provided guidelines on the frequency and quantity to be consumed. In the case of *atole espeso*, the FBR recommended the texture of the preparation (similar to a smoothie). As a follow-on to the first phase of the Optifood study, the trials of improved practices (TIPS) method was used to determine the feasibility and acceptability of the FBRs and validate them. This second phase involved data collection in Quiché and Huehuetenango where 21 pregnant and lactating women were interviewed during three household visits to see if they could follow the set of FBRs. Three focus group discussions and seven key informant interviews with health providers were also conducted.

¹ Documented anemia prevalence in Guatemala varies by survey, but the *Encuesta Nacional de Salud Materno Infantil* (ENSMI) is used as the standard resource.

² Problem nutrients, as defined in Optifood, are nutrients that are likely to remain low in diets due to the availability of and/or access to local food sources and existing dietary patterns.

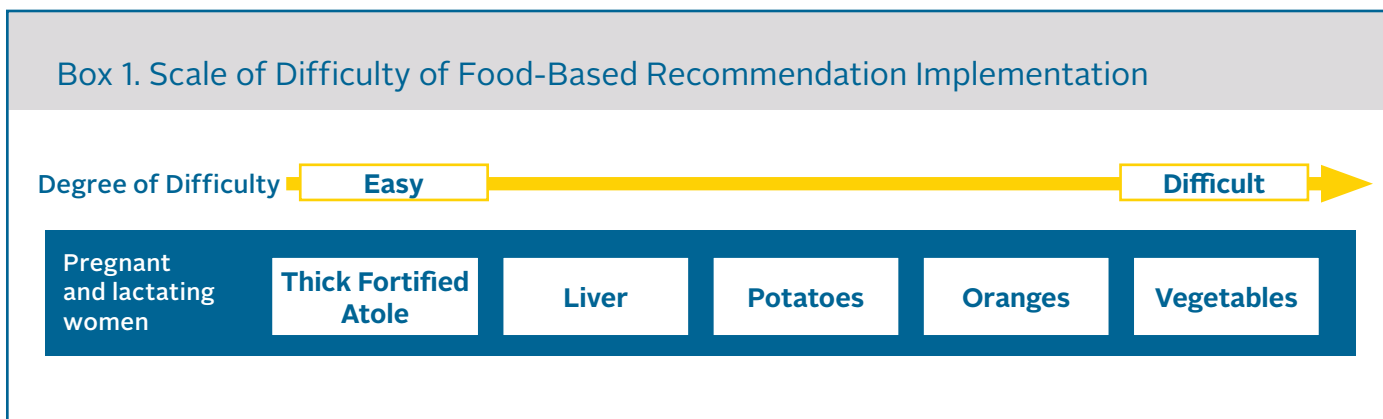
Key Findings

- The foods recommended in the FBRs were generally acceptable to pregnant and lactating women, but feasibility of trying each FBR at the recommended frequency and quantity was more challenging (see Box 1).
- Overall, pregnant and lactating women were not able to implement the full set of FBRs. However, most pregnant and lactating women reported that they were able to practice the FBRs promoting the consumption of atole espeso and liver as recommended in terms of frequency and quantity.
- Challenges to implementing the FBRs included financial constraints, inability to store perishable foods, and cost of traveling to markets and lack of regular access to markets to buy fresh foods. Also, many women reported that they felt most foods would have to be purchased and prepared for the whole family, and since family sizes are often large, the quantity they would have to purchase made the food too expensive to consume as recommended by the FBRs.
- Many pregnant and lactating women reported that they felt motivated to try the FBRs because they perceived there would be a benefit to their own and their child's well-being.

Implications

A revised set of FBRs was developed (see Box 2) based on further Optifood testing that examined the impact of adjusting the FBRs to make their adoption more feasible, as well as combining the FBRs with different scenarios of micronutrient supplementation, multiple micronutrient powders (MNPs), and fortified blended flour. The analysis showed that when micronutrient supplements or MNPs are consumed along with a feasible set of FBRs that includes fortified blended flour, these combinations are capable of supplying most problem nutrients for pregnant and lactating women, provided the supplements or MNPs are consistently available and consumed with the recommended frequency. For several of the FBRs, the challenges to feasibility point to the need for specific steps that would improve diet quality for pregnant and lactating women. These include:

- Exploring opportunities to provide an MNP designed specifically for pregnant and lactating women, and/or ensuring access to prenatal vitamins for these women (e.g., ferrous sulfate, folic acid, multiple micronutrients)
- Expanding access to fortified blended flour (e.g., Incaparina, Vitacereal, or others) made available through the government and the private sector



- Reviewing the formulation of fortified blended flour, micronutrient supplements, and MNPs to include micronutrients such as zinc and vitamin B12, which are difficult to obtain through foods that are currently consumed
- Improving the availability of nutrient-dense foods such as animal-source foods and fruits and vegetables through increased home production and access in local markets
- Exploring options for improved storage of perishable foods
- Improving incomes so families can afford more nutrient-dense foods and consideration of options to subsidize the cost of certain foods that provide nutrients that are crucial for the health of pregnant and lactating women
- Exploring options for increasing access to markets and fortified foods, either through transport initiatives or incentives for providers/producers to increase deliveries to remote communities
- Exploring how families and communities can meet the specific nutritional needs of pregnant and lactating women while respecting the cultural norm to distribute food resources equitably, given that pregnant and lactating women and children are not identified as vulnerable in the current socio-cultural context

Box 2. Food-Based Recommendations for Pregnant and Lactating Women

1. Drink a cup of thick fortified drink (atole espeso) made with fortified blended flour or fortified oats every day.

Serving size: 2 heaping tablespoons of dry fortified blended flour or fortified oats with a cup of boiled or treated water.

2. Eat 2 servings of vegetables every day of the week.

Serving size: 1 medium tomato, half a carrot, or 1 cup of chopped vegetables.

3. Eat beef liver or chicken liver once a week.

Serving size: 90 grams (3 ounces) of liver (chicken livers or beef liver).

This brief focuses on household trials of food-based recommendations for pregnant and lactating women. A comprehensive report is available that also includes results from household trials among caregivers of children 6–23 months of age.

Learn more about the Guatemala Optifood study at www.fantaproject.org/tools/optifood.



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