SITUATION ANALYSIS ON FORTIFIED COMPLEMENTARY FOODS FOR CHILDREN BETWEEN 6 AND 36 MONTHS OF AGE

IN LATIN AMERICA AND THE CARIBBEAN REGION

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PREFACE

The promotion of optimal growth and development of infants and young children has been clearly stated as a priority goal for global public health nutrition for several decades. The World Summit for Children in the 90s and in more recent times the UN Millennium Development Goals have indicated that securing child survival should be at the top of the development agenda. The promotion of exclusive breastfeeding accompanied by appropriate complementary foods after six months of life is crucial to achieve these goals. Growth monitoring, using mainly weight as a measurement has expanded throughout the world; more recently length measurements are increasingly being taken to assess the nutrition of young children. As we look at the figures emerging from most countries in the Latin American region, especially information from the poorest segments of society, we find that progress is clearly insufficient. When assessed by linear growth, stunting rather than underweight is presently the most prevalent form of malnutrition in children under five years of age in the Americas. In several countries in the region 30-50 % of all children are stunted; moreover these figures have not improved for the past 20 years. Despite improved child survival, the achievement of optimal linear growth remains an elusive goal; preventing death is a laudable goal but clearly not enough. Linear growth is perhaps the best indicator of child health and well-being, it also serves to signal how nutrition is acting as an impediment to human development as an integral part of national development.

"Equal opportunities for all", a commonly stated political slogan in the Latin American region, starts by securing that all children express their full genetic potential for physical growth and mental development in early life. Realizing the critical importance of growth in length from birth to two years of age has been recognized as a critical window of opportunity to achieve optimal health and mental development. This period corresponds to the period of breastfeeding and complementary feeding and has life long consequences for individuals and societies alike. The consequences of inadequate growth during this period are difficult, if not impossible, to fully reverse later on and have major implications for child survival, life long health and for the human and socio-economic development of nations.

We acknowledge that for most children exclusive breastfeeding for the first six months represents optimal feeding, and in fact this message has been progressively incorporated in most public health policy and programmatic efforts. Unfortunately the need to secure macro and micronutrient sufficiency for at least the first three years of life has not been equally recognized and even less realized. We have failed to recognize that in many cases linear growth fails quite early even before underweight becomes a problem. In fact, in many areas of the world even breast fed infants fail to gain length appropriately after the first 4 months of life. In all cases, we should continue to strongly support, promote and protect exclusive breastfeeding for the first 6 months of life. The real challenge we face now is how do we continue to support, promote and protect the growth of children as they approach 6 months of age and beyond. Of course the first choice would be to have the right local foods to provide good nutrition during the critical period of complementary feeding. Unfortunately for most groups living under poverty conditions do not have access to the quality foods required to meet the needs of growing children. Even for high income groups it is difficult to achieve iron sufficiency unless flesh foods are incorporated in the routine diet. In the case of the majority of children in the region poor diets can be explained by economic limitations coupled to cultural/educational barriers that need to be overcome. As we examine the nutrient needs of infants and young children we realize that nutrient-dense foods are often inaccessible to low and even middle income families. Yes, we could wait for economic growth and educational programs to bridge these gaps; this will take at best several decades or may never come for those living under extreme poverty.

As a result, many infants and young children will continue to suffer from multiple nutritional deficiencies and remain stunted for life.

Complementary foods of an adequate macro and micronutrient density, together with appropriate breastfeeding, are essential to ensure adequate nutrition after six months of age. We should emphasize "together with" not "instead of" breastfeeding. We must also recognize that these are programmatic guidelines for population groups; leave room for adaptation and or

modification for specific infants based on the assessment of individual needs. The knowledge base to develop fortified processed complementary foods for infants and young children has been recently summarized by the UN Consultation on Recommended Nutrient Composition for Fortified Complementary Foods. This provides much needed theoretical and practical guidance for national programmes in terms of assessing existing products and the development of new complementary foods. The issue is how to move from the technical solutions to operationally effective programs. Recognizing the complexities of the process, we must partner with others that can better overcome the practical barriers in order to achieve successful program implementation.

Most governments in Latin America have begun to address the needs of school children and other vulnerable groups by establishing feeding programs and fortifying staple foods. Young children may be more difficult to reach and have special needs that are not met through fortification of staple foods; neglecting to address their needs will compromise not only their growth but their capacity to be educated successfully. It is likely that there is no single best solution for all populations but that a combination of behaviour change strategies and food based approaches, which includes the use of fortified complementary foods, are needed.
Partnerships between the government, the private sectors and civil society (academics, and non-governmental organizations) are crucial to facilitate effective action. The present document on the situational analysis of fortified complementary foods for children between 6 and 36 months of age in Latin America and the Caribbean region represents an example of how the private sector can contribute to the solution of malnutrition by working jointly with the UN system and the public sector in the region. UNICEF and Unilever are showing the way of what effective partnerships mean.

We can see from this document that we have most of the scientific information needed and the technology to provide low cost fortified complementary foods for all children. We should not excuse our inability to take effective action by stating there is need for additional work, there will always be a need to refine our knowledge and to evaluate further the best solutions. My view is that Latin American children should not have to wait any longer. As stated by Gabriela Mistral....

"Many things we need can wait; children cannot. Now is the time, their bones are being modelled, their blood is being made, their brains and minds are developing. To him or her, we cannot say tomorrow her or his name is Today."

Ricardo Uauy
Professor of Public Health Nutrition
INTA University of Chile and London School of Hygiene and Tropical Medicine UK

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EXECUTIVE SUMMARY

The Latin America and Caribbean (LAC) Region is the most unequal region in the world with significant social, ethnic-cultural, economic and geographical disparities among sub-regions and within countries[1]. Inequality, poverty and malnutrition converge in a very diverse and complex socio-economic situation where children under two/three years of age and pregnant women are the most vulnerable groups. Chronic under-nutrition (stunting) and micronutrient deficiency disorders are the most severe nutritional problems. In children under five years old, the regional average for stunting is 16%, with a prevalence that varies between 49% in Guatemala and 1.5% in Chile. Anemia prevalence among children under-five ranges from 65.8% in Haiti to 1.5% in Chile. In some rural and indigenous areas of the LAC countries, more than 70% of children between 6-24 months are seriously undernourished and also affected by anemia.

In the last three decades, some governments in the region have made commitments and designated resources to try to alleviate poverty and malnutrition through social welfare programs that incorporated fortified complementary foods for children and the general population. Despite all the progress obtained, nutritional problems remain highly prevalent, particularly among infants and young children. Currently, the governments of the region are committed to achieving the Millennium Development Goals as established by UN organizations and affiliated countries groups. There is an international consensus on the importance of tackling nutrition problems in order to guarantee achievement of all the MDGs.

It is well recognized that the period from pregnancy and birth to two years of age is a critical "window" for the promotion of optimal growth, health and behavioral development. Nutritional vulnerability during this period and up to three years is the result of multiple factors and their interaction. The most important are: low rates of exclusive breastfeeding (from birth up to 6 months) and continued breastfeeding along with other foods from 6-24 months; poor nutritional quality of the foods offered relative to nutritional requirements and hygienic standards; high prevalence of diarrhea, respiratory infections and other diseases; and, inadequate day care practices. Complementary foods are needed in addition to breast milk to meet the nutrient requirements of infants and toddlers. Therefore, access to energy- and nutrient-dense foods during the complementary feeding period, is needed to ensure long-term optimal growth and development.

Within this context, the UNICEF Regional Office for Latin America and The Caribbean and The Unilever Health Institute for Latin American (UHI) established a partnership to support the improvement of children's nutrition and health.

This partnership is based on a global Memorandum of Understanding between UNICEF and Unilever. As the first activity of this partnership, a Situation Analysis on Fortified Complementary Foods (FCF) for Children between 6-36 months was conducted in order to obtain a better insight into the role of these products on the child nutrition situation and to recommend ways to strengthen the formulation, production, distribution and adequate use of these products. The aim of the SITAN was to review the existing and past initiatives on non-commercial FCF, including a discussion of availability, affordability, awareness, acceptability, and, if information was available, impact on nutritional status, and the support provided in these programs for continued breastfeeding. Another objective was to identify important elements for a pilot on the production a low-cost complementary food, providing optimum nutrition, as part of an integrated infant and young child feeding strategy. The implementation of this objective was expected for the next stage of the partnership.

Twenty countries participated in the situation analysis: Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. Of the twenty countries, sixteen have non-commercial FCF products while four countries (Bolivia, Jamaica, Paraguay, and Uruguay) have never had experience with the use

[1] UN/ECLAC. La Esquiva Equidad en el Desarrollo Latinoamericano, Nov.2005; World Bank. World Development Indicators, 2005. ECLAC/UNICEF/SECIB. Building Equity from the Beginning, Sept. 2001.

of non-commercial FCF.

The SITAN was conducted by gathering secondary data through the use of a questionnaire and country field visits. The information was collected by UNICEF's country offices and regional office and related to specific characteristics of the FCF programs such as beneficiaries, nutritional composition, production, marketing, distribution and price, along with other socioeconomic variables for giving a broad context to the Situation Analysis. A data base was elaborated using Dev Info technology. A Quality Assurance Committee was formed to follow up the study's implementation. As part of the data gathering, Nutrition Key Opinion Formers were interviewed on the importance of FCF products for child nutrition, and based on their responses a SWOT (strengths, weaknesses, opportunities, threats) was elaborated.

This Situation Analysis presents the results of thirty-five (35) different experiences with fortified complementary foods. The study goes beyond any other study that has been conducted in this area in the LAC Region. It presents a broader and more complete picture of Fortified Complementary Foods experiences in the Latin America and Caribbean Region. It covers a wide scope regarding the number of countries involved, the number of experiences studied, the amount of variables and indicators analyzed, as well as the quality of analysis done based on the current international recommendations. Some of the main findings are described in the following paragraphs.

Eighty two percent of the experiences related to FCF are public programs. Some of the programs started more than 30 years ago; others are in a proposal phase. One third of the experiences analyzed are implemented nationwide or in the most needed areas of the countries while the others are specific projects, past experiences or have just started.

The majority of the FCF studied are distributed to a wide and varied age-range of beneficiaries (children from 6-24 months, 6-36 months, 6-59 months, 1-14 years; adolescents, pregnant and lactating mothers; and for the fortified milk, even adult men and elderly people). The beneficiary selection is based on poverty and under-nutrition criteria. In general, less than 25% of the targeted population is currently being covered by these programs.

The nutritional characteristics of the studied FCF products are diverse and depend on the main ingredients of the product, the nutritional objective established by the program, and the scientific information that was available when they were formulated. Foods formulated in the seventies and the eighties have a higher protein content and those produced in the nineties and since 2000 have a higher fat and micronutrient content. Most of the FCF studied contribute with higher amount of energy but 2-5 times more than the recommended amount of the macronutrient and micronutrients for a fortified complementary food. Due to the wide range of target population already mentioned it can be concluded that most of the products were not specifically designed for children from 6-36 months and therefore are not nutritionally adequate for this age group.

In relation to the daily ration, there is also a wide range, from 20g to 150g. The international recommendation for an average daily ration for children from 6-24 months is 50g. Some children 6-24 and 6-36 months are receiving less than what is needed in relation to the nutritional contributions and energy density of the FCF, therefore not ensuring optimal growth and development. On the other hand, the large recommended daily ration for some of the FCFs suggests that these products contribute more than the expected energy or nutrient needs. This could lead to the substitution of breastfeeding. A FCF should be formulated to complement the nutritional contribution of the breast milk, not to substitute it. There is also a risk of an adverse effect of excess food intake on over-nutrition problems.

Few baseline, effectiveness and impact studies have been performed. The evaluations performed differ in terms of quality - sometimes results are not available while others are not reliable. From current and past experiences analyzed, 39% have impact evaluations and 14% are in the process of being evaluated. Four studies have reported a significant effect on anemia reduction; two evaluations showed increased growth, and one reported increased in weight gain. The results of one of the evaluations are not reliable and can not be taken into consideration.

In general, the social marketing (communication, information, education) activities have been done in an unsystematic and isolated way, not as part of an integrated approach together with breastfeeding promotion and other nutrition and health-related activities.

Concerning the prices of the FCF products, the

lowest and the highest prices per daily ration are U$ 0.021 and U$ 0.370 respectively. The price range for 100g of dry FCF goes from U$ 0.036 to U$ 0.660.

Based on the main findings, the following recommendations are made.

It is necessary to review and/or develop new strategies and programs to improve the availability and access to a nutritionally optimal, adequate energy density, and low-cost fortified complementary food product for a wide distribution to the most needy children, with a children's rights approach. This has to be based on recent scientific knowledge and the current international recommendations (WHO/FAO, 2003) of nutrient composition for fortified complementary foods for infant and young children. National legislation on food fortification for children also needs to be reviewed as it may not be in line with the WHO recommendations. The private sector, as well as scientific researchers and international agencies, should play an important role, giving significant support to help LAC country Governments achieve nutritional goals.

The social communication/social marketing component, as well as the monitoring and evaluation component and quality assurance, need to be an integral part of FCF in order to guarantee high nutrition impact. FCF programs need to implement integrated and continuous educative and social communication strategies to promote breastfeeding, to improve complementary feeding behaviors and the adequate use of FCF and other liquids in order to avoid their use for bottle-feeding and the displacement of breast milk. Knowing how programs are functioning, via monitoring and evaluation, will allow the identification of opportunities to improve the programs to ensure maximum impact on the child nutrition situation.

It is expected that the findings of this Situation Analysis will position Complementary Feeding as one of the high impact strategies for combating child under-nutrition in general, and for achieving the Millennium Development Goal 1 in particular, within the framework of the Global Strategy for Infant and Young Child Feeding, IYCFS (approved by WHO/UNICEF in 2002 but not being implemented yet in most of the LAC countries).

Based on this Situation Analysis, some countries will strengthen their current programs while others will initiate appropriate FCF projects formulating new proposals of optimal nutritional composition.

GLOSSARY

Fortified Complementary Food (FCF) is any nutrient-containing food or liquid other than breast milk given to infant and young children during the period of complementary feeding. For the purpose of this study, FCF is defined as any low cost fortified transitional food (liquid or solid) used to complement the infant and young child's breastfeeding and feeding (6-36 months of age). The FCF are utilized with social purposes such as nutritional situation improvement and/or poverty reduction. For the purpose of this exercise, no family foods or commercial foods are included, neither fortified foods for massive consumption, nor foods for hospitalized malnourished children.

Transitional foods, foods specially formulated to meet the particular needs of young children with respect to their nutritional requirements and neurophysiological development.

Family foods, foods prepared for the consumption of all members of the family.

Energy Density, is the energy concentration in foods, expressed in Kcal/g (kilocalories per gram) or Kcal/ml (Kilocalories per milliliter) of product. According to international recommendations, complementary food products should have an energy density of 4.4 Kcal/g dry weight.

Nutrient Density, is the amount of each nutrient/micronutrient expressed per 100 Kcal of FCF. Nutrient dense foods are those that provide substantial amounts of vitamins and minerals and relatively fewer calories. Foods that are low in nutrient density supply calories but no or relatively small amounts of micronutrients.

Serving Size is the amount of FCF product (dry or liquid) to be prepared each time it is served. It is expressed in grams (g) of dry products or in milliliters (ml) of liquid product.

Daily Ration is the amount of FCF product (dry or liquid) recommended for consumption during the entire day. It may vary from the daily portion depending on the recommended frequency of consumption (can be equal to or higher than the daily portion). It is expressed in grams (g) of dry product or in milliliters (ml) of liquid product. The recommended international average daily ration is 50 g dry weight for infants and young children.

Exclusive Breastfeeding (EBF) is only breast milk without any other foods or liquids, including water. It provides a complete source of nutrition for the first six months of life and is the ideal nutrition to support optimal growth and development.

Partial Breastfeeding (PBF) is the breastfeeding of a child from 6-9 months of age, with the use of other liquids and complementary foods.

Maintenance or still breastfeeding (MBF) is the continued breastfeeding of a child from 20-23 months of age with the use of other liquids and complementary foods.

Malnutrition, is a broader concept which covers both under-nutrition (stunting, wasting, underweight, and micronutrient deficiencies) and over-nutrition (overweight and obesity).

Under-nutrition, covers a range of poor nutrition, from being dangerously thin (wasting) or too short for age (stunting), to weighing less than expected for age (underweight). The three most commonly used indexes for child under-nutrition are length-for-age, weight-for-age, and weight-for-height. This term also covers deficiencies in vitamins and minerals (micronutrient deficiencies or hidden hunger).

Stunting or chronic under-nutrition (Height-for-age, H/A) is the failure to reach linear growth potential; a slowing of skeletal growth and of height for the age. This implies long-term under-nutrition measured as a height for age 2 Z-scores below the international reference. Moderate stunting is more than two standards deviations from the median height-for-age for a reference child population and severe stunting is more than 3 standard deviations from the median.

Underweight (Weight-for-age, W/A) is an inappropriately low weight for the age, 2 Z-scores below the international reference for weight-for-age. It is an indicator of current under-nutrition. Moderate underweight is more than two standards deviations from the median weight-for-age for a reference child population and severe underweight is more than 3 standard deviations from the median.

Wasting (Weight-for-Height, W/H) describes a

recent or current severe process leading to significant weight loss. It refers to acute under-nutrition or emaciation, 2 Z-scores below the international reference for weight-for-height.

Moderate wasting is more than two standards deviations from the median weight-for-height for a reference child population and severe wasting is more than 3 standard deviations from the median.

Z-score, is the deviation of an individual's value from the median value of a reference population, divided by the standard deviation of the reference population.

Anemia, is the low level of hemoglobin in the blood, as measured by the reduced quality or quantity of red blood cells, expressed as % of hemoglobin (for infant and young children, Hb < 11g/dl).

Iron Deficiency Anemia (IDA) is the most common type of anemia (50% of anemia worldwide is caused by iron deficiency).

Vitamin A deficiency, is the deficit of vitamin A; low tissue concentrations of vitamin A expressed by % of serum retinol (Serum Retinol < 20 ug/dl).

The Human Development Index (HDI of the United Nations) is a comparative measure of poverty, literacy, education, life expectancy, childbirth, and other factors for countries worldwide. It is a standard means of measuring well-being, especially child welfare.

Infant Mortality Rate (IMR) is the probability of dying between birth and one year of age expressed per 1,000 live births.

Under five Mortality Rate (U5MR) is the probability of dying between birth and five years of age expressed per 1,000 live births.

Maternal Mortality Rate (MMR) is the number of maternal deaths from pregnancy and post partum related causes per 100,000 live births.

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INTRODUCTION

It is well recognized that the period from pregnancy and birth to two years of age is a critical window for the promotion of optimal growth, mental, health and behavioral development (PAHO & WHO, 2002). Adequate nutrition plays a major role in this period of life. Several studies have shown that growth faltering may start within the first few months post-partum in infants in developing countries and even during pregnancy. However, if a child is exclusively breastfed, the most critical period of life in terms of nutritional impact on long-term health and development is between the ages of 6 and 24 months.

Breastfeeding contributes to the infant's nutrition and health through a number of important mechanisms. It provides a complete source of nutrition for the first six months of life, and is an important source of nutrition from six months to two years of life. Breastfeeding provides immunity against specific illnesses. Furthermore, exclusive breastfeeding eliminates the risk of illness through the use of contaminated foodstuffs and utensils. According to current United Nations recommendations, infants should be exclusively breastfed for the first six months of life and thereafter should receive appropriate complementary feeding with continued breastfeeding up to two years or beyond (ACC/SCN 2000).

The period during which other foods or liquids are provided along with breast milk is considered the period of complementary feeding. Any nutrient-containing foods or liquids other than breast milk given to young children during the period of complementary feeding are defined as complementary foods. Complementary foods are subdivided in two categories: Transitional foods and Family Foods. Transitional foods are specially formulated to meet the particular needs of young children with respect to their nutritional requirements and neurophysiological development (WHO, 1998; Brown & Lutter, 2000).

There is a fairly narrow age window when special transitional foods are needed. Thereafter, complementary foods are needed in addition to breast milk to meet the nutrient requirements of infants and toddlers. Although most toddlers are able to consume family foods by 12-15 months of age, it remains critical to ensure adequate micronutrient density throughout early childhood.

Longitudinal studies have consistently shown that the first two years of life constitute the peak age for growth faltering and deficiencies of certain micronutrients. After 2 years of age, it is difficult to reverse stunting that has occurred earlier (Martorell et al., 1994). The period between 8 and 20 months of age is the "valley of death", when under-nutrition becomes apparent, when the transfer of maternal immunity decreases and a synergism appears between under-nutrition and infection and many behavioral deficiencies (Allen et al.,1992). The immediate consequences of poor nutrition during these formative years include increased morbidity and mortality and delayed mental and motor development. In the long-term, early nutritional deficits are linked to impairments in intellectual performance, work capacity, reproductive outcomes and overall health during adolescence and adulthood. Thus, the cycle of malnutrition continues (PAHO & WHO, 2002).

Better nutrition during early childhood leads to adults with a greater potential for leading healthy productive lives (Martorell, 2005)[2]. Therefore, access to energy and nutrient-dense food during the complementary feeding period, along with appropriate feeding practices and continued breastfeeding, is needed to ensure long-term optimal growth and development (Lutter & Dewey, 2003).

Nutritional vulnerability during the period from 6 to 36 months is a multifactorial issue. It results from the poor nutritional quality of the foods offered relative to nutritional requirements and hygienic standards, and the associated high prevalence of diarrhea and respiratory infections when breastfeeding is no longer exclusive, and their interaction (Lutter & Rivera, 2003). Micronutrient deficiencies are common consequences of the plant and cereal-based complementary diet typically fed to infants and children in developing countries. Iron, zinc and vitamin B6 have been identified as the nutrients most likely to be lacking in complementary feeding diets in developing countries such as the Latin American and Caribbean countries. This implies that a better use of a variety of locally available foods, and/or fortification of complementary foods, is necessary to meet the requirements of these micronutrients (Dewey & Brown, 2003).

Due to the low concentrations of vitamin A in the breast milk of vitamin A-deficient mothers, an

[2] The INCAP longitudinal study (1969-1977) and its follow-up (1988-1989). It presents novel contributions and allows examination of functional effects that can only be measured later in life, extending the horizon for evaluating nutritional interventions.

inadequate dietary intake of vitamin A during and after weaning and the high prevalence of illnesses in childhood, vitamin A deficiency is highly prevalent in young children in developing countries without adequate vitamin A supplementation programs (Miller et al., 2002). Riboflavin and niacin are also likely to be lacking in some populations. The adequacy of complementary feeding diets to meet calcium, thiamin, folic acid and vitamin C needs depends on the set of recommended requirements used for this assessment. The lipid content of complementary foods is often low and may pose a problem, particularly for weaned children and the adequacy of the protein composition in complementary food diets has been inadequately studied (Lutter & Rivera, 2003).

Recently, recommendations for the nutrient composition of fortified complementary foods (FCF) have been published taking into account factors such as age of the child, daily ration size, recommended nutrient requirements and intake of breast milk (Dewey & Brown, 2003; Lutter & Dewey, 2003; PAHO & WHO, 2002). As breast milk is universally considered the optimal nutrition for infants and young children and breastfeeding is optimal for health and disease prevention, FCF have to be designed in a way as to not replace breast milk intake. In the past, many programs aiming to improve complementary feeding have not paid enough attention to avoiding excessive displacement of breastfeeding by complementary foods (Dewey & Brown, 2003).

Because infants are quite good at self-regulating their energy intake to meet their needs, they will reduce their intake of breast milk when energy is provided from other foods. The energy density of complementary foods is clearly a major determinant of the amount of food that is consumed (Dewey & Brown, 2003). However, even among children who were growth retarded and had a total energy deficit compared with requirements, up to 25% of food offered was not consumed (Lutter & Rivera, 2003). This indicates that dietary quality is also a key aspect of complementary food diets that needs to be improved in comparison to typical complementary foods in developing countries. A number of independent factors, such as the child's appetite, the caregiver's feeding behaviors, and the characteristics of the diets themselves, may also influence the amounts of complementary foods that are consumed.

As part of the UNICEF and Unilever Partnership, the present Situation Analysis was conducted. Emphasis was put on countries with high nutritional needs combined with a high potential for a future project on complementary feeding. The fortified complementary food programs were not only described in terms of nutritional value, but also in aspects such as access to the target population, affordability, program model and cost benefit, where data was available.

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OBJECTIVES AND METHODOLOGY

OBJECTIVES

The general objective of this study was to obtain a better insight into the role of FCF in Latin America and the Caribbean countries, and to recommend ways to strengthen the production and distribution of fortified complementary foods, while at the same time improve infant and young child feeding practices in the Latin America and the Caribbean (LAC) countries. The specific objectives were to:

1. Review the existing and past initiatives on complementary foods, including a discussion of availability, affordability, awareness, acceptability, and impact on nutritional status, and support provided in these programs for continued breastfeeding.
2. Review the nutritional composition of existing complementary foods, and compare the differences.
3. Identify important elements for a pilot of the production of a low-cost complementary food, as part of an infant and young child feeding strategy.

METHODOLOGY

Latin America and the Caribbean countries were investigated for ongoing, past and new initiatives and programs related to complementary foods. The study focused on 24 countries where UNICEF has Country Offices. Twenty countries out of those 24 participated in the study. Barbados, Belize, Brazil and Guyana did not participate in the study so information from those countries was not collected. A particular focus was put on countries where under nutrition (stunting and micronutrient deficiencies) among infants and young children was a public health concern and countries having a high potential for a pilot of a low-cost FCF.

Programs were evaluated by gathering secondary data through a questionnaire. Additional information sources were also consulted and reviewed in order to complement and /or validate the country information collected via the questionnaires. Fourteen LAC countries were also visited by the main investigator of the study (Regional Unicef Nutrition Officer) in order to obtain first hand knowledge of country's nutritional situation and FCF experiences. Besides the questionnaire and country visits, "Nutrition Key Opinion Formers" were interviewed on the importance of FCF products/programs for child nutrition. Based on these opinions a SWOT (Strengths, Weaknesses, Opportunities, Threats) matrix was prepared, which served later as an input and comparison for the conclusions and recommendations.

The proposal of the study and the questionnaire were reviewed and approved by members of a Quality Assurance Committee (QAC).

UNICEF Country Offices (CO's) participated in the data collection using local consultants hired and supervised by the Nutrition Officers/Focal points. These were the link between governments, the private sector, other local institutions and the UNICEF Regional Office. Additional information was gathered and validated by the Regional UNICEF Office and external consultants. The Regional Indicator System Group, INFOLAC supported the preparation of the data base using Dev Info technology.

The study's initial proposal was elaborated in October 2004 and reviewed during November-December 2004. The main instrument, a questionnaire, for gathering the information was prepared, and reviewed during February-March 2005. Country visits were organized as part of the process implementation of the Situation Analysis and took place from mid May-December 2005.

Reviews were held during four technical meetings: an interagency meeting held in Lima, Peru in November 2004 for sharing the proposal of the study; a UNICEF/Unilever meeting held in Valinhos, Brazil in January 2005 for reviewing the initial proposal based on comments received; an interagency nutrition experts meeting in

September 2005 on optimal low-cost nutrition product formulation in Vlaardingen, The Netherlands; and, a UNICEF/Unilever meeting held in Santiago, Chile in January 2006 for reviewing the first draft of the document. A Quality Assurance Committee was formed for reviewing information on the project formulation and progress.

Secondary data was collected from National Surveys, Census or Demographic Health Surveys, Multiple Indicators Cluster Surveys (MICS), other UN studies, and available published information, on the following variables and indicators:

- Population, Human Development Index (HDI), other economic indicators, nutritional status, mortality and breastfeeding/complementary feeding practices (preferably by urban and rural area).
- Specific information regarding the characteristic of the fortified complementary food (FCF) products: name of product, nutritional composition, ingredients, food format, daily portion, method of use and consumption, and cost of product (price for the consumer).
- Production capacity, packaging, distribution channels (social programs, commercial/retail markets).
- Availability of fortified complementary foods (FCF). Policies and programs, including government, NGO and international organizations. Focus on public sector initiatives, but including public-private social sector initiatives, as well.
- Social marketing, social communication, information, education and promotion activities related to these FCF, to breastfeeding and complementary feeding.
- FCF and the infant and young child feeding habits related to breastfeeding practices.
- Monitoring and evidence of the impact of the FCF programs on the reduction of child under-nutrition.
- Availability of studies and reports on breastfeeding and complementary feedings (reference list of documents).

The UNICEF Regional Office for LAC countries in Panama City was in charge of the study's technical and financing administration. This office, along with the Unilever Health Institute (UHI) for Latin America, coordinated all project stages: planning, execution, monitoring and evaluation. Together with UNICEF, the regional UHI participated in the proposal design and actively participated in the project stages: monitoring, execution and quality assurance. Also, the regional Unilever Health Institute (UHI) gave UNICEF financial support for the study's development.

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RESULTS

A. CHARACTERISTICS OF THE PARTICIPATING COUNTRIES

The participating countries are listed in table below. Twenty Latin America and Caribbean countries participated in the study: the five countries of the Andean Sub-Region; four countries from the Southern Cone Sub-Region; seven from Central America (for the purpose of this study, Mexico was included as part of this subregion) and four from the Caribbean Sub-Region:

PARTICIPATING COUNTRIES

Andean	**Southern Cone**
Bolivia	Argentina
Colombia	Chile
Ecuador	Paraguay
Peru	Uruguay
Venezuela	

Central America	**Caribbean**
Costa Rica	Cuba
El Salvador	Dominican Republic
Guatemala	Haiti
Honduras	Jamaica
Mexico	
Nicaragua	
Panama	

The general demographic characteristics of the populations of the participating countries are shown in Table 1 and Figure 1. Latin America and the Caribbean is the most urbanized region of the third world. Urbanization increases the levels of female employment, disposable income, and use of purchased foodstuffs (Ruel et al., 2000)

Figures 2 and 3 show the population of children under three in the participating countries as the total number of children per country and as the percentage of the total population by country clustered as Andean, Caribbean, Central America and Southern Cone Sub-Regions.

The socio-economic characteristics of the participating countries are shown in Table 2 at purchasing power parity (PPP) in US Dollars. Among the participating countries, Argentina (0.863), Chile (0.854), Uruguay (0.840), Costa Rica (0.838), Cuba (0.817), Mexico (0.814) and Panama (0.804) are classified as countries with a high human development according to the UN HDI. Nevertheless, it is important to point out that the recent socio-economic crisis in Argentina resulted in a deterioration of almost all socio-economic indicators that could apparently contradict the reported data. Haiti shows the lowest human development index (HDI) (0.475) and is classified as a country with low human development. The other participating countries are classified as countries with medium human development. The percentage of household income used for food expenses in the participating countries shows a wide variation from 82% in Dominican Republic to 16.2 % in Ecuador, with a mean of 41.7% and standard deviation of 16.3%.

Table 3 and Figures 4 and 5 show the Infant, Under Five and Maternal Mortality rates in the studied countries.

Growth faltering is widely prevalent in the Latin America and Caribbean Region with wide variations among sub-regions and within countries. Indexes derived from growth measurements are constructed from two or more raw anthropometric measurements and are simple numerical ratios such as weight for age (W/A), height for age (H/A), and weight for height (W/H). Height for age can be used as a long-term under-nutrition index. It is particularly valuable as an index of stunting of a child's full growth potential. This condition results from extended periods of inadequate food intake and increased morbidity and is generally found in countries where economic conditions are poor. Weight for height differentiates between stunting, when weight may be inappropriate for height; and, wasting, when weight is very low for height (Gibson R, 1990). The importance of child feeding practices for children nutrition is well established. Feeding practices are associated with the child height per age standardized normal deviation, Z score (HAZ) in most of the Latin America and the Caribbean countries. This association becomes stronger and significant after the age of 12 months. (Ruel et al 2002).

The nutritional status of the studied child population is shown in Table 4. Guatemala has the highest prevalence (49.0%) of stunting (moderate and severe H/A Z < 2 SD NCHS) for children 0-59 months followed by Honduras (29.0%), Bolivia (27.0%), Ecuador (26.0%) and Peru (25.0%). Jamaica (5.0%), Cuba (5.0%) and Chile (1.5%), showed the lowest prevalence of Stunting (Fig 6).

Faltering in weight begins at about 3 months of age and continues rapidly until about 12 months. Thereafter, it continues to decline at a slower pace until about 18-19 months with a subsequent catch-up pattern (Lutter and Rivera, 2003). In the studied countries, the average prevalence of wasting (moderate and severe W/H Z < 2 SD NCHS) in children under 5 years of age is 1.8%, with the highest value for Haiti (5.0%), followed by Venezuela and Argentina (3.0%). No wasting was found in Chile (Fig 7).

Anemia (defined as a hemoglobin level lower than 11 g/dL) is the most prevalent nutrition problem in the LAC Region, especially iron deficiency anemia (IDA). Anemia in children less than 5 years of age, ranges from 65.8% to 1.5% (Table 4 and Fig 8). Haiti showed the highest prevalence (65.8%), followed by Ecuador (57.5%), Bolivia (56.0 %), Guatemala (50%), Jamaica (48.2%) and Honduras (47%) while Dominican Republic (25.0%), El Salvador (21.5%) and Chile (1.5%) showed the lowest prevalence. On average, 12.7 % of preschool children showed vitamin A deficiency defined as serum retinol < 20 µg/dL. (Table 4 and Figure 8).

In summary, among the countries participating in this study, Chile, Uruguay, Costa Rica, and Argentina show the highest Human Development Index. This is reflected in a better child health and nutritional status. These countries showed the lowest infant, under 5, and maternal mortality rates and lowest levels of stunting, anemia, especially iron deficiency anemia (IDA) and vitamin A deficiency (VAD). Haiti, Honduras, Guatemala, and Bolivia, are the countries with the lowest human developing index, which is reflected in the highest Infant, under five and maternal mortality rates. They show also the highest stunting prevalence, which has been associated with poor feeding practices. As was mentioned before, this association becomes stronger and significant after the age of 12 months (Ruel et al 2002).

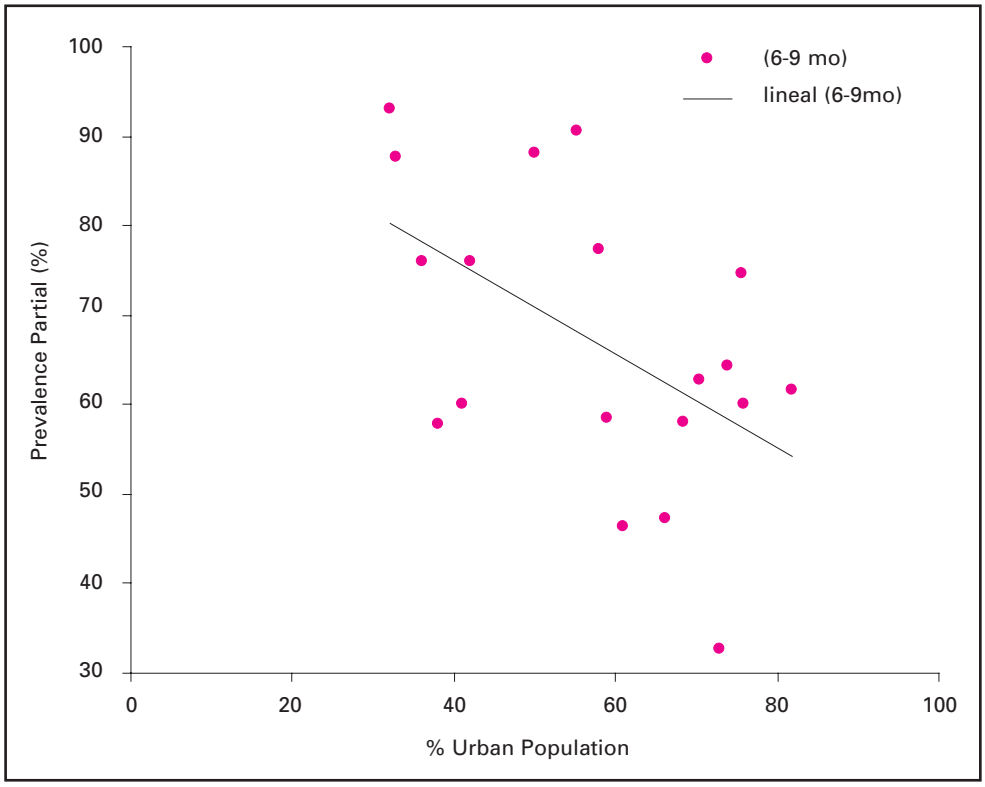
Adequate nutrition during the first two years is vital for optimal physical and mental development of infant and young children. According to current United Nations recommendations, infants should be exclusively breastfed for the first six months of life. After six months, children should receive appropriate complementary feeding with continued breastfeeding up to two years or beyond.

Furthermore, exclusive breastfeeding in early life protects against infections and reduces mortality, particularly in developing countries where microbiological contamination of foods and water is common (WHO 1998).

The prevalence of breastfeeding in the studied countries is shown in Table 5. Figure 9 shows the prevalence of EBF (0-6 mo), partial BF (6-9 mo) and maintenance of BF (20 -23 mo) per country. Exclusive breastfeeding (EBF) during the first 6 months of age varied markedly among countries and geographical regions. Peru shows the highest prevalence of exclusive breastfeeding during the first 6 months of life (72.5 %), followed by Chile (63.2%), Panama (57.3%) and Uruguay (54.1%). Only 10% of children 0-6 months from Dominican Republic, and 7% from Venezuela are exclusively breastfed. Data from these countries suggests an early introduction of complementary foods before 6 months of age. El Salvador, Peru and Bolivia have the highest prevalence of partial breastfeeding from 6-9 mo of age (77%, 76%, 74% respectively) while Panama (38%), Mexico (36%), and Uruguay (32.2%) have the lowest prevalence. Maintenance of BF 20-23 months of age ranges from 49% in Peru to 9% in Cuba.

The greatest threat of urbanization and maternal employment to child care is the potential negative impact on breastfeeding practices. It is generally believed that urban mothers are less likely to initiate breastfeeding and are more likely to wean earlier if they do breastfeed. Previous studies have showed that in Latin America and the Caribbean, the percentage of children ever breastfed tends to be lower in urban areas, but the pattern is not fully consistent and differences are generally small (Ruel, M. 2000). Data from the present study shows a significant and negative relationship between urbanization (% urban population) and prevalence of partial breastfeeding ($r = -0.52322$, $p<0.05$ (see figure below) suggesting that women who live in urban areas are less likely to partial breastfed their children between 6 to 9 months than women who live in rural areas. Exclusive breastfeeding and urbanization were positively associated, but did not reach statistical significance ($p=0.3788$). Urbanization and maintenance of breastfeeding were not related.

Urbanization (%) and Prevalence of Partial BreastFeeding (PBF) (%)



B. FORTIFIED COMPLEMENTARY FOODS (FCF) IN THE PARTICIPATING COUNTRIES.

FCFs should be formulated to complement the nutritional contribution of breastfeeding and only be given after 6 months of exclusive breastfeeding.

Designing a fortified complementary food that meets the nutrient needs of all breastfed children 6-36 months of age is a challenge because of variability in the amounts of complementary foods consumed and the very high nutrient requirements of children 6-12 months of age. According to international recommendations, a single formulation targeted for infants 6-8 months of age will result in excessive intakes of certain nutrients, like calcium, iron and zinc, if consumed by children 12-36 months of age, whereas a formulation targeted for children 12-23 months of age will provide insufficient levels of nutrients like iron, for infants 6-8 months of age. This means that, theoretically speaking, more than one formulation for the various age groups would be ideal, however this could cause confusion in mothers that have more than one child aged 6-36 months and will certainly increase the cost of a FCF-program. Options to solve this problem include a) a high energy and nutrient-density product but specifying a ration per day per each age group; or, b) a lower energy and nutrient-density product with specific ration per each age group and the use of a separate iron supplement to reach the highest levels needed by infants (Dewey, 2003).

There is clear evidence that the more energy children obtain from sources other than breast milk, the less breast milk they consume (Cohen, 1994, Dewey, 1999). Therefore, there is a risk that if complementary foods are inadequately formulated, breast milk intake will be reduced. On the other hand, if complementary foods are not introduced at the appropriate time in adequate amounts and quality to complement breast milk, growth faltering is likely (Brown, 2000).

The optimal characteristics of processed complementary foods include an adequate energy density and appropriate micronutrient energy ratios. It is important to ensure that the energy density of complementary foods is sufficient so that almost all children in the target population will be able to consume enough to meet their energy needs. In general, children will consume enough food to satisfy their energy requirements. Because there is no specific appetite for vitamins and minerals, the ability of foods to satisfy all nutrient needs depends on the nutrient/energy ratio or nutrient density of the products (Brown 1998, 2000).

A recommended nutrient composition for fortified complementary foods has recently been published (Lutter and Dewey, 2003). The proposed fortification levels are based on a daily ration size of 40 g for infants aged 6-12 months and 60 g for children aged 12-23 months (50 g average). A desired protein-energy ratio of 6-10% is used to estimate energy from protein. The desired percentage of energy from lipid is estimated at 24% for infants aged 6-11 mo and 28% for children age 12-23 mo. A FCF should provide a quantity of iron sufficient to meet the recommended dietary allowance in the form of dried ferrous sulfate of small particle size. Ascorbic acid, 70-140 mg for infants aged 6-23 months, will enhance iron absorption. For zinc, 4-5 mg is recommended in the form of zinc oxide. Proposed fortification levels are also provided for copper, calcium, vitamin D, magnesium, phosphorus, vitamin A, the B vitamins and iodine. The FCFs of the present situation have been analysed for their ability to provide the needs of almost all children, given the expected variation in their total intake.

In order to describe and compare the reality and the needs of the participating countries in regards to fortified complementary foods for children 6-36 months of age, and make adequate recommendations, the FCF programs have been classified in 4 categories:

1. **Category one: Nationwide Fortified Complementary Foods Programs.**
   Thirteen current experiences, in 9 countries, of programs related with FCFs used nationwide or in significant geographic areas of countries are included in this category: Nutrisano Papilla in Mexico; Mi Papilla and Nutriinfa Papilla in Ecuador; Mi Sopita and Purita Cereal in Chile; Bienestarina and Fortified Cookie in Colombia; Fruit Puree in Cuba; Nutricereal (Nutricrema) in Panama;

Fortified Complementary Foods (FCF) in Latin America and the Caribbean			
Country	**FCF**	**Country**	**FCF**
Argentina	BB´S infant cereal BB´S infant dessert Fortified Milk Powder	El Salvador	CSB Soyarin
Chile	Purita (Fortified Milk) Mi Sopita Purita Cereal	Guatemala	Incaparina (original) Incaparina (new) Vitacereal (Papilla)
Colombia	Bienestarina Colombiharina Solidarina Fortified Cookies Fortified Milk	Haiti	AK-1000
Costa Rica	Fortified Powder Milk	Honduras	CSB Flour CSB Papilla
Cuba	Nela (Fortified Evaporated Milk) Fruit Puree	Mexico	Tenutre (Fortified Milk) Nutrisano Papilla
Ecuador	Mi Papilla Nutrinnfa (papilla) Nutritiva (papilla)	Nicaragua	CSB Cereal CSB Papilla
		Panama	Nutricereal (Nutricrema)
		Peru	INCAMIX Papilla PACFO Papilla Alli Alimentu
		Dominican Republic	Fortified Milk
		Venezuela	Milk Product (PL) Lactovisoy

PACFO Papilla in Peru; BB's Infant Cereal and BB's Infant Desert in Argentina; and, Lactovisoy in Venezuela. These programs are reaching significant numbers of beneficiaries and most of them have been evaluated showing a positive impact on child nutrition, as described in the section on monitoring and impact evaluations.

2. **Category two: Fortified Milk Programs.**
   Seven experiences of programs related with fortified milk in seven countries: Purita Fortified Milk in Chile; Tenutre Fortified Milk in Mexico; Fortified Milk in Costa Rica; Fortified Milk in Dominican Republic; Fortified Milk in Colombia; Nela Evaporated Fortified Milk in Cuba; and, Fortified Milk Powder in Argentina. All of these programs are nationwide and have the widest range and highest number of beneficiaries.
3. **Programs Using Fortified Corn-Soy Blend (CSB) products.**
   Five experiences currently developed in three countries, including interventions of FCFs used in specific geographic areas of countries. They are supported mainly by the World Food Program (WFP), and a pilot project is supported by the World Bank (WB). All the experiences are based on Corn-Soy-Blend (CSB) products: CSB Soyarin in El Salvador; CSB Flour and CSB Papilla in Honduras; CSB Cereal and CSB Papilla in Nicaragua.
4. **Category Four: Past Experiences and New Programs with Fortified Complementary Foods.**
   Ten past experiences and new proposals, in six countries: Colombiharina and Solidarina in Colombia; Nutritiva Papilla in Ecuador; Incaparina Original, New Incaparina, and Vitacereal in Guatemala; Alli Alimentu and INCAMIX Papilla in Peru; Milk Product in Venezuela and AK-1000 in Haiti. Several of these FCF products are no longer being used as part of social programs, however they are currently being sold in retail markets. Some of these experiences have been successful and have formed the basis for the formulation of current national FCF programs placed in category one.

FCFs have become part of the social system and are unlikely to be eliminated in LAC. Eighty two percent of the programs related to FCFs in the studied countries belong to national public programs and are subsidized by the states, while the others are donations supported through international agencies.The fortified complementary foods (FCF) analyzed (35 in total) in the participating countries are shown in the table below. Bolivia, Jamaica, Paraguay and Uruguay are the only four countries that have not had, nor have, any non-commercial FCF experience.

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CATEGORY ONE

CATEGORY ONE: NATIONWIDE FORTIFIED COMPLEMENTARY FOODS PROGRAMS

The table below shows the FCFs distributed nationwide or in a significant geographic area of the participating countries. As was mentioned, thirteen FCF products distributed in a total of 9 countries are included in this category.

Nation-wide Fortified Complementary Foods	
Country	**FCF**
Argentina	BB´S infant cereal BB´S infant dessert
Chile	Mi Sopita Purita cereal
Colombia	Bienestarina Fortified Cookies
Ecuador	Mi Papilla Nutrinnfa
Cuba	Fruit Puree
Mexico	Nutrisano Papilla
Panama	Nutricereal (Nutricrema)
Peru	PACFO Papilla
Venezuela	Lactovisoy

a) Main Characteristics of the FCF Programs

The main characteristics of these programs are shown in Table 6. According to the reported data, the FCF experiences are in general public programs subsidized by the country's governments. The public programs are related with the Health and Social Welfare Sectors, through National Complementary Food Programs or National Food Security Programs. Some of them started more than 30 years ago and form part of large social scale cash advance programs. Bienestarina, distributed in Colombia by the Colombian Institute of Family Welfare, (ICBF) and the Lactovisoy in Venezuela were implemented in 1975. While the total production of Bienestarina is used only in social programs, Lactovisoy is used in both social programs and is also sold in the retail market.

b) Beneficiaries of the FCF Programs

The selection criteria for the beneficiaries of the programs are shown in Table 7. Poverty, under-nutrition or both are the main selection criteria used by the programs (except Cuba, where the specific criteria was prevalence of anemia). Even though this study was related to children from 6-36 months, there are a wide range of beneficiaries in the country FCF programs. For children, the range goes from 6 months of age through to 14 years. Most of the programs also benefit pregnant and lactating mothers. Cuba is the only participating country in this or any of the other program categories which has specific selection criteria for beneficiaries based on the nutritional characteristics of the Fortified Complementary Food (FCF). The use of specific criteria like Cuba would facilitate the impact evaluation of programs.

The main characteristics of the beneficiaries of the programs are summarized in Table 8 and illustrated in the figure above. The majority of the FCF are used for a wide and varied age range of beneficiaries. The FCFs Nutrisano Papilla in Mexico, Mi Papilla in Ecuador, and the BB's cereal and dessert in Argentina distributed to children 6-24 mo of age. Only two programs, Peru PACFO papilla and Colombia Bienestarina have children 6-36 months as a specific group of beneficiaries. Cuba distributed Fruit Puree to children 22-48 mo. The other FCFs in this category are distributed to a wide age range of beneficiaries, which makes it very difficult to relate the formulation of the product to the specific needs of the target population.

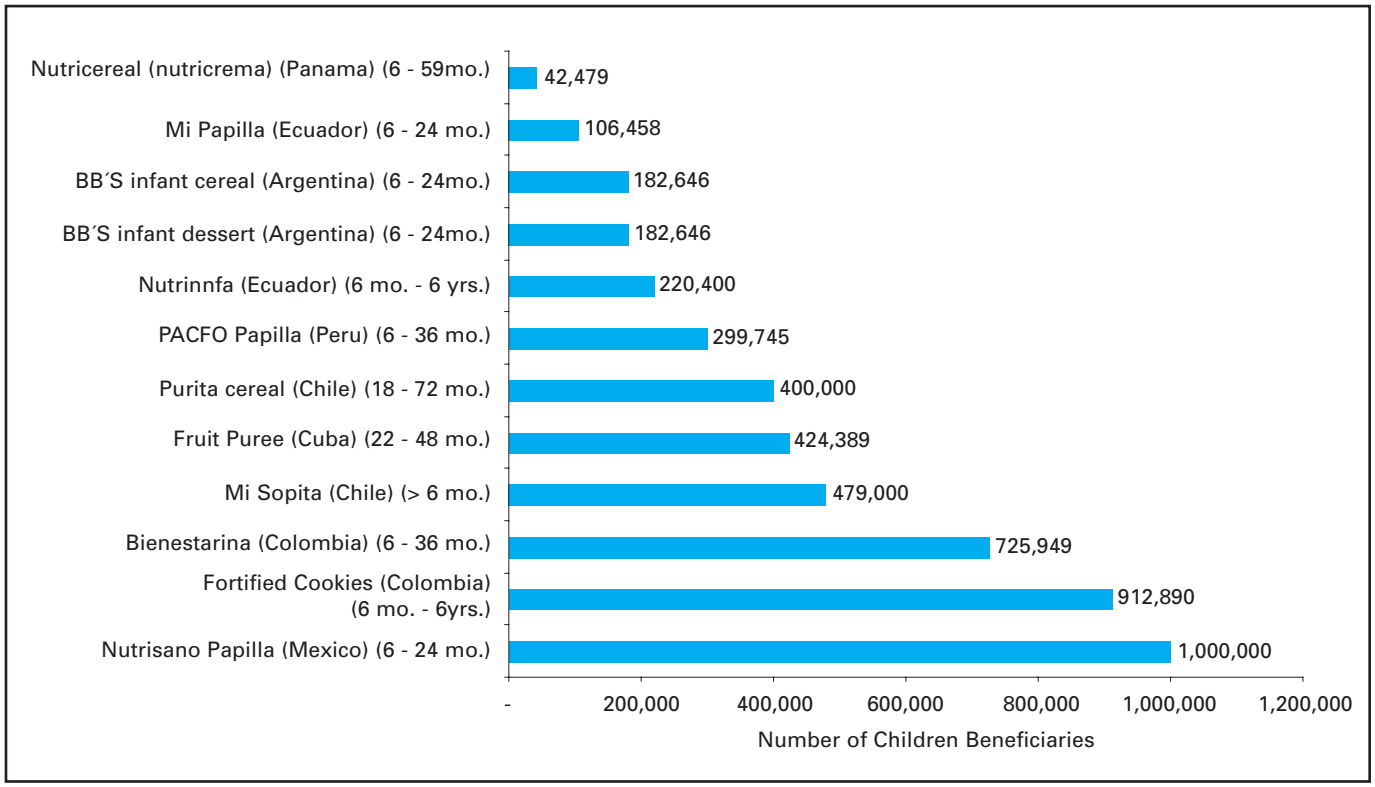
To estimate the coverage of the programs and the portion of the population that does not benefit, estimations have been done relating the number of beneficiaries of the program, to the total population of children under 3 in each country. Argentina reported the number of beneficiaries sub-stratified by a specific age range in the population of children under 3 years. Therefore cumulative data has been calculated in order to estimate the percentage of coverage of the reference population.

In Mexico, Papilla Nutrisano is distributed to the highest number of beneficiary children 6-24 months (more than 1,000,000); followed by Fortified Cookies and Bienestarina in Colombia (912,890 and 725,949 respectively); and Mi Sopita

in Chile (479,000). Nutrinnfa Papilla in Ecuador is distributed to children 6 months - 6 yrs (220,400) who live in communities in the first quintile of poverty and also attend Infant Development Centers. The same product is distributed to children who are beneficiaries of the Program Alimentese Ecuador. With the exception of Mi Papilla in Ecuador (current beneficiaries 106,458) which plans to increase the current coverage of the target population to 75%, the other programs have not reported a significant increase in coverage. When estimating the percentage coverage of the child population less than 3 years of age, the national programs cover approximately 4,959,809 children under 3 years (32.3%). Cuba has the highest percentage of beneficiaries (100%), followed by the Chilean FCF products (65% and 54.3% respectively).

Poverty data for beneficiary children was not reported nor analyzed as part of this study, so the real program coverage of beneficiaries using the same selection criteria was not obtained. Taking into account the reported information and the coverage estimates, as was mentioned before, an average of 32.3% of children between 6-36 months of age are receiving the benefits of the current category one nationwide programs.

Nationwide Fortified Complementary Foods Programs. Children Beneficiaries



c) Nutritional Composition of the FCF

Tables 9 A and B show the nutritional contribution of the fortified complementary foods used nationwide or in a significant geographic area of the country. Data is shown as nutritional contribution per 100 g of the product, per daily portion, and percentage of the recommended nutrient composition for FCF using the data reported by FAO/WHO. (Lutter CK., 2003).

As mentioned before, given the wide variation of age range of the beneficiaries, the analysis of the adequacy of the nutritional contribution of the products was difficult. Therefore the analysis concentrated on the nutritional contribution of the daily ration of the product and its comparison with the recommendations for FCF for children 6-24 months of age, because this Situation Analysis focuses on this group of children and up to three years of age.

BB's cereal and BB's dessert (Argentina), Mi papilla (Ecuador), and Papilla Nutrisano (Mexico) are the

FCF products in this category specifically formulated for children 6-24 mos. Nevertheless, except for calories, the nutritional contributions per daily ration are quite variable. In the best scenario, the daily ration of these products contributes between 1 and 1.9 times the needs of protein, around 0.5 to 1.6 times the needs of vitamin A, 0.5 to 2.4 times the needs of zinc and 0.4 to 1.4 times the needs of iron. A daily ration of Papilla PACFO (Peru) formulated for children 6-36 months, contributes 1.7 times the energy needs, 2.1 to 3.9 times the protein needs, less than half of the needs of vitamin A, 1.3 times the needs of zinc and 0.8% the needs of iron. The other FCF products are offered to a different age range of beneficiaries and therefore do not comply with the recommendations for children aged 6-24 months.

The variation in the nutritional contribution of these products may also be due to the fact that each product has been specifically formulated to meet different percentages of the needs based on the analyses of other complementary foods available at household level; are determined by the type of ingredient used in the formulation of the product; the lack of and changing scientific recommendations; and cost, amongst others.

The BB'S FCF products in Argentina are based mainly on corn, powder milk, whey protein and sugar. These products fill 1.3 times the protein recommendations for children 12-24 months of age, but contribute with 2.4 times the protein needs for breastfed children 6-11 months.

Fortified complementary foods based mainly on cereal-soybean mix are Mi Sopita and Purita Cereal (Chile), Bienestarina (Colombia), Mi Papilla and Nutriinfa Papilla (Ecuador), PACFO Papilla (Peru) and Lactovisoy (Venezuela). These products are formulated to contribute a significant amount and quality of protein. However, soy products not only contribute protein, but also significant levels of phosphorus. A daily portion of these products contains on average 1.5-2.0 times more phosphorus than the recommendations. The main source of phosphorus in plant foods is phytate, a well-known mineral absorption inhibitor. A product like Mi Papilla (Ecuador) contributes 2.5 times more zinc and 1.5 times more iron than recommended for the daily ration of a fortified complementary food. These levels, besides the need for the solution of the micronutrient deficiencies, were perhaps defined during the formulation of the product in an effort to compensate the inhibitory effect of the product phytate content. Nevertheless, a careful evaluation of the iron and zinc bioavailability of this and the other products needs to be performed.

The daily ration reported for Lactovisoy (Venezuela), with the exception of energy and vitamin C, contributed 1.7 to 4 times the expected nutrient contribution for a fortified complementary food for children 6-24 months. Lactovisoy is distributed to a wider age range of children (6mo-14yrs) and this could be the reason for the specific product formulation. Nevertheless, children 6-24 months, who benefit from the program might be receiving more than their needs with a direct effect on breastfeeding behavior.

Other products, like the Fruit Puree (Cuba) and the Fortified Cookie (Colombia), have been formulated to contribute 47-103 % of the iron needs. The Fortified Cookie also contributes 81-152% of the energy needs using natural or added sugar and 83% of fat, 47-85% of protein and 2.5-5% of the calcium needs.

d) Energy and Nutrient Density of the FCF

The energy and nutrient density of the FCFs used in nationwide programs or in significant geographic areas are analysed with regards to their ability to provide the needs of almost all children given the expected variation in their total intake of FCF.

Table 11 shows the energy density of the FCF daily ration before and after preparation of the final product. The energy density in a daily ration before preparation ranged from 3.51 Kcal/g of Nutricereal (Panama) to 4.42 Kcal/g of Purita Cereal (Chile). When the product is prepared and ready for consumption, the energy density ranged from 0.32 Kcal/ml for Nutricereal (Panama) to 4.31 Kcal/ml for Nutrisano papilla (Mexico).

Table 10 shows the nutrient density of the final FCF product. The micronutrient density of the FCF is expressed in terms of the amount of nutrient per 100 kcal of complementary food. Percentage of the recommended nutrient density is also included. The caloric density of both ready-to-eat products and products requiring preparation ranges between 0.93 (Fruit Puree, Cuba) and 4.45 Kcal/g (Fortified Cookie, Colombia. Except Fruit Puree, whose formulation was intended to fight only against anemia, all the FCFs in this category are around 80-100 % of the recommended caloric density. With regards to nutrient density, Fortified Cookie (Colombia) has the lowest protein density,

contributing between 58-107% of the recommendations, whilst Bienestarina is between 233 and 428% of the recommendations.

e) Social Communication, Social Marketing of the FCF Programs

The reported social communication/marketing activities of the FCFs in this category are shown in Table 12. Many of the programs in this category have incorporated a component of promotion, social marketing and education. However, most of these activities were conducted infrequently and on an isolated basis or not as an integrated educative component linked to breastfeeding promotion.

Colombia has established a plan of activities related to social communication and marketing, information and education using the mass media like radio, TV and community radio stations. The main purpose is to promote the characteristics of Bienestarina: its nutritional benefits, its composition, adequate preparation and storage, relationship with breastfeeding and adequate complementary feeding practices. Cuba had formulated a communication plan as part of the fortification program to be implemented in 2005-2006. Training and education activities have been implemented at different levels in the health sector.

A mass communication program has been initiated using radio, and counseling of family doctors and of the technical staff of the program. Ecuador has established a nutrition communication plan for the beneficiaries of the program that distributes Mi Papilla, using radio, TV and community interventions. The nutritional value of Mi Papilla, the adequate preparation of the FCF and breastfeeding are promoted as part of nutrition counseling given during health center visits. The Nutriinfa Papilla Programme also has an informative-educative component that is developed through Day Care Centers activities with mothers and families. It also includes a social marketing strategy that is realised through interinstitutional networks and local governments.

The program Oportunidades (formerly known as Progresa) in Mexico promotes health and nutrition education to the members of families participating in the program. Promotion of the program, improvement of the distribution of the supplement through local health centers and training of technical staff, school teachers and community leaders are all included. Finally, promotion and social marketing in Peru is implemented at local health centers and community organizations. It includes subjects related to complementary feeding practices, breastfeeding, hygiene, balanced diet and health. Mothers are visited at home to be trained in the adequate preparation of the FCF papilla and nutrition education.

Chile has not reported social marketing strategies for Mi Sopita, but will implement a marketing program for Purita Cereal. No information was reported for the BB's cereal and BB's dessert in Argentina, nor for Lactovisoy in Venezuela or Nutricereal in Panama.

f) Production and Distribution of the FCF

Table 13 and Figure 10 show the production of fortified complementary foods (FCF) used nationwide or in significant geographic areas of the countries. Few countries reported complete data on production and distribution of FCF. According to the data received, the level of production is related to the total number of beneficiaries and the size of the daily portion per beneficiary. Bienestarina in Colombia has the highest annual production (45,000 MT./ yr), while Mi Sopita in Chile has the lowest annual production (500 MT/ yr). In general, the FCF products are produced by the local private sector, with the exception of Bienestarina in Colombia, which is produced in part by the Colombian Government (ICBF) and part under contract with a private company. Nutrisano in Mexico is produced by LICONSA, a joint private-government company.

The distribution channels used for FCFs are related to the type of program in which the FCF is distributed. The distribution of FCFs in this category is shown in Table 14. In general, the FCFs are being distributed from the production unit directly to local health centers or public institution units. The centers and units distribute the FCF to the target population. Cuba has a regulated distribution system for the FCF products.

Lactovisoy in Venezuela is used not only in social programs but is also sold in the retail market so the product is distributed directly to schools, feeding centers and food stores.

Nutrinnfa in Ecuador is distributed nationwide by the National Institute for the Family and the Children (INNFA). The Operative Units of the Primary Health Care Net Centers of the Minister of Health are responsible for the distribution of the

FCF product to families or to Child Development Centers participating in the program.

g) Ingredients of the FCF

Not all the countries reported quantitative data for the ingredients in the fortified complementary foods. The majority reported the ingredients, as declared on the packaging. In these cases, only the qualitative data is presented, as shown in Table 15.

Fortified Complementary Foods in this category have been formulated using different combinations of cereals, legumes and milk products (Figure 11). Powder milk, oil, corn, wheat and soy are the most frequent ingredients used for FCFs. Sugar is used in the majority of products as well. Oil and sugar are added to increase the energy density of the product. The types of ingredients used for the formulation of the FCF are responsible for the sensorial, nutritional and price characteristics of the final product. Oil, sugar and powder milk are ingredients that add significant cost to the final product.

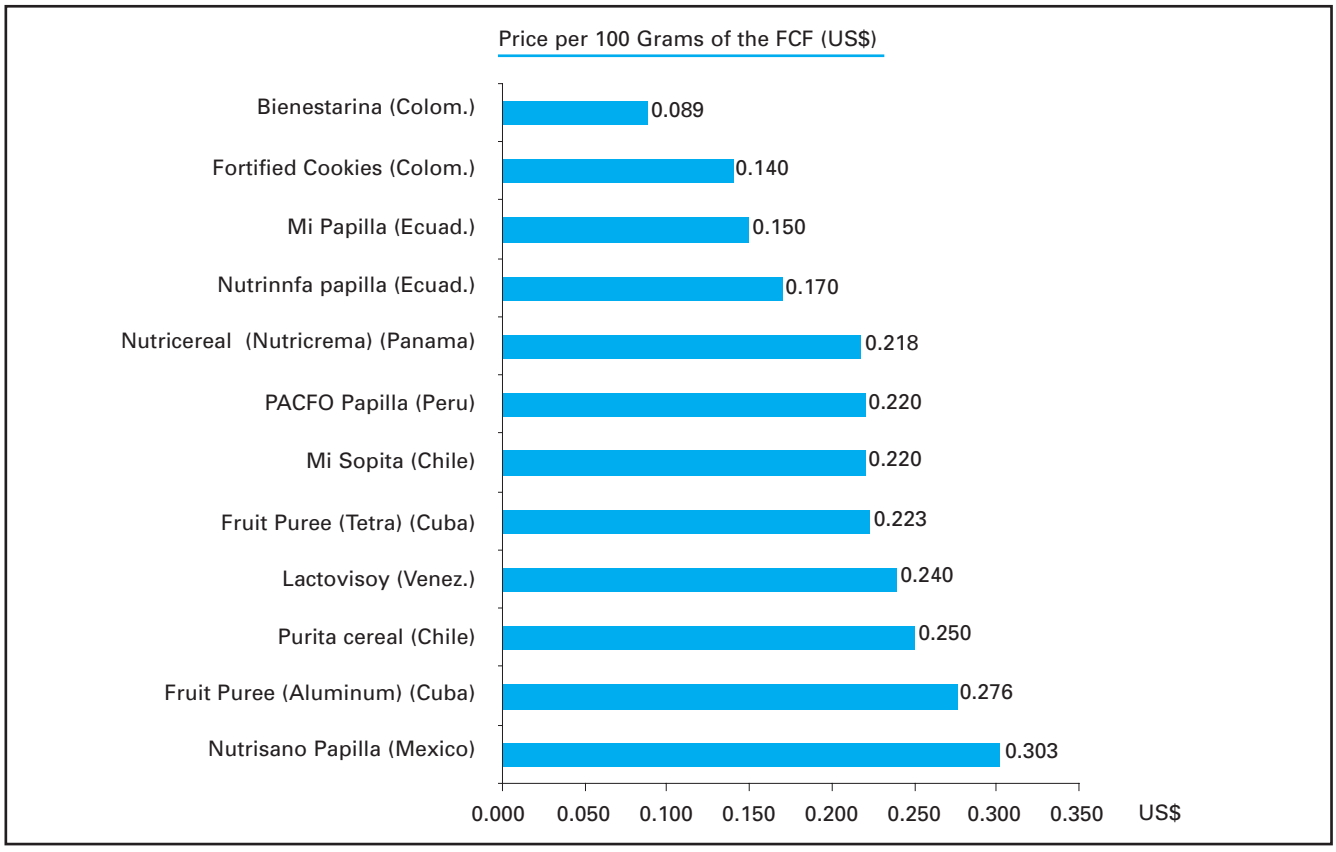
h) Product Specifications of the FCF

The product specifications of the FCFs used nationwide or in significant geographic areas are shown in Table 16. The products are packed in containers with a wide range of sizes. The majority of the products are packed in 0.5 to 1Kg containers.

Others use individual serving packs like the fortified cookie distributed in Colombia.
The size of the container depends on the type of food, the serving size, the transportation and the distribution channels. Container sizes range from 40 g for the fortified cookie (Colombia) produced as a single unit to 1 kg for the majority of the FCF products of this category. The number of servings is related to the container and the serving sizes.

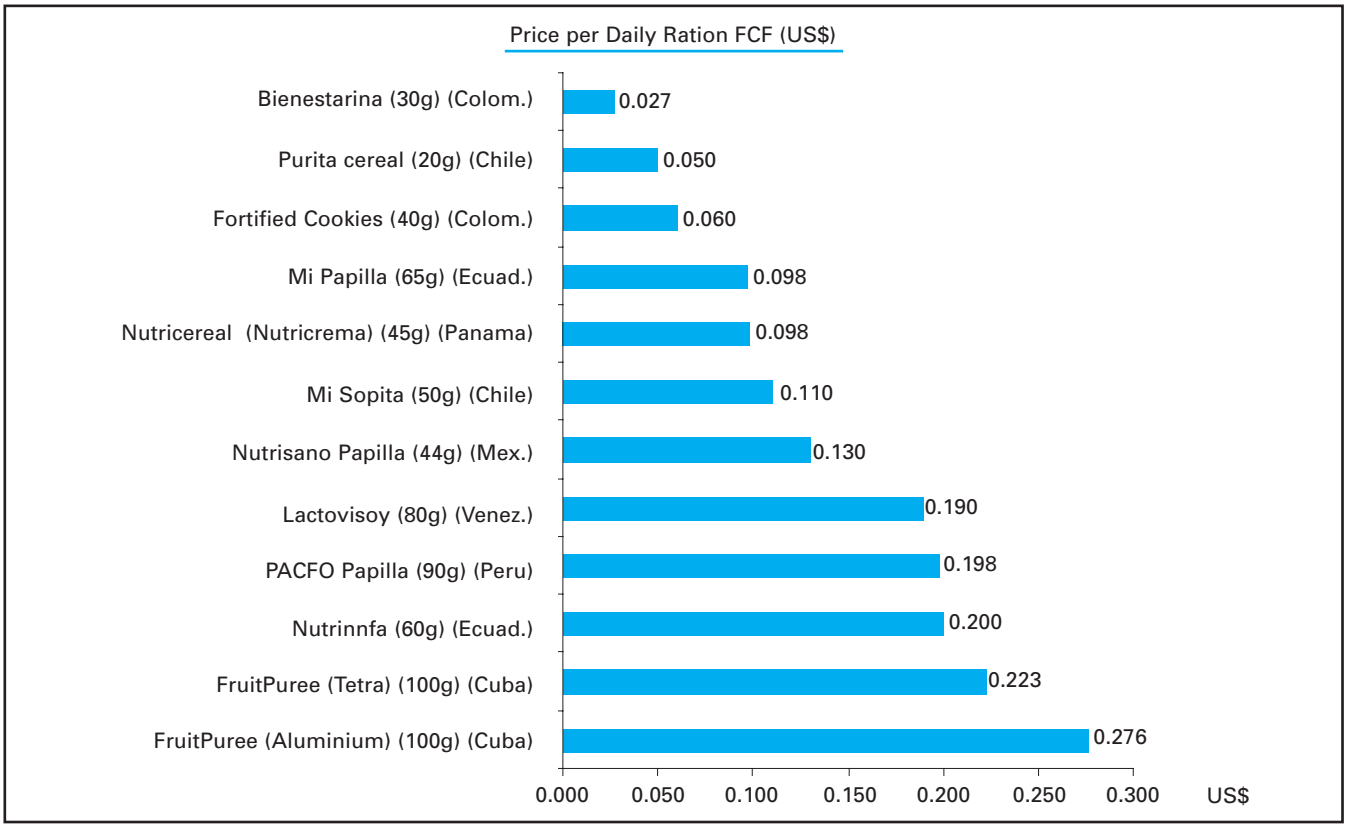
The daily portion or serving size of the FCF product (Fig 12) depends on the age of the target population of children and the expected nutritional contribution of the product. The serving size ranges between 10 g reported for Bienestarina in Colombia (30 g daily ration) and 20 g of Purita Cereal in Chile, to 100 g reported for Fruit Puree in Cuba.

Nationwide Fortified Complementary Foods Programs. Price (US$) per 100



Data not available for BB'S infant cereal and BB'S infant dessert in Argentina

Nationwide Fortified Complementary Foods Programs. Price (US$) per Daily Ration



Data not available for Fruit Puree in Cuba.
No Cost for BB'S infant cereal and BB'S infant dessert in Argentina.

In general, the daily ration for the FCFs distributed nationwide or in specific geographic areas range from 20g of Purita Cereal in Chile to 90 g of PACFO papilla in Peru, and 100 g of Fruit Puree in Cuba. BB's dessert (Argentina), Mi Papilla and Nutriinfa Papilla in Ecuador and Papilla Nutrisano (Mexico) distributed to children 6-24 months, have a daily ration size between 45 and 65 g.

It is recommended that the BB's cereal in Argentina is consumed in small servings during the day depending of the specific age of the child resulting in a daily ration between 25 and 100 g.

i) Preparation of the FCF

The preparation of the FCF products used nationwide or in a significant geographic area of the country is shown in Table 17. In general, the products require hydration and/or 1 to 5 minutes of cooking before consumption. Mainly water (33-300 ml) is recommended to be added during the preparation of FCFs in this category. Sugar is also added during the preparation of Bienestarina in Colombia.

j) Price and Cost Benefits of the FCF

The price of producing and packaging the different FCFs varies considerably, depending on the main ingredients and their levels, the technical specifications for the production, and the specifications for packaging, storage, transportation and distribution of the product. Packaging costs are highly variable, depending on the amount packaged and the quality of materials used. Small pack sizes increase the price of the final product. Shipping and internal transportation also increase the price of the final product (Dijkhuizen P, 2000; Marchione T, 2000).

The figure below and table 18 show the price of the FCFs distributed nationwide or in a significant geographic area of the country. Price per 100 g

varies between US$0.089 for 100 g of Bienestarina in Colombia to US$0.303 for Nutrisano Papilla in Mexico.

The price also depends on whether the FCF product is used only for social programs, sold in the retail market or both. When products are sold only in the retail market they do not necessarily reach the target population. Data reported for products in this category shows that Bienestarina is the FCF product distributed nationwide with the lowest price per daily ration. A daily ration of 30 g of Bienestarina costs US$0.0267, while a daily ration of 90 g of PACFO papilla in Peru cost US$0.198, seven times the cost of a daily ration of Bienestarina. Both products are produced at comparable levels, with a similar pack size.

However, PACFO Papilla is formulated using oil and sugar as two of the main ingredients, adding significant cost to the final product. Bienestarina is produced primarily by the Institution responsible for its distribution, therefore reducing the price of the product.

To estimate the cost/benefit of the FCFs, a price per nutrient unit contribution for the FCF was calculated and is shown in Table 19. Data is presented as a nutritional contribution per daily ration of the FCF and as a price (US$) per each unit of selected nutrients. According to the reported data, Bienestarina (Colombia) shows the lowest cost per unit for all the selected nutrients. Mi Sopita (Chile) shows the highest cost for thiamin, riboflavin, zinc and iron. Fortified Cookies (Colombia) shows the highest cost for protein and calcium. Purita Cereal (Chile), Nutricereal (Panama) and Lactovisoy (Venezuela) show the highest cost per unit of energy. Purita Cereal (Chile) and Papilla PACFO (Peru) show the highest cost per unit of vitamin A. In summary, the data reported in this study suggests that Bienestarina (Colombia) is the FCF, distributed nationwide, which results in the highest nutritional contribution to the beneficiaries at the lowest price.

k) Monitoring and Impact Evaluations of the FCF Programs

A well-designed program includes monitoring and evaluation of both operating effectiveness and impact. Effectiveness includes coverage, leakage, efficiency and sustainability. Impact includes behavioral change, child growth, micronutrient status and other indicators.

A summary of the studies conducted in programs associated with FCFs used nationwide or in a significant geographic area of the participating countries is shown in Table 20. The evaluations performed differ in terms of quality: sometimes results are not available while others are not reliable. Of the thirteen FCFs in this category, seven (53.8%) have impact evaluations and 23% are in the process of being evaluated. Three studies reported a significant effect on anemia reduction; four evaluations showed better growth, and one reported increased weight gain. The results of one of the evaluations are not reliable and can therefore not be taken into consideration. Effectiveness and impact studies of FCFs in nationwide programs have shown different results depending on the criteria used to formulate the FCF product, initial age of children, duration of the intervention and outcomes measured.

Some programs have never been evaluated while others have been studied but the results have not been published yet or access is restricted. Some studies have been used to re-formulate the program and/or the FCF product associated with the program. This is the case for the evaluation of the infant cereal and dessert provided by the Province of Buenos Aires in Argentina. According to the information from the country, the results were not published but were used gradually for the re-formulation of the project and the product.

Mi papilla is a FCF (instant product) associated with the Food and Nutrition National Program (PANN) in Ecuador that led to a significant reduction in underweight and the prevalence of anemia. The evaluation was conducted in the Canton of Santo Domingo de Los Colorados, Province of Pichincha (ten health centers in the Health Area of Los Rosales) in 2002-2003. There were two process evaluations. The impact evaluation comprised both a longitudinal study and a cross-sectional study comparing program to control children. The prevalence of anemia fell from 76% to 27% among program children, but dropped only to 44% in control children. The incremental growth of program children was 0.3 cm greater than that of control children, however this difference was not statistically significant. In less than a year, PANN 2000 was highly effective in reducing the prevalence of underweight and in reducing anemia (Lutter C et al 2005). In the beginning, the program was implemented with some technical and financial support from UN (WFP, UNICEF and PAHO) and other international agencies, then, the government assumed financing of the program through the national public budget.

PAHO participated in the design and the impact evaluation of the program, while WFP has supported the refocusing of the target population and is also administering the public funds used for the program's implementation. The program also includes a special FCF for pregnant and lactating mothers named Mi Bebida.
Nutrinnfa is another instant FCF used nationwide in Ecuador in the Infant Development Centers (IDC) attended by the National Institute of Children and Family, INNFA, with World Food Program support. An impact evaluation of the use of this product was conducted between July 2004 and May 2005 (base line establishment, July 2004; intervention phase, August 2004-April 2005; and, evaluation, April-May, 2005). The evaluation was done in 1411 children attending 58 Infant Development Centers, comparing program with control children. Initial results have shown an important positive impact on the nutritional status of the children under 6 years old, using W/A Standardized Normal Deviation Z scores (HAZ). The final report is not yet available.

Mexico has implemented a number of food and nutrition programs and polices since 1950. A large-scale Social Welfare Program Oportunidades (formerly known as Progresa) targeted to poor families has been implemented. Children, pregnant and lactating women in participating households received fortified nutrition supplements, and the families received nutrition education, health care services and cash transfers. Nutrisano papilla is an instant FCF supplied by Oportunidades since 1999.The food complement was targeted to the groups of individuals most likely to benefit: children aged 6 months to 2 years of age; underweight children aged 2 to 4 years, and pregnant and lactating women in low-income beneficiary house-holds. The target women received a special fortified food named Nutrivida.

The evaluation of the nutritional impact of the program was conducted in low-income households in poor rural communities in six contiguous states in the central region of the country, representing the largest area in which the program operated.

The study was conducted in a random selection of 205 communities scheduled to enroll in the program and 142 communities that enrolled a year later. A random sample of children in those communities was surveyed at baseline, and at 1 and 2 years afterwards. Children 12 months of age or younger were included in the analysis. Age- and length-adjusted height was greater by 1.1 cm among infants younger than 6 months at baseline and who lived in the poorest households. After one year of intervention, mean hemoglobin values were higher in the intervention group (11.12 g/dL) than the group (10.75 g/dL) who had not yet received the benefits of the intervention (P=0.01).The age-adjusted rate of anemia (hemoglobin levels < 11 g/dL) was lower in the intervention group (54.9%) than the group who had not received the intervention (44.3%) (P=0.03). After 2 years, when both groups were receiving the intervention, there were no differences in either hemoglobin levels or the age-adjusted rate of anemia. The results of this study suggested that Oportunidades (Progresa) is associated with better growth and lower rates of anemia in low-income, rural infants and children in Mexico (Rivera JA et al 2004). Recently, a change to a more bioavailable iron source was proposed to obtain better results on improving child nutritional status.

The program in Cuba associated with the Fruit Puree has a monitoring and evaluation component that includes indicators for both the process and the impact. The monitoring of the process includes levels of production, distribution and consumption, as well as the iron and zinc concentrations of the final product. The impact is evaluated using hemoglobin level in the participating 6-12 mo children in five provinces. Hemoglobin levels were determined at the beginning of the program and 2 years later. A baseline was established. The evaluation is in progress and some final data has been collected and analyzed (INHA, 2005). An evaluation of the effect of the iron and vitamin C in the fortified Fruit Puree on iron status of the participating children has been published and a significant effect of FCF consumption on anemia and iron deficiency was reported. The consumption of the FCF product resulted in a 16.3% reduction in the prevalence of anemia in children. Anemia was reduced by 10% in children 22-35 mo and 21.2% in children 36-48 mo. Iron deficiency was reduced by 15.9 % in children 36-48 mo. The data suggests that the program is effective in one of the groups with the highest prevalence of anemia in Cuba (Gay et al 2003).

Chile evaluated the reinforced Subprogram of the National Supplementary Feeding Program (PNAC)

The reinforced subprogram is designed for undernourished children and those at risk of becoming undernourished. The efficiency of the subprogram in changing the nutritional status of the targeted children was evaluated. A sample of 2,357 children, 3 years of age and up were

evaluated. No relationship was found between participation in the PNAC program during the past 3 years, and an improvement in nutritional status evaluated as W/H and W/A according to the NCHS (Z score). The re-formulation of the mentioned subprogram was recommended. (Kain et al 1994).

Assessment of the nutritional impact of the complementary feeding program (PAC-MINSA) with the use of Nutricrema (Nutricereal) Papilla was performed in Panama on children less than 5 years old. A retrospective cohort of program beneficiaries was studied and compared with others of the same age and location not involved in the intervention. Weight for age (W/A), height for age (H/A) and weight for height (W/H) were calculated and the nutritional status determined according to norms of the Ministry of Health.

Weight gain was higher in children with a lower W/A, in families with fewer children or mothers with a better education level. In 35% of malnourished children and 24% of children at risk, nutritional status improved during the intervention.

Children with a higher nutritional deficit at the beginning of the program had a significantly better nutritional improvement, providing evidence for the importance of focusing this program on malnourished children (Caballero E et al, 2004).

In Colombia the FCF products are used in different complementary feeding programs of the Colombian Institute for the Well-being of the Families (ICBF) and are also distributed along with other foods as a family food package. The ICBF has established a monitoring system for the different components of the program. According to reported data, the program does not have an impact evaluation, however there has been a change in the iron source used. A highly bioavailable iron component is now being used in the fortification process. The micronutrient premix was reformulated to include also folic acid, vitamin B12 and Zinc. Other improvements were also made such as the replacement of imported wheat flour with corn flour (fecula de maiz); and the introduction of 2 more product presentations (liquid and flakes) with 2 different flavors.

Currently, the National Institute of Health is studying the impact of the Infant Breakfast Program in which the Fortified Cookie and Fortified Milk are incorporated. The first phase of data collection is completed. The evaluation includes the effect on food intake and nutritional status of the participating children (ICBF 2003, 2004). Finally, Papilla PACFO (National Complementary Feeding Program for High Risk Groups) is another program that distributes instant FCF to high-risk children under 3 yrs of age. It is associated with the National Feeding Program PRONAA in collaboration with the National Food and Nutrition Center (CENAN) and the National Institute of Health. The program, founded in 1994, does not have baseline data making it difficult to evaluate the impact of the intervention. Results of case-control and time series studies are inconsistent and not very reliable (INS, 2003).

CATEGORY TWO

CATEGORY TWO: FORTIFIED MILK PROGRAMS

Micronutrient fortification of milk is one of the approaches that has been used by some countries as part of social programs to prevent micronutrient deficiency in children and pregnant women. The table below shows the fortified milk distributed in the participating countries. Seven of the sixteen countries that reported FCF products (out of twenty countries participating in the study) have been using fortified milk. The fortified milk is given to young children during the period of complementary feeding. For this reason, the present study has defined these milk products fortified complementary foods.

Fortified Milk Products	
Country	**Milk Product**
Solid Fortified Milk	
Argentina	Fortified Milk powder
Chile	Purita (Fortified Milk)
Costa Rica	Fortified Milk
Dominican Republic	Fortified Milk
Liquid Fortified Milk	
Colombia	Fortified Milk
Cuba	Nela (Fortified Evaporated Milk)
Mexico	Tenutre (Fortified Milk)

a) Main Characteristics of the Fortified Milk Programs

The main characteristics of the programs related to the Fortified Milks are shown in Table 21. Fortified Milk Products are used by public programs subsidized by the government in each country. The public programs are related with the Health Sector, through National Food Security, Complementary Feeding Programs or other specific programs.

The programs use the fortified milk products nationwide. Some of them have been established a while back. Programs related to milk products in Costa Rica and Chile were established in the 1950's. Other programs, like the fortified milk with iron and zinc program in Cuba which distributed the Nela evaporated milk, started last year (2005).

b) Beneficiaries of the Fortified Milk Programs

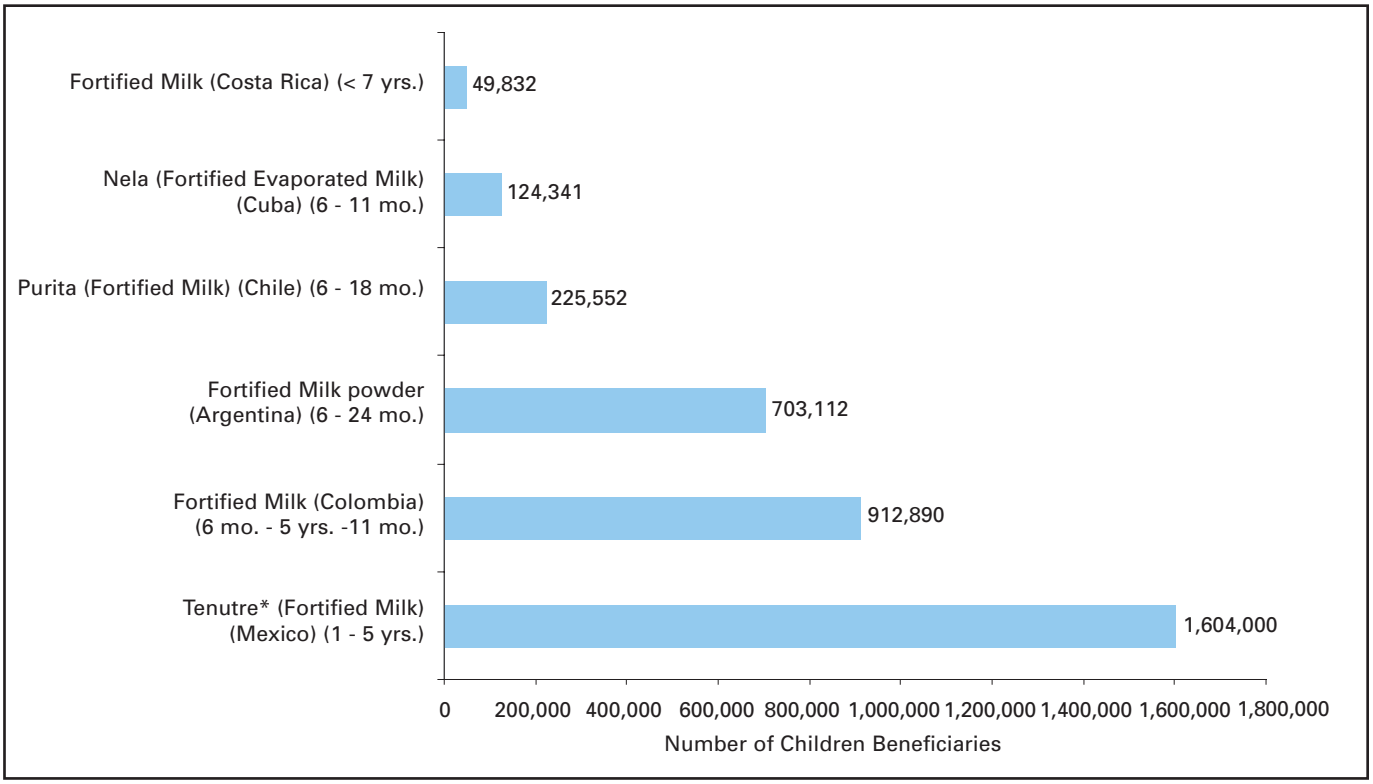
The beneficiaries of the fortified milks are selected using the criteria of poverty and/or under-nutrition in the participating Latin America and Caribbean countries. The main selection criteria for the beneficiaries of the programs in this category are shown in Table 22. The Colombian Family Welfare Institute (ICBF) distributed the Fortified Milk along with the Fortified Cookie to children between the ages of 6 months and 5yrs/11months. Cuba distributed Nela Evaporated Fortified Milk to children 6-12 mo of age and to children under 6 months who are not exclusively breastfed. The main characteristics of the beneficiaries of the programs are summarized in Table 23 and illustrated in the Figure below.

The programs distribute fortified milk to a wide age range of beneficiaries. The Fortified Milk Tenutre in Mexico and the Fortified Milk in Colombia are distributed to the highest number of beneficiaries (1,604,000 and 912,890 children under five respectively). The Fortified Milk in Argentina is distributed to the highest number of beneficiaries from 6-24 months (703,112). Chile, Argentina, Mexico and Costa Rica distribute fortified milk to pregnant and lactating women, in addition to young children. Cuba distributes the Nela Evaporated Fortified Milk to children in the narrowest age range (6-11 mo) and to children less than 6 months (under restricted control) who are not exclusively breastfed, while Dominican Republic also distributes to elderly people, aged 65 years and older.

When the population percentage of children less than 3 years of age is estimated, the fortified milk covers around 28.45% of that population (3,619,727 beneficiaries). Therefore, approximately 71.5% of children less than 3 yrs of age have not received the benefits of the programs that distribute fortified milk in the participating countries (Table # 23).

Poverty data for beneficiary children was not reported or analyzed as part of this study, so the real program coverage of beneficiaries using the same selection criteria was not obtained. It is possible that the total coverage of the programs is higher. However, as was mentioned before, special control is required for these FCFs in order to avoid breastfeeding displacement.

Fortified Milk Programs. Children Beneficiaries.



*Out of total 5,828,102 beneficiaries 6 mo-44 yrs
Not Available data for Fortified Milk in Dominican Republic

c) Nutritional Composition of the Fortified Milk

Tables 24 A and B show the nutritional composition of the fortified milk products. Data is shown per 100 g, per daily ration and as a percentage of the recommendations for a fortified complementary food. Data for 100 g of product is important in the definition of the daily ration of the FCF product. The fortified dry milks reported in this study supplied 100% of the recommended energy for a FCF per 100 g of dry product. However, when the data is analyzed by daily ration, the nutritional contribution of each product is different.

The daily ration for the dry milk in Argentina and Dominican Republic contributed 100 % of the recommendation for energy, but also 200-400% of the needs for protein, fat, vitamin D, riboflavin, calcium, and phosphorus. The daily ration of the Fortified Milk in Argentina meets 100% of the needs for zinc, and around 90% for iron and vitamin A. The Fortified Milk from Dominican Republic contributed 300% the needs for zinc. The daily portion of Fortified Milk distributed in Costa Rica contributes to around 70% of the energy, 150-300% of protein and calcium, 127% of total fat, and 80-95% of the needs for vitamin A and folic acid. The daily ration of the Tenutre Fortified Milk distributed in Mexico contributed 2 to 5 times the recommendations for the majority of the nutrients except zinc (1.65 times) and around 100% of iron and folic acid.

Fortified Milk contributes not only quantity and quality of protein, but also compounds like amino acids which are enhancers of mineral absorption.

d) Energy and Nutrient Density of the Fortified Milk

The nutrient densities of the seven fortified milk products distributed in the seven participating Latin America and Caribbean countries are shown in Tables 25 and 26 (final product energy contribution). Data is shown as energy density per g of the FCF product and nutrient density per 100 Kcal. The percentage of the nutrient density recommended for a FCF is also estimated.

The Kcal/g of solid fortified milk products is similar to the recommended energy density. Therefore the

net energy contribution of this type of product is specifically related to the daily portion size defined for each product. The final diluted Nela Evaporated Fortified Milk (Cuba) has an energy concentration (0.57 Kcal/mL) similar to the other liquid fortified milks distributed in Mexico (0.57 Kcal/ mL) and in Colombia (0.60 Kcal/mL).

In general, all the FCF products in this category show around two times the recommended protein density. With regards to the nutrient density, zinc density ranged from 0.3 in Nela Evaporated Fortified Milk (Cuba) to 5.8 in Dominican Republic's Fortified Milk. The recommended zinc and iron densities for a FCF are 1.9 and 3.2 respectively. No fortified milk product meets the recommended iron density.

e) Social Communication, Social Marketing of the Fortified Milk Programs

The reported marketing of the fortified complementary foods in this category is shown in Table 27. The majority of the programs related to these products have incorporated promotion and other social marketing strategies, however these activities have been conducted on an infrequent basis.

In 2000, in Argentina, the National Ministry of Health, with Unicef´s support, formulated a manual for the prevention of iron deficiency anemia in children and pregnant women. These guidelines have been used in social marketing, education and training activities associated with the fortified milk distribution. Programs that were established a long time ago, like the fortified milk program in Chile (Purita), no longer have associated social marketing activities. The products are now sold in retail markets. This strategy has a positive effect on the population due to the fact that the same products are sold and used both in social programs and commercially (not only for "poor" children).

Fortified Milks in Costa Rica and Colombia are distributed as part of a food family package. In Costa Rica the food family package is distributed in the different components of the Nutrition and Integral Child Development Program. This program has a community nutrition education component. The Fortified Milk product in Colombia is incorporated into the integral promotion and social communication activities of the FCF products supported by the Colombian Family Welfare Institute (ICBF) as was described before for products distributed nationwide, especially with the Fortified Cookie as part of the Infant Breakfast Program.

In Cuba a social marketing program will be implemented to support Nela Evaporated Fortified Milk as well as the Fruit Puree. No marketing information was available for the fortified Milk in the Dominican Republic.

f) Production and Distribution of the Fortified Milk

Fortified milk products are distributed in the participating countries in three different formats: dry, concentrate and liquid ready to be consumed. Fortified dry milk is distributed in Argentina, Chile, Costa Rica and Dominican Republic. Fortified milk concentrate is distributed in Cuba. Fortified ready-to-drink Liquid Milk is distributed in Colombia and Mexico. Milk is fortified with iron, zinc and, in some cases like Mexico, with vitamin C, folic acid and vitamin B12.

Table 28 and Figure 13 show the production of fortified milk products in the participating countries, according to the data reported by the countries. Milk Production ranges from 8,200 MT/yr in Chile to 1,235,817 MT/yr in Mexico. The level of production is related to the total number of beneficiaries and the size of the daily portion. No production data was reported for the Fortified Milk in Dominican Republic. In general, the fortified milk distributed in the participating Latin America and Caribbean countries is produced by the private sector.

The distribution of the Fortified Milk is shown in Table 29. In the majority of the countries, the FCF is distributed from the production unit directly to local health care centers, public institution units and/or local milk distribution centers. The centers and units are responsible for the distribution of the milk to the target population. The Nela Evaporated Fortified Milk in Cuba is distributed in the retail market that is accessible to the target population. Two different distribution channels are used in Dominican Republic: the Local Health Care Center and the Local Milk Distribution Center. This strategy could help to reach the target population.

g) Ingredients and Product Specifications of the Fortified Milk

Table 30 shows the main ingredients (qualitative data) of the Fortified Milk Products. Very few

countries reported quantitative data. The fortified solid milk products are based on powder milk. Oil and sugar are added to some products to enhance the sensorial characteristics and to increase the energy density of the final product. Oil has been added to the Tenutre Fortified Milk in Mexico and to the Fortified Milk in Dominican Republic.

Table 31 shows the product specifications for the fortified milk products. Fortified dry milk is distributed in containers from 400 to 1000 g with a serving size between 20 and 45 g and a daily ration of 20 to 60 g. The Nela Evaporated fortified milk is distributed in Cuba in containers of 1.0L with a recommended daily ration of 283.3 ml of concentrate milk diluted to 850 ml. The other liquid milk is distributed in containers of 200 mL to 2.0 L, with a serving size between 200 and 285 ml and a daily ration of 200-570 ml (Fig. 15). An average of 590 ml of the liquid fortified ready to drink milk is recommended to be consumed daily.

h) Preparation of the Fortified Milk

The preparation and intake of the milk products are shown in table 32. Solid fortified milk products are recommended to be given in serving sizes ranging between 20 and 45.4 g, 1-2.4 times per day. In Chile a daily ration of 20 g of Fortified Purita Milk is recommended for children 6-18 months. A daily fortified milk ration of 45-50 g is recommended in Argentina for children 6-24 months, and in Dominican Republic for children 11-36 months.

For all solid fortified milk products, water is added to give a final volume of 200 ml. Sugar is added during the preparation of the Iron Fortified Powder Milk in Argentina, while sugar and vegetable oil are recommended to be added during the preparation of the Fortified Purita Milk in Chile to increase the energy density of the final product. The addition of these ingredients during product preparation reduces the risk of a change in color and fat oxidation in the FCF during production, transportation, storage and distribution, and reduces the price of the product to the program. However, it adds to the price for the beneficiaries (Purita is sold in retail market).

The Nela Evaporated Fortified Milk in Cuba is diluted in a ratio of 1:2 concentrate milk: water to prepare the daily 1 L recommended ration. No additional ingredients need to be added to the ready-to-drink milk. The daily ration of Tenutre Fortified Milk distributed in Mexico is 570 mL for children 6 months to 5 years old, while in Colombia a daily ration of 200 mL is recommended for children 12-71 mos. In this analysis, it is important to remember that the Fortified Milk in Colombia is distributed along with the Fortified Cookie, which could result in a combined nutritional contribution for beneficiaries.

i) Price and Cost Benefits of the Fortified Milk

The price of the fortified milk distributed in the participating countries is shown in Table 33 and the figure below. The price per 100 g of dry milk product varied between US$ 0.310 (Chile) and US$ 0.660 (Argentina) with an average of US$ 0.50 per 100 g of dry milk.

With the exception of Cuba (850 ml), the serving size for the ready-to-drink fortified milk varied from 200 to 285 ml, with a cost of US$ 0.096 - 0.160 per serving and US$ 0.16-0.19 per daily ration.

Table 34 shows the estimated cost per nutrient unit in the fortified milk products. The Nela product distributed in Cuba has the lowest cost per nutrient unit for energy, protein, zinc and iron, while Tenutre distributed in Mexico, has the lowest cost for vitamin A. Fortified Milk in Colombia has the highest cost per nutrient unit for protein and vitamin A, while Fortified Powder Milk in Argentina has the highest cost for energy, calcium and zinc.

j) Monitoring and Impact Evaluation of the Fortified Milk Programs

High quality low-price FCFs with a good distribution system are effective in improving micronutrient status among the target population.

Table 35 summarizes the impact studies for the fortified milk products reported by the participating Latin American and Caribbean Countries. From the seven FCF programs, just two have been evaluated (Chile 3 evaluations conducted and Mexico 1 completed and one in progress. Cuba and Colombia fortified milk programs have evaluations in progress.

In Chile, the fortification of milk powder with iron (10 mg/100 g as ferrous sulfate), zinc (5 mg/100 g), copper (0.05 mg/100 g), and ascorbic acid (70 mg/100 g) has been studied. Forty-two healthy male children under 18 months with normal growth and from lower socioeconomic groups were studied. A nutrition survey was conducted: blood and hair samples were collected to evaluate

Fortified Milk Programs. Price (US$) per 100 g and per Daily Ration

the concentrations of Zn in plasma and hair, hemoglobin, hematocrit, and serum ferritin. The consumption of fortified milk resulted in a significant reduction of anemia. Children under 18 months who were fed with fortified milk provided by the Complementary National Food Program had an improved iron status, but possibly not the zinc status. A re-evaluation of the level of zinc fortification was recommended (Torrejon et al 2004).

The Maternal- Infant Program in Chile has done two studies to evaluate the iron bioavailability of the fortified milk. The first one, a case-control study, showed a reduction in anemia prevalence to 1.6% in the group who received the fortified milk compared with 27.8% anemia prevalence in the control group. The second was a regional study with beneficiaries of the program. The beneficiaries who received fortified milk showed 5.5% anemia prevalence, versus 29.9% for the control group.

Currently, in Argentina the Maternal-Infant Plan of the Health and Environment Ministry is carrying out an impact study related to fortified milk.

The program in Cuba associated with the evaporated fortified milk (and also with the Fruit

Puree) has a monitoring component that includes indicators for both the process and the impact. The monitoring of the process includes levels of production, distribution and consumption, as well as the iron and zinc concentrations of the final product. The baseline data and some final data have been collected for the impact evaluation. The impact is evaluated using hemoglobin levels in participating 6-12 month children in five provinces. Hemoglobin levels were determined at the beginning of the program and will be measured after 2 years of program implementation.

The National Institute of Health has begun (first data set has been collected) an impact study of the Fortified Milk as part of the Infant Breakfast Program in Colombia. The evaluation includes variables and indexes of the three levels of intervention in the program: children, family and community.

The Tenutre Fortified Milk provided by the Oportunidades program in Mexico is distributed by LICONSA. The efficacy of the iron fortified milk on anemia prevalence and iron status in pre-school Mexican children has been evaluated. Samples of children 12-30 months were randomly assigned in case control groups. One group received the fortified milk, and the other group received the non-fortified milk. The concentrations of hemoglobin, and/or serum ferritin and/or soluble transferin receptors (TfR) were measured at baseline and 6 months later. The results of this study suggested that the consumption of milk fortified with ferrous sulfate for 6 months, significantly reduced the prevalence of anemia and improved the nutritional status of Mexican children aged 12-30 months (Rivera JA et al, Shamah Levy T et al, and Salvador V et al). Currently, another evaluation of the product's impact is being conducted by the National Institute of Public Health in Mexico.

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CATEGORY THREE

CATEGORY THREE: PROGRAMS USING FORTIFIED CORN-SOY BLEND (CSB) PRODUCTS

The FCF programs in this category are relatively new, started since 2002. Most of them are experiences conducted in small geographic areas of countries and in specific locations (Table 36) Five FCF experiences are implemented in three participating countries:

Programs Using Fortified Corn-Soy Blend (CSB) Products	
Country	**FCF**
El Salvador	CSB Soyarin
Honduras	CSB Flour CSB Papilla
Nicaragua	CSB Cereal CSB Papilla

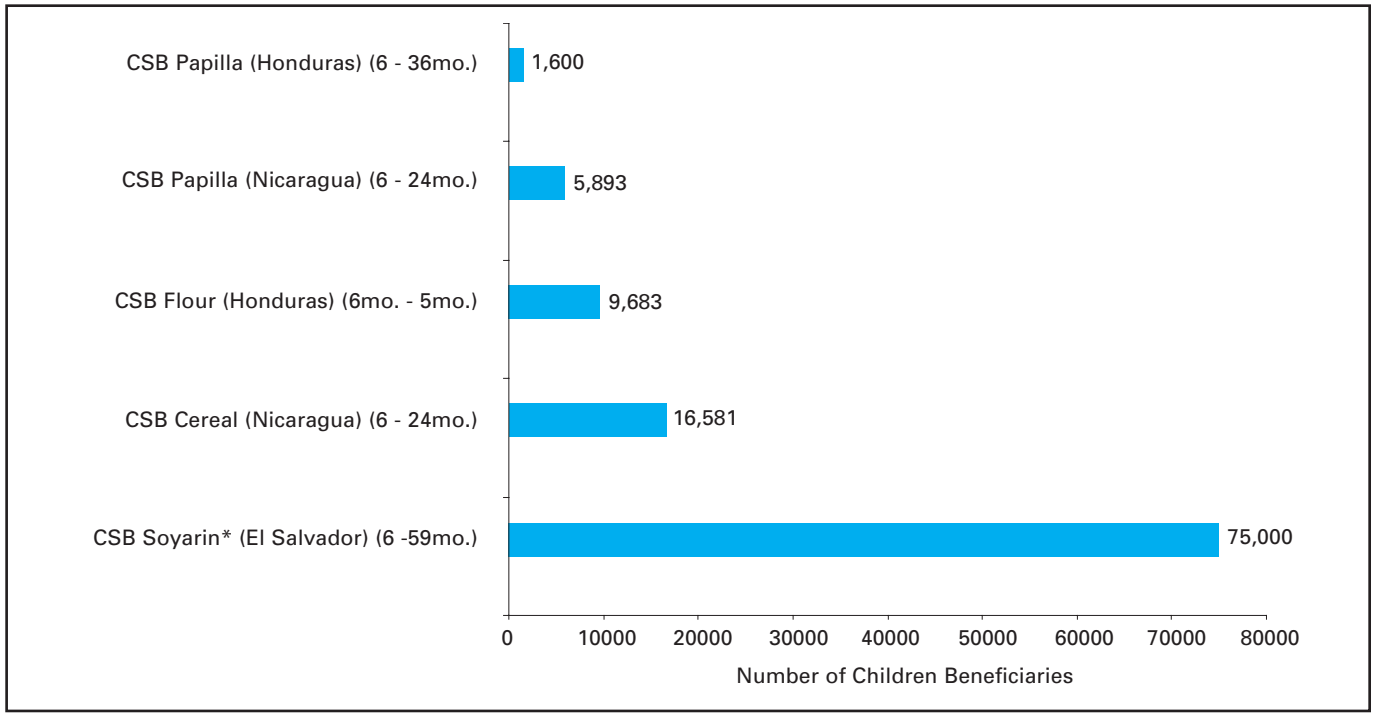
a) Main Characteristics of the Programs

The main characteristics of the programs are shown in Table 36. The FCF products in this category are donated mainly by the World Food Program (WFP); a pilot project is supported by the World Bank (WB).

b) Beneficiaries of the Programs

Table 37 shows the selection criteria for the beneficiaries of this category of FCF. Poverty and under-nutrition are the main criteria for the selection of the beneficiaries. The figure below shows the beneficiaries of the FCFs. There is a wide range of beneficiaries as in the two categories of FCF already discussed. In Nicaragua the CSB Papilla and cereal are distributed to children 6-24 months, as well as to pregnant and lactating mothers. In Honduras the CSB Papilla is distributed to children 6-36 months and CSB flour to children 6-60 mo. In El Salvador Soyarin is distributed to children 6-59 months and to pregnant and lactating mothers.

Programs Using Fortified Corn-Soy Blend (CSB) Products. Children Beneficiaries



* 150,000 children 7 - 12 yrs. , 25,000 pregnant / lactating mothers

Table 38 shows the number of beneficiaries for each FCF product. An estimation of coverage was calculated in each country based on the total population of children < 3 yrs old. It is important to take into consideration that the FCF products included in this category are distributed in specific geographic areas in the country. Therefore, a small number and % of coverage of the target population is expected in relation to the other nation wide experiences. In total, there are 108,757 child beneficiaries (7.12%). Soyarin in El Salvador reaches approximately 75,000 child beneficiaries (15.49%). In Honduras 1.60% and 0.26 % of the total < 3 yrs child population are covered. The CSB products in Nicaragua covered 3.76% and 1.34% of the target population, so 92.8 % (total) children under 3 years old do not benefit.

c) Nutritional Composition of the FCF

The nutritional contributions of the FCFs used in these interventions are shown in Tables 39-A and 39-B. Data is shown as a nutritional composition per 100 g, per daily ration and per % of the FAO/WHO recommendations. The CSB Cereal in Nicaragua has been recommended in two different high daily rations.

The daily ration of the CSB products contributes 2-4 times more then the recommended total energy per daily portion for a FCF and 2-6 times the recommendations for the majority of the other nutrients. Products contribute 54-166% the needs for zinc, and wide range for iodine. Because they are based on soybean, high levels of phosphorus are present in all the CSB products. As was mentioned before, these levels of phosphorus are due to the presence of phytate in the product, which is a well-known iron and zinc absorption inhibitors. Therefore a careful evaluation of the bioavailability of these important minerals is recommended.

d) Preparation, Energy and Nutrient Density of the FCF

Table 40 shows the nutrient density of the FCFs in this category. Nutrient density is estimated per 100 Kcal for selected nutrients. Percentages of the recommended nutrient density for a FCF are included. Except the nutrient density for zinc and, to some extent iron, the nutrient densities of the CSB products are 2 or 3 times the recommended protein density and 2-5 times for calcium density.

Table 41 shows the energy contribution of the products before and after preparation. FAO/WHO recommends a daily ration with 4.4 Kcal per g dry weight of product. The energy density of the products before preparation ranged from 3.76 Kcal/g for CSB Soyarin in El Salvador to 4.08 Kcal/g for CSB Papilla in Nicaragua. The caloric density of the final product is estimated in Kcal per ml of the product and ranges from 1.16 to 2.35 Kcal/ml.

Table 45 shows the preparation and recommended intake of the FCFs distributed in specific geographic areas of the participating countries. In general, products are diluted to a product-specific final volume. The addition of sugar and/or oil is recommended during the preparation of the majority of the CSB products, resulting in a product with a higher energy density than that of the original product.

e) Social Communication, Social Marketing, Production and Distribution of the FCF

Insufficient information about the marketing for this category of FCF products was reported with the exception of Soyarin in El Salvador. Social communication and social promotion of products are conducted in some of these programs, specially directed to mothers.

The distribution of the FCFs in this category is shown in Table 42. In general, most of the food distributed by the WFP (CSB products reported in El Salvador, Honduras and Nicaragua), is produced by private sector companies within the countries. CSB flour in Nicaragua is produced by private sector companies in the United States and provided by the World Bank, through a pilot project. Local manufacturers use local ingredients with the exception of the vitamin and mineral pre-mixes which are purchased from international suppliers. (Dijkhuizen P, 2000). Honduras and Nicaragua distribute from 67 to 460 MT of the CSB's products per year. Unfortunately, no other production information was reported by El Salvador.

The products in this category are distributed through local institution units, local health centers and non-governmental community organizations (NGOs).

f) Ingredients of the FCF

Table 43 shows the main ingredients used in the formulation of the FCF products in this category.

Figure 16 shows the frequency of use of the ingredients in the FCF products. The CSB flour donated by the WFP is a basic corn-soy blend product which has very little flavoring and is used as papilla, "atole" drink and for preparing different food recipes. The formulation of this and the other CSB's products is based on a 22.0%-69.7% Soy-Corn mix, which results in a protein quality higher than that of each single ingredient. Other products donated by the WFP are also based on corn-soy blend, with the addition of 5% to 10% of dry skim milk. As was mentioned before, the use of dry skim milk not only increases the nutritional quality of the product but also significantly improves the taste. The addition of dry skim milk also increases the price of the final product. (Dijkhuizen P, 2000).

g) Product Specifications of the FCF

The pack, serving and daily ration sizes, along with the price and preparation recipes, of the FCF products donated by the WFP vary widely by country. Table 44 shows a summary of the product specification of the FCF products in this category.

Products are distributed to beneficiaries in containers that range from 1,800 g (4 lb) to 14,982 g (33 lb).

The serving size (table 44) ranges from 57.5 g for CSB Papilla (Honduras) to 115 g which is recommended for the majority of the CSB products: Soyarin in El Salvador, CSB Cereal in Nicaragua and CSB Flour in Honduras. The recommended consumption for products in this category is a 50-115 g daily ration (Figure 17) because of the wide range of beneficiaries. The high recommended daily rations of these products, suggests that young children are receiving more than they need with a direct risk of breastfeeding displacement.

h) Price and Cost Benefit of the FCF

Price is very important, not only in situations in which the food is provided free of charge in the context of a social program or project, but also because of implications for commercial marketing.

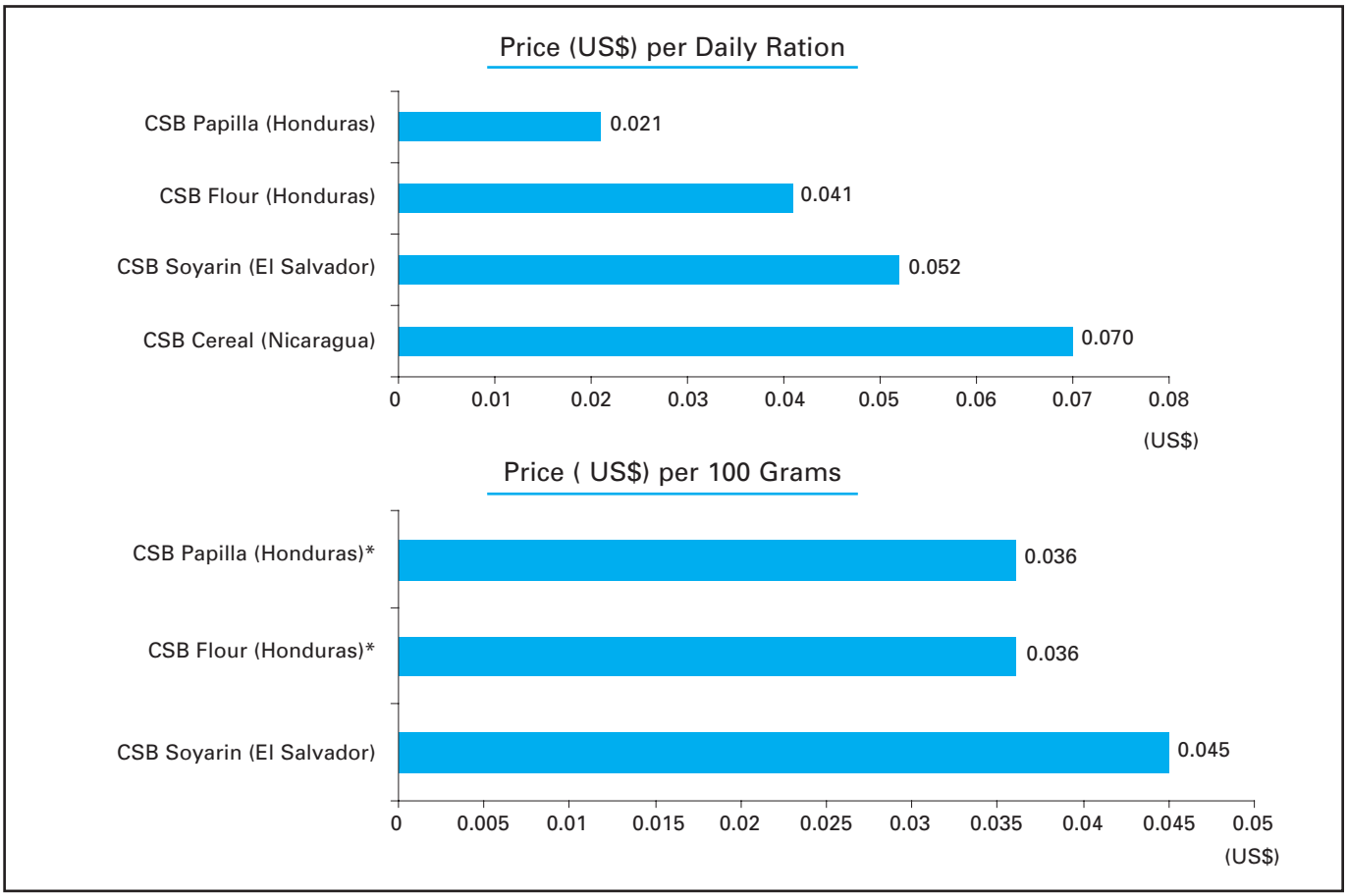
The CSB products distributed by the WFP in Honduras and Nicaragua are distributed in different sized containers. Packaging costs are highly variable, depending on the amount packaged and the quality of materials used.

Therefore, the price can vary from one country to another. In general the price of WFP foods has been reported to be one of the cheapest (about U$ 360 per metric ton and U$0.036 per 100 g). When milk is added to the corn-soy mix, as occurs in some CSB papillas, the cost is much higher (Dijkhuizen P, 2000).

Table 46 and the figures above show a summary of the prices of the FCFs distributed in programs supported by WFP. The price of the products depends not only on the type of ingredients used in the formulation of the product, but also in the size of the container or package distributed to the beneficiaries and in the number of servings per package. According to the data reported by the countries, similar CSB products are distributed to beneficiaries in El Salvador, Honduras and Nicaragua in different sized containers (12 lb (5.5 Kg) - 33 lb (15 Kg)). The CSB flour is distributed in Honduras in a package of 33 pounds, while the CSB papilla in a package of 12 pounds. The estimated price per 100 g of the CSB flour in Honduras is US$0.036. The price per 100g CSB papilla is US$0.036.

Among the FCFs distributed in Honduras and Nicaragua, the CSB cereal in Nicaragua has a lower price per nutrient than the similar product in Honduras. This means that factors other than the product specifications have an important role in the final price of the FCF.

CSB Products. Price per 100 g and per Daily Ration.



Not Available data for CSB Papilla and Cereal in Nicaragua

i) Monitoring and Impact Evaluation of the CSB Programs

Table 47 shows a summary of the impact studies for the products in this category. Only the FCF products in Honduras have been evaluated.

Honduras distributed the CSB Flour and CSB Papilla donated by the WFP. The evaluation of the impact of CSB Flour is in progress. Measurements of H/A in 2-5 year old children are performed on a monthly basis. CSB Papilla has been evaluated in 2 locations, Choluteca and El Paraiso, using the W/H indicator. Initial results show that the consumption of the CBS Papilla reduced the prevalence of severe wasting prevalence by 2.56% and the prevalence of moderate and severe wasting by 10.2%

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CATEGORY FOUR

CATEGORY FOUR: PAST EXPERIENCES AND NEW PROGRAMS WITH FCF

The FCFs in this category are shown in the table below. Ten different FCF products from seven countries are included in this category.

Past Experiences and New Programs	
Country	**FCF**
Past Experiences	
Ecuador	Nutritiva (papilla)
Venezuela	Milk Product (P.L)
Peru	Alli Alimentu
Past Experiences, Currently Sold in The Retail Market	
Colombia	Colombiharina Solidarina
Haiti	AK-1000
Guatemala	Incaparina (original) Incaparina (new)
New Programs	
Guatemala	Vitacereal Papilla
Peru	INCAMIX Papilla

Several programs have been subsidized by governments whilst others are being or have been donated by international organizations. The programs are or have been related to National Complementary Feeding Programs or specific projects designed to reach malnourished populations. Some complementary foods have been distributed since 1958 and many of them are sold in the retail market not as part of social programs.

a) Main Characteristics and Products Specifications of the Past experiences and New Programs with FCF

To better compare the specific characteristics of both programs and products in this category, the FCFs were divided in 3 sub-categories: i) past experiences: Nutritiva (Ecuador), AK-1000 (Haiti), Milk Product PL (Venezuela) and Alli Alimentu (Peru); ii) past and small experiences currently sold in the retail market: Incaparina original (Guatemala, El Salvador) and Incaparina new (Guatemala), Colombiharina and Solidarina (Colombia); and, iii) New Proposals: Vitacereal (Guatemala) and INCAMIX (Peru).

A summary of the main characteristics of past with FCFs are shown in Tables 48 and 49 and Figures 18, 19 and 20.

In the past (2000-2002), World Vision Projects distributed the Nutritiva Papilla in Ecuador. The FCF was produced by Moderna Alimentos SA. The staff of the eighteen Development Projects of the Area (PDA) were responsible for the distribution of the FCF to children 6-24 months from families living in communities of 7 provinces of the country. The FCF was based on rice, soy, powder milk and quinoa. Oil and sugar were added to increase the energy density and palatability. The product was distributed in packages of 1 kg and a daily ration of 65 g was recommended.

The Milk Product (PL) was distributed nationwide to poor families in Venezuela as part of the Program for the Protection of Malnourished Pre-school Children from 1958 to 1964. The product was produced in the Industrial Plant of the National Institute of Nutrition, marketed in Milk Products Units at the Local Centers and distributed by local health centers, pre-school and schools centers, or directly to family homes. The product was based on powder milk and sugar and distributed in 1Kg packages with a 60g daily ration.

Alli Alimentu in Peru was a pilot project developed in the Department of Ancash by the Institute of Nutritional Research (IIN) and the Peruvian Government through the National Fund of Development and Social Compensation, FONCODES. Children 6-36 months of age received the FCF. This pilot project was linked to a strategy of social communication and promotional activities through the community organizations. The Community Implementation Committee was responsible for the promotion of community participation, and implemented social marketing of the project using radio programs. The committee was also in charge of training mothers in proper food preparation using specifically designed educational materials. The FCF was based on a mix of rice, barley, beans, powdered milk and vegetable oil. It was produced and transported to the distribution points of the pilot project by the private sector under contract to the Government of Peru.

Thereafter, community organizations took

responsibility for the transportation of the food to the beneficiaries. The product was distributed in 2.5Kg packages with a recommended daily ration of 250g (Lopez de Romana, 2000).

The main characteristics of the programs and product specifications used in the past or small experiences that are available in the retail market are shown in Table 49 and figures 18, 19 and 20. Some of the products of past experiences had been part of social programs and are now sold in the retail market not only in the original country but also in other countries. Bienestarina and Incaparina are products made in Guatemala and distributed in the retail markets of Guatemala and El Salvador. Colombiharina is a past experience available in the retail market in Colombia. A product like Solidarina is a current small that is also available in the retail market.

The development of high-nutrition, low-cost vegetable mixtures or complementary foods suitable for feeding children under 4 yrs old and other vulnerable age groups started in the early 1950s at the Institute of Nutrition of Central America and Panama (INCAP). Foods were formulated using locally available ingredients processed into flour with a protein content and amino acid balance comparable to milk, in a culturally acceptable form and at the lowest price possible for the benefit of sectors of the population with modest purchasing power. They were also supplemented with vitamins, iron and calcium. Incaparina started in Guatemala in 1961. After the introduction of Incaparina to the market, INCAP licensed private companies to manufacture and sell the product in different countries. The Incaparina product concept was also used in several other countries, including Colombia, Ecuador and Peru, to develop similar products like Colombiharina, Bienestarina and Solidarina in Colombia. (Scrimshaw N, 1988; Rozo C, 2000).

Incaparina in Guatemala is produced by Alimentos SA based on soybean, cottonseed and corn flour fortified with vitamin A, thiamine, riboflavin, niacin, calcium, zinc, phosphorus and lysine. It is sold in 454 g packs with a recommended daily ration of 18.8 g. Currently, there are some problems with the availability of raw materials for the production of Incaparina, especially cottonseed flour, since cotton is no longer produced in the region. Therefore, INCAP has developed a new formulation for Incaparina. New Incaparina is based on maize and soybean flour and the micronutrient content provides at least 20% of the recommended daily allowance (RDA) for adult women. The new Incaparina has the same product specifications as the original one, but with a slightly higher cost.

The production and commercialization of complementary foods began in Colombia in 1962 when INCAP licensed Products Quaker in Cali to manufacture yellow Incaparina based on cottonseed and corn flour. The National Institute of Nutrition has supported the use of Incaparina in complementary feeding programs nationwide since its introduction into the market. The success of Incaparina stimulated other companies to develop competitive products. The University of Valle in Cali, in cooperation with Molinos Santa Rita, developed a product called Colombiharina, which is based on rice and defatted soybean flour and is offered to families via the retail market. Colombiharina is distributed in 500g packages with a daily ration of 12 g. The cost per daily ration is similar to the cost for Incaparina.

The Foundation Solidaridad por Colombia is a non-profit organization with a mission to help underprivileged populations, including abandoned children. With this purpose, the foundation established a complementary feeding program based on Solidarina. The coverage of the program is restricted by its financial resources. Solidarina is manufactured by Derivados del Maiz, an affiliate company of CPC International, using corn flour, soybean flour and non-fat dry milk. The addition of milk, as mentioned before, increases the nutritive value and palatability of the product. It also results in a higher cost for the FCF product. It is sold retail in Bogota and Medellin in 500g packs with a cost around 3 times the cost for the same amount of Colombiharina.

Vitacereal in Guatemala is one of the new proposals reported in this Situation Analysis. The joint interagency WFP-UNICEF-PAHO program supported the first phase of the National Plan for the Elimination of Chronic Under-Nutrition of Children under 3 Years of Age, which is related to Vitacereal. It is a three year phase beginning in 2006 and focused on the complementary nutrition of children aged 6-36 months old and pregnant and lactating women with the goal of breaking the intergenerational chronic under-nutrition/stunting circle. The program will be developed in 83 priority municipalities covering 220,000 children less than 3 years and 150,000 pregnant women and lactating mothers. The new Vitacereal Program in Guatemala will cover 16% of the country's children under 3 years old. The implementation of activities will be the responsibility of government institutions directly involved in issues related to the nutritional

attention of women and children under-three years of age. Different from past FCF experiences, which distributed products to a wide age range of beneficiaries, Guatemala's new program has defined a specific target age-range for beneficiaries, which should result in significant nutritional benefits for the target population.

The INCAMIX papilla in Peru is a WFP project pending implementation. It was formulated by a private company Kantur to be distributed to aged 6-36 months and 3-11years, and pregnant and lactating mothers in the Department of Huancavelica, one of the poorest in the country. Currently, the product is distributed to children 3-11 years old. At the request of the Peruvian Government, the formulation of the product is being re-evaluated in order to reach the required protein quality for children less than 3 years of age.

b) Nutritional Composition of the FCF

Tables 50 A and B show the nutritional contribution of the daily ration of the FCF products in this category. Data is compared with the recommended nutritional composition of FCF per daily intake of 50 g for children 6-23 mo (Lutter and Dewey, 2003).

As was mentioned before, the nutritional characteristics of the FCF products are variable and depend on the scientific information that was available when they were formulated. Foods that were formulated in the 1960s and 1970s, such as Incaparina and Colombiharina, have an adequate content of protein and a lower content of fat and minerals than those formulated in late 1990's, such as Alli Alimentu or INCAMIX Papilla.

The recommended daily portion for the original Incaparina supplies around 100% of the protein and vitamins that are needed to complement the nutritional contribution of the breast milk. However, it only covers a small percentage of the needs for energy, fat and minerals. The daily ration of the new Incaparina covers 45% of the needs for energy, the average needs for protein, the needs of the majority of the vitamins and calcium and around 70% of the zinc and iron needs.

Alli Alimentu was recommended to be given in a 250 g daily ration to children 6-36 months which is almost 5 times the recommended daily ration (40-60 g) for a FCF for 6-24 month children. The reported daily ration for Alli Alimentu covered 6-10 times the needs of the ideal FCF product for protein and the majority of the vitamins. The recommended daily ration for Papilla INCAMIX covers the needs of calories, fat, vitamin C, zinc and, with some excess iron, but contributes 3-5 times the needs of protein and vitamins.

Past Experiences and New Programs. Children Beneficiaries.

Country	Age (Months)													
	6	12	18	24	30	36	42	48	54	60	66	72	78	84
Past Experiences														
Ecuador	Nutritiva (papilla) (6-24 mo.)													
Haiti	AK-1000 (6-59 mo.)													
Peru	Alli Alimentu (6-36 mo.)													
Guatemala	Incaparina (original) (< 4 yrs.)													
Colombia	Colombiharina (All)													
Colombia	Solidarina (Low Income at Nutritional Risk)													
Venezuela	Milk Product (P.L.) (All)													
New Programs														
Guatemala	Vitacereal (MAS papilla) (6-36 mo.)													
Peru	INCAMIX Papilla (6-36 mo.)													

Not available data for Incaparina (new) in Guatemala.

c) Energy and Nutrient Density of the FCF

Table 51 shows the estimated nutrient density of the FCFs in this category. The percentage (%) of the recommended nutrient density for a FCF product has been calculated. As it was expected, the protein density in the products formulated 20 years ago, like Colombiharina and Incaparina, is 4-5 times what is recommended, whilst recently formulated products like Alli Alimentu and Vitacereal are better aligned with the recommendations. The new formulation for Incaparina has a better % of nutrient density adequacy than the original formulation.

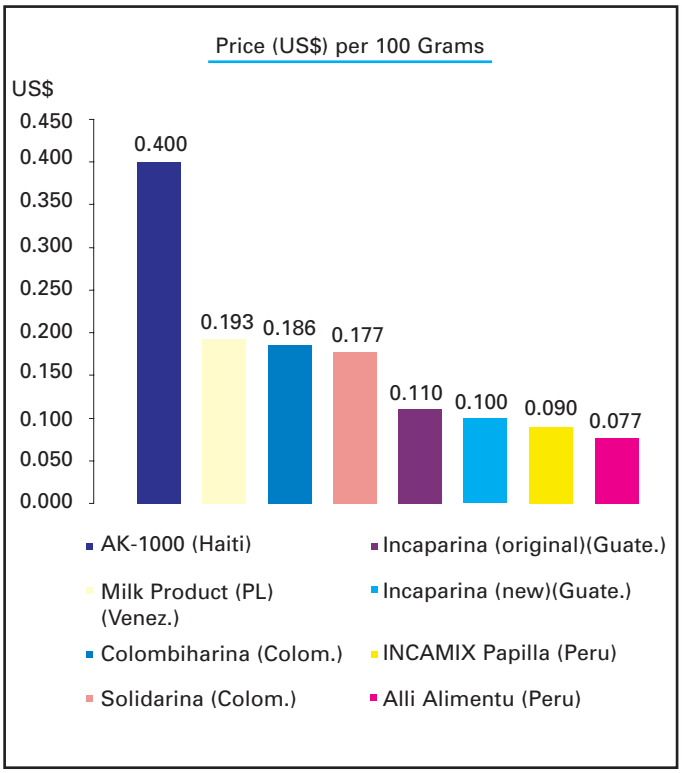
The new FCF Vitacereal (Guatemala) is adequate in the energy, protein, vitamin A and riboflavin nutrient density, but has only 50-60% of the recommendations for calcium, zinc and iron.

Considering the low contribution of iron by breast milk, and the high prevalence of anemia and iron deficiency, it would be expected that a FCF would be formulated to significantly contribute to the iron needs of a 6-36 month child.

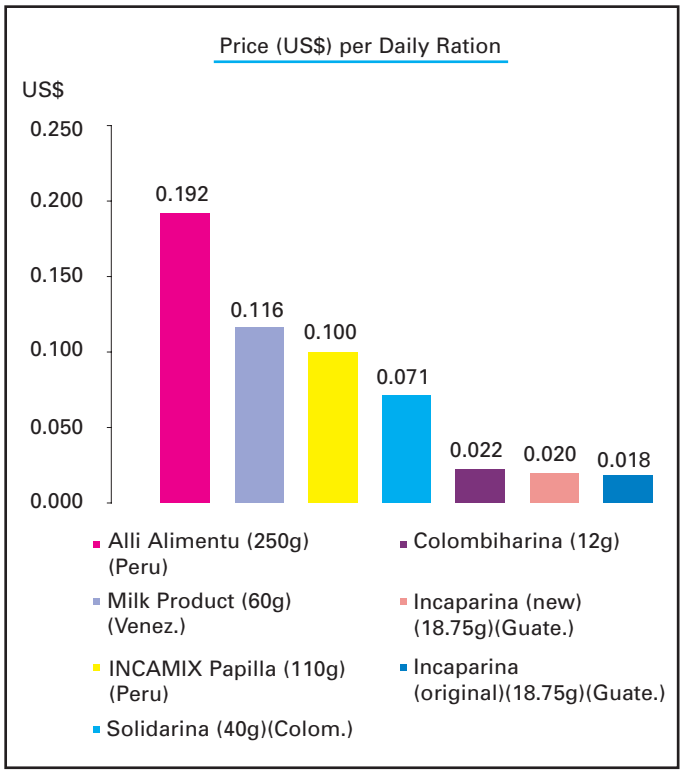
d) Price and Cost Benefit of the FCF

The figures below show the prices per 100 g and per daily ration for FCFs placed in this category. In order to have an idea of the cost/benefit for the FCFs in this category, Table 52 shows the estimates of price per nutrient for these FCF products. The following products show the lowest cost for different nutrients: original Incaparina (Colombia), Alli Alimentu and Papilla Incamix (Peru) for energy; Milk Product PL (Venezuela) and original Incaparina (Colombia) for Calcium; original Incaparina for protein, riboflavin and iron; and, Milk Product PL (Venezuela) has the highest cost per unit of iron.

Fortified Complementary Foods. Past Experiences and New Programs. Price per 100 g and per Daily Ration



Not available data for Nutritiva (papilla) in Ecuador and Vitacereral in Guatemala



Not available data for Nutritiva (papilla) in Ecuador, Vitacereral in Guatemala and AK-1000 in Haiti.

e) Monitoring and Impact Evaluation of the Past Experiences with FCF

A summary of the impact studies conducted in programs associated with the FCFs in this category is shown in Table 53. Unfortunately, studies related to only 2 of the FCF products in this category have been reported: Incaparina and Alli Alimentu.

Evaluations of the impact of Incaparina have shown that this FCF product had a positive impact on children's growth. The positive impact of the product on growth during early childhood persisted at adolescence and adulthood. In addition to the growth response, children who received the product scored higher on psycho-educational performance tests. Because both the mother during pregnancy and the child after birth received supplementation, it is difficult to disaggregate the effect of each route of supplementation on the children's growth and development. In a recent study in both a poor peri-urban mestizo population and a rural indigenous one, infants and toddlers consumed Incaparina for a period of 15 days per month or every other day, indicating that it is widely accepted in both urban and rural areas and among the indigenous communities (Lutter 2003, WHO 1998).

As part of the FONCODES project in Peru, the impact of the FCF Alli Alimentu was evaluated in randomly selected communities in two different locations. Nutritional status by anthropometry, nutrient consumption using quantitative 24-hour recalls, hemoglobin levels, vitamin A and zinc status were evaluated. The evaluation showed that among target children the consumption of energy, protein, iron, vitamin A and calcium increased and the prevalence of anemia and vitamin A deficiency decreased. Surprisingly, the project did not affect child growth, suggesting that stunting is associated with genetic, environmental and infectious factors that the project did not modify (Lopez de Romaña G, 2000).

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SWOT ANALYSIS

STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT) ANALYSIS OF FORTIFIED COMPLEMENTARY FOODS IN LAC COUNTRIES

As part of the data collection, 46 Nutrition Key Opinion Formers were interviewed including scientists, technicians and researchers and other nutrition experts of public and academic institutions and civil society organizations.

Based on their responses, a SWOT analysis was performed. The results are as follows:

1. Strengths

As one of the strengths, FCF products can be considered as one of several alternatives with a high impact on improving child nutrition in a short period of time. FCFs could be a promising intervention to support the achievement of Millennium Development Goal 1 as a response to hunger and malnutrition. Large quantities and high quality macro and micronutrients can be included in a single food. Products can also be specially designed for children in terms of flavor, color and odor.

2. Weaknesses

There are some weaknesses related to the FCF itself and also to the formulation and management of the programs. The following issues were identified: monotony (the same product used during a long time period bores children and results in the mother's rejection); inappropriate beneficiaries (does not reach the target population nor the most needy); lack of or inappropriate educative component with information, social communication and social marketing strategies specially targeted to the mothers and families of young children; lack of or insufficient base-line studies to measure impact; and, lack of or insufficient monitoring and evaluation for project adjustments/strengthening. These issues can also be considered opportunities if they can be overcome.

3. Opportunities

With respect to opportunities, the Key Opinion Formers referred to the need for managing FCFs as part of a broader approach that must include integration and joint interventions with breastfeeding promotion and other nutrition/health and education activities. It is important to design and implement well-focussed interventions, with strong monitoring and evaluation components that can help to strengthen the programs, refocus then or make any needed changes, and to measure the impact on child nutritional status. There is also an opportunity to increase the direct participation of the private sector.

4. Threats

Several threats were identified that, if not being overcome could result in the failure of FCF interventions: very expensive product due to high costs of production and logistics such as packaging and transportation; risk of intra-family dilution due to the fact that other family members could consume the product instead of the target malnourished children. Interference with breastfeeding and risk of it's substitution was another threat mentioned. FCF, if not well administered and managed, could create family and community dependency resulting in a passive attitude to their own development. Finally, there could be a risk of political manipulation during election campaigns and lack of transparency in budget administration and bidding processes.

CONCLUSIONS

Based on the results of the data analysis, the SWOT analysis, and the first hand knowledge obtained from country field visits, the following conclusions are presented:

GENERAL CONCLUSIONS

1. This situation analysis goes beyond any other study that has been conducted in this area in the LAC region. It presents a more complete picture of FCFs for Infant and Young Children in the Latin America and Caribbean Region. It covers the largest number of participating countries; the largest number of FCF products and programs; and, the largest number of variables and indicators analyzed. It gives novel high quality information and analysis of the nutritional characteristics, and energy and nutrient densities of 35 FCFs, compared to current international recommendations.

2. Some Governments have designated large amounts of public resources to implement fortified complementary foods programs as part of social welfare, health, and poverty reduction programs, however, the results of these investments are not always as expected or have never been evaluated. FCFs have become part of the social system and are unlikely to be eliminated, therefore it should be mandatory to make improvements in the best interests of infants and young children in the LAC region, especially for the most needy children.

3. According to the present Situation Analysis, 82% of the FCF experiences studied are public programs subsidized by governments. Some of the programs started more than 30 years ago; others are in a proposal phase. Fewer than 25% of the experiences/programs analyzed are implemented nationwide or in most needed areas of the countries while the others are pilot projects, past experiences or have just started.

SPECIFIC CONCLUSIONS:

1. Poverty and chronic under-nutrition (stunting) are the main selection criteria for the beneficiaries of the programs. The selection criteria are directly linked to the objectives of the Programs. Therefore, most of the programs aim to combat under-nutrition (stunting/wasting/micronutrient deficiencies) and poverty. The Cuban Fruit Puree was specifically developed to reduce anemia, and the Papilla PACFO in Peru has additional objectives related to the support of local producers, in addition to fighting against stunting.

2. According to the data gathered in the study and the first hand knowledge obtained through the field visits, most of countries did not take into consideration ethnic disparities as a strategy for reaching the most vulnerable children, despite the fact that the majority of the participating countries in the study have a very significant indigenous and afro-descendant population that suffer from the worst poverty and under-nutrition.

3. There is a wide range of beneficiaries. Among children, the range is from 6 months to 14 years old. Most programs also cover pregnant and lactating mothers using same FCF but with a larger daily ration. Two countries, Ecuador (Mi Bebida) and Mexico (Nutrivida) have specific formulations for mothers. The Tenutre fortified milk (Mexico) covers the general population, in addition to children from 6 months to 5 years old. One program (fortified milk in Dominican Republic) also covers elderly people. In general, less than 25% of the target population is currently covered by the FCF programs. This SITAN aimed to study children 6-36 months, however, due to the wide age range of beneficiary children, it was difficult to estimate the real number of children 6-36 months that receive FCF. The Chilean, Colombian and Mexican FCF programs have the largest number of beneficiaries, while El Salvador, Honduras and Nicaragua have the lowest number.

4. The nutritional characteristics of the FCF products are varied and depend on the main ingredients of the product, the nutritional objective established by the program, and the scientific information that was available when they were formulated. Products formulated more than 15 years ago, fill the requirements for protein and other specific nutrients, but not the requirements for energy and micronutrients. New formulations have included oil and sugar as main ingredients, resulting in a significant

contribution to energy needs. At the same time contribute with more than 2 times the complementary needs of protein and the other nutrients.

5. There is an assumption that the transitional foods (FCF) currently used are complementing other family foods received by infants and young children. However, data from other research showed that these transitional FCFs are the only food received by children from poor families. a Linking this information to the data reported in this SITAN, some children 6-24 and 6-36 months are receiving less than they need in terms of the nutritional contribution and energy density of the FCF, therefore not ensuring optimal growth and development. On the other hand, the large recommended daily ration of some FCFs suggests that some children are receiving more than they need (excessive amount of FCF, excessive energy or nutrient density) with a direct risk of affecting breastfeeding behavior (a FCF should be formulated to complement the nutritional contribution of the breast milk, not to substitute it) and also of over nutrition problems. The daily ration reported goes from 20g to 150g; a past experience used 250g. According to the international recommendations, the average daily ration for these age groups is 50g.

6. Analysis of the nutritional composition, energy density, and adequacy of the nutritional contribution for most of the FCFs given to children 6- 24 and up to 36 months of age, was difficult to conduct, as well as the calculation of the number of beneficiaries. Data analysis shows that, in general, the FCF products do not meet the international recommendations, particularly for iron and zinc, despite these being the most common micronutrient deficiencies. The probable causes for this are: a) the international recommendations were recently established and disseminated worldwide (2003); b) the wide range of beneficiaries; and, c) the fact that each product has been specifically formulated to meet a different percentage of the requirements based on the assumption that other complementary foods are available at a household level. The nutritional composition of FCF is also determined by the type of ingredients used in the product formulation and not based on the main nutritional problems. Taking the above into consideration, it can be concluded that most of the FCF products were not specifically designed for children from 6-36 months and are therefore not nutritionally adequate for this target population.

7. All fortified dry milk products reported in this study supplied 100% of the recommended energy from a FCF per 100 g of the dry product. However, when the size of the daily ration is taken into account the nutritional contribution of each product is different. None of the fortified milk products (dry or liquid) meets the recommended iron density, even though most of them were formulated with the aim of reducing anemia. This could be due to the same reasons stated above for FCFs in general.

8. Most of the programs have social marketing, education and communications activities associated with the FCF products. Despite social communication and social marketing being one of the most important activities for changing behavior, in general, they were only sporadically implemented, or used as part of an integrated complementary feeding strategy that incorporated breastfeeding promotion, along with other educational and health activities. Due to this limitation, the data shows that some programs aiming to improve complementary feeding have not paid enough attention to avoiding the displacement of breastfeeding by complementary foods.

9. The marketing of FCF products in retail markets, such as Purita Fortified Milk in Chile, has positive effects on the beneficiaries' perception of the product, due to the fact that the same products are sold and used both in social programs and commercially (for poor and rich people).

10. Most of the programs use health centers for the distribution of the FCF. Some monitoring data reported by nationwide FCF programs has identified this as one limitation for the program's implementation, because this activity may be time-consuming for personnel and detracts from their more important duties of providing health services and nutrition promotional/counseling for children's mothers and families.

11. The local private sector plays an important role in the production and distribution of FCFs in all the participating Latin American and Caribbean countries. Many of the FCFs used in feeding programs are produced and distributed by the private sector under contract from national governments or international agencies. A growing interest in the role of the private sector in public health interventions is evident from the number of programs in which such a collaboration already exists.

12. The formulations of FCFs in Latin America and the Caribbean are based mainly on corn flour, soybean flour and dry milk. A variety of other ingredients are used to increase energy density, protein density, viscosity and palatability. Sugar and sometimes oil are recommended to be added during the preparation of the final product. The products are prepared in a short period of time by usually adding water. Based on the data, six of the thirty-five reported FCFs are instant products (Mi Papilla and Nutriinfa in Ecuador; Nutrisano in Mexico; Papilla PACFO in Peru; and Lactovisoy in Venezuela; and, Alli-Alimentu as past experience in Peru). This could be a very important aspect to take into consideration time is required for product preparation.

13. The lowest and the highest prices per daily ration of FCF are U$ 0.021 and U$ 0.370 respectively. For 100g of dried FCF product, the price range goes from U$ 0.036 to U$ 0.660. In general, CSB FCFs have the lowest prices and fortified powder milks have the highest prices. Among the current nationwide FCF programs, Bienestarina in Colombia had the lowest price (U$ 0.027) per daily ration and per 100 g of product (U$ 0.089). The main reasons for this are the large volume of production and the use of a combined production strategy (part government and part under contract with a private company). The highest price per 100g of product is U$ 0.303 for Nutrisano papilla in Mexico, and the highest price per daily ration is U$ 0.276 for Fruit Puree in Cuba. The suggested main reasons for higher prices are the addition of oil and production in various flavors to avoid child boredom and the mother's rejection of the product. The type of packaging also increases the price (Cuba).

14. Few effectiveness and impact studies have been performed. The evaluations performed differ in terms of quality; sometimes results are not available while other results are not reliable. The data available from effectiveness and impact studies in programs associated with FCFs have shown different results depending on the criteria used to formulate the FCF product, the initial age of the children, duration of the intervention and outcomes measured. From the current and past experiences analyzed, 13 (39%) have impact evaluations and 14% have evaluations in progress. Four studies reported significant effects on anemia reduction; two evaluations showed improved growth, and one reported an increase in weight gain (particularly for FCFs from categories one and two). The results from one of the evaluations are not reliable and can not be taken into consideration.

Only one evaluation has analysed the effect on breastfeeding behavior, reporting no changes due to the use of the FCF. The majority of the FCF programs have incorporated neither a baseline study that allows them to measure the impact nor sufficient monitoring to enable project adjustments and strengthening.

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RECOMMENDATIONS

Based on the conclusions of this Situation Analysis, the following recommendations are made related to key aspects such as awareness; selection criteria and beneficiary targeting; distribution; synergies between sectors; social communication, promotional activities and marketing; monitoring and evaluation; and a final recommendation to develop the third objective of this SITAN.

1. There is a need to advocate on the importance of the role of effective FCF programs specially designed for children as one of the high impact nutrition interventions for tackling the under-nutrition problems of infants and young children in the LAC region that can show positive results in a short period of time. These programs have to be part of a Social Policy and/or Poverty Alleviation Program with a children's rights approach, and not as isolated FCF projects.

2. It is recommended that Fortified Complementary Foods Programs state clear and specific objectives, focusing on the reduction and prevention of under-nutrition and improving the nutritional status of children, rather than other objectives that could distract from the focus of these interventions and may diminish their nutritional impact.

3. Targeting strategies for reaching the most malnourished and poorest children must be review and reinforced. It is necessary to narrow the ethnic and geographical disparities in order to have a greater impact on reducing the prevalence of under-nutrition.

4. The formulation of the FCF products needs to be revised based on recent scientific knowledge and current international recommendations (WHO/FAO, 2003) for the nutrient composition of FCFs for infants and young children and to guarantee the use of highly bioavailable nutrients and a reduced content of mineral absorption inhibitors. Based on this, governments need to also review and adapt their specific legislation on food fortification for children. Programs must be reinforced in order to provide an adequate nutrient quality and appropriate energy density, using an appropriate amount of FCF for a specific age ranges of children with different needs, i.e. at least one formulation for children from 6-36 months, different from products for older children and women.

5. Effective and efficient FCF programs must adhere to three main principles: wide coverage, high quality and low cost. Therefore, strategies and programs to improve the availability of and access to an optimal nutrition, low-cost fortified complementary food product specially designed for children, must be reviewed or initiated in countries where there are no FCF products. The private sector, as well as scientific researchers and international agencies, can play an important role in the formulation, production, distribution and social marketing of these products and also in supporting the impact evaluation processes both technically and financially. These partners can play a key role, giving significant support to help LAC country Governments achieve nutritional goals.

6. The social communication and social marketing component is one of the main pillars of any effective FCF program. There is a need for the definition of integrated strategies and approaches to improve the prevalence of exclusive breastfeeding during the first 6 months of age and afterwards with access to the appropriate quality and quantity of FCFs and the promotion of dietary diversification and adequate complementary feeding behaviors, among other health and child care services. Special care needs to be taken in Programs that support the distribution of fortified milk products. There is a necessity to define and implement specific educative and social communication-social marketing strategies for the use of fortified milk and any other liquid complementary food in order to avoid its use for bottle-feeding and the displacement of breast milk.

7. There is a need to find innovative distribution channel strategies in order to reduce cost and to guarantee the availability of the product under the best physical conditions, avoiding work overload for public institution personnel that could detract them from providing health services and nutrition counseling with consequent negative results on the child nutrition situation. Mixed public-private distribution strategies, or distribution entirely managed by the private sector under contract to governments could have positive

results according to the reality in each country.

8. Monitoring and evaluation must be rein forced and implemented on a mandatory basis in order to measure the impact of FCF programs and guarantee a high impact of interventions on nutrition. Baselines need to be conducted, especially at the start of programs to monitor the process, to strengthen the programs, and to further evaluate the impact on the nutritional status of children.

9. Finally, based on the findings and recommendations of this situation analysis, it would be worthwhile to explore the opportunities for the production, distribution and social marketing of a low-cost complementary food, as part of an integrated infant and young child feeding strategy in public-private partnership. Initial activities already conducted by Unilever have included a global nutrition experts meeting and the formulation of a special FCF product according to current nutritional recommendations. This initiative will offer new FCF alternatives to countries, while current experiences are reinforced and strengthened.

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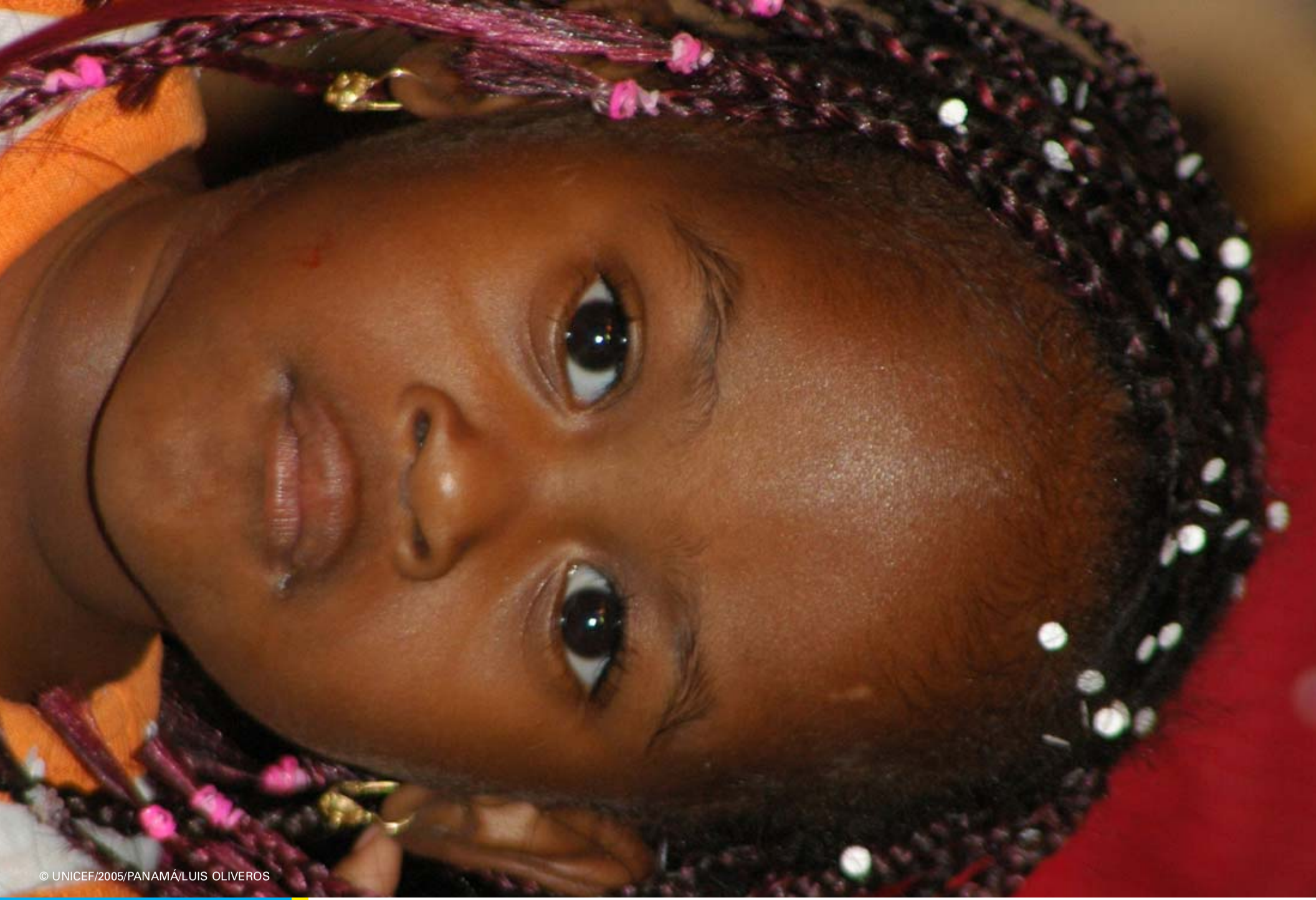

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ABBREVIATIONS

ACC/SCN	Administrative Committee on Coordination/ Sub-Committee on Nutrition
CENAN	National Food and Nutrition Center
CO´s	Country Offices
CBF	Continued Breastfeeding
CSB	Corn Soy blend
EBAIS	Basic Integral Heath Care Units (Costa Rica)
EBF	Exclusive Breastfeeding
ENSIN	National Nutrition Survey (Colombia)
FAO	Food and Agriculture Organization
FCF	Fortified Complementary Foods
FONCODES	Cooperation Fund For Social Development
GDP	Gross Domestic Product
H/A	Height for Age
HAZ	Height for Age Standardized Normal Deviation, Z Score
HDI	The United Nation Human Development Index
ICBF	Colombian Family Welfare Institute
IDC	Infant Development Centers (Ecuador)
IDA	Iron Deficiency Anemia
IIN	Nutritional Research Institute
IMR	Infant Mortality Rate
INCAP	Institute of Nutrition of Central America and Panama
INFOLAC	Information Indicator System for Latin America and The Caribbean
INHA	Institute of Nutrition and Hygiene of Foods
INNFA	The National Institute for Children and Families (Ecuador)
IYCF	Infant and Young Child Feeding Global Strategy
LAC	Latin America and the Caribbean
MBF	Maintenance Breastfeeding (still breastfeeding)
MDG	Millennium Development Goals

MDO	Millennium Development Objectives
MICS	Multiple Indicators Cluster Surveys
NGO	Non Governmental Organization
PAC-MINSA	Complementary Feeding Program of Minister of Health (Panama)
PACFO	Complementary Feeding Program for High Risk Groups (Peru)
PAHO	Pan American Health Organization
PANN	Food and Nutrition National Program (Ecuador)
PBF	Partial Breastfeeding
PDA	Development Project of the Area
PNAC	National Supplementary Feeding Program
PPP	Purchasing Power Parity
PRONAA	Associated to the National Feeding Program
QAC	Quality Assurance Committee (formed to follow up the study's process)
UHI	Unilever Health Institute
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
SISBEN	System for Selecting Beneficiaries of Social Spending
SITAN	Situation Analysis
SWOT	Strengths, Weaknesses; Opportunities, Threats
VAD	Vitamin A Deficiency
WB	World Bank
W/H	Weight for Height
WFP	World Food Program
WHO	World Health Organization
WSB	Wheat Soy Blend

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TABLES

TABLES

CATEGORY FOUR: PAST EXPERIENCES AND NEW PROGRAMS WITH FORTIFIED COMPLEMENTARY FOODS

Table 1. Demographic Characteristics of Participating Countries.

Country	Nation			Female[1]		Male[1]		Children < 3 yrs[1]	
	Total[1]	Urban(%)[2]	Rural(%)[2]	Total	(%)	Total	(%)	Total	(%)
Argentina	38,592,150	90.6	9.4	19,693,678	51.0	18,898,472	49.0	1,992,410	5.16
Bolivia	9,427,219	64.4	35.6	4,728,926	50.2	4,698,293	49.8	778,827	8.26
Chile	16,267,278	87.7	12.3	8,214,714	50.5	8,052,564	49.5	736,611	4.52
Colombia	46,039,144	77.4	22.6	23,275,014	50.6	22,764,130	49.4	2,877,059	6.24
Costa Rica	4,321,872	61.7	38.3	2,124,185	49.1	2,197,687	50.9	234,706	5.43
Cuba	11,256,852	76.0	24.0	5,619,689	49.9	5,637,163	50.1	407,596	3.62
Dominican Republic	8,992,952	60.1	39.9	4,429,335	49.3	4,563,617	50.7	612,043	6.80
Ecuador	13,211,333	62.8	37.2	6,585,375	49.8	6,625,958	50.2	865,298	6.54
El Salvador	6,873,524	60.1	39.9	3,493,940	50.8	3,379,584	49.2	484,045	7.04
Guatemala	12,699,780	47.2	52.8	6,502,381	51.2	6,197,399	48.8	1,247,337	9.82
Haiti	9,151,370	32.6[3]	67.4[3]	4,631,522	50.6	4,519,848	49.4	750,193	8.19
Honduras	7,346,532	46.4	53.6	3,644,240	49.6	3,702,292	50.4	603,880	8.21
Jamaica	2,700,868	56.1[4]	43.9[4]	1,367,024	50.6	1,333,844	49.4	262,368*	9.70*
Mexico	106,943,179	76.0	24.0	54,670,792	51.1	52,272,387	48.9	6,477,166	6.05
Nicaragua	5,483,447	58.1	41.9	2,742,705	50.0	2,740,742	50.0	440,619	8.03
Panama	3,228,186	57.8	42.2	1,599,466	49.5	1,628,720	50.5	206,887	6.40
Paraguay	6,214,650	58.5	41.5	3,079,004	49.5	3,135,646	50.5	507,609	8.16
Peru	27,946,654	74.6	25.4	13,895,266	49.7	14,051,388	50.3	1,799,669	6.43
Uruguay	3,455,127	93.0	7.0	1,776,839	51.4	1,678,288	48.6	169,048	4.89
Venezuela	26,577,423	88.1	11.9	13,229,691	49.8	13,347,732	50.2	1,719,374	6.46

* Children < 4 yrs.
(1) CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
(2) Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
(3) République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
(4) FAO Nutrition Country Profiles. Jamaica

Table 2. Socio-Economic Characteristics of Participating Countries.

Country	HDI[*] (2003)[1]	GDP[†] per capita (US$) 2003[1]	GNI[&]per capita (US$) 2003[2]	Household Income (US$)[3]	Food Expenses (%)[3]
Argentina	0.863	3,524	3,650	4,220.00 (2004)	34.8 (2002)
Bolivia	0.687	892	890	59.00 (2002)	63.0 (2002)
Chile	0.854	4,591	4,390	979.00 (2000)	26.8 (2001)
Colombia	0.785	1,764	1,810	394.70 (2003)	43.2 (2003)
Costa Rica	0.838	4,352	4,280	621.49 (2004)	41.0 (1988)
Cuba	0.817	2,720[4]	1,170	N/A	N/A
Dominican Republic	0.749	1,893	2,070	153.00 (2005)	82.0 (2005)
Ecuador	0.759	2,091	1,790	728.70 (2004)	16.2 (2004)
El Salvador	0.722	2,277	2,200	404.30 (2003)	42.0 (2003)
Guatemala	0.663	2,009	1,910	N/A	N/A
Haiti	0.475	346	380	380.00 (1999)	39.3[5] (1996)
Honduras	0.667	1,001	970	165.02 (2004)	N/A
Jamaica	0.738	3,083	2,760	2,990.00 (2004)	42.6 (2000)
Mexico	0.814	6,121	6,230	627.46 (2002)	30.7 (2002)
Nicaragua	0.690	745	730	593.35 (2001)	52.3 (2001)
Panama	0.804	4,319	4,250	N/A	N/A
Paraguay	0.755	1,069	1,100	N/A	42.4 (2001)
Peru	0.762	2,231	2,150	N/A	N/A
Uruguay	0.840	3,308	3,820	490.20 (2002)	27.9[6] (1994)
Venezuela	0.772	3,326	3,490	N/A	N/A

N/A - Not Available
* HDI = Human Development Index
† GDP = Gross Domestic Product
(1) United Nations Development Programme. Human Development Report 2005
(2) UNICEF The State of the World's Children 2005
(3) UNICEF-UNILEVER 2005
(4) GNP per capite reported by FAO Perfiles nutricionales por país CUBA.
(5) Estimation based on UNICEF-UNILEVER 2005
(6) UNICEF-UNILEVER 2005 (Food expenses for Montevideo, Uruguay)

Table 3. Infant and Maternal Mortality Rate.

	Infant Mortality rate (per 1,000 live births)		Maternal Mortality rate
	< 1yr	< 5yrs	(per 100,000 live births)
Andean			
Bolivia	53	66	390
Colombia	18	21	78
Ecuador	24	27	80
Peru	26	34	190
Venezuela	18	21	60
Southern Cone			
Paraguay	25	29	180
Argentina	17	20	46
Uruguay	12	14	26
Chile	8	9	17
Central America			
Guatemala	35	47	150
Honduras	32	41	110
El Salvador	32	36	170
Nicaragua	30	38	97
Mexico	23	28	63
Panama	18	24	70
Costa Rica	8	10	29
Caribbean			
Haiti	76	118	520
Dominican Republic	29	35	180
Jamaica	17	20	110
Cuba	6	8	34

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Table 4. Children's Nutritional Status (0 - 59 mo.)[1] [2].

	% Stunting (Moderate & severe) (H/A Z Score < 2SD NCHS)	% Wasting (Moderate & severe) (W/H Z Score < 2SD NCHS)	% Anemia (Hb < 11 g/dL)	Vit Deficiency % (Serum Retinol < 20µg/dL)
Andean				
Bolivia	27.0	1.0	56.0 (1998)	11.3 (1991)
Colombia	12[11]	1.0	33.2[11]	5.9 (11)
Ecuador	26.0	2.4[2]	57.5 (1986) ***	13.9 (1986)
Peru	25.0	1.0	27.8 (1998)	13.1 (1998)
Venezuela	13.0	3.0	36.0(3)	5.3[3]
Southern Cone				
Paraguay	12.0	3.0	22.4 (1995) *	8.7 (1995) **
Argentina	1.5[10]	0.0	1.5[10]	8.8[5]
Uruguay	12.0[4]	1.0[4]	22.0[4]	4.0[4]
Chile	8.0	1.0	36.1[6]	9.6[6]
Central America				
Guatemala	6.0	2.0	26.0 (1996)	8.7 (1996)
Honduras	18.2[12]	1.0	21.5[12]	17.0[8]
El Salvador	49.0	2.0	50.0[8]	21.0[8]
Nicaragua	29.0	1.0	47.0[8]	15.0[8]
Mexico	18.0	2.0	27.2 (1999)[7]	27.9 (1999)[7]
Panama	20.0	2.0	34.0[8]	8.8 (2000)[6]
Costa Rica	14.0	1.0	34.0[13]	6.0 (2000)[13]
Caribbean				
Haiti	5.0	2.0	46 (2000)[9]	3.6 (2001)[9]
Dominican Republic	9.0	2.0	25[6]	23.0 (1995)
Jamaica	23.0	5.0	65.8[6]	31.5 [6]
Cuba	5.0	2.0	48.2 (1997)	11.1[6]

N/A - Not Available
Sources:
* 9-24 mo. Tierra del Fuego, Argentina
** Pre-school Children. Tierra del Fuego, Argentina.
*** < 2 yrs
(1) UNICEF The State of the World's Children 2005
(2) FAO Nutrition Country Profiles 2001
(3) Country data 2001 - 2004, Children 6 mo. 0-15 yrs. García M. Nieves Profiles 2000. La Deficiencia de Hierra como Problema de Salud Pública. FAO Nutritions Country Profiles 2000 Reported 53.8% Anemia, 60% VAD.
(4) Unicef CO´s extracted from National DHS and other local studies, 2001 - 2003. N/A National Data. Anemia 12 - 60 mo. VAD 6 - 60 mo.
(5) WHO/PAHO Country Health Profile. Health Situation Analysis Updates 2001
(6) Mason et al 2005 [Annex 2.Estimates of prevalence's of deficiencies and underweight for each country for 2000 ("best guesses")]
(7) National Nutrition Survey 1999. National Institute of Public Health. Mexico
(8) Vitamin and Mineral Deficiencies. A Global Progress Report. MI, 2004
(9) 6-36 mo. INHA - UNICEF. Resultados Anuales de Investigaciones. 2000
(10) MINSAL, 2004
(11) ENSIN, 2005
(12) Situación Nutricional Niños y Niñas Menores de 5 Años, Mujeres en Edad Fértil y Madres en Periodo de Lactancia. USAID, 2005
(13) Panama. PRONAN, 2000. 6 - 24 mo. (Anemia)

Table 5. Prevalence of Breastfeeding (%)

	Exclusive BF (0-6 mo)	Partial BF (6-9 mo)	Maintenance of BF (20-23 mo))
Andean			
Bolivia	54.0	74.0	46.0
Colombia	26.0	58.0	25.0
Ecuador	48.7	70.0	25.0
Peru	72.5	76.0	49.0
Venezuela	7.0	50.0	31.0
Southern Cone			
Argentina	43.7	55.2	27.3
Chile	63.2	47.0	46.7
Paraguay[1]	22.0	60.0	8.2
Uruguay	54.1	32.2	31.3
Central America			
Costa Rica	35.0	47.0	12.0
El Salvador	16.0	77.0	40.0
Guatemala	51.4	67.0	47.0
Honduras	35.0	61.0	34.0
Mexico	20.3	36.0	21.0
Nicaragua	31.0	68.0	39.0
Panama	57.3	38.0	21.0
Caribbean			
Cuba	46.9	42.0	9.0
Dominican Republic	10.0	41.0	16.0
Haiti	24.0	73.0	30.0

Note: No data available for Jamaica
UNICEF The State of the World's Children 2005
INHA-UNICEF Resultados anuales de investigaciones, 2000
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica de Salud, Washington DC, 2005.
(1) DHS (ENDSSR 2004. CEPEP)

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Table 6. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Program Characteristics.

Country	Fortified Complementary Food (FCF)	Subsidy (S)/ Donation (D)	
Argentina	BB´S infant cereal	S	Argentine Government
	BB´S infant dessert	S	Argentine Government
Chile	Mi Sopita	S	Chilean Government
	Purita cereal	S	Chilean Government
Colombia	Bienestarina	S	Colombian Government
	Fortified Cookies	S	Colombian Government
Cuba	Fruit Puree	S	Cuban Government
Ecuador	Mi Papilla	S	Ecuatorian Government
	Nutrinnfa	D/S	WFP/Instituto Nacional del Niño y la Familia (INNFA)
Mexico	Nutrisano Papilla	S	Mexican Federal Government
Panama	Nutricereal (Nutricrema)	S	Panamanian Government
Peru	PACFO Papilla	S	Peruvian Government
Venezuela	Lactovisoy	S	Venezuelan Government

N/A - Not Available
UTD- Up To Date

Program	Type of Program		Geographic Area of Distribution	Duration	
	Public	Public-Private		Start	End
Plan Más Vida Federal Project	x		Cono urbano & Provincia interior of Buenos Aires	2001	UTD
Plan Más Vida Federal Project	x		Cono urbano & Provincia interior of Buenos Aires	2001	UTD
National Complementary Feeding Program	x		Nationwide	2003	UTD
National Food Supplementation and Micronutrient Fortified Program					
National Complementary Feeding Program	x		Nationwide	1983	UTD
Colombian Family Welfare Institute (ICBF)	x		Nationwide	1975	UTD
Colombian Family Welfare Institute (ICBF) Infant Breakfast Program, 2004. Food Supplementation and Micronutrients Fortification Program	x		Nationwide	2002	UTD
Iron Fruit Puree Fortification Program for the Prevention and Control of Anemia and Iron Deficiency	x		Nationwide	2001	UTD
National Food and Nutrition Program (PANN 2000)	x		Nationwide	2000	UTD
INNFA Program for Children in the Infant Development Center		x	Nationwide INNFA Development Centers	1989	UTD
Alimentese Ecuador Program					
Oportunidades Program (PROGRESA)	x		Nationwide	1999	UTD
Complementary Feeding Program. MINSA (PACMI)	x		Nationwide	1995	UTD
National Complementary Feeding Program for High Risk Groups (PACFO)	x		7 Andean Depts.	1994	2010
Program of the National Institute of Nutrition	x		Nationwide	1975	UTD

Table 7. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Selection Criteria of Beneficiaries.

Country	Fortified Complementary Food (FCF)	Program
Argentina	BB´S infant cereal	Plan Más Vida Federal Project
	BB´S infant dessert	Plan Más Vida Federal Project
Chile	Mi Sopita	National Complementary Feeding Program National Food Supplementation and Micronutrient Fortification Program
	Purita cereal	National Complementary Feeding Program
Colombia	Bienestarina	Colombian Family Welfare Institute (ICBF)
	Fortified Cookies	Colombian Family Welfare Institute (ICBF). Infant Breakfast Program, 2004. Food Supplementation and Micronutrient Fortification Program
Cuba	Fruit Puree	Iron Fruit Puree Fortification Program for the Prevention and Control of Anemia and Iron Deficiency
Ecuador	Mi Papilla Nutrinnfa	National Food and Nutrition Program (PANN 2000) INNFA Program for children in the Infant Development Center Alimentese Ecuador Program
Mexico	Nutrisano Papilla	Oportunidades Program (PROGRESA)
Panama	Nutricereal (Nutricrema)	Complementary Feeding Program. MINSA (PACMI)
Peru	PACFO Papilla	National Complementary Feeding Program for High Risk Groups (PACFO)
Venezuela	Lactovisoy	Program of the National Institute of Nutrition.

N/A - Not Available

Selection Criteria

Poor Families with children under 6 yrs old.
Pregnant and/or lactating women.
Poor Families with children under 6 yrs old.
Pregnant and/or lactating women.

Malnutrition or risk for malnutrition

Children under 6 yrs old and pregnant women.

Children (6 mo. - 5yrs. 11 mo.):
a) from families with the lowest score in the first level
of the Colombian "SISBEN" system.
b) from families certified by the Social Solidarity Network.
c) Native Children certified by the native community organization.
d) Children 12-36 mo. from rural area.
e) Children who are not benefited by other public or private
complementary feeding programs.

Children (12 mo. - 5yrs.- 11 mo.):
a) from families with the lowest score in the first level of the
Colombian "SISBEN" system.
b) from families certified by the Social Solidarity Network.
c) Native Children certified by the native community organization.
d) Children 12-36 mo. from Rural area.
e) Children who are not benefited by other public or private
complementary feeding programs.

Anemia and iron deficiency

Children 6-24 mo., whose family are in the first and second quintile of poverty
First and second quintile of poverty

Poverty and Malnutrition; Children under 2 yrs. of age;
Families with under 5 malnourished children
a) Priority Districts: 6-36 mo., Moderate malnourished children (W/AZ score <-1SD);
b) No priority Districts: Severe malnourished 6-36mo. children (W/AZ Score <-2SD;

Poverty. All children beneficiaries of the PACFO program selected
based on poverty and malnutrition indexes. Support to Local Food Producers.

Infant Malnutrition

Table 8. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Beneficiaries (aprox).

Country	Fortified Complementary Food (FCF)	Beneficiaries		< 3 years National Population			
		Age Range	Present #	Coverage		Without Coverage[2]	
				Total # [1]	(%)	#	(%)
Argentina*	BB´S infant cereal	6 - 24 mo.	182,646	1,992,410	9.2	1,809,764	90.8
	BB´S infant dessert	6 - 24 mo.	182,646	1,992,410	9.2	1,809,764	90.8
Chile*	Mi Sopita	> 6 mo.	479,000[3]	736,611	65.0	257,611	35.0
	Purita cereal	18 - 72 mo.	400,000[3]	736,611	54.3	336,611	45.7
Colombia	Bienestarina	6 - 36 mo.	725,949	2,877,059	25.2	2,151,110	74.8
	Fortified Cookies	6 mo. - 6 yrs.	912,890	2,877,059	31.7	1,964,169	68.3
Cuba	Fruit Puree	22 - 48 mo.	407,596	407,596	100.0	-	0.0
Ecuador**	Mi Papilla	6 - 24 mo.	106,458	865,298	12.3	758,840	87.7
	Nutrinnfa	6 mo. - 6 yrs.	220,400	865,298	25.5	644,898	74.5
Mexico**	Nutrisano Papilla	6 - 24 mo.	1,000,000[3]	6,477,166	15.4	5,477,166	84.6
Panama*	Nutricereal (nutricrema)	6 - 59 mo.	42,479	206,887	20.5	164,408	79.5
Peru	PACFO Papilla	6 - 36 mo.	299,745	1,799,669	16.7	1,499,924	83.3
Venezuela	Lactovisoy	6 mo. - 14 yrs.	N/A	N/A	N/A	N/A	N/A

(1) CEPAL-CELADE 2005
(2) Children not benefiting from FCF programs. Estimation based on present # of beneficiaries.
(3) Estimated
N/A - Not Available
* FCF distributed for pregnant/lactating women, also.
** Special FCF for pregnant/lactating women
Note: % Beneficiaries 6 - 24 months is much higher. Estimation was made on children < 3 years.


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Table 9-A. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Nutritional Contribution.

X.1 Macronutrients and Vitamins

Country	FCF	Calories	Protein (g)	Total Fat (g)	Vit. A (µg Retinol)	Vit. E (mg)	Vit.D (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit. B-6 (mg)	Vit. B-12 (µg)	Folic Acid (µg)	Vit. C (mg)
FAO/WHO Recommendations per 100g FCF[1]		**440**	**6 11**	**12.7**	**500**	**10**	**2.0 3.0**	**0.36**	**0.36**	**6.1**	**0.44**	**0.52**	**83**	**140 280**
FAO/WHO Recommendations per Daily Portion of 50g of FCF[1]		**220**	**3 5.5**	**6.35**	**250**	**5**	**1 1.5**	**0.18**	**0.18**	**3.05**	**0.22**	**0.26**	**41.5**	**70 140**
Argentina	BB´S infant cereal													
	Per 100g dry weight	382	11	3.8				0.15		6.00	0.15		20	80
	Recommendation % (100g)	87	183 100	30				42		98	34		24	57 29
	Per Average Daily Intake (62.5g)	239	6.9	2.4				0.09		3.75	0.09		12.5	50
	Recommendation % (Daily Portion 50g)	109	229 125	37				52		123	43		30	71 36
Argentina	BB´S infant dessert													
	Per 100g dry weight	381	240 14.4	1	240			0.50	0.60	8.00	0.70		20	40
	Recommendation % (100g)	87	7.2 131	8	48			139	167	131	159		24	29 14
	Per Daily Intake (50g)	190.5	240	0.5	120			0.25	0.30	4.00	0.35		10.0	20.0
	% of Reference (daily Portion 50g)	87	131	8	48			139	167	131	159		24	29 14.3
Chile	Mi Sopita													
	Per 100g dry weight	411	200 12	15.0	326	4.0	4.4	0.14	0.16	1.80	0.14	1.50	40	35
	Recommendation % (100g)	93	6.0 109	118	65		220 147	39	44	30	32	288	48	25 13
	Per Daily Intake (50g)	205.5	200	7.5	163		2.2	0.07	0.08	0.90	0.07	0.75	20.0	17.5
	Recommendation % (Daily Portion 50g)	93	109	118	65		220 147	39	44	30	32	288	48	25 12.5
Chile	Purita Cereal													
	Per 100g dry weight	442	283 17	18	139.5	10	50	0.35	0.50	4.50	0.60	1.50	120	50
	Recommendation % (100g)	100	3.4 155	142	28	100	2500 1667	97	139	74	136	288	145	36 18
	Per Daily Intake (20g)	88.4	113	3.6	27.9	2.0	10.0 667	0.07	0.10	0.90	0.12	0.30	24.0	10.0
	Recommendation % (Daily Portion 50g)	40	62	57	11	40	1000	39	56	30	55	115	58	14 7.1
Colombia	Bienestarina													
	Per 100g dry weight	360	350 21	3	600			0.50	0.90	7.30		1.40	160	45
	Recommendation % (100g)	82	6.3 191	24	120			139	250	120		269	193	32 16
	Per Daily Intake (30g)	108	210	0.9	180			0.15	0.27	2.19		0.42	48	14
	Recommendation % (Daily Portion 50g)	49	115	14	72			83	150	72		162	116	19 10
Colombia	Fortified Cookies													
	Per 100g dry weight	445	107 6.4	13.1										
	Recommendation % (100g)	101	2.6 58	103										
	Per Daily Intake (40g)	178	85	5.2										
	% of Reference (daily Portion 50g)	81	47	83										

Cuba	Fruit Puree															
	Per 100g dry weight	93													50	
	Recommendation % (100g)	21													36	18
	Per Daily Intake (100g)	93													50	
	Recommendation % (Daily Portion 50g)	42													71	3
Ecuador	Mi Papilla															
	Per 100 g dry weight	400		16	10	194.8	5.5		0.64	0.75	8.30	0.92	0.64	76.9	36.9	
	Recommendation % (100g)	91	267	145	79	39	55		178	208	136	209	123	93	26	13
	Per Daily Intake (65g)	260	10		7	127	3.6		0.42	0.49	5.40	0.60	0.42	50	24	
	% of Reference (daily Portion 50g)	118	347	189	102	51	72		231	271	177	272	160	120	34	17
Ecuador	Nutrinnfa															
	Per 100 g dry weight	427		11.5	12.3	200	3.5		0.6	1.1	8	1.1	0.7	50	37.5	
	Recommendation % (100g)	97	192	105	97	40	35		167	306	131	250	127	60	27	13
	Per Daily Intake (60g)	256	6.9		7.4	120	2.1		0.4	0.7	4.8	0.7	0.4	30	23	
	Recommendation % (Daily Portion 50g)	116	230	125	116	48	42		200	367	157	300	152	72	32	16
Mexico	Nutrisano Papilla															
	Per 100g dry weight	441		13.2	15	909	13.6			1.81			1.59	113.6	90.9	
	Recommendation % (100g)	100	220	120	118	182	136			348			306	137	65	32
	Per Daily Intake (44g)	194	5.8		6.6	400	6.0			0.8			0.70	50	40	
	Recommendation % (Daily Portion 50g)	88	193	105	104	160	120			308			269	120	57	29
Panama	Nutricereal (nutricrema)															
	Per 100 g dry weight	350		12	12	220	2.1	6.7	0.40	0.45	6.00	0.50	0.50	36		
	Recommendation % (100g)	80	200	109	94	44	21	334	222	111	125	98	114	96	43	
	Per daily Intake (45g)	158	5		5.4	99	0.9	6.3	0.18	0.20	2.70	0.23	0.23	16.2		
	% of Reference (daily Portion 50g)	72	180	98	85	40	19	630	420	100	113	89	102	87	39	
Peru	PACFO Papilla															
	Per 100 g dry weight	425		13	13	120	4.0		0.50	0.50	5.00	0.60	0.50	30	100	
	Recommendation % (100g)	97	217	118	102	24	40		139	139	82	136	96	36	71	36
	Per Daily Intake (90g)	383	12		12	108	3.6		0.45	0.45	4.50	0.54	0.45	27	90	
	Recommendation % (Daily Portion 50g)	174	390	213	184	43	72		250	250	148	245	173	65	129	64
Venezuela	Lactovisoy															
	Per 100 g dry weight	389		16	0.9	1099			0.80	1.00	13.00	1.00			21	
	Recommendation % (100g)	88	267	145	7	220			222	278	213	227			15	8
	Per Daily Intake (80g)	311	13		1	879			0.64	0.80	10.40	0.80			17	
	% of Reference (daily Portion 50g)	141	427	233	11	352			356	444	341	364			24	12

(1) Source: Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.

Table 9-B. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Nutritional Contribution.

X.2 Minerals

Country	FCF	Calories	Calcium (mg)	Zinc (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Iodine (µg)	Selenium (µg)	Cooper (µg)	Manganese (mg)
FAO/WHO Recommendations per 100g FCF[1]		**440**	**200 400**	**8.3**	**14**	**80 120**	**150 200**	**180**	**20**	**400 800**	**1.2**
FAO/WHO Recommendations per Daily Portion of 50g of FCF[1]		**220**	**100 200**	**4.15**	**7**	**40 60**	**75 100**	**90**	**10**	**200 400**	**0.6**
Argentina	BB´S infant cereal										
	Per 100g dry weight	382		3.0	15					150	
	Recommendation % (100g)	87		36	107					38 19	
	Per Average Daily Intake (62.5g)	239		1.9	9.4					93.8	
	Recommendation % (Daily Portion 50g)	109		45	134					47 23	
Argentina	BB´S infant dessert										
	Per 100g dry weight	381		4.0	6.0						
	Recommendation % (100g)	87		48	43						
	Per Daily Intake (50g)	191		2.0	3.0						
	Recommendation % (Daily Portion 50g)	87		48	43						
Chile	Mi Sopita										
	Per 100g dry weight	411	400	4.0	5.0	72	320				
	Recommendation % (100g)	93	200 100	48	36	90 60	213 160				
	Per Daily Intake (50g)	206	200	2.0	2.5	36	160				
	Recommendation % (Daily Portion 50g)	93	200 100	48	36	90 60	213 160				
Chile	Purita Cereal										
	Per 100g dry weight	442	900	6.0	6.2	90	600			300	
	Recommendation % (100g)	100	450 225	72	44	113 75	400 300			75 38	
	Per Daily Intake (20g)	88	180	1.2	1.2	18	120			60.0	
	Recommendation % (Daily Portion 50g)	40	180 90	29	18	45 30	160 120			30 15	
Colombia	Bienestarina										
	Per 100g dry weight	360	700	8.3	14.1		550				
	Recommendation % (100g)	82	350 175	100	101		367 275				
	Per daily Intake (30g)	108	210	2.5	4.2		165				
	Recommendation % (Daily Portion 50g)	49	210 105	60	60		220 165				
Colombia	Fortified Cookies										
	Per 100g dry weight	445	12.5		8.25						
	Recommendation % (100g)	101	6.3 3.1		59						
	Per daily Intake (40g)	178	5.0		3.3						
	Recommendation % (Daily Portion 50g)	81	5.0 2.5		47						

Cuba	Fruit Puree												
	Per 100g dry weight	93			2.0								
	Recommendation % (100g)	21			14								
	Per daily Intake (100g)	93			4.3								
	Recommendation % (Daily Portion 50g)	42			61								
Ecuador	Mi Papilla												
	Per 100g dry weight	400	369.2		15.38	15.38	73.8		369.2				
	Recommendation % (100g)	91	185	92	185	110	92	62	246	185			
	Per daily Intake (65g)	520	240		10.0	10.0	48		240				
	Recommendation % (Daily Portion 50g)	236	240	120	241	143	120	80	320	240			
	Nutrinnfa												
	Per 100g dry weight	427	533.3		13.3	13.3	86.66		333.3			500	
	Recommendation % (100g)	97	267	133	160	95	108	72	222	167		125	63
	Per Daily Intake (60g)	256	319.9		8	8	52		200			300	
	Recommendation % (Daily Portion 50g)	116	320	160	192	114	130	87	267	200		150	75
Mexico	Nutrisano Papilla												
	Per 100g dry weight	441			22.73	22.73							
	Recommendation % (100g)	100			274	162							
	Per Daily Intake (44g)	194			10.0	10.0							
	Recommendation % (Daily Portion 50g)	88			241	143							
Panama	Nutricereal (nutricrema)												
	Per 100g dry weight	350	266		6.0	11.1			64		52		
	Recommendation % (100g)	80	133	67	72	79			43	32	29		
	Per Daily Intake (45g)	315	120		2.7	5.0			29		23		
	Recommendation % (Daily Portion50g)	143	120	60	65	71			38	29	26		
Peru	PACFO Papilla												
	Per 100g dry weight	425	500		6.0	6.0	50		300		52		
	Recommendation % (100g)	97	250	125	72	43	63	42	200	150	29		
	Per Daily Intake (90g)	383	450		5.4	5.4	45		270		23		
	Recommendation % (Daily Portion 50g)	174	450	225	130	77	113	75	360	270	26		
Venezuela	Lactovisoy												
	Per 100 g dry weight	389	500			15.0			225		55		
	Recommendation % (100g)	88	250	125		107			150	113	31		
	Per Daily Intake (80g)	383	400			12.0			180		50		
	Recommendation % (Daily Portion 50g)	174	400	200		171			240	180	55		

(1) Source: Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.

Table 10. Category1. Fortified Complementary Foods (FCF). Nationwide Experiences. Nutrient Density.

Country	FCF	Daily Ration	Calories	Calories Kcal/g	Protein (g)		Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)		Zinc (mg)	Iron (mg)
FAO/WHO Recommendations per Daily Portion of 50 g of FCF[1]		**50**	**220**	**4.4**	**3**	**5.5**	**250**	**0.18**	**0.18**	**100**	**200**	**4.15**	**7**
Recommended Nutrient Density[2]					**1.4**	**2.5**	**113.6**	**0.08**	**0.08**	**45.5**	**90.9**	**1.9**	**3.2**
Argentina	BB´S infant cereal												
	Per Average Daily Ration	62.5	239	3.82		6.88		0.09					
	Nutrients Density per 100 Kcal				2.88	2.88		0.04					
	% of Recommendation			86.8	211	115		48					
Argentina	BB´S infant dessert												
	Per Daily Ration	50	190.5	3.81	7.20		120.0	0.25	0.30			2.00	3.00
	Nutrients Density per 100 Kcal				3.78	3.78	63	0.13	0.16			1.05	1.57
	% of Recommendation			86.6	277	151	55	160	192			56	49
Chile	Mi Sopita												
	Per Daily Ration	50	205.5	4.11	6.00		163.0	0.07	0.08	200		2.00	2.50
	Nutrients Density Kcal				2.92	2.92	79	0.03	0.04	97.3	97	0.97	1.22
	% of Recommendation			93.4	214	117	70	42	48	214	107	52	38
Chile	Purita Cereal												
	Per Daily Ration	20	88.4	4.42	3.40		27.90	0.07	0.10	180		1.20	1.24
	Nutrients Density per 100 Kcal				3.85	3.85	32	0.08	0.11	203.6	204	1.36	1.40
	% of Recommendation			100.5	282	154	28	97	138	448	224	72	44
Colombia	Bienestarina												
	Per Daily Ration	30	108	3.60	6.30		180	0.15	0.27	210		2.49	4.23
	Nutrients Density per 100 Kcal				5.83	5.83	167	0.14	0.25	194.4	194	2.31	3.92
	% of Recommendation			81.8	428	233	147	170	306	428	214	122	123
	Fortified Cookies												
	Per Daily Ration	40	178	4.45	2.60					5.00			3.30
	Nutrients Density per 100 Kcal				1.46	1.46				2.81	3		1.85
	% of Recommendation			101.1	107	58				6	3		58
Cuba	Fruit Puree												
	Per Daily Ration	100	93	0.93									2.00
	Nutrients Density per 100 Kcal												2.15
	% of Recommendation			21.1									68
Ecuador	Mi Papilla												
	Per Daily Ration	65	260	4.00	10		127	0.40	0.50	240		10.0	10.0
	Nutrients Density per 100 Kcal				3.85	3.85	49	0.15	0.19	92.3	92	3.85	3.85
	% of Recommendation			90.9	282	154	43	188	235	203	102	204	121
Ecuador	Nutrinnfa												
	Per Daily Ration	60	256	4.3	6.9		120	0.4	0.7	320		8	8
	Nutrients Density per 100 Kcal				2.7	2.7	47	0.14	0.26	125	125	3.1	3.1
	% of Recommendation			97	198	108	41	172	315	275	137	165	98.0
Mexico	Nutrisano Papilla												
	Per Daily Intake	44	194	4.41	5.8		400		0.80			10.0	10.0
	Nutrients Density per 100 Kcal				2.99	2.99	206		0.41			5.15	5.15
	% of Recommendation			100.2	219	120	181		504			273	162
Panama	Nutricereal (nutricrema)												
	Per Daily Intake	45	158	3.51	5.00		99	0.20	0.20	120		2.70	5.00
	Nutrients Density per 100 Kcal				3.16	3.16	63	0.13	0.13	75.9	76	1.71	3.16
	% of Recommendation			79.8	232	127	55	155	155	167	84	91	99
Peru	PACFO Papilla												
	Per Daily Intake	90	383	4.25	11.70		108	0.45	0.45	450		5.40	5.40
	Nutrients Density per 100 Kcal				3.06	3.06	28	0.12	0.12	117.6	118	1.41	1.41
	% of Recommendation			96.6	224	122	25	144	144	259	129	75	44
Venezuela	Lactovisoy												
	Per Daily Intake	80	311	3.89	12.70		979	0.60	0.80	400			12.00
	Nutrients Density per 100 Kcal				4.08	4.08	315	0.19	0.26	128.6	129		3.86
	% of Recommendation			88.4	299	163	277	236	314	283	141		121

(1) Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.
(2) Estimation based on FAO/WHO Recommendations per Daily Portion of 50 g of FCF

Table 11. Category1. Fortified Complementary Foods (FCF). Nationwide Experiences. Final Product Energy Contribution.

Country	Fortified Complementary Food (FCF)	FCF Daily Ration			Additional Ingredients per daily Ration		Final Product		
		(g)	Kcal	Kcal/g	Type	Amount	Kcal	Volume (ml)	Kcal/ml
Argentina	BB´S infant cereal	62.5*	239.0	3.82	Water	200 ml**	239.0	200	1.20
	BB´S infant dessert	50.0	190.5	3.81	Water	100 ml	190.5	100	1.91
Chile	Mi Sopita	50.0	205.5	4.11	Water	400 ml	205.5	400	0.51
	Purita cereal	20.0	88.4	4.42	Water	200 ml	88.4	200	0.44
Colombia	Bienestarina	30.0	108.0	3.60	Water Sugar/ Sugar Cane	600 ml 30 g	228.0	600	0.38
Ecuador	Mi Papilla	65.0	260.0	4.00	Water	65 ml	260.0	65	4.00
	Nutrinnfa	60.0	256.0	4.27	Water	220 ml	256.0	220	1.16
Mexico	Nutrisano Papilla	44.0	194.0	4.41	Water	45 ml	194.0	45	4.31
Panama	Nutricereal	45.0	158.0	3.51	Water	500 ml	158.0	500	0.32
	(Nutricrema)	90.0	383.0	4.26	Water	270 ml	383.0	270	1.42
Venezuela	Papilla PACFO Lactovisoy	80.0	311.0	3.89	Water	400 ml	311.0	400	0.78

N/A - Not Available
* Average(25-100)
** Estimated volume of 200 ml based on the reported powder milk preparation, that is used in this FCF product

Table 12. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Marketing.

Country	Fortified Complementary Food (FCF)	Program	Marketing
Argentina	BB´S infant cereal	Plan Más Vida Federal Project	N/A
	BB´S infant dessert	Plan Más Vida Federal Project	N/A
Chile	Mi Sopita	National Complementary Feeding Program National Food Supplementation and Micronutrient Fortification Program	N/A
	Purita cereal	National Complementary Feeding Program	To be Implemented
Colombia	Bienestarina	Colombian Family Welfare Institute (ICBF)	Social marketing, Information and Education
	Fortified Cookies	Colombian Family Welfare Institute Program (ICBF). Infant Breakfast Program, 2004. Food supplementation and Micronutrient Fortification Program	Social marketing, Information and Education
Cuba	Fruit Puree	Iron Fruit Puree Fortification Program for the Prevention and Control of Anemia and Iron Deficiency	To Be Implemented
Ecuador	Mi Papilla	National Food and Nutrition Program (PANN 2000)	Promotion, Education and Communication
	Nutrinnfa	INNFA Program for Children in the Infant Development Center. Alimentese Ecuador Program	Promotion, Education and Communication
Mexico	Nutrisano Papilla	Oportunidades Program (PROGRESA)	Social marketing and Education
Panama	Nutricereal (Nutricrema)	Complementary Feeding Program. MINSA (PACMI)	Social marketing and Education
Peru	PACFO Papilla	High Risk Group Complementary Feeding Program	Social marketing and Education
Venezuela	Lactovisoy	Program of the National Institute of Nutrition	Technical Nutritional Unit Staff, Public school Teachers, Directors, Doctors and Health Center staff, Child Care providers (mothers)

N/A - Not Available

Table 13. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Production.

Country	Fortified Complementary Food (FCF)	Program	Production Metric Tons (MT)	Production Company
Argentina	BB´S infant cereal BB´S infant dessert	Plan Más Vida Federal Project Plan Más Vida Federal Project	3,850	For Teknofood elaborated by Solfrut S.A. For Teknofood elaborated by Solfrut S.A.
Chile	Mi Sopita Purita cereal	National Complementary Feeding Program National Food Supplementation and Micronutrient Fortification Program National Complementary Feeding Program	500 9,180	IPAL S.A., PROEZA LTDA. WATT'S, COMMERCIAL STA. ELENA
Colombia	Bienestarina Fortified Cookies	Colombian Family Welfare Program (ICBF) Colombian Family Welfare Institute Program (ICBF). Infant Breakfast Program, 2004. Food Supplementation and Micronutrient Fortification Program	45,000 13,328	S.A. Maize Industries Comestibles la Rosa S.A, by the request of the Cooperative Colanta Ltda, for the ICBF.
Cuba	Fruit Puree	Iron Fruit Puree Fortification Program for the Prevention and Control of Anemia and Iron Deficiency	10,000	Conservas de VegetalesUnion
Ecuador	Mi Papilla Nutrinnfa	National Food and Nutrition Program for Children under 1 and 8 of age (PANN 2000) INNFA Program for children in the Infant Development Centers. Alimentese Ecuador Program	19,163 1,400	"Modern Foods Producing Companies S.A., Molinos Superior, Fortesan" Grupo Moderna S.A.
Mexico	Nutrisano Papilla	Oportunidades Program (PROGRESA)	16,060	Plants owned and operated by the Government of Mexico (1)
Panama	Nutricereal (Nutricrema)	Complementary Feeding Program. MINSA (PACMI)	613	Cenutre S.A.
Peru	PACFO Papilla	National Complementary Feeding Program for High Risk Groups (PACFO)	30,000	ALPROSA, TRASANDINA, PROPEIN and others (60 producers)
Venezuela	Lactovisoy	Program of the National Institute of Nutrition	N/A	N/A

N/A - Not Available
*Assumption = Argentina BB's Cereal 1 unit= 175 g
*Assumption = Argentina BB's Postre 1 unit= 350 g
Colombia : Fortified Cookie and Fortified Milk 100% demand estimation based on total beneficiaries, daily ration and 365 days per year Mexico. Annual Production Papilla Nutrisano estimation based on total beneficiaries, daily ration and 365 days per year
(1) Rosado JL, 2000; Rivera JA 2000.

Table 14. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Distribution.

Country	Fortified Complementary Food (FCF)	Program	Distribution Channels
Argentina	BB´S infant cereal BB´S infant dessert	Plan Más Vida Federal Project Plan Más Vida Federal Project	Directly to Municipal storage Directly to Municipal storage
Chile	Mi Sopita	National Complementary Feeding Program National Food Supplementation and Micronutrient Fortification Program	Directly to Health Units per region
	Purita cereal	National Complementary Feeding Program	Directly to Health Units per region
Colombia	Bienestarina Fortified Cookies	Colombian Family Welfare Institute (ICBF) Colombian Family Welfare Institute Program (ICBF). Infant Breakfast Program, 2004. Food Supplementation and Micronutrient Fortification Program	Colombian Family Welfare Institute (ICBF) Colombian Family Welfare Institute (ICBF) units
Cuba	Fruit Puree	Iron Fruit Puree Fortification Program for the Prevention and Control of Anemia and Iron Deficiency	According to regulations
Ecuador	Mi Papilla Nutrinnfa	National Food and Nutrition Program (PANN 2000) Alimentese Ecuador Program INNFA Program for Children in the Infant Development Center	Operative Units Ministry of Health Directly to the family Child Development Centers
Mexico	Nutrisano Papilla	Oportunidades Program (PROGRESA)	N/A
Panama	Nutricereal (Nutricrema)	Complementary Feeding Program. MINSA (PACMI)	National Health Centers (MINSA) National Public Schools (MEDUC)
Peru	PACFO Papilla	National Complementary Feeding Program for High Risk Groups (PACFO)	Directly to Local Health Centers
Venezuela	Lactovisoy	Program of the National Institute of Nutrition	School, Feeding Center, Food Stores

N/A - Not Available

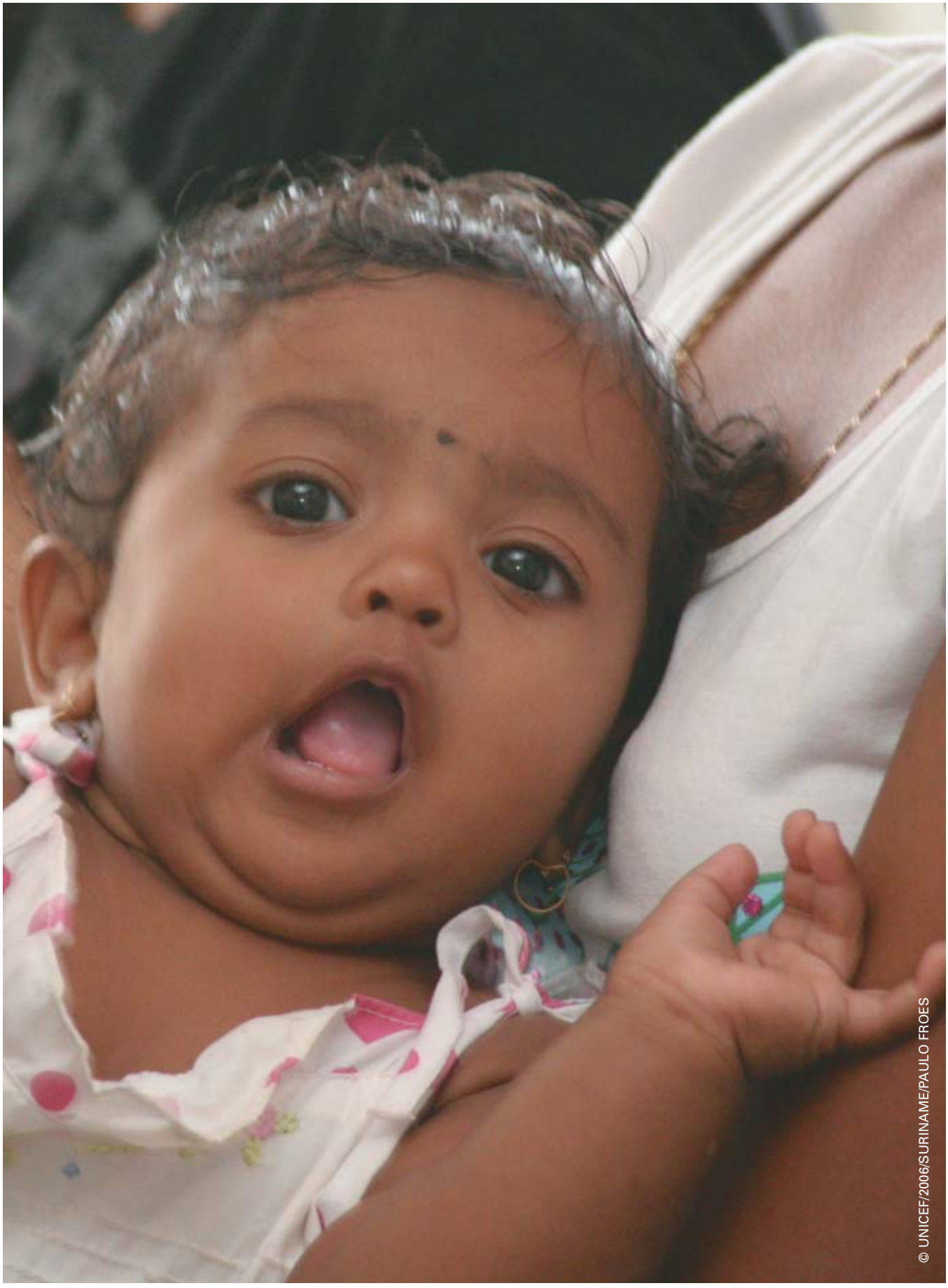

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Table 15. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Ingredients.

Country	Indicador	Powder Milk	Soy	Corn	Wheat	Oil	Sugar	Rice	Soy Protein Isolate	
Argentina	BB´S infant cereal			x			x			
Argentina	BB´S infant dessert						x			
Chile	Mi Sopita		x	x		x				
Chile	Purita Cereal	x	x	x		x				
Colombia	Bienestarina	x	x	x	x	x				
Colombia	Fortified Cookies				x		x			
Cuba	Fruit Puree									
Ecuador	Mi Papilla Nutrinnfa	x x	x x	x	x	x x	x x	x x		
Mexico	Nutrisano Papilla	x					x			
Panama	Nutricereal (Nutricrema)					x	x			
Peru	PACFO Papilla	x	x	x		x	x	x		
Venezuela	Lactovisoy	x					x	x	x	

x: Qualitative report.

	Quinua	Cereal Mix	Legume Mix	Cereal + Vegetable mix	Meat	Corn Starch	Dry Conc. Milk Whey Protein	Powder Gourd	Milk Cream	Fruits Pulp
							x	x	x	
							x			x
		x	x	x	x					
						x				
										x
	x									
		x	x							
	x									

Table 16. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Product Specifications.

Country	Fortified Complementary Food (FCF)	Age Range	Container		Serving (g)	Daily Ration	
			Size (g)	Servings Per Container		Frequency	(g)
Argentina	BB´S infant cereal	6-24 mo.	175	7.0	25.0	1-4	63 (25-100)
	BB´S infant dessert	6-24 mo.	350	7.0	50.0	N/A	N/A
Chile	Mi Sopita	> 6 mo.	500	20.0	25.0	2.0	50.0
	Purita cereal[1]	18-72 mo. 6-36 mo.	1,000	50.0	20.0	1.0	20.0
Colombia	Bienestarina	6 mo.- 5 yrs.	1,000	100.0	10.0	3.0	30.0
	Fortified Cookies		40	1.0	40.0	1.0	40.0
Cuba	Fruit Puree	22-48 mo.	214 (Tetra)	2.1	100.0	1.0	100.0
			360(Alum.)	3.6	100.0	1.0	100.0
Ecuador	Mi Papilla	6-24 mo.	1,000	15.4	32.5	2.0	65.0
	Nutrinnfa	6 mo. - 6yrs.	1,000	33.0	30.0	2.0	60.0
Mexico	Nutrisano Papilla	6-24 mo.	264	6.0	44.0	1.0	44.0
Panama	Nutricereal (Nutricrema)	6--59 mo.	454	20.0	22.5	2.0	45.0
Peru	PACFO Papilla	6-36 mo	900	10.0	30.0	3.0	90.0
Venezuela	Lactovisoy	6 mo. -14 yrs.	1,000	25.0	40.0	2.0	80.0

(1) Distribution: 1- 2 Kg/ month (Kain et al 1994 Arch Lat Nutr)
N/A - Not Available

Table 17. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Preparation and Intake.

Country	Fortified Complementary Food (FCF)	Age Range	Additional Ingredients/ Serving		Preparation Time (min.)	Serving (g)	Daily Consumption	
			Type	Amount			Frequency	Serving (g)
Argentina	BB´S infant cereal	6-24 mo.	Water	N/A	3	25.0	1-4	25-100
	BB´S infant dessert	6- 24 mo.	Water	100 ml	3	50.0	as needed	N/A
Chile	Mi Sopita	> 6 mo.	Water	200 ml	0	25.0	2	50
	Purita cereal	18-72 mo.	Water	200 ml	0	20.0	1	20
Colombia	Bienestarina	6-36 mo.	Water Sugar/ Sugar Cane	200 ml 10 g	5	10.0	3	30
Ecuador	Mi Papilla	6-24 mo.	Water	32.5 ml	2	32.5	2	65
	Nutrinnfa	6 mo.- 6yrs.	Water	220 ml	2	30.0	2	60
Mexico	Nutrisano Papilla	6-24 mo.	Water	45 ml	2	44.0	1	44
Panama	Nutricereal (Nutricrema)	6--59 mo.	Water/Milk	250 ml	1	22.5	2	45
Peru	PACFO Papilla	6-36 mo.	Water	270-300 ml	2-3	30.0	3	90
Venezuela	Lactovisoy	6 mo. -14 yrs.	Water	200 ml	5	40.0	2	80

N/A - Not Available

Table 18. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Price (US$).

Country	Fortified Complementary Food (FCF)	Container		Serving (g)	US$			Consumption		
		Size	Servings per Container		Container	100 g	Per serving	Frequency per Day	Daily Ration (g)	US$ per day
Argentina	BB´S infant cereal	175 g	7.0	25.0	N/A	N/A	N/A	1-4	25-100	N/A
Argentina	BB´S infant dessert	350 g	7.0	50.0	N/A	N/A	N/A	as needed	N/A	N/A
Chile	Mi Sopita	500 g	20.0	25.0	1.10	0.220	0.055	2	50	0.110
	Purita cereal (1)	1 Kg	50.0	20.0	2.50	0.250	0.050	1	20	0.050
Colombia	Bienestarina	1 Kg	66.7	10.0	0.89	0.089	0.009	3	30	0.027
Colombia	Fortified Cookies	40 g	1.0	40.0	0.06	0.140	0.056	1	40	0.060
Ecuador	Mi Papilla	2 Kg	61.5	32.5	3.00	0.150	0.049	2	65	0.098
	Nutrinnfa	1 Kg	33	30	1.70	0.170	1.100	2	60	0.200
Cuba	Fruit Puree	214 g (Tetra)	2.1	100.0	0.48	0.223	0.223	1	100	0.223
		360 g (Aluminum)	3.6	100.0	1.00	0.276	0.276	1	100	0.276
Mexico	Nutrisano Papilla	264	6.0	44.0	0.73	0.303	0.134	1	44	0.130
Panama	Nutricereal (Nutricrema)	454 g	20.2	22.5	0.99	0.218	0.049	2	45	0.098
Peru	PACFO Papilla	900 g	30.0	30.0	1.98	0.220	0.066	3	90	0.198
Venezuela	Lactovisoy	1 Kg	25.0	40.0	2.42	0.240	0.095	2	80	0.190

(1) Distribution: 1- 2 Kg/ month (Kain et al 1994 Arch Lat Nutr)
N/A - Not Available

Table 19. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Price per Nutrient Unit (US$).

Country	FCF	Daily Ration (g or ml)	Price(US$) per Daily Ration	Kcal	Protein (g)	Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)	Zinc (mg)	Iron (mg)
Chile	Mi Sopita										
	Per Daily Ration	50.0	0.110	205.5	6.0	163.0	0.1	0.1	200.0	2.0	2.5
	Cost (US$) per nutrient unit			0.0005	0.0183	0.0007	1.5714	1.3750	0.0006	0.0550	0.0440
Chile	Purita Cereal										
	Per Daily Ration	20.0	0.050	88.4	3.4	27.9	0.1	0.1	180.0	1.2	1.2
	Cost (US$) per nutrient unit			0.0006	0.0147	0.0018	0.7143	0.5000	0.0003	0.0417	0.0403
Colombia	Bienestarina										
	Per Daily Ration	30.0	0.0267	108.0	6.3	180.0	0.2	0.3	210.0	2.5	4.2
	Cost (US$) per nutrient unit			0.0002	0.0042	0.0001	0.1780	0.0989	0.0001	0.0107	0.0063
Colombia	Fortified Cookies										
	Per Daily Ration	40.0	0.060	178.0	2.6				5.0		3.3
	Cost (US$) per nutrient unit			0.0003	0.0231				0.0120		0.0182
Cuba	Fruit Puree (Tetra)										
	Per Daily Ration	100.0	0.224	93.0							2.0
	Cost (US$) per nutrient unit			0.0024							0.1120
	Fruit Puree (Aluminium)										
	Per Daily Ration	100	0.276	93.0							2.0
	Cost (US$) per nutrient unit			0.0030							0.1382
Ecuador	Mi Papilla										
	Per Daily Ration	65.0	0.098	260.0	10.0	127.0	0.4	0.5	240.0	10.0	10.0
	Cost (US$) per nutrient unit			0.0004	0.0098	0.0008	0.2438	0.1950	0.0004	0.0098	0.0098
	Nutriinnfa (papilla)										
	Per Daily Ration	60	0.200	256	6.9	120	0.4	0.7	320	8.0	8.0
	Cost (US$) per nutrient unit			0.0008	0.0290	0.0017	0.5556	0.3030	0.0006	0.0251	0.0250
Mexico	Papilla Nutrisano										
	Per Daily Ration	44	0.130	194.0	5.8	400.0		0.8		10.0	10.0
	Cost (US$) per nutrient unit			0.0007	0.0224	0.0003		0.1625		0.0130	0.0130
Panama	Nutricereal (nutricrema)										
	Per Daily Intake	45.0	0.098	158.0	5.0	99.0	0.2	0.2	120.0	2.7	5.0
	Cost (US$) per nutrient unit			0.0006	0.0196	0.0010	0.4900	0.4900	0.0008	0.0363	0.0196
Peru	Papilla PACFO										
	Per Daily Intake	90.0	0.198	382.5	11.7	108.0	0.5	0.5	450.0	5.4	5.4
	Cost (US$) per nutrient unit			0.0005	0.0169	0.0018	0.4400	0.4400	0.0004	0.0367	0.0367
Venezuela	Lactovisoy										
	Per Daily Intake	80.0	0.190	311.0	12.7	979.0	0.6	0.8	400.0		12.0
	Cost (US$) per nutrient unit			0.0006	0.0150	0.0002	0.3167	0.2375	0.0005		0.0158

(1) Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.
(2) Estimation based on FAO/WHO Recommendations per Daily Portion of 50 g of FCF

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Table 20. Category 1. Fortified Complementary Foods (FCF). Nationwide Experiences. Impact Studies.

Country	FCF product	Studies	Location (s)	N	Age	Indicators
Chile [1]	Mi Sopita Purita Cereal	1	2 locations South West of Santiago	2,357	>3 yrs.	W/H, W/A
Colombia [2]	Bienestarina, distributed long with other foods by the ICBF	1	ICBF Hogares Comunitarios	456 families		Nutrient intake, W/H, W/A
	Fortified Cookies	1	Infant Breakfast Program			Food intake and nutritional status
Cuba [3]	Fruit Puree	1	La Habana	377	22-48 mo.	Hemoglobin, Serum Ferritin
		1	Five provinces	N/A	6-12 mo.	Hemoglobin
Ecuador [4]	Mi Papilla Nutrinnfa	1	10 Health Centers of Los Rosales, Santo Domingo de los Colorados, Canton.	1,154	9-23 mo.	Socio-economic status, breastfeeding prevalence, morbidity, hemoglobin concentration and W/A, W/H
Mexico [5]	Papilla Nutrisano		58 Infant Development Centers of 4 provinces: Guayas, Manasi, Cotopaxi and Pichincha.	1,411	6-59 mo.	W/A
Panama [6]	Nutricereal	1	Communities of 6 contiguous states in the central region of the country	347 communities	< 2 yrs. and 2-4 yrs.	Infant growth, evaluation of W/A and H/A, hemoglobin
		1	15 Health District Centers	691	< 5 yrs.	W/A H/A W/H during the first 9 months of intervention
Peru [7]	PACFO	1	Case control study, Huanco (control), ANCASH (case)	N/A	N/A	Stunting

(1) Kain,1994
(2) ICBF, 2003, Dialogo Boletin 1:(6). Mora et al (1981). And Mora et al (2004)
(3) Gay , 2003. INHA, 2005
(4) PANN, 2000. CEISAN 2005.
(5) Rivera, 2004
(6) Caballero, 2004
(7) INS, 2003

Main Finding	Recommendations/Conclusions
63% of children, 3 yrs. in the Area participated in the program No relationship between participation in the program and change in nutritional status	Reformulation of the "reinforcement" subprogram of the National Supplementary Feeding Program
A greater proportional intake of protein. A significant differences in weight at age 3 months and in length beginning at age 6 months. Significant reduction in prevalence of moderate and severe malnutrition. in progress	Iron was changed into a higher bioavailable component and Premix was reformulated, included folic acid, vit B12 and Zinc. In order to have a significant effect of the supplemented group on physical growth, it is necessary to implement an effective preven N/A
16.3% reduction of anemia prevalence child care children. 10% reduction in anemia prevalence in children 22-35 mo. Reduction of 21.2% in anemia prevalence in children 36-48 mo. Reduction of 15.9% in iron deficiency prevalence in children 36-48 mo. In process	The program start having effect on a group with the higher incidence of anemia. N/A
No effect on in socio-economic status nor breastfeeding prevalence. Significant higher energy and iron intake. Significant increase in weight gain, W/A, W/H and low weight prevalence. Reduction in 16.6% the anemia prevalence.	Mi papilla did not substitute the energy and iron contribution of the regular diet of the children. The program is having important implication on the development and education of ecuatorian children.
Initial results showed important positive impact in children's nutritional status.	Final report is not available yet.
Better growth in height. Age and length -adjusted height was greater by 1.1 cm. Mean hemoglobin values were higher. Age adjusted rate of anemia was lower. No significant changes in W/A H/A and W/H. Nutritional status in malnourished children improved in 35%. Nutritional status of children at risk of malnutrition improved in 24%.	PROGRESA is associated with better growth and lower rates of anemia in low-income, rural infants and children in Mexico. Iron component was changed for one with a higher bioavailability. Children with higher nutrition deficit at the beginning of the program have significantly better nutritional improvement , encouraging the importance of focusing this program in malnourished children.
2% reduction of stunting (from 1994 to 2002)	Note: The results of this study are inconsistent and not very reliable

Table 21. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Program Characteristics.

Country	Milk Product	Subsidy (S)/ Donation (D)	Program	Type of Program			Duration	
				Public	Public-Private	Geographic Area of Distribution	Start	End
Argentina	Fortified Milk powder	S	Argentine Government	National Food Security Program (PNSA) Materno-Infantil Program (PMI)	x		Nationwide	2001	UTD
Chile	Purita (Fortified Milk)	S	Ministry of Health-Chilean Government	National Complementary Feeding Program	x		Nationwide	1952	UTD
Colombia	Fortified Milk	S	Colombian Family Welfare Institute (ICBF)Colombian Government.	Colombian Family Welfare Program. Infant Breakfast Program, 2004. Food supplementation and micronutrient Fortification Program	x		Nationwide	2002	UTD
Costa Rica	Fortified Milk	S	Costa Rica Government	Nutrition and Integral Child Development Program	x		Nationwide	1950	UTD
Cuba	Nela (Fortified Evaporated Milk)	S	Cuban Government	National Iron and Zinc Milk Fortification Program for Children under 1 and 8 of age	x		Nationwide	2005	2006
Dominican Republic	Fortified Milk	S	Dominican Government	Dietetic and Complementary Nutrition Program	x		Nationwide	1965	UTD
Mexico	Tenutre (Fortified Milk)	S	Mexican Federal Government	National Complementary Feeding Program		x	Nationwide	1972	UTD

UTD - Up To Date

Table 22. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Selection Criteria of Beneficiaries.

Country	Milk Product	Program	Selection Criteria
Argentina	Fortified Milk powder	National Food Security Program (PNSA) Materno-Infantil Program (PMI)	Poverty and Malnutrition; 6-12 mo. children and pregnant women considered a risk for malnutrition at the local health Care Center. All malnourished Children
Chile	Purita Fortified Milk	National Complementary Feeding Program	Children under 6 yrs.
Colombia	Fortified Milk	Colombian Family Welfare Program . Infant Breakfast Program, 2004. Food supplementation and micronutrient Fortification Program	Children (12 mo. - 5yrs. 11 mo.): a) from families with the lowest score in the first level of the Colombian "SISBEN" system. b) from families certified by the Social Solidarity Network. c) Native Children certified by the native community organization. d) Children 12-36 mo. from Rural area. e) Children who are not benefited by other public or private complementary feeding programs.
Costa Rica	Fortified Milk	Nutrition and Integral Child Development Program	Mild, Moderate or Severe Malnutrition. Live outside of the area when the Ready to Eat Food Service Program is held. Poverty.
Cuba	Nela (Fortified Evaporated Milk)	National Iron and Zinc Milk Fortification Program for Children under 1 and 8 of age	All Children 6-11 mo. of age. Children under 6 mo. of age who are not exclusive breastfeed
Dominican Republic	Fortified Milk	Dietetic and Complementary Nutrition Program	All Children 11-36 mo. of age.
Mexico	Tenutre (Fortified Milk)	National Complementary Feeding Program	Poverty, No participation in other social programs.

N/A - Not Available

Table 23. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Beneficiaries (aprox).

Country	Milk Product	Beneficiaries		< 3 years National Population			
		Age Range	Present #	Coverage		Without Coverage [2]	
				Total # (1)	(%)	#	%
Argentina*	Fortified Milk powder	6 - 24 mo.	703,112	1,992,410	35.3	1,289,298	64.7
Chile*	Purita (Fortified Milk)	6 - 18 mo.	225,552	736,611	30.6	511,059	69.4
Colombia	Fortified Milk	6 mo. - 5 yrs. - 11 mo.	912,890	2,877,059	31.7	1,964,169	68.3
Costa Rica*	Fortified Milk	< 7 yrs.	49,832	234,706	21.2	184,874	78.8
Cuba	Nela (Fortified Evaporated Milk)	6 - 11 mo.	124,341	407,596	30.5	283,255	69.5
Dominican Republic**	Fortified Milk	11 - 36 mo.	N/A	612,043	N/A	N/A	N/A
Mexico	Tenutre (Fortified Milk)	1 - 5 yrs.	1,604,000[3]	6,477,166	24.8	4,873,166	75.2

(1) CEPAL-CELADE 2005
(2) Children not benefiting from FCF programs. Estimation based on present # of beneficiaries.
N/A - Not Available
(3) Out of total 5,828,102 beneficiaries 6 mo-44 yrs
* Distributed to pregnant/lactating mothers, also.
**Distributed also to elder population > 65 yrs.
Note: % Beneficiaries 6-24 months is much higher. Estimation was made on children < 3 years.

Table 24-A. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Nutritional Contribution.

X.1 Macronutrients and Vitamins

Country	Milk Products	Calories	Protein (g)	Total Fat (g)	Vit. A (µg Retinol)	Vit. E (mg)	Vit.D (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit. B-6 (mg)	Vit. B-12 (µg)	Folic Acid (µg)	Vit. C (mg)
FAO/WHO Recommendations per 100 g FCF[1]		**440**	**6 11**	**12.7**	**500**	**10**	**2.0 3.0**	**0.36**	**0.36**	**6.1**	**0.44**	**0.52**	**83**	**140 280**
FAO/WHO Recommendations per Daily Portion of 50 g of FCF[1]		**220**	**3 5.5**	**6.35**	**250**	**5**	**1 1.5**	**0.18**	**0.18**	**3.05**	**0.22**	**0.26**	**42**	**70 140**
	Solid Fortified Milk													
Argentina	Fortified Milk Powder													
	Per 100 g Product	490	26.0	26.0	480	0.4	8.0	0.28	1.80	0.65	0.36	3.09	6.0	100
	Recommendation % (100g)	111	433 236	205	96	4	400 267	78	500	11	82	594	7	71 36
	Per Daily Intake (50g)	245.0	13.0	13.0	240	0.18	4.00	0.14	0.90	0.33	0.18	1.55	3.00	50.0
	Recommendation % (Daily Portion 50g)	111	433 236	205	96	4	400 267	78	500	11	82	594	7	71 36
Chile	Purita (Fortified Milk)													
	Per 100 g Product	496	26.0	26.0										70
	Recommendation % (100g)	113	433 236	205										50 25
	Per Daily Intake (20g)	99.2	5.2	5.2										14.0
	Recommendation % (Daily Portion 50g)	45	173 95	82										20 10
Costa Rica	Fortified Milk													
	Per 100 g Product	484	24.5	24.5	600		10						121	
	Recommendation % (100g)	110	408 223	193	120		500 333						146	
	Per Daily Intake (33g)	159.7	8.1	8.1	198.0		3.3						39.9	
	Recommendation % (Daily Portion 50g)	73	270 147	127	79		330						95	
Dominican Republic	Fortified Milk													
	Per 100 g Product	487	27.1	26.5	720		10	0.30	1.10					50
	Recommendation % (100g)	111	452 246	209	144		500 333	83	306					36 18
	Per Daily Intake (45.4g)	221.1	12.3	12.0	326.9		4.54	0.14	0.50					22.7
	Recommendation % (Daily Portion 50g)	100	410 224	189	131		454 303	76	277					32 16
	Liquid Fortified Milk													
Colombia	Fortified Milk													
	Per 100 ml Product	60	3.0	3.0	33									
	Recommendation % (100ml)	14	50 27	24	7									
	Per Daily Intake (200ml)	120.0	6.0	6.0	66.0									
	Recommendation % (Daily Portion 50ml)	55	200 109	94	26									
Cuba	Nela (Fortified Evaporated Milk)													
	Per 33.3ml evap (100 ml ready to drink)	57	3.0	3.0										
	Recommendation % (100ml)	13	50 27	24										
	Per Daily Intake (283.3ml)	484.9	25.5	25.5										
	Recommendation % (Daily Portion 50ml)	220	851 464	402										
Mexico	Tenutre (Fortified Milk)													
	Per 100 ml Product	57.4	3.0	3.0	90		0.75		0.11			0.10	7.40	
	Recommendation % (100ml)	13	50 27	24	18		38 25		31			19	9	
	Per Daily Intake (570ml)	327.2	17.1	17.1	513.0		4.28		0.63			0.57	42.18	
	Recomendations % (daily Portion 50g)	149	570 311	269	205		428 285		348			219	100	

(1) Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.

Table 24-B. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Nutritional Contribution.

X.2 Minerals

Country	Milk Products	Calories	Calcium (mg)	Zinc (mg)	Iron (mg)	Magnesium (mg)	Fósforo (mg)	Yodo (µg)	Selenio (µg)	Cobre (µg)	Manganeso (mg)
FAO/WHO Recommendations per 100 g FCF [1]		**440**	**200 400**	**8.3**	**14**	**80 120**	**150 200**	**180**	**20**	**400 800**	**1.2**
FAO/WHO Recommendations per Daily Portion of 50 g of FCF [1]		**220**	**100 200**	**4.15**	**7**	**40 60**	**75 100**	**90**	**10**	**200 400**	**0.6**
	Solid Fortified Milk										
Argentina	Fortified Milk powder										
	Per 100 g Product	490	900	9.0	12.0	84.0	700				
	Recommendation % (100g)	111	450 225	108	86	105 70	467 350				
	Per Daily Intake (50g)	245.0	450	4.5	6.0	42.0	350				
	Recommendation % (Daily Portion 50g)	111	450 225	107	86	105 70	467 350				
Chile	Purita (Fortified Milk)										
	Per 100 g Product	496		5.0	10.0					500	
	Recommendation % (100g)	113		60	71					125 62.5	
	Per Daily Intake (20g)	99.2		1.0	2.0					100	
	Recommendation % (Daily Portion 50g)	45		24	29					50 25	
Costa Rica	Fortified Milk										
	Per 100 g Product	484	900		4.2						
	Recommendation % (100g)	110	450 225		30						
	Per Daily Intake (33g)	159.7	297		1.4						
	Recommendation % (Daily Portion 50g)	73	297 149		20						
Dominican Republic	Fortified Milk										
	Per 100 g Product	487	890	28		75	620.0	54.0			
	Recommendation % (100g)	111	445 223	337		94 63	413 310	30			
	Per Daily Intake (45.4g)	221.1	404	12.7		34.1	281.5	24.516			
	Recommendation % (Daily Portion 50g)	100	404 202	306		85 57	375 469	27			
	Liquid Fortified Milk										
Colombia	Fortified Milk										
	Per 100 ml Product	60	112		1.5						
	Recommendation % (100 ml)	14	56 28		11						
	Per Daily Intake (200 ml)	120.0	224		3.0						
	Recommendation % (Daily Portion 50ml)	55	224 112		43						
Cuba	Nela (Fortified Evaporated Milk)										
	Per 33.3 ml evap (100 ml ready to drink)	57		0.5	1.0						
	Recommendation % (100g)	13		6	7						
	Per Daily Intake (283.3ml)	484.9		4.3	8.5						
	Recommendation % (Daily Portion 50ml)	220		101	122						
Mexico	Tenutre (Fortified Milk)										
	Per 100 ml Product	57.4		1.2	1.2						
	Recommendation % (100 ml)	13		14	9						
	Per Daily Intake (570 ml)	172.2		6.8	6.8						
	Recommendation % (Daily Portion 50ml)	78		165	98						

(1) Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.

Table 25. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Nutrient Density.

Country	Milk Product	Daily Ration	Calories	Calories Kcal/g	Protein (g)		Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)		Zinc (mg)	Iron (mg)
FAO/WHO Recommendations per Daily Portion of 50 g of FCF[1]		**50**	**220**		**3**	**5.5**	**250**	**0.18**	**0.18**	**100**	**200**	**4.15**	**7**
Recommended Nutrient Density[2]				**4.4**	**1.4**	**2.5**	**113.6**	**0.08**	**0.08**	**45.5**	**90.9**	**1.9**	**3.2**
	Solid Fortified Milk Product												
Argentina	Fortified Milk powder												
	Per Daily Ration (g)	50	245.0	4.90	13.0		240.0	0.14	0.90	450		4.50	6.00
	Nutrients Density per 100 Kcal				5.3	5.3	98	0.06	0.37	184	184	1.84	2.45
	% of Recommendation			359.3	389	212	86	70	449	404	202	97	77
Chile	Purita (Fortified Milk)												
	Per Daily Ration (g)	20	99.2	4.96	5.2							1.00	2.00
	Nutrients Density per 100 Kcal				5.2	5.2						1.01	2.02
	% of Recommendation			363.7	384	210						53	63
Costa Rica	Fortified Milk												
	Per Daily Ration (g)	33	159.7	4.84	8.1		198			297			1.39
	Nutrients Density per 100 Kcal				5.1	5.1	124			186	186		0.87
	% of Recommendation			354.9	372	203	109			409	205		27
Dominican Republic	Fortified Milk												
	Per Daily Ration (g)	45.4	221.1	4.87	12.3		326.9	0.14	0.50	404		12.71	
	Nutrients Density per 100 Kcal				5.6	5.6	148	0.06	0.23	183	183	5.75	
	% of Recommendation			357.1	408	223	130	75	276	402	201	305	
	Liquid Fortified Milk Product												
Colombia	Fortified Milk												
	Per Daily Ration (ml)	200	120.0	0.60	6.0		66.0			224			3.00
	Nutrients Density per 100 Kcal				5.0	5.0	55			187	187		2.50
	% of Recommendation			44.0	367	200	48			411	205		79
Cuba	Nela (Fortified Evaporated Milk)												
	Per Daily Ration (ml)	283.3	484.9	1.71	25.5							4.30	8.5
	Nutrients Density per 100 Kcal				5.3	5.3						0.89	1.75
	% of Recommendation			125.5	386	210						47	55
Mexico	Tenutre (Fortified Milk)												
	Per Daily Ration (ml)	570	327.2	0.57	17.1		513		0.63			6.84	6.84
	Nutrients Density per 100 Kcal				5.2	5.2	157		0.19			2.09	2.09
	% of Recommendation			42.1	383	209	138		234			111	66

(1) Lutter C K and K G Dewey. Proposed Nutrient Composition for Fortified Complementary Food J. Nutr 133:3011S-3020S, 2003.

Table 26. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Final Product Energy Contribution.

Country	Milk Product	FCF Daily Ration			Additional Ingredients per daily Ration		Final Product		
		(g)	Kcal	Kcal/g	Type	Amount	Kcal	g	Kcal/ml
Solid Fortified Milk									
Argentina	Fortified Milk powder	50.0	245.0	4.90	Water Sugar	400 ml (1) 20 g (1)	325.0	400.00	0.81
Chile	Purita (Fortified Milk)	20.0	99.2	4.96	Water Sugar Vegetable Oil	200 ml 5 g 4 g	155.2	200.00	0.78
Dominican Republic	Fortified Milk	45.4	221.1	4.87	Water	200 ml	221.1	200.00	1.11
Liquid Fortified Milk		**(ml)**	**Kcal**	**Kcal/ml**	**Type**	**Amount**	**Kcal**	**ml**	**Kcal/ml**
Colombia	Fortified Milk	200.0	120.0	0.60	-	-	120.0	200.00	0.60
Cuba	Nela (Fortified Evaporated Milk)	283.3	484.9	1.71	Water	566.6 ml	484.9	850.00	0.57
Mexico	Tenutre (Fortified Milk)	570.0	327.2	0.57	-	-	327.2	570.00	0.57

(1) Calvo E, et al 2001. Prevención de la Anemia en Niños y Embarazadas en la Argentina. Actualización para Equipos de Salud. Dirección Nacional de Salud Materno Infanto Juvenil. (June 2001).
N/A - Not Available
Not Available data for Fortified Milk (Costa Rica)

Table 27. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Marketing.

Country	Milk Product	Program	Marketing
Argentina	Fortified Milk powder	National Food Security Program (PNSA) Materno-Infantil Program (PMI)	Social Marketing Social Marketing
Chile	Purita (Fortified Milk)	National Complementary Feeding Program	Supermarket and Pharmacy retail
Colombia	Fortified Milk	Colombian Family Welfare Program. Infant Breakfast Program, 2004. Food supplementation and micronutrient Fortification Program	Social Marketing. Information and Education
Costa Rica	Fortified Milk	Nutrition and Integral Child Development Program	Social Marketing and Education
Cuba	Nela (Fortified Evaporated Milk)	National Iron and Zinc Milk Fortification Program for Children under 1 and 8 of age	To be implemented
Dominican Republic	Fortified Milk	Dietetic and Complementary Nutrition Program	N/A
Mexico	Tenutre (Fortified Milk)	National Complementary Feeding Program	Social Marketing

N/A - Not Available

Table 28. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Production.

Country	Milk Product	Program	Production Metric Tons (MT)	Production Company
Argentina	Fortified Milk powder	National Food Security Program (PNSA) Materno-Infantil Program (PMI)	15,600 4,500	Verónica SA – Sucesores de Alfredor Williner SA – Sancor Cooperativas Unidas Limitadas – Parmalat Argentina SA – Nestlé Argentina SA - Molfino Hnos SA – Milkaut SA – Mastellone Hnos SA – Manfrey SA
Chile	Purita (Fortified Milk)	National Complementary Feeding Program	8,200	COLUM, SOPROLE, PROLESUR, DOS ALAMOS & WATT'S
Colombia	Fortified Milk	Colombian Family Welfare Program . Infant Breakfast Program, 2004. Food Supplementation and Micronutrient Fortification Program	68,573	Cooperativa Colanta Ltda
Costa Rica	Fortified Milk	Nutrition and Integral Child Development Program	11,520	Cooperativa de Productores de Leche Dos Pinos R.L..
Cuba	Nela (Fortified Evaporated Milk)	National Iron and Zinc Milk Fortification Program for Children under 1 yr of age	20,700	Alimento Río Zaza" CO. Sancti Spiritus, Cuba.
Dominican Republic	Fortified Milk	Dietetic and Complementary Nutrition Program	N/A	Lacteos Dominicanos IDEMALCA
Mexico	Tenutre (Fortified Milk)	National Complementary Feeding Program	1,235,817	LICONSA S.A. DE CV

N/A - Not Available
Colombia: Fortified Milk. Annual production estimation based on: 100% demand, total beneficiaries, daily ration, density of 1.026 kg/L and 365 days per year. Costa Rica: Fortified milk annual production = annual milk distributed in both, the DAF (food distribution) and the milk distribution components of the program

Table 29. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Distribution.

Country	Milk Product	Program	Distribution Channels
Argentina	Fortified Milk powder	National Food Security Program (PNSA) Materno-Infantil Program (PMI)	N/A N/A
Chile	Purita (Fortified Milk)	National Complementary Feeding Program	Directly to Health Care Units per region
Colombia	Fortified Milk	Colombian Family Welfare Institute (ICBF) Program, 2004. Infant Breakfast Program. Food Supplementation and Micronutrient Fortification Program	Colombian Family Welfare Institute (ICBF). Infant Breakfast Program. Food Supplementation and Micronutrient Fortification Program
Costa Rica	Fortified Milk	Nutrition and Integral Child Development Program	Basic Teams for Integrate Health Care (EBAIS) and Local Health Centers
Cuba	Nela (Fortified Evaporated Milk)	National Iron and Zinc Milk Fortification Program for Children under 1 and 8 of age	Retailers accessible to target population
Dominican Republic	Fortified Milk	Dietetic and Complementary Nutrition Program	"SESPAS's Local Health Center. Local Milk Distribution Centers"
Mexico	Tenutre (Fortified Milk)	National Complementary Feeding Program	Milk Supply National Program of LICONSA

N/A - Not Available
PNSA: Programa Nacional De Seguridad Alimentaria
PMI : Programa Materno Infantil
ICBF: Instituto Colombiano de Bienestar Familiar
EBAIS : Equipos Basicos de Atencion Integral a la Salud

Table 30. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Ingredients.

Country	Indicador	Oil	Powder Milk
Argentina	Fortified Milk powder		x
Chile Purita	(Fortified Milk)		x
Colombia	Fortified Milk		x
Costa Rica	Fortified Milk		x
Cuba Nela	(Fortified Evaporated Milk)		x
Mexico	Tenutre (Fortified Milk)	x	
Dominican Republic	Fortified Milk	x	

x: Qualitive report.

Table 31. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Product Specifications.

Country	Milk Product	Age Range	Container		Serving (g) (ml)	Daily Ration	
			Size (g) (ml)	Servings Per Container		Frequency	(g) (ml)
Solid Fortified Milk							
Argentina	Fortified Milk powder	6 - 24 mo.	800	32.0	25.0	2	50.0
Chile	Purita (Fortified Milk)	6 - 18 mo.	1,000 (1)	50.0	20.0	1	20.0
Costa Rica	Fortified Milk	< 7 yrs.	400	12.1	33.0	1	33.0
Dominican Republic	Fortified Milk	11-36 mo.	454	10.0	45.4	1	45.4
Liquid Fortified Milk			**Size (ml)**	**Servings Per Container**	**(ml)**	**Frequency**	**(ml)**
Colombia	Fortified Milk	12 mo. -5 yrs.11 mo.	200	1.0	200.0	1	200.0
Cuba	Nela (Fortified Evaporated Milk)	6 - 11 mo.	1,000	3.5	283.3	1	283.3
Mexico	Tenutre (Fortified Milk)	1 - 11 yrs.	2000	7.0	285.0	2	570.0

(1) Distribution: 2 Kg/ month. Non breastfeeding babies up to 6 months = 7 to 9 servings per day (Torrejon et al 2004 Nutr)

Table 32. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Preparation and Intake.

Country	Milk Product	Age Range	Additional Ingredients/ Serving		Preparation Time (min.)	Serving g/ml	Daily Consumption	
			Type	Amount			Frequency	(g)
Solid Fortified Milk								
Argentina	Fortified Milk powder	6 - 24 mo.	Water Sugar	200 ml (1) 10 g (1)	N/A	25.0	2 - 2.4	50-60
Chile	Purita (Fortified Milk)	6 - 18 mo.	Water Sugar Vegetable Oil	200 ml 5 g 4 g	0	20.0	1	20
Costa Rica	Fortified Milk	< 7 yrs.	Water			33	1	33
Dominican Republic	Fortified Milk	11-36 mo.	Water	200 ml	N/A	45.4	1	45.4
Liquid Fortified Milk			**Type**	**Amount**	**Preparation Time (min)**	**Serving ml**	**Frequency**	**(ml)**
Colombia	Fortified Milk	12 mo. -5 yrs.11 mo.	-	-	0	200.0	1	200.0
Cuba	Nela (Fortified Evaporated Milk)	6 - 11 mo.	Water	566.6 ml	1	283.3	1	283.3
Mexico	Tenutre (Fortified Milk)	1 - 11 yrs.	-	-	0	285.0	2	570.0

(1) Calvo E, et al 2001. Prevención de la Anemia en Niños y Embarazadas en la Argentina. Actualización para Equipos de Salud. Dirección Nacional de Salud Materno Infanto Juvenil. (June 2001).
N/A - Not Available

Table 33. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Price.

Country	Milk Product	Container		Serving	US$			Consumption		
		Size	Servings per Container		Container	100 g/ml	Per serving	Frequency per Day	Ration per day	US$ per day
Solid Fortified Milk										
Argentina	Fortified Powder Milk	800 g	32.0	25.0 g	5.28	0.660	0.165	2	50-60 g	0.34-0.40
Chile	Purita (Fortified Milk) (1)	1 Kg	50.0	20.0 g	3.32	0.310	0.060	1	20 g	0.060
Costa Rica	Fortified Milk	400 g	12.1	33.0 g	2.08	0.520	0.171	1	33.0 g	0.171
Dominican Republic	Fortified Milk	454 g	10.0	45.4 g	N/A	N/A	N/A	1	45.4 g	N/A
Liquid Fortified Milk										
Colombia	Fortified Milk	200	1.0	200.0 ml	0.16	0.080	0.160	1	200 ml	0.160
Cuba	Nela (Fortified	1 L	3.5	283.3 ml	0.04	0.003	0.009	1	283.3 ml	0.009
Mexico	Evaporated Milk) Tenutre (Fortified Milk)	2 L	7.0	285.0 ml	0.67	0.034	0.096	2	570 ml	0.191

(1) Distribution: 2 Kg/ month. Non-breastfed babies up to 6 months = 7 to 9 servings per day (Torrejon et al 2004 Nutr)
N/A - Not Available

Table 34. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Price per Nutrient unit.

Country	Milk Product	Daily Ration (g or ml)	Price (US$) per Daily Ration	Kcal	Protein (g)	Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)	Zinc (mg)	Iron (mg)
	Solid Fortified Milk										
Argentina	Fortified Powder Milk										
	Per Daily Ration (g)	50.0	0.3	245.0	13.0	240.0	0.1	0.9	450.0	4.5	6.0
	Price (US$) per nutrient unit			0.0014	0.0262	0.0014	2.4286	0.3778	0.0008	0.0756	0.0567
Chile	Purita (Fortified Milk)										
	Per Daily Ration (g)	20.0	0.1	99.2	5.2					1.0	2.0
	Price (US$) per nutrient unit			0.0006	0.0115					0.0600	0.0300
Costa Rica	Fortified Milk										
	Per Daily Ration (g)	33.0	0.2	159.7	8.1	198.0			297.0		1.4
	Price (US$) per nutrient unit			0.0011	0.0211	0.0009			0.0006		0.1234
	Liquid Fortified Milk										
Colombia	Fortified Milk										
	Per Daily Ration (ml)	200.0	0.2	120.0	6.0	66.0			224.0		3.0
	Price (US$) per nutrient unit			0.0013	0.0267	0.0024			0.0007		0.0533
Cuba	Nela (Evaporated Triple Concentrated Fortified Milk)										
	Per Daily Ration (ml)			484.9	25.5					4.3	8.5
	Price (US$) per nutrient unit	283.3	0.01	0.00002	0.00035					0.0021	0.0011
Mexico	Tenutre Fortified Milk										
	Per Daily Ration (ml)			327.2	17.1	513.0		0.6		6.8	6.8
	Price (US$) per nutrient unit	570.0	0.2	0.0006	0.0112	0.0004		0.3046		0.0279	0.0279

No Price (US$) data avalailable for Dominican Republic

Table 35. Category 2. Fortified Complementary Foods (FCF). Fortified Milk Experiences. Impact Studies.

Country	Milk Product	Studies	Location (s)	N	Age	Indicators
Chile [1]	Fortified Milk Purita	1	Primary care center located in a urban slum of Santiago	42 male children	< 18 mo.	Hemoglobin, Plasma and Hair Zn, hematocrit and Serum Ferritin
		1	Control-group	N/A	N/A	N/A
		1	Regional (beneficiaries)	N/A	6 - 18 mo.	N/A
Mexico	Tenutre (Fortified Milk)	1	Control-group	N/A	12 - 30 mo.	Hemoglobin, Seric Ferritine, Transferine Receptors (TfR)
Mexico		1	In Progress			

(1) Torrejon et al 2004 Nutr

Main Finding	Recommendations/Conclusions
Favorable affects the Fe status, but not the Zn nutrition	Re-evaluation of the levels of Zn fortification
Significant reduction in the anemia prevalence. Fortified milk 1.6%, Non Fortified Milk 27.8%	N/A
Significant reduction in the anemia prevalence: Fortified milk 5.5%, Non Fortified Milk 29.9%	N/A
Significant reduction in the anemia prevalence after 6 months of receiving Tenutre. Fortified Milk 5.5%, Non Fortified Milk 29.9%	The consumption for 6 months of the fortified milk with ferrous sulfate reduces significantly reduces the anemia prevalence and increases the nutritional status of Mexican children between 12-30 months.
Anemia was reduced	Continue support

Table 36. Category 3. CSB Programs. Program Characteristics.

Country	Fortified Complementary Food (FCF)	Subsidy (S)/ Donation (D)		Program	Type of Program		Geographic Area of Distribution	Duration	
					Public	Public- Private		Start	End
El Salvador	CSB Soyarin	D	WFP	Rebuilding and Rehabilitation Program	x		Ahauchapan, Cabañas, Morazán	2003	2006
Honduras	CSB Flour	D	WFP	Primary Health Attention Program	x		Sta Barbara, South of Francisco Morazan	N/A	N/A
		D	WFP	N/A	x		60 communities in San Marcos de Colon & Duyure. Choluteca Dept.	2004	UTD
	CSB Papilla	D	WFP	Basic Activity #1 Program Project	x		11 South municipalities, 7 municipalities in Dept. of El Paraiso	2003	2007
Nicaragua	CSB Cereal	D	WFP	Program for vulnerable groups	x		35 municipalities of 7 Departments	2002	UTD
	CSB Papilla	D	WB	World Bank Pilot Project		x	Leon & Chinandega	2002	UTD

N/A - Not Available
UTD - Up To Date
WFP - World Food Program

Table 37. Category 3. CSB Programs. Selection Criteria of Beneficiaries.

Country	Fortified Complementary Food (FCF)	Program	Selection Criteria
El Salvador	CSB Soyarin	Rebuilding and Rehabilitation Program	Poverty and under
Honduras	CSB Flour	Primary Health Attention Program	Poverty and under
	CSB Papilla	Basic Activity #1 Program Project	Poverty and undernutrition
Nicaragua	CSB Cereal	Program for vulnerable groups	Poverty and undernutrition
	CSB Papilla	World Bank Pilot Project	Poverty and undernutrition

Table 38. Category 3. CSB Programs. Beneficiaries.

Country	Fortified Complementary Food (FCF)	Beneficiaries		< 3 years National Population			
		Age Range	Present #	Coverage		Without Coverage[2]	
				Total # [1]	(%)	#	(%)
El Salvador[3]	CBS Soyarin	6 - 59 mo.	75,000	484,045	15.49	409,045	84.51
Honduras	CSB Flour	6mo. - 5 yrs.	9,683	603,880	1.60	594,197	98.40
	CSB Papilla	6 - 36 mo.	1,600	603,880	0.26	602,280	99.74
Nicaragua[4]	CSB Cereal	6 - 24 mo.	16,581	440,619	3.76	424,038	96.24
	CSB Papilla	6 - 24 mo.	5,893	440,619	1.34	434,726	98.66

(1) CEPAL-CELADE 2005
(2) Children not benefiting from FCF programs. Estimation based on present # of beneficiaries.
(3) 150,000 children 7-12 yr., 25,000 pregnant/lactating mothers
(4) 14,184 Distributed to pregnaut / factoring mothers, also.

Table 39-A. Category 3. CSB Products. Nutritional Contribution.

A Macronutrients and Vitamins

Country	FCF	Calories	Protein (g)		Total Fat (g)	Vit. A (µg Retinol)	Vit. E (mg)	Vit.D (µg)		Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit. B-6 (mg)	Vit. B-12 (µg)	Folic Acid (µg)	Vit. C (mg)	
FAO/WHO Reference 2002 (100 g) [1]		**440**	**6**	**11**	**12.7**	**500**	**10**	**2.0**	**3.0**	**0.36**	**0.36**	**6.1**	**0.44**	**0.52**	**83**	**140**	**280**
FAO/WHO Reference 2002 (Daily Portion of 50 g) [1]		**220**	**3**	**5.5**	**6.35**	**250**	**5**	**1**	**1.5**	**0.18**	**0.18**	**3.05**	**0.22**	**0.26**	**41.5**	**70**	**140**
El Salvador	CSB Soyarin	375.7		17.2	6.9	784	8.70	4.95		0.53	0.48	6.23	0.50	1.00	300	40	
	Recommendation % (100g)	85	287	156	54	157	87	248	165	147	133	102	114	192	361	29	14
	Per daily Intake (115g)*	432	20		7.9	901	10	5.7		0.61	0.55	7.16	0.58	1.15	345	46	
	Recommendation % (Daily Portion 50g)	196	659	360	125	360	200	569	380	339	307	235	261	442	831	66	33
Honduras	CSB Flour	380		18	6.0	510	8.00	5.00		0.70	0.50	8.00	0.70	4.00	0.2	40	
	Recommendation % (100g)	86	300	164	47	102	80	250	167	194	139	131	159	769	0.2	29	14
	Per Daily Intake (115g)	437	21		6.9	587	9.2	5.8		0.81	0.58	9.20	0.81	4.60	0.2	46	
	Recommendation % (Daily Portion 50g)	199	690	376	109	235	184	575	383	447	319	302	366	1769	0.6	66	33
Honduras	CSB Papilla	380		18	6.0	510	8.0	5.0		0.7	0.5	8.0	0.7	4.0	0.2	40	
	Recommendation % (100g)	86	300	164	47	102	80	250	167	194	139	131	159	769	0.2	29	14
	Per Daily Intake (115g)	437	21		6.9	587	9.2	5.8		0.81	0.58	9.20	0.81	4.60	0.2	46	
	Recommendation % (Daily Portion 50g)	199	690	376	109	235	184	575	383	447	319	302	366	1769	0.6	66	33
Nicaragua	CSB Cereal	380		18	6.0	510	8.0	5.0		0.70	0.50	8.00	0.70	4.00	0.2	40	
	Recommendation % (100g)	86	300	164	47	102	80	250	167	194	139	131	159	769	0.2	29	14
	Per Daily Intake (115g)	437	20.7		6.9	587	9.2	5.8		0.81	0.58	9.20	0.81	4.60	0.2	46	
	Per Daily Intake (60.5g)*	230	11		4	309	5	3.0		0.42	0.30	4.84	0.42	2.42	0.12	24	
	Recommendation % (Daily Portion 50g)	199	690	376	109	235	184	580	387	450	322	302	368	1769	0	66	33
Nicaragua	CSB Papilla	380		18	6.0	510	8.0	5.0		0.70	0.50	8.00	0.70	4.00	0.2	40	
	Recommendation % (100g)	86	300	164	47	102	80	250	167	194	139	131	159	769	0.2	29	14
	Per Daily Intake (115g)	437	20.7		6.9	587	9.2	5.8		0.81	0.58	9.20	0.81	4.60	0.2	46	
	Per Daily Intake (60.5g)*	230	11		4	309	5	3.0		0.42	0.30	4.84	0.42	2.42	0.12	24	
	Recommendation % (Daily Portion 50g)	199	690	376	109	235	184	580	387	450	322	302	368	1769	0	66	33

(1) Lutter C K and K G Dewey. 2003.

* 4 lb per month. Therefore, assuming 60.5 g per day

Table 39-B. Category 3. CSB Products. Nutritional Contribution.

B. Minerals

Country	FCF	Calories	Calcium (mg)	Zinc (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Iodine (µg)	Selenium (µg)	Cooper (µg)	Manganese (mg)
FAO/WHO Reference 2002 (100 g) [1]		**440**	**200 400**	**8.3**	**14**	**80 120**	**150 200**	**180**	**20**	**400 800**	**1.2**
FAO/WHO Reference 2002 (Daily Portion of 50 g) [1]		**220**	**100 200**	**4.15**	**7**	**40 60**	**75 100**	**90**	**10**	**200 400**	**0.6**
El Salvador	CSB Soyarin	376	831	5.0	17	174	206	57	6.0	0.90	0.70
	Recommendation % (100g)	85	416 208	60	125	217 145	137 103	32	30	0.2 0.1	58
	Per Daily Intake (115g)*	432	956	5.8	20	200	237	65	6.9	1.0	0.8
	Recommendation % (Daily Portion 50g)	196	956 478	139	287	500 333	316 237	73	69	0.5 0.3	134
Honduras	CSB Flour	380	800	3.0	18	100	600	50			
	Recommendation % (100g)	86	400 200	36	129	125 83	400 300	28			
	Per Daily Intake (115g)	437	920	3.5	21	115	690	58			
	Recommendation % (Daily Portion 50g)	199	920 460	83	296	288 192	920 690	64			
Honduras	CSB Papilla	380	800	3.0	18	100	600	50			
	Recommendation % (100g)	86	400 200	36	129	125 83	400 300	28			
	Per Daily Intake (115g)	437	920	3	21	115	690	58			
	Recommendation % (Daily Portion 50g)	199	920 460	83	296	288 192	920 690	64			
Nicaragua	CSB Cereal	380	800	3.0	18	100	600	50			
	Recommendation % (100g)	86	400 200	36	129	125 83	400 300	28			
	Per Daily Intake (60.5g)*	230			11						
	Per Daily Intake (115g)	437	920	3.5	20.7	115	690	58			
	Recommendation % (Daily Portion 50g)	199	920 460	83	296	288 192	920 690	64			
Nicaragua	CSB Papilla	380	800	3.0	18	100	600	50			
	Recommendation % (100g)	86	400 200	36	129	125 83	400 300	28			
	Per Daily Intake (60.5g)*	230			11						
	Per Daily Intake (115g)	437	920	3.5	20.7	115	690	58			
	Recommendation % (Daily Portion 50g)	199	920 460	83	296	288 192	920 690	64			

(1) Lutter C K and K G Dewey. 2003.
* 4 lb per month. Therefore, assuming 60.5 g per day

Table 40. Category 3. CSB Products. Nutrient Density.

Country	FCF	Daily Ration	Calories	Calories Kcal/g	Protein (g)		Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)		Zinc (mg)	Iron (mg)
FAO/WHO Recommendations per Daily Portion of 50 g of FCF		**50**	**220**		**3**	**5.5**	**250**	**0.18**	**0.18**	**100**	**200**	**4.15**	**7**
Recommended Nutrient Density [1]				**4.4**	**1.4**	**2.5**	**113.6**	**0.08**	**0.08**	**45.5**	**90.9**	**1.9**	**3.2**
El Salvador	CSB Soyarin												
	Per Daily Ration (g)	115	432	3.76	20		901	0.6	0.6	956		5.8	20
	Nutrients Density per 100 Kcal				4.58	4.58	209	0.14	0.13	221.2	221	1.33	4.66
	% of Recommendation			85.4	336	183	184	172	156	486.6	243	71	146
Honduras	CSB Flour												
	Per Daily Ration (g)	115	437	3.80	21		587	0.81	0.58	920		3.5	21
	Nutrients Density per 100 Kcal				4.74	4.74	134	0.19	0.13	210.5	211	0.79	4.74
	% of Recommendation			86.4	347	189	118	227	162	463.2	232	42	149
Honduras	CSB Papilla												
	Per Daily Ration (g)	115	437	3.80	21		587	0.81	0.58	920		3.5	21
	Nutrients Density per 100 Kcal				4.74	4.74	134	0.19	0.13	210.5	211	0.79	4.74
	% of Recommendation			86.4	347	189	118	227	162	463.2	232	42	149
Nicaragua	CSB Cereal												
	Per Daily Ration (g)	115	437	3.80	20.7		587	0.81	0.58	920		3.5	20.7
	Nutrients Density per 100 Kcal				4.74	4.74	134	0.18	0.13	210.5	211	0.79	4.74
	% of Recommendation			86.4	347	189	118	225	161	463.2	232	42	149
Nicaragua	CSB Papilla												
	Per Daily Ration (g)*	60.5	247	4.08	12		371	0.39	0.78				10
	Nutrients Density per 100 Kcal				4.74	4.74	150	0.16	0.32				3.95
	% of Recommendation			92.8	347	189	132	193	386				124

(1) Lutter C K and K G Dewey. 2003.
* 4 lb per month. Therefore, assuming 60.5 g per day

Table 41. Category 3. CSB Products. Final Product Energy Contribution.

Country	Fortified Complementary Food (FCF)	FCF Daily Ration			Additional Ingredients per daily Ration		Final Product		
		(g)	Kcal	Kcal/g	Type	Amount	Kcal	Volume (ml)	Kcal/ml
El Salvador	CBS Soyarin	115	432.0	3.76	N/A	N/A	N/A	N/A	N/A
Honduras	CSB Flour	115	437.0	3.80	Water Sugar Oil	400 ml As needed* 5 g	482.0	400	1.21
	CSB Papilla	115	437.0	3.80	Water Sugar Oil	200 ml N/A N/A	437.0	200	2.19
Nicaragua	CSB Cereal	115	437.0	3.80	Water Oil	400 ml* 4.7 g	465.0	400	1.16
	CSB Papilla	60.5	247.0	4.08	N/A	105 ml*	247.0	105	2.35

* Not included in the estimation of total energy of the final product
N/A - Not Available

Table 42. Category 3. CSB Products. Distribution.

Country	Fortified Complementary Food (FCF)	Program	Distribution Channels
El Salvador	CSB Soyarin	Rebuilding and Rehabilitation Program	Secretaría Nacional de la Familia and NGOs
Honduras	CSB Flour CSB Papilla	Primary Health Attention Program Basic Activity #1 Program Project	Community Municipalities and Community support groups
Nicaragua	CSB Cereal CSB Papilla	Program for vulnerable groups World Bank Pilot Project	Community Organizations Local Health Centers

Table 43. Category 3. CSB Products. Ingredients.

Country	Indicador	Oil	Sugar	Rice	Beans	Soy	Corn	Powder Milk
El Salvador	CSB Soyarin	x				x	x	
Honduras	CSB Flour	x				x	x	
Honduras	CSB Papilla	x	x			x	x	
Nicaragua	CSB Cereal	x	x			x	x	
Nicaragua	CSB Papilla	x		x	x			x

x: Qualitative report.

Table 44. Category 3. Programs Using Fortified Corn-Soy Blend (CSB) Products. Products Specifications.

Country	Fortified Complementary Food (FCF)	Age Range	Container		Serving (g)	Daily Ration	
			Size (g)	Servings Per Container		Frequency	(g)
El Salvador	CSB Soyarin	6-59 mo.	25000	N/A	115.0	1.0	115.0
Honduras	CSB Flour	12-23 mo.	14,982	47.4	115.0	1	115
	CSB Papilla	6-36 mo.	5,448	94.7	57.5	2	115
Nicaragua	CSB Cereal	6-24 mo.	12,500	108.7	115.0	1-2	115
	CSB Papilla	6-24 mo.	1,800	N/A	N/A	N/A	60.5

N/A - Not Available

Table 45. Category 3. CSB Products. Preparation and Intake.

Country	Fortified Complementary Food (FCF)	Age Range	Additional Ingredients/ Serving		Preparation Time (min.)	Ration (g)	Daily Ration	
			Type	Amount			Frequency	Serving (g)
El Salvador	CSB Soyarin	6-59 mo.	N/A	N/A	N/A	115.0	1	115
Honduras	CSB Flour	12-23 mo.	Water Sugar Oil	400 ml As needed 5 g	20	115.0	1	115
	CSB Papilla	6-36 mo.	Water Sugar Oil	200 ml N/A N/A	10	57.5	2	115
Nicaragua	CSB Cereal	6-24 mo.	Water Oil	As needed 1 tbsp	15	115.0	1-2	115
	CSB Papilla	6-24 mo.	N/A	N/A	N/A	N/A	N/A	60.5*

N/A - Not Available
* Estimated daily ration based in distribution of 4/lb per month per child. Therefore 60.5 g/day

Table 46. Category 3. CSB Programs. Price (US$)

Country	Fortified Complementary Food (FCF)	Container		Serving (g)	US$			Consumption		
		Size	Servings per Container		Container	100 g	Per serving	Frequency per Day	Grams per day	US$ per day
El Salvador	CSB Soyarin	25 Kg	217.4	115	11.25	0.045	0.052	1	115*	0.052
Honduras	CSB Flour	33 lb	130.3	115	5.39	0.036**	0.041	1	115	0.041
	CSB Papilla	12 lb	94.7	57.5	1.96	0.036**	0.021	2	115	0.041
Nicaragua	CSB Cereal	28 lb	110.5	115(a)	6.22	0.070	0.056	1-2	115	0.080
	CSB Papilla	4 lb	N/A	N/A	N/A	N/A	N/A	N/A	60.5***	N/A

N/A - Not Available
(a) cost/100 g
** Estimated daily ration based in distribution of 4lb per month per child. Therefore 60.5 g/day
*** Dijkhuizen P. 2000

Table 47. Category 3. CSB Programs. Impact Studies

Country	FCF product	Studies	Location (s)	N	Age	Indicators	Main Finding	Recommendations /Conclusions
Honduras	CSB Flour	1	In progress		< 2 yrs. and 2-5 yrs.	Evaluation of H/A (2-5 yrs.), W/A (< 2y) in a monthly, semester and annual base	N/A	N/A
	CSB Papilla	2	Department of Choluteca and El Paraiso		< 5 y	W/H	2.56 % reduction of the prevalence of severe malnutrition. 10.2% reduction of the moderate and severe malnutrition.	N/A

N/A - Not Available
Country Data 2005

Table 48. Category 4. Fortified Complementary Foods (FCF). Past Experiences. Main Characteristics.

Indicators	Nutritiva	Milk Product (PL)	Alli Alimentu [1]
Country	**Ecuador**	**Venezuela**	**Peru**
Start -End (year)	2000-2002	1958-1964	1993
Program/ Institution	Ecuador's World Vision Complementary Alimentation Programme	Program for the Protection of Malnourished Pre-School Children	Nutritional Research Institute (INN) / National Fund for Social Development and Compensation (FONCODES)
Beneficiaries	6 - 24 mo.	All Family	
Producer	Moderna Alimentos S.A.	Industrial Plant Property of the INN assigned to the Unit of Nutrition	6-36 mo Private Sector under contract to the Government of Peru
Marketing	N/A	Milk Products Units at the Local Centers	Social Marketing
Distribution Channels	Technical personnel of 18 Projects of local development.	Local Health Centers, Pre-schools Centers, Famliy Homes	Local Community Implementation Committee
Ingredients			
Rice	x		
Soy	x		
Powder Milk	x	x	
Quinua	x		
Oil	x		
Sugar	x	x	
Energy Density (Kcal/g dry product)	2.5	3.55	4.44
Package			
Package Size (g)	1,000	1,000	2,500
Servings per Package Unit (#)	30.8	16.7	20.0
Size			
Daily Ration (g)	65	60	250
Serving per day (#)	2	1	2
Serving Size (g)	32.5	60	125
Total Energy (Kcal)/day	163.0	213.0	1110
Cost			
per Package (US$)	N/A	1.93	1.92
per 100 g (US$)	N/A	0.193	0.077
per Daily Ration (US$)	N/A	0.116	0.192
Preparation per Serving			
Product (g)	65	60	250
Sugar (g)		12	
Water (ml)	32.5	200	240
Energy Density Final Product (Kcal/mL)	5.02	1.31	4.63
Time of Preparation (min)	2	5	2

(1) Lopez De Romaña, 2000
N/A - Not Available

Table 49. Category 4. Fortified Complementary Foods (FCF). Past Experiences Sold in Retail Market. Main Characteristics.

Indicators	Incaparina (Original)[1]	Incaparina (New)[1]	Colombiharina[2]	Solidarina[2]	AK-1000
Country	**Guatemala and El Salvador**	**Guatemala**	**Colombia**	**Colombia**	**Haiti**
Start -End (year)	1961-	N/A	1969-1970	1976-	1990
Program/ Institution	Institute of Nutrition for Central America and Panama (INCAP)	Institute of Nutrition for Central America and Panama (INCAP)	Universidad del Valle, Cali	Solidaridad for Colombia Foundation Program	CPNNu National Nutrition Coordination/MOH
Beneficiaries	< 4 yrs	N/A	All Family	Poor families	6-59 mo N/A
Producer	Alimentos S.A	N/A	Molinos Santa Rita	Derivados del Maiz (CPC International)	
Marketing	Retail Sale	N/A	Retail Sale Marketing	N/A	
Distribution Channels	Supermarket and Food Stores	N/A	Supermarket and Food Stores	Solidarina Foundation, Supermarket Bogota and Medellin	
Ingredients					
Defatted Soybean Flour		x	x	x	
Soybean Flour	x				
Cottonseed Flour	x				
Rice Flour			x		x
Corn Flour	x	x		x	
Powder Milk				x	x
Vitamin and Minerals Premix			x	x	x
Phytate/Fe	N/A	N/A	x	N/A	
Phytate/Zn	N/A	N/A	x	N/A	
Energy Density (Kcal/g dry	3.73	5.33	3.83	3.40	N/A
product)	1.93	2.81	2.01	N/A	N/A
Protein Efficiency Ratio (PER)					
Package	454	454	500	500	N/A
Package Size (g)	24	24	42	12.5	N/A
Servings per Package Unit (#)					
Size	18.8	18.8	12.0	40.0	N/A
Daily Ration(g)	1	1	1	1	5
Serving per day (#)	18.8	18.8	12.0	40.0	N/A
Serving Size (g)	70	100	46	136	N/A
Total Energy (Kcal)/day					
Cost	0.454	0.499	0.920	0.885	N/A
per Package (US$)	0.100	0.110	0.186	0.177	0.400
per 100 g (US$)	0.018	0.020	0.022	0.071	N/A
per Daily Ration (US$)					
Preparation per Serving					2 measures of cereal
Product (g)	18.75	18.75	12	40	for one measure of
	12	12	24	20	grindeded vegetables
Sugar (g)	220	220	230	240	40
Water (ml)					1000
Oil (ml)					25
Whole Milk Powder (g)					55
Caloric Density Final Product (Kcal/mL)	0.54	0.67	0.62	0.90	N/A
Time of Preparation (min)	15	10	10	5	30

N/A - Not Available
(1) Rozo C., 2000
(2) Tartanac F, 2000

Table 50-A. Category 4. Fortified Complementary Foods (FCF). Past Experiences and New Programs. Nutritional Contribution

A Micronutrients and Vitamins

Country	FCF		Calories	Protein (g)	Total Fat (g)	Vit. A (µg Retinol)	Vit. E (mg)	Vit.D (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit. B-6 (mg)	Vit. B-12 (µg)	Folic Acid (µg)	Vit. C (mg)
FAO/WHO Reference 2002 (100 g) [1]			**440**	**6 11**	**12.7**	**500**	**10**	**2.0 3.0**	**0.36**	**0.36**	**6.1**	**0.44**	**0.52**	**83**	**140 280**
FAO/WHO Reference 2002 (Daily Portion of 50 g) [1]			**220**	**3 5.5**	**6.35**	**250**	**5**	**1 1.5**	**0.18**	**0.18**	**3.05**	**0.22**	**0.26**	**41.5**	**70 140**
Past Experiences															
Ecuador	Nutritiva	Per 100g	250	7.0	6.5	195	5.5		0.64	0.75	8.3	0.92	0.6	76.9	36.92
		Recommendation % (100g)	57	117 64	51	39	55		178	208	136	209	123	93	26 13
		Per Daily Intake (65g)	163	4.6	4.2	127	3.6		0.4	0.5	5.4	0.6	0.4	50	24
		Recommendation % (Daily Portion 50g)	74	152 83	67	51	72		231	271	177	272	160	120	34 17
Venezuela	Milk Product (P.L)		355	27.0	0.8	892		6.3	1.25	2.10	11.7		10.0		60
		Recommendation % (100g)	81	450 245	6.1	178		31 208	347	583	191		1923		43 21
		Per Daily Intake (60g)	213.0	16.2	0.5	535.1		3	0.8	1.3	7.0		6.0		36.0
		Recommendation % (Daily Portion 50g)	97	540 295	7.3	214		3.8 250	417	700	230		2308		51 26
Peru	Alli Alimentu [2]	Per 100g	444	14.4	14.8	720		37	0.50	0.5	5.0	0.60	0.50	30	50
		Recommendation % (100g)	101	240 131	117	144		5	139	139	82	136	96	36	36 18
		Per Daily Intake (250g)	1110	36	37	1800			1.3	1.3	13	1.5	1.3	75	125
		Recommendation % (Daily Portion 50g)	505	1200 655	583	720			694	694	410	682	481	181	179 89
Past Experiences, Currently Sold in The Retail Market															
Colombia	Colombiharina [3]	Per 100g	383	21.7	1.3	1500			1.83	1.08	13.3				
		Recommendation % (100g)	87	362 197	10	300			508	300	218				
		Per Daily Intake (12g)	46	2.60	0.16	180			0.22	0.13	1.60				
		Recommendation % (Daily Portion 50g)	21	87 47	2.5	72			122	72	52				
Colombia	Solidarina [3]	Per 100g	340	23	2.0	520			0.4	0.53	6.66		1.7	170	29
		Recommendation % (100g)	77	383 209	16	104			111	147	109		327	205	21 10
		Per Daily Intake (40g)	136	9.2	0.8	208			0.2	0.2	2.7		0.7	68	12
		Recommendation % (Daily Portion 50g)	62	307 167	13	83			89	118	87		262	164	17 8.3
Haiti	AK-1000	Per 100g	100	4											
		Recommendation % (100g)	23	67 36											
		Per Daily Intake (N/A))													
		Recommendation % (Daily Portion 50g)													
Guatemala	Incaparina (Original) [4]	Per 100g	373	21.3	5.3	1350			1.7	1.01	13.6				
		Recommendation % (100g)	85	355 194	42	270			472	281	223				
		Per Daily Intake (18.75g)	70	4.0	1.0	253			0.3	0.2	2.6				
		Recommendation % (Daily Portion 50g)	32	133 73	16	101			177	105	84				
Guatemala	Incaparina (New) [4]	Per 100g	533	23.5	4	528			0.85	1.2	15		1.1	213	
		Recommendation % (100g)	121	392 214	31	106			236	333	246		212	257	
		Per Daily Intake (18.75g)	100	4.4	0.8	99			0.2	0.2	2.8		0.2	40	
		Recommendation % (Daily Portion 50g)	45	147 80	12.0	40			89.0	125.0	92.0			96	
New Proposals															
Guatemala	Vitacereal	Per 100g	427	16.41	7.95	499			0.13	0.45	4.8		1.2	60	4.8
		Recommendation % (100g)	97	274 149	63	100			36	124	79		231	72	3.4 1.7
		Per Daily Intake (120g)	512	20	10	599			0.2	0.5	5.8		1.4	72.0	5.8
		Recommendation % (Daily Portion 50g)	233	656 358	150	240			85	299	189		554	173	8.2 4.1
Peru	INCAMIX Papilla	Per 100g	400	14	5.0	120			0.5	0.5	6	0.4	0.9	150	100
		Recommendation % (100g)	91	233 127	39	24			139	139	98	91	173	181	71 36
		Per Daily Intake (110g)	440	15	5.5	132			0.6	0.6	6.6	0.4	1.0	165	110
		Recommendation % (Daily Portion 50g)	200	513 280	87	53			306	306	216	200	381	398	157 79

(1) Lutter C K and K G Dewey. 2003.
(2) Lopez De Romaña, 2000
(3) Rozo C., 2000
(4) Tartanac F, 2000

Table 50-B. Category 4. Fortified Complementary Foods (FCF). Past Experiences and New Programs. Nutritional Contribution

B Minerals

Country	FCF		Calories	Calcium (mg)	Zinc (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Iodine (µg)	Selenium (µg)	Cooper (µg)	Manganese (mg)
FAO/WHO Reference 2002 (100 g) [1]			**440**	**200 400**	**8.3**	**14**	**80 120**	**150 200**	**180**	**20**	**400 800**	**1.2**
FAO/WHO Reference 2002 (Daily Portion of 50 g) [1]			**220**	**100 200**	**4.15**	**7**	**40 60**	**75 100**	**90**	**10**	**200 400**	**0.6**
Past Experiences												
Ecuador	Nutritiva	Per 100g	250	369	15.4	15.4	73.8	369				
		Recommendation % (100g)	57	185 92	185	110	92 62	246 185				
		Per Daily Intake (65g)	163	240	10	10	48	240				
		Recommendation % (Daily Portion 50g)	74	240 120	241	143	120 80	320 240				
Venezuela	Milk Product (P.L)		355	1750		12.3		1205				
		Recommendation % (100g)	81	875 438		88		803				
		Per Daily Intake (60g)	213	1050		7.4		723				
		Recommendation % (Daily Portion 50g)	97	1050 525		105		964				
Peru	Alli Allimentu [2]	Per 100g	444	200	10.0	10	50	200	70			
		Recommendation % (100g)	101	100 50	120	71	63 42	133 100	39			
		Per daily Intake (250g)	1110	500	25	25	125	500	175			
		Recommendation % (Daily Portion 50g)	505	500 250	602	357	313 208	667 500	194			
Past Experiences, Currently Sold in The Retail Market												
Colombia	Colombiharina [3]	Per 100g	382	500	8.3	14.2		275				
		Recommendation % (100g)	87	250 125		101		183	138			
		Per Daily Intake (12g)	46	60		1.7		33				
		Recommendation % (Daily Portion 50g)	21	60 30		24		44	33			
Colombia	Solidarina [3]	Per 100g	340	568	6.0	10		440				
		Recommendation % (100g)	77	284 142		71		293	220			
		Per Daily Intake (40g)	136	227		4.0		176				
		Recommendation % (Daily Portion 50g)	62	227 114		57		235	176			
Haiti	AK-1000	Per 100g	100									
		Recommendation % (100g)	23									
		Per Daily Intake (N/A)										
		Recommendation % (Daily Portion 50g)										
Guatemala	Incaparina (Original) [4]	Per 100g	373	305		11.2		65				
		Recommendation % (100g)	85	153 76		80		43	33			
		Per Daily Intake (18.75g)	70	57		2		12				
		Recommendation % (Daily Portion 50g)	32	57 29		30		16	12			
Guatemala	Incaparina (New) [4]	Per 100g	533	1066	15.0	25.6						
		Recommendation % (100g)	121	533 267	181	183						
		Per Daily Intake (18.75g)	100	200	3	5						
		Recommendation % (Daily Portion 50g)	45	200 100	68	69						
New Proposals												
Guatemala	Vitacereal	Per 100g	427	100	5.0	8						
		Recommendation % (100g)	97	50 25	60	57						
		Per Daily Intake (120g)	512	120	6.0	10						
		Recommendation % (Daily Portion 50g)	233	120 60	145	137						
Peru	INCAMIX Papilla	Per 100g	400	400	6.0	15						
		Recommendation % (100g)	91	200 100	72	107						
		Per Daily Intake (110g)	440	440	7	17						
		Recommendation % (Daily Portion 50g)	200	440 220	159	236						

(1) Lutter C K and K G Dewey. 2003.
(2) Lopez De Romaña, 2000
(3) Rozo C., 2000
(4) Tartanac F, 2000

Table 51. Category 4. Fortified Complementary Foods (FCF). Past Experiences and New Programs. Nutrient Density

Country	FCF	Daily Ration	Calories	Calories Kcal/g	Protein (g)	Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)	Zinc (mg)	Iron (mg)
FAO/WHO Recommendations per Daily Portion of 50 g of FCF [1]		**50**	**220**		**3 5.5**	**250**	**0.18**	**0.18**	**100 200**	**4.15**	**7**
Recommended Nutrient Density [2]				**4.4**	**1.4 2.5**	**113.6**	**0.08**	**0.08**	**45.5 90.9**	**1.9**	**3.2**
Past Experiences											
Ecuador	Nutritiva										
	Per Daily Ration (g)	65	163	2.5	4.6	127	0.4	0.5	240 148	10	10
	Nutrients Density per 100 Kcal				2.8 2.8	78	0.26	0.30	148 162	6.2	6.2
	% of Recommendation			56.8	205 112	69	313	367	325	326	193
Venezuela	Milk Product (P.L)										
	Per Daily Ration (g)	60	213.0	3.6	16.2	535	0.8	1.3	1050 493		7.4
	Nutrients Density per 100 Kcal				7.6 7.6	251	0.35	0.59	493 542		3.5
	% of Recommendation			80.7	558 304	221	430	723	1085		109
Peru	Alli Alimentu [3]										
	Per Daily Ration (g)	250	1110	4.4	36	1800	1.3	1.3	500 45	25	25
	Nutrients Density per 100 Kcal				3.2 3.2	162	0.11	0.11	45.0 50	2.3	2.3
	% of Recommendation			100.9	238 130	143	138	138	99.1	119	71
Past Experiences, Currently Sold in The Retail Market											
Colombia	Colombiharina [4]										
	Per Daily Ration (g)	12	46	3.8	2.6	180	0.22	0.13	60		1.7
	Nutrients Density per 100 Kcal				5.7 5.7	392	0.48	0.28	131 131		3.7
	% of Recommendation			87.0	415 227	345	584	345	287 144		117
Colombia	Solidarina [4]										
	Per Daily Ration (g)	40	136	3.4	9.2	208	0.2	0.2			
	Nutrients Density per 100 Kcal				6.8 6.8	153	0.12	0.16			
	% of Recommendation			77.3	496 271	135	144	191			
Guatemala	Incaparina (Original) [5]										
	Per Daily Ration (g)	18.75	70	3.7	4.0	253	0.3	0.2	57		2.1
	Nutrients Density per 100 Kcal				5.7 5.7	362	0.46	0.27	81.8 82		3.0
	% of Recommendation			84.8	419 228	318	557	331	180 90		94
Guatemala	Incaparina (New) [5]										
	Per Daily Ration (g)	18.75	100	5.3	4.4	99	0.2	0.2	200	2.8	4.8
	Nutrients Density per 100 Kcal				4.4 4.4	99	0.16	0.23	200 200	2.8	4.8
	% of Recommendation			121.1	323 176	87	195	275	440 220	149	151
New Proposals											
Guatemala	Vitacereal										
	Per Daily Ration (g)	120	512	4.3	19.7	599	0.2	0.5	120	6.0	10
	Nutrients Density per 100 Kcal				3.8 3.8	117	0.03	0.10	23.4 23	1.2	1.9
	% of Recommendation			97.0	282 154	103	37	128	51.5 26	62	59
Peru	INCAMIX Papilla										
	Per Daily Ration (g)	110	440	4.0	15	132	0.6	0.6	440	6.6	17
	Nutrients Density per 100 Kcal				3.5 3.5	30	0.13	0.13	100 100	1.5	3.8
	% of Recommendation			90.9	257 140	26	153	153	220 110	80	118

N/A - Not Available
(1) Lutter C K and K G Dewey. 2003.
(2) Estimation based on FAO/WHO Recommendations per Daily Portion of 50 g of FCF
(3) Lopez De Romaña, 2000
(4) Rozo C., 2000
(5) Tartanac F, 2000
N/A data for AK-1000 in Haiti

Table 52. Category 4. Fortified Complementary Foods (FCF). Past Experiences and New Programs. Price per Nutrient unit

Country	FCF	Daily Ration (g or ml)	Price (US$) per Daily Ration	Kcal	Protein (g)	Vit A (µg Retinol)	Thiamin (mg)	Riboflavin (mg)	Calcium (mg)	Zinc (mg)	Iron (mg)
Past Experiences											
Venezuela	Producto Lacteo (P.L)										
	Per Daily Ration (g)	60	0.116	213.0	16.2	535	0.8	1.3	1050		7.4
	Cost (US$) per nutrient unit			0.0005	0.0072	0.0002	0.1547	0.0921	0.0001		0.0157
Peru	Alli Alimentu [1]										
	Per Daily Ration (g)	250	0.192	1110	36	1800	1.3	1.3	500	25	25
	Cost (US$) per nutrient unit			0.0002	0.0053	0.0001	0.1536	0.1536	0.0004	0.0077	0.0077
Past Experiences, Currently Sold in The Retail Market											
Colombia	Colombiharina [2]										
	Per Daily Ration (g)	12	0.022	46	2.6	180	0.22	0.13	60		1.7
	Cost (US$) per nutrient unit			0.0005	0.0084	0.0001	0.1002	0.1698	0.0004		0.0129
Colombia	Solidarina [2]										
	Per Daily Ration (g)	40	0.071	136	9.2	208	0.2	0.2			
	Cost (US$) per nutrient unit			0.000	0.0077	0.0003	0.4438	0.3349			
Guatemala	Incaparina (Original) [3]										
	Per Daily Ration (g)	18.75	0.018	100	4.4	99	0.2	0.2	200	2.8	4.8
	Cost (US$) per nutrient unit			0.0002	0.0041	0.0002	0.1129	0.0800	0.0001	0.0064	0.0038
Guatemala	Incaparina (New) [3]										
	Per Daily Ration (g)	18.75	0.020	70	4.0	253	0.3	0.2	57		2.1
	Cost (US$) per nutrient unit			0.0003	0.0050	0.0001	0.0627	0.1056	0.0003		0.0095
New Proposals											
Peru	Papilla INCAMIX										
	Per Daily Ration (g)	110	0.100	440	15	132	0.6	0.6	440	6.6	17
	Cost (US$) per nutrient unit			0.0002	0.0065	0.0008	0.1818	0.1818	0.0002	0.0152	0.0061

(1) Lopez De Romaña, 2000
(2) Rozo C., 2000
(3) Tartanac F, 2000
Not available data of daily ration cost for Nutritiva in Ecuador, Vitacereal in Guatemala and AK-1000 in Haiti.

Table 53. Category 4. Fortified Complementary Foods (FCF). Past Experiences and New Programs. Impact Studies

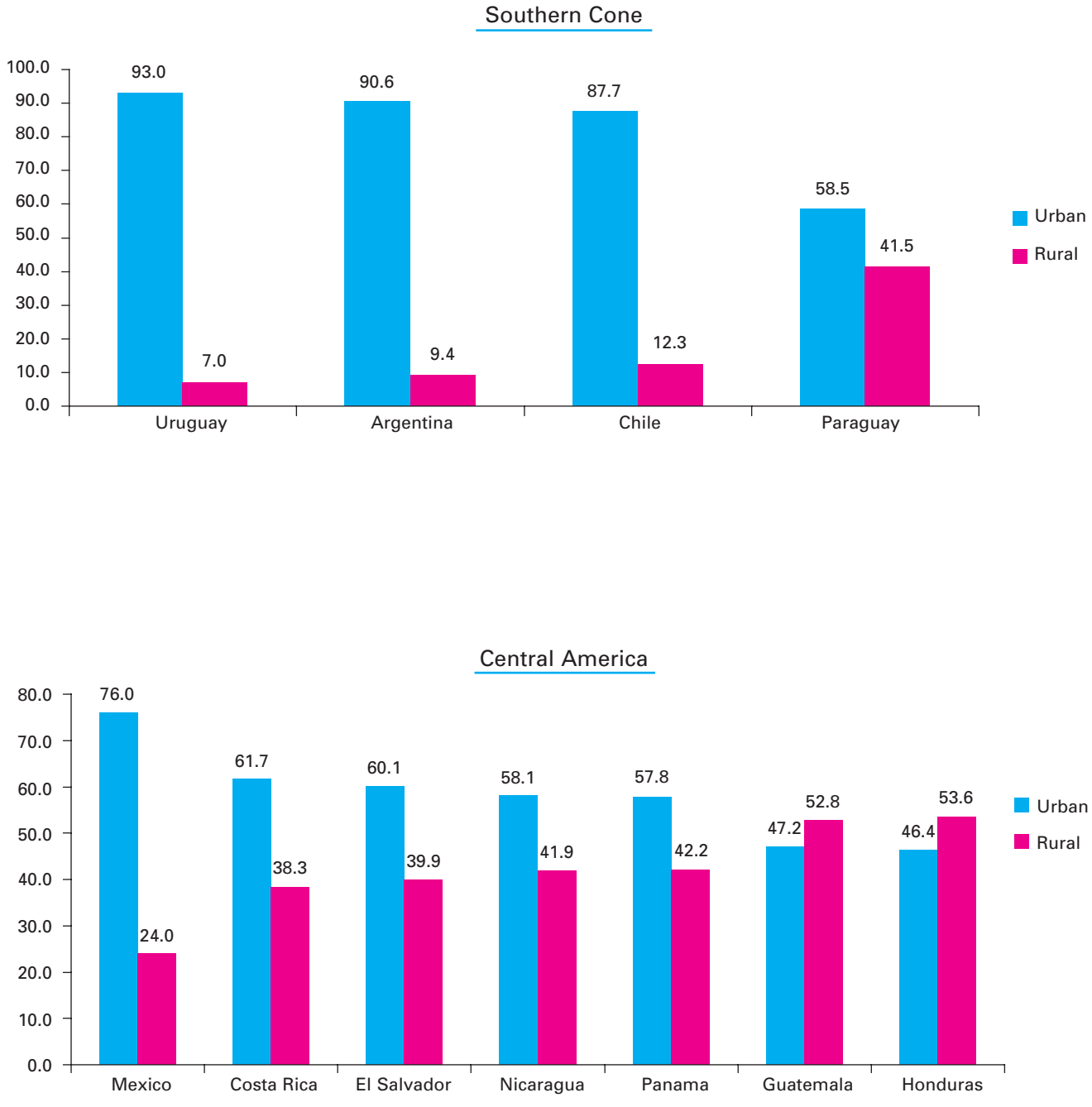
Country	FCF product	Studies	Location(s)	N	Age	Indicators	Main Finding	Recommendations/ Conclusions
Guatemala	Incaparina[1]	1	2 Villages of Eastern Guatemala	~ 330	3-36 mo.	energy intake. W/A W/H	Length increase of 2.5 cm during the first 3 y of life. Recovered of one fourth of the total growth deficit. Greater positive relationship between supplementation and growth during the first year of life (3-12 mo) than during the second and third year.	Incaparina has an positive impact in child growth, which persisted at adolescence and adulthood. Children who received the product scored higher on psycho-educational performance tests.
Peru	Alli Alimentu[2]	1	Communities in 2 differents locations	125-500	6-36 mo.	W/A H/A W/H, nutrient consumption, hemoglobin levels, and vitamin A and zinc status	Consumption of energy, protein, iron, vitamin A and calcium increased. Prevalence of anemia and vitamin A deficiency decreased.	The project affected nutritional status, but did not affect child growth, suggesting that stunting is associated with genetics, environmental and infectious factors that the project did not modify.

(1) WHO, 1998
(2) Lopez De Romaña, 2000

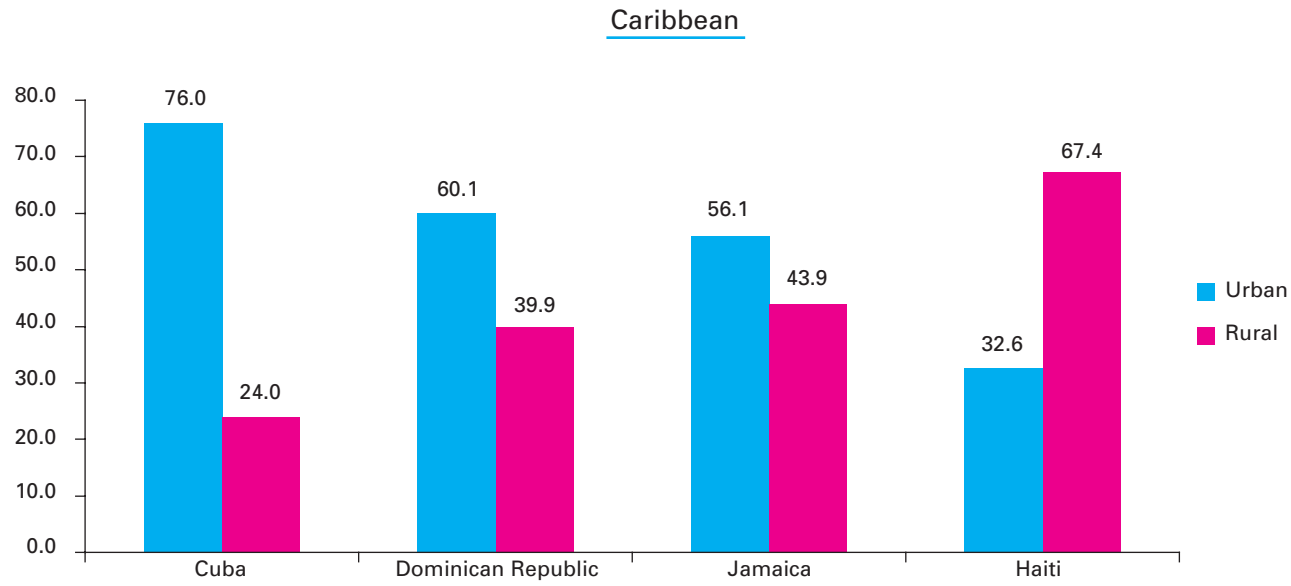
FIGURES

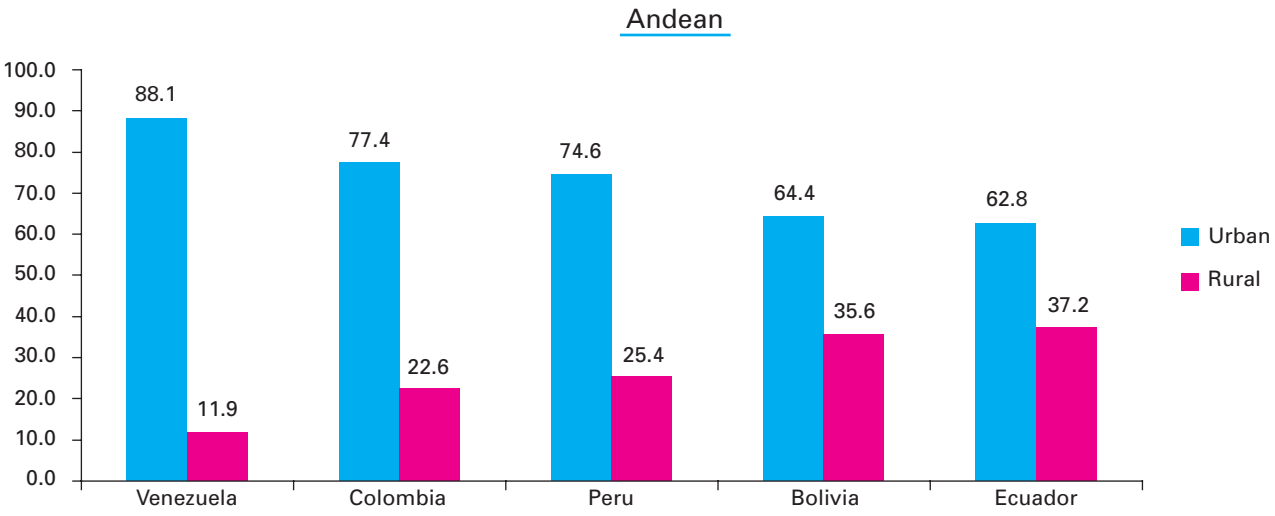
FIGURES

Figure 1. Urban & Rural Population (%)



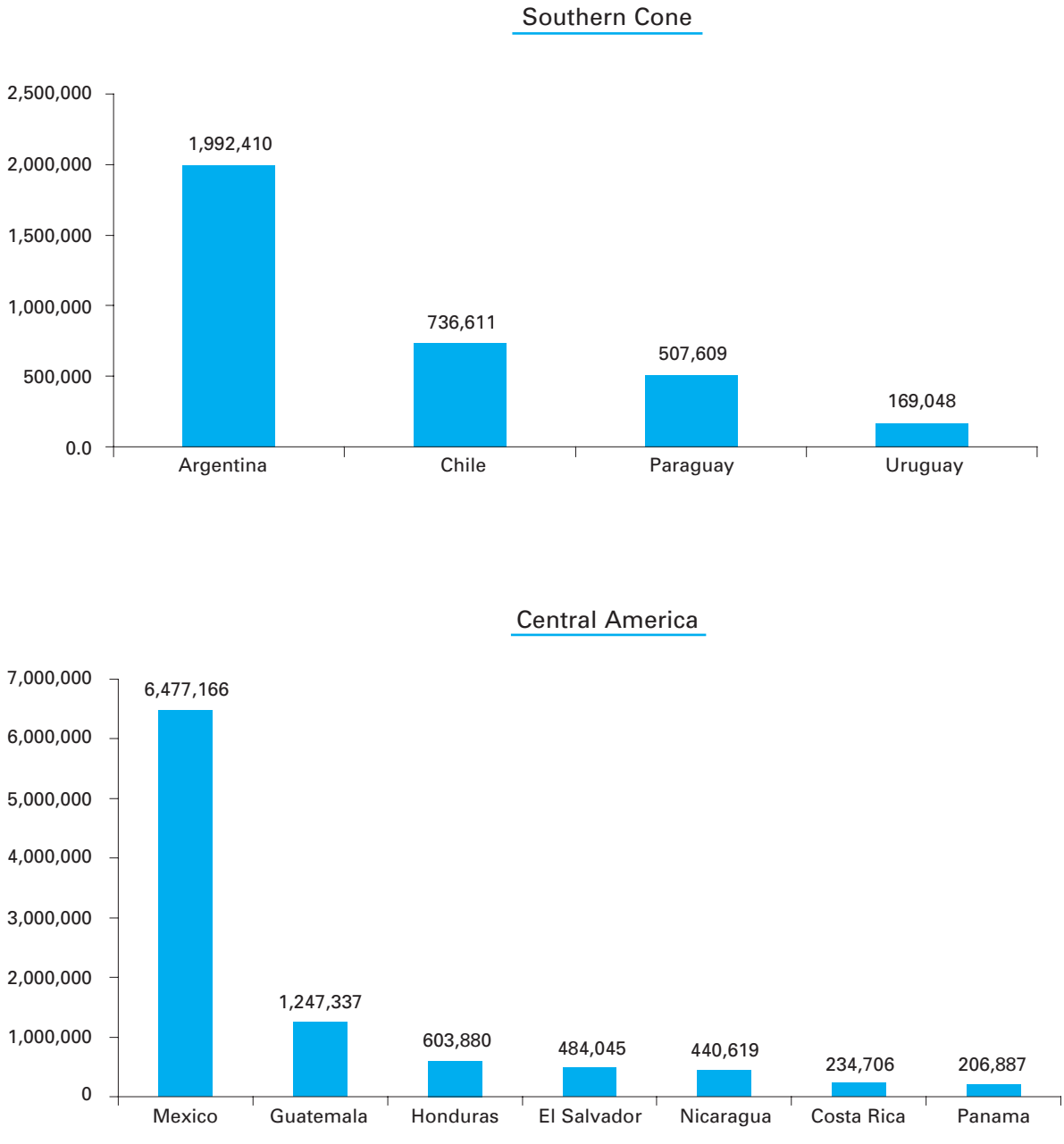
CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
FAO Nutrition Country Profiles. Jamaica



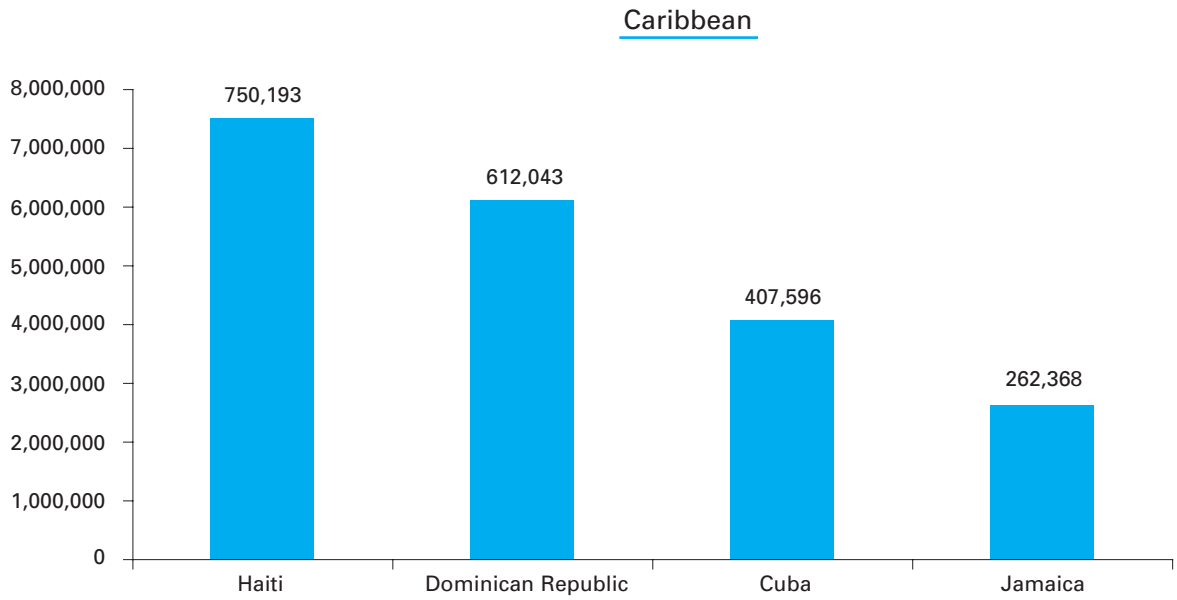


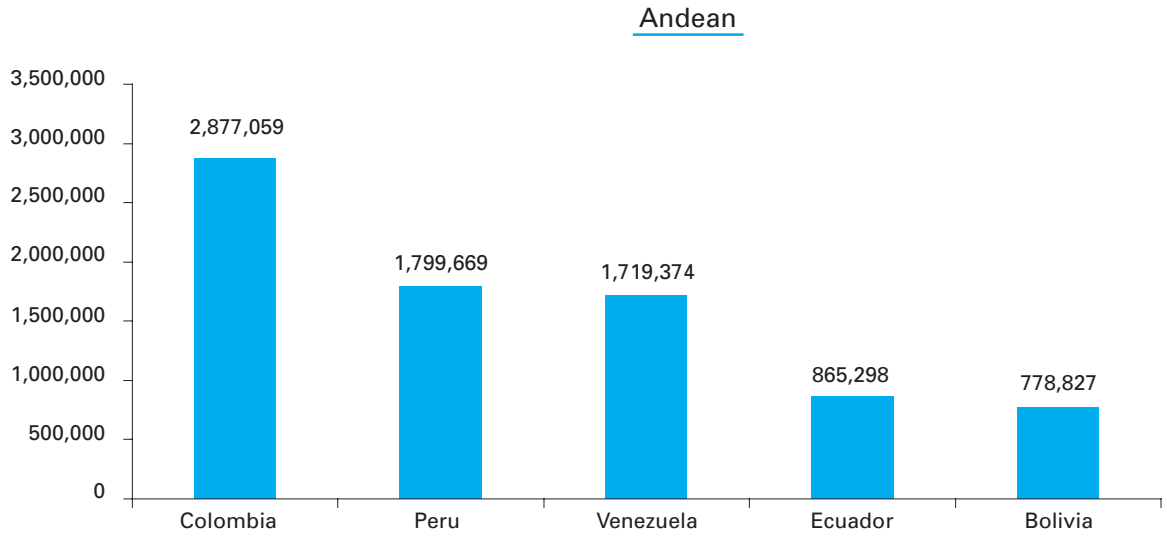
CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
FAO Nutrition Country Profiles. Jamaica

Figure 2. Children Population under 3 years old by Sub Region and Country



CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
FAO Nutrition Country Profiles. Jamaica

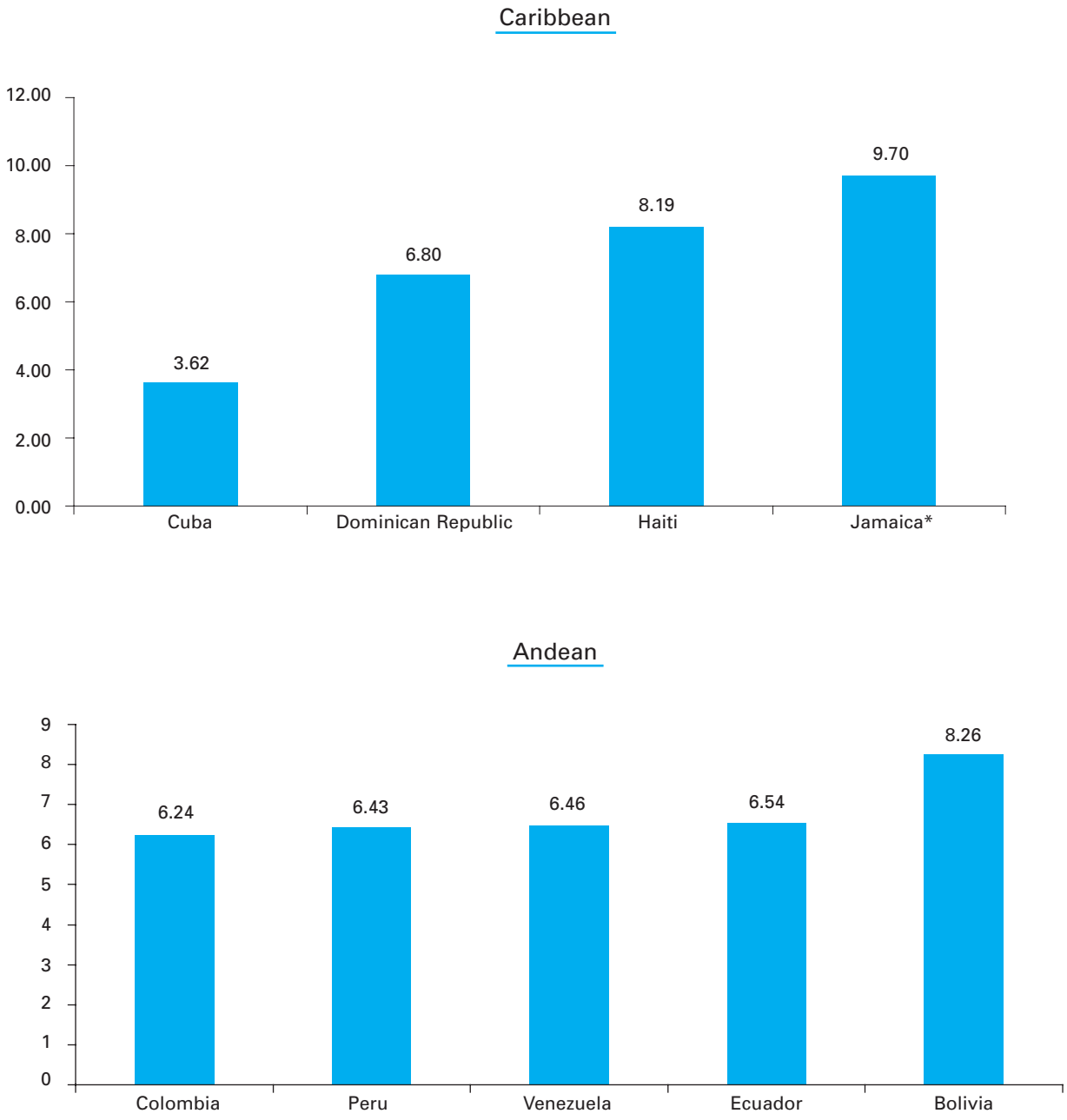




CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
FAO Nutrition Country Profiles. Jamaica

Figure 3. Total % of Children Population under 3 years old by Sub Region and Country.

* Children < 4 yrs.
CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005
Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.
République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995
FAO Nutrition Country Profiles. Jamaica



* Children < 4 yrs.

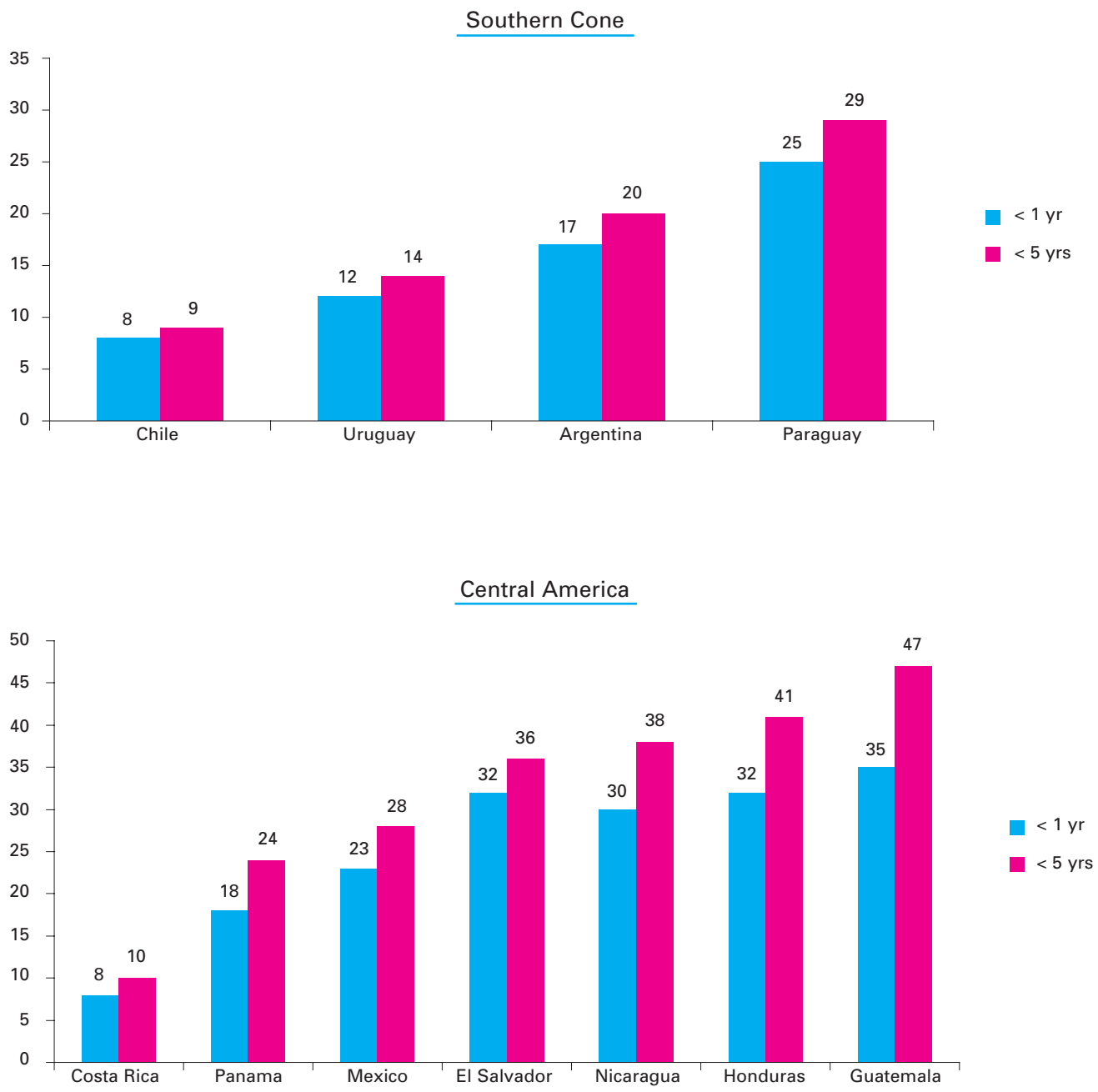
CEPAL-CELADE 2005 and UNICEF-UNILEVER 2005

Organización Panamericana de la Salud (OPS), Area de Análisis de Salud y Sistemas de Información Sanitaria. Iniciativa Regional de Datos Básicos en Salud. Sistemas de Información Técnica en Salud, Washington DC, 2005.

République d'Haiti, Ministère de l'Économie et des Finances. Institut Haïtien de Statistique et d' Informatique (I.H.S.I). 1995

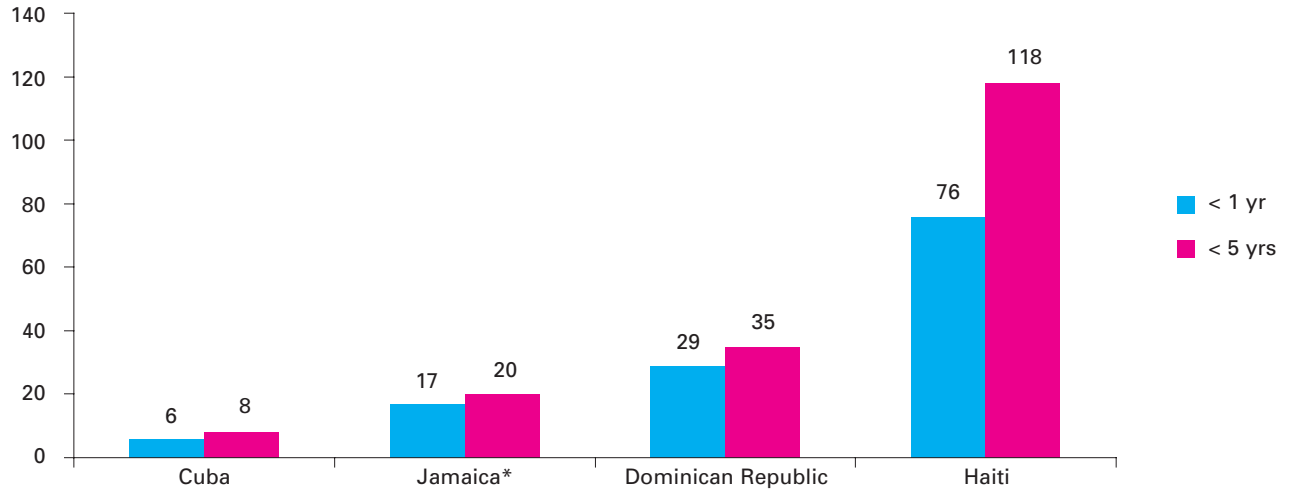
FAO Nutrition Country Profiles. Jamaica

Figure 4. Children's Mortality Rate (IMR and U5MR) (Per 1,000 live births)

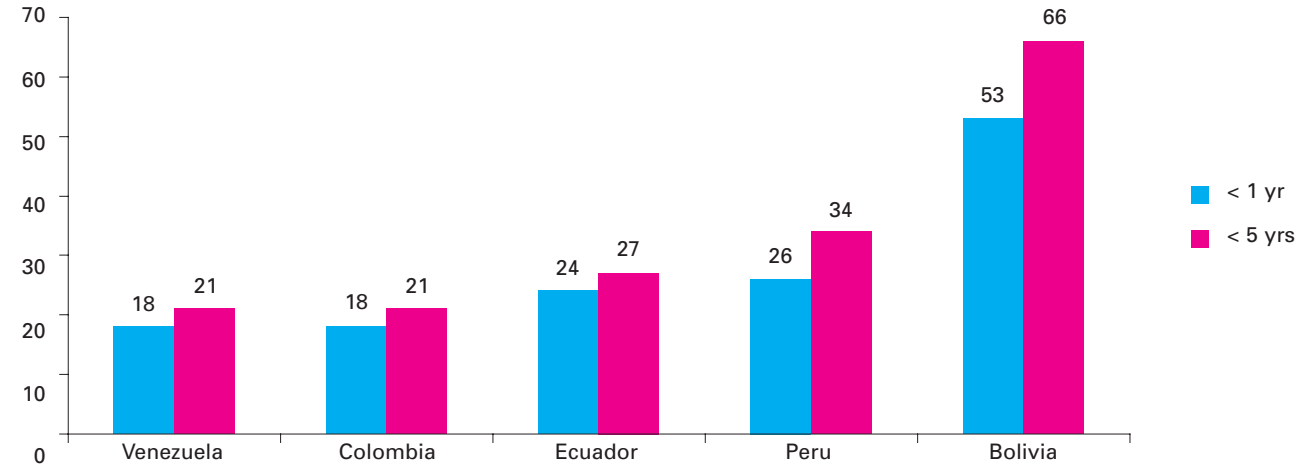


* Children < 4 yrs.
UNICEF The State of the World's Children 2005

Caribbean

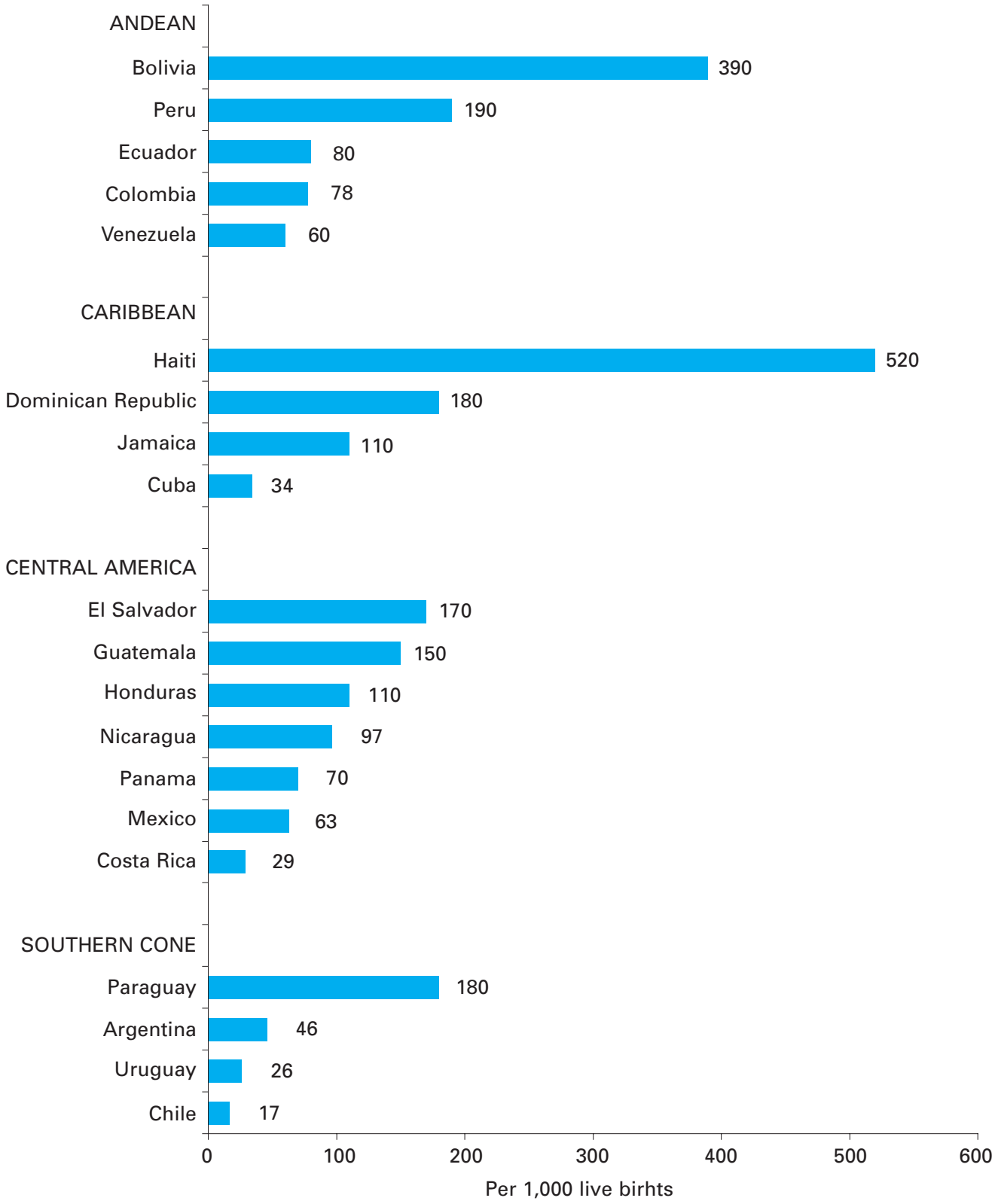


Andean



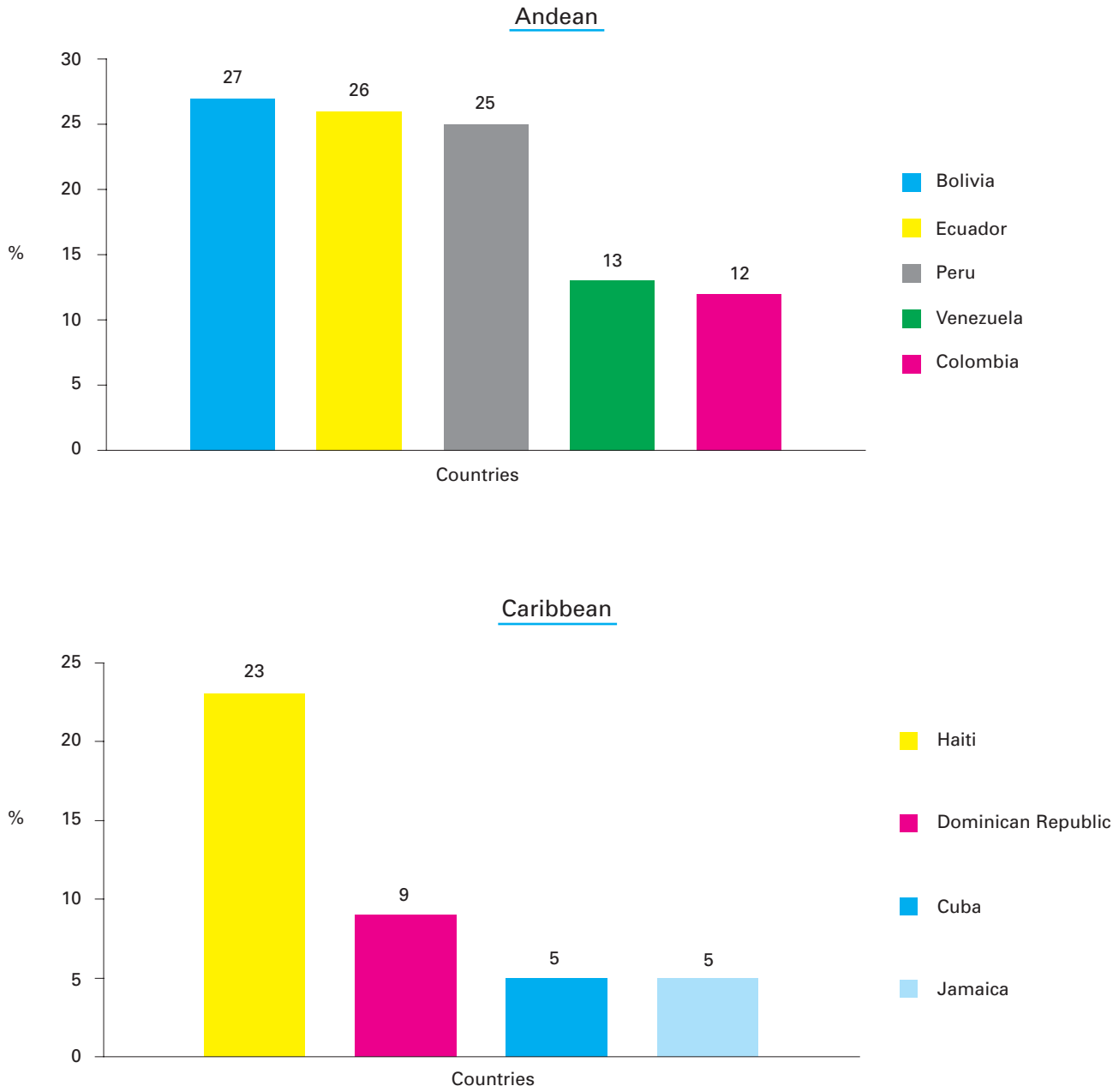
* Children < 4 yrs.
UNICEF The State of the World's Children 2005

Figure 5. Maternal Mortality Rate (Per 1,000 live births)



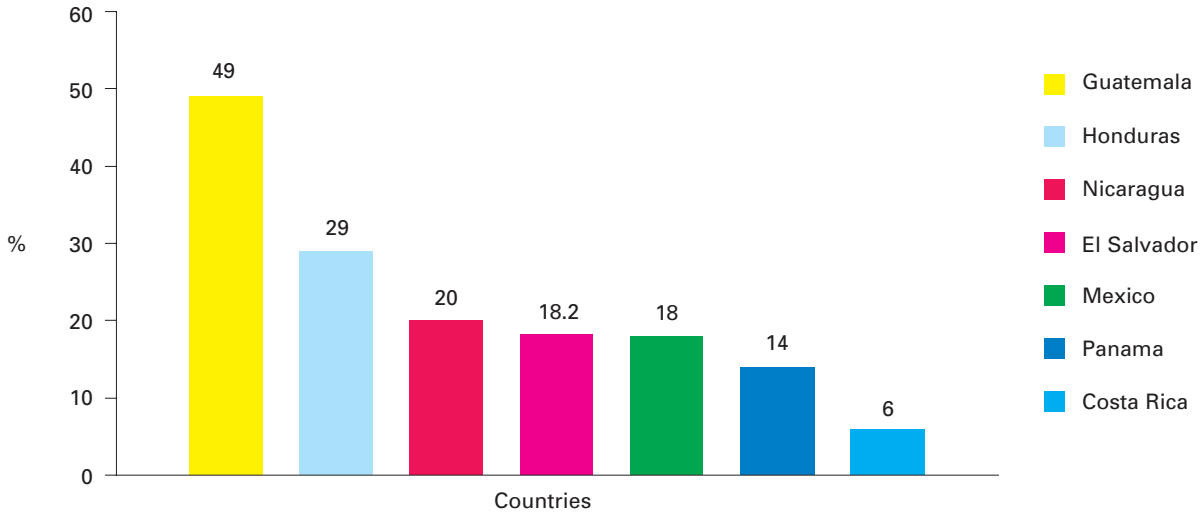
UNICEF The State of the World's Children 2005

Figure 6. Prevalence of Stunting % (Moderate and Severe) (H/A Z < 2 SD NCHS) in Children 0-59 mo.

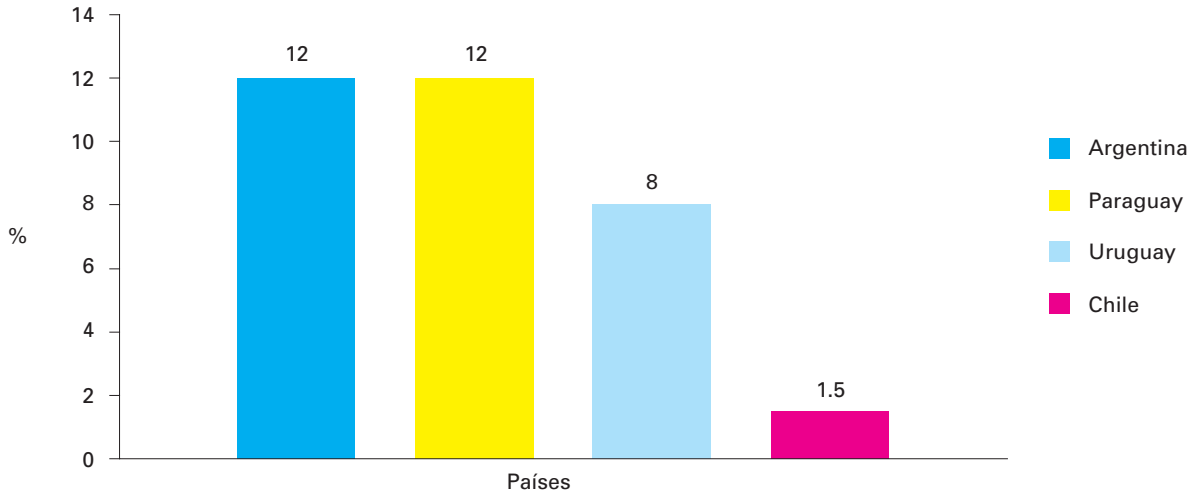


UNICEF WSC, 2005
Countries Data
Colombia, ENSIN, 2005
Chile, MINSAL, 2004
El Salvador USAID, 2005

Central America

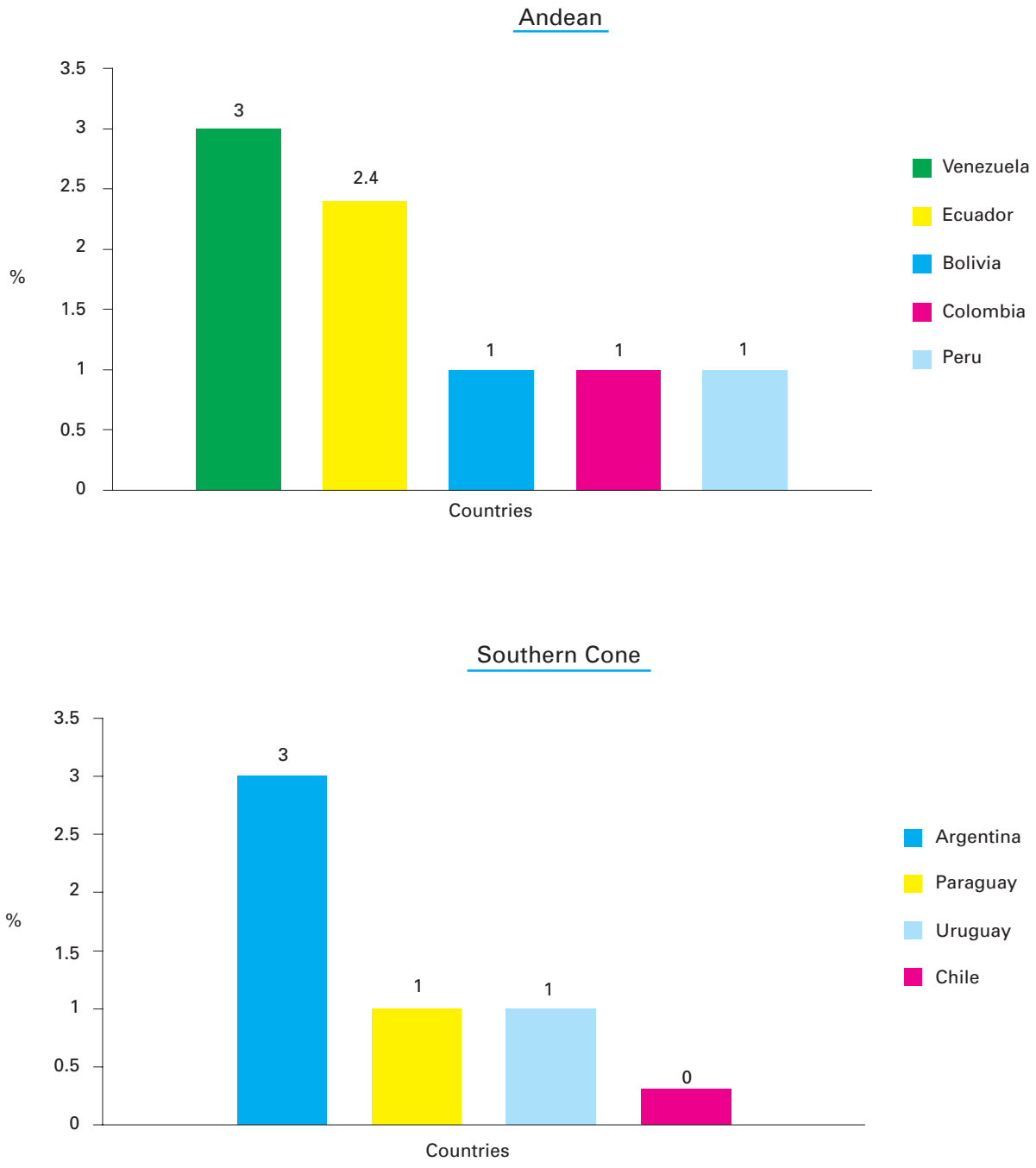


Southern Cone



UNICEF WSC, 2005
Countries Data
Colombia, ENSIN, 2005
Chile, MINSAL, 2004
El Salvador USAID, 2005

Figure 7. Prevalence of Wasting % (Moderate and Severe) (W/H Z score < 2SD NCHS) in Children 0-59 mo.



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Countries Data
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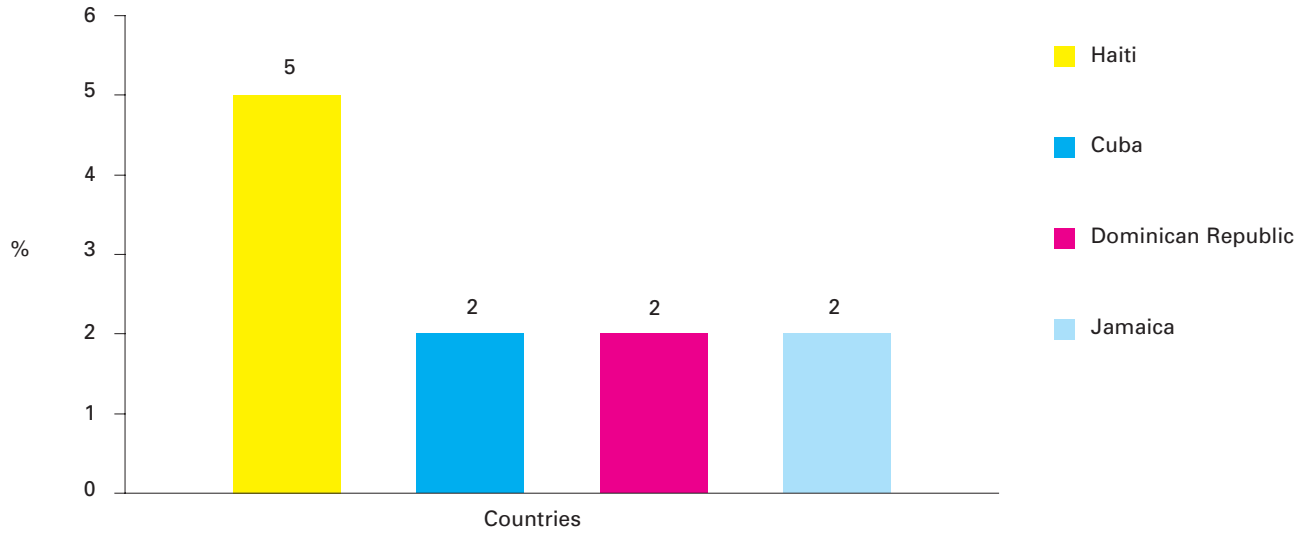
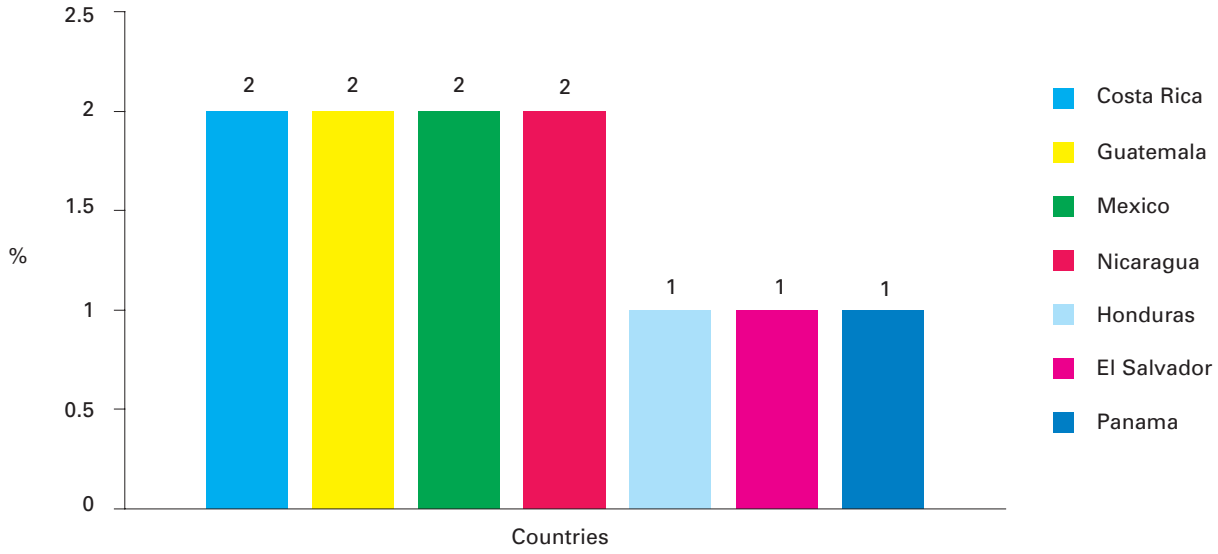
Caribbean

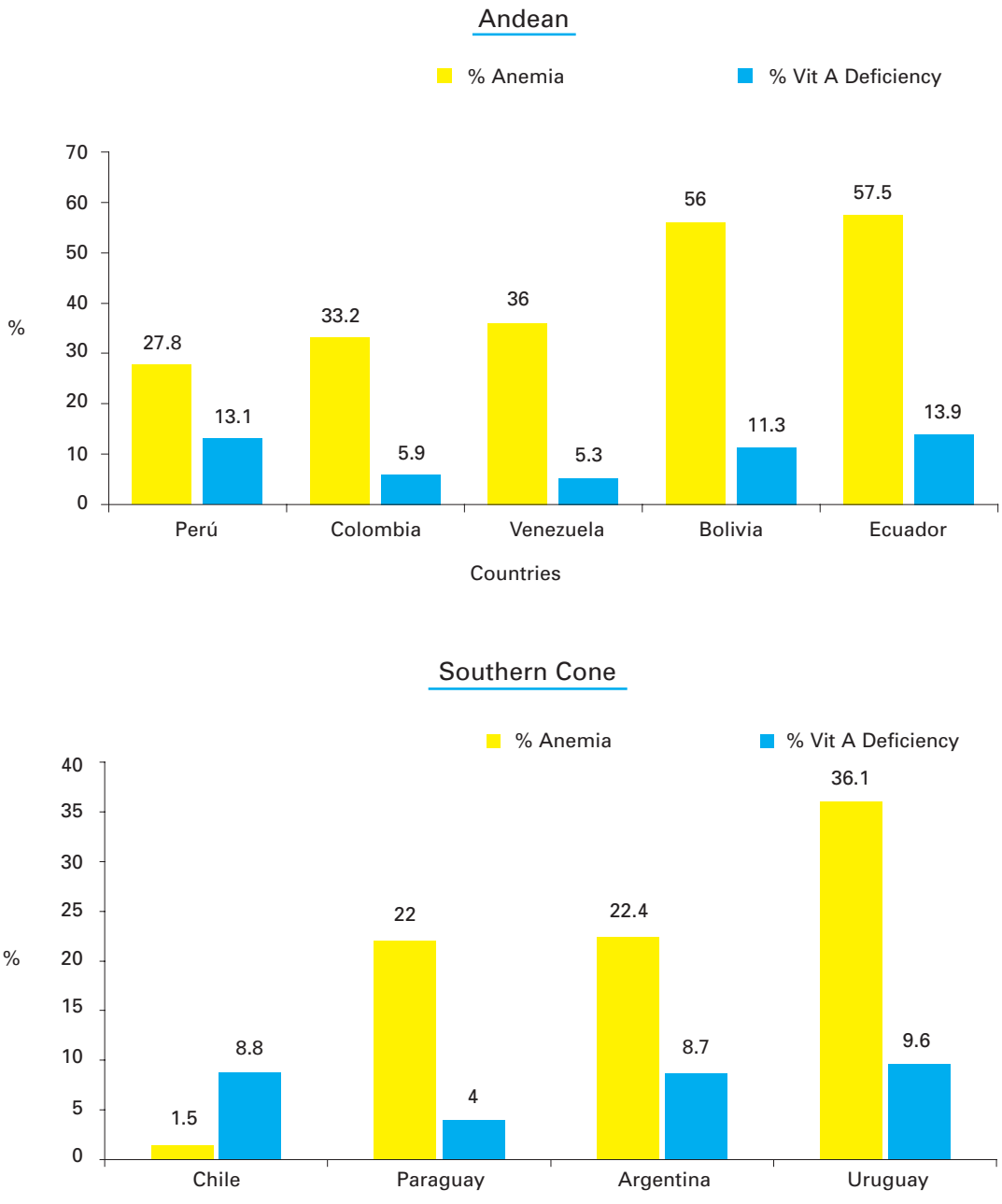


Central America



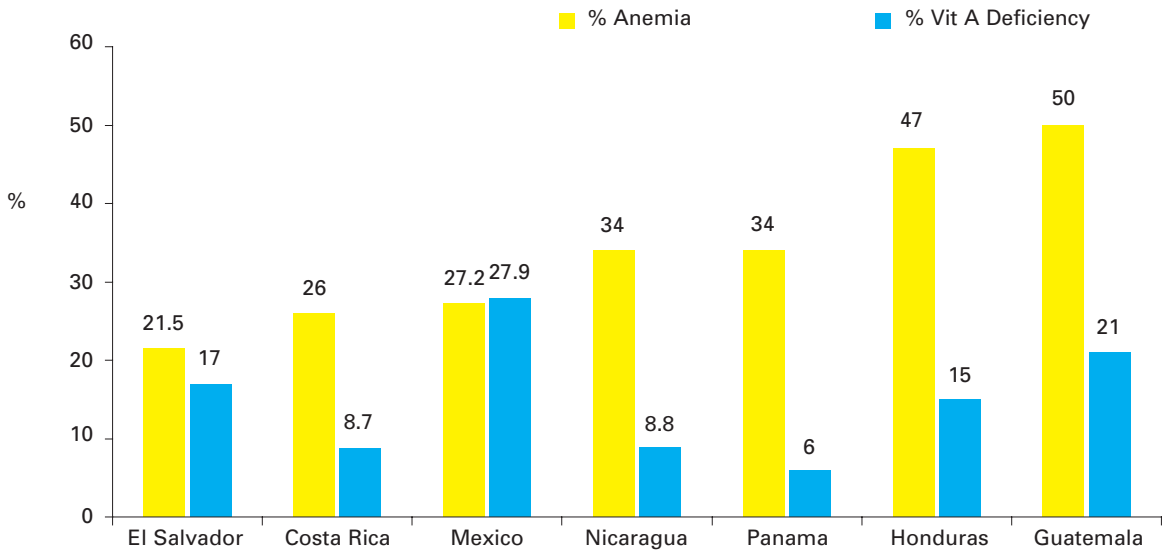
UNICEF WSC, 2005
Countries Data
Colombia, ENSIN, 2005
Chile, MINSAL, 2004

Figure 8. Anemia Prevalence (Hb < 11 g/dL) and Vit A Deficiency (serum Retinol < 20µg/dL) in Children 0-59 mo.

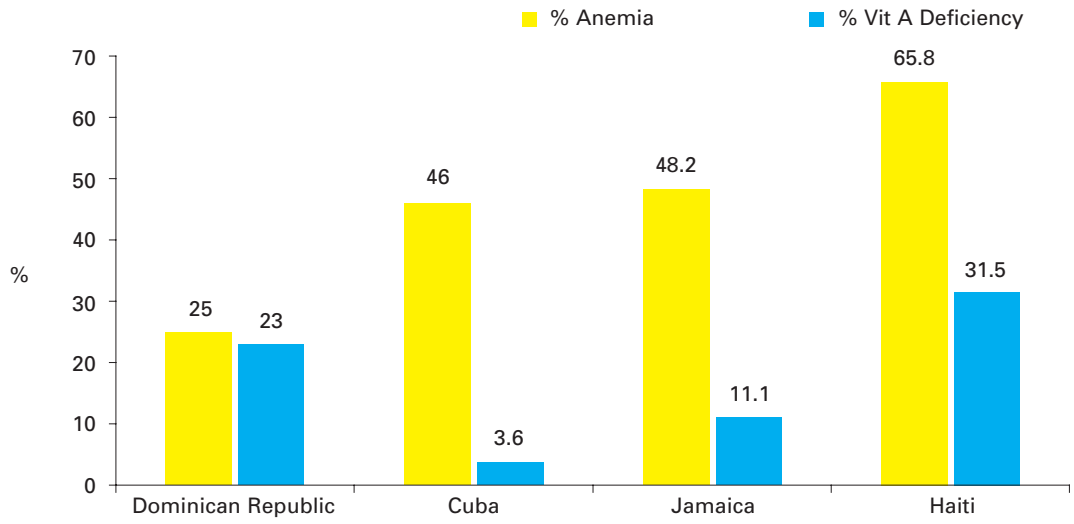


UNICEF WSC, 2005
Countries Data
Colombia, ENSIN, 2005
Chile, MINSAL, 2004
USAID, 2005

Central America

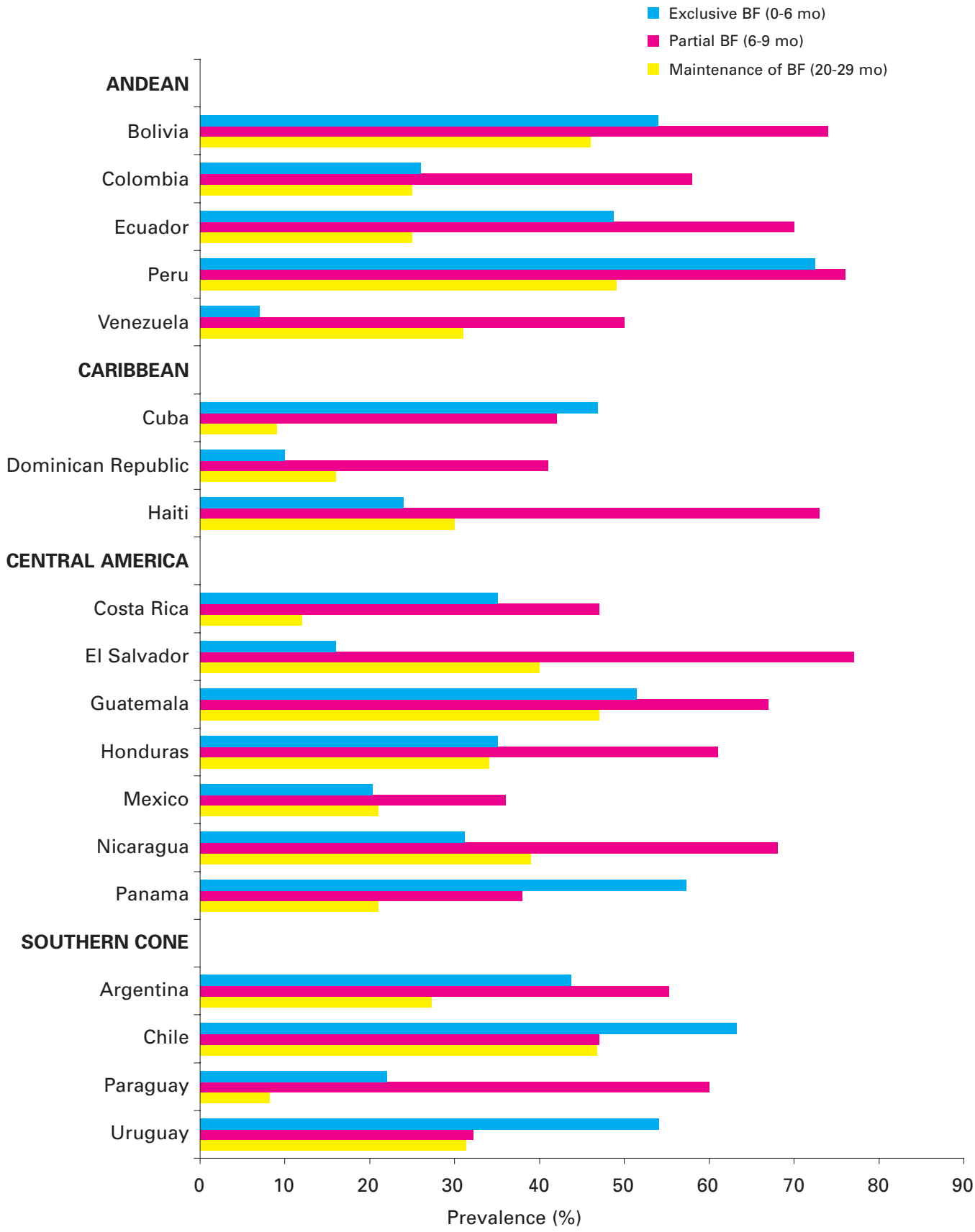


Caribbean



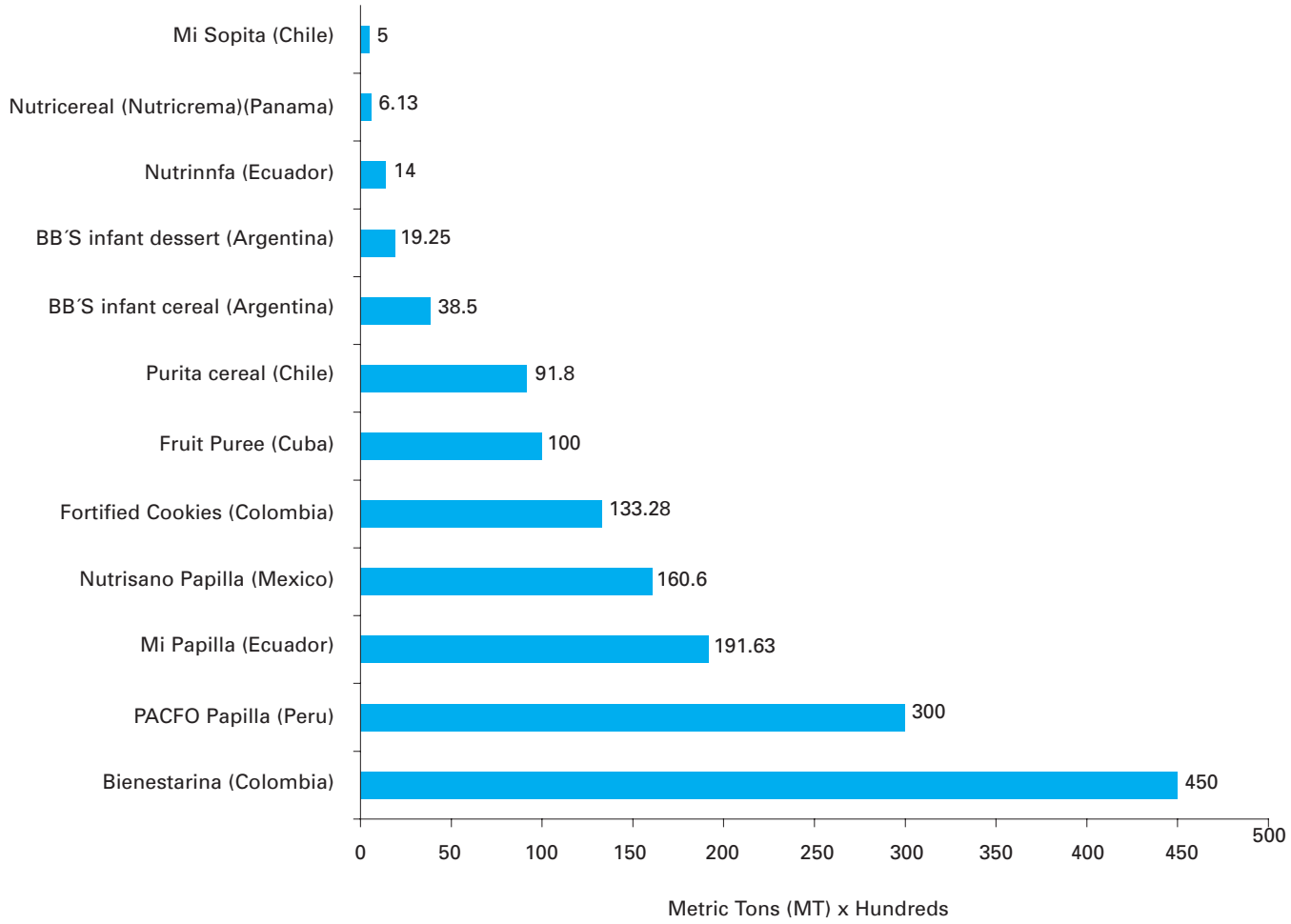
UNICEF WSC, 2005
Countries Data
Colombia, ENSIN, 2005
Chile, MINSAL, 2004
USAID, 2005

Figure 9. Prevalence of Breastfeeding (%)



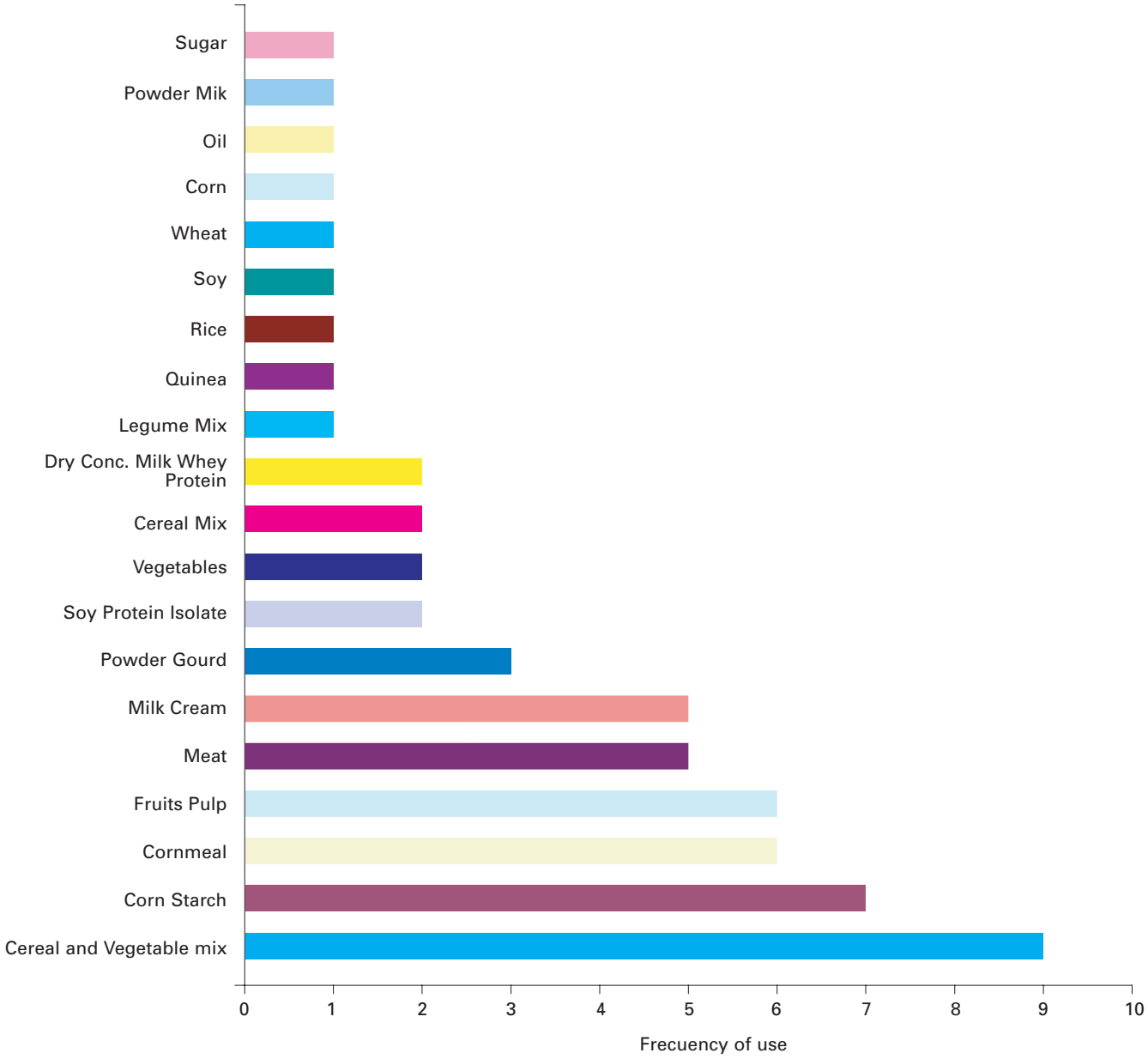
UNICEF The State of the World´s Children 2005

Figure 10. Fortified Complementary Foods. Nationwide Experiences. Production.



N/A data for Lactovisoy in Venezuela

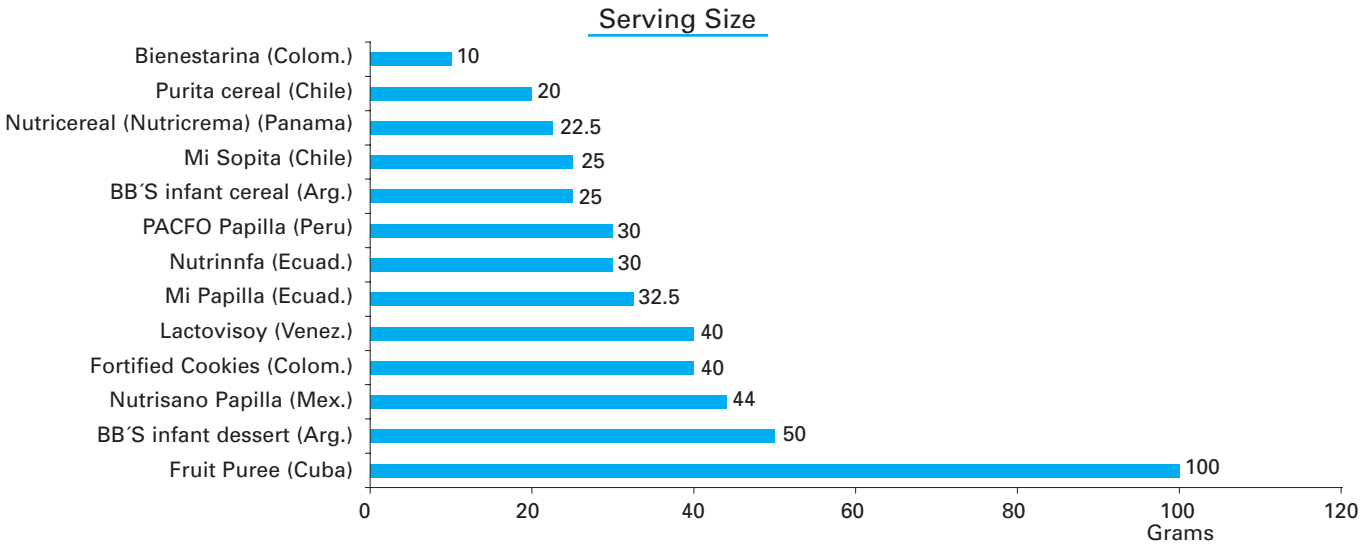
Figure 11. Category 1. Fortified Complementary Foods. Nationwide Experiences. Frequent Use of Ingredients.

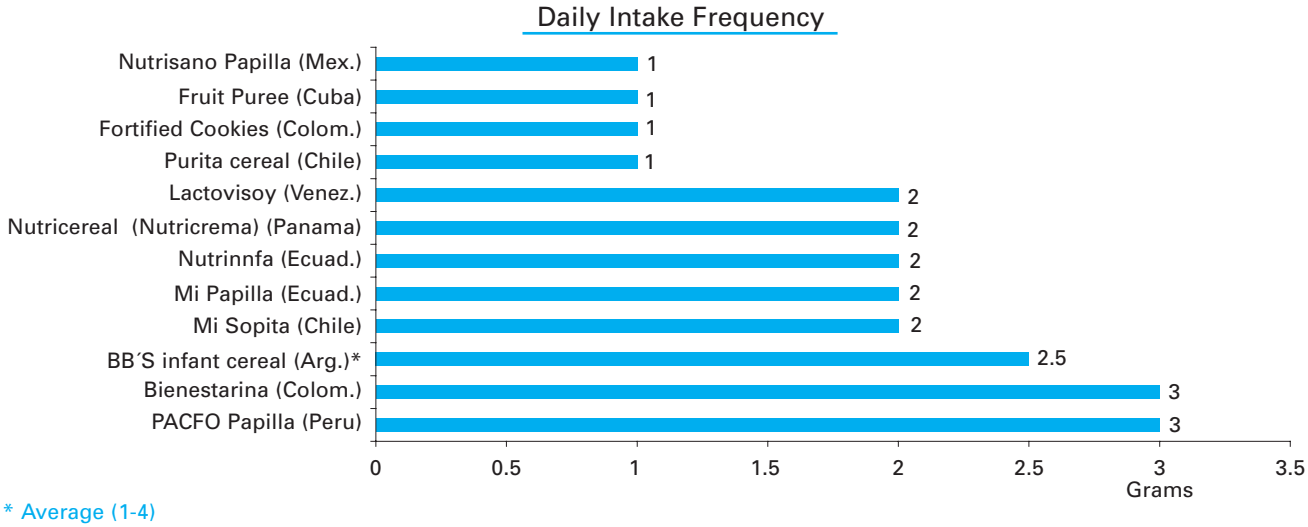


Ingredient	Frequency
Sugar	9
Powder Mik	7
Oil	6
Corn	6
Wheat	5
Soy	5
Rice	3
Quinea	2
Legume Mix	2
Dry Conc. Milk Whey Protein	2

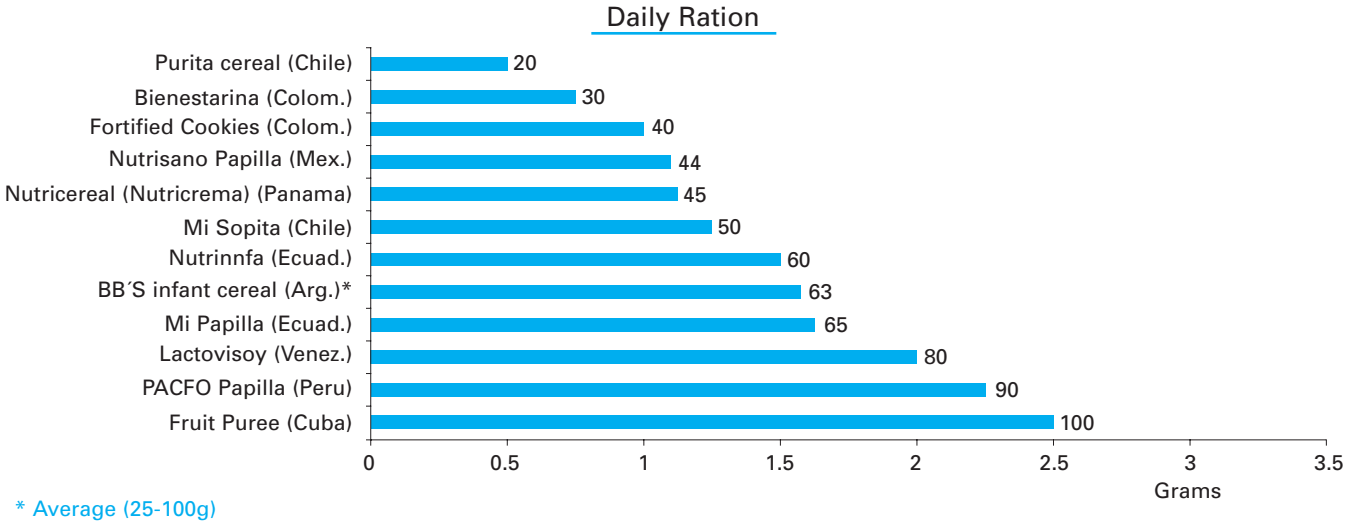
Ingredient	Frequency
Cereal Mix	2
Vegetables	1
Soy Protein Isolate	1
Powder Gourd	1
Milk Cream	1
Meat	1
Fruits Pulp	1
Cornmeal	1
Corn Starch	1
Cereal and Vegetable mix	1

Figure 12. Category 1. Fortified Complementary Foods. Nationwide Experiences. Serving Size, Daily Intake Frequency and Daily Ration (g).



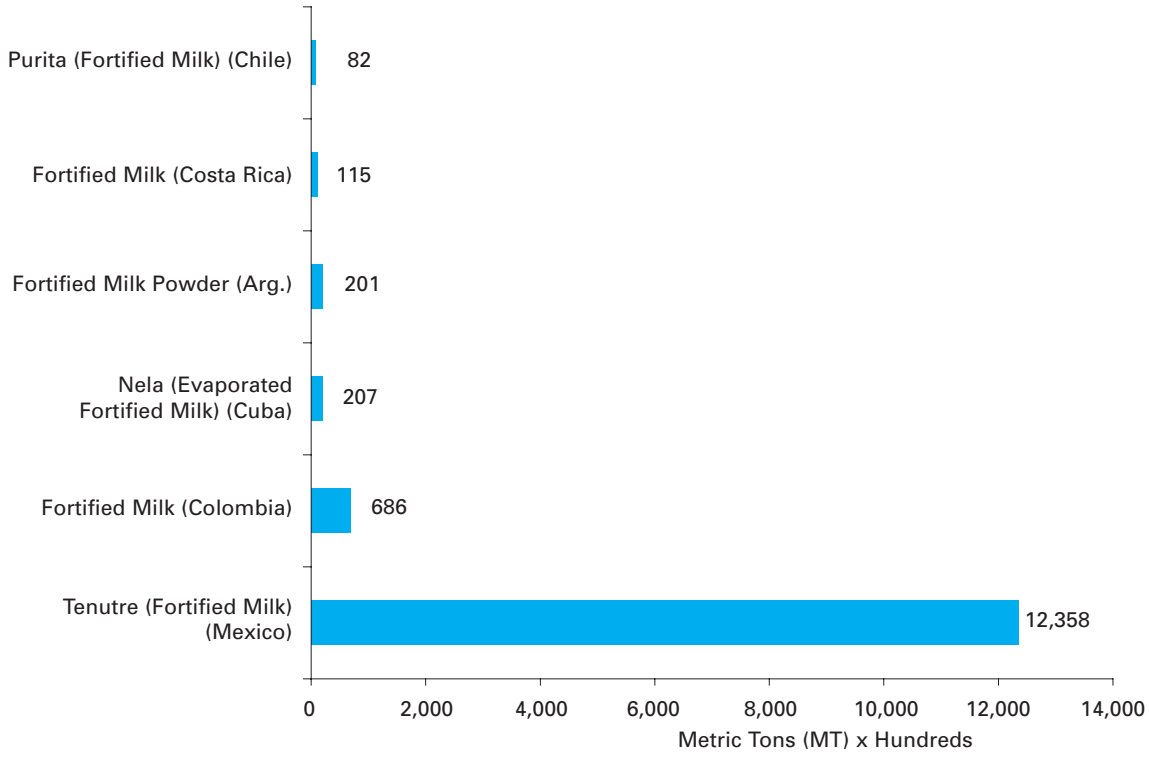


* Average (1-4)
Data Not Available for BB´S infant dessert (Arg.)



* Average (25-100g)
Data Not Available for BB´S infant dessert (Arg.)

Figure 13. Category 2. Fortified Complementary Foods. Fortified Milk Experiences. Production (TM).



N/A Data for Fortified Milk in Dom. Rep.

Figure 14. Category 2. Fortified Complementary Foods. Fortified Milk Experiences. Serving Size, Daily Frequency and Daily Ration.

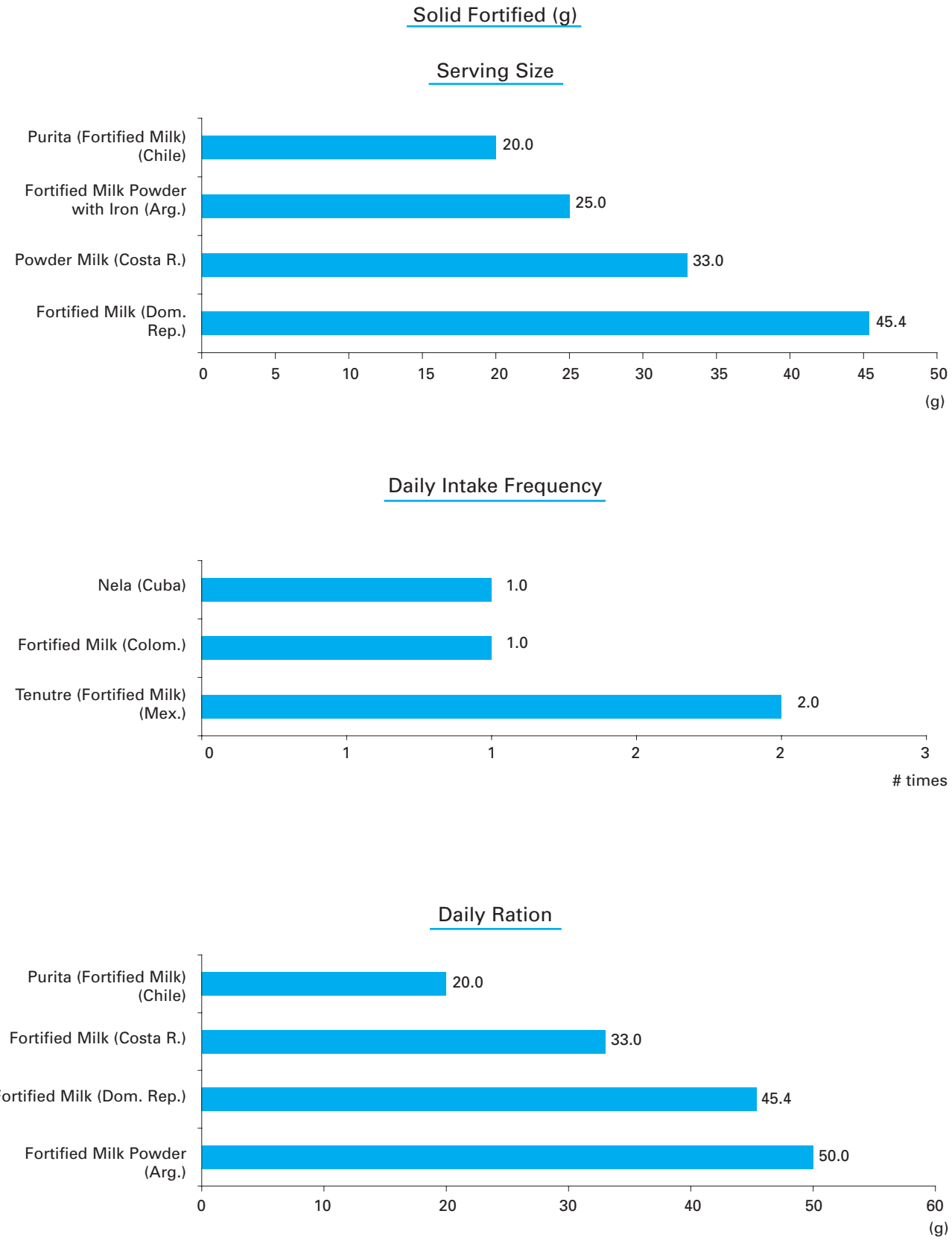
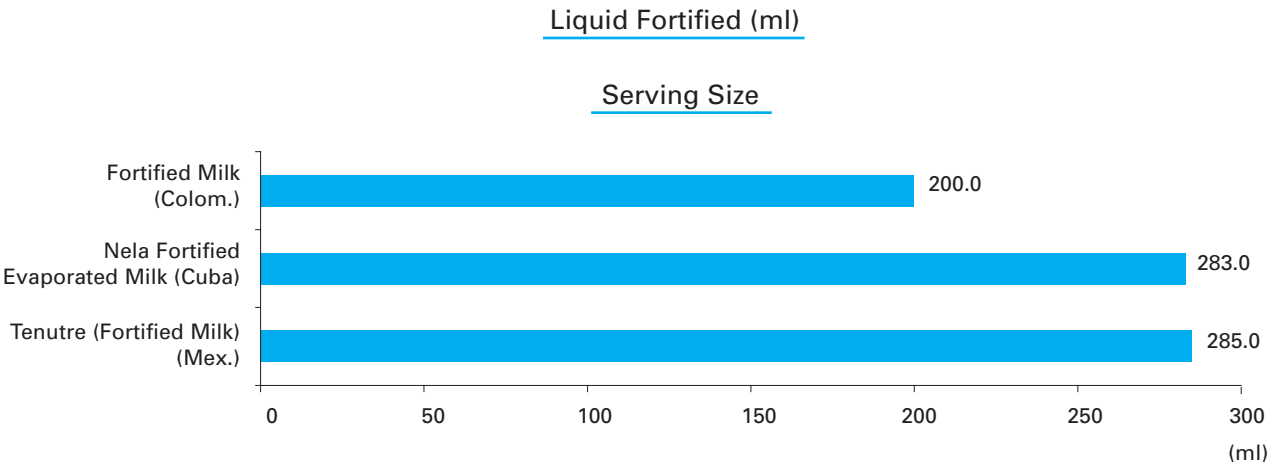
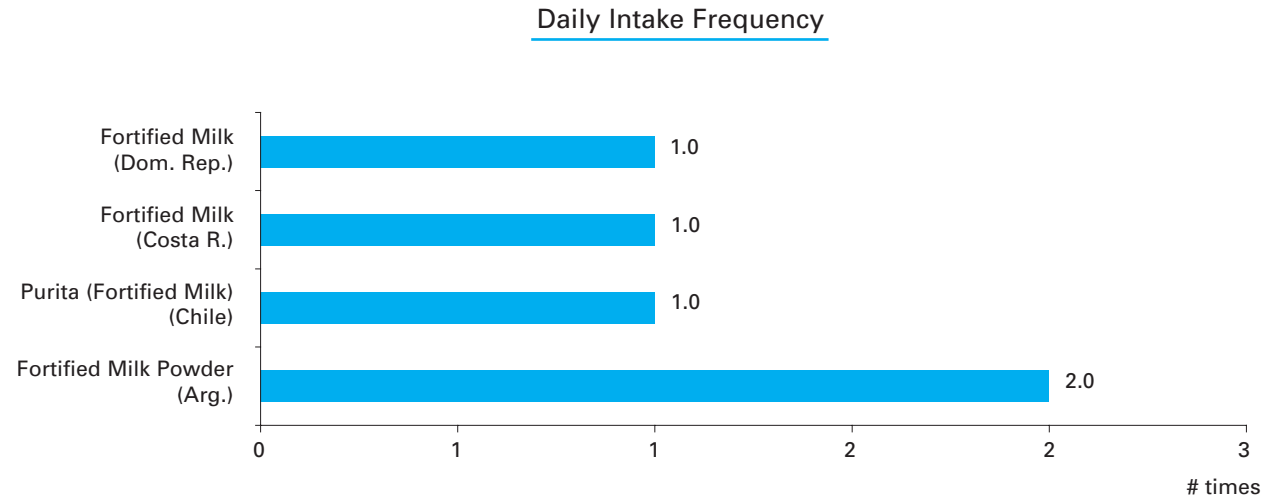


Figure 15. Category 2. Fortified Complementary Foods. Fortified Milk Experiences. Serving Size, Daily Frequency and Daily Ration.





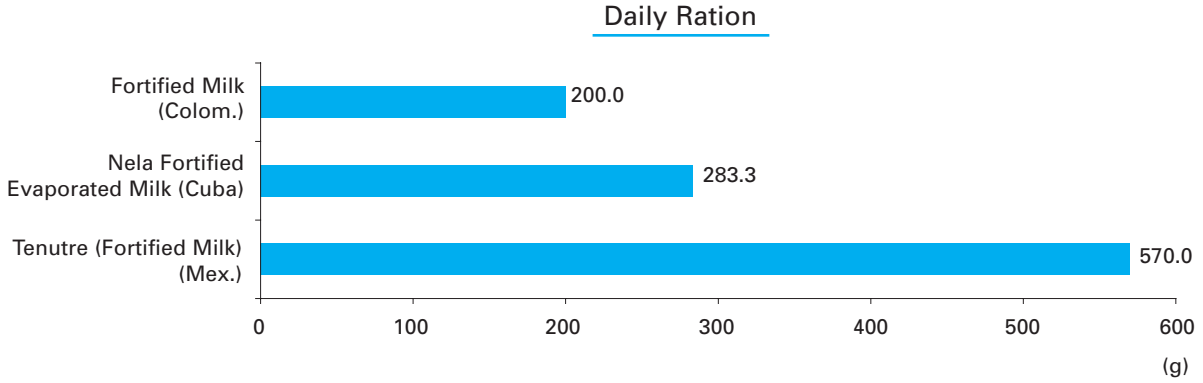


Figure 16. Category 3. CSB Products. Pilot Experiences. Frequent Use of Ingredients.

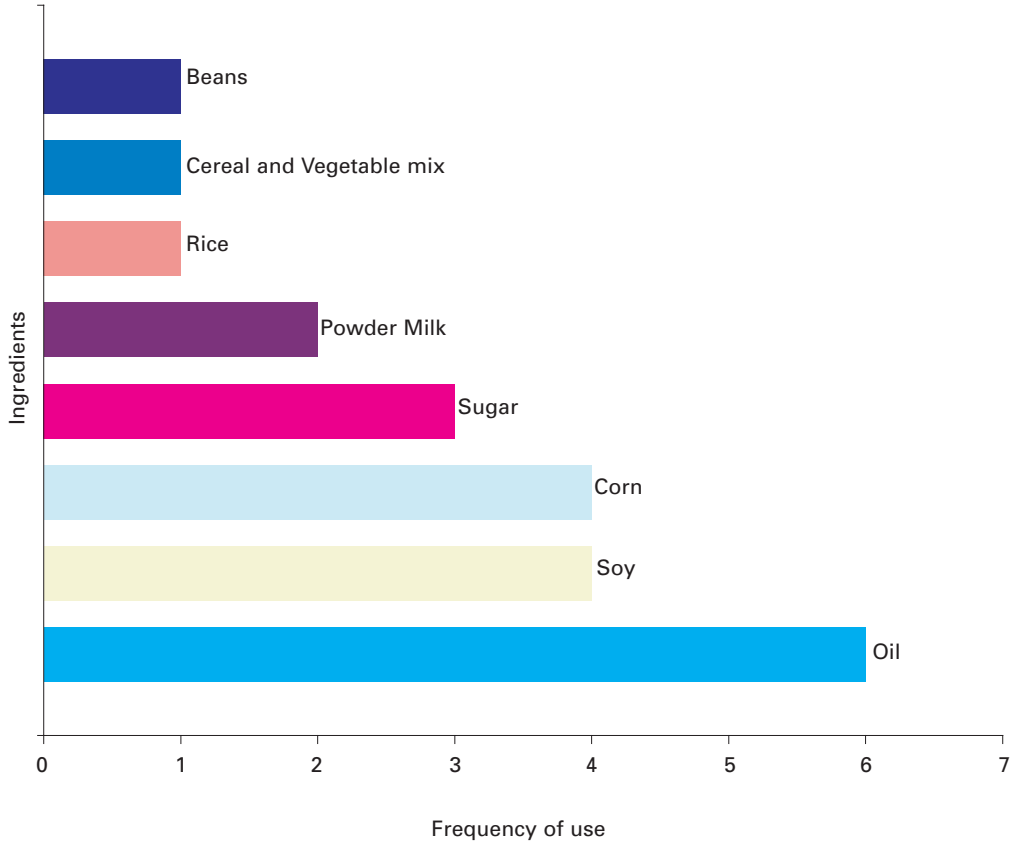
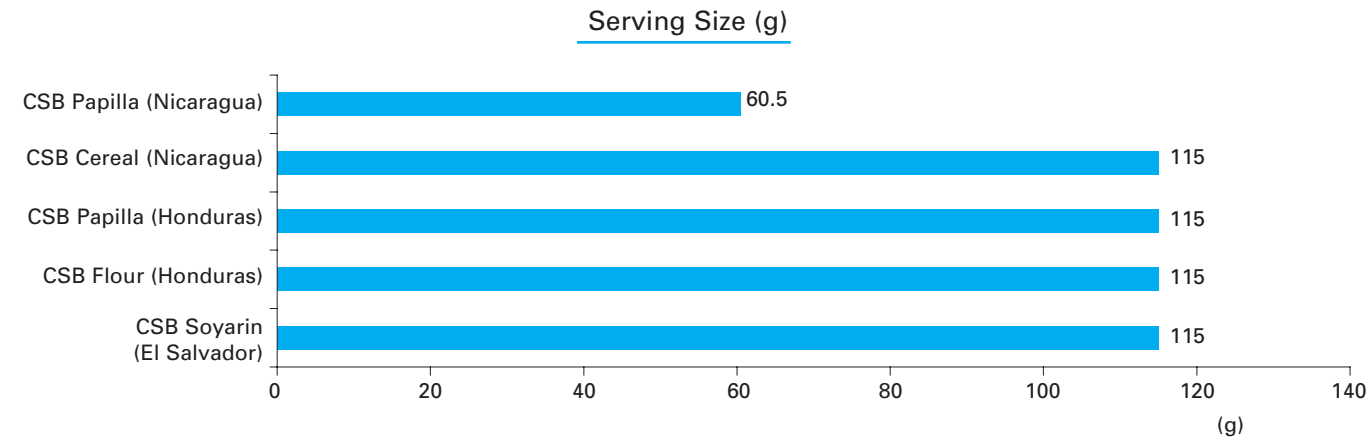
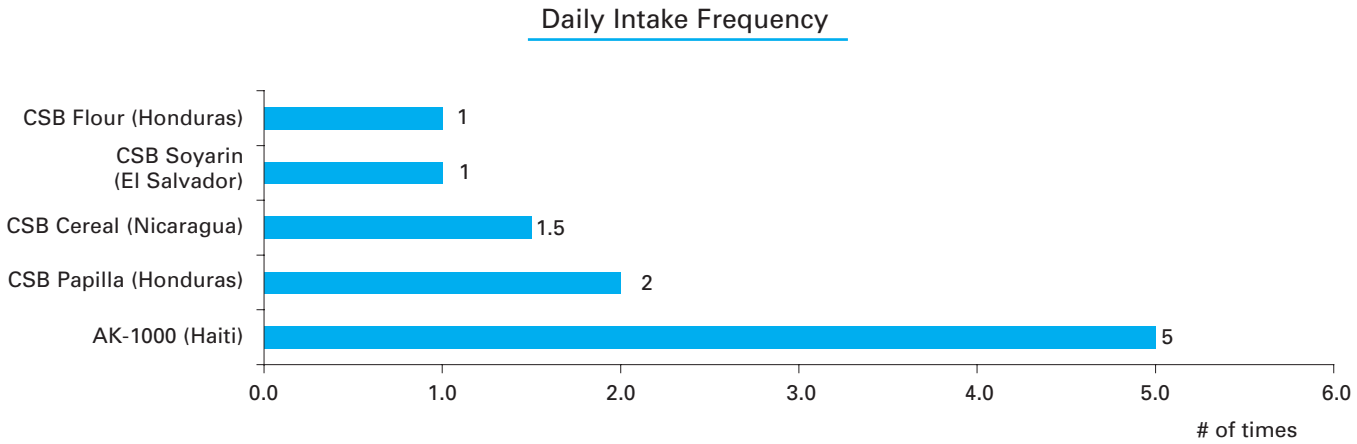


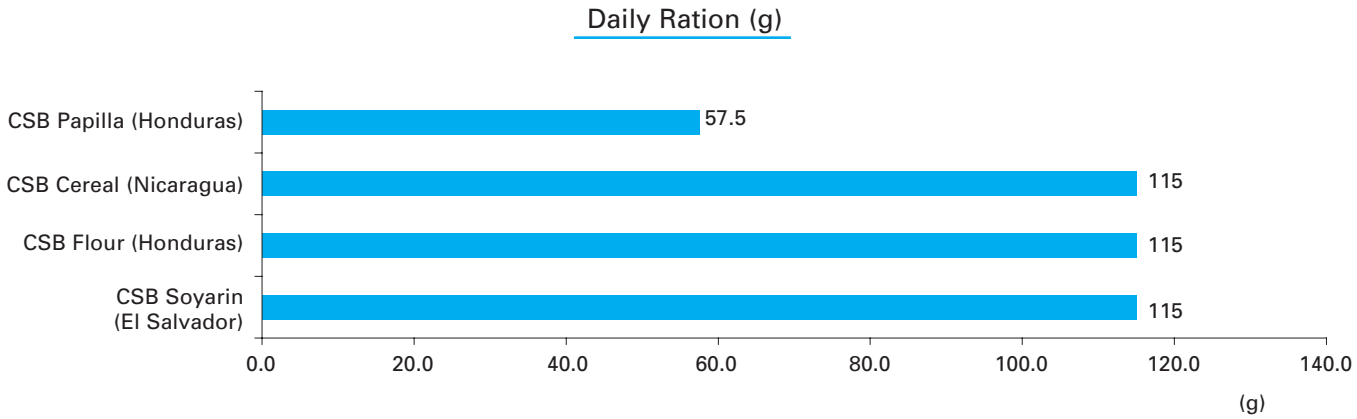
Figure 17. Category 3. CSB Products. Pilot Experiences. Serving Size, Daily Intake Frequency and Daily Ration.



* *Estimated daily ration for 115 g.
** Estimated daily ration based in distribution of 4/lb per month per child. Therefore 60.5 g/day.

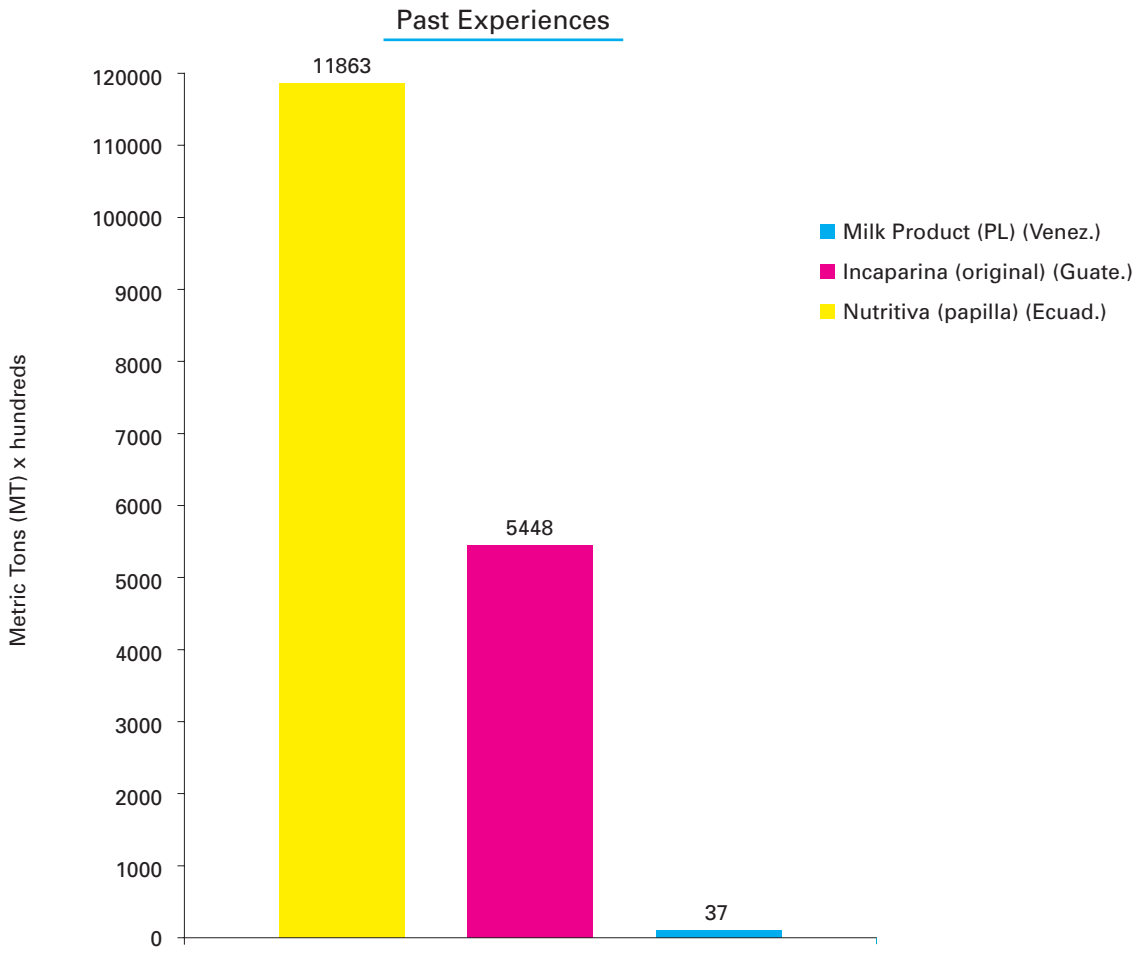


Data not avaliable for CBS Papilla in Nicaragua.



N/A data for CBS Papilla in Nicaragua.

Figure 18. Category 4. Fortified Complementary Foods. Past Experiences and New Programs. Production.



The following FCF have no production data available:
*Incaparina (New), Bienestarina and CSB flour in Guatemala and for AK-1000 in Haiti.

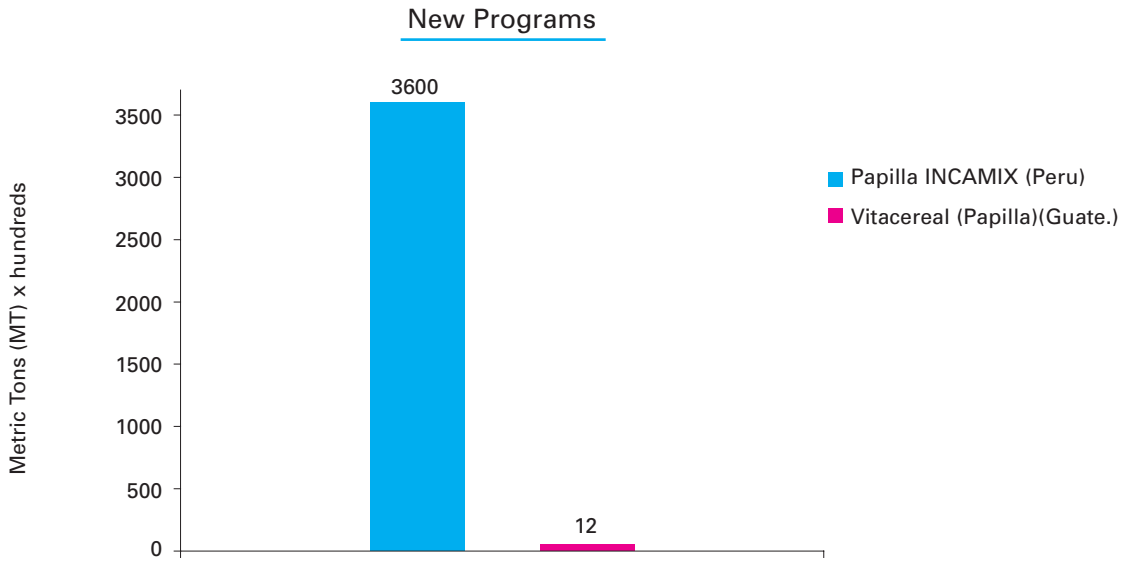


Figure 19. Category 4. Fortified Complementary Foods. Past Experiences and New Programs. Frequent Use of Ingredients.

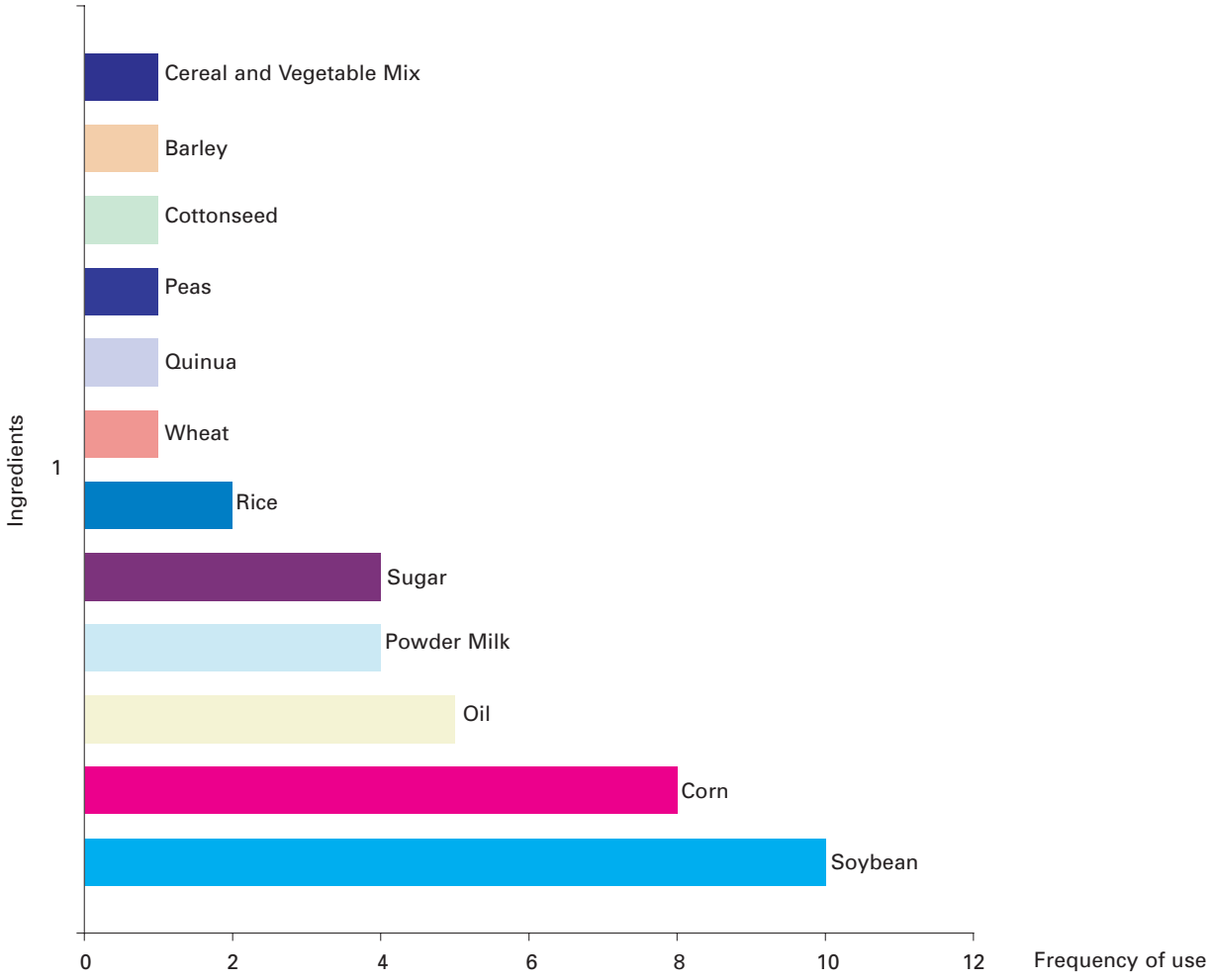
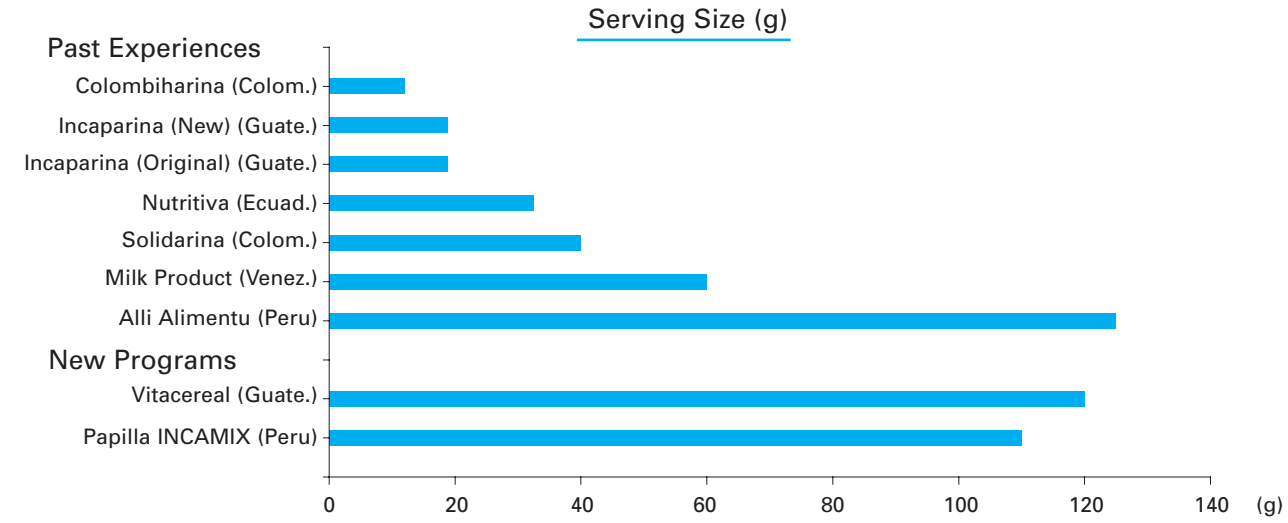
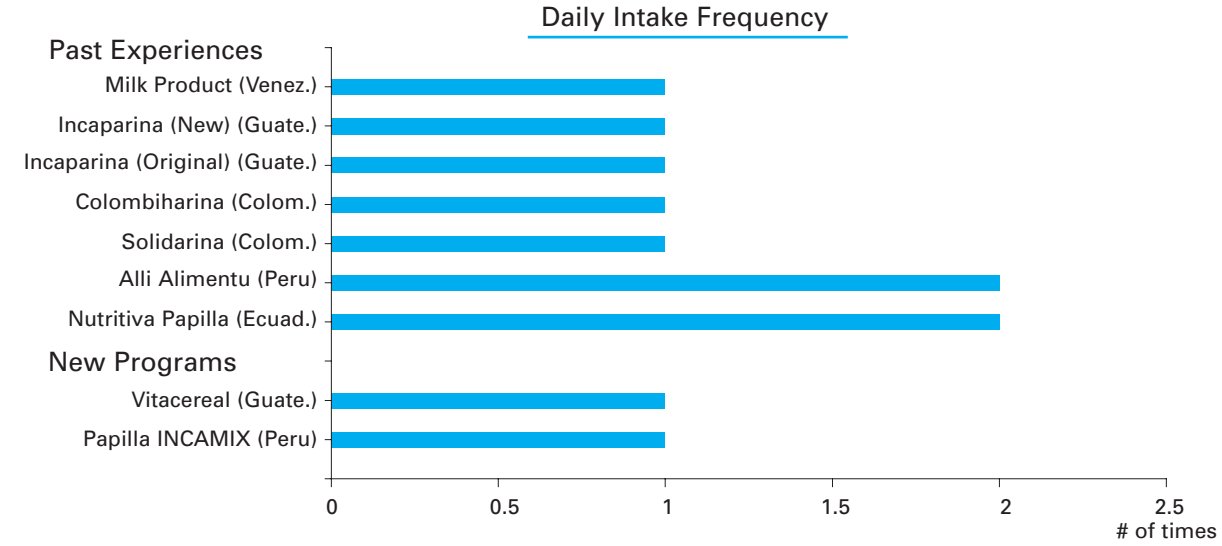


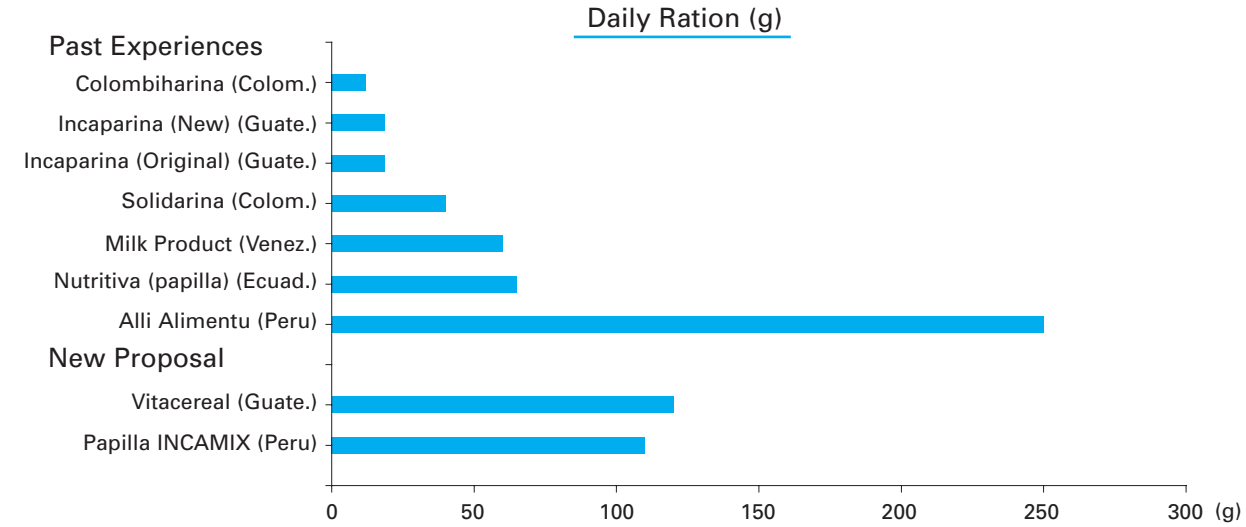
Figure 20. Category 4. Fortified Complementary Foods. Past Experiences and New Programs. Serving Size, Daily Intake Frequency and Daily Ration.



N/A Information for AK-1000 in Haiti



N/A Information for AK-1000 in Haiti



N/A Information for AK-1000 in Haiti

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ANNEXES

QUESTIONNARIE
SITUATIONAL ANALYSIS ON COMPLEMENTARY FOODS FORTIFICATION FOR CHILDREN BETWEEN 6 AND 36 MONTHS OF AGE, IN THE LATIN AMERICA AND CARIBBEAN REGION.
UNICEF-UNILEVER ALLIANCE

PART I: COUNTRY INFORMATION

COUNTRY: _____

DATE:(DAY/MONTH/YEAR) ___/___/___/

I. COUNTRY DATA

1.	COUNTRY POPULATION PER SEX, RESIDENCE AREA AND GROUP OF AGE	Age group in months	MALE			FEMALE			TOTAL* COUNTRY
			Urban	Rural	Total Male (All Ages)	Urban	Rural	Total Female (All Ages)	Both Sexes (All Ages)
		0-11							
		12-23							
		24-36							

SOURCE:
*Include the total country population

2.	SOCIO ECONOMICS INDICATORS	HD4	PER CAPITA INCOME	INFANT MORTALITY < 1 year 1,000 Live births	UNDER FIVE MORTALITY (TMMS) 1,000 live births	MATRNAL MORTALITY (MM) 1,000 live births

SOURCE:

3.	HOUSEHOLD INCOME (US) / GNI PER CAPITA	% SPENT ON FOOD

SOURCE:

4.	INFANT AND CHILDREN UNDER-NUTRITION	*TOTAL COUNTRY: %				
		Age group in months	STUNTING (%)		WASTING (%)	
			Urban	Rural	Urban	Rural
		0-12				
		12-24				
		24-36				

SOURCE(S):
*Include the total country prevalence
Define indicator and cut off for each one.
If there is more disaggregated information for age groups, example 0-6months, etc, please specify. If there is < 5 years information, please specify.
If this data is based on a certain region of the country, please indicate which region(s).

5.	MICRONUTRIENT DEFICIENCIES (BIOCHEMICAL INDICATORS)	AGE GROUP*	% DEFICIENT**	SOURCE, DATE AND NATURE OF SURVEYS
	Iron deficiency			
	Vitamin A deficiency			
	Zinc			
	Others (specify the micronutrient)			

*Specify the age groups.
**Define indicator and cut off for each micronutrient
If this data is based on a certain region of the country, please indicate which region(s).

II. CURRENT PRACTICES

BREASTFEEDING PRACTICES

6.	INITIAL BREASTFEEDING NEW BORN CHILDREN	INITIATING BREASTFEEDING IMMEDIATELY AFTER BIRTH					
		% Children breastfed within an hour of birth		% Children breastfed during first 24 hours after was born		% Children ever breastfed	
		Urban	Rural	Urban	Rural	Urban	Rural

7.	BREASTFEEDING AMONG CHILDREN 0-6 MONTHS OF AGE	BREASTFEEDING DURATION (IN THE FIRST 6 MONTHS)							
		% Not Breastfeed		% of children 0-6 months of age Exclusively Breastfeed		% Breastfeeding and others (water, formulas, juices, mashed or solids)*		Total number of children surveyed	
		Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural

SOURCE:
*Specify % for each.

8.	BREASTFEEDING DURATION CHILDREN 6 - 24 MONTHS	PERCENT STILL BREASTFEEDING / FREQUENCY OF BREASTFEEDING							
		Still breastfeeding at 12-15 months		Still breastfeeding at 20-23 months		Average frequency of breastfed by age		Total number of children surveyed	
		Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural

SOURCE:

9.	BREASTFEEDING PRACTICES 0 - 6 MONTHS	Exclusive breastfeeding (0-3 months)		Breastfeeding and complementary foods (6-9 months)		Continued breastfeeding (20-23 months)	
		Urban	Rural	Urban	Rural	Urban	Rural
	TOTAL						

AVAILABLE REPORTS / PUBLICATIONS

Please list or attach all available reports/publications of studies on breastfeeding in this country.

BREASTFEEDING, REPLACEMENT, SUPPLEMENTARY AND COMPLEMENTARY, FEEDING SITUATION CHILDREN AGED 0 - 24 MONTHS

Please give as much information as possible on all foods and liquids given to children between 0 to 24 months of age (listing foods, drinks and supplements, describing habits and feeding practices, believes etc.). If data exists, please specify by age group and urban /rural location

AVAILABLE REPORTS / PUBLICATIONS

Please list and / or attach all available reports/publications of studies on complementary feeding in this country.

QUESTIONNAIRE
SITUATIONAL ANALYSIS ON COMPLEMENTARY FOODS FORTIFICATION FOR CHILDREN BETWEEN 6 AND 36 MONTHS OF AGE, IN THE LATIN AMERICA AND CARIBBEAN REGION.
UNICEF - UNILEVER ALLIANCE

PART II. PRODUCT INFORMATION

COUNTRY: _____

DATE:(DAY/MONTH/YEAR) ___/___/___/

III. PRODUCT ATTRIBUTES/USERS

LIST OF AFFORDABLE FORTIFIED COMPLEMENTARY FOODS (FCF) PRODUCTS*

10.	PRODUCT**	Key contact person	Address	Telephone	e-mail address

*Please add rows if needed for more products.
**Specify format of product, example soft food, beverage, others.

Please fill in the following information for each product individually.

PRODUCT NAME*:

NUTRITIONAL COMPOSITION OF FORTIFIED COMPLEMENTARY FOOD FOR CHILDREN 6-36 MONTHS (EVERY 100g OF DRY PRODUCT)

11.	Calories (Kcal)	Carbohydrates (g)	Protein (g)	Total Fat (g)	Saturated Fat (g)	Mono-unsaturated Fat (g)	Poly-unsatu-rated Fat (g)	Dietary Fiber (g)	Sodium (mg)	Pantothenic Acid (mg)	Biotin (mg)
	Vitamin A (IU)	Vitamin E (mg)	Vitamin D (ug)	Thiamin Vitamin B1 (mg)	Riboflavin Vitamin B2 (mg)	Niacin (mg)	Vitamin B6 (mg)	Vitamin B12 (ug)	Folic Acid (ug)	Vitamin C (mg)	Choline (mg)
	Calcium (mg)	Zinc (mg)	Iron (mg)	Magnesium (mg)	Phosphorus (mg)	Iodine (ug)	Selenium (ug)	Copper (mg)	Fluor (mg)	Manganese (mg)	

SOURCE:

MAIN INGREDIENTS OF FORTIFIED COMPLEMENTARY FOOD USED FOR COMPLEMENTARY FEEDING FOR CHILDREN 6-36 MONTHS

12.	MAIN INGREDIENTS (g, mg, other units) - please specify								
	Rice Flour	Wheat Flour	Maize Flour	Quinua Flour	Soja	Sugar	Oil (specify type)	Powder Milk	Others

SOURCE:

COST U$ (PRICE FOR CONSUMERS) OF COMPLEMENTARY FORTIFIED FOOD

13.	COST PER PORTION SIZE	COST PER 100g	COMMERCIALIZED UNIT IN THE MARKET	SUBSIDIZED	DONOR

SOURCE:
Mark with an X if the product is subsidized and specify Donor.

USERS

14.	TARGET POPULATION (Number of beneficiaries and age range)		SELECTION CRITERIA
	Current	Projected	

SOURCE:

METHOD OF USE

15.	RECOMMENDED METHOD OF USE *					
	Time required for preparation (minutes)	Frequency per day	Portion size	Describe preparation Method	Addition of Water or Others Ingredients	Other recommendations given on the pack related to feeding practices

SOURCE:
*Method of use as recommended on the package.

PROGRAMS/PROJECTS OF FCF AND PRODUCT DISTRIBUTION

16.	Type (Public, Public-Private, Private)	Current or Past (Starting year and ending)	Manufacturing capacity (Kg/MT)	Manufacturing methods and Company responsible	Geographical Area Distribution
	Distribution Channels	Market Share	Packaging	Portion Size (g/mg) (l/dl)	Portions / Package

SOURCE:
**Please copy same table as needed, for different programs and projects.

NUTRITIONAL IMPACT OF THIS FORTIFIED COMPLEMENTARY FOOD

Please provide all available information on the impact of the product on nutritional status and health indicators (geographical area, study size, type of study, indicators used etc)

IV. PROGRAM ASSOCIATED WITH THIS COMPLEMENTARY FOOD PRODUCT

EXISTENCE OF MOTIVATIONAL PROGRAMS ASSOCIATED WITH THIS PRODUCT

Please describe every activity related to the complementary food product (Social communication, social marketing, information on breastfeeding, complementary feeding, hygiene, other education, and communication)

AVAILABLE REPORTS/PUBLICATIONS

Please list or attach all available reports/publications of studies on the impact of this product.

V. NOTES

KEY COUNTRY OPINION MAKERS (NUTRITION EXPERTS, UNIVERSITY PROFESSORS, FORMER NUTRITION AUTHORITIES AND PUBLIC, PRIVATE AND CIVIL SOCIETY AUTHORITIES, ABOUT THE EXPERIENCIES WITH THE FORTIFIED COMPLEMENTARY FOODS IN THE COUNTRY.

Data of person responsible for filling the questionnaire (Part I and Part II)
Name:
Position:
Address:
Organization:
Phone:
e-mail address:

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