National Food and Nutrition Commission

Annual Report on the Food and Nutrition Situation in Zambia

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HSSP
Health Services and Systems Program
Contributing to improved health status of Zambians

National Food and Nutrition Commission

The National Food and Nutrition Commission is a quasi government organization under the Ministry of Health specialized in the provision of technical advice on food security, health and nutrition and related disciplines.

The Commission was established in 1967 through an act of parliament specifically to be a focal point for food and nutrition. The Act of Parliament, No. 41 of 1967, guides the commission in the execution of its mandate.

Since its establishment, the commission has engaged in promotional activities and provides advice to the Government and other stakeholders on matters concerning food and nutrition.

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FOREWORD

The monitoring and evaluation (M&E) framework for nutrition was developed for collecting relevant Programmatic nutrition information to enable policy makers, planners and Programme officers to make informed decisions about Programmes; and allow for effective and efficient use of resources. M&E is key to monitoring nutrition trends among populations. In addition, it is the mandate of the National Food and Nutrition Commission to advocate and advice on matters related to nutrition. This can only be done with adequate and up to date information.

The current food and nutrition M&E report is the first publication of its kind in Zambia. Its production involved various stakeholders who developed the indicators and provided related data. The process of developing the framework dates back to September 2005 when data collection on indicators was commenced.

The purpose of the report is to highlight the extent to which nutrition Programmes are achieving their objectives by examining indicators selected to measure progress over time. It also allows for coordination of the nutrition interventions being implemented by various stakeholders.

The report covers various food and nutrition interventions that have been implemented by some stakeholders dealing with nutrition Programmes in Zambia. The indicators are assembled into five groups: Infant and Young Child Feeding, Micronutrients Control Programmes, Public Health Measures, Food Based Approaches, Food Security, Emergency and Nutrition Programmes for Special Populations. The report explains the status of each food and nutrition intervention in terms of coverage, provision and impact. It also highlights constraints and existing opportunities for improving the Programme. Recommendations are listed for further action by Programme officers and the government.

It is hoped that the indicators discussed in this report will be a useful instrument for Programmes aimed at reducing under nutrition arising from vitamin A, Iodine and Iron deficiencies, Protein Energy Malnutrition, infections, as well as HIV and AIDS. However, it is important to note that the report does not cover comprehensive nutrition information from current research and it is not designed to be an early warning system tool for nutrition in emergencies.

Acting Executive Director
National Food and Nutrition Commission

EXECUTIVE SUMMARY

In order to better inform policy makers, planners and Programme officers of the state on efforts being made to improve nutrition in Zambia, a monitoring and evaluation framework was developed by partners engaged in nutrition Programming under the auspices of the National Food and Nutrition Commission. The framework was used as a guide to assemble relevant information about the food, nutrition and health of the population and the interventions in place to improve its nutritional well-being. Based on the initial collection of data in accordance with the framework, this annual report was compiled leading to recommendations that focus and prioritize nutrition Programmes.

To construct the monitoring and evaluation framework, partners from the many sectors involved in nutrition Programmes collaborated to identify indicators of provision, coverage and impact of a set of 26 Programmes of five different types: Infant and Young Child Feeding, Micronutrient Programmes, Food Security and Emergency Programmes, Nutrition Programmes for Special Populations and Public Health Measures. A number of the impact indicators for specific Programmes are also quite useful in describing the overall nutrition picture for example, the anthropometry of children under five years of age.

The importance of reducing malnutrition is underscored first as a means to eliminate the immediate contribution of poor nutrition to a variety of diseases, many contributing to higher mortality. The negative consequences of malnutrition and specific micronutrient deficiencies are also clearly linked to the cognitive development of children and, ultimately, to the productivity of the workforce. Due to these far-reaching implications, reducing malnutrition is recognized as a precondition for achieving the millennium development goals adopted and accepted by governments throughout the world.

The 26 Programmes identified for inclusion in the overall nutrition framework span the various traditional sectors, reflecting the diverse conditions that contribute to poor nutrition. These Programmes address food production and food security, reduction of specific diseases closely linked to poor nutrition, and Programmes aimed to modify behaviors that play a role in determining the nutritional well-being in a population.

The report concludes with a series of recommendations associated with each of the five Programme types, as follows.

Infant and Young Child Feeding Programmes

- Successful pilot Programmes should be scaled up.
- Management of advanced cases of malnutrition, particularly in infants and young children, should become a greater priority.
- Communities should become more involved in monitoring and addressing the nutritional status of their children.

Micronutrient Deficiency Control Programmes

Universal vitamin A supplementation of children during child health weeks should be continued.

- The environment for food fortification should be improved through better monitoring of fortified products and enforcement of violations of the law and/or failure to meet standards.

- Neighboring countries should be urged to establish standards similar to those in Zambia to minimize the availability of alternatives to food products that must be fortified according to Zambia law.

Agriculture and Food Emergency Programmes

- Several food-based initiatives should be scaled-up including production of vitamin-A-rich palm oil and staple crop diversification through the promotion of cassava.

- A review of food processing techniques, especially in the area of storage to prevent loss, should be conducted with an eye toward developing Programmes to eliminate losses in the production of fruits and vegetables as well as staple foods.

- Research into all aspects of food production and processing should be encouraged to improve production efficiency and storage, and to promote a more diversified diet among the Zambian population.

Public Health Interventions

- Plans should be developed and put in place to assure continued funding for key Programmes such as de-worming, bilharzia control and the treatment and prevention of malaria now largely donor supported.

- Policies and Programme designs should be reviewed and modified when necessary to emphasize nutritional aspects of other health Programmes for example, during antenatal care sessions.

Nutrition Programmes for Special Populations

- For Programmes addressing the needs of the chronically ill, monitoring data should be improved and integrated into other performance assessment tools.

- For Programmes designed to enhance food availability through local production, especially in schools, investments in sinking bore holes or other means to improve water supplies should be considered and partnerships should be formed with the larger community to encourage local production and protect gardens and orchards from vandalism.

- For supplementary feeding Programmes in schools, policies and regulations should be formalized in school policy to improve the implementation of ongoing Programmes.

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- Land 'O' Lakes
- Malaria Control Centre (MCC)
- Ministry of Agriculture and Cooperatives (MACO).
- Ministry of Education (MoE)
- Ministry of Health (MoH)
- Programme Against Malnutrition (PAM)
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- Zambia Sugar Company (ZSC)

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Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
BFHI	Baby Friendly Hospital Initiative
CARE	Cooperative for Assistance for Relief Everywhere
CBoH	Central Board of Health
CSO	Central Statistical Office
DMMU	Disaster Management and Mitigation Unit
FAO	Food and Agricultural Organization
FPMU	Food Programme Management Unit
FRA	Food Reserve Agency
HIV	Human Immunodeficiency Virus
HSSP	Health Services and Systems Programme
IDA	Iron Deficiency Anaemia
IDD	Iodine Deficiency Disorders
IYCF	Infant and Young Child Feeding
LCMS	Living Conditions Monitoring Survey
M&E	Monitoring and Evaluation Unit
MoE	Ministry of Education
MoH	Ministry of Health
NCHS	National Centre for Health Statistics
NFNC	National Food and Nutrition Commission
NGOs	Non Governmental Organizations
PAM	Programme Against Malnutrition
PEM	Protein Energy Malnutrition
UNICEF	United Nations Children's Fund
VAC	Vulnerability Assessment Committee
VAD	Vitamin A Deficiency
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

GLOSSARY

Availability

The physical existence of food, be it from own production or on the markets.

Access

When all households and all individuals have sufficient resources to obtain appropriate foods for a nutritious diet. It is dependent on the level of household resources --capital, labor, and knowledge -- and on prices.

Body Mass Index (BMI)

An assessment of nutritional status obtained by dividing body weight by height in meters squared (kg/m^2). The normal range is 18.5 to 25. Both high BMI (overweight) and low BMI (underweight) are unacceptable.

Coverage Indicators

These show the number or proportion of the target population being reached by an intervention.

Food Insecurity

When people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and health life. The unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level, which may be chronic, seasonal or transitory, are all causes of food insecurity.

Food Security

When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active, healthy life.

Impact Indicators

These show the extent to which the intervention improves the health and nutritional status of the population. (One impact indicator is used for various interventions discussed in the report, for example, reduction of hospital case fatality rate to less than 5%).

Low Birth Weight (LBW)

A body weight at birth of less than 2500 grams.

Malnutrition

Poor nutrition caused by a complex array of factors including excess or inadequate dietary inadequacy, infections, and socio-cultural factors. (Underweight or stunting and overweight, as well as micronutrient

deficiencies, are forms of malnutrition).

Nutrition Security

An adequate supply of essential nutrients that support body functions (growth, development, maintenance and physical activity) for good health and productivity.

Nutritional Status

The physiological state of an individual that results from the relationship between nutrient intake and requirements and from the body's ability to digest, absorb and use these nutrients.

Overnutrition

A condition arising from excess consumption of nutrients. This is often accompanied by reduced physical activity and emergence of diet related complications such as obesity, coronary heart diseases, hypertension and cancers.

Provision Indicators

These show the quantities of supplies distributed to Programmes for a specific intervention

Stunting

The failure to reach linear growth potential because of inadequate nutrition or poor health. It implies long-term under-nutrition and poor health, measured as two z-scores below the international reference of height-for-age. Usually stunting is a good indicator of long-term under-nutrition among young children. For children under 12 months, recumbent length is used instead of height.

Under Nutrition

A condition arising from inadequate intake of essential nutrients. It may occur in association with infection. This manifests in underweight, stunting and wasting, kwashiorkor, marasmus, and marasmic-kwashiorkor.

Underweight

Low weight-for-age, which is two z-scores below the international reference of weight-for-age. It implies stunting or wasting and is an indicator of under nutrition

Wasting

Weight (in kilograms) divided by height (in meters squared) that is two z-scores below the international reference. It describes a recent or current severe process leading to significant weight loss, usually a consequence of acute starvation or severe disease. Commonly used as an indicator of under-nutrition among children and especially useful in emergency situations such as famine.

Z-score

The deviation of an individual's value from the median value of a reference population, divided by the standard deviation of the reference population.

CHAPTER 1. INTRODUCTION

Poor nutrition is universally recognized as an underlying cause of mortality in children and as a major contributor to a number of health problems in all segments of the population. In order to better inform policy makers, planners and Programme officers on efforts being made to improve nutrition in Zambia, a monitoring and evaluation framework was developed by partners engaged in nutrition Programming under the auspices of the National Food and Nutrition Commission. The framework was used as a guide to assemble relevant information about the food, nutrition and health of the Zambian population and existing interventions for improving the nutritional health.

This report will be a yearly publication. The purpose of this report is multifaceted. It includes issues on advocacy, policy development and revision, as well as recommendations that focus on and prioritize nutrition Programmes. It also contains background information for contextualizing nutrition information.

The report is organized in seven chapters: Chapter 2 provides background information on the objectives and the process of developing nutrition monitoring and evaluation framework; Chapter 3 provides information on the nature and consequences of nutrition problems; Chapter 4 explains the causes of malnutrition with reference to the adapted UNICEF conceptual framework for understanding causes of malnutrition; Chapter 5 presents selected food and nutritional status indicators in Zambia; while Chapter 6 describes the interventions for addressing the food and nutrition situation. The interventions are discussed in the context of selected indicators for which data are available. Chapter 7 provides general conclusion and recommendations for Programme categories.

The target audience for this report includes the following: policy makers, planners, Programme officers and other interest groups in Zambia.

CHAPTER 2. METHOD FOR DEVELOPING THE NUTRITION MONITORING AND EVALUATION FRAMEWORK

The National Food and Nutrition Commission of Zambia (NFNC) has a mandate to oversee policy development and the technical direction of nutrition Programmes in the country. This includes technical support to Programmes with specific nutrition objectives managed by various sectors involved in food and nutrition activities. To carry out this mandate, in September 2005, the National Food and Nutrition Commission and other stakeholders advancing the cause of good nutrition in the country convened a meeting to initiate the development of an integrated monitoring and evaluation (M&E) framework for nutrition.

In Zambia, the use of anthropometry in children is well described, and the prevalence of malnutrition depicted by these measures has remained high. In addition, micronutrient deficiencies are well documented, and Programmes have been developed to reduce these deficiencies. Lacking, however, is an inventory of ongoing activities aimed at addressing malnutrition, as well as developing means of determining their contribution to the reduction of this problem in the country.

The purpose of developing the integrated monitoring and evaluation framework is to create and maintain an inventory of nutrition activities. This would provide a basis for tracking over time, what each of the activities is accomplishing. The vision for this integrated system is to enable NFNC to have a broad understanding of the nutrition situation in Zambia and the Programme activities designed to improve the situation based on existing data sources. Information from the integrated system will assist NFNC in advocacy, policy development and revision, as well as developing recommendations that focus and prioritize nutrition Programmes. Such a system will also help each sector to understand their Programme activities in relation to other sectors, and overall progress in improving the nutrition situation in Zambia.

Initially, four types of indicators were identified for each Programme: *provision, utilization, coverage and impact*. By tracking these indicators, it is possible to determine whether the Programmes are being implemented as planned, the coverage of the Programmes, and ultimately, their impact.
At the September 2005 meeting, participants were encouraged to be creative about indicator selection. An attempt was made to whittle down the number of indicators into a workable set.

During the nine months after September 2005, two further meetings were held to refine the framework. The number of indicators in the framework was reduced to sharpen their definitions. Given the magnitude and complexity of the initial framework, the number of indicators was reduced to a more workable set. This was based on the relevance of the indicator and the viability of the data source. Definitions of the indicators were expanded or clarified to remove the possibility of ambiguity. Selected critical indicators not routinely available were tagged for further investigation to determine the

possibility of being measured through special collection systems. For example, a sentinel site system where additional data collection activities are carried out on a periodic basis. Following the last meeting in May 2006, the staff of NFNC started gathering data from various partners and stakeholders.

During development, the framework was designed to capture information from a variety of existing sources, according to the current reporting frequency, indicator definitions and mechanism for data flow. NFNC made recommendations for strengthening the nutrition data from diverse sources, and sought mechanisms to fill gaps.

The indicators in the initial framework were assembled in four groups, Infant and Young Child Feeding, Micronutrient Programmes, Food Security and Emergency Programmes, and Nutrition Programmes for Special Populations. An additional category on Public Health Measures was added to group interventions not generally classified under nutrition Programmes.

In the interest of further simplifying of the system, NFNC and its partners elected to limit the types of indicators associated with each Programme by removing utilization indicators. It was agreed that by measuring provision, coverage and impact, a good picture of the contribution of each Programme to nutritional improvement would emerge.

Several of the suggested impact indicators are clearly linked to many if not all of the Programmes and are viewed in other contexts as an indication of the general nutritional or micronutrient status of the population. The anthropometry of children under five is considered as the best indicator of the nutritional status of the entire population (children usually manifest changes in nutritional well-being more quickly than adults and, therefore, reflect what is happening in all age groups). The anaemia status of women is another such indicator for micronutrients. The prevalence of vitamin A deficiency would be a similar indicator. However, the measurement of vitamin A deficiency is costly and may give misleading information in the absence of good measures of the level of infection in the population. Infection draws heavily on vitamin A stores and depletes the vitamin A recognized in the blood.

Using MICROSOFT ACCESS software, a relational data base has been constructed to store the values of the indicators over time, their sources and comments about the reliability of the data. This report is prepared in an effort to develop the baseline data for indicators. In years to come, this report will include not only the current status of the indicators but also time series trends for those indicators evaluated periodically.

CHAPTER 3. THE NATURE AND CONSEQUENCES OF NUTRITION PROBLEMS

3.1 NUTRITION AND THE MILLENNIUM DEVELOPMENT GOALS

Nutrition is the process by which food is ingested, digested and utilized by the body. Excess or inadequate food intake, often accompanied by disease, results in malnutrition. Malnutrition could be due to either under or over feeding as well as deficiency of some important micronutrients such as iron, vitamin A, iodine or even a combination. Globally, 55% children are malnourished. In Sub-Saharan region, Zambia ranks sixth (28%) with regard to underweight; and third (47%) in terms of stunting (CSO, 2002).

Good nutrition is one of the key fundamental cornerstones to the attainment of the Millennium Development Goals.

Table 1. Nutrition in the Millennium Development Goals

	Nutrition contributes to the attainment of the Millennium Development Goals
Goal 1:	*Eradicate extreme poverty and hunger* Malnutrition wears away human capital, reduces resilience to shocks and reduces productivity (impaired physical and mental capacity).
Goal 2:	*Achieve universal primary education* Malnutrition reduces mental capacity. Malnourished children are less likely to enroll in school, or more likely to enroll late. Current hunger and malnutrition reduces school performance.
Goal 3:	*Promote gender equality and empower women* Better-nourished girls are more likely to stay in school and to have more control over future choices.
Goal 4:	*Reduce child mortality* Malnutrition is directly or indirectly associated with more than 50% of all child mortality. Malnutrition is the main contributor to the burden disease in the developing world.
Goal 5:	*Improve maternal health* Maternal health is compromised by an anti-female bias in allocations of food, health and care. Malnutrition is associated with most major risk factors for maternal mortality.
Goal 6:	*Combat HIV/AIDS, Malaria, and other diseases* Malnutrition accelerates onset of AIDS among HIV-positive people. It weakens resistance to infections and reduces malarial survival rates.

Source: Adapted from Gillespie and Haddad (2003)

3.2 IMPORTANCE OF ADEQUATE NUTRITION

The nutritional health of a population is affected by the work of many of the traditional sectors such as agriculture, education and health. Nutrition is considered as a sector in its own right: firstly good nutrition is an essential determinant for well-being, secondly good nutrition is a fundamental right (Jonsson, 1996) and thirdly, the consequences associated with bad nutrition have strong ramifications on economic activity of the country.

Nutritional health requires adequate intake and utilisation of macronutrients and micronutrients. Important macronutrients required for nutritional health include carbohydrates, protein and fats. Carbohydrates provide the majority of energy in the diets of most people. Micronutrients like vitamin A and iron, though required in very small amounts, are not manufactured and not usually stored by our bodies and hence should be derived from specific foods that contain them.

Diets high in carbohydrate as compared to those high in fat, reduce the likelihood of developing obesity and its co-morbid conditions. An optimum diet should consist of at least 55% of total energy coming from carbohydrate obtained from a variety of food sources.

Energy and nutrient needs are increased in pregnancy and lactation, and the primary challenge for pregnant women is to meet these increased energy needs in order to ensure healthy offspring. An observation has been made that where variety is low and carbohydrate intake is high, a low-birth weight is more common.

3.3 CONSEQUENCES OF MALNUTRITION

Adverse effects on nutritional status may result when the diet lacks adequate protein, fat and other essential nutrients. Further, poor absorption of nutrients due to diseases may lead to poor nutritional status.

- Inadequate food intake, poor nutritional quality of diet and various infections affect growth. Poor growth is also a predictor of other undesirable outcomes such as increased morbidity and mortality in early childhood and small stature. Those with severe malnutrition are most likely to die if proper management is not adequately addressed. In Zambia, infant and under five mortality stand at 95 deaths and 168 deaths per 1000 births (CSO, 2002). Malnutrition is associated with 42% of the deaths (CSO, 2002).

- Losses caused by growth faltering in early life are never regained. Malnutrition acts synergistically with disease, and death due to disease is more likely among the malnourished.

- Measures of growth retardation, such as stunting, are strongly associated with poor psychological test performance and low school achievement. Evidence from a wide range of studies suggests that malnutrition impairs mental development, in the most severe cases, by a direct effect on brain cells and in more moderate cases, by lowering the child's motivation and energy level, thereby reducing the amount of effective learning time.

- Malnutrition reduces the activity levels of poor children in developing countries. Malnourished children are less likely to attend school and less likely to succeed if they do.

- Stunting in childhood leads to reduced adult size and decreased work capacity. This in turn has an impact on economic productivity at the national level (WHO, 1 995a, p.180). Women of short stature are at greater risk of obstetric complications because of smaller pelvic size. Small women have greater risk of delivering an infant with low birth weight. This leads to an intergenerational effect since low-birth-weight infants tend to be small in size as adults.

- Malnutrition potentiates the effects of infection (Pelletier et al., 1993). Malnourished children have more severe diarrhoeal episodes as measured by duration, risk of dehydration or hospital admission, and associated growth faltering. They also have a higher risk of pneumonia.

- Inadequate intake of dietary carbohydrate is important in the causes of colorectal cancer as it is thought to be protective through mechanisms involving arrest of cell growth, differentiation and selection of damaged cells for cell death. However, in Zambia, it is not well known as to what extent this is a contributory factor to the cases of cancer. Inadequate intake of non-starch polysaccharides and resistant starch, which are most contributors to stool weight may result in constipation, hemorrhoids and anal fissures as well as diverticulitis.

3.4 MAJOR CONSEQUENCES OF MICRONUTRIENT DEFICIENCIES

Vitamin A deficiency: The most obvious health consequences of severe vitamin A deficiency (VAD) involve the visual system, affecting vision in low light or darkness, and dryness (xerosis) and disruption in the integrity of the surface of the conjunctiva and cornea (Bitot's spot, corneal clouding, ulceration). Occurrence of these signs is associated with elevated risk of blindness and death. Hidden consequences that occur even before eye signs are detectable include changes in surface linings of the gastrointestinal, respiratory, excretory and reproductive systems. In addition, the integrity of the immune system is impaired. These changes contribute to a significantly higher risk of death among vitamin A deficient children.

Iron deficiency anaemia: Iron deficiency anaemia (IDA) is the most prevalent nutritional deficiency worldwide. It is a major public health problem with adverse consequences especially for women of reproductive age and for young children. The consequences of IDA are numerous as iron plays a central role in the mechanism for oxygen transport in the human body, and is essential in many enzyme systems. Of greatest concern is that IDA in infants and children is associated with impaired physical and cognitive development. In adults, IDA is associated with weakness and fatigue, which reduce capacity for physical work and productivity. In pregnant women, it contributes to maternal morbidity and mortality, and increases the risk of foetal morbidity, mortality and low birth weight. Severe anaemia may be a contributory factor of up to 50% of maternal deaths, and is the main cause of up to 20% of maternal deaths in developing countries (ACC/SCN, 1991).

Iodine deficiency disorders: Iodine deficiency is the most prevalent cause of preventable mental retardation in the world (reviewed by Delange, 1994). Severe, iodine deficiency impairs thyroid function, resulting in a lower metabolic rate, growth and mental retardation and brain damage. The long-term consequence of IDD is irreversible. It also increases perinatal mortality and other defects. Iodine deficiency impacts on intellectual development and results in huge costs to societies, including delayed socio-economic development (Pandav, 1996).

Folic acid deficiency: Folic acid deficiency leads to megaloblastic anaemia, a condition where red blood cells are characteristically large and pale. Recent data also suggest that a poor folate status is related to high blood homocysteine levels, which in turn have been identified as a risk factor for cardiovascular disease. Folic acid deficiency also contributes to the incidence of birth defects. However, in Zambia, studies to determine these effects have not been carried out.

Zinc deficiency: Zinc deficiency contributes significantly to growth stunting in young children in many regions (Sandstead, 1991). What has been termed protein energy malnutrition, especially low height-for-age, may be due to poor diet quality, including low levels of bioavailable zinc, rather than an inadequate quantity of either protein or energy. Zinc supplementation has been shown to correct growth failure in Canadian young children. Zinc deficiency may also contribute to the major causes of morbidity in young children, as shown by studies in India and elsewhere. Zinc deficiency may be an underlying cause of the very high rates of maternal mortality in Sub-Saharan Africa. Zambia has included zinc in the treatment protocols for diarrhoea.

3.5 NUTRITION IS BOTH A CAUSE AND AN OUTCOME OF OTHER HEALTH PROBLEMS

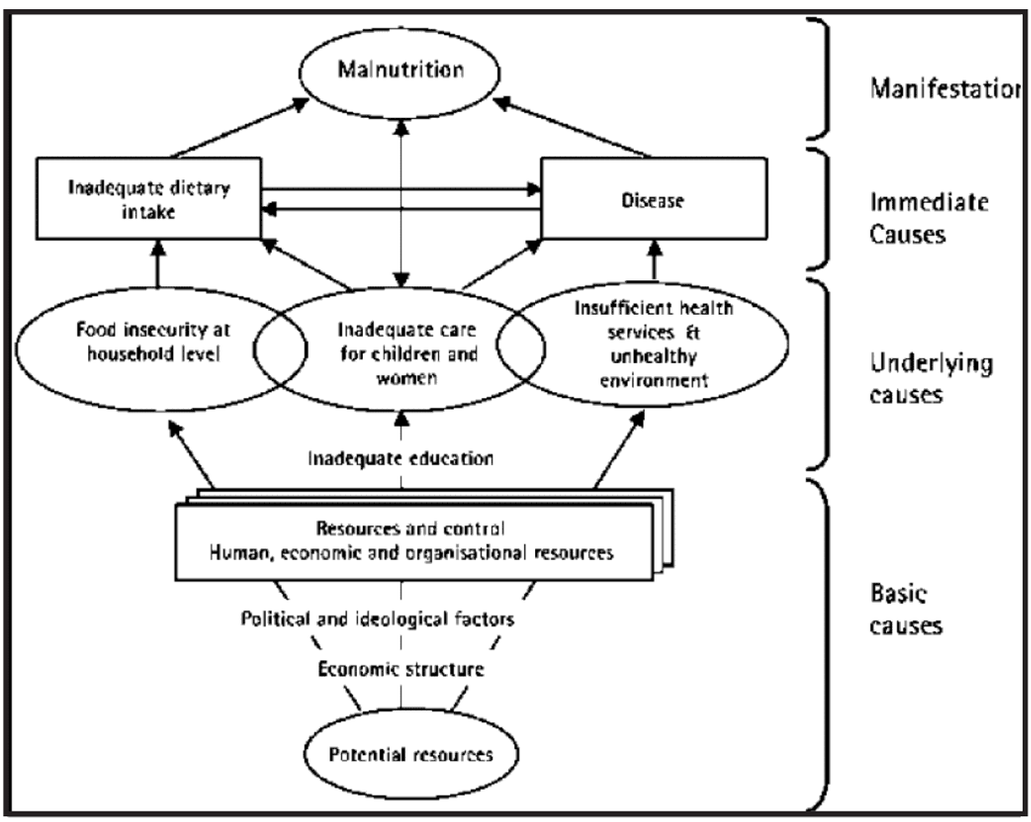
There are strong synergistic relationships between health status and nutritional status. A person who is sick may lose his/her appetite resulting in poor food intake, digest his/her food poorly and use some of his nutrients to fight infection. A malnourished person is more prone to infections due to a weakened immune system. Infections therefore increase the potential for malnutrition and its severity. In developing countries, infectious diseases, such as diarrhoeal diseases (DD), and acute respiratory infections (ARI), are the most important nutrition-related health problems. Therefore, sustainable access to safe food of sufficient quality and quantity, access to health services including hygienic and sanitary environment and safe water and caring practices are key to improving nutrition.

Table 2. Profile of Zambia

	Basic Indicators			*Year*
Total population			11million	
Rural population			65% of total population	
Population under 15 years of age			48% of total population	
Annual population growth rate			3.1%	
Life expectancy at birth			37years	
Agricultural area			800mm	
Arable land under cultivation			13% of agricultural land	
Human development index			0.386 in 2000	
Proportion of population living with less than 1$ a day (PPP)	*MDG1*		80% of the total population	
Population living below the national poverty line	*MDG1*		72.9%	

UNICEF has developed a conceptual model of malnutrition that is widely accepted at the international level (see Figure 1). Although used mainly in the context of under-nutrition in rural areas of developing countries, it is also applicable to over-nutrition in an urban context.

Figure 1. A Conceptual Model of Malnutrition



Source: Adapted from UNICEF (1998) The State of the World's Children 1998. Oxford University Press, Oxford.

According to this model, malnutrition occurs as a result of a number of factors, which directly and indirectly are a cause. The ***immediate causes*** of the nutritional status of an individual are dietary intake and health status. These factors themselves are interdependent. Dietary intake must be adequate in quantity and quality, and nutrients must be consumed in appropriate combinations for the human body to be able to utilise the energy, protein, fat, and micronutrients. At the household level the decision on what food is put on the table (demand) and who is to eat it (intra household distribution) determine the composition of the meals for the individual. Habits such as food taboos and knowledge about food preparation, processing and feeding practices influence not only the composition but also the biological utilization of the food. There are strong synergistic relationships between health status and the nutritional status. A poorly nourished person has a weakened immune system and is more prone to infections. Infections increase the potential for and severity of malnutrition. In developing countries, infectious diseases, such as diarrhoeal diseases, and acute respiratory infections, are the most important nutrition related health problems.

The major underlying cause of malnutrition is the food security situation. Only 36% of households in Zambia usually have enough food to eat, while 19% of Zambian households seldom or never have enough to eat and are chronically food

4.1 FOOD AND NUTRITION SECURITY DEFINITIONS

In order to understand fully the nutrition problems in Zambia, it is important to understand food and nutrition security.

Food security versus nutrition security

It is important to distinguish between food security and nutrition security, two quite different terms often used interchangeably in the literature. Food security, an important input for improved nutrition outcomes, is concerned with physical and economic access to food of sufficient quality and quantity in a socially and culturally acceptable manner. Nutrition security is an outcome of food intake, good health, a healthy environment, and good caring practices in addition to household-level food security. For example, a mother may have reliable access to the components of a healthy diet, but because of poor health or improper care, ignorance, gender, or personal preferences, she may not be able to or may choose not to use the food in a nutritionally sound manner, thereby becoming nutritionally insecure. Nutrition security is achieved for a household when secure access to food coupled with a sanitary environment, adequate health services, and knowledge care ensures a healthy lifestyle for all household members.

A family (or country) may be food secure, yet have many individuals who are nutritionally insecure. Food security is therefore often a necessary but not sufficient condition for nutrition security.

Source: World Bank 2006, Repositioning Nutrition as Central to Development

"Food and Nutrition Security is achieved, if adequate food (quantity, quality, safety, sociocultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and quality life."

Availability refers to the physical existence of food, be it from production by the household or purchase in the market place. At a national level, food availability is a combination of domestic food production, commercial food imports, food aid, and domestic food stocks, as well as the underlying determinants of each of these factors. Use of the term availability is often confusing, since it can refer to food supplies available at both the household level and at a more aggregate (regional or national) level. Throughout this report food security will be discussed at the household level.

Access is ensured when all households and all individuals within the household have sufficient resources to obtain appropriate foods for a

nutritious diet. It is dependent on the level of household resources namely, capital, labor, knowledge; and prices. Note that adequate access can be achieved without households being self-sufficient in food production. What is important is the ability of households to generate sufficient income, which can be used to meet food needs. Food access is also a function of the physical, social and policy environments. These determine how effectively households are able to utilize resources to meet their food security objectives. Drastic changes in these conditions, such as during periods of drought or social conflict, may seriously disrupt production strategies and threaten the food access of affected households. These shocks often lead to the loss of productive assets such as livestock; may also have severe implications for the future productive potential of households and long-term food security.

Food utilisation refers to the socioeconomic aspect of household food security. If sufficient and nutritious food is both available and accessible, the household is able to make decisions about what food is to be purchased, prepared and consumed and how the food is allocated within the household. In households where distribution is unequal, even if the measured aggregate access is sufficient, some individuals may suffer from food deficiency.

4.2 NUTRITION AND INFECTIOUS DISEASES

The relationship between malnutrition and infections is well documented. Infections make malnutrition worse and poor nutrition increases the severity of infectious diseases (FAO: 1997:23). However, a healthy body is able to resist diseases to some extent.

The presence of nutrient deficiencies (malnutrition) in the body due to poor nutrition is known to reduce the body's resistance to infection as it affects the immune system.

Malnutrition impairs the normal defence mechanisms of the body making it not function properly. It reduces the ability to fight infections such as measles, upper respiratory infections, gastro intestinal infections and malaria. It also leads to morbidity and mortality, especially among children.

Infections also affect nutrition in many ways. They increase demand for essential nutrients. Infections cause nutrient malabsorption[1], metabolic alterations[2] and reduction in food intake, fatigue and side effects such as nausea, vomiting, diarrhoea and anorexia that arise from medications. Infections that are mostly accompanied by fever lead to anorexia (loss of appetite) or vomiting, thus reducing food intake. Diarrhoea, most common in young children, may lead to reduced absorption of nutrients from food. These infections if not quickly checked can lead to malnutrition.

Parasitic infections such as ascaris, trichuris (whipworm) and hookworm affect nutrition due to intestinal heamorrhage that may lead to considerable loss of iron. Hookworm is known to be the major cause of iron deficiency anaemia in many communities. It is estimated that about 350 hookworms in the intestine cause a daily loss of 10 ml of blood, or 2 mg of iron (FAO: 1997:25). High parasitic infections especially among children are common in environments with poor sanitation. Therefore deworming is important for children's healthy growth. Bilharzia (schistosomiasis) infections, which are prevalent in Zambia also contribute to poor nutrition.

HIV infection makes special demands on the body's nutritional requirements. As the disease progresses, complications such as weight loss, diarrhoea and opportunistic infections become more common and have a negative impact on nutritional status. In addition, HIV infection in mothers poses some risk for transmitting the infection to the baby during breastfeeding.

4.3 AVAILABILITY OF AFFORDABLE, HIGH QUALITY FOODS

Food availability and access determines food consumption of a population and ultimately the nutritional status. However, food availability depends on people's own household production and market supply. These aspects can be a combination of domestic food stocks, commercial food imports, food aid and domestic food production. In order to promote nutritional wellbeing,

food should be available at a cost that is affordable to the majority. To promote high quality foods, emphasis should be placed on promotion of staple foods, legumes, vegetables, fruits and animal products. In addition, in places of low income and rural areas where poverty is high, traditional foods should be promoted together with other food-based interventions.
Intra-household practices have a bearing on food availability and nutritional status. They determine who is responsible for producing food, who earns cash income for food purchase, who buys the food and who prepares it. The respective contribution:

1. Malabsorption occurs due to increase bouts of diarrhoea
2. Infections result in increased energy and protein requirements as well as inefficient utilization and loss of nutrients.

of men and women in these aspects is an important factor. Hence, intra-household dynamics and gender role perspectives are significant factors in determining household food and nutrition security. In many countries intra-household food distribution is unequal. Husbands and male children are generally favoured (Simon: 1999).

4.4 GENDER AND NUTRITION

Gender equality contributes significantly to efforts to improve the nutrition and health status of women, men and children. Women are often more vulnerable to nutritional problems because of their lower socioeconomic status and their physiological needs. Improving women's knowledge of nutrition and food security can prevent illnesses, disabilities and premature deaths. Women who enjoy good health are better able to contribute to economic development, and are more likely to have healthy infants.

4.5 DIETARY PRACTICES

The type of diets people eat determine to a large extent people's health, growth and development. Dietary intake must be adequate in quantity and quality. The nutrients that are consumed must be in appropriate combinations for the human body to be able to use them. In most cases at household level, the diet is determined by what people are used to eating, who eats it and what is to be prepared, the food habits and knowledge.

Universally, the first food that a child receives is breast milk. Breastfeeding provides necessary energy and nutrients for the first six months of life. WHO recommends that countries promote, protect and support exclusive breastfeeding for the first six months. After that breast-milk must be complemented with food rich in energy and nutrients up to two years or longer. Breastfeeding is important for diarrhoea case management. It is one of the most cost-effective interventions for diarrhoeal disease control. Breastfed children who have diarrhoeal infection recover more quickly than non-breastfed children and they have fewer complications such as dehydration.

Appropriate complementary feeding practices are essential for preventing macro and micro nutrient deficiencies in children 6 to 24 months of age. Children need to be given enough energy and nutrients with a combination of breast milk. These foods should be hygienically prepared and fed to the babies to prevent diarrhoea.

4.6 POOR SANITATION

The health status of a community is largely influenced by access to services, sanitation systems and environmental conditions. Children have the highest exposure to the pathogens present in the environment due to their exploratory play behaviours. Diarrhoeal disease prevalence is a good indicator of overall environmental hygiene and food safety.

In light of this, improved water supply and sanitary interventions are key as they contribute to improving living standards.

4.7 POOR HEALTH CARE

To improve the nutritional status, there is need to provide quality health services. It is common that the people who are in the greatest need of the health services are least likely to receive the services due to poor access to services. This may be due to poor transport services, inadequate pharmaceutical and preventive care. In addition, many people are poor and unable to afford medical fees. Affordable and accessible health services may lack specialists and preventive care services limiting the proportion of consultations. According to the LCMS (2004), 52% of the people who reported illness two weeks before the survey had consulted over their illness while 21% used self administered medicine while 27% neither consulted nor used self administered medicine.

Poor health services make it difficult to take early intervention on infections and compromises survival rates.

CHAPTER 5. CURRENT FOOD AND NUTRITION STATUS INDICATORS IN ZAMBIA

The current nutrition status of Zambia is below acceptable standards as reflected in annual surveys depicted in figure 2. Nutritional status has deteriorated from independence to date. There are several indicators that can be used in measuring nutrition status. In Zambia, these include anthropometric measurement of children, micronutrient deficiency levels, Body Mass Index (BMI) and birth weight of children.

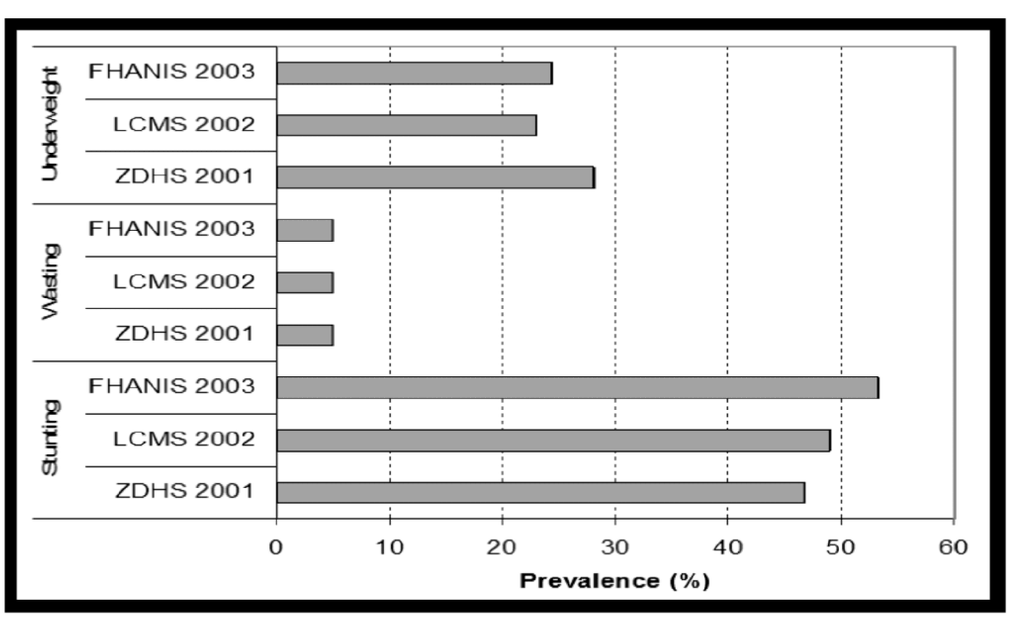
5.1 NUTRITION INDICATORS

5.1.1 Anthropometric measurements of children under five

Nutritional status of children less than five years is an indication of the socio-economic status of the population in that particular setting. According to the latest Zambia Demographic and Health Survey report 2002, anthropometric measurements of stunting, wasting and underweight stand at 47%, 5% and 28% respectively.

Figure 2 shows national results coming out of ZDHS, LCMS and FHANIS for the three nutritional indicators between 2001 and 2003.

Figure 2. Under-Five Nutritional Status for Zambia



Stunting is indicative of chronic malnutrition. The findings are very similar in the three surveys and show alarming results with stunting varying between 53% and 47%. The prevalence of stunting in Zambia is comparable to Ethiopia (51.5%, CSO, 2000) and Malawi (49%, DHS 2000) and much higher than West African countries. According to WHO, rates of stunting above 10% are indicative of a public health problem.

Underweight is indicative of either chronic or acute malnutrition. In Zambia, 28% of under-fives were underweight in 2001, 23% in 2002 and 24% in 2003. Underweight is the recommended indicator to measure MDG 1. Zambia, according to the World Bank report, has made no progress in reducing hunger as measured by underweight children.

Wasting is indicative of acute malnutrition. In Zambia, levels of wasting are within the globally accepted standard. National prevalence of wasting shows a stable trend or insignificant variations over the last ten years. The prevalence of wasting ranged between 2.5% and 7.6% and has remained stable over a period of ten years (CSO 1992; CSO 1996; CSO 2002). As wasting rates are within the global acceptable range (about 5%) there is no need for an emergency feeding Programme. However, preventive activities including family nutrition education and community nutrition sensitization are required.

In Zambia, children between zero and twenty-three months of age are the most vulnerable and represent the highest proportion of children who are stunted, underweight and wasted.

5.1.2 Micronutrient deficiency levels

Other nutrition problems of public health concern are those resulting from various micronutrient deficiencies of vitamin A, iron and iodine.

Mineral/Vitamin	Previous deficiency Level	Current deficiency level	Cut of points for public health problem
Vitamin A	1998 68%	2003 54%	10%
Iron	1997 65% children 46.9% pregnant women 38.3% non pregnant	2003 52%	10%
Iodine	1993	2003	200 µg/l
	49 µ g/l	245 µg/l	

The vitamin A impact study of 2003 indicates that 54% of children 6 to 59 months of age had serum retinol of <0.70 mol/l. Although there has been a decline in the rate of vitamin A deficiency among children, a prevalence of 54% indicates a problem of public health concern, as it is above the global figure (WHO, 1996).

Iron deficiency is another problem of public health concern. Figures reflected in the table confirm the need for intensified effort to achieve acceptable global rate.

The measurement of median urinary iodine provides the best single measurement of iodine intake of the population. The 1993 baseline study on IDD showed median urinary iodine level of 49□g/l while the Impact Study 2003 reflected 245 □g/l. The 2003 level was above the recommended range of 100 1 99□g/l. In addition, the report further revealed that 93.5% of households had iodized salt at the time of the survey.

5.1.3 Women's body mass index (BMI)

One of the indicators to measure the nutritional status of women is BMI. BMI has deteriorated with the proportion of women having a BMI less than 18.5 increasing from about 9% to 10% in prior surveys to 15% in 2001/2 (ZDHS, 2001/2). This indicates that women are still consuming inadequate food and that there is poor intra-household food security.

5.1.4 Birth weight of children

Poor nutritional status in women makes it likely for them to give birth to low birth-weight babies. Low birth-weight in Zambia stands at 10%. It is an indication of malnutrition both prior to and during pregnancy. Low birth-weight may have become cyclical. Poor nutrition of girls from childhood through adolescence to adulthood leads to small frame women, who most likely give birth to small babies. Poor nutrition during foetal development exacerbates the situation.

5.1.5 Economic consequences of malnutrition in Zambia

According to a global review of nutrition Programmes conducted by the World Bank, malnutrition is cited as a condition that hampers economic growth and perpetuates poverty. This is mainly due to the following:

- Losses directly associated with poor physical health status
- Losses indirectly incurred from poor cognitive function, and
- Losses associated with increased health care

Malnutrition affects the economic development in several ways:

- Mental impairment due to iodine deficiency
- Stunting due to protein-energy malnutrition, and
- Iron deficiency anaemia.

These problems have a profound impact on work productivity.

In Zambia, a computer based model for creating nutritional profiles is available for projecting costs of not investing in nutrition. For example, the mental impairment caused by iodine deficiency is permanent. The present

value of lost future wages due to iodine deficiency over the ten-year period (2004-20 13) is about 616 million US dollars.Stunting is another nutrition problem that affects productivity. In Zambia, 47% of children under five years old are moderately stunted, while 22% are severely stunted. Stunted children grow up to become stunted adults. One of the most significant consequences of adult stunting is reduced physical capacity and productivity. If current levels of stunting remain unchanged over the next ten years (2004-2013), Zambia will lose 775 million US dollars in future economic production as a direct result of the poor nutrition.

Iron deficiency is another nutritional problem that has far-reaching effects on productivity. Data from national surveys indicate that 65% of children under five years, 39% of non-pregnant women, 50% of pregnant women and 23% of men are anemic. Scientific research shows that there is at least a 1% reduction in productivity for each 1 % drop in iron status. Based on this, the female labor force between 2004 and 2013, one million fifty seven dollars will be lost in productivity in the manual sectors as a consequence of iron deficiency anaemia.
Thus the total cost of malnutrition to worker productivity in the country is estimated to be 4.45 million US dollars due to iodine deficiency disorders; 10 million US dollars due to stunting, and 6 million US dollars due to iron deficiency anaemia. This is a total loss of 20 million US dollars over the 10 years projection (from 2004-2013) and this is just the cost of the problems we have examined here.

5.2 CURRENT FOOD SITUATION

The key indicators of the food situation in Zambia are the food balance sheets at national level and the food basket at the household level.

5.2.1 Food Balance Sheet

Food availability estimates at the national level reflect a surplus with regard to maize produced, maize meal flour and cassava flour. However there is a deficit in terms of paddy rice and wheat. Sorghum/millet and sweet/irish potatoes requirements are estimated to be equivalent to the available stocks. Staple foods are assumed to represent 70% (1,421 kCal/person/day) of the total diet (2,030 kCal/person/day).

Table 2 is the national food balance sheet for the most recent marketing year.

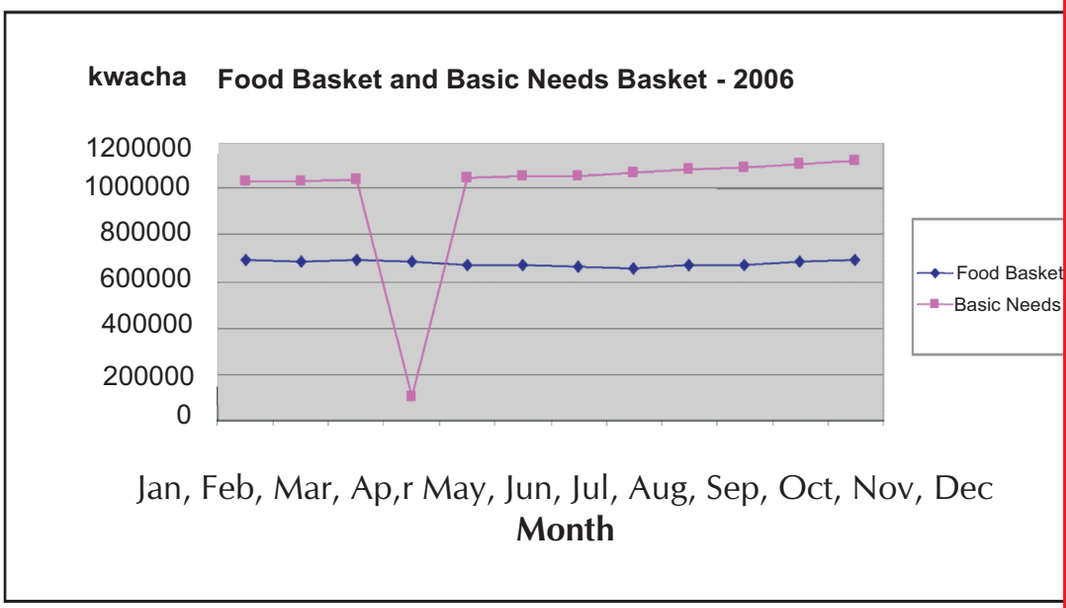
Table 2. National Food Balance	Sheet for		the 2007/200	Marketing Year				
	Maize	Paddy rice	Wheat	Sorghum/ millet	Sweet and Irish potatoes	Cassava flour	Total (Maize mealie meal equivalent)	
Availability:								
(i) Opening stocks (1st May 2007)[1]	433,031	931	0	4,712	0	4,459	398,614	
(ii) Total production (2006/07) [2]	1,366,158	18,317	115,843	34,480	75,664	1,185,600	2,476,734	
Total availability	1,799,188	19,248	115,843	39,192	75,664	1,190,059	2,875,349	
Requirements:								
(i) Staple food requirements:								
Human consumption [3]	1,132,880	30,332	132,708	35,468	71,880	700,442	1,837,314	
Food Reserve Stocks (net) [4]	250,000	0	0	1,000	0	2,949	228,609	
(ii) Industrial requirements:							0	
Stockfeed [5]	65,000	0	0	0	0	0	58,500	
Breweries [6]	15,000	0	0	0	0	0	13,500	
Seed[7]	18,000	0	1,500	1,000	0	0	18,183	
(iii) Losses [8]	68,308	916	5,792	1,724	3,783	23,712	90,846	
Total requirements	1,549,188	31,248	140,000	39,192	75,664	727,104	2,246,952	
Surplus/deficit (A -B)[9]	250,000	-12,000	-24,157	0	0	462,956	628,396	
Commercial import requirements [10]		12,000	24,157					
12th June 2007								

It should be noted that surplus does not imply household food security as it maybe compromised by individual purchasing power and intra-household distribution.

5.2.2 Food Basket

One of the indicators of the food situation in Zambia is the Food Basket, a survey designed to illustrate the prices for essential food and non food items that comprise the bare minimum basket of goods needed for an urban family of six to maintain a decent and healthy standard of living. (JCTR, 2005)

Figure 3. Food Basket and Basic Needs Basket - 2006



Source: CSO

On average the monthly food basket for the year 2006 was estimated at K 700,000 for essential foods and K 1,100,000 for non-food items. This means that a total of K 1,800,000 was spent on a monthly basis.

The above costs are too high for the majority of Zambians who earn less than the expected total expenditure per month. Some people, particularly the unemployed, can not participate effectively in the food market economy. This has direct effects on the nutritional status of the people.

Table 2 should be interpreted in the contexts of the points below:

Food aid import requirements 9

1. Stocks held by small-scale farmers in rural areas.

2. Production estimates from MACO/CSO. Cassava production is based on the total area under cassava, using an annual yield figure of 11.7 tonnes per hectare (MAFF Root and Tuber Improvement Programme, 1996). A flour extraction rate of 25% is used. Other tubers are sweet potatoes and Irish potatoes.

3. Staple foods are assumed to represent 70% (1,421 kCal/person/day) of total diet (2,030 kCal/person/day), converted to crop requirements for the national 2007/2008 population of 12.1 million people.

4. Locally purchased FRA stocks expected to be carried over into the next season. (This does not indicate total FRA purchases on the local market nor imports.)

5. Estimated requirements by major stock feed producers.

6. Estimated requirements by industrial breweries.

7. Estimated seed crop grown for seed companies.

8. Post harvest losses are estimated at 5% for grains and sweet potatoes in line with estimates from other SADC countries, and 2% for cassava.

9. Expected surpluses or deficits that arise after meeting minimum overall staple human consumption requirements as well as industrial requirements. Cassava and maize may be substituted for other crops and may result in different exportable volumes than the ones indicated in the table. The total is expressed as maize mealie meal equivalent using energy values. The rice deficit is based on what is known to be imported each year, as indicated under D. The wheat deficit is based on the estimated market size as indicated in B, less availability as indicated in A. The maize mealie meal equivalent and cassava flour surplus represents an overall surplus of staple foods. Cross-substitution may make this surplus partly available in the form of other crops.

10. Imports required to be made by the private sector to meet the commercial market demands. Total estimated requirement for food relief among vulnerable groups, to be imported. This could be met with maize or other grains.

CHAPTER 6. INTERVENTIONS TOWARDS IMPROVING THE NUTRITION SITUATION IN ZAMBIA AND THEIR STATUS

Description of the Multi-Sectoral Approach to Nutrition in Zambia

In Zambia various multi-sectoral approaches have been developed by various sectors to contribute towards the improvement of the health and nutrition state of the Zambian people. Government departments and NGOs are involved in the implementation of nutrition Programmes. Various partners provide assistance to different organizations running the nutrition activities in the country. The following are some of the Programmes currently contributing towards the improvement of the nutrition situation:

- ***Infant and young child feeding Programmes,*** meant to promote, protect and support, breastfeeding. The Programmes are designed to improve breastfeeding and complementary feeding.

- ***Micronutrient Programmes,*** designed to eliminate particular micronutrient deficiencies through supplementation and diet diversity, including food fortification Programmes.

- ***Agricultural and food emergency Programmes*** designed to help Zambians diversify their food production base and respond effectively to emergency situations.

- ***Public health measures*** designed to address other health problems known to have major effect on nutrition (malaria control and deworming Programmes).

- ***Nutrition Programmes for special populations*** designed to provide targeted assistance to especially needy populations.

6.1 INFANT AND YOUNG CHILD FEEDING PROGRAMME

The Infant and Young Child Feeding Programme (IYCF) focus in this document include exclusive breastfeeding, Infant feeding in the context of HIV and AIDS, complementary feeding, supplementary feeding and management of severe malnutrition. Zambia has adopted the WHO and UNICEF recommendation that all infants and young children be exclusively breastfed for the first six months of life and that complementary feeding introduced at six months with continued breastfeeding up to two years or beyond.

The 2006-2010 operational strategy to promote optimal infant feeding was developed in the context of the national food and nutrition policy through the Ministry of Health and Zambia's national long-term vision. It encourages community participation and focuses on breastfeeding, the promotion of timely and adequate complementary feeding in the general population and in the context of HIV and AIDS, feeding infants and young children in exceptionally difficult situations, monitoring the marketing of breast milk

substitutes, and maternity protection to protect the rights of the working mother. The IYCF operational strategy is an important step towards operationalizing key strategies for improving the feeding of infants and young children. The implementation of this strategy contributes towards the attainment of some of the Millennium Development Goals.

6.1.1 Promotion of exclusive breastfeeding and infant feeding in the context of HIV/AIDS.

	PROGRAMME: Promotion of Exclusive Breastfeeding		
Type	**Indicator**	**Value**	**Source/Year**
Provision	Number of health facilities (1st-3rd level) declared to be baby friendly	46	BFHI Report/ 1998
Provision	Proportion of health facilities providing infant and 3 young child feeding counseling in the context of HIV [3]	Data not available	NA
Coverage	Proportion of children less than six months of age who receive no foods or liquids other than breast milk	41%	DHS/2001-2002
Coverage	Proportion of post-natal mothers who receive counseling in infant and young child feeding available. [4]	Data not	N/A
Impact	Proportion of children zero to six months of age who had diarrhoea in the two weeks prior to a survey	9.9%	DHS/200 1-2002

Rationale for the intervention

The first food that a child should receive is breast milk. Breastfeeding provides all the energy and nutrients required by a newborn during the first six months of life. The World Health Organization recommends countries to promote exclusive breastfeeding for the first six months of life. After that, breast milk should be complemented by foods rich in energy and other nutrients. Breastfeeding should continue during the child's first two years of life or even longer as it is one of the safest and most nutritious foods available for infants and young children. Research has shown that about 13% of child deaths globally could be averted breastfeeding (Lancet, 2000). According to WHO, infants that are not breastfed are at a higher risk of suffering from diarrhoea, respiratory infection and malnutrition as compared to the breastfed infants.

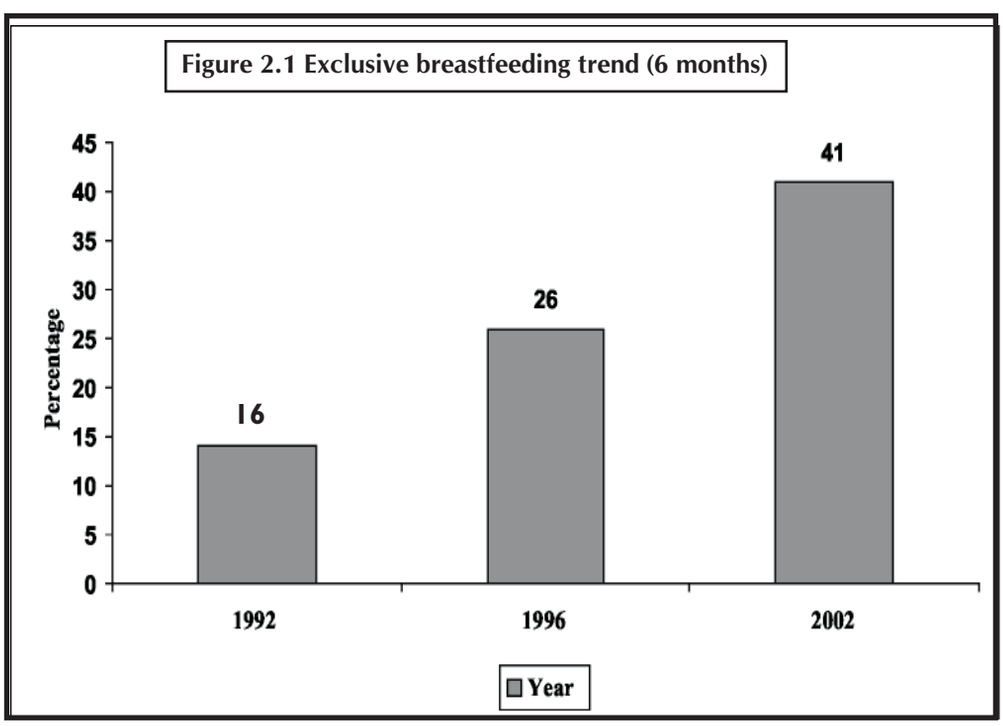
Description of the intervention

The Ministry of Health takes the lead in promoting breastfeeding. The objectives of the breastfeeding initiative are to promote, protect and support breastfeeding in order to improve child survival through improved nutrition. The infant and young child feeding operational strategy is viewed as a continuum of care, stressing the promotion of exclusive breastfeeding for the first six months of life, the introduction of appropriate complementary feeds at six months and continued breastfeeding up to two years and or beyond. Specific interventions include the Baby Friendly Hospital Initiative (BFHI) and the counselling of mothers in the benefits of breastfeeding.

[3] This indicator has been included in the revised HMIS under PMTCT and will be captured in the next report.

[4] This indicator has been included in the revised HMIS under PMTCT and will be captured in the next report.

Figure 4. Exclusive breastfeeding trends



Source: CSO

Comment

The target for exclusive breastfeeding for the first six month of life is 60% by 2010. Based on the Zambia Demographic Health Surveys of 1996 and 200 1/2 there has been an increase in the rates of exclusive breastfeeding from 26% to 41% respectively. Despite this increase, more than half the infants less than six months in the general population are still not being exclusively breastfed.

As a way of promoting exclusive breastfeeding, Zambia started implementing the Baby Friendly Hospital Initiative (BFHI) in the early 1990s. By 1997, forty six facilities were declared "Baby Friendly". As evidence mounted that breastfeeding is a mode of Mother To Child Transmission of HIV (MTCT), promoting breastfeeding had to be reconsidered. Recent literature shows that exclusive breastfeeding is effective at limiting transmission more than mixed feeding. Therefore, messages communicated to potential mothers have had to be refined presenting various feeding options for individual mothers with known HIV positive status. This on this based on whether the feeding option is acceptable, feasible, affordable, safe and sustainable (AFASS). It is important to note that infants who are on replacement feeding are at a higher risk of other infections such as diarrhoea and respiratory infections. This presents a delicate balance in light of increasing HIV free survival in infants and young children. Accordingly, Zambia is also re-vitalizing breastfeeding protection, promotion and support in the general population.

According to ZDHS 2001/2 the percentage infants that continued to breastfeed between ages twenty to twenty-three months was estimated at 82%. This figure is likely to decline as a result of the response by mothers to avoid mixed feeding. Historically, despite this high rate of prolonged breastfeeding, malnutrition in this age range is high. This suggests other factors maybe contributing to the problem.

6.1.2 Promotion of appropriate complementary feeding

PROGRAMME: Promotion of appropriate Comp lementary feeding			
Type	**Indicator**	**Value**	**Source/Year**
Provision	Frequency of times children are given complementary foods per day	2 - 5 times	ZDHS 2001/02
Coverage	Proportion of infants under six months given solid foods in addition to breast-milk	30%	ZDHS 2001/02
Coverage	Proportion of children six to nine months given solidfoods in addition to breast milk	87%	ZDHS 2001/02
Impact	Reduction of under-five mortality rate		

Rationale for the intervention

The period of introducing other foods in addition to breastfeeding is a vulnerable period for infants. It has been documented that between birth and twenty-two months of age, the percentage of children who are alive and not malnourished drops sharply from 90% to about 27%. While exclusive breastfeeding helps to limit introduction of potentially harmful bacteria, by six months complementary foods are necessary to ensure child's adequate nutrition, adequate growth and development. Up to 6% of all child deaths globally can be averted if appropriate complementary feeding recommendations are adhered to (Lancet, 2000).

Description of the intervention in Zambia

WHO/UNICEF feeding recommendations state that from the age of six months, infants should be fed on nutritious complementary foods in addition to breast milk. Appropriate complementary feeding is one component of the IYCF operational strategy. The Programme aims at promoting the introduction of timely, adequate and appropriate complementary feeds in order to contribute to the reduction of the infant and young child malnutrition. The Programme focuses on providing counselling to caregivers and mothers on recommended complementary feeding practices, and building capacity of service providers providing complementary feeding services at various points. The Programme also encourages the participation of mothers and caregivers in counselling and nutrition education.

Comments

The ZDHS of 2001/2 showed that an estimated of 87% of infants aged six to nine months are fed on solid foods in addition to breast milk. Despite this high proportion, the complementary food given to infants is often of limited variety. In addition, in most cases food is also given less frequently than the recommended two to five meals per day depending on the specific age (CSO 2002). Children who do not receive complementary feeds as recommended are at risk of malnutrition. Community initiatives that promote complementary feeding are being promoted.

6.1.3 Promotion of appropriate supplementary feeding of children

	PROGRAMME:		
Type	**Indicator**	**Value**	**Source/Year**
Provision	Proportion of targeted health workers trained in supplemental feeding	90%	FPMU Report 2002
Coverage	Proportion of districts with HEPS available all year	57%	WFP/Zambia country Programme,2002 - 06
Impact	Reduction of case fatality rate associated with Malnutrition	37%	MoH Selected performance indicators report

Rationale for the intervention

Supplementary feeding Programmes are one of the major areas in IYCF Programme which takes into consideration the nutritional needs of the children in exceptionally difficult situations.

Supplementary feeding is promoted to help mothers/caretakers with children who are malnourished to have a source of food that is rich in energy, protein and other nutrients. This preventive measure is designed to reduce the number of children at risk of becoming moderately or severely malnourished.

Description of the intervention in Zambia

Food supplements in the form of high-energy protein supplements (HEPS) and other ready-to-eat foods are distributed through health facilities by government services or partner NGOs. The main Programme areas include: a) identification of children between six and fifty-nine months who need supplementary foods; b) distribution of food supplements to children in need; c) identification of health facilities and or communities to provide the supplements and provision of the supplements to the health facility; and d)

monitoring the response of the children who are receiving the supplements.

Comments

The 2002 FPMU reports show that 90% of the targeted health workers were trained in supplementary feeding Programme management. However, the Programme targeted very few staff in the selected districts. Since 2002, no training has been conducted.

Among the districts that were targeted by the Programme, 57% reported that they had HEPS throughout the year in 2005. Data from the Standard Project Report of 2005 show that more children received supplements than originally targeted. The same Report also indicates that 39% of eligible children who received supplementary feeding recovered, according to criteria.

6.1.4 Management of severe malnutrition in children

	PROGRAMME		
Type	Indicator	Value	Source/Year
Provision	Number of hospitals following WHO treatment Guidelines	16	MoH report 2005
Provision	Number of health workers trained in treatment Guidelines	17	MoH report 2005
Coverage	Data not available	N/A	N/A
Impact	Severe malnutrition case -fatality rate	31%	MoH report 2005
Impact	Proportion of hospitals with case -fatality < 5%	0%	MoH report 2005

Rationale for the intervention

Severe malnutrition, and or the presence of nutritional oedema, is a life-threatening condition requiring urgent treatment. This intervention focuses on improving the management of severe malnutrition to reduce mortality. The Government has put emphasis on the management of severe malnutrition to reduce case fatality rates due to malnutrition from 30% to below 10% at facility level.

Description of the intervention in Zambia

The WHO has provided Guidelines on Management of Severe Malnutrition. This intervention is designed to improve management of severely malnourished children aged six to fifty-nine months, both in the community and at the health facility. The Programme focuses on identification of health facilities that are rehabilitating severely malnourished children; training of the health workers in severe

malnutrition case management protocols; and training of community service providers in the identification of severe malnutrition cases during community based growth monitoring and promotion and referrals. Currently, most hospitals in Zambia have a unit for severely malnourished children.

Comments

In 1996, sixteen hospitals were able to manage severe malnutrition using the WHO guidelines throughout the country; 71 health workers were trained in the management of severe malnutrition; and 1110 malnourished children were admitted for inpatient care. During the same year, the case fatality rate was at 31% (MoH, 2000).

Based on the indicators in the table, it is clear that many of the Zambian children who are severely malnourished die within 24 hours of admission. Several challenges exist in the management of severely malnourished children. The most important being insufficient trained manpower, lack of funds to purchase special therapeutic kits and feeds to sustain the intervention, and lastly limited number of health facilities managing severe malnutrition.

6.2 MICRONUTRIENT PROGRAMMES

In 1990 at the World Summit for Children in New York, world leaders committed to several nutritional goals. Among these were the elimination and control of micronutrient malnutrition by the year 2000, specifically:

- Virtual elimination of vitamin A deficiency
- Virtual elimination of iodine deficiency disorders
- A one-third reduction in iron deficiency anaemia among women

These goals were endorsed during the Ending Hidden Hunger conference in Montreal in 1991 and the International Conference on Nutrition in Rome in 1992. Zambia is implementing several micronutrient interventions.

6.2.1 Vitamin A supplementation

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Data not available	N/A	N/A
Coverage	Proportion of children 6 -59 months of age receiving capsules in most recent Child Health Week	80%	MoH tally sheets
Impact	Percentage improveme nt of serum retinol levels among under -five children	53%	VAD Impact Study, NFNC, 2003

Rationale for the intervention

Vitamin A supplementation has shown to reduce child mortality dramatically in clinical trials, and in countries with high under-five mortality and known vitamin A deficiency. Achieving high coverage in six to fifty-nine months old children is associated with mortality reduction of about 23%. Vitamin A supplementation may be one of the most powerful interventions to improve child survival. In addition, vitamin A treatment for measles, diarrhoea, xerophthalmia and malnutrition reduces mortality from these conditions.

Description of the intervention in Zambia

Vitamin A supplementation of children six to fifty-nine months of age is a goal of twice-yearly child health weeks (CHWk) in Zambia. This Programme aims to achieve 90% national coverage, with at least 80% of districts achieving 90% coverage. Activities of this Programme include: the procurement of the vitamin A capsule and timely distribution to the districts and clinics; working closely with low coverage districts to help them

overcome constraints; orientation of the districts prior to the child health week; and training of the health staff in child health week activities.

The vitamin A supplementation also aims to improve the coverage for postpartum women, and to increase the coverage of supplementation among children with xerophthalmia, measles, diarrhoea and malnutrition.

Comments

Vitamin A supplementation involves administration of vitamin A to eligible groups of the population, with a recommended coverage of 80%. Coverage below this threshold has a less significant impact. Zambia has met this benchmark for children in a number of districts, though with some fluctuation in some years.

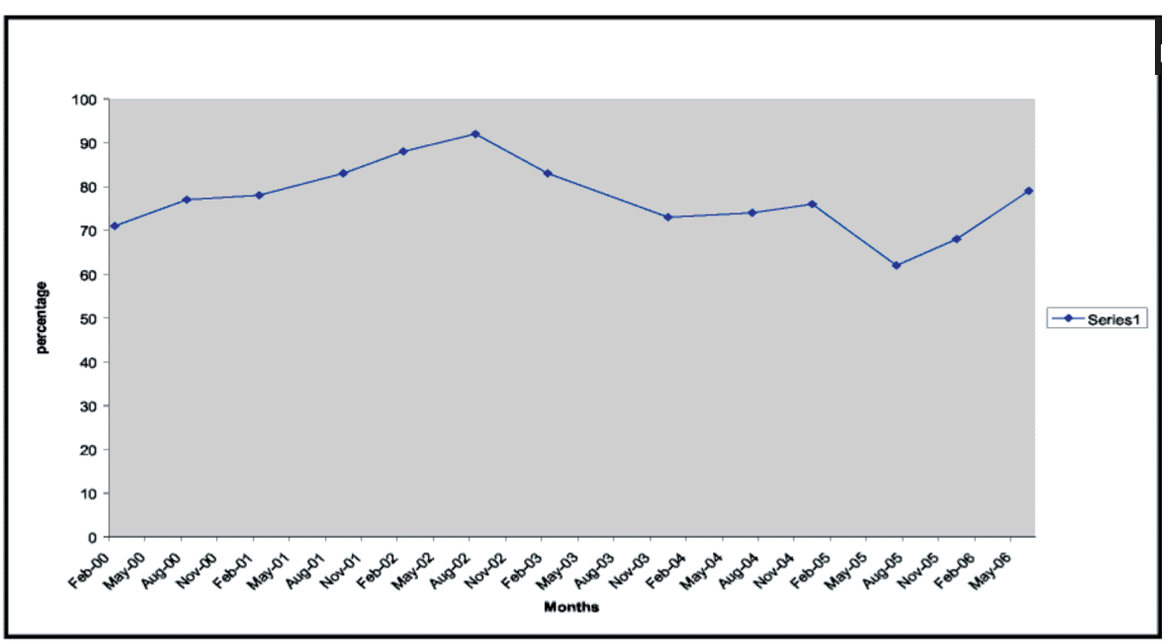


Figure 5. National Averages for Vitamin A Supplementation
National Average for Vitamin A Supplementation

Source: NFNC 2006

In order for the Vitamin A Supplementation Programme to continue being effective, a country needs to procure adequate stocks. Procurement and distribution data are incomplete, and in Zambia, twenty-six districts in 2006 reported to have run out of stock of vitamin A.

Problems associated with shortages of Vitamin A in health facilities include: a) late disbursement of district grants to finance the Programme; b) limited logistics such as transport; c) lack of trained human resources to oversee the implementation of the Programme; d) delays in transportation of logistics from central level to districts for implementation of the CHWk activities. Most

districts receive logistic support late hence starting the activities later than the planned dates.

6.2.2 Iron supplementation

	PROGRAMME		
Type	Indicator	Value	Source/Year
Provision	Proportion of pregnant women attending antenatal clinics reporting having been given iron supplements	72%	ZDHS 2001/02
Coverage	Proportion of pregnant women who took the recommended 90 day dose of iron supplements During their last pregnancy	29%	ZDHS 2001/02
Impact	Percentage reduction of neonates with low birth weight	10%	ZDHS 200 1/02

Rationale for the intervention

Zambia, like many countries has very high anaemia rates in children and pregnant/lactating women. Anaemia results from many causes, including low iron-rich food intake, malaria and worm infestation. It is known to have a negative impact on growth and development. Measures to reduce anaemia include ensuring adequate iron intake during vulnerable periods.

Description of the intervention in Zambia

The goal of the iron supplementation Programme is to reduce anaemia rates by improving the proportion of pregnant women receiving iron/folate supplements, and completing a 90 day course. This should contribute to a reduction in maternal mortality due to anaemia and in the percentage of neonates with low birth weight. Consideration has been given to supplementation of adolescent girls, in anticipation of their potential childbearing years.

Programme activities include: awareness creation on the importance of iron/folate during pregnancy; procurement and distribution of the iron/folate tablets to the districts and schools; ensuring that no stock-outs are experienced; and supplementing school-going children with iron tablets.

In Zambia malaria and other infections (including helminthes) contribute significantly to anaemia prevalence making iron supplementation less effective. The impact of iron supplementation on anaemia prevalence, in the presence of multiple factors is limited. Thus, additional Programmes directed at reducing the burden of infections are included in anaemia Programmes.

Iron supplementation is targeted at pregnant women attending antenatal clinics. Only 10% of pregnant women attending antenatal clinics should be found with Hb levels below 11 g/l if tested.

Comments

According to the ZDHS 2001/02, only 72% of pregnant women attending antenatal clinics reported having been given iron supplements. Of these, only 29% took a recommended dose of 90 iron supplements during their last pregnancy.

The poor results point to two main factors. Firstly the Programme has faced inadequate supplies of iron supplements in the drug kit. Secondly there has been low compliance to iron supplementation by pregnant women due to a number of factors. These include: unacceptable smell and taste of the iron supplement; fear of giving birth to a big baby; and negative side effects such as constipation, black stool, feeling dizzy and nausea after taking the supplements.

In order to improve the benefits of iron supplementation in the target groups, there is need to consider such initiatives as development of guidelines promoting provision of iron supplements to all pregnant women attending antenatal clinics. Since iron supplements are one of the listed essential drugs, therefore, all health facilities should be availed a constant supply. In addition, structures should be put in place to enable women easily come in contact with service providers.

6.2.3 Food fortification

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of food items fortified[5]		
Coverage	Proportion of households using adequately iodated salt	77%	ZDHS 2001/02
Coverage	Proportion of households using fortified sugar	66%	ZDHS 2001/02
Impact	Percentage improvement in serum retinol in among under-five children	53%	VAD Impact Study 2003
	Median urine iodine levels in school c hildren	245 umg/l	IDD Impact Survey, 2001 NFNC

Rationale for the intervention

Food fortification is the addition of micronutrients to processed foods. It increases levels of micronutrients in a product. Food fortification is one of the food-based approaches for the prevention of micronutrient malnutrition. It can be a very cost-effective method to ensure adequate intake of micronutrients.

Description of the intervention in Zambia

In Zambia, different types of food are fortified with various nutrients as needed. For example, salt is fortified with iodine and sugar is fortified with vitamin A. Plans are under way to fortify maize meal with a multimix of vitamins and minerals. In promoting this intervention, one of the activities is to assess the level of utilization of fortified foods by households and determine if samples of fortified foods meet the government standards.

Comments

a) s alt

According to the Zambia Revenue Authority (ZRA) data for the years' 2000 and 2001, 32,201,958 and 31,783,361 metric tons of salt were imported into Zambia respectively. Most of the imported salt is from Botswana and Namibia. Only 10% is locally produced.

The ZDHS 2001/2 reflects that 77% of the population is consuming adequately iodized salt. Iodine deficiency disorders are currently under control due to the universal salt iodation Programme. However, there is still need to continue monitoring the levels of salt iodation in order to ensure that salt consumption by the Zambian population is adequately iodated.

[5] The value and the source to be provided in the next report

A number of factors constrain the implementation of the Programme. These include lack of iodine testing kits and laboratory reagents to determine the adequacy of iodine levels in the salt entering the country as well as inconsistent monitoring of the Programme.

b) Sugar

Fortified sugar is produced by three companies namely Zambia Sugar, Kafue Estates and Kalungwishi Sugar . The proportion of the sugar that meets government fortification standards at production level is not known. The sugar fortification intervention has been successful as observed by government commitment to the partnership with the industry. According to the ZDHS 2001/2, 66% or two-thirds of the population was found to have fortified sugar.

6.3 AGRICULTURAL AND FOOD EMERGENCY PROGRAMMES

Agriculture and food emergence Programmes aim at improving food security through food diversity among households. This is possible through increasing support in field crop production, rearing of poultry or small livestock, cultivation of fruit and other key crops. Emergency Programmes include food distribution or production.

6.3.1 Promotion of palm oil production and consumption

PROGRAMME:			
Type	**Indicator**	**Value**	**Source/Year**
Provision	Number of seedlings provided	12,506	MACO report 2004
Coverage	Number of households receiving seedlings [6]	Data not available	N/A
Impact	Contribution towards reduction vitamin A deficiency	65%	Vitamin A impact survey, 2003

Rationale for the intervention

Palm oil is rich in both calories and vitamin A. For this reason, in countries with malnutrition and vitamin A deficiency, production and use of palm oil contributes to improved vitamin A and overall nutrition status.

Description of the intervention in Zambia

Palm oil production is one of the food-based approaches for providing vitamin A to the rural population of Zambia. Due to environmental conditions, oil palm production is localized in the valleys of Luapula province. Expanding production requires purchase and distribution of seedlings to the farmers in the target province. The Programme also provides for the training of the farmers in the management and the processing of the palm oil. There is need to conduct a study to ascertain the number of households consuming palm oil.

Palm oil production Programme started in early 1980s, but, the data is available on four districts for the 2004. A total of 3,006 seedlings were distributed in Kawambwa, 2,372 in Nchelenge, 3,125 in Chienge and 4,003 in Mwense for the 2005 planting season.

[6] The value and the source to be included in the next report

Comments

The information on provision of seedlings is not provided by number of households, which poses the challenge of measuring the proportion of households benefiting from the Programme. There has been no survey conducted to indicate households consuming locally produced palm oil in the Programme area.

6.3.2 Promotion of food processing, storage and utilization

	PROGRAMME:		
Type	Indicator	Value	Source/Year
Provision	Number of NGOs trained	37	MACO Programme reports
Provision	Number of group members trained	28,803	MACO Programme reports
Coverage	Number of provinces where training has taken place	4	MACO report 2005
Impact	Number of group members using the skills	Data not available	N/A

Rationale for the intervention

This Programme involves the processing of food in order to maintain its nutrient content. The aim of the Programme is to ensure maximum retention of the nutrients so as to provide the desired nutrient to the family consuming the processed foods. Substantial losses in both micronutrient and overall nutritional value occur with improper food processing and storage. Improper utilization of existing food may make certain groups, including young infants and pregnant/lactating women, more vulnerable to under nutrition.

Description of the intervention in Zambia

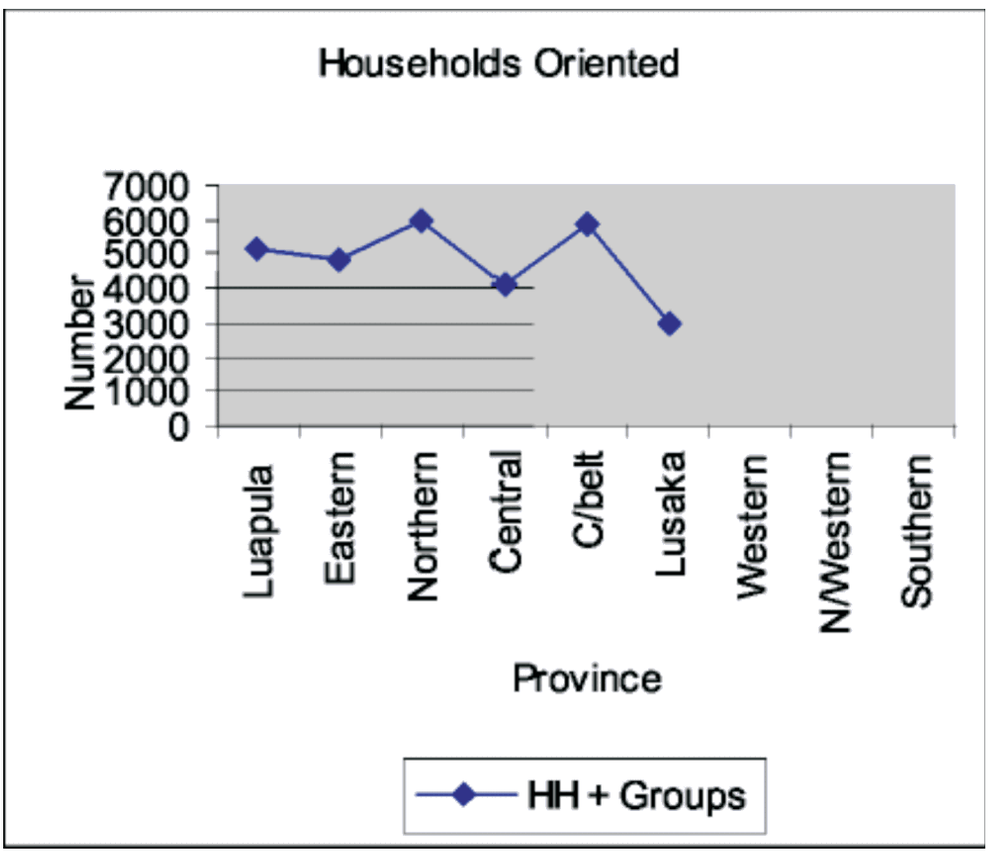
This Programme involves the orientation of the farmer groups and NGOs in different methods of processing, storage and utilization of various types of foods. Food processing, storage and utilization is another food based strategy to improve the food security situation in the country. It is primarily done through the department of Agriculture with the support of Programme Against Malnutrition (PAM). The Programme is active in all the provinces. It includes the training of the community groups and NGOs in food processing and storage and the adoption of the strategy by the households.

Comments

According to the report by PAM, NGOs were trained in food processing storage and utilization Provinces where group members were trained

include: Eastern Province (4,823); Lusaka (3009); Central Province (4072); Luapula (5105); Copperbelt (5853); and Northern Province (5941) members.

Figure 6. Households Oriented



While the training for the Programme had a wide coverage the actual households trained could not be determined. Trained group member were from households. The extent to which the trained members trained the communities is not well documented. The challenge is to help trained members to disseminate the information to the other community members so that the practice can be widely adopted.

Despite the geographic coverage being so good, there has been very poor monitoring of the adoption of the practices. So far only Northern Province reported to have 60% adoption of the improved processing techniques. This shows that there is need for good community monitoring indicators to capture the adoption rates of the practices being advocated for to improve the nutrition situation in the country. The Ministry of Agriculture and Cooperatives carried out some training of women's groups in Lusaka, Central and Copperbelt provinces. These were mostly in the use of solar driers. The data needs to come from the provinces.

6.3.3 Promotion of yellow-fleshed sweet potato

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of households benefiting from vines Quantity of vines distributed	Data not Available	N/A
Coverage	Proportion of households benef iting	Data not Available	N/A
Impact			

Rationale for the intervention

This Programme aims at improving the consumption of vitamin A rich foods through awareness creation and diversification of diet. Yellow-fleshed sweet potatoes contain higher levels of vitamin A than other varieties. They are widely acceptable to farmers and consumers.

Description of the intervention in Zambia

The Programme executed through the Ministries of Health and Agriculture. These Ministries have intensive educational campaigns to create public awareness on the importance of a diversified diet. Agriculture research has made efforts to improve varieties of sweet potatoes and other vitamin A rich foods. Currently, yellow-fleshed varieties are being promoted.

Comments

Yellow flesh sweet potato is common in North Western and some pockets of Central Province. Since Agricultural Research continues to multiply the planting materials and increase awareness about the nutritional importance of sweet potatoes.

6.3.4 Promotion of small livestock production

PROGRAMME:			
Type	**Indicator**	**Value**	**Source/Year**
Provision	Number of households trained in small live stock production (Disaggregated by type Number of households provided with small livestock per year	 1,239	MACO/2005 MACO Report on LOL
Coverage	Proportion of households producing small live stock Proportion of households stating participation in small livestock Programme	Data not available	N/A
Impact	Proportion of households stating consumption of small livestock	Data not available	N/A

Rationale for the intervention

The goal of this intervention is to improve the vitamin A and iron status of families through increased production and use of small livestock such as goats, pigs, eggs, chickens and fish. Consumption of eggs and meat increases vitamin A stores. It also provides an efficient mechanism to increase iron stores through consumption of heme iron.

Description of the intervention in Zambia

The small livestock Programme has been pioneered by the Ministry of Agriculture and Cooperatives through out the country. Activities include the provision of small livestock to farmers, training of the households in small livestock management, and encouraging families to eat small livestock. The Programme has been implemented through projects such as the Chibolya chicken project within Lusaka district; and in other provinces through out the country. Training is given to farmers before they start production to enable them apply good management. Other NGOs such as Plan in Chibombo with goats pass over project and World Vision in Western province dealing with goats and pigs pass over.

Comments

Access to data on small livestock is a challenge. The MACO central level depends on information on activities from districts. Due to inadequate professional staff, information is rarely made available and also not shared among project/Programme implementers.

6.3.5 Promotion of cassava production and utilization

	PROGRAMME		
Type	Indicator	Value	Source/Year
Provision	Number beneficiaries identified	33,000	MACO reports/05
	Number households receiving cassava cuttings	26,078	MACO reports/05
Coverage	Proportion of target group receiving cuttings	79%	MACO reports/05
Impact		Data not Available	N/A

Rationale for the intervention

Cassava is one of the staple food crops grown in many parts of the country, especially in Luapula, Northern and North/Western provinces. As a drought resistant crop, increased production can contribute to overall food security, particularly in areas with high malnutrition rates or susceptible to droughts. Cassava production is one of the strategies to improve the food security in the country.

Description of the intervention in Zambia

Cassava production is spearheaded by the Ministry of Agriculture, but a lot of organizations and NGOs are also involved in the Programme. Some of these organizations include PAM, the World Vision Catholic Relief Services (CRS), Agriculture Support Programme. The Programme involves giving farmers cassava cuttings every year in different parts of the country. The Programme also trains farmers on how to improve the production, processing and utilization of cassava.

Comments

Out of the number that was targeted to receive cassava cuttings in 2005, only 9,130 households received the cuttings from PAM. 33,000 beneficiaries were targeted for distribution in 2006. Only 26,078, about 79% of the target households received cassava cuttings. Some of the beneficiaries of cassava cuttings were also trained in cassava production, processing and utilization.

There is limited use of the crop in some areas such as Southern Province due to a number of factors such as limited opportunities for marketing cassava it being a non-traditional crop; and limited capacity building in processing and utilization and inadequate staffing levels at agricultural camp level. Inadequate government funding to support and sustain the Programme also limits the number of beneficiaries as was the case in the 2004/2005 season.

6.3.6 Fertiliser support Programme/Food Security Pack

	PROGRAMME:		
Type	Indicator	Value	Source/Year
Provision	Number of households receiving fertilizer (Food Security Pack)	33,000	PAM records
Provision	Number of metric tons of fertilizer distributed Number of households receiving fertilizer (Fertilizer Support) Number of metric tons of fertilizer distributed	30,000 102,000 81,600	PAM and CARE records MACO Records/2005
Coverage	Proportion of farmers who receive fertilizer of those who apply	Data not available	N/A
Impact	Average yield per hectare among recipients of Fertilizer	Data not available	N/A

Rationale for the intervention

Agriculture is still the key industry in Zambia as 60% of the population depends on the production of crops, livestock and fisheries for their livelihoods while 70% of the total workforce in Zambia depends on agriculture for employment. Crop production depends on fertilizer especially for commercial crops like maize. Adequate crop production is critical for adequate nutrition for much of the Zambian population.

Description of the intervention in Zambia

The government has been supporting crop production through subsidising the fertilizer to make it more affordable to the poor. The government distributes fertilizer through the Registered Primary Cooperatives and such NGOs as PAM and CARE International.

Comments

The number of metric tons of fertilizer distributed by PAM and CARE reduced to 30,000 from 720,000 tons in 2004/5 and 2003/4 seasons. The total metric tons distributed by government are not known (FAO). The national coverage for fertilizer support distributed by PAM in the year 2006 was 33,000 households.

There are a number of weaknesses in the implementation of the Programme. For instance, targeting fewer farmers than initially planned forces beneficiaries to split inputs, which lead to reduced yields. Furthermore delayed input delivery affects crop yields especially with the unpredictable rainfall patterns. The Programme supports only maize throughout the country irrespective of the agro-ecological zone at the same fertilizer application rate.

A number of factors threaten the smooth implementation of the Programme. Recurrent droughts and floods which push some beneficiaries back into the state of food insecurity; and outbreaks of larger grain borer drastically reduce the available maize stock. Furthermore, any change in government policy such as removal of fertilizer subsidy would negatively affect maize production and consequently the country's maize stock.

There is inadequate capacity building and follow up which is associated to inadequate staffing levels. In addition, the number of would be beneficiaries are reduced as they are no staff in the agricultural camps to reach them.

Opportunities for improving household food security include a conducive policy environment for diversified staple production and high private sector participation in research and development which encourages sustainability.

6.3.7 Crop diversification Programme

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of households receiving: Maize seed Beans seed Cow peas seed Tonnage of: Maize seed Beans seed Cow peas seed Number of metric tons of fertilizer distributed	 3,100 1,240 2,222 22 9.3 15.6 255	PAM report 2005.
Coverage	Proportion of farming households in Programme areas trained in crop diversification	Data not available	N/A
Impact	Proportion of households trained who are growing more than three crops	Data not available	N/A

Rationale for the intervention

Agriculture is still the key industry in Zambia. Farmers are being encouraged to use modern methods of farming including, among other things, the use of certified seed and fertilizers. Small scale agriculture is dependent on rainfall. In case of drought or excessive rainfall, crop failure is not uncommon. To minimize the risk of low yield, the Ministry of Agriculture and Cooperatives is promoting crop diversification.

Description of the intervention in Zambia

The government has been supporting crop diversification through targeting vulnerable but viable small scale farmers with small quantities of seed and fertilizer to grow a quarter of a hectare of each crop. Farmers receive 5 kg of seed of a cereal, 2.5 to 7 kg of a legume and cuttings of a root or tuber crop. Each farmer signs a contract where he/she agrees to pay back a certain amount of the harvest of the crops received. Among the crops there should be one which is drought tolerant, one early maturing and the total package should be balanced in terms of nutrients.

Comments

The Programme is led by the Ministry of Agriculture and Cooperatives; other players are PAM, and CARE. It has similar implementation weaknesses as implementation of the fertilizer support Programme.

6.3.8 Food aid for emergencies

PROGRAMME:			
Type	**Indicator**	**Value**	**Source/Year**
Provision	Number of vulnerable persons identified	1,232,661	VAC reports: 2005
	Number of kgs of cereal provided per person	46.5	VAC reports: 2005
Coverage	Number of eligible people fed. Number of eligible districts receiving food aid	 27 districts	 VAC reports: 2005
Impact	Number of hospital admissions for severe malnutrition in hospitals in affected districts	Data not available	N/A

Rationale for the intervention

This Programme was designed to provide food aid to the vulnerable households in districts that have been affected by disasters, such as floods and drought. The aim of the food in emergencies is to enable people to realize their right to food and ensure the nutritional well being of their families. If food is not provided there is increased risk to illnesses, malnutrition and even death.

Description of the intervention in Zambia

The main aim of the Programme is to improve the nutritional status of food insecure households. The most common disasters that lead to food emergencies in Zambia are floods, droughts, outbreaks of plant and animal pests and diseases. Wars in the neighboring countries contribute to the influx of refugees. The occurrence of such disasters result in low or no food production, reduction in income, disrupted food distribution systems and the collapse of markets. The lead ministry in Programme implementation is the Ministry of Community Development and Social Services. The overall Programme coordination is through the Disaster Management and Mitigation Unit (DMMU) with support from World Food Programme and other partners.

Comments

In 2005, there were 1,232,661 vulnerable persons identified to receive food assistance as a result of drought during the 20 04/5 agricultural seasons. The plan was to provide 96 kg of cereal to each person for the period of eight months instead of the 46.5 kg that was actually provided (VAC reports: 2005).

6.3.9 Food security pack

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of food security packs distributed per year per district.	9,130	MACO report 2004/05
Coverage	Proportion of vulnerable households who distributed excess seeds produced. Proportion of hectares available to vulnerable households that are planted (number of hectares planted / total hectares available).	Data not available	N/A
Impact	Proportion of children less than five years of age in participating districts who are underweight (<2 standard deviations below the standard).	Data not available	N/A

Rationale for the intervention

Some households are particularly vulnerable to changes in crop prices, production, and other factors affecting their food security. This Programme is designed to improve the food security of vulnerable households and thus reduce the risk of malnutrition. Vulnerable households include: child-headed, single-headed, households with chronically ill patients who are bread-winners and households living in disaster prone areas.

Description of the intervention in Zambia

The food security pack contributes to enhance household food security among the beneficiary households through the introduction of diversified range of crops including drought resistant crops such as cassava, cowpeas, sorghum and increased supply of the seed at community level.

The Food Security Pack Programme (FSP) is under the Ministry of Community Development and Social Services, but it is jointly coordinated by the Ministry of Agriculture and Cooperatives and Finance and National Planning. The Programme Against Malnutrition was contracted to implement the Programme.

The Programme was designed to empower vulnerable but viable farmers who had lost productive assets due to recurrent adverse weather conditions and the negative impact of the Structural Adjustment Programme (SAP). The SAP reduced the accessibility by small-scale farmers to inputs and services. The Programme is seen as a social safety net aimed at improving household food security of the vulnerable by providing them with means for economic growth to reduce poverty.

The Programme is comprised of the crop diversification, conservation farming, marketing entrepreneurship and seed/cereal bank development, alternative livelihoods management and coordination. It provides seed packs to the farmers, such as cereals (maize or millet or rice or sorghum), legumes (groundnuts, beans, cowpeas and soybeans) root and tubers (cassava or sweet potatoes). These are supported with fertilizers for the maize beneficiaries and lime for the beneficiaries in the area affected by soil acidity.

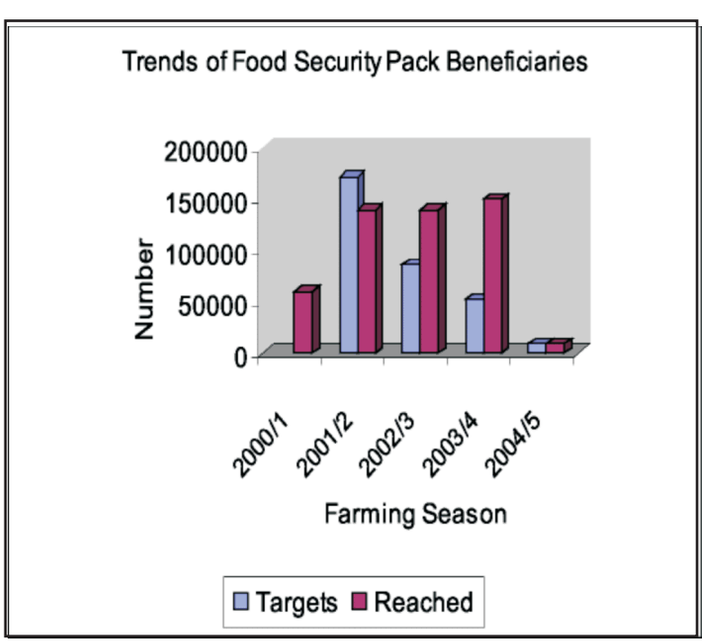
Comments

The food security pack Programme provides cereal, legume, tubers and fertilizer. The FSP originally targeted 200,000 beneficiary households per year in all the districts or 600,000 for six years. Total targets for all the provinces varied from one season to another (figure 8). Due to scarcity of funds the Programme has been scaled down over time.

So far the Programme has reached 219,000 beneficiary households country-wide. The coverage was as follows:

- 60 000 in 2000/200 1
- 140 000 in 200 1/2002 and 2002/2003
- 150 000 in 2003/2004
- 9000 in 2004/2005

Figure 8. Trends in Households Benefiting in Food Security Pack



Source: PAM 2005

Those who performed well were graduated from the Programme and the numbers are as follows:

- 5,042 in 200 1/2002
- 13,382 in 2002/2003
- 14,241 in 2003/2004

At the beneficiary household level average yields increased from less than 5 x 50 kg to 18 x 50 kg for the maize, 6 x 50 kg for the legumes and 42 x 50 kg for cassava or sweet potatoes.

The Programme has made significant contributions to the national food security achieved by the country in the last two seasons. In some districts the Programme accounted for more than 50% of the total agricultural production.

However, some factors limit the Programme in meeting its intended purpose. For example, inadequate funding by government limits the targeted number of beneficiary households who can be recruited on the Programme. Therefore, some vulnerable households continue to be food insecure.

6.4 PUBLIC HEALTH PROGRAMMES

6.4.1 Deworming of children 12-59 months, school children and pregnant women

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of deworming tablets distributed to districts per year Number of deworming tablets distributed to schools per year		
Coverage	Proportion of infants and young children aged 12-59 months dewormed during Child Health Week Number of schools participating in deworming Programme Number school children dewormed in participating schools Proportion of women attending antenatal clinic who are given deworming tablets	79% 201 155,933 (3Provinces)	CHWk report Dec 2005 SHN review report2006 SHN review report 2006
Impact	Reduction in disease burden/anaemia	Data not Available	N/A

Rationale for the intervention

Infection and helminth infection are known to increase anaemia rates contributing to overall child morbidity and mortality. This Programme is designed to reduce both the prevalence and worm burden among children and pregnant women.

Description of the intervention in Zambia

Deworming takes place during Child Health Weeks for infants and young children aged twelve to fifty-nine months of age. It is conducted in schools and country-wide through routine services for the Mother and Child at health facilities. The aim of the intervention is to increase the hemoglobin levels of school going children to above 10g/l.

The intervention includes the procurement and distribution of the deworming tablets to the districts; assisting the district and schools to ensure the constant supply of the tablets during the child health week; orienting the health and community service providers in the deworming protocols; deworming of children and pregnant women; and spearheading the implementation of school health and nutrition Programmes in schools.

Comments

During the Child Health Week conducted in December 2005, the proportion of infants and young children aged twelve to fifty-nine months dewormed was 79.1%.

The School Health and Nutrition Programme has succeeded in reaching 48,000 school children. This represents 5 8.2% of an average beneficiary coverage routine services and school coverage of 56.8% in 40 schools in Chadiza and Chipata districts in 2003. In 2005, 128,974 pupils were reached in 12 districts and 304 schools. In 2006, 155,933 school children were reached; 37,003 in central province, 59,245 in Lusaka province and 59,685 in Eastern province. It is clear from the figures that the original targeted coverage for the Programme has been attained.

This Programme has been well received. Parents have become involved and shown eagerness to have their children treated. The structures are in place providing easy access to the service for infants and young children as well as school children. The presence of a clear School Health and Nutrition policy provides the basis for sustaining the Programme.

6.4.2 Insecticide treated nets (ITN)

	PROGRAMME		
Type	Indicator	Value	Source/Year
Provision			
Coverage	Proportion of targeted children who slept under insecticide treated net	7%	ZDHS (2001/02)
	Proportion of pregnant women who slept under insecticide treated net	8%	ZDHS (200 1/02)
	Proportion of pregnant w omen at antenatal visit who are given presumptive treatment for malaria	3 5.8%	ZDHS (2001/02)
Impact	Proportionof pregnant women attending Antenatal Clinics with Hb levels below 11g/l	46.9%.	ZDHS (2001/02)

Rationale for the intervention

As with helminth infections, malaria contributes substantially to the prevalence and severity of anaemia among all ages. The relationship between iron metabolism and malaria is not clear. Recent studies have suggested that iron and/or folate supplementation of children in malaria areas may be detrimental. However, reduction in malaria prevalence will reduce anaemia, and is likely to improve iron status.

Description of the intervention in Zambia

Malaria is one of the top five causes of mortality in children under five years of age. With the government's vision of completely eradicating malaria, measures have been put in place. The use of insecticide treated nets (ITNs) is emphasised for children under five years and pregnant women. Pregnant women are also presumptively treated with Fansidar starting in the second trimester. Training is ongoing to ensure that, by the year 2008, cases are correctly diagnosed and promptly treated with coartem. Recently, an indoor residual spraying Programme has been initiated. The spraying Programme in combination with the ITNs, will reduce the transmission of the disease.

Bednet retreatment is one of the activities of the Child Health Week. The aim is to increase the number of nets retreated. Activities include: procurement of the retreatment kits yearly; distribution of the kits to the districts; and monitoring the availability of the kits to ensure no stock outs during Child Health Week.

According to the policy, 80% of the population should be sleeping under a net every night; 80% of pregnant women should receive intermittent presumptive treatment with Fansidar; and 80% of the eligible households in 15 selected districts should be sprayed against mosquitoes by the year 2008.

Comments

The ZDHS (2002) reported that only 7% of the targeted children and 8% pregnant women slept under insecticide treated nets the night before the survey. Of the pregnant women who attend antenatal clinics, only 35.8% are given presumptive treatment for malaria. The proportion of pregnant women attending antenatal clinics with Hb levels below 1 1g/l was 46.9%.

A number of factors make it conducive for the success of the Programme and include government policies which call for ensuring that all children less than five years of age and pregnant women sleep under an insecticide treated nets every night. Provision of presumptive treatment with Fansidar to all pregnant women starting in the second trimester is another. For the rural based population, supply of nets is free.

The Programme is threatened by the removal of Fansidar from the list of essential drugs, which may affect sustained supply. Another challenge is to introduce focused antenatal visits to assure that pregnant women are directly observed taking the presumptive treatment when they come for antenatal services. Other challenges are those associated with use of ITNs as they may not be used for the intended purpose. For example, in some fishing areas, insecticide treated nets maybe used for catching fish. Introduction of residual spraying against malaria has raised the fear of resistance.

6.4.3 Schistosomiasis treatment of school children

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of pupils in school receiving treatment	217,262	MoE 2006
	Number of children in community receiving treatment	18,727	MoE 2006
Coverage	Proportion of pupils in participating schools	54%	MoE 2006
Impact	Reduction in burden of infection and anaemia Increased awareness	Data not available	N/A

Rationale for the intervention

Schistosomiasis (bilharzia) is another infectious disease that contributes to the burden of anaemia. This public health measure contributes to the reduction of the burden of disease and reduces anaemia.

Description of the intervention in Zambia

This is one of the activities carried out during school health and nutrition Programmes. The aim is to treat 90% of school children in high-risk areas for schistosomiasis to reduce the related anaemia. Activities include the expansion of the Programmes to include all districts in the country, treatment of the children in the targeted schools; and monitoring of the Programme.

The goal of the Programme is to firstly, reduce the progression of morbidity of schistosomiasis and soil transmitted helminth infections in school-age children. Secondly, to reduce development of additional complications of advanced morbidity among adult populations using chemotherapy (with praziquantel and albendazole).

Comments

The bilharzia Programme started in 2000 with a baseline in Chongwe district in six basic schools where more than 700 children were randomly selected from Grades 1 7 to participate in the exercise. Preliminary results showed that at Nyangwena 62% and Chinyunyu 36% of the children were infected with bilharzias worms. Only children who were found to be infected at Chinyunyu Basic School were treated with praziquantel, but all the children at Nyangwena Basic School were treated, as the prevalence rate was higher than 50%.

In the pilot phase in the Eastern Province in Chipata and Chadiza districts, 500,000 individuals were treated (250,000 school children and a further 250,000 out of school individuals). During the course of Phase 3 in 2003, the Programmeme first expanded to Mambwe and Lundazi districts and later expanded to the rest of the districts in Eastern Province. By June 2005 a total of 201 schools from Eastern Province and 103 schools in Southern Province in Gwembe, Siavonga and Sinazongwe were participating in SHN interventions.

By August 2006, the available data indicated that the Ministry of Education Programme provided services to 217,262 pupils in school and 18,727 children in the community. About 1.5% of the community members in participating communities and 54.4% of pupils in participating schools were reached.

The high cost for the drugs limits the expansion of the Programme to other districts, while insufficient number of health personnel to monitor the drug administration might compromise the quality of the service.

6.5 NUTRITION PROGRAMMES FOR SPECIAL POPULATIONS

Although a community may be food secure, there are always some pockets of the population which remain food insecure such as the chronically ill, the aged and disabled. School children are also regarded as a special population in areas of high poverty as hunger affects their performance.

6.5.1 Food assistance to food insecure households with chronically ill persons

PROGRAMME			
Type	Indicator	Value	*Source/Year
Provision	Number of metric tons of supplementary food allocated to Programme	6,975	FPMU report 2005
	Number of metric tons of supplementary food allocated to Programme	1,193	WFP 2006
Coverage	Number of chronically ill people provided with supplementary food	67,408	FPMU report 2005
	Number of chronically ill people provided with supplementary food	120,703	WFP 2006
Impact	Reduction in disease case fatality rate	Data not available	N/A

**Country Programme for GRZ*

Rationale for the intervention

Households with chronically ill persons, particularly in food insecure areas are especially prone to malnutrition, poor adherence to prescribed drug regimens and eroding livelihood base The aim of food assistance is to ensure that livelihoods are maintained, nutrition well-being is upheld and adherence to drugs is maintained. This therefore increases quality of life.

Description of the intervention in Zambia

The Programme targets chronically ill individuals and their households in food insecure areas. The Ministry of Health through its health facilities leads the implementation of this Programme. It is supported by the World Food Programme and other partners. Transportation of food to the health centers is made possible by the Food Programme Management Unit in the Ministry of Community Development and Social Services (MCDSS). Eligible beneficiaries collect their food rations from health facilities.

Comments

The Programme was allocated 6,975 metric tons of supplementary food in 2005. The total number of 67,408 people was provided with supplementary food. The coverage was higher than the planned figure.

The Programme faces a number of challenges. The spill over effect of food to non-targeted individuals deprives the targeted persons of their benefits. The Programme has been constrained by the increasing number of vulnerable groups in need of food supplements. Inadequate food supplements also affect the ration size. In addition, the Programme component for the vulnerable is not integrated in the quarterly performance assessment package at provincial and district levels. This makes Programme monitoring expensive and unsustainable.

It is important to note that there are other partners/projects providing food assistance to households with chronically ill persons other than GRZ. However this being the first edition, there are plans to incorporate all existing Programme/ projects being undertaken by GRZ and NGOs.

6.5.2 Provision of food through production units

	PROGRAMME		
Type	Indicator	Value	Source/Year
Provision	Number of schools receiving production unit inputs	230	MoE report 2006
Coverage	Proportion of schools producing food from production units for at least two years Number of pupils benefiting from production unit Gardens	30%	MoE report 2006
Impact	Number of pupils with improved agricultural skills[7]	Data not available	N/A

Rationale for the intervention

Nutritional status is critical for adequate learning in schools, and children need to be aware not only of good nutrition habits, but of good agricultural practices. This Programme is designed to improve child nutrition through establishing food production in schools.

Description of the intervention in Zambia

The Programme for nutrition in special populations involves provision of food through production units at targeted schools for children between 7 to 20 years old. Production units are expected to produce food for the children to eat at break times to improve nutritional intakes.

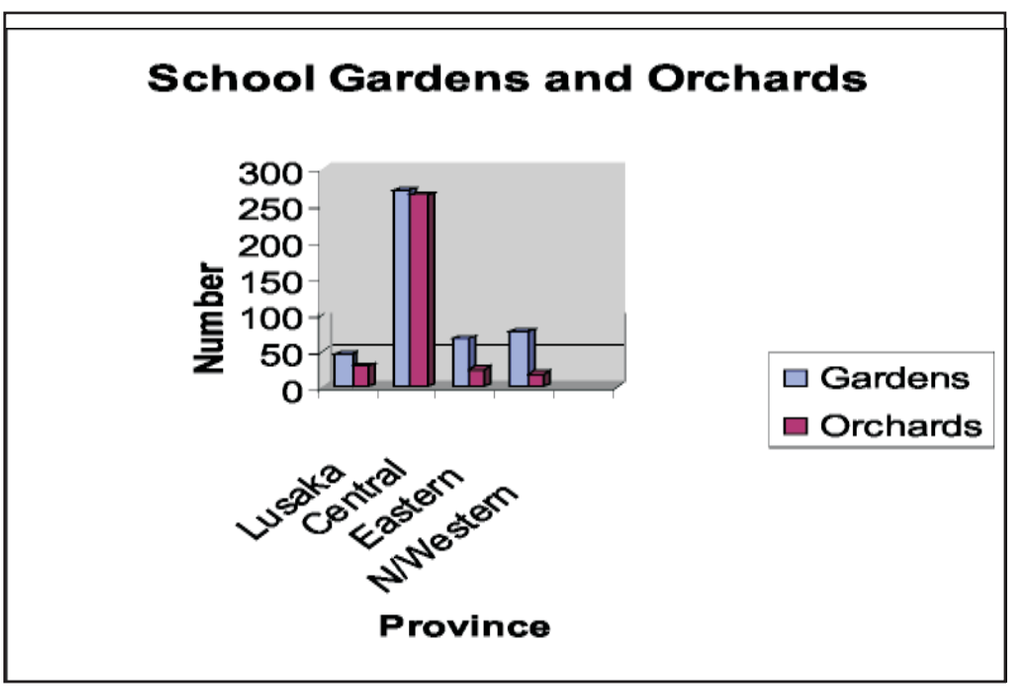
[7] That value and the source to be provided in the next report

Comments

Production units have been promoted since the inception of schools. The aim of production units is to provide skills especially in agriculture and to generate cash income for schools. The food produced is also used to feed school children in areas where children go to school hungry.

The promotion of production units takes place in Central, Lusaka, Eastern and North-western provinces (figure 9). The most common activities are gardening and orchards.

Figure 9. School Gardens and Orchards by Province.



According to MoE report, a total of 230 schools received production unit inputs in 2006. About 30% of schools produce food from production units for at least two years.

Despite some schools having successful gardens, others are constrained by lack of water, general poor management of orchards/gardens; destruction of crops/orchards by goats and cattle in rural areas; plants destroyed by termites or wild animals and drought; and fruits vandalized by some community members in some districts. Another emerging problem is that of land disputes between some schools and surrounding communities.

6.5.3 Supplementary feeding in schools

PROGRAMME			
Type	Indicator	Value	Source/Year
Provision	Number of metric tons distributed to targeted schools		MoE SHN report 2005
	Number of MoE targeted schools provided with supplementary foods	140	MoE SHN report 2005
Coverage	Number of districts provided with supplementary feeds	5 districts	MoE SHN report 2005
	Number of children fed in targeted schools	66,870	
Impact	Enrolment rate compared to 2003	19.5% increase	MoE SHN report 2005
	Attendance rate compared to 2003	22.1% increase	

Rationale for the intervention

Children suffer from communicable and nutritional problems due to insufficient food intake. Nutritional status is aggravated by unsafe water supply and poor sanitary conditions in some schools. This Programme is designed to reduce malnutrition through provision of supplemental food in selected schools.

Description of the intervention in Zambia

Supplementary feeding is provided in selected schools. The Programme provides a daily ration of fortified blended food to primary school children attending classes. The ration consists of 150 grams high-energy protein supplements (HEPS), 10 grams sugar and 10 grams vegetable oil per child. This provides a total dietary intake equivalent to 810 kilocalories and 21 grams of protein per pupil per day. This is in line with the recommended RDA for a supplement.

The Programme started in the three most drought-affected districts of Sinazongwe, Siavonga and Gwembe in the Southern Province. By the end of 2003 it had expanded to Livingstone in the southern province and Chadiza in Eastern province.

Expansion of school feeding will continue up to 2010.

In addition, the MoE is implementing school feeding in Lusaka, Eastern and Northwestern Province using high protein food supplements called Gorgis Protamin and ProVITA. The Programme is covering Mambwe, Nyimba, Luangwa, Lusaka, Zambezi and Chavuma.

Comments

A total of 140 MoE targeted schools were provided with supplementary foods in 2005. Of the targeted (70,000) school children, only 96% were provided with supplementary foods in the same year. This intervention contributed to increased attendance and enrolment rates by 22.1% and 19% respectively between 2003 and 2005.

Challenges faced by the Programme include fuel, particularly fire wood for meal preparation not easily found or is expensive and lack of Programme ownership has manifested in parents wanting to be paid to cook food.

General Comment

A number of indicators have no data. This will be provided in future reports as the system of data collection, report writing and synthesis get improved.

CHAPTER 7 CONCLUSIONS AND RECOMMENDATIONS

In response to the many causes of malnutrition, the government authorities, international agencies and non-governmental organizations throughout Zambia have initiated a broad range of interventions to reduce the devastating effects of malnutrition. Nonetheless, malnutrition remains one of the most challenging public health problems in Zambia. Although the range of interventions exist, lack of resources, both financial and human, to sustain Programmes remains a major obstacle to making headway in the struggle to eliminate malnutrition.

7.1 INFANT AND YOUNG CHILD FEEDING PROGRAMMES

In Zambia, as in most developing countries, the evidence shows that malnutrition should be addressed throughout the life cycle, starting with the woman of child-bearing age with special Programmes to help the woman meet her additional nutritional needs during pregnancy. The healthy mother is more likely to give birth to a healthy child who then should be exclusively breastfed, and, at the appropriate age, given high quality complementary foods. To strengthen ongoing Programmes:

1. Successful pilot Programmes should be scaled up
2. The management of advanced cases of malnutrition, particularly in infants and young children, should become a greater priority, and
3. Communities should become more involved in monitoring and promoting the nutritional status of their children.

7.2 MICRONUTRIENT DEFICIENCY CONTROL PROGRAMMES

Until such time as everyone in Zambia is able to purchase or produce adequate, high quality foods, special Programmes to address micronutrient deficiencies are needed. Even in affluent societies, owing to the fact that people do not always eat right, Programmes are often sustained to ensure adequate intake of key micronutrients. Supplementation Programmes, though expensive, are needed in Zambia. Such Programmes need to be targeted among needy groups. While food fortification would benefit a larger population, in the immediate future, there is need to encourage food-based solutions, including food fortification.

1. Universal vitamin A supplementation of children during child health weeks

2. Food fortification should be improved through better monitoring of fortified products and enforcement of violations of the law and/or failure to meet standards, and

3. Collaboration with neighboring countries to establish food fortification standards.

7.3 AGRICULTURAL AND FOOD EMERGENCY PROGRAMMES

Improvements in the availability of both home-grown and commercial food products are key elements in the long-term strategy to address malnutrition in Zambia. At one end of the spectrum, small-scale agricultural production is an important element of food security and income protection for many in rural areas. On the other end of the spectrum, improved agricultural productivity, processing, storage and distribution of nutritious foods are needed to enable the market place to play an increased role in supplying food across all income categories.

1. Several food-based initiatives should be scaled-up: the production of vitamin A rich palm oil and staple crop diversification through the promotion of cassava

2. A review of food processing techniques, especially in the area of storage to prevent loss, conducted in line with developing Programmes to eliminate losses in the production of fruits and vegetables as well as staple foods, and

3. Research into all aspects of food production and processing should be encouraged to improve production efficiency, storage, and to promote a more diversified diet among the Zambian population.

7.4 PUBLIC HEALTH INTERVENTIONS

Measures to prevent and/or treat common illnesses that have an adverse effect on nutrition play an important role in increasing the absorption and utilization of available foods, especially in young children, preserving their appetites for consuming adequate quantities of nutritious food. To improve and sustain current efforts to deliver public health interventions:

1. Plans should be developed and put in place to ensure continued funding for key Programmes such as deworming, bilharzia control and the treatment and prevention of malaria that are now largely donor supported, and

2. Policies and Programme designs should be reviewed and revised when necessary to emphasize nutritional aspects of other health Programmes; for example, during antenatal care.

7.5 NUTRITION PROGRAMMES FOR SPECIAL POPULATIONS

For the foreseeable future, Programmes for special populations will need to continue in Zambia. Ongoing Programmes often are not funded adequately to meet those in need. In some instances, the monitoring of Programme performance and coverage is expensive and inadequate. Actions to be taken include:

1. For Programmes addressing the needs of the chronically ill, monitoring data should be improved and integrated into other performance assessment tools

2. For Programmes designed to enhance food availability through local production, especially in schools, investments in sinking bore holes or other means to improve water supplies should be considered and partnerships formed with the larger community to encourage local production and protect gardens and orchards from vandalism, and

3. For supplementary feeding Programmes in schools, policies and regulations should be incorporated in school policy to improve the implementation of ongoing Programmes.

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