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FOOD AND NUTRITION TECHNICAL ASSISTANCE

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THE ANALYSIS OF THE NUTRITION SITUATION IN UGANDA

May 2010

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Acknowledgments

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Abbreviations and Acronyms

ACF	Accion Contre la Faim/Action Against Hunger
AHSPR	Annual Health Sector Performance Report
AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Infections
HIV	human immunodeficiency virus
BMI	Body Mass Index
CDPS	Child Days Plus Strategy
CED	Chronic Energy Deficiency
CRS	Catholic Relief Services
CHDC	Child Health and Development Centre
CMAM	Community-based Management of Acute Malnutrition
CMD	Community Medicine Distributors
DHO	District Health Office
FAO	Food and Agricultural Organisation
GAM	Global Acute Malnutrition
GoU	Government of Uganda
Hb	Haemoglobin
HSSP	Health Sector Strategic Plan
IDA	Iron deficiency anaemia
IDP	Internally Displaced Persons
IEC	Information Education and Communication
IFA	Iron/Folic Acid
IGBM	Interagency Group on Breastfeeding Monitoring
IMAM	Integrated Management of Acute Malnutrition
IPT	Intermittent Presumptive Treatment
ITNs	Insecticide Treated Nets
ITC	Inpatient Therapeutic Care
MDG	Millennium Development Goals
MMR	Maternal Mortality Ratio
NCHS	National Centre of Health Statistics
NECDP	Nutrition and Early Childhood Development of Health
NCD	Non communicable Diseases
MOH	Ministry of Health
NGO	Non-governmental Organisation
OTC	Outpatient Therapeutic Care
PEM	Protein Energy Malnutrition
SAM	Severe Acute Malnutrition
SOWC	State of the World's Children
TFC	Therapeutic Feeding Centre
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UFNS	Uganda Food and Nutrition Strategy
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
U5MR	Under five mortality rate
VAD	Vitamin A deficiency
VAS	Vitamin A Supplementation
WFP	World Food Programme
WHO	World Health Organisation
VAM	Vulnerability Assessment Mapping

Executive Summary

Adequate nutrition is an essential prerequisite for maintaining health status. The critical role nutrition plays in health and development warrants greater commitment to and investment in nutrition in Uganda. Moreover, such an investment is a necessary prerequisite for further progress on the Millennium Development Goals (MDGs), particularly the hunger and health MDGs. The overall goal of this Nutrition Situation Analysis is to raise awareness and political interest in addressing malnutrition in Uganda and to focus attention on and advocate for greater resources to be committed to addressing this serious problem. This report provides an analysis of the magnitude, consequences and causes of maternal and child malnutrition in Uganda and underscores the need to harness existing opportunities for improved development outcomes through increased investment in nutrition.

While at the national level Uganda currently produces sufficient food to meet the needs of its rapidly growing population, the proportion of Ugandans unable to access adequate calories increased from 59 percent in 1999 to 69 percent in 2006. The persistent high rates of malnutrition in Uganda also attest to this reality: 38 percent of children under 5 suffer from chronic malnutrition (stunting), 16 percent from underweight and 6 percent from acute malnutrition.

Uganda has ratified a range of international covenants and committed itself to ending hunger and malnutrition. Moreover, the 1995 Constitution of the Republic of Uganda pledged to ensure food and nutrition security for all Ugandans[1] and the Uganda Food and Nutrition Policy (UFNP), adopted in 2003, expressly recognises the human right to adequate food for all. As a signatory of the Millennium Declaration 2000, Uganda has agreed to achieve the eight MDGs by 2015. There has been mixed progress to date in achieving targets for MDGs 1, 4, 5 and 6, which directly relate to and depend upon improvements in women's and children's nutrition.[4] MDG 1 aims to halve both the proportion of people living on less than $1 a day and the proportion of people suffering from hunger as measured by the prevalence of underweight children and access to the minimum recommended calories per day. Uganda has almost reached the first target of reducing poverty, which fell from 56 percent in 1992 to 31 percent in 2006.[102] The rate of change in poverty over this period was -1.8 percentage points per year, and at this rate, Uganda is likely to meet the income-poverty target of less than 10 percent by 2015.[102] In sharp contrast, the prevalence of underweight in children under 5 decreased only slightly between 1995 and 2006, from 27 percent to 20 percent. Over the past 10 years, the rate of change in the prevalence of underweight has been less than -0.7 percentage point per year, and at this rate, it is unlikely that Uganda will meet the MDG target to halve hunger and malnutrition by 2015.

Uganda's most common malnutrition problems are high rates of chronic malnutrition and micronutrient deficiencies, especially of Vitamin A and iron. Malnutrition in all its forms remains largely a "hidden problem" since a majority of children affected are moderately malnourished and identifying malnutrition in these children without regular assessments is difficult. Increasingly Uganda is experiencing the double burden of malnutrition: High levels of undernutrition co-exist with a growing prevalence of overweight and obesity. Malnutrition plays a major role in child morbidity and mortality: Wasting and underweight have been shown to significantly increase the risk of both morbidity and mortality in children. Deficiencies of micronutrients such as vitamin A and iron also carry an increased risk of morbidity and mortality in children. Vitamin A deficiency is associated with an increased risk of mortality from measles and severe diarrhoeal diseases.[9] Iron deficiency also carries significant adverse consequences for child development both in the short and long term.[10,11]

Malnutrition starts early in infancy for children in Uganda. By extrapolation, at birth, about 11 percent of children are already stunted and about 16 percent are wasted. The substantial proportion of children born with low birth weight suggests that high fertility rates, short birth intervals, young maternal age and maternal malnutrition are likely factors that contribute significantly and adversely to child malnutrition from birth. The prevalence of wasting and underweight peaks when children are 9-13 months, and wasting

[1] The Objective pledges that "the State shall (a) take appropriate steps to encourage people to grow and store adequate food; (b) establish national food reserves; and (c) encourage and promote proper nutrition through mass education and other appropriate means in order to build a healthy State."

rates rise steeply among infants from as young as four months, suggesting that infection rates are likely high and might be attributable to poor feeding practices where liquids other than breast milk might be introduced early, increasing the risk of infection. The prevalence of stunting increases from seven months and peaks at 26 months, reflecting continuous nutritional deprivation of children from an early age.

The prevalence of stunting is highest in Northern and Southwest Uganda. The rate of decline since 2001 is the fastest in the Western region and slowest in the Northern and Eastern regions. The prevalence of underweight is highest in the East Central, Northern and Southwest regions, and the rate of decline is slower than the rate of change for stunting. Wasting is rising in all regions, with the smallest increase in the Central region. In women, chronic energy deficiency was 12 percent in the 2006 Uganda Demographic and Health Survey (UDHS) survey and has been rising across all regions.[8] Overweight and obesity in women has also been rising, but most rapidly in urban, Western and Central regions. Micronutrient malnutrition also remains widely prevalent, specifically deficiencies in vitamin A and iodine, and iron-deficiency anaemia (IDA). Vitamin A deficiency (VAD) affects 20 percent of women and children, and IDA affects 73 percent of preschool children and 49 percent of women of childbearing age.

The immediate causes of malnutrition for children in Uganda continue to be the high disease burden resulting from malaria, diarrhoeal disease and acute respiratory infections, as well as inadequate dietary intake resulting from suboptimal infant feeding practices. While breastfeeding is nearly universal, exclusive breastfeeding tapers off rapidly and by six months, only 11 percent of infants are exclusively breastfed. In addition, late initiation of breastfeeding (86 percent) and the use of prelacteal feeds (54 percent) are common. Early introduction of foods and liquids and inappropriate complementary feeding are also widespread. Adequate feeding practices are used with only 28 percent of children under 2, when considering continued breastfeeding, adequate frequency of feeding and diet diversity, three key indicators of adequate complementary feeding. Infant and young child feeding (IYCF) practices are suboptimal, and while social and behaviour change communication (SBCC) is one response to address this, SBCC alone will be inadequate to improve feeding practices. Poverty and food insecurity at the household level play a significant role, but women's lack of control over their time, their competing household and reproductive roles, and their lack of control over their fertility together undermine their IYCF capabilities. SBCC efforts must engage men as partners in change.

The underlying causes of malnutrition in Uganda are inadequate water and sanitation safety and access, inadequate health infrastructure and access to health care, and food insecurity. Although access to health services has improved in the past decade, the quality of those services has remained questionable. Sanitation and hygiene have worsened in marginalised areas. Food insecurity varies regionally. The Northern region suffers from the highest levels of food insecurity, followed by parts of East and East Central regions and parts of Southwest Uganda. Common causes of food insecurity across Uganda are the lack of diversification in livelihoods, dependence on agriculture and wage labour, declining wages and rising food prices. While poverty has declined across Uganda from 56 percent in 1992 to 31 percent in 2006, improvements in the prevalence of poverty are largely attributable to economic growth rather than income distribution and welfare improvement. In fact, income inequality between the wealthy and the poor has steadily risen.

Gender inequality is significantly intertwined with poverty and food insecurity in Uganda and has been identified as a primary reason for the persistent poverty. Poverty is more gendered now because income inequality is rising and women fundamentally lack access to resources such as land and capital. Gender inequality also exacerbates food insecurity for women and children. While 80 percent of women contribute labour for food production, they own less than 8 percent of the land on which to farm. Men earn significantly more than women and spend more of their income on non-food items, while women are left to close the food security gap. Women are the primary caregivers in families but have the least decision-making power; as a result, they lack control over their fertility, reproductive health and time. In Uganda, women's lack of time and high fertility rates are two critical factors that undermine health and nutrition outcomes in their children. Uganda's high rates of domestic violence and adolescent pregnancies attest to the fact that gender inequality is deep rooted. Taking these factors together, gender inequality substantially undermines women's capabilities in achieving and ensuring food security for their families.

In summary, this Analysis of the Nutrition Situation in Uganda finds that:

- Nutrition indicators are generally improving, but the rate of change is too slow.
- The double burden of malnutrition—where undernutrition coexists with overnutrition--is increasing.
- SBCC is not enough to improve caregivers' nutrition practices.
- Increasing adolescent pregnancies and large family sizes are undermining food security and nutrition.
- Changing gender roles are affecting food security and nutrition.
- Poor health infrastructure is undermining nutrition outcomes.
- Food insecurity is increasing.
- Income and wealth disparities are increasing.

This situation analysis recommends approaches to improving the design and delivery of nutrition services to prevent, reduce and control malnutrition at the policy, leadership and programmatic levels, as well as to promote coordination and resource mobilisation.

Policy and Leadership Level

- The Ministry of Health (MOH) should develop and share with partners the nutrition-related targets set by the government. If possible, the targets should be disaggregated by regions and specify the kind of interventions required to prevent and control malnutrition in these areas. For example, the MOH should work with partners to define the number of target children that must be screened for malnutrition or must receive vitamin A capsules in each region—and each district, if possible.

- This analysis has indicated that the levels of malnutrition and rate of change are different across the regions. The specific underlying causes of malnutrition are also different. The MOH should map (or facilitate mapping) all nutrition activities in the country, specifying the different NGOs and bilateral agencies working in different regions, the type and scale of nutrition interventions, funding sources and the programmes' expected duration. The mapping exercise should identify areas with high malnutrition levels that are not receiving adequate support.

- The MOH should review guidelines that no longer align with international standards, e.g. the iodine legislation and the anaemia guidelines.

- The structure of nutrition human resources at regional/district levels need to be defined. This would include reviewing the job descriptions so that the staff are not just based in the hospital but can conduct and oversee promotive and preventive nutrition activities in the communities.

- Pre-service learning on nutrition should include practical subjects that are also based on the services provided, e.g., integrated management of severe malnutrition, integration of nutrition in HIV/AIDS services, nutrition in emergencies and infant and young child nutrition. Courses should be based on government guidelines and performance improvement materials. Priority areas of operational research to address operational challenges in implementing nutrition services should be identified.

Programmatic Level

- Programmes that aim to improve malnutrition should focus on improving IYCF practices and hygiene and sanitation practices, and reducing disease burden. They should include practical ways to improve diet diversity and increase the energy and nutrient density of local diets. Both food-based approaches and micronutrient-specific interventions will be needed. The scope of such programming must seek to integrate nutrition, gender and livelihood activities, targeting groups like men, adolescents and overweight groups (or groups vulnerable to overweight).

- Programmes should shift from a mother-focused paradigm to family-focused programming and involve men and other household members. Messages and dialogue should include what men

and family members can do to help mothers implement recommended infant and young child feeding, sanitation and hygiene and health-seeking behaviours. While these messages and dialogue would target households, parallel efforts are also needed at the community level. For instance, community-based forums could facilitate dialogue on issues like alcoholism, teenage pregnancies, women's time and workload, gender-based violence and polygamy and how they affect child care and nutrition. It will also be important to harness the potential of local government to take actions, like setting the necessary by-laws, to support nutrition activities and prevent malnutrition.

- In the past, community-based nutrition activities have been implemented in few sub-counties, but coverage is limited. Nutrition programmes should be designed to cover larger areas and emphasise approaches that achieve wide coverage. This might involve finding new entry points and channels for delivering the services.

Resource Mobilisation

- The MOH Nutrition Unit should develop an advocacy plan to raise the profile of nutrition among senior MOH management team, parliamentarians, academicians, the private sector, the media and the donor community. The advocacy should aim to mobilise and raise additional resources for nutrition programming in Uganda.

- The government should show its commitment by finalising its plans to elevate the Nutrition Unit into a Division of Nutrition and increase resources for nutrition programming, especially resources for nutrition supplies (like vitamin A, iron/folate supplements and zinc supplements; therapeutic foods; weight scales; child health cards) and recruitment to fill all approved nutrition positions. District or local governments should also be encouraged to invest in nutrition as part of their annual plans.

- The government should identify new ways to raise resources for nutrition, e.g., from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), the World Bank and the private sector.

Coordination

- While there is a coordination mechanism at the national level, such a mechanism is needed at the regional/district level. The MOH/Nutrition Unit should facilitate the establishment of regional nutrition stakeholder meetings, especially in the North, East Central and Southwest, which have the highest malnutrition levels.

- Each nutrition partner develops its annual plan independently, and the MOH does not share its plans with them. In addition, there is no mechanism to review performance. The MOH should develop one plan that partners buy into or contribute to and should incorporate a performance review mechanism.

- The coordination and planning mechanisms at different levels should be as multisectoral as possible. Key sectors should include agriculture/food security, gender and education, academia and the private sector.

Chapter 1. Introduction

1.1 BACKGROUND

Adequate nutrition is an essential prerequisite for maintaining health status. The critical role nutrition plays in health and development warrants greater commitment and investment in nutrition. Uganda has ratified a range of international covenants and committed itself to ending hunger and malnutrition. Building on these commitments, the 1995 Constitution of the Republic of Uganda pledged to ensure food and nutrition security for all Ugandans[2] and the Uganda Food and Nutrition Policy (UFNP), adopted in 2003, expressly recognises the human right to adequate food for all. Efforts are also under way to adopt a National Food and Nutrition Strategy and a Food and Nutrition Act within the framework of the National Development Plan.

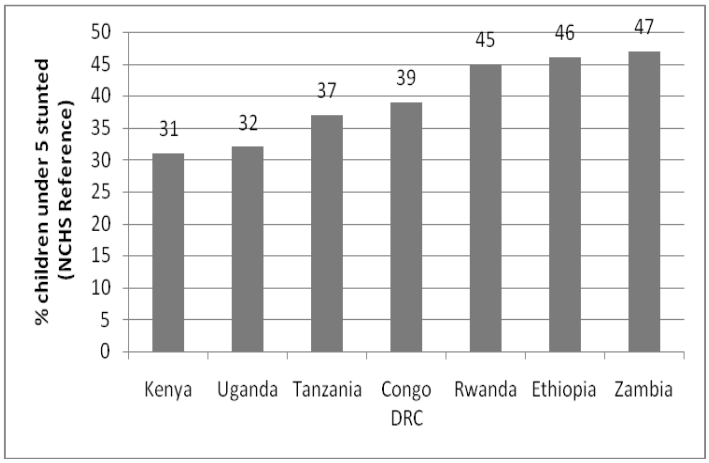
Uganda, a signatory of the Millennium Declaration 2000, has agreed to achieve the eight Millennium Development Goals (MDGs) by 2015. There has been mixed progress to date in achieving targets for MDGs 1, 4, 5 and 6, which directly relate to and depend upon improvements in women's and children's nutrition.[4] MDG 1 aims to halve both the proportion of people living on less than US$1 a day and the proportion of people suffering from hunger as measured by the prevalence of underweight children and access to the minimum recommended calories per day. Uganda has almost reached the first target of reducing poverty, which fell from 56 percent in 1992 to 31 percent in 2006.[102] At that rate of change (-1.8 percentage points per year), Uganda is likely to meet the income-poverty target of less than 10 percent by 2015.[102]

On the other hand, although Uganda currently produces sufficient food to meet the needs of its growing population at the national level, the absolute number of Ugandans unable to access recommended calories has increased in all regions because of the uneven distribution of food, access constraints related to seasonality factors, poverty, inequality in wealth and diseases. Nationally, the proportion of the population unable to access adequate calories decreased from 23 percent in 1997 to 15 percent in 2006.[137] However, the persistent high rates of malnutrition in children under 5 are symptomatic of the larger problems of inadequate access to food, suboptimal infant feeding practices and poor health, sanitation and hygiene practices by many within the country: 38 percent suffer from chronic malnutrition (stunting), 16 percent are underweight and 6 percent suffer from acute malnutrition.[8]

Still, Uganda's nutrition situation is better than many other countries in eastern and southern Africa (**Figure 1)**. In sharp contrast to the reduction in poverty, the prevalence of underweight in children under 5 decreased only slightly between 1995 and 2006, from 27 to 20 percent.[116] At this rate of change (-0.7 percentage points per year), Uganda will not meet the MDG target to halve hunger and malnutrition by 2015. While the trajectory in the reduction of underweight over this 11-year period might not be entirely linear, the difference between the rate of change in poverty and the rate of change in chronic malnutrition is consistent with analyses showing that a reduction in poverty does not directly translate into a reduction in malnutrition.[7] Other investments are needed to reduce the prevalence of malnutrition.

[2] The Objective pledges that "the State shall (a) take appropriate steps to encourage people to grow and store adequate food; (b) establish national food reserves; and (c) encourage and promote proper nutrition through mass education and other appropriate means in order to build a healthy State."

Figure 1. Stunting Rates in Selected Countries in East Central and Southern Africa (Using NCHS References) [126-132]



A transition is under way in Uganda, characterised by the increasing presence of overweight and obesity among adults. In Southwest Uganda in particular, some households face the double burden of malnutrition, where overnutrition exists with undernutrition. And as noted in literature, increasing prevalence of overweight and obesity increases the risk of chronic diseases like diabetes and non-communicable diseases.

1.2 CONSEQUENCES OF MALNUTRITION IN UGANDA

Progress in achieving the MDGs depends on progress in reducing malnutrition and hunger in Uganda. Stunting, underweight, wasting and micronutrient deficiencies increase the risk of both morbidity and mortality in children. Vitamin A deficiency is associated with an increased risk of mortality from measles and severe diarrhoeal diseases.[9] Iron deficiency, in addition to increasing the risk of child morbidity and mortality, carries significant adverse consequences for child development both in the short and long term.[10,11]

The Uganda Child Survival Strategy estimated that malnutrition directly and indirectly contributes to up to 60 percent of child mortality, making malnutrition one of the most significant contributors to childhood mortality in the country.[12] Estimated projections suggest that over 520,000 children will die as a consequence of underweight alone between 2006 and 2015 if the status quo is maintained. Vitamin A deficiency will cause an additional 160,000 child deaths. Reducing malnutrition in Uganda is critical to save children's lives and achieve MDG 4.[13]

Addressing maternal anaemia will also contribute significantly toward improving maternal health and reducing maternal mortality. Approximately 24 percent of maternal mortality is associated with iron deficiency, and estimated projections suggest that the current levels of anaemia among women of reproductive age will result in the deaths of 15,000 mothers between 2006 and 2015 [13].

In addition to contributing to maternal and child morbidity and mortality, malnutrition also carries significant adverse consequences for income poverty. Several studies have estimated that a 1 percent reduction in stunting is associated with a 1.4 percent increase in wages [1]. Malnutrition hurts development in terms of education and productivity. Stunting and micronutrient malnutrition impede cognitive development in children, undermining school performance and long-term human productivity. It is estimated that a 1 percent loss in height is associated with a 1.4 percent loss in productivity in adults.[1] Malnutrition impairs productivity directly through poor physical status and indirectly through poor cognitive development that affects educational outcomes. Stunting and micronutrient malnutrition carry adverse short- and long-term consequences for cognitive development in children. Stunting in early childhood predicts lower cognitive function and educational performance in the long term. Similarly, deficiencies in

certain micronutrients, such as iodine, carry significant risks of disability and mental retardation in unborn children, and the damage is irreversible. Reducing malnutrition helps reduce poverty not only through the population's improved productivity and ability to compete, but also through savings to government and families in treating illnesses like diarrhoea and respiratory infections that are attributable to malnutrition.

Among adults, obesity increases the risk for many chronic conditions including diabetes mellitus, hypertension, dyslipidaemia, coronary heart disease and some cancers. It also increases the risk of death from coronary heart disease and diabetes mellitus.

1.3 OBJECTIVE OF THE SITUATION ANALYSIS

Nutrition is central to Uganda's larger development agenda and a prerequisite for further progress on the hunger and health MDGs. The primary goal of this situation analysis is to raise awareness of malnutrition in Uganda and to advocate for greater resources to be committed to addressing this serious problem. This report provides an analysis of the magnitude, causes and consequences of maternal and child malnutrition in Uganda and underscores the need to harness existing opportunities for improved development outcomes through increased investment in nutrition. The latter part of this report also provides an overview of the current interventions to reduce malnutrition and the national, regional and district resources available to support nutrition activities. It highlights the gaps and challenges that prevail in addressing malnutrition in the country as well as the opportunities that have been overlooked. This document seeks to inform and guide programme planning and the development of, among others, the Health Sector Strategic Plan III, the Uganda National Development Plan, Uganda's National Nutrition Operational Plan and National Nutrition Communication Strategy, as well as the development of a scalable model for community nutrition interventions to improve the nutritional status of women and children.

1.4 METHODS USED

The information used in this report was collected through:

- A desk review of key documents and meeting presentations
- Key-informant interviews with respondents from six districts stakeholder meetings in Kampala
- Input from reviews of the document by various stakeholders in Uganda and internationally

The report focused predominantly on data from the period since 1995. The report synthesizes available documented information with data from various sources, including the knowledge and experience of governmental and nongovernmental sources. Different sources were used to triangulate available information and identify common themes.

Chapter 2. Uganda at a Glance

2.1 GEOGRAPHIC AND DEMOGRAPHIC BACKGROUND

Uganda is a land-locked country in East Africa, bordered by Kenya to the east, Rwanda and Tanzania to the south, the Democratic Republic of Congo to the west and Sudan to the north (**Figure 2**). **Table 1** presents basic indicators for Uganda. Uganda's total population is estimated at 30.7 million,[14] up from 9.8 million in 1970 and 20.4 million in 1997. Uganda has over 13 major ethnic groups that speak over 30 languages. The annual population growth rate is 3.3 percent and the total fertility rate is an estimated 6.7 children per woman, among the highest in the world.[15] Eighty-five percent of the population is rural; only 15 percent of the population (3.8 million people) lives in urban settings. Urban population has been growing at 4.4 percent per year.[16] More than half of the population (56 percent) is under 18 years old, and almost 20 percent is under 5 years old.[17] Rapid population growth and the large proportion of dependent children pose major challenges to Uganda's social sector, particularly education and health services. Poverty declined from 56 percent in 1992 to 31 percent in 2006. However, the prevalence of malnutrition has remained high.

Figure 2. Map of Uganda

Uganda's Northern region has suffered from 19 years of internal conflict between the Lord's Resistance Army (LRA) and the Government of Uganda, resulting in significant internal displacement in the region: A majority live in internally displaced persons (IDP) camps. Since the LRA and the Government signed a Cessation of Hostilities Agreement in 2006, security conditions have improved significantly, and a shift from humanitarian activities (relief) to development activities is under way. However, while people are resettling their villages, access to viable farm land remains tenuous. Agricultural production currently stands at only 34 percent of capacity.

2.2 LITERACY LEVELS IN UGANDA

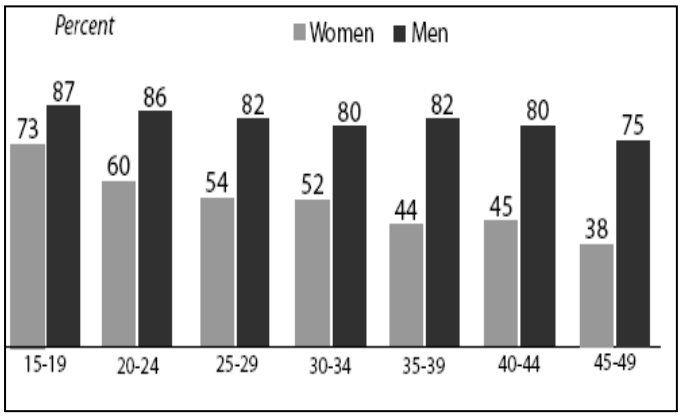
Literacy is improving in Uganda. The adult literacy rate has increased from 67 percent in 2000 to 74 percent in 2007.[16] Overall, men (83 percent) are more likely than women to be literate (56 percent). However, this disparity is much smaller among the younger generation. The female-to-male literacy ratio for adults age 45-49 is 0.51, compared with 0.84 in the 15-19 age group, showing a strong positive trend toward closing the gender gap in education in that age group [20] (**Figure 3**). The same pattern holds true for educational attainment, where on average just 5 percent of men never attended school, compared with 15 percent of women. Among children age 15-19, less than 1 percent of boys and almost 4 percent of girls have never attended school. Net enrolment in primary schools in 2006 for children age 6-12 was 82 percent for boys and 81 percent for girls.[19] Net enrolment in secondary schools is lower, at 16 percent for both boys and girls.

2.3 CLIMATE AND ECOLOGICAL ZONES IN UGANDA

Uganda has some of the most fertile land in East Africa. A quarter of the country's land is considered agricultural, and an additional 11 percent is under permanent crops. Ugandan agriculture depends

predominantly on rain, and only 9,000 hectares of land are under irrigation.[23] Uganda's climate varies regionally, with tropical rainforests in the south and drier savannah woodlands and semi-desert vegetation in the north. Because of the climatic variations and corresponding agricultural potential, there are higher population densities in the south and west of the country than in the Northern region. Most of the country receives rains twice a year, providing for two major harvests in July/August and December. The North has just one rainy season and harvest.[18]

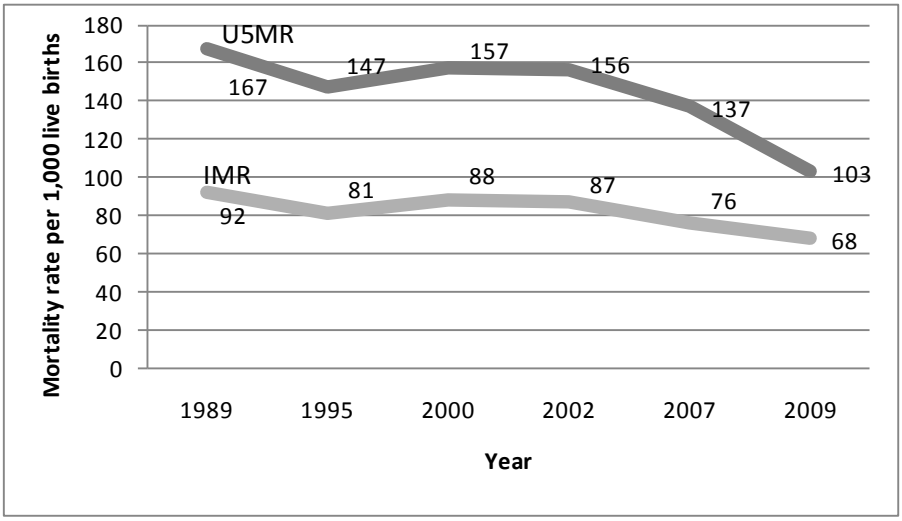
Figure 3. Literacy by Sex and Age [8]



2.4 HEALTH INDICATORS

HIV prevalence rates have fallen (from 19 percent in 1995 to 6 percent in 2008), and coverage with essential health services has improved. Over the same period, immunisation coverage for children under five increased from 30 percent to 46 percent and household access to improved water sources increased from 46 percent to 64 percent. A number of health status indicators have also improved in the past decade. Under-5 mortality declined from 167 to 103 per 1,000 live births and infant mortality declined from 92 to 68 from 1989 to 2007. However, these have been declining slowly, and Uganda is unlikely to meet the MDG target at this rate of change (**Figure 4**).

Figure 4. Trends in Under-5 Mortality and Infant Mortality, 1989-2009 [108]



Similarly, the decline in the maternal mortality rate (MMR) has also been slow, and Uganda is unlikely to meet the MDG target of reducing MMR. Recent trend estimates show that the MMR has declined from 523 per 100,000 in 1989 to 435 in 2007. Persistently high MMR is most likely a result of inadequate

services, high fertility rates, and early and frequent childbearing. Maternal anaemia also likely contributes significantly to MMR and maternal morbidity.

Table 1. Basic Indicators for Uganda [14, 120, 8, 108,121]

INDICATOR	VALUE
Population	
Total population (in millions)	31
% of total population under 18 years (2002)	56
% of population in rural areas	85
Gross Domestic Product	
Gross domestic product per capita (US$) PPP	1,45
Contribution of agriculture to GDP (%)	29
Per capita income	340
Poverty	
Human poverty index (%)	35
% of population living below national poverty line	38
% of population living in extreme poverty	31
Malnutrition	
Prevalence of underweight in children under 5 (%)	16
Prevalence of stunting in children under 5 (%)	38
Prevalence of wasting in children under 5 (%)	6
% of population undernourished	19
Human Development	
Human development index	0.5
Gender development index	0.5
Education	
Adult literacy rate (% age 15 and above)	67
Gross primary school enrolment (%)	104
Gross primary enrolment ratio (female: male)	1
Gross secondary school enrolment (%)	16
Gross secondary enrolment ratio (female: male)	0.8
Age at Marriage and First Birth	
Median age of woman at first marriage (among 25-49 year olds)	18
Median age of women at first birth (among 25-49 year olds)	19
% of women age 20-24 married by age 18	46
% of adolescent girls (age 15-19) who are pregnant or have given birth	19
Life Expectancy, Fertility and Mortality	
Life expectancy at birth (years)	51
Total fertility rate (births per woman)	7
Maternal mortality rate (per 100,000 births) 2007	435
Under-5 mortality rate (per 1,000 live births) (2009)	103
Infant mortality rate (per 1,000 live births) (2009)	68
HIV Prevalence	
Adult HIV prevalence rate (%)	6
Water and Sanitation	
% of population using improved water source	64
% of population using improved sanitation	43

Chapter 3. Nutrition Situation in Uganda

Uganda's most common malnutrition problems are high rates of chronic malnutrition and micronutrient deficiencies, especially of Vitamin A and iron. Malnutrition in all its forms remains largely a "hidden problem" since majority of children affected are moderately malnourished or have micronutrient deficiencies that are not routinely assessed. In addition, the prevalence of overweight and obesity is rising in both rural and urban areas.

3.1 PREVALENCE AND TRENDS IN MALNUTRITION IN CHILDREN UNDER 5

3.1.1 Characteristics of National Prevalence of Malnutrition in Children

Undernutrition in Uganda affects over 2 million children under 5. Stunting (or chronic malnutrition, measured as "height-for-age"), which occurs when a child fails to grow to the expected height or length compared to a healthy child of the same age, remains a major public health problem in Uganda. The most recent UDHS reported that approximately two of five children under 5 (39 percent) were stunted, more than a third of them severely (based on the WHO Growth Standards). Underweight is often considered a composite measure of both acute and chronic malnutrition. Using the WHO 2006 Growth Standards, the 2006 UDHS reported a prevalence of underweight of 16 percent for children under 5. The new WHO Growth Standards have led to a downward revision of the prevalence of underweight. The prevalence dropped from 19 percent in 2001. Underweight remains an important indicator to track because it is one of the MDG 1 indicators of measure of progress. While the lower prevalence of underweight might make it seem that the MDG goal is achievable, effecting change at much lower levels of prevalence requires much more effort.

Box 1. Use of WHO Growth Standards Versus NCHS Growth References

UDHS (and most surveys) conducted before 2006 used the NCHS growth references to compare children's nutritional status to that of a normal population. These growth references were based on healthy American children who were not necessarily exclusively breastfed. The WHO has developed new growth standards (WHO standards) based on "well-fed—e.g., exclusively breastfed—healthy children from different continents."

The anthropometric data in the 2006 UDHS were computed using the new WHO Growth Standards. Using these new standards, the rate of stunting is higher than that computed using the NCHS growth standards and the rate of underweight is lower.

All previous UDHS have been re-analysed using the WHO standards. All trend comparisons in this analysis over the years have used the WHO standards.

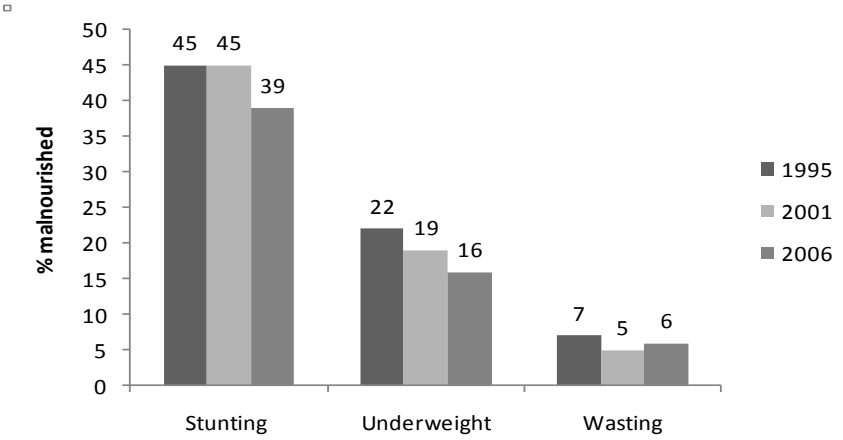
The WHO standards classify Uganda's nutrition situation as serious for stunting and poor for both underweight and wasting (**Table 2**). The trends in the prevalence of stunting, underweight and wasting are given in **Figure 5**. Previous UDHS nutrition data have been reanalysed using the WHO standards.[103] Nationally, the prevalence of malnutrition has been trending downward; the rate of change for stunting was -1.2 percentage points per year between 2001 and 2006. Although relatively rapid, this rate of change is inadequate to halve the prevalence of stunting by 2015. The rate of change in the prevalence of underweight from 2001 to 2006 was **-0.6** percentage points per year, which is also too slow to meet the MDG goal. On average, the prevalence of wasting has not changed much.

Table 2. WHO Classification of the Public Health Importance of Prevalence of Malnutrition [24,82]

	Acceptable	Poor	Serious	Critical
Stunting	<20%	20-30%	30-40% **(39%)**	>40%
Wasting	<5%	5-10% **(6%)**	10-15%	>15%
Underweight	<10%	10-20% **(16%)**	20-30%	>30%

Note: Uganda national levels from the 2006 UDHS are in parentheses.

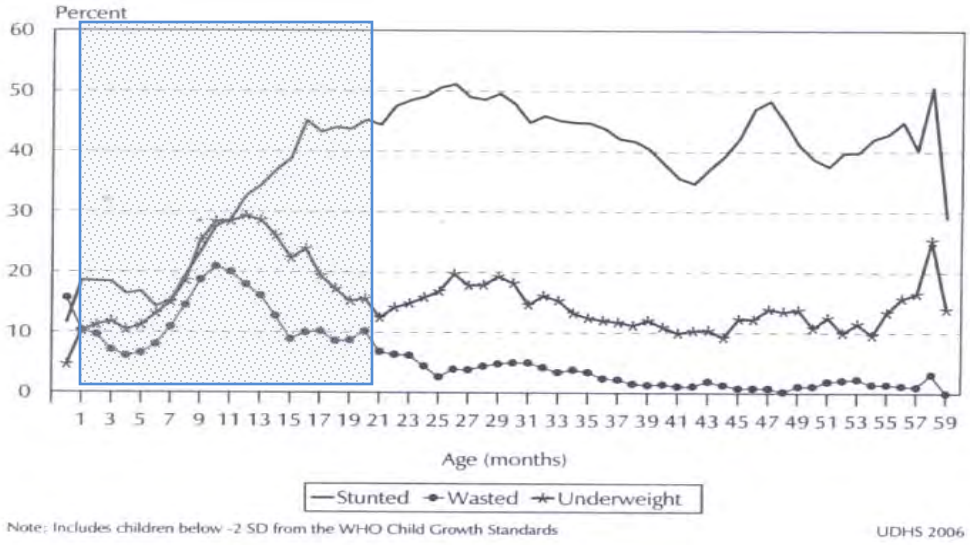
Figure 5. National Trends in the Prevalence of Malnutrition (WHO Growth Standards) [8, 21, 22]



Malnutrition starts before birth for children in Uganda (**Figure 6**). By extrapolation, about 11 percent of children are born already stunted and about 16 percent of children are likely to be wasted at birth. The high prevalence of malnutrition at birth is associated with high fertility rates, short birth intervals, young maternal age and maternal malnutrition. Infants tend to regain adequate weight during the first three months (as evidenced by decreased rates of wasting), but the prevalence of wasting and underweight starts to increase at around four months, peaks (20 percent for wasting, 29 percent for underweight) at about nine to 13 months and then begins to decline. (Wasting is rare among children 36 months and older; levels are about or below 1 percent.) The steep rise in wasting rates among infants from as young as four months suggests that infection rates are likely high and are partly attributable to poor feeding practices where liquids other than breast milk are introduced early, increasing the risk of infection.

Stunting rates are generally above 15 percent from the third month of life, but they sharply increase at seven months and peak (at about 50 percent) at about 26 months. Stunting levels oscillate between 35 percent and 50 percent in older groups. Although childhood malnutrition affects mostly children 6-23 months, children in Uganda are most vulnerable to wasting and underweight at 4-12 months and remain vulnerable to stunting until they are about 2 years old.

Figure 6. The Window of Opportunity to Address Malnutrition in Uganda [8]



Boys were more likely to be stunted than girls (41 percent vs. 36 percent). Stunting is highest among children born less than 24 months after their older sibling (41 percent), and children who were reported to be small or very small at birth are more likely to be stunted than their average-size peers (49 percent and 48 percent vs. 35 percent). Rural children are more likely to be stunted (40 percent) than urban children (26 percent). Children from the poorest 20 percent of households are much more likely to be stunted (43 percent) than the richest 20 percent (24 percent), and 41 percent of children born to mothers without education are stunted, whereas only 23 percent of children born to mothers with secondary or higher education are stunted.[8]

3.1.2 Regional Prevalence and Trends in Malnutrition in Children Under 5

This section presents the differences in prevalence of malnutrition by region and over time. **Box 2** highlights some of the limitations in doing such comparisons.

Box 2. Use of Nutrition Trend Data from the UDHS

To compare trends in malnutrition over time the data are presented for the four main administrative regions, Northern, Central, Eastern, and Western Uganda instead of the 11 used in the 2006 UDHS. The 2006 UDHS was the first survey for Uganda that includes the entire country in the sample; previous surveys could not achieve this because of the security situation in the north. Anthropometric data are compared over time using the WHO Growth Standards for each survey year. These trend data should be interpreted with caution. The three surveys were all conducted during different times of the year: 1995 was done in March to August; 2001 was done in September to March; and 2006 was done in May to October. The 1995 survey is presented for children 0-4 years, while the 2001 and 2006 have data for children 0-5 years. Given this, the trend data, while largely comparable, are limited in some ways because the previous surveys might not provide as accurate a picture of the prevalence of malnutrition as the 2006 survey.

The prevalence of malnutrition among children under 5 varies significantly by region in Uganda. **Table 3** shows the regional distribution in the prevalence of stunting, underweight and wasting in the 2006 UDHS. The prevalence of stunting was highest in Karamoja followed by the Southwest and North; underweight is highest in East Central and the North; and wasting is highest in Karamoja, East Central, the Southwest and West Nile regions.

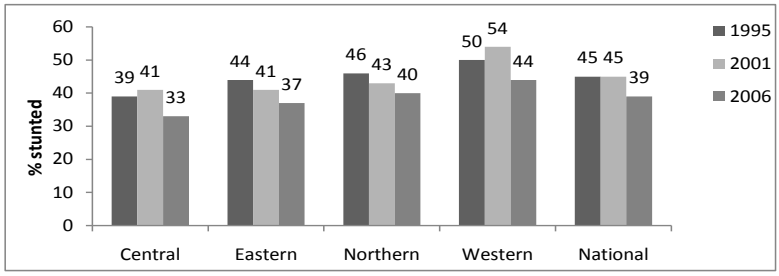
Table 3. Regional Distribution in the Prevalence of Severe (-3 z-score) and Moderate (-2 z-score) Stunting, Underweight and Wasting (WHO Growth Standards) [8]

Region	Stunting		Underweight		Wasting	
	Severe	Severe and Moderate	Severe	Severe and Moderate	Severe	Severe and Moderate
Central 1	15	39	4	13	3	5
Central 2	8	30	2	8	1	3
Kampala	8	22	3	10	4	7
East Central	11	38	6	23	5	10
Eastern	13	36	2	11	1	3
North	17	40	7	22	2	7
West Nile	15	38	5	17	2	8
Western	18	38	3	15	0	5
South West	23	50	5	19	3	9
IDP	14	37	5	20	2	6
Karamoja	25	54	14	14	4	4
National	15	38	4	16	2	6

3.1.2.1 Regional Trends in Stunting

Using the WHO standards to compare rates over time, the national prevalence of stunting has declined, from 45 percent in 1995 to 39 percent in 2006. **Overall the prevalence of stunting declined between 2001 and 2006, an average decline of 1.2 percentage points per year**. Prevalence of stunting was highest in the western region, where it declined more rapidly than in other regions (**Figure 7**), with an average decline of 2.0 percentage points per year from 2001 to 2006. However, the trend in the western region most likely masks the large difference in stunting rates between the western and southwest regions of Uganda; the highest rates of stunting in the country were reported in southwest in the 2006 DHS. However, given that previous DHS combined the two regions into the western region, it is difficult to estimate the rate of change in stunting in the southwest alone. The decline of 2.0 percentage points per year might reflect greater improvements in the western region than in the southwest region, though even in the latter some downward trend is likely.

Figure 7. Regional Trends in Prevalence of Stunting 1995-2006 (WHO growth standards) [8, 21, 22]



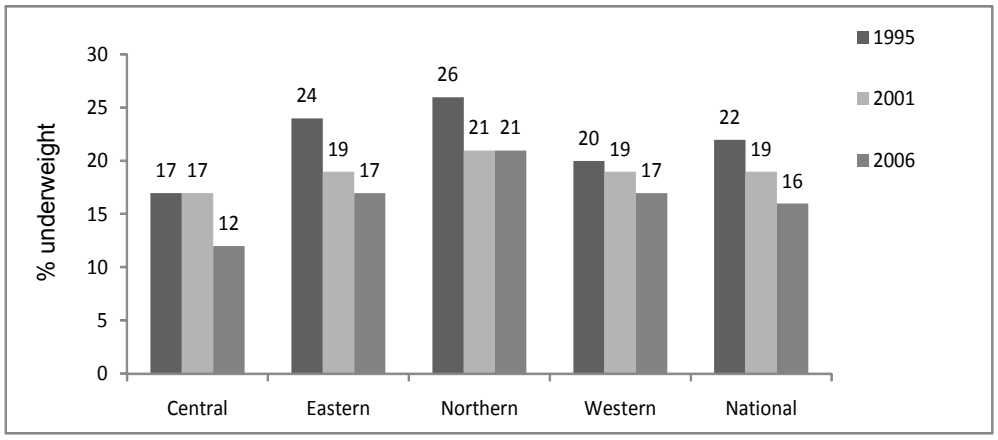
Prevalence of stunting was also high in the eastern and northern regions. These regions have also seen a downward trend in the prevalence of stunting, declining an average of 1.2 percentage points and 0.8 percentage point for eastern and northern Uganda, respectively, from 2001 to 2006. These rates are much slower than the pace in both Western and Central Uganda. In the latter, the rate of change from 2001 to 2006 was -1.6 percentage points per year. However, except in 2001, the central region has had the lowest rates of stunting over time. The slow rate of change in the northern region might be attributed to the region's security situation.

Despite these downward trends in the prevalence of stunting, it remains unacceptably high across all regions.

3.1.2.2 Regional Trends in Underweight

The prevalence of underweight in the country has been declining (**Figure 8**). However, the decline in underweight was only 0.6 percentage points per year between 2001 and 2006. At this rate, it is unlikely that Uganda will meet the MDG goal of halving the prevalence of underweight by 2015. Across regions, the prevalence of underweight declined most rapidly in the Central region, at a rate of -1.0 percentage points per year from 2001 to 2006. Prevalence of underweight declined in all regions except the north.

Figure 8. Regional Trends in Prevalence of Underweight UDHS Data 1995-2006 (WHO growth standards) [8, 21, 22]



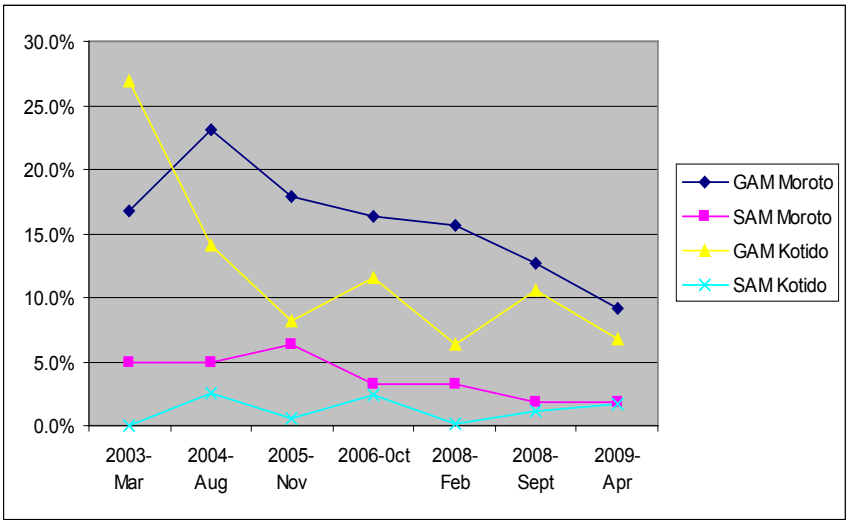
The data also indicate that underweight declined in both rural and urban areas but at a faster rate in rural areas (0.6 percentage point compared to 0.2 percentage point per year between 2001 and 2006), probably because urban areas had already lower rates of underweight.

3.1.2.3 Regional Trends in Wasting

Wasting (or acute malnutrition, which is measured by weight-for-height and is often a result of recent illness or weight loss), affected 6 percent of children under 5, and 2 percent severely. Severe acute malnutrition (SAM) was particularly high in Karamoja, the east central, southwest, and West Nile regions and might be a consequence of the comparatively high disease burden in these areas and the lower immunisation coverage rates. In 2003 the acute malnutrition situation in northern Uganda was classified as "serious," i.e., the levels of global acute malnutrition (GAM)[3] were 10-15 percent. However, data from 2008 and 2009 nutrition surveys in northern Uganda reported GAM rates of around 5 percent, and 10 percent or less in the Karamoja sub-region (**Figure 9**).[25] However, the rates of acute malnutrition in northern Uganda continue to fluctuate periodically, associated with seasonality or prolonged drought.

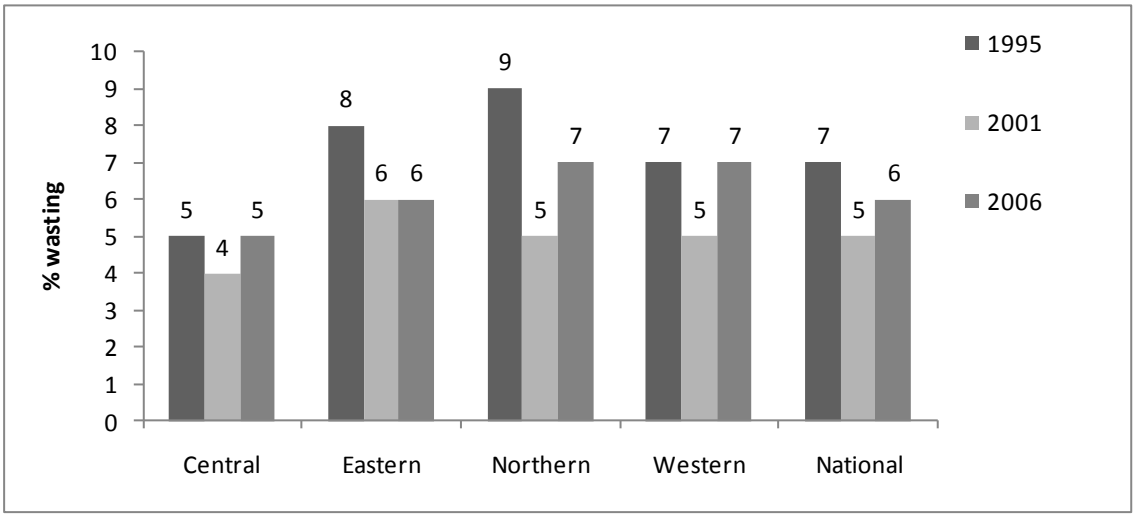
[3] GAM is defined as WFH of less than -2 z-scores or presence of nutritional oedema (see *Sphereproject.org*).

Figure 9. Global Acute Malnutrition in Karamoja [25]



Overall, the prevalence of wasting in Uganda has been rising, from 5 percent in 2001 to nearly 6 percent in 2006, suggesting an increase in disease burden. Since the 2001 UDHS, the prevalence of wasting rose across all regions except eastern, where it remained the same. The largest increase was in the western and northern regions (**Figure 10**).

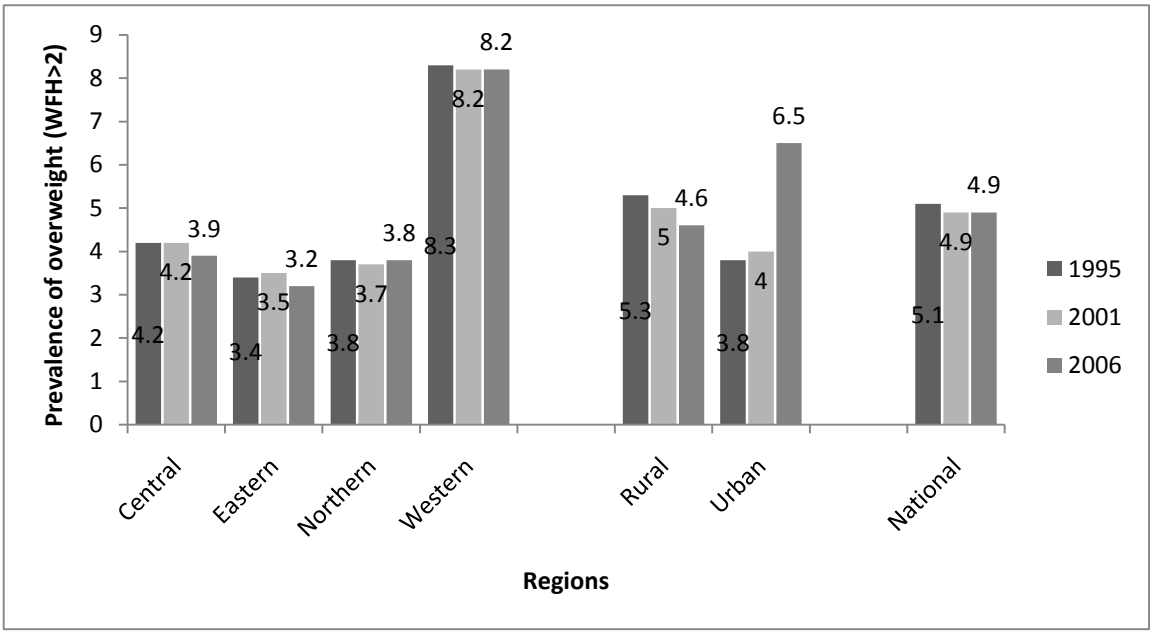
Figure 10. Regional Trends in Prevalence of Wasting 1995-2006 (WHO growth standards) [8, 21, 22]



3.1.2.4 Trends in Overweight

Data on overweight and obesity among children is now available from the reanalysis of UDHS data using the WHO standards. Figure 11 presents the UDHS data for overweight of children age 0 to 5 years for the three UDHS periods. While the prevalence of overweight has not changed much during the period, it fell slightly in rural areas but increased significantly in urban areas. The prevalence of overweight children has been highest in western region (mainly in southwestern region, where in 2006 prevalence of overweight was reported at 13 percent compared with 4 percent in west region).

Figure 11. Regional Trends in Prevalence of Overweight Among Children (WHO growth standards) 1995-2006 [8,21,22]



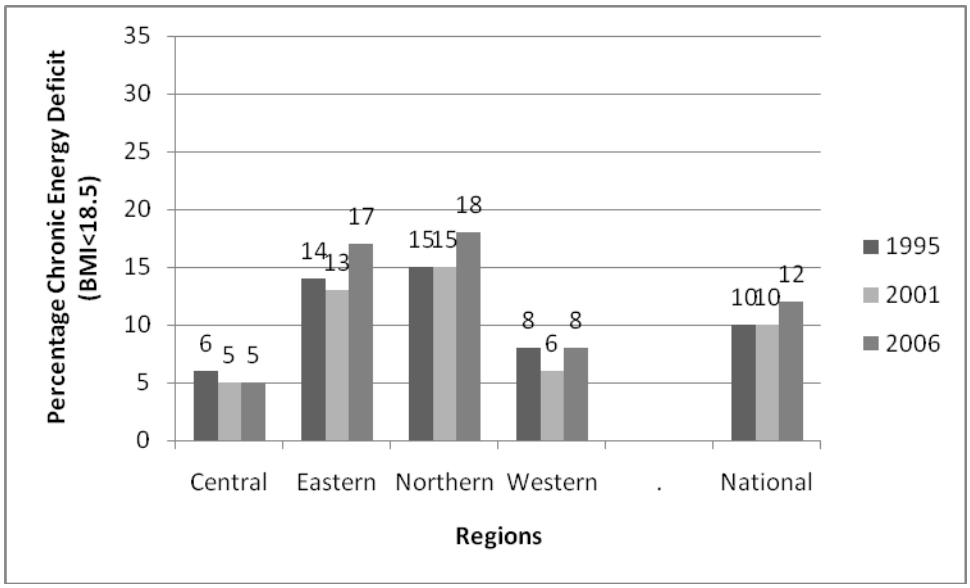
According to the global school-based Students' Health Survey 2003 Report, 5.3 percent (2 percent male and 12 percent female) of Ugandan schoolchildren age 13-18 were identified as at risk of overweight (more than 85 percent of weight for age and sex).[116] Obesity levels were around 0.7 percent. The study also showed that the percentage of schoolchildren who engaged in a physical activity in the week before the survey was low in both boys (14 percent) and girls (16 percent).

3.2 MALNUTRITION OF WOMEN OF CHILDBEARING AGE

3.2.1 Prevalence and Trends in Chronic Energy Deficiency (CED) Among Women

The national prevalence of CED, defined by body mass index (BMI) <18.5 kg/m^2, was 12 percent among non-pregnant women of childbearing age (ages 15-49 years) in the UDHS 2006.[8] **Figure 12** presents the trends in prevalence of CED from 1995 to 2006 by administrative regions. Overall the prevalence of CED has increased slightly over time, with CED highest for women 35 and older. This increasing prevalence among older women of childbearing age might be linked to the increasing prevalence of HIV (and its progression to AIDS with age) among women and/or the high fertility rate in this age group. Rural women were more than twice as likely as urban women to be undernourished (14 percent of rural women vs. 6 percent in urban areas). Similarly, women from households in the lowest wealth quintile were at highest risk of CED (23 percent). Among women with no education, CED was 18 percent compared with 5 percent for women with secondary or higher education.

Figure 12. National and Regional Trends in the Prevalence of CED Among Women of Childbearing Age in Uganda [8,21,22]

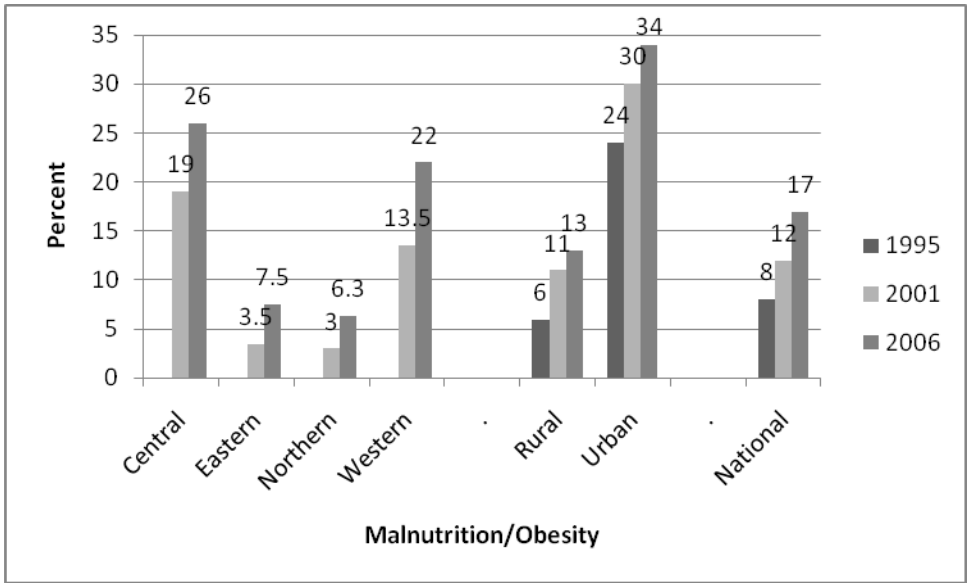


The prevalence of CED varies across regions. The highest prevalence of CED among women is in the regions of Karamoja, the IDP camps, the North, West Nile, Eastern and East Central. From the 2001 survey to the 2006 survey, the prevalence of CED has risen across all regions, especially in the northern and eastern administrative regions.

3.2.2 Prevalence and Trends in Overweight among Women

Overweight (BMI >25) among women is increasingly becoming a health problem in Uganda. As of 2006, the prevalence of overweight was higher than the prevalence of CED, 17 percent of women compared to 12 percent with CED.[8] **Figure 13** presents the levels of overweight (and obesity) among women of childbearing age. The proportion of overweight women ranged from 6 percent in the North to 26 percent in the central region.

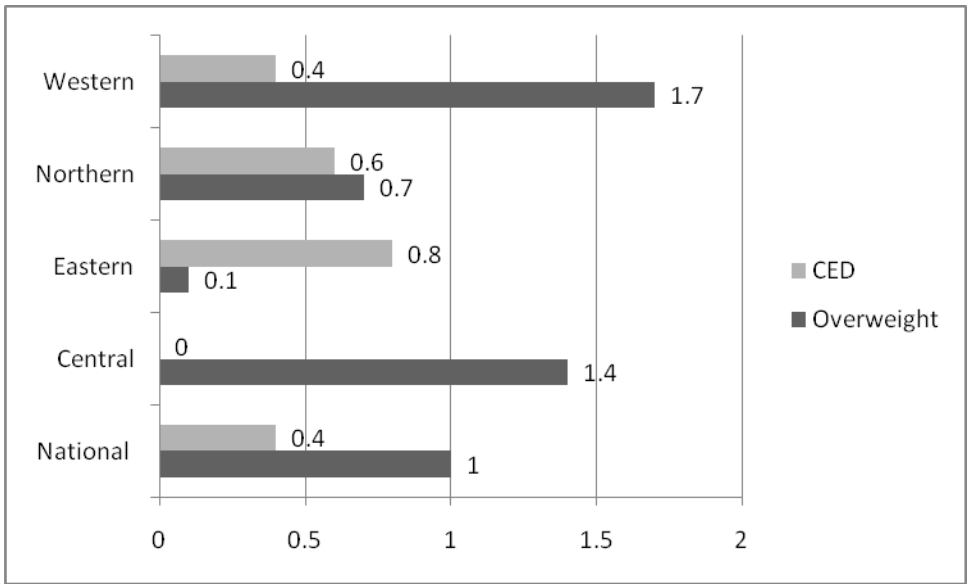
Figure 13. Prevalence of Overweight in Women of Childbearing Age [8,21,22]



Overweight/obesity was found to be higher in urban areas (34 percent) than in rural areas (13 percent) and among women in the wealthiest households. The proportion of households with both an overweight mother and a stunted child under 5 is increasing in both rural and urban areas. The Southwest region in particular has high rates of childhood stunting and maternal overweight. This pattern is also likely because mothers from this region might have been stunted in childhood and might become overweight more easily with a shorter stature.

Nationally, while the prevalence of CED among women has risen slightly in the past 10 years (by about 0.4 percentage points per year between 2001 and 2006), overweight among women has increased from 8 percent in 1995 to 12 percent in 2001 to 17 in 2006 **(Figure 14)**. Overweight/obesity was increasingly found in rural areas although the problem is much greater in urban areas. Households, especially in southwest region, are also shifting from more labour-intensive crops like millet/sorghum and beans to bananas, cassava and sweet potatoes, which are less labour-intensive. The reduced physical activity and increased consumption of foods rich in carbohydrates and purchased foods like oils and sugar are likely to lead to more overweight among adults.

Figure 14. Changes in Prevalence of Chronic Energy Deficiency and Overweight in Women by Region between 2001 and 2006 [8, 21]



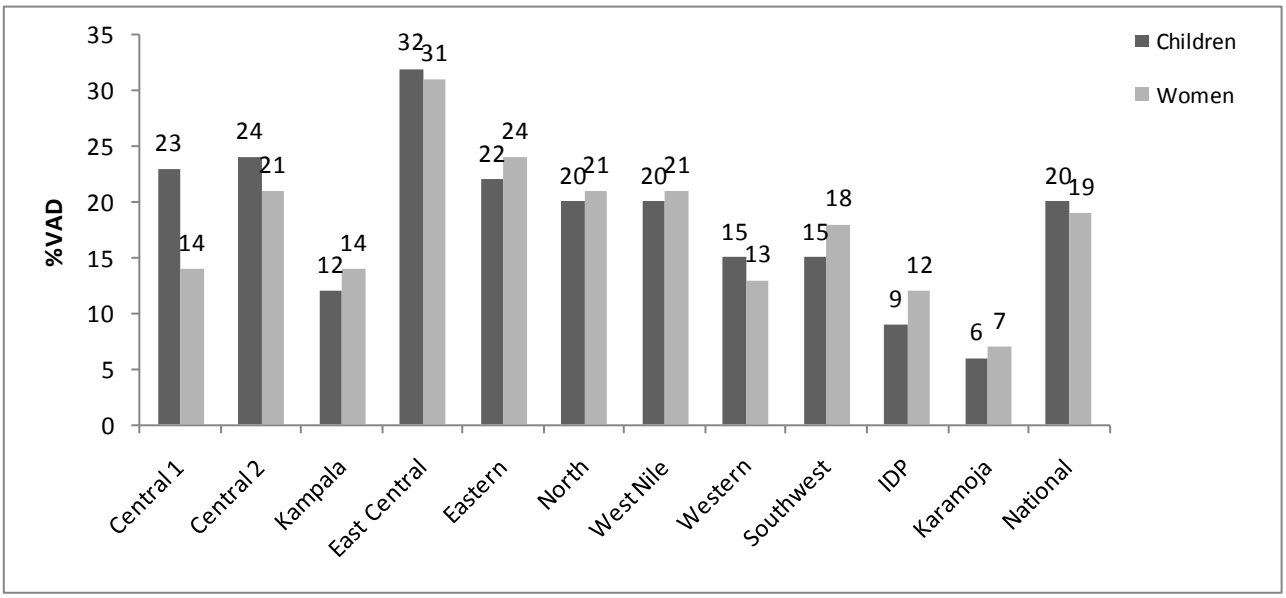
3.3 MICRONUTRIENT DEFICIENCY IN CHILDREN AND WOMEN OF CHILDBEARING AGE

3.3.1 Prevalence of Vitamin A Deficiency in Children and Women

In Uganda, 20 percent of children 6-59 months and 19 percent of women of childbearing age were vitamin A deficient in 2006.[8][4] The regional distribution in the prevalence of vitamin A is presented in **Figure 15** below. Vitamin A deficiency (VAD) levels among children and women are similar within regions. The prevalence of VAD among children and women was highest in East Central Uganda (32 and 31 percent, respectively) followed by East and Central Uganda. The lowest levels of VAD were reported among IDP populations (9 and 12 percent of children and women, respectively) and in Karamoja (6 and 7 percent, respectively). Boys were more likely to have VAD than girls (22 percent and 19 percent, respectively). The risk of VAD was higher among children under 18 months (18 percent) than older ones (22 percent). WHO classifies Uganda as having a moderate public health problem with VAD.

[4] The 2001 UDHS [21] used *serum retinol concentrations* in dried blood samples. Retinol is not stable and might break down under field conditions, thus overestimating VAD. The 2006 UDHS measured *retinol binding protein (RBP)*, a surrogate marker for retinol that is more stable. Given the difference in sensitivity and accuracy in the two methods, trends are not presented. The 2001 method likely overestimated the prevalence of VAD.

Figure 15. Regional Prevalence of VAD by Region among Children and Women of Childbearing Age [8]



3.3.2 Prevalence of Anaemia and Iron Deficiency in Children and Women

Almost three quarters (73 percent) of children 6-59 months were reported to be anaemic (Hb < 11.0 g/dl), with 22 percent mildly anaemic (Hb 10.0-10.9 g/dl), 43 percent moderately (Hb 7.0-9.9 g/dl) and 7 percent severely (Hb < 7.0 g/dl) (UDHS, 2006). The prevalence of anaemia was higher among children (**Figure 16**) than adults (**Figure 17**) and declined with age. Among women of childbearing age, 49 percent were anaemic (Hb < 12.0 g/dl if not pregnant, < 11.0 g/dl if pregnant), with 35 percent mildly anaemic, 13 percent moderately and 0.8 percent severely[8] This was an increase from the 2001 data, mainly due to a slight increase in the proportion of women with mild anaemia. The majority of women and children affected by anaemia fell in the mild or moderate categories. More women had mild anaemia, and more children had moderate anaemia across the regions of Uganda (**Figures 16** and **17**).

Anaemia is very high in preschool children, and the prevalence appears to be rising across much of Uganda for both women and children. **The prevalence of anaemia among children under 5 was higher than that for women of childbearing age**. The highest prevalence of anaemia for women and children was in the Central 1 region and the lowest was in Kampala. Anaemia is so widespread in Uganda that it is difficult to determine region-specific underlying causes. It is more likely that across Uganda some common factors are driving the high prevalence of anaemia, such as high disease burden and inadequate dietary sources and intake of iron. Prevalence of anaemia is highly associated with wealth ranking, being lowest in the upper wealth quintiles.

Figure 16. Regional Trends in the Prevalence of Anaemia Among Children Under 5, From 2001 to 2006 [8,21]

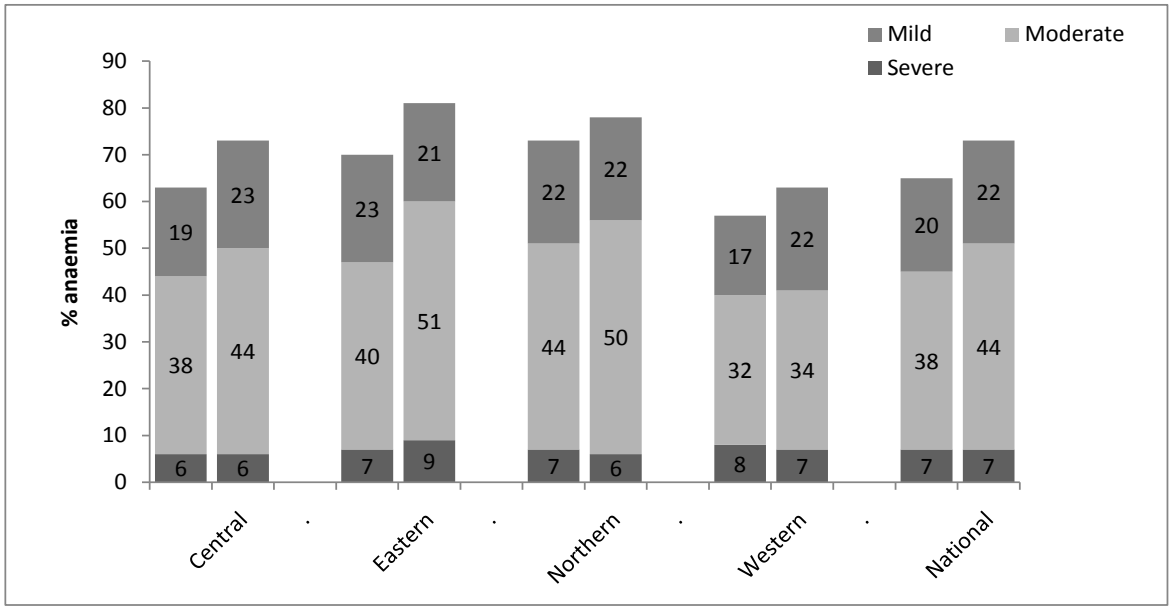
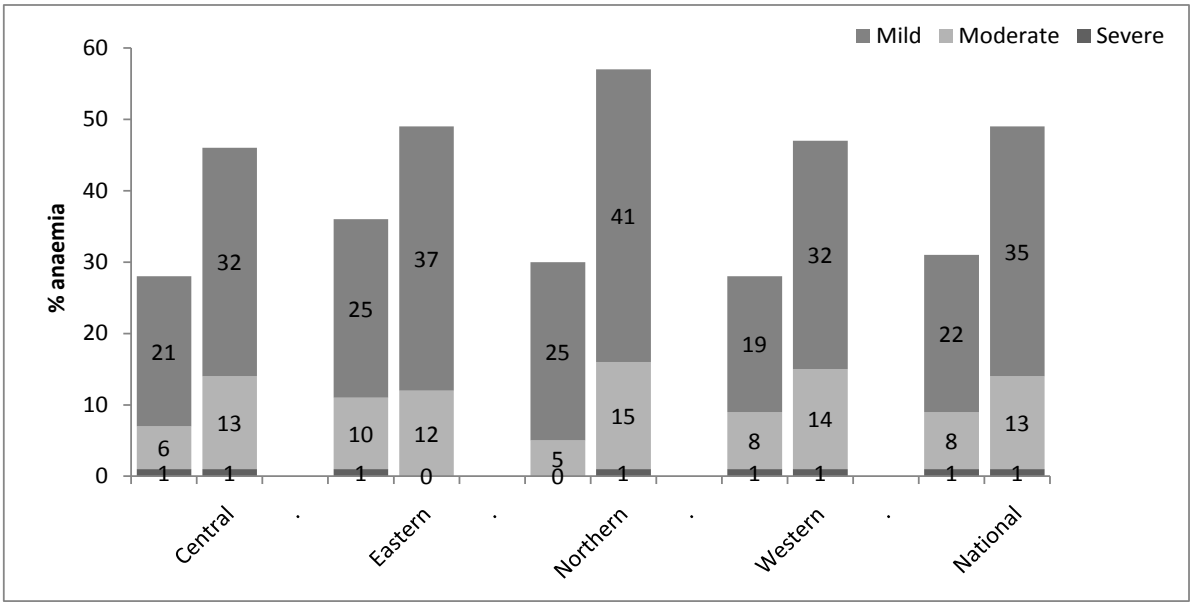


Figure 17. Regional Trends in the Prevalence of Anaemia Among Women of Childbearing Age, From 2001 to 2006 [8,21]



It is estimated that the prevalence of iron deficiency is 2 to 2.5 times the prevalence of anaemia.[104] A study conducted in Kampala in 2002 estimated that nearly half of the anaemia was iron-deficiency anaemia (IDA); the other half was anaemia caused by malaria, worm infestations and chronic disease including HIV infection.[28] However, this is likely to be an underestimation of the actual prevalence of iron deficiency, as ferritin, the biomarker used to assess iron deficiency in this study, is influenced by

infection. A recent UDHS 2006 supplemental study correcting for infection determined that almost all children had iron deficiency.[104]

Table 4 gives the results of the UDHS 2006 supplemental study that show that 88 percent of women had iron deficiency, with or without anaemia. About 55 percent of women had iron deficiency without anaemia, while 32 percent had IDA. Only 5 percent of women had anaemia with no iron deficiency. Similarly, almost all children under 5 had iron deficiency, with or without anaemia. About 28 percent of children had iron deficiency without anaemia and 70 percent had IDA. Only 1 percent of children had anaemia with no iron deficiency.

Table 4. Iron Deficiency: The Most Common Cause of Anaemia in Uganda [104]

	Iron deficiency with				
	No anaemia	**Mild anaemia**	**Moderate anaemia**	**Severe anaemia**	**Anaemia without iron deficiency**
Women (n=471)	55%	25%	7%	0.4%	5%
Children (N=735)	28%	21%	44%	5%	1%

3.3.4 Prevalence of Iodine Deficiency in Children and Women

Few surveys provide an accurate snapshot of the current prevalence of iodine deficiency. A 1999 study found the total goitre rate among schoolchildren age 6-12 to be 31 percent (a goitre prevalence of more than 5 percent in schoolchildren signals a public health problem by WHO standards).[29] However since that study, the rate of iodized salt intake has increased dramatically. According to the 2006 UDHS, 96 percent of households in Uganda use adequately iodized salt (15+ ppm) and an additional 3 percent of households had salt with some levels of iodine in it. These results are comparable to the 2001 UDHS results, indicating that salt iodization coverage in Uganda has been stable for some years. Very few households use un-iodized salt. Most are found in isolated areas in the western and southwestern parts of the country; only 7 percent and 3 percent of salt samples collected from these areas, respectively, were not iodized.[8]

Urinary iodine surveys were undertaken in 1999 and 2004 among children age 6-12 years to assess the impact of universal salt iodization in selected districts in Uganda. The 1999 survey included six districts, three highland districts (Kabale, Kapchorwa and Kisoro) and three lowland districts (Apac, Hoima and Luwero).[29] The 2004 survey assesses urinary iodine levels in schoolchildren in each of the four regions (North, East, Central, and West).[63] The study found that median urinary iodine levels increased from 310 micrograms per litre in 1999 to 464 micrograms in 2004.

While these findings suggest that Uganda is well on its way to eradicating iodine deficiency disorders (IDD),[5] it will be important to continue monitoring iodized salt intake to ensure that use of iodized salt remains high and that iodine is available as a regular part of women and children's daily diet.

3.3.5 Prevalence of Other Micronutrient Deficiencies

Although limited data exist, given the kind of food staples in most of Uganda, **zinc deficiency** could be a potential public health problem. The prevalence of zinc deficiency has been estimated to range between 20 to 69 percent in children and 21 to 29 percent in adults.[26] Low zinc levels among children might have some bearing on the high rates of stunting among young children in Uganda. WHO recommends that all

[5] [105] and [106] recommended that for sustainable elimination of IDD as a public health problem, a country should meet the following targets: Median urinary iodine levels should be above 100 micrograms per litre and no more than 20 percent of the population should have values below 50 micrograms per litre, and at least 90 percent of households should be using salt with an iodine content of 15 parts per million (ppm) or more. At this level there is evidence of sustainability over time.

children with severe diarrhoea who are seen at a health facility be provided with zinc supplementation.[27]

Other nutrient-specific deficiencies reported in Uganda include increasing cases of **vitamin B2** deficiency.[6] Between August and October 2009, over 200 cases of vitamin B2 deficiency were reported in Nakapirpirit district; cases were also reported in Kotido and Moroto districts.[30] Isolated periodic outbreaks of **pellagra** have been reported in the IDP camps where the main staple is maize, which is given as food aid but is a poor source of niacin. Since heavy alcohol consumption contributes to pellagra, it is the men of the community who largely get this condition as a result of heavy alcohol use.

3.4 MALNUTRITION AMONG PEOPLE LIVING WITH HIV (PLHIV)

HIV was first defined as a "slim disease" in Uganda in 1984 because almost all those who were diagnosed with the disease suffered AIDS-related wasting [31]. With cotrimoxazole and increased early treatment of opportunistic infections, fewer people are wasted from AIDS when they start antiretroviral therapy (ART). There are no good data on malnutrition rates among PLHIV. A sample from three facilities providing ART in Uganda estimated that 20 to 25 percent of adult patients (non-pregnant) starting ART were mildly to severely malnourished (BMI<18.5), with the highest rates in rural areas (25 percent) compared to Kampala (21 percent).[32] Higher rates have been reported in Zambia (31 percent) and Tanzania (30 percent).[33] Uganda's lower rate of malnutrition among clients starting ART might suggest that most HIV cases are diagnosed early and PLHIV start ART or prophylaxis for pneumocystis pneumonia (PCP) before they have advanced disease and/or that there might be less food insecurity among PLHIV.

Bachou reported that 30-40 percent of severely malnourished children admitted in Mulago Hospital's nutrition unit were HIV-positive.[34] Mortality was over 50 percent among these children.[35] Earlier studies in Uganda reported that malnourished HIV-positive children (weight-for-age [WFA] below -1.5 z-scores) were five times more likely to die by the time they reach 24 months than non-infected, non-malnourished children.[36]

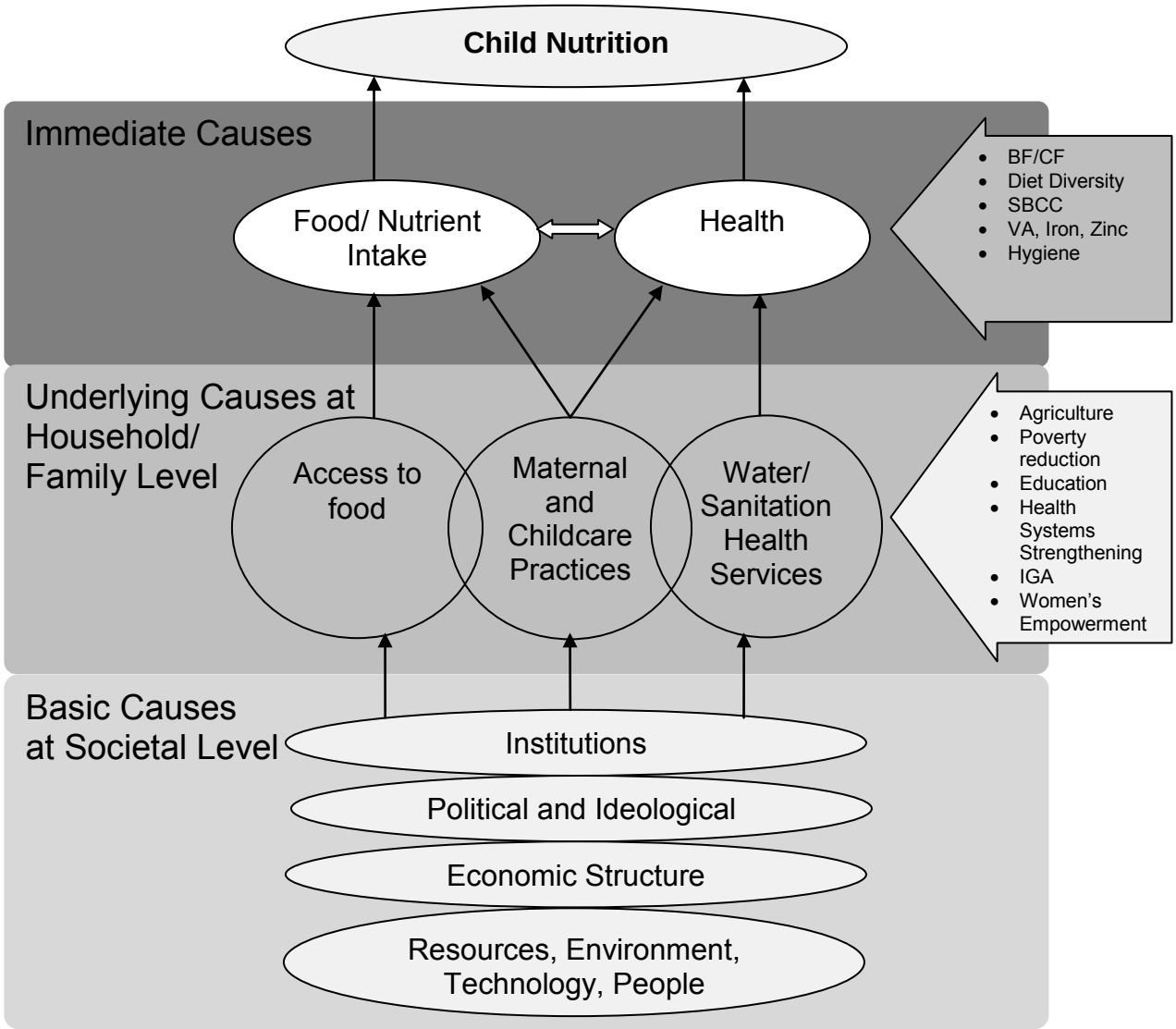
[6] Clinical signs of vitamin B2 deficiency. Angular stomatitis was reported by the district and Concern Worldwide i.e., characterized by a high incidence of mouth sores and gum ulceration in a number of children from one village.

Chapter 4. Causes of Malnutrition in Uganda

4.1 INTRODUCTION: CONCEPTUAL FRAMEWORK OF CAUSES OF MALNUTRITION

The 1990 UNICEF Conceptual Framework for Nutrition (**Figure 18**) explains the causal pathway for malnutrition, from basic to immediate causes. The framework shows that the causes of malnutrition are multifaceted and happen at several levels. There are three major underlying causes: access to food/food security, quality of maternal and child care, and quality of health services/environment, which are influenced by several basic causes. The outcome and immediate determinants can be said to be operating at individual levels, the underlying determinants operate mainly at the household and community level while most basic factors operate at the cultural/ideological, ecological, economic or policy levels.[37]

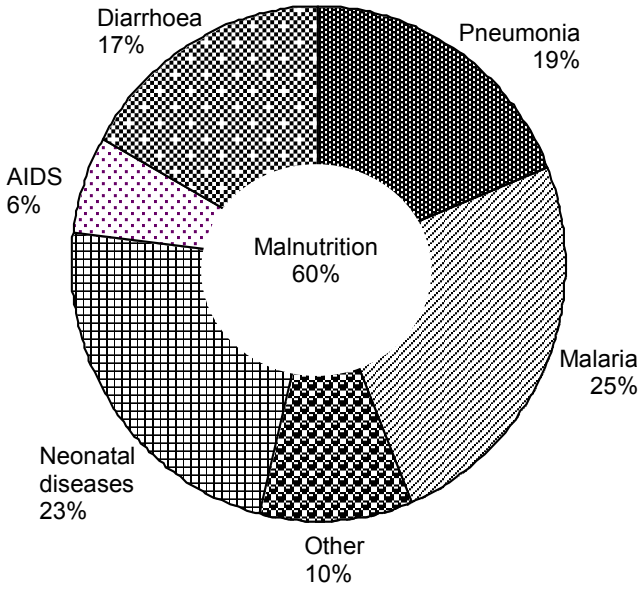
Figure 18. Conceptual Framework of the Determinants of Child Undernutrition [37,117,118]



4.2 IMMEDIATE CAUSES OF MALNUTRITION: DISEASE BURDEN AND INADEQUATE DIETARY INTAKE

In Uganda, as in many parts of the developing world, disease burden and inadequate dietary intake are the immediate causes of malnutrition in children under 5. As shown in **Figure 19**, malaria, neonatal diseases, diarrhoeal disease, acute respiratory infections (ARIs) and to some extent the risk of HIV/AIDS contribute significantly to the disease burden in young children. But malnutrition directly or indirectly contributes about 60 percent of child mortality, making it the most critical factor in childhood mortality in the country.

Figure 19. Causes of Child Mortality in Uganda [12]



4.2.1 Disease Burden

Disease causes loss of appetite, reduced food intake and increased loss and reduced absorption of nutrients, leading to malnutrition. After an acute infection among children, weight gain often recovers relatively rapidly, but linear growth is slower to recover.[39] Malnutrition compromises the immune system and increases the risk and severity of infection and disease. Kikafunda and others have shown the co-existence of the high prevalence of malnutrition in Uganda with fections among children, suggesting that poor immune function might be a result of adequate nutrition.[40] In a setting like Uganda, where infections occur frequently, linear growth hardly gets a chance to catch up, resulting in high levels of stunting. Four infections--malaria, ARIs, diarrhoeal disease and HIV/AIDS--are highly associated with malnutrition. There is seasonality in the incidences of the diseases reported but also changes in quality of care (both family and health care) with seasons. During the rainy seasons, the prevalence of childhood diarrhoea, malaria/fever and ARIs might increase. This is also the period when health facilities' supplies and staffing are lowest (as transport is limited by impassable roads and most health care providers take their holidays to tend to their farms) and when the quality of child care is at its worst because caregivers are busiest with farm activities.

4.2.1 Malaria

Malaria is endemic in Uganda; an estimated 88 percent of the population is exposed to moderate to very high malaria transmission. It is a leading cause of child mortality, killing nearly 70,000 to 100,000 children each year. Malaria also carries significant adverse consequences for pregnant women, some related to nutrition. Differences exist between districts even within the same region. For instance, an interview with

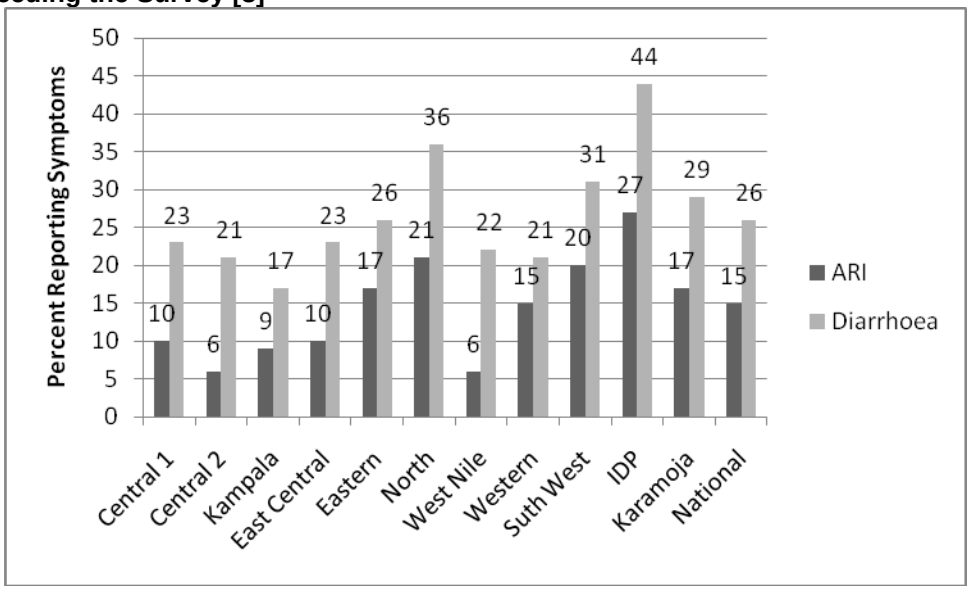
the Bushenyi District Health Team reported that about 8 percent of the population (60,000 cases out of a population of 830,000) was treated for malaria-related symptoms in 2007, representing 40 percent of the district's total caseload, while in Kanungu district the caseload from malaria was about 25 percent. In a survey of 1,123 children in Mbarara and Bushenyi districts in 2006, 32 percent were reported with malaria. In these districts, most child deaths (36 percent) were associated with malaria[7].

4.2.2 Diarrhoeal Disease and ARIs

Diarrhoeal disease and ARIs are widespread among children under 5, especially those under 2. Both infections taper off among children 36-60 months. The 2006 UDHS provides a snapshot of the level of infection in young children at the time of the survey.[8] **Figure 20** presents the prevalence of diarrhoea and ARI symptoms in young children in the two weeks preceding the survey. However, trends in infection are subject to seasonal variation; therefore the disease burden varies significantly over the course of a year.[8] Nonetheless, the survey findings illustrate that disease burden due to diarrhoea and ARIs is high in young children.

The highest prevalence of both symptoms of ARI and diarrhoea were reported in the north, especially in the IDPs. The southwest region also reported relatively high levels of both symptoms. Diarrhoea stems from poor hygiene and sanitation, including the lack of potable water and sanitation facilities, as well as from contaminated food.[42] Only 64 percent of Ugandans have access to an improved water source, and an estimated 33 percent use improved sanitation facilities.[16]

Figure 20. Prevalence of ARI and Diarrhoeal Disease Symptoms among Children Under 5 in the 2 Weeks Preceding the Survey [8]



As reported in the last three UDHS, the percentage reporting diarrhoea have increased, peaking among children 6-23 months, the same age groups reporting the highest rates of malnutrition. The fact that wasting rates rise steeply among infants from as young as four months suggests that infection rates are likely high and may be attributable to poor feeding practices where liquids other than breast milk might be introduced early, increasing the risk of infection. This is also the period when children become more

[7] Malaria is the leading cause of morbidity and mortality in Uganda and is responsible for up to 40 percent of all outpatient visits, 25 percent of all hospital admissions and 14 percent of all hospital deaths.[41] A survey of 202 households in Bufuula community in Uganda reported with 100 percent response rate reported that 34 percent of each household income was allocated to addressing the burden of malaria.[107]

[8] The 2006 Uganda DHS was conduct in May to October, when diarrhoea and ARI cases are likely to be high.

mobile and independent; putting dirty hands and objects into their mouths might be another cause of infections resulting in diarrhoea and other gastrointestinal problems. Contaminated food is another main route of transmission of diarrhoeal pathogens. A review by Esrey and Feachem [43] concluded that 15 to 70 percent of all diarrhoeal episodes might be associated with food preparation, handling and storage as well as feeding methods. Hands, water, utensils, feeding bowls, raw ingredients and the surrounding environment are potential sources of pathogens in infant food. It is also possible that rapid population growth has given rise to overcrowding and exhaustion of natural resources, which might be a contributing factor to this increase in diarrhoea prevalence over time.

Diarrhoeal disease is a common cause of malnutrition among children. Diarrhoea is associated with decrease in dietary intake (about 40-50 percent lower for energy and protein) among children.[44] This reduced intake is associated with up to 80 percent of weight faltering.[45] However, a number of studies seem to indicate that breast milk intake does not change during diarrhoea and adequately breastfed children are less likely to reduce their total energy intake.[46] Diarrhoea is also associated with the risk of VAD, and vitamin A supplementation has been shown to reduce the severity of diarrhoea and mortality attributable to diarrhoea.[47] So, health-care seeking and feeding behaviours during diarrhoea are likely to reduce the risk of malnutrition.

Table 5 illustrates the proportion of sick children whose caregivers sought treatment during the last episode of ARI, and the type of treatment used to manage diarrhoea. A majority of children who had ARI or diarrhoea the two weeks before the UDHS saw a health care provider. In the case of diarrhoea, although families consulted health care providers, only half of those decided to follow oral rehydration therapies (ORT). Many resorted to home remedies, and nearly 20 percent reported no treatment at all. Of interest are the relatively lower proportion of children in the southwest region who sought conventional health care or used ORT and the high proportion that used home remedies in the central and southwest regions. The Healthy Child Uganda survey in Bushenyi and Mbarara (both in southwest) reported use of oral rehydration salts (ORS) among only 11 percent of children with diarrhoea. The 2006 UDHS reported less than 17 percent of children were given additional food and fluids during the last episode of diarrhoea. Contamination is likely from home remedies that ill infants are given, such as the *fluid from tomatoes* children in Lira are given when they had stomach problems or the *"juice" from bananas* that children in Bushenyi are given.

Table 5. Proportion of Sick Children Who Sought Treatment for ARI and Diarrhoea Two Weeks Before the Survey, by Region [8]

Region	% seeking treatment for ARI	% seeking treatment for diarrhoea	% using home remedy for diarrhoea	% using ORT and Increased fluids	% No treatment for diarrhoea
Central 1	85	73	54	58	19
Central 2	85	66	38	57	19
Kampala	72	71	37	61	12
East Central	68	58	38	44	26
Eastern	66	71	45	59	15
North	81	89	25	63	11
West Nile	72	64	40	50	17
Western	66	67	43	48	19
Southwest	74	52	52	39	19
IDP	86	91	24	72	7
Karamoja	66	81	30	57	15
National	73	70	40	54	17

4.2.2 Infant and Young Child Feeding Practices and Care Practices

4.2.2.1 Introduction

Infant and young child feeding (IYCF) practices have a direct impact on both actual food intake and disease. Care practices include care for women during pregnancy to ensure adequate food intake and rest, reduced work load and disease control and prevention. Practices also include quality care and support before, during and after delivery to ensure women's nutrition and health are maintained, and support for implementing recommended child-feeding behaviours. Infants must be introduced to the breast within the first hour of birth, be exclusively breastfed the first six months of life and be introduced to complementary foods at six months. Complementary foods should be of high energy and nutrient density, diverse, safe and fed frequently. Breastfeeding should be continued up to or beyond 24 months. During the first eight weeks after delivery (six weeks if the mothers are not exclusively breastfeeding), new mothers should take vitamin A supplements and be supported to successfully initiate the child-spacing method of their choice. Also of crucial importance is child feeding during illness. These infant-feeding practices are major determinants for child nutrition during the most vulnerable period of life and are discussed in the following sub-sections.

4.2.2.2 Breastfeeding Practices

Breastfeeding is a key factor in child survival. Children who are optimally breastfed are three times more likely to survive by the end of the first year of life compared to children who are suboptimally breastfed. Optimal breastfeeding is defined as exclusive breastfeeding for the first six months and continued breastfeeding with adequate complementary foods from six months to two years or beyond. Uganda's culture is positive toward breastfeeding. Initiation of breastfeeding is nearly universal in Uganda; 98 percent of women initiate breastfeeding of their infants.[8] For breastfeeding to be effective, infants should be breastfed on demand. In most communities, infants remain close to their mother, which facilitates breastfeeding on demand. The 2006 UDHS reported that almost all children (96 percent) 0-6 months were breastfed at least six times in the 24 hours before the interview[9] (**Table 6**).[8] In a 1994 Wellstart study, a significant proportion of women understood "on-demand feeding" to mean "feeding the child when they cry"—which would mean that the more passive infants, like low-birth babies, might not be fed frequently enough.[68]

Table 6. Frequency of Breastfeeding among Children Under 6 Months [8]

Region	% breastfed 6+ times in last 24 hrs	Mean # of feeds in a day	Mean # of night feeds
Central 1	95	7	5
Central 2	96	6	4
Kampala	96	7	5
East Central	96	7	4
Eastern	95	8	6
North	96	8	6
West Nile	95	9	5
Western	97	8	5
Southwest	94	6	4
IDP	93	8	5
Karamoja	98	9	8
National	96	7	5

[9] This reflects the frequency of feeding on demand, but not necessarily that the child was full at every feed.

HIV-positive mothers tend to breastfeed for a shorter period than the general population. A cross-sectional study in eastern Uganda estimated the median duration of breastfeeding for HIV-positive mothers at 12 months, compared with 21 months for the population in eastern region during the 2006 UDHS. Sixty-four percent of the mothers mentioned being HIV-positive as the major reason for stopping breastfeeding before the child was 2 years.[69] Other reasons included pregnancy, no milk in breasts, the child refused the breast or was refusing food, or the mother got sick.

4.2.2.3 Initiation of Breastfeeding

The national guidelines recommend that breastfeeding be initiated within the first hour after birth. Early initiation of breastfeeding takes advantage of the baby's first hour of alertness and the baby's instinct of suckling at the breast to promote breast milk production, release oxytocin in the mother to help contract the uterus and reduce the risk of postpartum haemorrhage, and helps establish successful breastfeeding and bonding between mother and child. Early initiation also provides the infant with colostrum, the first yellow thick milk that is rich in antibodies that protect the newborn from disease. Generally, most women give colostrum to their children except in a few isolated cultures with perceptions that lead to discarding of colostrum. In addition, early initiation can reduce the risk of neonatal mortality by 16 percent if mothers start breastfeeding on the first day and by 22 percent if breastfeeding is initiated within the first hour. [136] Early initiation also increases the overall duration of breastfeeding [70].

Only 42 percent of infants start breastfeeding within an hour of birth, 86 percent within the first day, and the remaining 12 percent start later.[8] Early initiation has increased from 32 percent in the 2001 survey. The percentage breastfed within an hour of birth varies regionally, from 57 percent in Karamoja to 35 percent in the Southwest. In a survey in Bushenyi and Mbarara districts, both in the southwest region, 32 percent of newborns had been breastfed within an hour after birth and 12 percent did not begin until after 24 hours.[41] Findings from a cross-sectional study on infant feeding practices conducted in Mbale district in eastern Uganda were similar; 39 percent of women initiated breastfeeding immediately after birth, 50 percent within the first two hours, and 68 percent within the first day.[136] Women reported that a major reason for delayed initiation was that their breast milk came late (60 percent); other reasons include "mother needs to rest after delivery," "complications during delivery" and "child being sleepy."[71]

Although the fear of transmitting HIV to children does exist, there is no evidence that it is a factor in initiating breastfeeding, even among HIV-positive women. Without interventions, it is estimated that about 20,000 children in Uganda would be infected with HIV annually, with transmission through breastfeeding accounting for up to 20 percent of mother-to-child transmission (MTCT). The risk of MTCT is reduced by antiretroviral (ARV) prophylaxis for HIV-infected pregnant women and their infants, and appropriate infant feeding. In Uganda, 73 percent of women are aware that HIV can be transmitted by breastfeeding (the range is from 85 percent in Kampala to 65 percent in the North).[8] Similarly, a knowledge, attitude and practice (KAP) survey conducted in Western and Northern Uganda found widespread knowledge on the risk of HIV transmission through breastfeeding. A survey undertaken by Catholic Relief Services (CRS) in 2007 found that 51 percent of mothers reported that to reduce the risk of HIV transmission, they would advise all HIV-positive mothers not to breastfeed.[71] Postnatal attendance in clinics has been shown to be a key factor in higher adherence to recommended breastfeeding practices among HIV positive mothers.[72] Similarly, a survey of HIV-positive women in eastern Uganda reported that after counselling on infant feeding options, 91 percent of the mothers opted to initiate breastfeeding and only 9 percent opted for replacement feeding.[69]

4.2.2.4 Exclusive Breastfeeding[10]

The Uganda Policy Guidelines on Infant and Young Child Feeding recommend that infants should not be given any fluids (including water) or foods other than breast milk until they turn 6 months [133]. The only exception is medicines or vaccines. The Government of Uganda recommends "exclusive breastfeeding for all infants whose mothers are HIV negative or do not know their HIV status. HIV positive mothers are

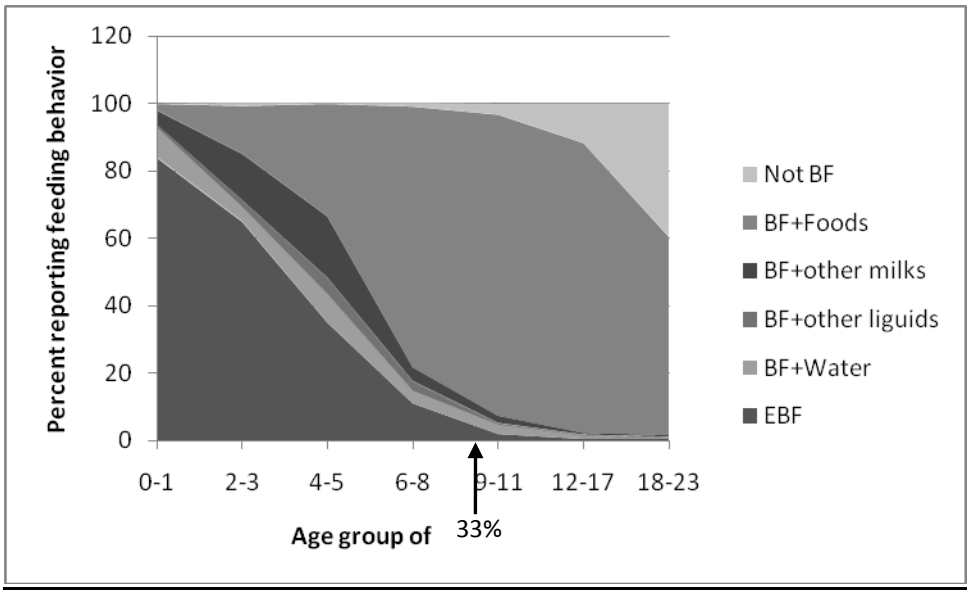
[10] Exclusive breastfeeding is defined as giving nothing else but breast milk, not even water during the first six months of an infant's life.

also advised to exclusively breastfeed their infants for 6 months unless they meet the acceptable, feasible, affordable, sustainable and safe (AFASS) criteria."[134] Exclusive breastfeeding (EBF) protects infants from infection; infants who are not exclusively breastfed in the first two to three months of life are six times more likely to die of infection than those who are. However, many children in Uganda are not exclusively breastfed. **Figure 22** illustrates the sharp drop in EBF rates among infants in Uganda, from 84 percent among infants 0-1 month to 65 percent among infants 2-3 months to about 33 percent among infants 4-5 months.[8] By age 4-5 months, about 33 percent of children are already on foods other than breastmilk, water or juice. By 6 months, only around 10 percent of infants are exclusively breastfed. The definition of EBF in the UDHS is based on a recall of exclusive breastfeeding in the previous 24 hours and not whether the child has ever been given other foods/fluids from birth. The prevalence of EBF (as defined in UDHS) has declined over time, from 70 percent of infants 0-5 months who had not received any other fluid/food but breast milk in the past 24 hours in 1995 to 63 percent in 2001 to 60 percent in 2006. This decline parallels the trend that increasingly more children are being introduced to other foods and fluids earlier in life.

The definition of EBF by UDHS may overestimate exclusive breastfeeding rates. A study conducted in Uganda that compared the methodology of estimating EBF rates by use of 24-hour recall with a methodology that asks feeding patterns since birth reported that the 24-hour recall consistently overestimated EBF rates by 50-70 percent.[136] A recent study in eastern Uganda, using the definition of EBF for six months, reported a rate of only 20 percent.[69] However, measuring exclusive breastfeeding using a longer recall period also poses challenges to the accuracy of the data as mothers may over- or under-report the use of foods or fluids other than breastmilk. Based on **Figure 21** from the UDHS and other recent studies, the International Baby Friendly Association Network in Uganda has estimated the prevalence of EBF for six months to be around 33 percent.

While many women are aware of the risk of HIV transmission through breast milk, a majority are not aware of the benefits of EBF in the HIV context and that mixed feeding increases the risk of HIV transmission as a result of more infections to the child and potential breast problems for the mother. The recommendation for HIV-positive women in Uganda is "to exclusively breastfeed for the first six months of life, irrespective of the infant's HIV status, unless replacement feeding is AFASS and continue to breastfeed to when the child is 24 months if the alternative animal milk options are not AFASS."[134] A study on low adherence to EBF in HIV-positive mothers in eastern Uganda showed that 7 percent had exclusively breastfed for three months and none were exclusively breastfeeding at six months.[136] Kagaayi and others documented a 25 percent breastfeeding rate among infants born to HIV-positive women in Rakai at one month postpartum.[73] Magezi and others found that the percentage of mothers exclusively breastfeeding was 65 percent in mothers in a preventing MTCT (PMTCT) programme, compared with 98 percent in non-PMTCT mothers in Nsambya Hospital in Kampala.[74] The mean duration of breastfeeding was 2.5 months among PMTCT mothers, compared with 4.1 months in non-PMTCT mothers in this study. The reason for cessation of breastfeeding included advice from health workers, illness of mother, breastfeeding difficulties and breast problems, perceived milk insufficiency, family pressure, education status of the mother, economic status, enrolment in a PMTCT programme and the sero status of the mother. In another study in Bushenyi, western region, it was found that HIV-positive women practiced EBF more often (39 percent) than women who did not know their status (34 percent). In the context of HIV/AIDS, support to good positioning and attachment is even more important as it helps prevent breast problems, thus reducing the risk of MTCT for HIV-positive mothers.

Figure 21. Infant Feeding Practices, by Child's Age [8]



Duration of EBF

The median duration for EBF estimated in the 2006 UDHS was three months (**Table 7**). The median for predominant breastfeeding was four months. The median duration of EBF was lower in Southwest, North and East Central regions compared to the national average. Children living in urban areas were breastfed for less time (median of 2.8 months) than those living in rural areas (3.1 months).

Table 7. Median Duration of Breastfeeding Children Under 6 Months [8]

	Median duration of breastfeeding (months) among children born in the last 3 years		
Region	**Any breastfeeding**	**Exclusive breastfeeding**	**Predominant breastfeeding**
Central 1	19	3	4
Central 2	18	3	4
Kampala	18	3	3
East Central	18	1	3
Eastern	21	3	4
North	22	3	5
West Nile	23	5	5
Western	20	4	5
Southwest	21	3	4
IDP	20	3	5
Karamoja	24	4	5
National	20	3	4

Use of Prelacteal Feeds

Optimal breastfeeding in Uganda is undermined by the practice of giving infants prelacteal feeds at birth. Prelacteal feeds have been shown to increase the risk of wasting in infants, because they interfere with establishing successful breastfeeding and increase the exposure to and risk of infection in newborns.[75] A study in Kampala reported that infants who received breast milk as the first feed were more likely to continue exclusive breastfeeding, while the introduction of prelacteal feeds increased the likelihood of

fluids other than breast milk also being introduced early.[76] A study in eastern Uganda reported a significant negative effect of prelacteal feeds on growth.[75]

In the 2006 UDHS, more than half of the infants born in Uganda (54 percent) received prelacteal feeds, and the Southwest and East Central regions reported the highest use of prelacteal feeds in the country. The most common prelacteal feeds include plain water (37 percent), water with sugar or glucose (31 percent), animal milk (16 percent) and tea (5 percent).[8] In their study in eastern Uganda, Fadnes et al. found that over 64 percent of children received prelacteal feeds in the first three days.[69] Similarly, Engebretsen and others found that 57 and 43 percent of children in eastern and western Uganda, respectively, received prelacteal feeds.[77,136] Use of prelacteals was more common among more-educated women and those from higher wealth quintiles: 50 percent of infants born to mothers without education and 56 percent of infants born to mothers with secondary or higher education were given prelacteals, and 42 percent of children from the poorest households and 58 percent of children from the richest received prelacteals.[8]

Box 3. Use of Prelacteal Feeds

"I got my baby last year; I was 19 years old. I had heard many things concerning feeding the baby. I had visited the health centre only three times before giving birth, which was at home with my mum. The health worker had told us to give only breast milk, but I did not have milk for two days. My mother and I were worried, and I gave my child boiled water with sugar. We added sugar so that it tastes sweet. My child did not have diarrhoea then, but when we gave him bean soup at three months, he had diarrhoea. We continued to give him the soup so that he gets used to it."

--20-year-old woman in Lira, Northern region

The main reasons reported for giving prelacteal feeds include: a) mothers have to wait until the breast milk starts flowing before breastfeeding and meanwhile they have to give the baby something to drink; b) initially, the baby might not have enough by depending on mother's milk alone; c) there is need to clean the baby's throat and gut system; d) mother feels pain when breastfeeding immediately after birth or she is exhausted after delivery; and e) traditions or the advice from older people in the community.

Box 4. Early Introduction to Other Foods

"Women are always very close to their babies. They move with them everywhere. When eating their meals, the baby stretches their hand to [get] food. You cannot deny your child every time; everyone will be very unhappy with you. If my husband, friends or relatives bring (cow's) milk or juice for the baby, I have to give it to the baby. I give the baby what I am eating, just soften it with soup or water and give it to them, in addition to breastfeeding. What is wrong giving your child a sip of soda or a bite of doughnut [or] biscuit? By the time the child is sitting and crawling (around 3-4 months), you have to give other fluids like porridge and soft foods because breast milk is inadequate and the child has to get used to family foods.

"If the child starts to have diarrhoea when we breastfeed, we suspect we are pregnant and we may introduce other foods. When I started family planning, I had to stop breastfeeding because I feared that the medicine may affect my baby."

--A mother of three in Kanungu, southwest Uganda

Mixed Feeding Before 6 Months

The sharp drop in EBF rates in the first few months of life indicates that mixed feeding[11] before 6 months is a common practice in Uganda. "It is normal practice to give children something else like water or other milks when the mother feels it is necessary."[78]

Many infants under 6 months are introduced to fluids other than breast milk. By 1 month, 16 percent of infants are given other fluids or foods. Between 2-3 and 4-5 months, that number gradually rises from 34 to 65 percent.[8] Early introduction of other foods in addition to breast milk before 6 months was reported more often in the East Central and Southwest regions. Foods and fluids other than breast milk are partial breast milk substitutes. Because these foods satisfy an infant's hunger, they suckle less at the breast, resulting in decreased breast milk production and increased risk of infection for infants. A common reason for mixed feeding is perceived inadequate milk production. A study conducted in Kawempe, one of Kampala's suburbs, documented perceived inadequate milk production as the major factor in mixed feeding.[76] Working away from home, maternal illness, the child's increased appetite, child illness and contraception were also referred to as factors.[79] Return to livelihood activities is a common reason given for early introduction to other foods/fluids and not exclusively breastfeeding, especially among participants in the informal economy. Fluids like bean soup and mashed peas are also introduced so the child can become accustomed to the foods eaten in the home. In addition, advice from health workers, friends and relatives also plays a major role.

4.2.2.5 Complementary Feeding

Children can derive all their energy needs from breast milk alone until they are 6 months. As they grow older, breast milk alone is not adequate to meet their increasing energy and nutrient needs. At 6-8 months, breast milk provides about 60 percent of the total dietary energy requirement; 40 percent should come from complementary foods. Breast milk can provide only 50 percent of energy needs at 9-11 months and only 30 percent at 12-23 months.[82] Therefore timely introduction of complementary foods at 6 months of age is necessary to provide the energy and nutrients[12] that cannot be provided by breast milk alone. Optimal complementary feeding is a function of timely initiation of complementary feeding, adequate frequency of feeding (at least twice a day for breastfed infants 6-8 months, at least three times a day for breastfed children 9-23 months and at least four times a day for non-breastfed children), continued breastfeeding and adequate quantities and quality of foods (food diversity and energy/nutrient density) and food safety.

Timely Introduction of Complementary Foods

Over 70 percent of Uganda's children are introduced to solid or semi-solid food before the recommended age of 6 months. In some instances, complementary foods are introduced late, after 6 months, which increases the risk of malnutrition. However, though rates vary from region to region, the likely reasons for early introduction to other foods are a) the mother not producing enough milk to meet the baby's demands, b) the mother becoming pregnant and needing to wean the child and c) mothers' belief that fluids like animal milk, porridge and soups were actually not "foods." Most mothers believe children need small amounts of drinks from around 3 months onward; soups, tea, thin porridge and other fluids/milks are considered appropriate. Semi-solid foods are normally introduced when the child is 6 to 8 months. Semi-solids and pastes are considered foods and, according to the mothers, are generally not considered as appropriate for very young children but the older children are said to need food and drinks. Most infants 6-9 months (about 80 percent) in Uganda are already receiving complementary foods in addition to breast milk.[8] A survey conducted in northern Uganda in 1999 reported 29 percent of children 6-9 months had not started on solid or semi-solid foods before the survey but had been on breast milk and other fluids.[83] About 2 percent of infants 6-9 months were fully weaned, and about 18 percent of children were introduced to solid/ (semi-) solid complementary foods after turning 9 months. "Delayed

[11] Mixed feeding is defined as giving children both breast milk and other fluids or foods.
[12] The gap between what is provided by breast milk and what the child needs increases with the child's age, especially for energy, iron, zinc and vitamin A.

introduction of solid and semi-solid foods is mainly to do with perceptions that the child was not as yet ready for solid/semi-solid foods and that such foods would have an adverse effect on the child, for instance, cause stomach ache or discomfort, diarrhoea, large stomach and choking. Majority of those who had delayed introduction of complementary foods had also not visited a health facility in the 3-4 months prior to the survey."[83]

Frequency of Feeding Complementary Foods

Breastfed children 6-8 months need 200 kcal of complementary foods per day, those 9-11 months need about 300 kcal per day and those 12-23 months need about 550 kcal per day.[109] A key indicator of adequate complementary feeding is the frequency of feeding. Because their stomach capacities are small, infants and young children need to eat small frequent meals that are energy and nutrient dense every day. According to national guidelines on infant feeding, breastfed infants 6-8 months should be fed complementary foods two to three times a day, while children 9-23 months should be given complementary food three to four times a day. Non-breastfed children should be fed at least four times a day.

Overall, only about 40 percent of breastfed children 6-23 months were fed the minimum recommended number of times a day [8] (**Figure 22**). It is common in Uganda for young children to eat the same foods at the same time as adults in a household: The frequency a child eats is the same as the number of meals eaten in the household, which might vary by region and season. Households in the north normally reported eating fewer meals in a day. Proportionally more children in the north (Karamoja), IDPs were fed at an adequate frequency. According to the National Household Survey 2005/06, 18 percent of households in northern Uganda reported that they ate only one meal a day, compared with 5 percent in eastern and 4 percent in western regions.[8] CRS also documented similar feeding patterns: 49 percent of children 6-23 months in northern regions were fed only twice or less a day compared with 34 percent in the western regions.[71] With the low frequency of child feeding, especially in the north, it is unlikely that the daily energy and nutrient needs are met.

Box 5. Frequency of Child Feeding

"Normally, infants and young children eat together with their parents, during meal times or whatever snack adults are having. Rarely are special foods prepared for infants. During the planting season, most homes cook one or two meals in a day; the first meal is prepared late in the afternoon. The evening meal is normally late, and some is stored to be eaten as breakfast the following day or to park for the children.

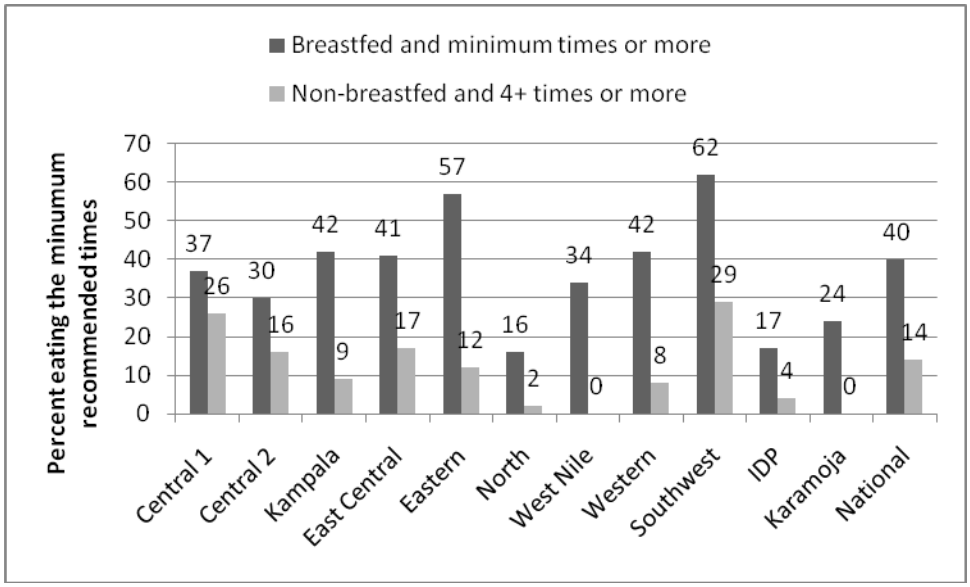
"If a mother has to go to work, the remaining 'food' from the previous meal (matooke or potatoes, or millet porridge) is carried in a sealable container to the workplace (e.g., farm) and fed to the baby probably twice or three times. The mother may also carry (boiled) water for herself, but the baby may also be given sips. As the mum works, the baby is left to sleep nearby. The baby is breastfed whenever they cry (breastfeeding is given not only as a food but also as a means to comfort the baby). Rarely do mothers wash the breast before feeding the baby."

--Mother of two in Bushenyi, Southwest Uganda

Dietary Diversity and Nutrient Density

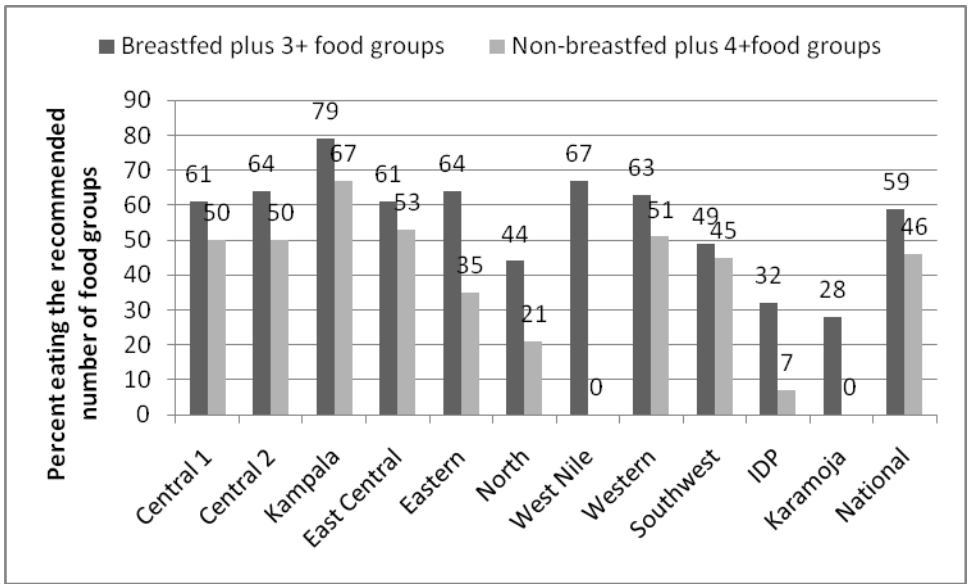
The Uganda DHS 2006 indicates that there is significant regional variation in the diet diversity of infants and young children. As shown in **Figure 23,** only about 60 percent of children in Uganda received adequate variety in their meals. The range was from 28 percent in Karamoja to 79 percent in Kampala, again indicating lowest variety for children in the North.

Figure 22. Frequency of IYCF Among Breastfed and Non-Breastfed Children [8]



In Uganda, most times infants and young children eat with their mothers. The quality of the infant's food is as good as the family meal. The difference is that the infant's food is softer, mashed and many times made more watery. When there is no food in the household the child, especially infants, might rely entirely on breast milk. Data from the UDHS show that many children get a variety of foods, but the most commonly consumed foods in this age group are those made from grains such as millet, maize or sorghum that tend to be low in nutrient density.

Figure 23. Breastfed and Non-Breastfed Children Consuming More Than 3 or 4 Food Groups [8]



The food eaten in the household is the common first food given to young children. Children are also given porridge, soups and other milks. Porridge, where available, is the only food prepared specifically for an infant. It is commonly made from plain cereals or cassava and water, and usually nothing is added. Maize-based porridge is common across the country, while millet-based porridge is more common in

Box 6. Common Foods for Children

"Children are fed mainly matooke and "banana juice" and beans (or "beans soup"), potatoes, pumpkins, mashed "posho" (thick maize gruel). Preparation methods and kinds of food have changed over the years. Some years ago, millet or soya porridge and pumpkins were common foods for children; we never added sugar. Those days, children were often also given ghee and fermented milk. Nowadays, few children get these foods. In fact, some foods like fermented milk are discouraged by health workers.

"Young children are also given pawpaw and avocado while older children are left to collect by themselves whatever fruits are in season. Morning hours, children will be given family foods left over from the previous night. The leftovers or porridge is normally given cold. Older children of 2 years and over eat together, but younger children eat with their parents. We have to teach them to share. When the young child refuses food, we give them the breast to calm them."

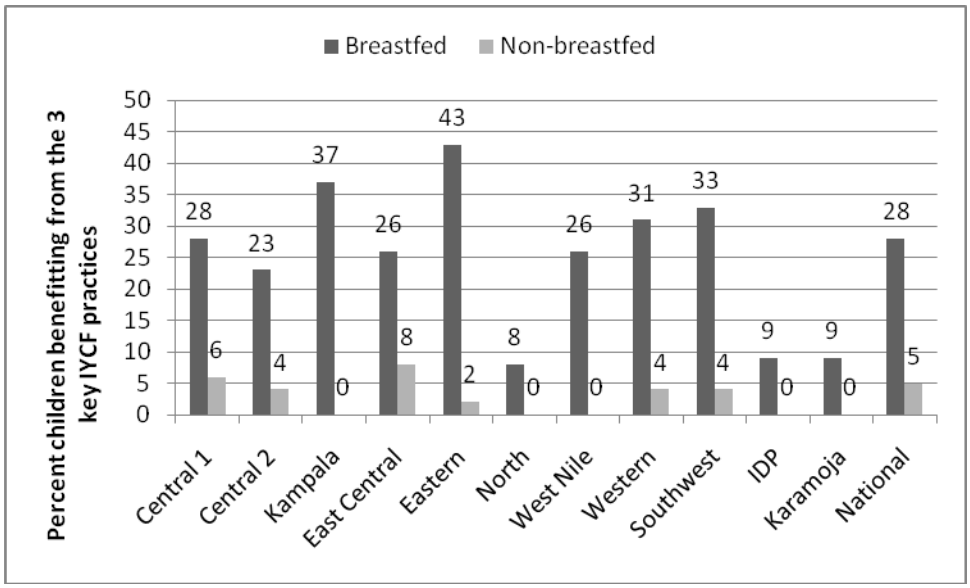
-- School teacher and mother of four, Mbarara, southwest Uganda

Northern, Western and Southwestern regions. Kikafunda reported that about 80 percent of children 6-12 months in her study were fed cereal porridge while 90 percent were fed matooke (mashed watery plantain).[85] Plain cereal or cassava porridge is bulky and contains inadequate energy and nutrients for the young child to grow and develop well. In studies in central and eastern Uganda, Hung reported that maize and millet-based porridges fed to most children in her sample were very diluted, and therefore low in energy and nutrient density.[86] The study by Kikafunda estimated that the cereal-based porridge prepared for young children had energy density of only 37 kcal/100 grams. Taylor found that only 17 percent of samples of complementary food fed to young children under 24 months had an energy density of 100 kcal/100 ml or more.[87] Few mothers enriched the porridge with energy- or nutrient-dense foods like simsim, ghee/oil, small dried fish or milk.[87] Fruits and vegetables were rarely mentioned as having been fed to the child. Mothers interviewed by Hung were hesitant to feeding infants a thicker paste; most mothers considered porridge as a "drink" and not a "food" as the consistency was a thin liquid [86]. But mothers interviewed by Foote indicated willingness to mix groundnut paste and beans with the child's staple, although affordability was referred as a barrier.[88]

The 2006 UDHS combined three standard infant and young child complementary feeding practices--continued breastfeeding, minimum number of food groups given (diet diversity) and minimum frequency of feeding—and identified the proportion of young children who benefited from all three.[8] As shown in **Figure 25**, about one in four children 6-23 months, 28 percent of breastfed children and only 5 percent of non-breastfed children met all the three minimum standards for IYCF. The North fared the worst, mainly because of the low frequency of feeding and number of food groups given to the child. Children from Eastern Uganda fared better than the national average. Inadequate complementary feeding in Uganda is associated with inadequacy in the two of the three recommended: low frequency of feeding for the child's age and insufficient variety and diversity of foods.

A growing area of interest in child feeding is the parent-child interaction during feeding as a supportive practice for both feeding and cognitive development. Active feeding includes having a child eat from his or her own plate, stimulating an older child to feed himself or herself and helping a child eat more, particularly when sick. Children who eat without adult encouragement might consume too little food, even if the frequency of feeding is adequate. Little is known about how Ugandan parents and children interact during feeding, although this is important to understand to improve IYCF practices. A formative research study conducted in eight Ugandan districts, two communities in each district, found that an important barrier to caregiving for both mothers and fathers was lack of time to attend to their young children's needs.[89]

Figure 24. Breastfed and Non-Breastfed Children Benefiting From All 3 IYCF Practices by Region [8]



4.4 UNDERLYING CAUSES OF MALNUTRITION: FOOD SECURITY AND HEALTH CARE

4.4.1 Food Security in Uganda

Definition of Food Security

Food security exists when *"when all people at all times have both physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference requirements for a productive and healthy life."* [135] The definition focuses on three distinct but inter-related elements, all three of which are essential to achieving food security:

- **Food availability**: Having sufficient quantities of safe and nutritious food from household production, other domestic output, commercial imports or food assistance
- **Food access**: Having adequate resources to obtain appropriate and preferred foods for a nutritious diet, which depends on available income, distribution of income in the household and food prices
- **Food utilisation/consumption**: Proper biological use of food, requiring a diet with sufficient energy and essential nutrients, potable water and adequate sanitation, as well as knowledge of food storage, processing, basic nutrition and child care and illness management.

4.4.1.1. Vulnerability to Food Insecurity in Uganda

The World Food Programme's recent Vulnerability Assessment Mapping (VAM) survey provides some insights into the regional variation, pattern and underlying causes of food insecurity in Uganda. The results of the Uganda CFSVA 2009 indicate that 6% of households are food insecure, 21% are moderately food insecure and at risk of becoming food insecure if conditions deteriorate. The remaining 73% are classified as food secure. As shown in **Table 9**, the reasons for food insecurity differ across the country.[23] The effects of the long conflict in the North continue to fuel poverty and food insecurity there. Food production is not yet at capacity because of fear of insecurity and land disputes. In addition, households are still highly dependent on food aid, incomes are low and livelihoods are undiversified. In Eastern and East Central Uganda, lack of livelihood diversification, reduced wages and dependence on agriculture alone are keeping incomes low and have been identified as plausible explanation of the

prevalence of food insecurity in these regions*. These regions have a high number of moderately food insecure households that are at risk of becoming highly food insecure if their food stocks are depleted*. Chronic illness among adults also appears to be a factor in increasing the risk of food insecurity. In the Central region, inadequate production of food stocks at the household level, lack of income and increasing food prices appear most likely to explain the prevalence of food security. The Western and Southwestern regions have the lowest food security, but because agriculture is a mainstay among the poor, many of whom work as agricultural labourers, their income is subject to seasonality, and wages can fluctuate significantly. In the WFP assessment, reduced wages and rising food prices appear to be factors in the prevalence of food security. Overall, low wages and incomes, dependence on agriculture and lack of diversification in livelihood activities appear to be factors that reduce food security [23].

Table 8. Prevalence and Characteristics of Food Insecurity, by Regions [23]

Region	Total population (numbers)	% highly food insecure	% moderately food insecure	Characteristics of Food Insecurity
Northern region				
Acholi				• Underlying food security masked because of food aid • 20% of all food items from food aid • Current food security situation unsustainable and vulnerability is high • Total expenditures in this region is low, suggesting little disposable income and most may be spent on food • Low diet diversity • On average 2.5 acres of land cultivated by families, but only 55% of land available is cultivated • 44% are female-headed households with low literacy • 60% are asset-poor
Kitgum	357,000	3.2	39.0	
Amuru	208,300	4.2	44.6	
Gulu	353,500	1.3	36.7	
Pader	436,000	0.7	28.5	
West Nile	2,543,000	1.1	13.2	• Relatively more food secure than other Northern districts • 95% report receiving aid; for a majority this is non-food aid • The total area cultivated is low relative to the land available for farming • 65% of total expenditures are on food • Diet diversity is better relative to other regions • Humanitarian aid has likely sustained food security • Development of infrastructure, markets and livelihoods is needed to maintain gains to date
North Central				• Food insecurity is relatively low, except for Soroti • Food insecurity might be largely attributable to changes in food availability, lack of access to enough food, lack of money to buy food and rising food prices in the markets
Lira	956,100	1.0	26.8	
Apac	780,100	2.9	16.2	
Katakwi/ Amuria	396,500	1.1	19.6	
Soroti	1,013,400	7.2	35.7	
Karamoja				• Insecurity fuels poverty in much of the North, especially Karamoja • Food insecurity is very high, and 36% of all food items consumed are from food aid • Households are highly vulnerable to shocks, both environmental and household-specific, and many households report experiencing shocks • Lack of diversification in and options for livelihoods makes livelihoods are extremely vulnerable
Abim	54,100	9.6	39.7	
Kotido	179,300	16.7	44.0	
Kaabong	301,200	16.0	42.0	
Moroto	265,300	30.0	42.8	
Nakapiripirit	217,500	22.7	18.5	
Eastern				
Elgon	1,440,600	2.4	10.9	• Food insecurity is high in some parts of this region • Diet diversity and quality are low • Shocks are low and wealth/assets are high relative to other areas • Undiversified agriculture predominates, limiting income, lowering resilience to shocks and diminishing the ability to move out of poverty • Increases in food prices have adversely affected households • 21% of households reported a household member had reduced income • Industry has been declining and land fragmentation has been increasing • Chronic illness, reduced incomes (lower wages and/or fewer days of paid work) and high food prices appear to underlie food insecurity
Budaka	1,421,100	11.7	33.5	
Eastern Busoga	3,375,900	15.1	26.0	

				• There is a high number of moderately food insecure households; if food stocks are depleted before the next harvest and food prices continue to rise, these households are vulnerable to becoming severely food insecure
Central				
Central Buganda	3,076,600	3.0	14.7	• In Central Buganda, food insecurity is a result of inadequate food stocks, lack of money for food and rising market prices for food • Access to food and rising food prices are important concerns in this area
South Buganda	3,193,000	9.3	20.4	
Western				
Kasese	924,800	4.8	14.0	• Food insecurity is relatively low in this region • Except for Bunyoro-Toro, households in this region appear to be vulnerable to shocks and thus increased risk of food insecurity • Agriculture is the main livelihood activity, with many working as agricultural labourers • Food insecurity is exacerbated by high food prices and reduced wages of household members (lower daily wage rate for labourers)
Bunyoro-Toro	2,779,300	2.1	7.9	
Southwest				
Kigezi	1,255,000	3.3	19.6	
Ankole	2,534,600	7.6	26.2	

4.4.1.2. Food Availability

National Food Availability

Uganda is self-sufficient in the production of most staples except rice and wheat, which contribute less than 5 percent of the national calorie consumption.[6] The Food and Agriculture Organisation's Food Balance Sheets estimate Uganda's average per capita dietary energy availability at 2,380 kcal per day, well above Uganda's computed minimum per capita daily energy requirement of 1,700 kcal per day.[6] The depth or intensity of hunger, a new indicator of food insecurity, for Uganda is estimated at 220 kcal per person per day (2003-05). However, despite the availability of food at the aggregate level, significant numbers of vulnerable households lack adequate access to food.

The high population growth rate threatens Uganda's self-sufficiency in food production in the long term. Overall food production per capita has declined between 1964 and 2005 [6]. There has been a continued reduction in production relative to population size, a situation that, if not reversed, would see Uganda importing more food to meet its growing needs. For the 85 percent of Uganda's population that rely on semi-subsistence farming, food production has been declining [23].

Food production in Uganda has declined for a variety of reasons, and this varies regionally as well [23]. In the North, farming is slowly being rehabilitated after the cessation of conflict, but land clearing is challenging due to landmines and land tenure is tenuous. Families are uncertain of what land they can access and for how long, which results in lower long-term investments for improved and increased food production over time. Land degradation and poor soil fertility are also significant problems across the country. In some places, land allocation and tenure are also shifting, resulting in greater fragmentation of farm land, and families are accessing smaller plots of land on which to grow food. Cash-cropping is also increasing in some parts of Uganda, leaving less land available for subsistence farming, an activity undertaken predominantly by women. Choices on what crops to grow are also driven by the level of labour required. Crops such as matooke and cassava are sometimes favoured because they require less labour than crops such as millet. The recent VAM survey found that on average households grow two to three crop varieties and the land cultivated per family averages at about 2.5 acres [23]. Households also have to sell some of their produce to pay for essential food and non-food necessities; the remaining food stocks might not last from one harvest season to the next, and households have to buy food to supplement their own production.[84]

Land Access and Tenure

While land availability is not a problem at the aggregate level, there are critical regional disparities. The high population density in the East, West and Central parts of Uganda has led to fragmentation and exploitation of marginal lands. Insecurity in the North has limited access to land. In general, Uganda has a

complex land tenure system, as in much of Africa, that is characterised by four forms of ownership, access or tenure [23]:

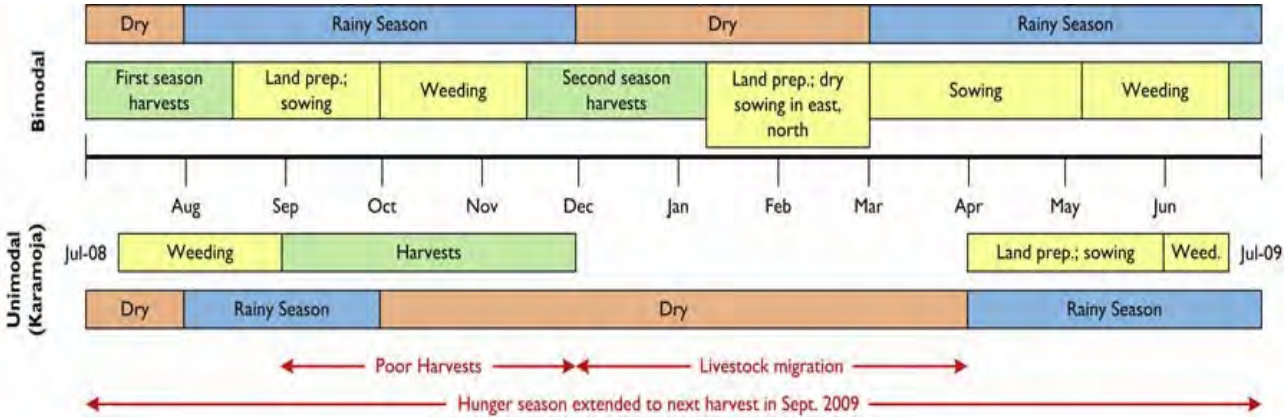
- Customary land tenure, a traditional system of individual and communal land ownership
- Leasehold, with leases from 49 to 99 years
- Freehold, individual ownership that leads to greater fragmentation of land parcels due to inheritance “Mailo”, a limited form of freehold that recognises tenants’ rights

For the rural poor, these systems are important in determining their ability to produce food to maintain their households’ food security. As land becomes fragmented, production becomes inadequate for families to subsist on. Moreover, women, who are primarily subsistence farmers across Uganda, are allocated land through marriage; as a result their access to land is dependent on men and significantly more insecure.

Differences in Regional Food Production

As mentioned earlier, Uganda has two agro-climatic zones, with two periods of harvest in the South and one in the North. **Figure 25** presents a seasonal calendar of food production.

Figure 25. Seasonal Calendar in Areas With Unimodal or Bimodal Rainy Periods [91]



Areas with a single harvest season experience longer hunger periods. In the North and Karamoja, sorghum, maize and beans are the main crops, whereas in the Southwest there is greater diversity, representing a more tropical environment, including matooke, fruit, cassava and pulses. This variation also leads to variation in the diet and food consumption patterns across the country.

Household Food Availability

Although national level data indicate there is currently enough food for everyone, regional availability varies, with some regions faring better than others. The Eastern and Southwest are generally the country’s breadbasket, producing most of the food consumed in Uganda. By contrast, vulnerability in food availability is more pronounced in the North, East and Northeast, where about 2 million people were categorised as moderately to highly food insecure in 2008, based mainly on the ability to produce enough food for own use at the household level [91].

Box 7. Effects of Commercialization of Agriculture

"There has been a decline in food production for home consumption. Communities learn from each other that there is "quick money" in cash crops. There is intensive promotion of commercialized agriculture by both the government (e.g., through NAADS) and the private sector (e.g., Mukwano for sunflowers and BAT for tobacco in the North). As such, more and more land and household labour have been allocated to crops that bring liquid income to the household, for instance, sunflowers, soya and simsim in Lira and Pader districts. Less land and labour are allocated to their own production of food crops like millet (purely a woman crop), beans and maize. This has affected mainly those poor households that have very little land. They also have to allocate their labour, which is most needed for their own production, to work for the richer community members to raise money to buy food and other necessities.

"There is need for harmony between partners who promote environmental issues, those who promote food security and nutrition and extension officers promoting commercialized agriculture. District councils need to be involved more to creating this harmony but also in setting by-laws that will promote food security at household level."

--Health focal person for the District Council in Lira

There are many reasons for decreased household food production, including:

- The amount of land owned by poor households is decreasing due to demarcations and their selling land to richer members of society. Larger families (especially polygamous ones) demarcated their available land into small parcels and cannot produce sufficient food to take them from one season to the next.
- The allocation of scarce family land to non-food cash crops (e.g., outgrowing of sugar cane in Mayunge in East Central region, pineapples in Bushenyi in Southwest or sunflowers in Lira and Pader in the North) is increasing, which increases household income to buy food but reduces the amount of land and labour available to produce food crops.
- Declining soil fertility, changing climate and plant diseases were identified by families, mainly in the Southwest, as major factors resulting in smaller yields.
- Women report that increasing alcoholism, diseases and laziness among men resulted in poorer households having less food.
- Foods like millet and peas, which require more labour and inputs but are more nutritious, are produced less in favour of less laborious and less nutritious crops like matooke and cassava.
- The North districts of Gulu, Lira, Amuru, Kitgum and Pader are experiencing the long conflict's impact on food security. Though households might be producing food, the amounts are inadequate as households are still farming small pieces of land, and after leaving the land fallow for years, weeds are difficult to remove.

A major factor in household food availability is the level of post-harvest losses. Most post-harvest losses are associated with poor storage facilities. Households with good storage and food preservation methods can stretch the number of months during which they have adequate food from their own production. However, post-harvest losses remain a significant problem for many. ACDI/VOCA has estimated post-harvest losses at 10 percent of the total production for maize and 15 percent of the total production for beans.[92] More than 70 percent of households were found to keep their crop production on the floor in the main house, where wastage could be high due to rodents, for example. While food granaries were common in the past, they are becoming less common: Only 5 to 20 percent of households had them. Granaries were least common in Budaka (3 percent), Kumi (5 percent) and Pallisa (6 percent), and most common in Kaberamaido (27 percent), Soroti (24 percent) and Amuria (25 percent).[92]

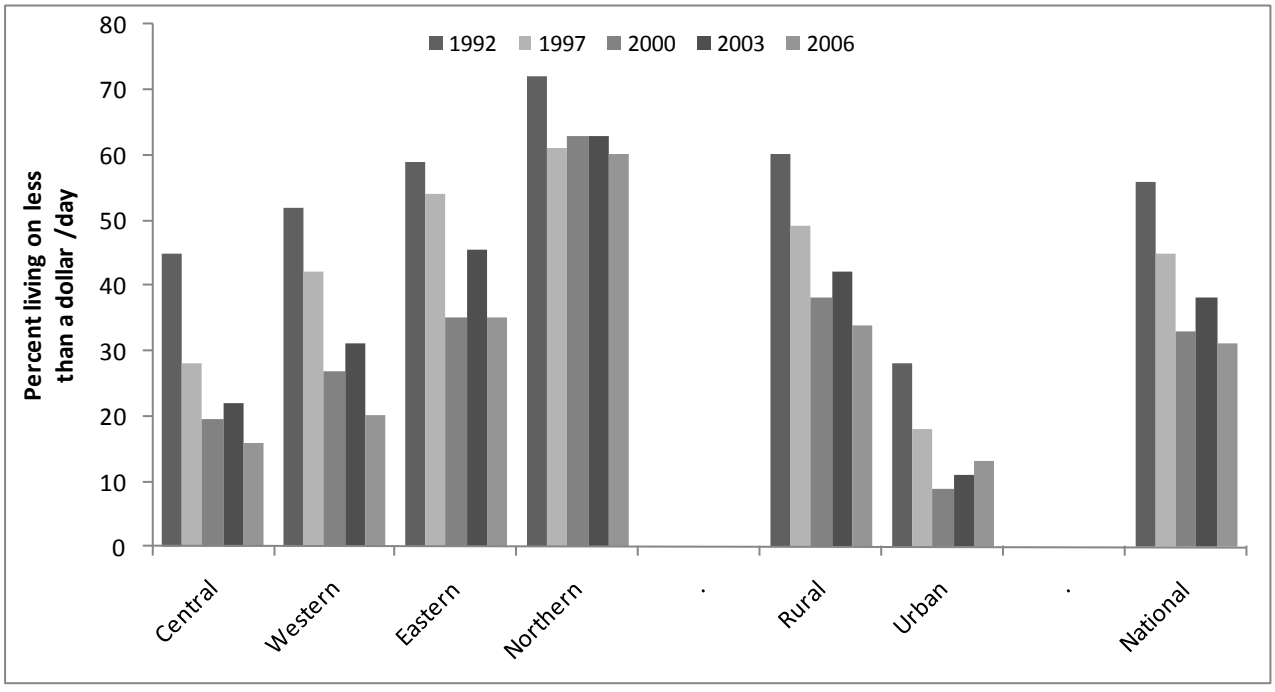
Solar drying is another common preservation method in parts of Uganda. In northern Uganda, over 90 percent of rural households use this method.[71] Legumes (beans and peas), cereals (maize, sorghum),

roots and tubers (cassava), ground nuts and simsim are commonly sun-dried. However, even here wastage can be high because foods sometimes are not dried sufficiently.

4.4.1.3 Food Access

To access food, people need adequate resources to obtain appropriate foods for a nutritious diet, which depends on available income, distribution of income in the household and food prices. Uganda has enjoyed sustainable economic growth over the past 15 years, with the annual per capita income increasing from US$186 in 1991/92 to US$340 in 2007.[102] Poverty has fallen from 56 percent in 1992 to 31 percent in 2006, meaning about a third of the population lives on less than US$1 a day [102]. However, these aggregate statistics mask the regional disparity and trends in poverty within Uganda. Poverty remains largely a rural phenomenon. **Figure 26** shows the trends in poverty between 1992 and 2006. Poverty remained highest in northern Uganda, largely a consequence of the conflict in the north and the poorer climatic conditions for agriculture. However, poverty has declined steadily in the other regions, with the largest decline reported in western Uganda. Agriculture is the dominant industry, employing 80 percent of the workforce, and most households depend on subsistence farming or work with agricultural industries.[23] Detailed analysis on the nature of chronic poverty in Uganda suggests that households that remain chronically poor over time are ones that tend to have *higher dependency ratios, subsistence agriculture-based livelihoods and a dependence on undiversified income sources* (e.g., households where agriculture is the main source of income) [122]. Overall, improvements in the incidence of poverty are largely attributed to economic growth rather than income distribution and welfare improvement [102, 123].

Figure 26. Trends in poverty, 1992-2006 [102]



Poor households have not gained equitably from the market-oriented development policies, and inequality has increased [123]. The Gini coefficient, a measure of income inequality, increased from 0.36 in 1992 to a high of 0.43 in 2003 nationally, indicating growth in the disparity between the highest and lowest wealth quintiles (**Figure 27**) [102]. While the Gini coefficient decreased in 2006, it was still higher than it was in 2000. Moreover, the Gini coefficient tends to be higher in urban areas, where income inequality is greater. In rural Uganda, there is marginally less income inequality between the highest and lowest wealth

quintiles but the inequality increased between 1997 and 2006. Inequality was highest in the Central region, but increasing levels of inequality were also observed in the Western regions.

Box 8. How much is "enough food"?

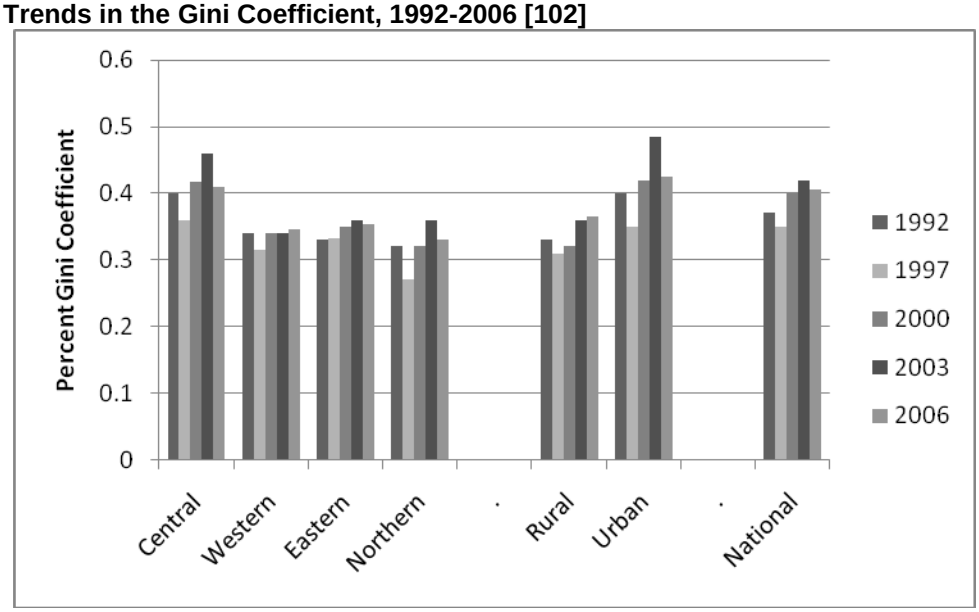
Though everyone has matooke plantations, not everyone has **enough**. Subsistence farmers have to produce enough to feed their own households, share with family members in urban areas and sell to raise the necessary income. A family of seven to nine members needs a batch of matooke every day, which would require slightly over an acre of land for home supply alone (an acre would produce about 350 to 400 batches of matooke in a year). Most homes have three acres, but some have more.

Poor rural families have no other sources of income and depend on the same farm produce to raise essential income. Most times, households must sell the more valuable farm produce like livestock (goats, chicken/eggs, cattle/milk/ ghee) or crops (groundnuts, beans/peas, millet, the large bunches of matooke) that are easier to trade. Sometimes these "other needs" are so pressing that whatever is available is sold to pay for items like sugar, paraffin, batteries, soap, medicines, school fees, house repairs, clothing and alcohol. On average, households sell one third to one half of their produce to pay for these other needs.

--Discussion group with district health and agricultural officers in Bushenyi, Western region

Not only are there disparities in food access between regions, but also possibly within districts. **Food can be absent where it is evidently present**. Especially in Southwest, northern and East Central regions, large populations of "poor families" live among "better off" homes. Generally, the poor have larger families, live in the districts' more remote and marginal areas and have no livelihood other than subsistence farming [23]. In Southwest for instance, though these household have matooke plantations, they might **not be enough** to provide all the needs of many households as most plantations belong to several households. Many factors result in the rising number of households without **enough food**, including lower food production and an increasing need for cash.

Figure 27. Trends in the Gini Coefficient, 1992-2006 [102]

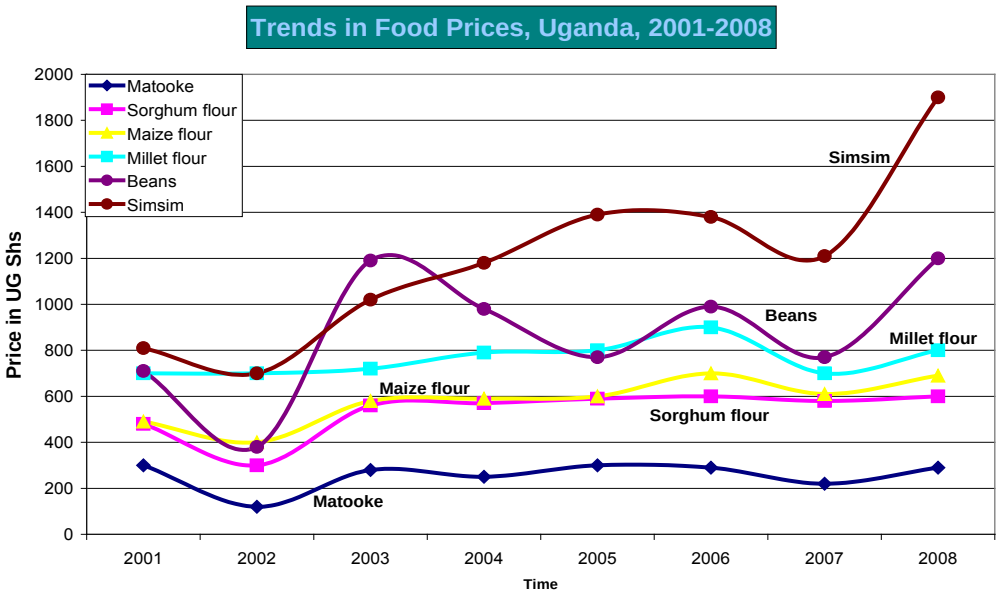


Food prices have also been rising, incomes decreasing and overall expenditures on food have been increasing. Accessing enough food is becoming more challenging for households; as a result there is more risk and vulnerability with regard to household food security. The WFP VAM survey found that overall 37 percent of households had experienced food shortages in the previous 12 months.[23] Access to food appears to be the driving factor behind food insecurity. Access to food also varies by season, with October to March and May-July being the most difficult months. The primary reasons reported for inadequate access were drought and poor rains that reduced farm yields, which resulted in higher food prices amid lower incomes. Not surprisingly, lack of income to buy food was a particularly significant reason in northern Uganda. On average 19 percent of households in Uganda reported that high food prices were also a factor, with nearly 35-50 percent of households in the North citing prices as a significant reason for inadequate access to food [23].

Increasing food prices and food access

Most rural households in Uganda consume food from their own production or from both their own production and purchased food; and few households rely entirely on purchased food. Because Uganda is self-sufficient for its major staple foods that are not actively traded on the global market, the global rise in food prices might only have a limited impact on Uganda's food prices.[90] However, Uganda has experienced an increase in prices for some food and non-food commodities, particularly in 2008. For instance, the price of rice, simsim and beans increased sharply in 2008, attributed to rising oil prices globally and the increasing cost of transporting and processing food crops. In addition, the demand for Uganda's food crops increased as a result of the early 2008 post-election turmoil and the drought in Kenya and the increasing market in Southern Sudan. Uganda also produced less food in 2007 and 2008 due to poor agro-climatic conditions, resulting in higher food prices. **Figure 28** presents recent trends in the food prices of major crops in Uganda.

Figure 28. Trends in Food Prices in Uganda, 2001-2008 [90]



Research from IFPRI estimates that about half of the calories households consume come from food they produced, ranging from 65 percent for households that live primarily on income derived from subsistence or commercial farming to 25-30 percent for households that earn their income through wage employment and non-agricultural enterprises.[94] Only 5 to 10 percent of households in Uganda depend entirely on purchased foods. Households that spend a large portion of their cash income on food saw a significant decline in their purchasing power because of the rise in food prices. However, Uganda households normally have diversity in the staple foods to choose from: roots and tubers, matooke and different

cereals. Households can always shift consumption from higher-priced foods like rice and millet to lower-priced foods like cassava, sweet potatoes, maize and matooke. Because of this wide choice of staples most households in Uganda normally can withstand the effects of increased food prices caused by global or regional factors.

The recent VAM survey for Uganda [23] found that nationally 54 percent of total household expenditures were spent on food, higher than the previous UNHS survey (2005/6) that found that households spent on average 45 percent of their income on food. Most of the money is used to purchase staples, like cereals, pulses and tubers. Within this, there is also significant regional variation (**Figure 29**). Households in the Central region tend to have the highest rates of total expenditures, and proportionally less is spent on food. In the northern region, because of lower incomes, total spending is lower, and most of it is on food. **Figure 30** shows the main sources of the food households consume in the different regions. Across regions, about 55 percent of food is purchased on the market and 33 percent is from subsistence farming.

Figure 29. Per-Capita Expenditure Patterns of Various Groups [23]

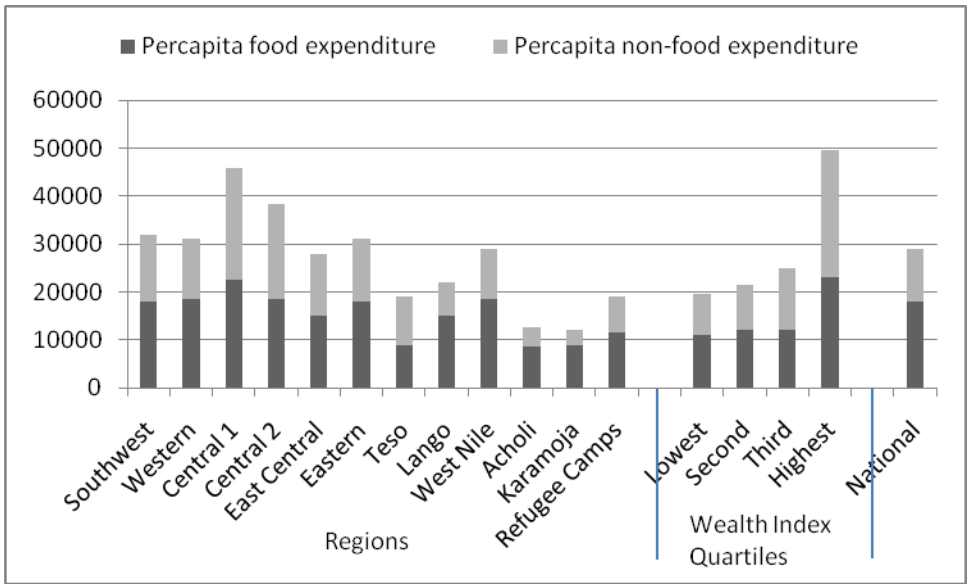
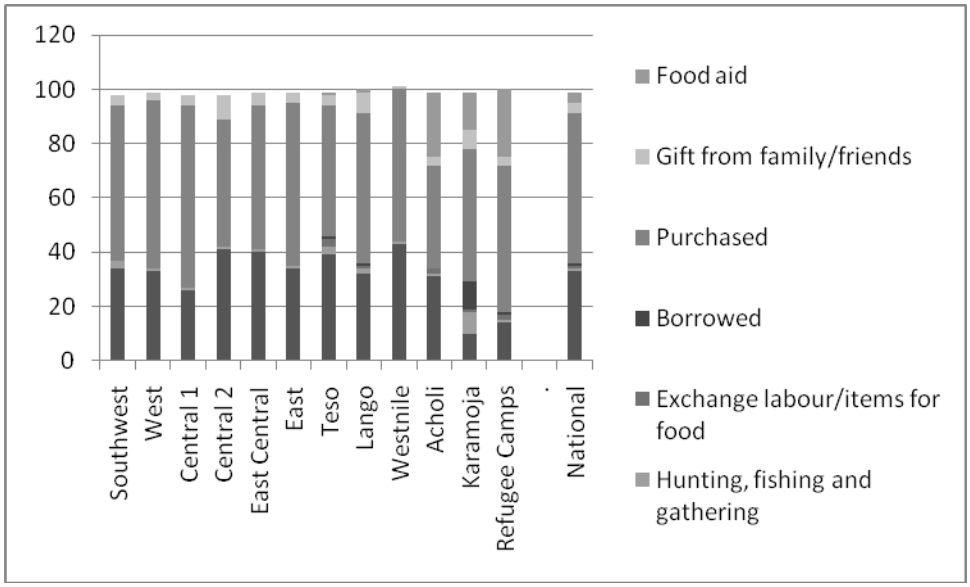


Figure 30. Food Sources (reported by % of all food items) [23]



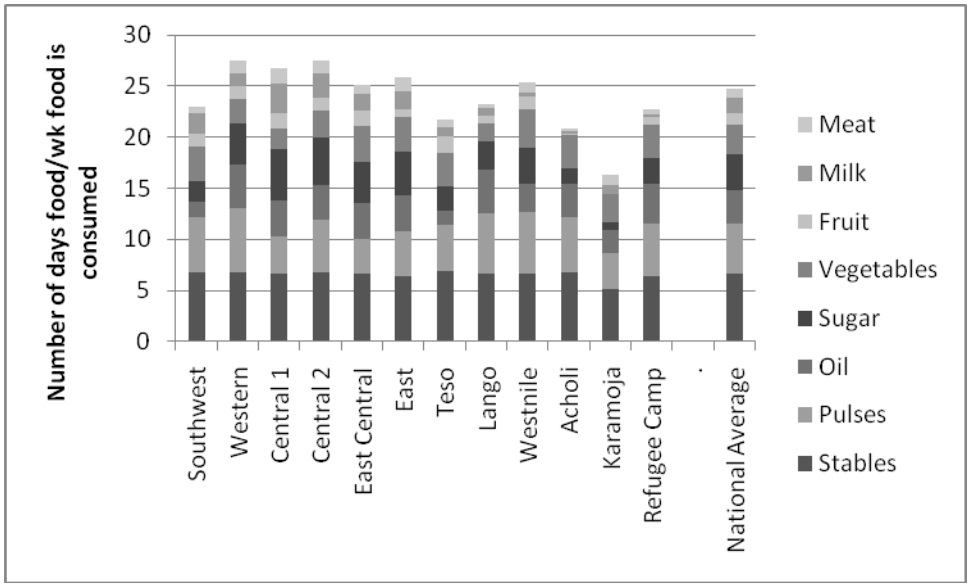
4.4.1.4. Food Utilisation/Consumption

Food utilisation covers food consumption (distribution within the household and intake), and its use in the body for physiological functions and health is key to this. (The health components are discussued in **Section 4.4.2**.) Food consumption patterns and diet diversity vary by regions due to the variety of foods available, food prices and the ability to purchase these foods. Across regions, households consume staple foods daily, though the type of staple varies by region, as shown in **Table 9 [23]**. Matooke and roots/tubers (cassava and sweet potatoes) are the common foods in Uganda. Cereals are the main foods in the North and parts of eastern Uganda. Beans consumption is widespread. Diet diversity is the lowest in northern Uganda, Acholi regions, in both variety and nutrient density; meat, eggs, milk and fruit are consumed in negligible amounts. Vegetables are consumed about three times a week (**Figure 31**). Across Uganda, most households report consuming vegetables about three times a week, and fruit less than twice a week; meat and eggs are consumed less than once a week and appear to be rare foods. Milk is consumed one to three times a week in southern Uganda (Western, Central and Eastern), mainly in tea.

Table 9. Main Staples Most Frequently Consumed by Region [23]

Region	Main staples consumed (**bold** refers to most frequently consumed in the region))
Southwest	**Matooke**, cassava, potatoes, beans, maize, bread
Western	**Cassava**, **beans,** potatoes, matooke, maize
Central 1	**Cassava**, matooke, beans, potatoes, maize,
Central 2	**Cassava**, **potatoes**, matooke, beans, maize, bread
East central	**Potatoes**, cassava, maize, bread, beans
Eastern	**Maize**, **cassava,** potatoes, sorghum, milet, matooke, bread
Teso	Sorghum, millet, cassava, potatoes, beans
Lango	**Cassava, beans**, maize, potatoes
West Nile	Maize, cassava, potatoes, beans
Acholi	**Maize**, cassava, beans
Karamoja	Maize, sorghum, beans, beer residue
Refugee camps	Maize, cassava, beans

Figure 31. Number of Days a Food Group is Consumed by Region [23]



Food Fortification

To improve the quality of food, the government and food manufacturers embarked on a partnership to fortify frequently consumed food with essential micronutrients in 2004.

- A National Working Group on Food Fortification (NWGFF) was established, composed of food manufacturers, the relevant government sectors, academia, and consumer groups.
- A fortification logo and a social marketing strategy were put in place. The logo is placed on all fortified foods according to Ugandan standards. All fortification is being done voluntarily.
- To date, 80-85 percent of the market share of cooking oil, produced by two major companies (Mukwano Oil Industries and BIDCO Uganda) is fortified with Vitamin A.[95]
- A small fraction of maize flour produced by Maganjo Grain Millers and Unga 2000 is fortified with iron, zinc and vitamin A, and there are plans to fortify all maize and wheat flour distributed by WFP as food aid. The major challenge in fortifying flour is the large number of small-scale grain millers in Uganda.
- Kendo Mills is fortifying sugar with vitamin A.

4.4.2 Health and Nutrition Care in Uganda

4.4.2.1 General Nutrition Programming

Most nutrition services in Uganda are provided in health facilities through the government or local government sectors. The core nutrition interventions include nutrition education, IYCF counselling during antenatal and postnatal services, support for breastfeeding during maternity stay, provision of vitamin A, deworming of women and children, and growth monitoring and promotion. In areas that have experienced insecurity or prolonged hunger, nongovernmental organisations (NGOs) provided most of the nutritional support, especially in management of severe malnutrition. **Table 10** shows nutrition activities in government and non-government institutions.

Table 10. Nutrition Activities in Government and Nongovernment Institutions

Institution/Sector	Mandate and/or nutrition-related activities
Government Institutions	
Ministry of Health	• Nutrition education (breastfeeding/lactation management and child feeding counselling) and information, education and communication (IEC) • Antenatal Iron/folic acid supplementation • Vitamin A supplementation for women (postpartum) and children • Zinc supplementation for diarrhoeal disease • Growth monitoring and promotion (facility- and community-based) • PMTCT and infant feeding • Nutritional care and support for people living with HIV (PLHIV) • Rehabilitation of severely malnourished children in hospitals • Training of district and programme service providers in nutrition • Development of guidelines and legislations (e.g., nutrition and HIV/AIDS, IYCF, integrated management of childhood illnesses (IMCI), care for severe malnutrition) and policies (e.g. the anaemia policy, code for marketing of breastmilk substitutes) • Monitoring and measurement of impact of emergency interventions • Nutrition information system
Food and Nutrition Commission	• Coordination of nutrition activities in the country (works through subcommittees) • Development of policies and guidelines (e.g., National Plan of Action in Nutrition, Food and Nutrition Policy)
PMA/NAADS	• Hosting the subcommittee on food and nutrition security. • Development of the UFNS and the Food and Nutrition Bill • Tool for monitoring the implementation of the UFNS
Department of Disaster and Refugees and Food Management Unit (Office of the Prime Minister)	• Coordination of nutrition and health during disasters (through a working group) • Procurement of food aid/assistance (developing specifications for the kind of food to buy and criteria for distribution) • Training on disaster management • Receiving and storage of food aid/relief (but happens rarely) • Calling for bids on procurement and distribution of food aid to beneficiaries (mainly to schools in affected areas)
Ministry of Agriculture, Animal Industry and Fisheries	• Nutrition/home-economics education (food hygiene and preparation, better nutrition practices) • Food storage, preservation and processing (extension) • Food accessibility (backyard gardens), working with women/community groups • Promotion of cottage industries (agri-business, small livestock keeping, fruit trees) to generate income
Ministry of Education and Sports	• Education (nutrition is part of the teachers and school curriculum) • School Lunch Programme (in primary schools in the North and Karamoja areas) • School health services • Training of teacher trainees (in home economics and nutrition) • Development of (nutrition) curriculum for home economics and vocational schools • Establishment of Early Childhood Care and Development (ECCD) centres (including the “lunchbox” initiative)
Ministry of Industry/trade	• Development and enforcement of legislation (e.g., iodine salt fortification, the Food Safety Law) • Advocacy for food fortification (of maize meal and oils) • Food hygiene and quality control (have a food analysis laboratory available) • Education on and raising awareness of legislation and use of fortified foods
Nongovernment Institutions	
NGOs	• Involvement in training and education of caregivers in food preparation, income generating activities and management, food/horticultural production and utilisation • Nutrition/health education and demonstration, and growth monitoring and promotion

	• Provision of nutrition-related services in the communities, e.g., PD Hearth, micronutrient supplementation; community-based management of acute malnutrition (CMAM/CTC), nutrition support groups (e.g., for mothers)
Private sector (industry)	• Fortification of different foods (maize and wheat flour, cooking oil) • Manufacture of composite flours • Manufacture of appropriate complementary foods (GAIN is supporting this effort) • Support of industry to manufacture and distribute foods for PLHIV • Social marketing of complementary foods
UN agencies (WHO, UNICEF, FAO, WFP)	• Mainly technical support for different arms of the government on nutrition-related issues, e.g., development of relevant guidelines and protocols; coordination; procurement of micronutrients, therapeutic/supplementary foods and equipment; capacity development, e.g. ,in-service training, nutrition assessment, surveillance and mapping
Development partners (NuLife, FANTA-2, A2Z, IFPRI, Harvest +, GAIN)	• Paying for development of guidelines/protocols, IEC materials, capacity development, advocacy and coordination, monitoring and supervision, service provision in micronutrients, HIV/AIDS, research in policy analysis and bio-fortification, nutrition assessments, development of nutrition programmatic models and operational research
Training institutions (Makerere University, Kyambogo University, Mbarara University) and professional bodies like UGAN	• Capacity development, research, networking, nutrition and food security programme models, consultancies and technical assistance

Community-Based Nutrition Programmes

There are few community-based nutrition programmes in Uganda. Most are operated by NGOs and most have promising practices that can be scaled up **Box 9**. However, there are several challenges:

- The scale of operation is often limited to a selected number of villages, parishes or sub-counties in a district. Rarely have community nutrition programme covered a whole district. The reasons given are that “it is expensive to cover a district,” the mandate of most implementers limits them to a few districts or the financial resources available allow coverage of only a few areas.
- The guidelines for working with community volunteers are not harmonised. For instance, what should be their roles, incentives and reporting systems, and what training and follow-up should they receive? Moreover, differences in incentives could lead to motivational challenges and competition between programmes rather than collaboration and mutual reinforcement.
- Community programmes generate a lot of data and information that often do not go beyond the coordinating agency’s office. Many times the data cannot be compared because the indicators are different or defined differently.

4.4.2.2 Management of Severe Acute Malnutrition

Until recently, the management of severe acute malnutrition (SAM) has primarily taken place in the North where the SAM rates have been highest due to the conflict. Sixteen therapeutic feeding centres (TFCs) have been providing treatment to 11,200 children a year. Community-based management of acute malnutrition (CMAM) (in Uganda this is referred to as the integrated management of acute malnutrition (IMAM)), when implemented in full, has a better impact on management of SAM than the traditional inpatient model because of increased coverage and improved timeliness of treatment. Community-based management of SAM in Uganda was first implemented by ACF in Gulu in 2004. Before phase-out of most projects, outpatient therapeutic care (OTC) had been established at 38 sites in conflict and post-conflict districts in north and northeast Uganda. Currently there are 32 sites (OTC and inpatient therapeutic care sites) that consistently report their data to the MOH. In addition, 38 health centres offer paediatric HIV/AIDS care including OTC using Plumpy’Nut for moderately and severely malnourished HIV-positive

Box 9. Community Project on Nutrition: UPHOLD

The USAID-funded Uganda Programme for Human and Holistic Development (UPHOLD), implemented by John Snow Inc., supported the establishment of Community-Based Growth Promotion (CBGP) in over 500 villages in five districts to help empower communities to prevent malnutrition among children under 2 years old and to serve as a catalyst for addressing illness, poor feeding practices or other child-care concerns at the community and household levels. More than 1,200 community growth promoters from selected sub-counties and villages were trained and equipped with tools for conducting monthly village weighing sessions and for providing support to the community in meeting children's health needs. Community growth promoters saw about 15,000 children under 2 each month.

Parish-level coordinators were identified from among the community growth promoters and given one additional day of training in basic supervisory skills, data collection and reporting. These parish supervisors collected and compiled the monthly village summary reports, reviewed them for accuracy and submitted them to the sub-county supervisor. Continuous training on infant and young child nutrition, individual counseling and other topics was provided through quarterly feedback meetings.

A review of the programme showed that the growth promotion approach has great potential to prevent malnutrition and maintain child health in Uganda. Overall malnutrition levels (weight-for-age below –2 z-score, 2005 WHO standards) declined from 13 percent (n=748) to 8 percent (n=680) between September 2006 and April 2007, in only eight months of programme implementation. All mothers were counseled in conjunction with monthly weighing; three-quarters of them received messages relevant to their children's age and well-being on feeding practices and other health and nutrition needs. Villages that achieved the best results had higher rates of child participation and well-established support supervision mechanisms. The major challenge of the approach was that support supervision was labour-intensive and expensive. UPHOLD estimated that during early implementation (setup and intensive support supervision), the programme cost around US$7 per child per year and that recurrent cost thereafter would fall to about US$2 per child per year.

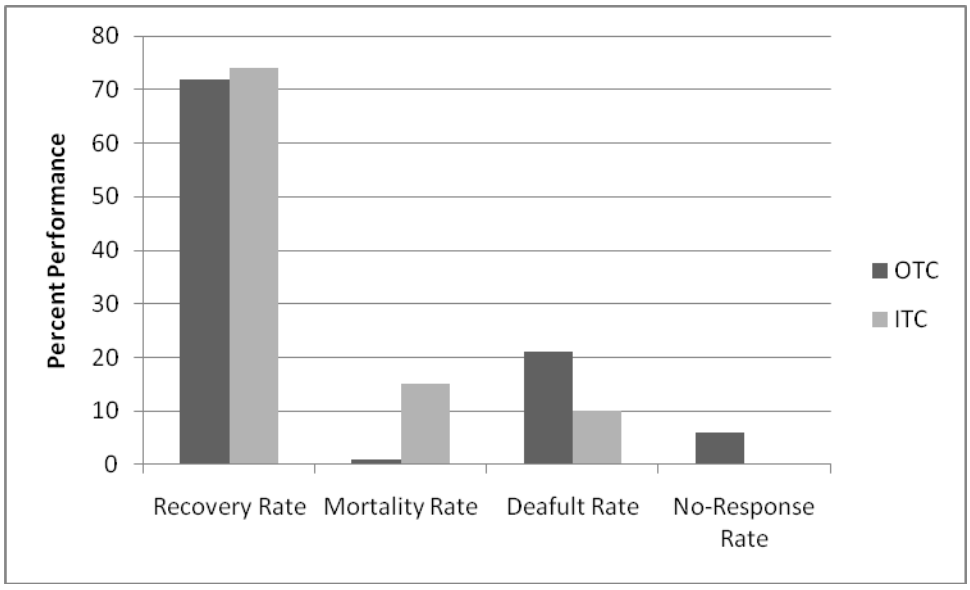
children up to 18 years old. National guidelines on integrated management of acute malnutrition (IMAM) are being finalised, but the rollout of OTC without final guidelines and reporting mechanisms has contributed to various operational challenges in the country.

A programme review conducted by UNICEF in 2008 revealed that inpatient facilities largely continued the implementation of the old TFC model while OTC was added as an additional programme.[48] Linkages between the different IMAM programme components hardly existed, and the community component for screening and referral was very weak. Most admissions continued to come in by self-referral, often when malnutrition had deteriorated and was more complicated to treat. As a result, about 50 percent of total admissions continue to be treated in inpatient care, compared with an expected 10-15 percent when all programme components are well-integrated.[49] The review found that partners used different admission and discharge criteria and rejected referrals. The review further concluded that the implementation of OTC in Uganda is heavily NGO-dependent, with most OTCs being run by teams of four or more NGO-paid workers with support from community volunteers. NGOs' reduced presence in the affected districts especially in the North will pose a major challenge to continuation provision of therapeutic care to severely malnourished children because the (local) government health staff is not adequate or competent enough to provide services at the same client load. Data compiled by the MOH indicate that about 650 children with SAM were seen by OTC and inpatient facilities in northern Uganda. Most were in the north and a few, mainly on paediatric HIV, were from central region. The caseload had declined to only 400 in August 2009. In addition, the Plumpy'nut pipeline was seen as a major constraint in the implementation of IMAM.

As shown in **Figure 32** the recovery rate, based on the 32 sites that submitted reports, was about 72 percent, slightly lower than the target of 75 percent. Mortality rates in inpatient therapeutic care (ITC)

were high because most children came well after their condition deteriorated and with severe complications. Default rates[13] in both OTC and ITC were high (21 percent in OTC and 10 percent in ITC). OTC facilities are intended to reduce default rates, but Uganda's higher OTC default rates did not meet these expectations.

Figure 32. OTC and ITC Performance Indicators January-August 2009 from Reporting Sites [30]



In 2008 and 2009, UNICEF and Mulago Hospital's Mwanamugimu Nutrition Unit trained hospitals in the Northern region in providing inpatient care for severely malnourished children. An action plan has been drafted for the rollout of IMAM within the existing health and social services system. In 2007 and 2008, ready-to-use therapeutic foods (RUTF), specifically Plumpy'nut, was procured by UNICEF and the Clinton HIV and AIDS Initiative (CHAI). CHAI's commitment, mainly targeted for facilities with HIV care and treatment, is up to 2010.

4.4.2.3 Vitamin A Supplementation and Immunisation Coverage

According to government policy, vitamin A supplementation (VAS) should be provided to all women by eight weeks postpartum and biannually to all children 6 months to 6 years old. Mass VAS was introduced in 1994 along with the national measles immunisation campaigns. In 2001 the guidelines changed to provide VAS through biannual Child Days held in May and November. The national target is to increase VAS coverage from 60 percent to 80 percent (HSSP-2).[110] Since 2004, the government and its development partners have implemented a biannual Child Days Plus Strategy (CDPS) to accelerate delivery of an integrated package of key interventions to reduce child mortality and morbidity.[50] Child Days are periods of accelerated action, organised during two months each year, to provide preventive health services at health facilities, regular community outreach sites and primary schools. Health workers provide routine and catch-up immunisation, VAS for all children under 5, deworming for children 1 to 14 years, immunisation of women of reproductive age against tetanus and education on healthy family practices such as breastfeeding, hygiene and malaria prevention.

A review of the CDPS by the Child Health and Development Centre in 2006 documented that the strategy was successfully integrated into existing structures and thus valued for maximising outputs from scarce resources.[51] Though facility statistics were satisfactory (national averages exceeded 78 percent for VAS and 80 percent for deworming and immunisation, the national demographic surveys continued to show dismal coverage. The discrepancy in the facility-based immunisation coverage rates relative to the

[13] This is a technical term used in CMAM to imply children lost to follow-up before they are cured.

general population surveys is most likely because those who can access health facilities receive immunisations at the facilities, but a majority of the population who do not use or cannot access health facilities are not receiving immunisations. This suggests that broader efforts are needed to increase immunisation coverage rates outside of health facilities.
Only 36 percent of Uganda's children 6-59 months had received a high dose of vitamin A during the six months preceding the 2006 UDHS, down from 38 percent reported in the 2001 UDHS. The Healthy Child Uganda project reported VAS at 33 percent for the 12 months preceding the survey.[41] Neither survey reported the percentage of children who received the recommended two doses. In both surveys, the highest coverage was reported for younger children, likely due to the fact that VAS has been linked to immunisation service delivery and children coming for immunisation are also given vitamin A. Surprisingly, reported coverage for deworming is significantly higher than for immunisation, suggesting that a large number children who are not fully immunised come into contact with the health workers but do not get immunised.

Immunisation coverage increased most rapidly until the mid-1990s. In more recent years, coverage has continued to rise but more slowly. From 2000 on, coverage rates appear to have reached a plateau. Notably, coverage for both BCG and DTP1 is high, around 90 percent. But coverage of other immunisations, including DTP3, is much lower, less than 70 percent.

The A2Z Project documented an increase in VAS coverage of over 80 percent where community medicine distributors (CMDs) were used to distribute the capsules.[62] The assessment concluded that integration of VAS during Child Day Plus (which includes CMDs) would be a cost-effective and sustainable way to achieve and maintain high national targets.

4.4.2.4 Anaemia Prevention and Control

The health sector uses four key interventions to prevent and control anaemia and iron deficiency: iron-folate supplementation for pregnant and lactating women, malaria control, deworming against hookworm and nutrition education on iron-rich foods and food diversification.

Iron-Folate Supplementation

The national anaemia policy mandates that all pregnant women be given 60mg iron and 4µg folic acid supplementation (IFA)[14] daily for six months during pregnancy and six months postpartum.[53] The provision of IFA supplements is integrated into routine antenatal care. The policy also recommends daily iron supplementation for children under 5 in areas where the prevalence of anaemia in children is 40 percent or more.[53] These guidelines have not been updated since WHO issued new guidance in 2006. *Due to possible contraindications for daily iron supplementation in areas with high prevalence of malaria and other infections, WHO recommends that iron supplementation be targeted only to children who are anaemic or at high risk of iron deficiency*. Given the high levels of anaemia among children (73 percent of children under 5) in Uganda this policy needs immediate clarification.

According to the 2006 UDHS, less than 1 percent of women took iron tablets for at least 90 days (three months), 56 percent of women took less than 60 tablets and 37 percent of women did not take any iron tablets during pregnancy. The 2006 UDHS reports that 5 percent of children 6-59 months had received iron supplements in the seven days preceding the survey, ranging from 1-2 percent in the Central region to 12-22 percent in IDP camps and Karamoja.[8]Higher supplementation was reported in the Northern region probably due to the high levels of external support these conflict areas receive, e.g., support related to community distribution of basic preventive and curative medicine.

The demand for antenatal care (ANC) services including iron supplementation is still low. Stock-outs are, however, the largest constraint to adequate iron supplementation in Uganda. The standard MOH antenatal drug kit contains 2,000 iron tablets that are intended to last three months but are adequate for only 20 pregnant women. In 2002, facilities were found to have enough IFA tablets only 50 percent of the

[14] This translates to 200 mg of the ferrous sulfate tablets being used in Uganda.

time.[54] An assessment by the A2Z Micronutrient Project [55] in 2009 found that stock-outs lasted an average 175 days for iron and 211 days for folic acid in the 21 facilities assessed. In fact, in some districts the iron supplementation programme is viewed to have been ineffective. Stock cards are rarely updated, and service providers cannot observe the standard operating procedures. They tend to save supplies by not giving them to all pregnant women or by dispensing fewer tablets than the required number because of inconsistent supplies.[54,56] In addition, despite Uganda's high prevalence of anaemia, screening for anaemia is not a standard practice for all ANC attendants. It is almost never done in other clinics, such as in the well-baby or immunisation clinics.

Malaria Prevention and Control

Malaria infection is a major cause of anaemia and low birth weight in areas where the disease is prevalent, and pregnant women are most vulnerable to malaria. The effects are more severe for women in their first pregnancy and the symptoms often are not apparent. Uganda promotes the use of insecticide-treated bed nets (ITNs) and provision of intermittent presumptive treatment (IPT) during pregnancy to prevent malaria as an important measure to reduce anaemia, low birth weights, spontaneous abortions, and maternal mortality. However, despite the high risk, use of ITNs by children and women across all the regions remains extremely low, ranging from less than 10 to 25 percent.

- Only 24 percent of pregnant women had slept under an ITN the night preceding the 2006 UDHS. Only 18 and 19 percent of women in East Central and Southwest, respectively, had slept under an ITN.
- Only 16 percent of women surveyed in the 2006 UDHS took the recommended two doses of IPT during antenatal care.
- A survey in Bushenyi and Mbarara reported that only 4 percent of women slept under a net.[119]

In 2002, the MOH designed the Home Based Management of Fever and Malaria (HBMFM) as a strategy to improve the recognition, management and treatment of fever/malaria among children under 5 at the household and community levels. Under the strategy, CMDs treat children with fever/malaria with a pre-packaged, colour-coded and easily administered Chloroquine-SP (sulfadoxine-pryimethamine) combination pack called Homapak and refer children with persistent fever or danger signs to health centres. HBMFM was pilot-tested in 10 districts in 2002 and scaled up nationwide by the end of 2003.[57] In 2004, Homapak was replaced by artemisinin-based combination therapy (ACT).

According to Ajayi et al, CMDs are trusted members of the community who were chosen by the community from a range of backgrounds.[59] CMDs, two per parish, are trained for two days and linked to a nearby health unit that regularly supplies them with Homapak. This was meant to make it as easy as possible for CMDs to receive Homapaks, be supervised and continue to participate in the programme.[58] Although CMDs are not paid a salary, they receive various items for motivation, such as raincoats, bicycles, boots, watches, T-shirts and certificates of participation. Some CMDs receive a quarterly allowance of about US$4.50.[59]

A review of the HBMFM strategy by Fapohunda et al in six districts (Kamuli, Kanungu, Kiboga, Kumi, Lira and Ntugamo) noted that compliance with this treatment was excellent (>95 percent) and timely treatment of fever episodes increased: ~55-60 percent (of 3,975 children under 5 for whom care was sought) within 24 hours of onset of symptoms and 80 percent or more within 48 hours.[60] Ninety-three percent of children who received the correct medicine prescribed in the right quantities recovered from fever. Caregiver compliance to the fever/malaria treatment regime administered by the CMDs was 71 percent.[59] There is evidence that community members' capacities are strengthened through CMDs and that the number of children getting treatment for fever/malaria has increased. Some of the challenges documented on this community model include use of passive support supervision due to inadequate funding, stock-outs, lack of IEC materials and high CMD dropout rates.[58]

Hookworm Deworming

Hookworm infestation is associated with anaemia in children and adults. In areas where women do most of the agricultural work, they are more affected than others. An infestation of moderate intensity might

cost a woman as much or more iron as is required during pregnancy. According to the Reproductive Health guidelines and the Uganda Anaemia Guidelines, pregnant women are supposed to be dewormed twice, once in the second trimester and again in the third. However, as with IFA and IPT, most women do not receive the recommended deworming services either because they do not attend the ANC services adequately or because of high stock-out rates. For example, albendazole/mebendazole was not available for 108 days in the 21 health facilities surveyed by the A2Z Project.[55] Deworming for children 1-14 years has been integrated into Child Days since 2002. In the 2006 UDHS, an estimated 42 percent of children 6-59 months received deworming medication during the six months preceding the survey.[8] Utilisation of deworming services among children was lowest in Southwest (39 percent) and East Central (38 percent). The Healthy Child Uganda survey in Mbarara and Bushenyi districts reported that only 15 percent of children 18-23 months were dewormed in the preceding year.[41] A cluster randomised controlled trial conducted in eastern Uganda found that providing albendazole twice a year as a part of Child Days resulted in an increase in weight gain of preschool children of about 10 percent (166 g per child per year); when albendazole was given once a year, weight increased of 5 percent.[64] However, the data for coverage with two annual doses of albendazole/mebendazole for children are not available.

4.4.2.5 Programmatic Support to Improve Breastfeeding

The Baby Friendly Hospital Initiative

Uganda adopted the Baby Friendly Hospital Initiative (BFHI) in 1996 as a strategy to create a health care environment that supports breastfeeding. The BFHI presumes that health services play an important role in protecting, promoting and supporting breastfeeding by implementing the internationally recommended 10 steps to successful breastfeeding (see **Box 10**). The BFHI's performance has been mixed. The greatest setback has come from the fear of transmitting HIV from the mother to the baby through breast milk. PMTCT became the major focus, and health professionals shied away from general support to breastfeeding. However, the focus on breastfeeding has been revitalised since 2005, when WHO called for support for exclusive breastfeeding as a feeding option for reduced MTCT. The BFHI concept and tools were incorporated into the Uganda Policy Guidelines on Infant and Young Child Feeding (2009) and the training package for health workers. The aim is that all health workers trained on HIV and infant feeding also learn the BFHI concept. When external assessments were conducted in 34 health facilities in 2006, 15 were certified as baby friendly and 11 were certified as committed. During the assessment, facilities were certified as baby friendly if they implemented the 10 internationally recommended BFHI steps. Only three of the 15 certified health facilities achieved at least eight of the 10 steps recommended by WHO and UNICEF. Only 17 health facilities have ever been certified Baby Friendly, out of the 102 hospitals and Health Centre IVs and Health Centre IIIs providing maternity services in Uganda.

A major challenge for the BFHI in Uganda is that the initiative has remained parallel to routine maternal and maternity services without continuous monitoring, evaluation and certification. Uganda has recently incorporated BFHI training in the PMTCT programme, but BFHI assessments are still heavily donor-dependent.

Box 10. The Baby Friendly Hospital Initiative's 10 Steps

1. Establish a breastfeeding policy
2. Train all health care staff in IYCF
3. Promote breastfeeding as part of ANC
4. Help mothers initiate breastfeeding within half an hour of birth
5. Support breastfeeding even if mothers are separated from their infants
6. Give no food or drink other than breast milk
7. Practice rooming in
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers
10. Refer mothers to mother support groups

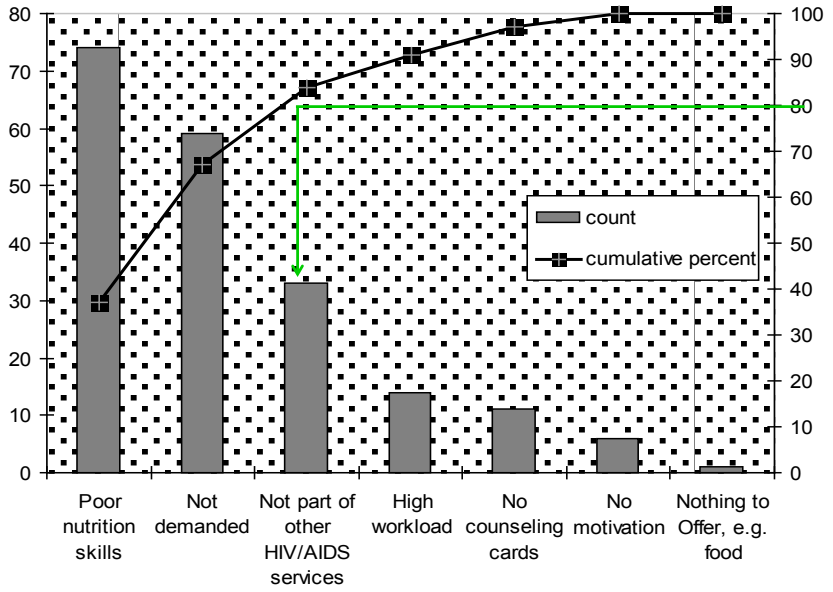
The Code of Marketing Breastmilk Substitutes

Uganda adopted the International Code of Marketing Breastmilk Substitutes in 1997 as a part of the national Food and Drugs (Marketing of Infant and Young Child Foods) Regulations. The creation of a comprehensive awareness of the regulations (even among health professionals) and routine compliance monitoring and enforcement are still major challenges. The 1997 regulations did not spell out the structures to be used to monitor the Code, such as the Health Inspectorate in the MOH or in the Uganda National Bureau of Standards. A monitoring exercise conducted in 2004 and supported by UNICEF and IGBM (Interagency Group on Breastfeeding Monitoring) also aimed to strengthen local capacity in Code monitoring and mainstream it within regular child health and welfare reporting mechanisms. The exercise, conducted only in Kampala, found many Code violations. Most violations related to labelling (not meeting language specifications, lack of required warnings on hazards, or using forbidden text or pictures promoting the use of breast milk substitutes) and advertisements. A few violations related to health facility visits by companies that manufactured products under the scope of the regulations. At most of these visits, companies provided product information to health workers, but two facilities were given samples and information on products under the scope of the regulations. One facility received free samples of Nestle's PreNAN for professional evaluation; another facility received free samples of a local baby soya product to be distributed to mothers of young children.[81] The monitoring exercise contributed to creating awareness and enhanced capacity regarding Code monitoring. However, Code monitoring has yet to be mainstreamed within regular child health and welfare reporting mechanisms. The regulations were revised in 2004 to include issues related to HIV/AIDS, compliance monitoring structures, membership of the Code monitoring national committee and penalisation of violations. The 2004 revisions have yet to be passed into law.

4.4.2.6 Integration of Nutrition in Management of HIV

The MOH/AIDS Control Programme produced the first edition of the nutrition and HIV guidelines in 2005. They were very well received as they provided guidance in nutritional care for PLHIV in care and treatment. Eighteen months after the guidelines were disseminated, a study evaluating their accessibility and use found that only 10 percent of health workers had seen a copy and only 3 percent had access to a copy (n=218 health workers from 76 health units in 19 districts). The study reported that 56 percent of health workers periodically assessed their clients' nutritional status (e.g., by taking weight) but only 2 percent computed nutritional indicators like body mass index (BMI) for adults or the weight-for-height for children to diagnose nutritional status. None assessed dietary intake among clients losing weight or provided guidance in meal planning in relation to the drug schedule as proposed in the guidelines.[65] The major reasons for not implementing these practices were poor nutritional skills in the context of HIV and AIDS, lack of emphasis or demand by superiors or during supervision and a belief that the practices were not their responsibility nor part of other HIV services (as shown in the **Figure 33**). Heavy workload or lack of motivation to provide the services, often thought to be major limiting factors, were mentioned by only eight health workers.

Figure 33. Reasons Reported by Health Workers for not Providing Nutrition Counselling to People With HIV, in 19 of 72 Districts in Uganda, 2005 [65]



USAID is funding a three-year project, called NuLife, to support the integration of nutrition in services for PLHIV in Uganda. The project will operate in 54 health facilities and in communities with orphaned and vulnerable children (OVC). NuLife assessed 32 health facilities to determine the availability of essential capacity (e.g., human resources, skills, equipment, IEC materials) to provide nutritional services to PLHIV. There was a general lack of functional equipment for anthropometric measurements and IEC materials to support education and counselling. Six of the 32 HIV clinics surveyed did not have functional scales, and where these were available, most clinics for PLHIV shared scales with ANC and young child clinics. Salter scales were the most common scales available, though a number of them were old and had not been calibrated in the past two years. Only four of 32 clinics had IEC materials on nutrition.[66]

Few programmes address overweight and obesity or integrate nutrition/dietetics in the management of non-communicable diseases (NCDs). Recently a new Association of Dietetics and Nutrition has been launched in Uganda, and more dieticians are expected to be trained and registered to support clinical nutrition in the country. In addition, few activities address the nutritional needs of adolescents other than school health and feeding programmes in a few districts.

4.4.2.7 Water and Sanitation

Access to an improved water source has increased steadily in rural areas, from less than 20 percent of the population in 1991 to around 68 percent in 2006. The Water, Environment and Sanitation Sector Performance Report estimates that latrine ownership was only 58 percent. Forty-three percent of the population has access to improved sanitation facilities, but hygiene practices such as boiling drinking water, hand-washing and safe disposal of infants' faeces remain low. The simple act of washing hands with soap can cut diarrhoea risk by almost half and respiratory infections by a third. However, according to the Ministry of Water, Lands and Environment (MWLE) the average hand-washing coverage might be below 10 percent.

4.4.2.8 Fertility, Contraceptive Use and Child Spacing

Uganda's fertility rate for is estimated at nearly seven births per woman. The fertility rate among urban women is much lower, 4.4 births per woman compared with 7.1 for rural areas. Among regions, rates vary

from 3.7 births per woman in Kampala to over eight births per woman in the IDP camps. Women in Uganda have little control over their sexuality and fertility; a majority of them never discuss contraceptive use with their spouses or partners. In addition, contraceptive use has increased very slowly, from 8 percent in the 1995 UDHS to 19 percent in the 2006 survey.[8,22] Contraceptive use is low both before and between births. Younger women are also more likely to have closely spaced births than their older peers.

4.4.3 Implications of Gender Inequality for Nutrition

4.4.3.1 Characteristics of Gender Inequality in Uganda

Gender inequality is likely to be a primary reason for persistent food insecurity, malnutrition and morbidity in Uganda [96]. Women in Uganda have very few realised rights, which significantly undermines their ability to ensure optimum health and nutrition for themselves and their children. A key factor that keeps women economically dependent on men is women's lack of access to and control over resources and productive assets such as land, capital and farming inputs [124]. Women also lack decision-making power in the household and often have little control over their or their households' income. Widespread gender inequality prevails in [8,124,125, 96]:

- Land ownership and management: Women can access customary land mainly through marriage or male relatives. While access to land tenure is tenuous for men, it is even more so for women. This lack of security over land tenure significantly undermines women's capabilities in subsistence farming and food production, and thereby food security.
- Early marriage: This is still practiced, and women and girls have little control over whom and when they marry. The practice of paying a bride-price also severely curtails a woman's ability to divorce or leave her husband because her family would have to repay the bride-price to the husband's family.
- Teenage pregnancies: This trend has led to some adolescent girls having children without the rights and protections of marriage, which prevents them from obtaining child support from the father.
- Married women's lack control over their sexuality and fertility: This carries adverse consequences for them in terms of childbearing and fertility, their reproductive health and their exposure to HIV/AIDS. Women also lack rights to their children; customary practice dictates that children are born to their paternal families, and paternal custody of children is favoured.
- High prevalence of gender-based, domestic and sexual violence: The 2006 UDHS reported that 68 percent of women experienced some form of violence, nearly 50 percent experienced physical violence perpetrated by an intimate partner.
- The practice of widow inheritance: If a woman's husband dies, she might be forced to marry her husband's brother.

Taken together, these inequalities and realities form the backdrop against which poverty, food insecurity, malnutrition and morbidity prevail.

4.4.3.2 Gender and Poverty

Poverty in Uganda is becoming increasingly gendered because the Government of Uganda's pro-growth policies benefit those with a minimal asset base from which to build greater wealth [123, 96]. Because poor women fundamentally lack access to and control over productive assets, they are essentially excluded from this form of economic progress. For these same reasons, income inequalities between men and women are likely becoming more pronounced, further exacerbating the risk of malnutrition in children as women's purchasing power remains low or declines further. Moreover, data for Uganda clearly show that when men control income, male-headed households are more likely to spend on non-food items and contribute less to household food security [96]. The 2006 UDHS also found that over 75 percent of women who worked for wages earned less than their husbands. Women's lower purchasing power is a consequence of lower wages, more unpaid work, fewer work opportunities for which women

have skills (women predominate in the agriculture sector), and lack of time and capital to generate income [124, 96, 8].

4.4.3.3 Gender and Food Security

While 80 percent of women contribute to and provide labour for food production in Uganda, access to and ownership of land is held overwhelmingly by men (92 percent), as shown in **Table 11 [96]**. The disparities identified here illustrate both women's significant—but undervalued--contribution to food security and their heavy workloads. While women's and men's roles in food production and food security differ in important ways, overall women must balance their reproductive and productive roles with their household responsibilities, while data clearly show that men are much less productive, as noted, are more likely to spend their income on non-food items, increasing the household's food insecurity.[96] Women predominate in subsistence farming, while men predominantly farm cash crops with women's labour. Further, when food crops become cash crops, control over those crops and the income they bring pass to men's hands from women's hands.

Despite women's significant contributions to food production, household food security remains fragile in Uganda, as men contribute less and less and women try to close the food security gap with their own limited resources. Land tenure, already insecure for women, is more so in the context of HIV/AIDS. If a woman becomes a widow, she can lose her access and rights to land tenure and hence her livelihood to feed her family [125].

Table 11. Men and Women's Roles in Food Production [96]

Indicator	% Female	% Male
Population	51	49
Food Production	80	20
Planting	60	40
Weeding	70	30
Harvesting	60	40
Processing/Preparation	90	10
Access to/ownership of land and related means of production	8	92

Women are often allocated smaller plots of land that are of poorer quality and are farther from their homesteads, resulting in lower yields, lost time and higher opportunity costs. Women also lack the resources for farming inputs such as fertiliser, technology and extension services to improve crop yields. The heavy burden of farming and household work leaves women with little time to diversify their livelihoods, which, as noted, contributes to chronic poverty [96, 124]. In addition, women face labour constraints because they must work on their family's farms first and then on their own land (normally a kitchen garden near the homestead), delaying planting on their plots. They also are less able to hire labour to work on their land.

4.4.3.4 Gender and Nutrition

Women in Uganda play an important role in household nutrition and food security through their responsibilities as marketers, food producers and caregivers. Research shows that in Sub-Saharan Africa, children in households where women have low decision-making power relative to men have lower nutritional status.[97] Women's low status in Uganda is partly reflected in the high fertility rates and the relatively high percentage of poor rural women who suffer from moderate and severe malnutrition (BMI < 18.5 kg/m^2), 23 percent (in the lowest wealth quintile) [8]. This high prevalence of women's malnutrition is related to a number of factors. Women's nutrition in general, and especially during pregnancy, is poor. Women suffer from low quantity and diversity of food in their diets, as well as certain food taboos that deprive them of nutrient-rich foods. Food allocation in the household does not favour women and cultural norms dictate that men be served first. During pregnancy, women need to reduce their workload to

ensure they maintain their health and the health of the foetus. However, this is virtually impossible given women's many obligations in agricultural work and household chores, such as hauling water and firewood and caring for young children. As noted above, women's capacity to care for themselves and their children is especially difficult given their limited decision-making power and access to resources needed to improve their health and their children's health.

Women's lack of decision-making power and control over their sexuality are also significant factors that contribute to Uganda's high fertility rate. In Uganda, women are sometimes valued for their ability to bear children yet they have no custody rights over their children [125]. Frequent and closely spaced pregnancies increase the risk of malnutrition in every subsequent child, and women frequently stop breastfeeding their youngest child when they become pregnant. In addition, for every additional child, mothers' caring capacity is stretched further and they have to balance child rearing with the competing tasks of managing their households and farming.

A study conducted in Uganda [111] found that domestic violence significantly increased the risk of child morbidity, specifically fever, diarrhoea, cough and fast breathing. Studies conducted in India [113] and Latin America [112] have shown that domestic violence is significantly associated with increased child mortality and poor nutritional outcomes in children and their mothers suffering the abuse and that domestic violence is often linked to depression and low self-esteem in women. As shown in **Table 12**, 68 percent of women in Uganda reported having been either physically beaten or emotionally or sexually abused by a male intimate partner, according to the 2006 UDHS.[8] Overall, 70 percent of women considered a husband justified in beating his wife for reasons such as going out without telling him, neglecting the children, arguing and refusing sex. This ranged from 42 percent in the Kampala to 83 percent in the Eastern region. The high prevalence of domestic violence in Uganda likely impairs a mother's ability to provide optimal care for her children, and gender inequity likely contributes to the poor health and nutritional status of women and children and ultimately to poor household food security.

Table 12. Prevalence of Domestic Violence by Region [8]

	Emotional Violence	Physical violence	Sexual violence	Physical or Sexual violence	Emotional/Physical or sexual violence
Central 1	61	44	47	60	73
Central 2	33	33	29	44	52
Kampala	41	30	24	41	54
East Central	57	47	45	62	72
Eastern	54	63	48	74	78
North	44	50	27	58	67
West Nile	22	53	18	58	61
Western	46	46	34	56	65
Southwest	62	55	37	65	75
IDP	38	44	24	54	62
Karamoja	46	50	37	60	72
National	49	48	36	59	68

Another challenge in Uganda is the high rate of adolescent pregnancy. Around 20 percent of adolescent girls marry before age 19 (**Table 13**). Twenty-five percent of adolescent girls (ages 15 to 19) across Uganda start childbearing during adolescence, 40 percent in the lowest wealth quintile. The growing trend of men forgoing marriage and paying bride-price is fueling high rates of adolescent pregnancy. The lack of a socially accepted union and the girls' partners denying that they are the fathers of their children make adolescent girls and their children highly vulnerable. Without an accepted marriage, they are denied the rights and protections of marriage – child support, access to land, support from their parents, education and livelihood skills – all of which are essential to ensure good nutrition for themselves and their children.

A recent study in Wakiso district found that first-time adolescent mothers faced increase stigma from the community and family violence.[98] Notably, they were found to be significantly more disadvantaged than their adult peers in terms of health-seeking behaviour for themselves and their children. They also had fewer resources for managing their livelihoods. The practices of child and adolescent marriage and early pregnancy contribute to poor maternal and child health in this context. Adolescent mothers and their infants are at greater risk of poor nutrition outcomes in the long term, and these mothers, because of their age and life stage, are at the lowest end of the social and gender hierarchy. At their time of greatest need in terms of young child nutrition and care, they have the least decision-making power and the lowest access to resources to ensure optimal health, nutrition and growth in their children.

Table 13. Regional Variation in Median Age at Marriage Among Women Age 20-24 and Percentage of Girls 15-19 Who Have Started Childbearing [8]

	Median age at marriage among women age 20-24		Percentage of girls 15-19 who have started childbearing		
Region	**Median age at marriage**	**Median age at first birth**	**% Had a live birth**	**% Pregnant with first child**	**% Started childbearing**
Central 1	19	19	17	5	21
Central 2	18	19	25	5	30
Kampala	-	-	11	3	14
East Central	18	19	18	7	25
Eastern	18	19	24	7	31
North	17	19	26	8	34
West Nile	18	20	18	4	22
Western	18	19	20	9	28
Southwest	19	20	12	1	13
IDP	17	18	35	8	43
Karamoja	19	20	8	10	18
National	18	19	19	6	25

4.7 SUMMARY ANALYSIS OF NUTRITION SITUATION IN UGANDA

Figure 34 presents the conceptual framework of the key factors in malnutrition in Uganda as discussed in this analysis. The summary is presented below.

Uganda Might Not Achieve Set Goals With Current Rates of Change of Key Nutrition Indicators

This analysis shows that many across Uganda are deeply affected by malnutrition and food insecurity. Nationally, chronic malnutrition (stunting) affects more than 2 million preschool children across Uganda. However, the highest prevalence of stunting, is in the Northern, Eastern and Southwest regions. Unfortunately, the current rates of change in malnutrition are too slow to achieve set targets or commitments, such as reaching the Health Sector Strategic Plan 2005-2010 (HSSP-2) and MDG 1 nutrition goals by 2015--unless greater efforts are made to address the problem of malnutrition. **Table 14** below compares the rates needed to achieve the HSSP-2 targets and the actual rates of change.

Table 14. MOH Targets on Nutrition Indicators and the Rate of Change to Achieve the Targets

HSSP-2 nutrition goals (2005-2010)	Levels at 2006	Annual change needed to achieve HSSP-2 goals	Actual annual rate of change (2001-2006)
Increase the prevalence of exclusive breastfeeding from 70 to 80 percent	60 percent	+2 percent	-2 percent
Reduce the prevalence of underweight among under-5s from 23 to 17 percent (was set using the NCHS references)	20 percent	-1 percent	-0.6 percent
Increase VAS uptake for 6-59 months from 60 to 80 percent	78 percent (facility statistics)	+4 percent	+3 percent
Attain 100 percent household salt iodisation	95 percent	+2 percent	+1 percent

WHO categorises the levels of VAD and IDA as "severe." VAD can be reduced significantly if there are concerted efforts—as there has been in the IDPs and in Karamoja regions during the period 2000 and 2005. Although highly associated with wealth ranking, iron deficiency (IDA) levels have kept increasing even as national poverty levels have significantly declined. There are no signs that current approaches are bearing fruit. Public health initiatives, intensive food diversification education and food fortification are needed to reduce micronutrient deficiencies.

The levels of overweight in adults are increasing in both rural and urban areas. Maternal overweight and child stunting exist in the same households, most likely suggesting lack of knowledge and understanding of IYCF practices, low diet diversity and a strong dependence on single high-carbohydrate staple foods. Obesity rates are still low, but the number of cases associated with NCDs is increasing in Ugandan hospitals. Managing NCDs will cost much more than controlling and treating nutrition deficiencies.

Disease and Health Environment

The immediate causes of malnutrition in Uganda continue to be the high disease burden and poor IYCF practices. Hygiene and sanitation and food safety are also, and sometimes even more, important factors in malnutrition. Data indicate that the prevalence of diarrhoea increased in most rural areas even though access to latrines and clean, safe water improved. Food safety and hygiene are likely contributors to infant and childhood diarrhoea. These factors are likely to be affected as the population and women's workloads increase.

HIV is another factor in both childhood and adult malnutrition. But with declining HIV prevalence and improved treatment and care, the contribution is likely to decline.

Poor IYCF Practices: Behaviour Change Communication is Necessary but Not Enough

Key issues in infant feeding are use of prelacteals, early introduction of foods other than breast milk, low feeding frequency and the low nutrient density of foods used as complementary foods. However, simply providing mothers with more information on reducing infection and improving infant feeding practices will be inadequate in most regions of Uganda. Women are overburdened, balancing the competing tasks of producing food and incomes, bearing and rearing children, and other domestic responsibilities. This results in less time and capability to provide optimum care to each of their children and subsequently to implement actions to reduce and prevent malnutrition. Women also lack access to and control over resources and control over their fertility. Generally, men have little knowledge of IYCF practices and do not support women in the nurturing process. Any approach to address malnutrition must carefully consider women's time and control over household resources and try to identify ways to relieve women's burdens. Male involvement in child care and household productive activities is a critical element in the prevention and control of malnutrition.

Many parts of Uganda, especially the Northern and East Central regions, are experiencing high rates of adolescent pregnancy and high total fertility rates. Children born to teenagers are likely to be low birth weight and malnourished in childhood. In addition, the high total fertility rate and frequent births increases

vulnerability to poor child care, early stopping of breastfeeding, less time for feeding older children and less food for the many children. Unfortunately, the same households have smaller plots of land, due to fragmentation, and live in more marginalised areas of the community.

Changing Gender Roles and Social Cohesion

Increasingly, poverty in Uganda is becoming a gendered issue. Generally, men are perceived as the providers of material needs for their children, such as food, health care and education. But in some ways gender roles are changing. Men and young adults are leaving rural homes in search for means of paid employment, and older children are increasingly entering "boarding schools." These changes are not necessarily positive because men are contributing less money, labour and other resources to their households. Women are left to close the gap and must feed their families with the little income they earn. In addition, men's increasing consumption of alcohol and chronic illnesses like HIV diverts meagre financial resources and labour from family needs. Alcoholism and gender-based violence are also affecting family cohesion with negative repercussions on child care and health. Targeting mothers alone without reaching out to fathers and other family members will have little impact on the nutrition of children and women. Community dialogue on shared responsibility for preventing malnutrition is needed; male support can go a long way toward supporting and enabling mothers to adopt positive behaviours.

Health and Nutrition Care Infrastructure

Most health and nutrition services are provided in health facilities, with about a third of the population living within a 90-minute walk. The quality of the services remain doubtful, making the opportunity cost of using health care services high because of long waiting hours and periodic lack of supplies. Nutrition services like VAS are provided routinely in all facilities. Nutrition education and growth promotion are occasionally provided in some health facilities. However, nutrition supplies like IFA supplements are not assured, and there are many missed opportunities for providing vitamin A to children and postpartum women.

Health and nutrition services are limited in coverage because most are facility-based and the few community-based nutrition programmes are limited to areas within districts. Few community-based programmes have proved successful and can be scaled up. For instance, the Gender Informed Nutrition and Agriculture (GINA) project model implemented by Makerere University is a potential option for addressing malnutrition (**Box 10**). The project couples income-generation activities with increasing mothers' knowledge, providing mothers with key resources to enable change – resources that broaden livelihood activities and provide much-needed income to women to support implementation of their knowledge on improved practices. While this model was conducted on a small scale, it is appealing in the Ugandan context.

Box 11. Integrated Nutrition Programming: Gender, Livelihood and Nutrition

The Gender Informed Nutrition and Agriculture (GINA) Project was funded by USAID and implemented by the department of food science technology of Makerere University in Kabale, Kanungu and Rukungiri districts in Uganda in 2006. The GINA project selected and trained community-based growth promoters to carry out monthly growth promotion and monitoring of young children in their immediate communities. The growth promotion training package encompassed empowering mothers with knowledge and skills on the Essential Nutrition Actions (ENA) and best practices for child feeding and care. Nutritional status was monitored using weight-for-age. The information was passed on to the mothers during the growth promotion activity, drama and through talk shows broadcast twice a week on Saturday and Sunday. Project beneficiaries also engaged in income-generating activities that included growing of crops such as sweet potatoes, Irish potatoes and vegetables as well as rearing small livestock such as chicken and rabbits.

A review of the project documented a significant improvement in child feeding practices, with about 75 percent of the mothers in GINA groups practicing exclusive breastfeeding for the first six months compared with the national figure of 56 percent.[99] The majority of mothers in GINA groups reported actively feeding their children on balanced diets about five times a day. Immunization and deworming of children in the GINA groups is now universal. Community-based growth promotion and monitoring positively contributed to the behavioural change patterns among the mothers in the targeted communities, particularly child care and feeding, adherence to immunization schedules, and hygiene and sanitation. All these positive actions resulted in reduced levels of malnutrition (underweight) among GINA-enrolled children, from 22 percent at baseline to 10 percent after one year of intervention, a drop of more than 50 percent. The reviewers recommended that this strategy be scaled up to other districts.

Declining Food Security

Food production per capita is steadily declining, likely because of the rapidly rising population and increasing land fragmentation and degradation. Commercialised agriculture is also growing rapidly, increasing household income and providing employment to household members. However, the benefits are not contributing sufficiently to household food security and nutrition. Both commercial crops and traditional food crops are sold almost in their entirety at the end of the harvest, when prices are lowest. By selling substantial portions of their harvest, families are prone to food shortages and thus food insecurity. The North, Northeast, East and Southwest regions are most affected by food insecurity. In the North, food insecurity is a result of inadequate food production, low incomes and undiversified livelihoods. In Eastern and East Central Uganda, lack of diversification and dependence on agriculture alone keeps incomes low, while food prices are rising. In the Southwest, many men and women are agricultural day labourers and their wages have been declining while food prices are rising, contributing to food insecurity in the region. Also central to food production is access to land, and land tenure in Uganda is becoming increasingly insecure for women and the poor, as they access increasingly marginalised land that is farthest from their homesteads and have smaller parcels of land to cultivate.

Poverty and Wealth Disparity

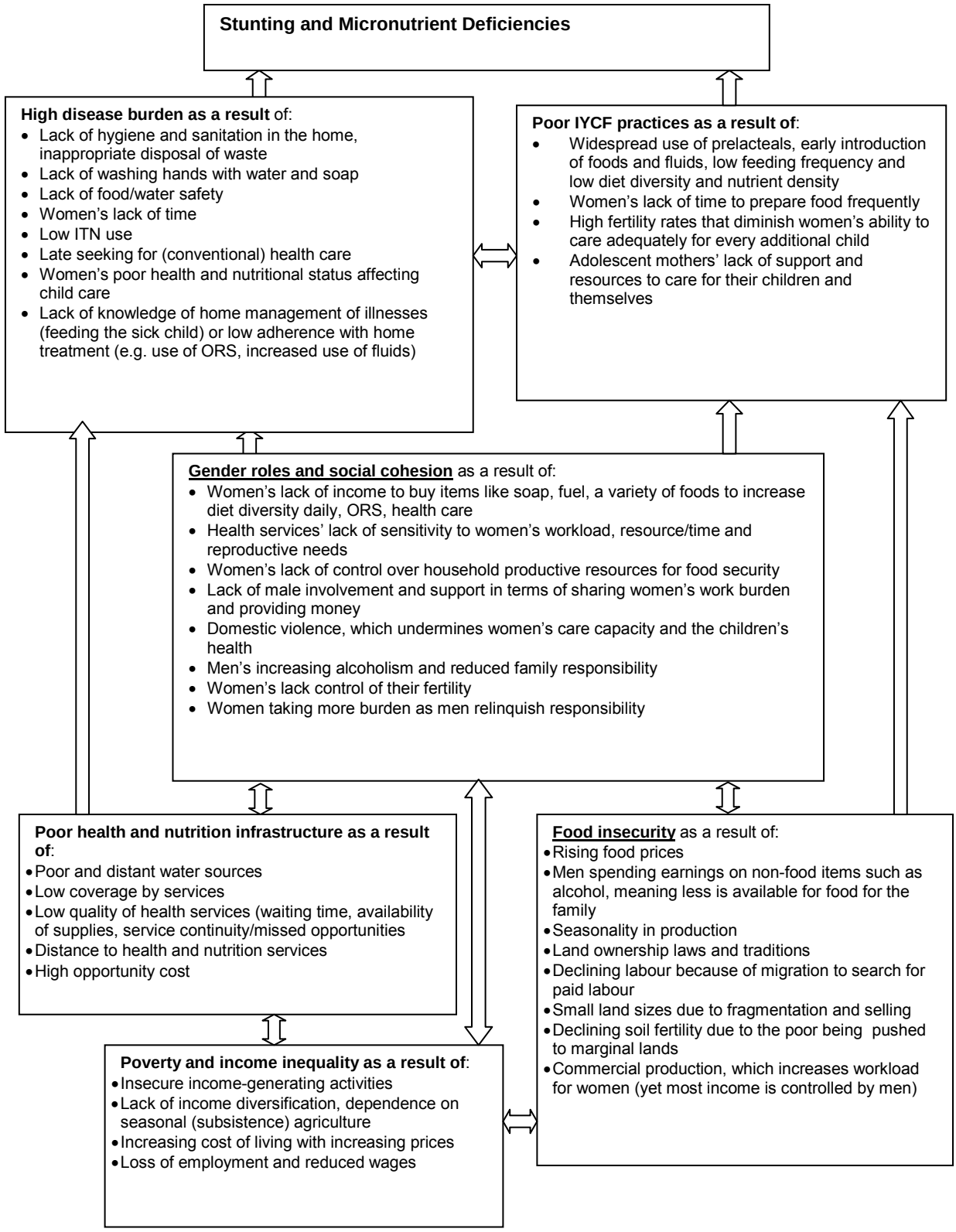
Uganda has successfully reduced poverty from 56 percent in 1992 to 31 percent in 2006, but wealth inequality has increased notably, and in part poverty is driving the high prevalence of stunting and IDA. Income poverty results in undiversified diets, and as food prices rise, the poor likely will rely on substitute staples that are cheaper than other preferred foods. They are likely to trade quality and diversity of foods for quantity of a single high-carbohydrate staples, which means infants and young children will have a relatively undiversified diet.

Box 12. Increasing Coverage With Structures Outside the Health Sector

The Girl Guides Anaemia Prevention Badge Programme (APBP) began in 2007 and works with Girl Guides ages 7 to 18 who are members of the Uganda Girl Guide Association (UGGA). Under the direction of trained Guide Leaders, the Girl Guides earn an "Anaemia Prevention Badge" for learning key messages about anaemia and its prevention, completing practical activities and conducting community outreach activities for anaemia prevention among adolescent girls and women of reproductive age in their communities. Training and educational materials were developed to support the Guide Leaders and Girl Guides in implementing the APBP. The Anaemia Prevention Badge Guiders' Training Manual provides lesson plans on nutrition, anaemia and its prevention and control, as well as guidance on participatory methods, developing communication messages, and tracking the programme activities. An accompanying handbook describes the requirements to earn the badge. The Anaemia Prevention Badge Workbook provides information and activities to Girl Guides through cartoon stories, activity sheets, and summaries of key points about anaemia. Finally, there is an Anaemia Prevention Badge that Girl Guides can wear once they fulfill all requirements. The materials were designed to be adaptable to all ages, with activities recommended specifically for Brownies, Girl Guides or Rangers.

Eleven Guide Leaders were trained in the APBP at the UGGA national training of trainers in Kampala in February 2007. District-level trainings, facilitated by those trained at the national level and supported by UGGA, RCQHC and FANTA, were held in Kumi and Wakiso Districts in August 2007. At the three-day trainings, 20 Guide Leaders, all of whom are teachers at 20 local primary and secondary schools, learned about anaemia prevention and how to facilitate the APBP and developed action plans for implementing the APBP in their schools. The programme has been implemented successfully in the two selected districts in Uganda, with 25 Guide Leaders trained and over 1,400 Girl Guides actively participating. The programme was integrated into schools as a club, with enthusiastic support from school, district and community leadership, which has been essential to programme operation. About 450 badges have been earned, and about 7,500 people (peers, parents, community members) have been reached with behaviour change messages through presentations, performances and conversations at home, church, school, markets and community gathering points.

Figure 34. Conceptual Framework of Causes of Malnutrition in Uganda



Chapter 5. Institutional Framework for Improving Nutrition in Uganda

5.1 HUMAN RESOURCES AND CAPACITY FOR NUTRITION IN THE PUBLIC SECTOR

National Level

The Nutrition Unit is based in the Division of Child Health, which is under the Department of Community Health. The new MOH 2010 proposal has suggested elevating the Nutrition Unit to the level of a division within the Department of Community Health. Currently the Nutrition Unit has four technical staff. One other nutrition staff is based in the AIDS Control Programme and another in the Division of Reproductive Health. Under the MOH proposed structure, the Division of Nutrition will have 10 technical staff, including a statistician/M&E officer.

Regional Level

MOH staff structure includes a senior nutritionist and a nutritionist at referral hospitals. As of the end of 2009, 10 of the 11 regional hospitals had a nutritionist who reported directly to the MOH.[15] The major focus is on curative and rehabilitation services within the hospital, with some nutrition promotion through the hospital's community outreach department.

District Level

Guidelines and policies are operationalised at the district level. *District Health Offices* coordinate health and nutrition activities promoted by the government, NGOs and private-sector partners. District/local government staff structure includes one nutritionist at general hospitals and district governments can use their local (district) public health funds and other locally mobilised resources to employ a nutritionist. Ten of 83 districts have nutritionists (Bushenyi, Ntungamo, Nakaseke, Amuru, Bududa, Tororo, Moyo, Kisoro, Apac and Iganga). In other districts, the Expanded Programme on Immunisation (EPI) coordinator, public health nurse or district health educator is responsible for coordinating and implementing nutrition activities.

Community Level

The HSSP-2 proposes using village health teams (VHTs) to interface between the community and the health facilities. VHTs consist of reproductive health agents, community growth promoters, vaccinators, traditional birth attendants (TBAs), malaria drug distributors or other community health workers. One VHT member is expected to cover 30 households. The MOH's aim is to have VHTs in every village by 2015. Currently, 20 districts (25 percent) have established VHTs.

Pre-service nutrition training began only recently in Uganda. Undergraduate and graduate degrees offered in public health nutrition or in public health, with an emphasis on nutrition, are offered at the major universities (Makerere and Kyambogo), and these programmes produce 15-40 nutritionists per year. Nutrition issues are also well integrated in medical curricula at Makerere and Mbarara universities and in nursing and paramedical institutions.

In-service training is conducted widely at all levels. Most training is provided by NGOs, but the Nutrition Unit has also conducted short courses for health staff in IYCF, PMTCT and management of severe malnutrition. The MOH has produced training manuals for all these areas.

Major Challenges

- At the implementation level, non-nutrition staff who have nutrition responsibilities are overworked and must multitask between responsibilities.

[15] There are two more new regional hospitals (Moroto and Mubende), and neither has a nutritionist,

- Staff retention and recruitment are especially a problem. High staff turnover has led to a recurrent need for training.
- Limited human resource capacity for nutrition is a major constraint in raising nutrition standards.
- The decentralised health policy makes it paramount for nutritionists to be placed at the district level.

5.2 POLICIES, GUIDELINES AND LEGISLATION

Uganda has many good up-to-date technically sound policies and guidelines, some of which are presented in **Table 15.** Most of the policies and guidelines have been launched in Kampala but not in the regions or districts. Though these guidelines have monitoring and evaluation indicators, including indicators for evaluating the use of the guidelines, their coverage and use have not been evaluated.

Box 13. The Use of the VHT Approach

The VHT training is based on a manual produced by the MOH. The module on child growth and development has five major topics: home based management of fever (HBMF), immunization, diarrhea, food and nutrition, and breastfeeding.

The food and nutrition chapter describes the different food groups (energy-giving foods, body-building foods and protective foods) and classifies three types of malnutrition (marasmus, kwashiorkor and underweight). VAS is mentioned but IFA supplementation and associated factors are not expounded upon well. The breastfeeding section does not address the major constraints faced in Uganda (prelacteal feeding, early introduction of additional feeds, stopping breastfeeding due to another pregnancy). There is actually wrong information on a few issues related to how to breastfeed. Complementary feeding issues are not addressed at all.

As many partners put more emphasis on community-based actions to address malnutrition (e.g., moving from TFCs to CMAM/CTC), the VHT strategy will find more support. In the North, UNICEF and many NGOs supported/continue to support the VHT concept. However, the concept's practicality and continuity must be redefined to fit the realities of the different geographic areas.

VHT motivation is critical for sustainability. Provision of supplies, trainings, refresher trainings, supervision, feedback and incentive items like torches, raincoats, bags and gumboots has been found to be effective in motivating VHTs.

The VHT package is currently under review, but this is spearheaded by the MOH's Health Promotion and Education Department. The MOH's Nutrition Unit should be more involved and ensure that practical issues of IYCF and maternal nutrition be incorporated in the training modules.

Table 15. Nutrition-Related Policies and Guidelines in Uganda

Policy Guidelines (year)	Summary of content
National nutrition policies	
National Food and Nutrition Policy (2003)	The overall goal is to ensure food security for and adequate nutrition of all Ugandans. The cross-cutting policy objective is to promote nutritional status through multisectoral, coordinated and sustainable food security and nutrition interventions. Specific nutrition objectives include: • Reduce Protein-Energy Malnutrition (PEM) especially among children • Reduce chronic undernutrition among adolescents and women of reproductive age • Reduce low birth weight(LBW) • Encourage and support EBF and continued breastfeeding with complementary feeding for 2 years or beyond

	• Promote and support optimum IYCF • Eliminate micronutrient deficiencies (vitamin A, iodine, iron) • Prevent and control chronic nutrition-related NCDs • Promote optimal nutritional standards in institutions • Promote optimum nutrition for PLHIV The policy also proposes establishment of a Food and Nutrition Council to coordinate nutrition activities in Uganda.
National Food and Nutrition Strategy and Investment Plan (2003)	This plan is in place to help operationalise the Food and Nutrition Policy. A Parliamentary Bill on Food and Nutrition Act (2008) has been drafted to legalise the establishment of the Food and Nutrition Council in Uganda. The bill provides for: • Enjoyment of the right to food • Establishment, functions and composition of the Food and Nutrition Council • Establishment of Food and Nutrition Committees at district and sub-county levels • Definition of various public authorities' roles in implementing the Act The primary focus, particularly of the bill, is on food (food security, household and national food reserves, food production, importation, distribution and trade, and food aid). The health sector was not been adequately represented during the development of the Food and Nutrition Policy and Strategy and Investment Plan in 2001/02 and during the bill's drafting.
Cross-cutting policies related to nutrition	
Uganda's National Health Policy (1999)	The policy aimed to ensure access to the Uganda National Minimum Health Care Package (UNMHCP). Nutrition, with emphasis on women and children, is one of the UNMHCP's technical health care programmes. The national nutrition targets for the plan were: • Reduce stunting in children under 5 from 38% to 28% • Reduce underweight in children under 5 from 26% to 20% • Increase EBF at 6 months from 68% to 75% • Increase and sustain VAS coverage for children 6-59 months from 80% to 95% • Increase the proportion of households consuming iodized salt from 69% to 100% • Increase public awareness of appropriate nutrition practices from 50% to 95%
Health Sector Strategic Plan 2005-2010 (HSSP-2) [110]	This provides a common strategic framework for the long- and medium-term expenditure framework and annual budget frameworks. The nutrition targets are placed under the MCH Cluster and include: • Increase the prevalence of EBF from 70% to 80% • Reduce the prevalence of underweight among children under 5 from 23% to 17% • Increase VAS uptake for children 6-59 months from 60% to 80% • Attain 100% household salt iodization
Child Survival Strategy (draft 2009) [12]	The Child Survival Strategy (CSS) shows the renewed commitment to accelerate efforts to address child survival in Uganda. The CSS identified priority high-impact nutrition interventions--including promotion of EBF for 6 months, complementary feeding and vitamin A and zinc supplementation as key to child survival. To provide a more comprehensive framework for implementing the essential nutrition interventions under the CSS, the MOH-Nutrition Unit is developing a National Nutrition Operational Framework.
National Nutrition Operational Framework (MOH, 2009 draft)	The framework operationalises the nutrition component of the CSS and is a means of accelerating the reduction of under-5 mortality. The framework's overall objective is to scale up implementation of a defined package of proven, cost-effective nutritional interventions and to sustain high coverage. Impact indicators are also presented.
IYCF	
Code of Marketing of Breastmilk Substitutes (1997)	This encompasses guidelines marketing of complementary foods for children up to 6 months. The regulations were revised in 2004 to address issues related to HIV/AIDS, compliance monitoring structures, membership of the Code committee and penalisation of violations; however, the revised version has yet to be passed into law.
Baby Friendly Hospital Initiative (BFHI) (MOH, 2004)	The BFHI, adopted by the MOH in 2004, includes these requirements for hospitals and health facilities to attain Baby Friendly Status: o Establish a breastfeeding policy

	o Train all health care staff in IYCF o Promote breastfeeding as part of ANC o Help mothers initiate breastfeeding within half an hour of birth, o Support breastfeeding even if mothers are separated from their infants o Give the infant no food or drink other than breast milk o Practice rooming in o Encourage breastfeeding on demand o Give no artificial teats or pacifiers o Refer mothers to mother support groups
Uganda Policy Guidelines on Infant and Young Child Feeding (2009)	This is an update of the 2001 Policy Guidelines on Infant and Young Child Feeding in the Context of HIV/AIDS that includes recent evidence related to HIV and infant feeding and that addresses suboptimal IYCF in a more comprehensive manner. The guidelines now address IYCF under "normal" circumstances, the feeding of infants and young children exposed to HIV or in other exceptionally difficult circumstances. The guidelines also make a stronger case for addressing specific suboptimal complementary feeding practices widely observed in Uganda.
Employment Labour Act # 6 of 2006.	This establishes four days of paid paternity leave and 60 days of paid maternity leave.
Micronutrients	
Salt iodization legislation (UNBS, 1997) [114]	This stipulates that all salt for human and animal consumption in Uganda be adequately iodized with potassium iodate. It defines the content of iodations and the monitoring and enforcement mechanisms. The legislation needs revision, given new best practices and national experiences.
Uganda Anaemia Policy (2001)	This aims at improving management of anaemia (including sickle cell anaemia), ensuring early detection and treatment of anaemia, eliminating IDA and supporting and strengthening complementary policies relevant to anaemia. The policy stipulates various intervention packages for pregnant women, adolescent girls and preschool and school-aged children. However, the guidelines need review to address the recent WHO recommendations on iron supplementation in areas where malaria is endemic.
National Guidelines on Planning and Implementation of Vitamin A Supplementation (2001)	The guidelines provide recommendations and technical guidance to improving and sustaining VAS coverage for children 6-59 months to 95 percent by the end of 2004/05. The guidelines also advocate for VAS of non-breastfed infants under 6 months as well as postpartum women within eight weeks after delivery. Technical guidance also is provided on how much VAS to give and when and on indicators for monitoring.
Zinc supplementation guidelines (MOH, 2008)	To reduce morbidity and mortality due to diarrhoeal diseases, the MOH reviewed the control of diarrheal diseases (CDD)revitalisation/ORT implementation plan to develop the new ORT strategy, which recommends zinc supplementation for all children suffering from diarrhoea.
Food fortification guidelines/legislation (UNBS, 2005) [115]	Under these guidelines and legislation (Food and Drugs Regulations, 2005, Statutory Instruments 2005:2), the MOH is to encourage and promote the fortification of staple foodstuffs and other processed foods to address identified micronutrient deficiencies in accordance to national standards. Fortified foodstuffs that are permitted by the MOH have a logo displayed on their labels.
Uganda Policy Guidelines on Integrated Management of Acute Malnutrition (draft December 2009)	These guidelines update the 2005 Guidelines on Management of Severe and Moderate Malnutrition. The new guidelines covers inpatient therapeutic care, OTC, supplementary feeding programmes and community screening/referral, and they take treatment of severe malnutrition out of the emergency context into the development context.
Nutrition and HIV	
Nutrition in the Context of HIV and	This strategy provides a national framework to guide the development, implementation, monitoring and evaluation of food and nutrition interventions for people living with and

Tuberculosis Strategy 2008-2012 (MOH, 2009)	affected by HIV and/or tuberculosis. Strengthening advocacy, increasing coverage of food supplementation and capacity of institutions, coordination and strengthening the nutrition information system are some of the strategic interventions and objectives to be addressed under the plan.
Food safety and hygiene	
The National Food Safety Strategic Plan (NFSSP) 2007-2016 (GOU, 2007)	This plan emphasises government's commitment to the Poverty Eradication Action Plan (PEAP) in attaining sustainable development. The plan aims to establish an Integrated National Food Safety Control System, ensure local manufactured and imported foods meets national standards, provide institutional framework and capacity, coordinate activities related to food safety and reduce the burden of food-borne illnesses in Uganda.

Some policies and guidelines must be reviewed to align with new international recommendations and evidence, e.g., the anaemia policy, the Code of Marketing of Breast Milk Substitutes (1997), salt iodization legislation [114], the food fortification guidelines/legislation [115].

In 2009, the draft National Development Plan was developed and the social sector component addressed issues of health and nutrition. In addition, the National Health Policy was reviewed and nutrition was comprehensively addressed. The draft HSSP III is being developed with a broad basic care package that includes nutrition.

5.3 INFORMATION SYSTEMS, SURVEILLANCE AND RESEARCH

The following are the main sources of nutrition information in Uganda:

- The Uganda Demographic Health Survey is the major national information resource for nutrition.
- UNICEF supports nutritional assessments in the conflict regions. Annual surveys are done in Acholi, Lango and Teso sub-regions and biannual surveys in Karamoja.
- WFP conducts periodic Emergency Food Security Assessments in number of districts in northern Uganda.
- WFP also supports the Comprehensive Food Security Vulnerability Analysis that maps food insecurity in the whole country.
- A database of information from TFCs and sites providing paediatric HIV services and receiving RUTF is compiled in the MOH.
- The MOH also compiles data collected during Child Days.
- Minimal nutrition data are also collected through the health management information system (HMIS). Indicators routinely recorded through the HMIS in public health facilities include age, date of birth, weight at measles vaccination, VAS, deworming and indicators on IYCF in the context of HIV in the PMTCT programme. However, the system needs strengthening through monitoring and support supervision and through development of key performance indicators to determine its quality.
- The MOH/Nutrition Unit is also establishing a nutrition web portal page within MOH website. Quarterly nutrition bulletins and monthly nutrition briefs produced with UNICEF support and other nutrition information collected by various projects will be posted on the portal.

Uganda's early warning system includes data from systems operated by FAO's Global Information and Early Warning System (GIEWS) in the Ministry of Agriculture, USAID's Famine and Early Warning System Network (FEWSNET) and WFP's Vulnerability Assessment Mapping programme (VAM). FEWSNET distributes monthly publications highlighting trends and levels of food insecurity for population sub-groups in Uganda. In addition, a countrywide comprehensive food security and vulnerability assessment done in 2008 examined nutrition, mortality, anthropometry, food security and vulnerability to food insecurity.

With UNICEF's support, ACF is piloting a nutrition surveillance system of sentinel surveys aggregated by livelihood zones and district. The system will conduct three rounds of data collection in each selected site in Karamoja. The system will collect data on health and nutrition data, sanitation/hygiene and food security. The pilot, expected to be done and reported in 2011, is expected to guide the development of a

national nutrition surveillance system. UNICEF is also piloting in Pader and Amuru districts a nutrition surveillance approach called RapidSMS, which uses a phone short messaging system (SMS) to send data (collected by VHTs) to the District Health Office (DHO) office in order to monitor nutrition and health in selected villages.

While the Nutrition Unit does not have an HMIS focal person, the upcoming new MOH structure that has a Division of Nutrition with a proposed statistician/ M&E officer who will compile the limited nutrition data routinely collected through HMIS and other sources. There are no surveillance? tools for collecting nutrition data, and where they exist, e.g., as in the NuLife programme and data from feeding centres, they are not integrated into the HMIS.

Uganda does not have a formal national nutrition research agenda. Nutrition surveys and assessments are primarily mandated and performed by donor agencies and NGOs using varied methodologies and instruments. However, in recent years, the MOH has taken several measures to be actively engaged in donor-supported activities. In 2009, the National Guidelines for Nutrition Surveys using the SMART methodology were developed, and national and regional trainings were conducted on the methodology.

5.4 COORDINATION AND PARTNERSHIPS

In late 2008, the MOH/Nutrition Unit established a multisectoral coordination mechanism. Three times a year, stakeholder met to:

- Update one another on nutrition interventions being undertaken
- Share lessons learnt in implementing nutrition activities at various levels
- Provide opportunity for peer evaluation and make recommendations for future interventions
- Learn the state of the art on different nutrition topics

Meetings of a Sub-Committee of Nutrition (SCN) is supposed to meet quarterly to set the agenda for different activities and review the activities of the technical working groups (TWGs). Some of the TWGs are:

- IYCF
- Maternal nutrition
- Micronutrients
- Integrated management of acute malnutrition
- Nutrition surveillance and monitoring and evaluation
- Nutrition in emergencies
- Nutrition in NCDs

The Health/Nutrition Cluster (mainly coordinated by the UN) is being phased out, and the MOH is supposed to spearhead coordination meetings on emergency nutrition.

Key partnerships are being established with the private sector, especially in the TWG on food fortification. Another is the partnership with the media through the Uganda Health Communication Alliance (UHCA), mainly on nutrition advocacy.

5.5 FINANCING OF NUTRITION ACTIVITIES

Uganda established a Minimum Health Care Package (MHCP) with detailed nutrition components. However, its implementation has been problematic due to inadequate funding and poor quality of nutrition service provision. The GOU's investment in health has remained at around 2 percent of gross domestic product (GDP). Similarly, government expenditures on health as a percentage of total expenditures on health have remained relatively constant at about 30 percent. The per capita public health expenditure in 2007-08 was US$8.20, while the MHCP is estimated to cost US$28 per capita. Uganda did not achieve the HSSP-2 commitment of allocating 12 percent of the GOU budget to health by 2007/08, suggesting that a significant portion of Ugandans' health costs are met through private expenditures. Donors have contributed—and continue to contribute—funding to a variety of nutrition programmes. Major GOU donors

and partners in the area of maternal and child nutrition (MCN) are listed in **Table 16** and programmes funded include vitamin A and other micronutrient supplementation, management of severe malnutrition, IYCF, technical support, food fortification, nutrition education and capacity building. Donors and NGOs pay for most nutrition intervention activities, other than wages and administration. Through advocacy, the quarterly operational budget allocation to the Nutrition Unit in the MOH has increased from Ushs 3 million per quarter in July 2008 to 30 million per quarter in December 2009, allowing for more supervision and coordination of nutrition services in the country.

Table 16. Donor Role and Contributions to Nutrition Programmes [101]

MULTILATERAL AGENCY	CONTRIBUTIONS
UNICEF	• Financing for programmes and technical assistance for: • Management of SAM in conflict areas • IYCF • Biannual VAS, other micronutrient interventions, deworming, ORT, water and sanitation • Maternal nutrition, e.g., IFA supplementation, IPT • Piloting of nutrition surveillance systems and information systems in the MOH • Nutrition assessments in conflict areas
Belgian Survival Fund (BSF) through UNICEF	• Support to food security initiatives, including a community nutrition component by community-owned resource persons, in three districts in eastern Uganda (Kotido, Abim and Kaberamaido)
WFP	• Support for food supplementation to IDPs in northern Uganda, refugees in northern and western Uganda and to the food-insecure Karamoja • Technical assistance in development of guidelines/strategies, advocacy • Design of a new strategy to include a preventive community nutrition component
WHO	• Technical and financial support for protecting and promoting health, primary health care, control and prevention of specific health problems and response to emergency health problems • Support for MCH and immunisation programmes, new child growth cards • Support for IYCF training in pre-service training institutions • Support for coordinating various partners' emergency health, nutrition and HIV/AIDS initiatives
USAID	Funding for several maternal and child nutrition projects: • **Elizabeth Glaser Paediatric AIDS Foundation** was supported in development of an IYCF training manual and in technical assistance and programming on PMTCT and infant feeding. • **NuLife** Food and Nutrition Interventions for Uganda provides comprehensive nutrition care and support services for PLHIV in 32 health facilities initially (will grow to 120 sites by end of 2010) and supports local production of RUTF. • **A2Z,** a continuation of the MOST project, now supports activities implemented for mainstreaming micronutrient interventions into primary health care. A2Z's initial focus was on Kiboga and Kanungu; it now covers 16 districts in Central and Southwestern Uganda. • **FANTA-2** is implementing a two-year project to strengthen MCN programming through technical assistance to MOH and partners, the development of a scalable community nutrition model, support to MOH on training district and regional nutritionists, advocacy, documentation and national-level nutrition coordination and networking activities. • **ACDI/VOCA** has been managing a Title II (Food for Peace) programme in Uganda since 1989. It currently implements a multiyear food security programme that include some nutrition interventions in 17 districts in North and East Uganda. • **Mercy Corps and International Medical Corps (IMC**) implement the Title II (Food for Peace) five-year Healthy Practices, Strong Communities (HPSC) programme in Kitgum and Pader districts. • **Save the Children** implements newborn care initiatives, including early initiation

	of breastfeeding, and is about to launch in 10 districts a new child survival and family planning programme that includes nutrition.
Clinton Foundation	• Provides RUTF for HIV-exposed and HIV-affected children and technical assistance in integrating nutrition in the Global Fund country proposal.
Global Alliance for Improved Nutrition (GAIN)	• Launched in 2008 in Uganda, GAIN builds partnerships among the GOU, the private sector and civil society to address malnutrition. • Supports the MOH in its national food fortification programme, including iron fortification of wheat and maize flour and vitamin A fortification of vegetable oil.
International Food Policy Research Institute (IFPRI)	• Policy research and nutrition programme evaluations. • Development of the National Food and Nutrition Strategy for Uganda • Ongoing large-scale study on reaching end-users with micronutrient-dense orange-fleshed sweet potatoes • Regional Network on AIDS, Livelihoods and Food Security (RENEWAL) programme on HIV/AIDS and food and nutrition security is evaluating WFP's nutritional support to HIV-affected households in Gulu and Soroti districts.
Global Fund on AIDS, TB and Malaria	• Provides food and nutrition support to PLHIV through the MOH and selected NGOs. MOH has used the resources mainly for training and developing training materials.

Chapter 6. Recommendations

The goal of the document is to provide an analysis of the nutrition situation in Uganda, with the aim that the findings can be used for advocacy and programming. The recommendations below are meant to suggest new areas for improving the design and delivery of nutrition services to prevent and control malnutrition at the policy, leadership and programmatic levels, and for improving coordination and resource mobilisation.

6.1 POLICY AND LEADERSHIP LEVEL

- The MOH should develop and share with partners the nutrition-related targets set by the government. If possible, the targets should be disaggregated by region and the kind of interventions required to prevent and control malnutrition in these areas should be specified. For example, the MOH should work with partners to determine the number of target children who must be screened for malnutrition or who need vitamin A capsules in each regions—or, if possible, in each district.

- This analysis has indicated that malnutrition levels and rates of change vary across regions, as do the specific underlying causes of malnutrition. The MOH should map (or facilitate mapping) all nutrition activities in the country, specifying the NGOs and bilateral agencies working in the different parts of the country, the type and scale of nutrition interventions, funding sources and the programmes' expected duration. The mapping exercise also should identify areas with high malnutrition that are not adequately supported.

- The MOH should review guidelines that are no longer in line with international standards, e.g., the iodine legislation and anaemia guidelines.

- The structure of regional/district human resources for nutrition must be defined. This would include reviewing the job descriptions so that the staff is not just based in the hospital but also can conduct and oversee promotive and preventive nutrition activities in the communities.

- Pre-service learning on nutrition in Uganda should include practical subjects that are based on services delivered, e.g., integrated management of severe malnutrition, integration of nutrition in HIV/AIDS services, nutrition in emergencies, and infant and young child nutrition. Courses should be based on government guidelines and performance improvement materials. Priority areas of operational research should be identified to address operational challenges in implementation of nutrition services.

6.2 PROGRAMMATIC LEVEL

- Programmes that aim to improve malnutrition should focus on improving IYCF practices and hygiene and sanitation practices, and reducing disease burden. There should be practical ways of improving diet diversity and increasing the energy and nutrient density of local diets. Both food-based approaches and micronutrient-specific interventions will be needed. The scope of such programming must seek to integrate nutrition, gender and livelihood activities, targeting groups such as men, adolescents and people who are overweight (or vulnerable to becoming overweight).

- Programmes should shift from a paradigm that is mother-focused to family-focused programming and involve men and other household members. Messages and dialogue should include what men and family members can do to help mothers implement recommended IYCF, sanitation and hygiene and health-seeking behaviours. While these messages and dialogue would target households, parallel efforts are also needed at the community level. For instance, community-based forums could facilitate dialogue on issues like alcoholism, teenage pregnancies, women's time and workload, gender-based violence and polygamy and how they affect child care and

nutrition. It will also be important to harness the potential of local government to take necessary actions, such as establishing the necessary by-laws, to support nutrition activities and prevent malnutrition.

- In the past, community-based nutrition activities have been implemented in few sub-counties, but coverage is limited. Nutrition programmes should be designed to cover larger geographic areas and emphasise approaches that achieve wide coverage. This might involve identifying new entry points and channels for delivering the services.

6.3 RESOURCE MOBILISATION

- The MOH Nutrition Unit should develop an advocacy plan designed to raise the profile of nutrition among the senior MOH management team, parliamentarians, academicians, the private sector, the media and the donor community. The advocacy should aim to mobilise and raise additional resources for nutrition programming in Uganda.

- The government should show its commitment by finalising its plans to elevate the Nutrition Unit into a Division of Nutrition and increase the resources for nutrition programming, especially resources for nutrition supplies (e.g., vitamin A, iron/folate and zinc supplements; therapeutic foods; scales; child health cards) and for recruitment to fill all approved nutrition positions. District/local governments should also be encouraged to invest in nutrition as part of their annual plans.

- The government should identify new ways to raise resources for nutrition. For instance, there are opportunities to raise resources from the Global Fund, the World Bank and the private sector.

6.4 COORDINATION

- While there is a coordination mechanism at the national level, such a mechanism is needed at the regional/district levels. The MOH/Nutrition unit should facilitate the establishment of regional nutrition stakeholder meetings, especially in the three regions with the highest levels of malnutrition: North, East Central and Southwest.

- Each partner in nutrition develops its annual plans independently, and the MOH does not share its plans with partners. In addition, there has been no mechanism to review performance. The MOH should develop one plan that partners buy into or contribute to and should incorporate a performance review mechanism.

- The coordination and planning mechanisms at different levels should be as multisectoral as possible. Key sectors should include agriculture/food security, gender and education, academia and the private sector.

Works Cited

1. World Bank. 2006. *Repositioning nutrition as central to development: a strategy for large-scale action*. World Bank Nutrition Strategy Paper. Washington, DC: World Bank.

2. Horton, S, Alderman, H, and Rivera, Al. 2008. *Copenhagen Consensus 2008 Challenge Paper: Malnutrition and Hunger*. Washington, DC: World Bank

3. Danton-Hill I, Nishida C, and WPT James. 2004. A life course approach to diet, nutrition and the Prevention of chronic diseases. *Public Health Nutrition* 7(1A): 101-21.

4. UNDP 2007. *MDG Uganda's Progress Report*. Geneva: UNDP

5. UNDP and UNDP/Uganda. 2007. *Millennium Development Goals: Uganda's Progress Report 2007*. Geneva: UNDP. http://www.undp.or.ug/mdgs/25 (Accessed). January 2009.

6. FAOSTAT 2010. 2008. Food security statistics. Rome: FAO. http://www.fao.org/economic/ess/food-security-statistics/en/

7. Radhakrishna, RK, Hanumantha Rao, C Ravi, and B Sambi Reddy. 2004. Chronic Poverty and Malnutrition in 1990s. *Economic and Political Weekly*: 3121-3130. July 10, 2004. http://www.jstor.org/action/showPublisher?publisherCode=epw&cookieSet=1 (Accessed) 28th April 2010.

8. Opinion Research Corporation Macro International, Inc (ORC Macro). 2006. *Uganda Demographic Health Survey 2006*. Calverton, MD: ORC Macro.

9. Black, Robert E, et al. 2008. Maternal and child undernutrition: Global and regional exposures and health consequences. Lancet Series on Maternal and Child Undernutrition. *The Lancet* 371: 243-60.

10. Brabin, BJ, et al. 2001. Iron deficiency anemia: Reexamining the nature and magnitude of the public health problem. An analysis of anemia and child mortality. *Journal of Nutrition* 131(2): 636S-648S.

11. Grantham-McGregor S, Ani C. 2001 1999/2001. A review of studies on the effect of iron deficiency on cognitive development in children. *Journal of Nutrition* 131(suppl): 649S-66S.

12. Uganda MOH. 2009. *Ministry of Health Child Survival Strategy for Uganda – 2008-2015*. Draft. Kampala, Uganda: Uganda MOH.

13. Uganda PROFILES (2010). Nutrition Advocacy Technical Working Group PROFILES Meeting report. Kampala, MOH.

14. UBOS, 2008. Statistical Abstract. Page 7. website: www.ubos.org.

15. UNDP. 2007. *Human Development Report 2007/08: Fighting climate change: Human solidarity in a divided world*. Geneva: UNDP.

16. UNICEF. 2009. *State of the World's Children 2009 (SOWC 2009)*. New York, NY: UNICEF. p 141.

17. UN Population data base 2009. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*,

Uganda Demographic profiles. http://esa.un.org/unpp, Accessed Thursday, April 29, 2010; 9:26:00 AM.

18. ORC Macro. 2006. *Uganda Demographic Health Survey 2006*. Calverton, MD: ORC Macro. p 1.

19. ORC Macro. 2006. *Uganda Demographic Health Survey 2006*. Calverton, MD: ORC Macro. pp 37-38.

20. ORC Macro. 2006. *Uganda Demographic Health Survey 2006*. Calverton, MD: ORC Macro. pp 39-40.

21. ORC Macro. 2001. *Uganda Demographic Health Survey 2001.* Calverton, MD: ORC Macro.

22. ORC Macro.1995. *Uganda Demographic Health Survey 1995*. Calverton, MD: ORC Macro.

23. McKinney, Phillip. 2009. *Comprehensive Food Security and Vulnerability Assessment: Uganda. VAM Food Security Analysis*. Rome: WFP.

24. WHO. 1995. *Physical status: the use and interpretation of anthropometry*. Report of an Expert WHO Committee. Technical Report Series No 854. Geneva: WHO. http://www.who.int/childgrowth/publications/physical_status/en/index.html (Accessed April 15, 2010).

25. ACF and UNICEF. 2009. Nutrition Surveillance System in Karamoja Region. Presentation in the Nutrition Stakeholders' Meeting, November 14, at Hotel Africana in Kampala, Uganda.

26. Srinivansan, M. 2007. *The efficacy of zinc as adjunct therapy in the treatment of severe pneumonia in children admitted to Mulago Hospital*. Masters thesis, Makerere University.

27. Dehbozorgi, P, P Mohseni, and Z Mazloom. 2007. The Influence of Zinc Sulfate on the Growth of School Age Children in Villages around Shiraz 2002, 2003. *Journal of Medical Sciences* 7(4): 690-3.

28. Totin et al. 2002. Iron deficiency anemia is highly prevalent in HIV-infected and uninfected infants in Uganda. *Journal of Nutrition* 132(3): 423-429 .

29. Bimenya et al. 2002. Monitoring the severity of Iodine Deficiency disorders in Uganda. *Journal of African Health Sciences* 2(2): 63-8.

30. UNICEF. 2009. UNICEF Uganda nutrition update. Presentation in the Nutrition Stakeholders' Meeting, November 14, at Hotel Africana in Kampala, Uganda. New York, NY: UNICEF.

31. Serwadda, D, RD Mugerwa, NK Sewankambo, A Lwegaba, JW Carswell, GB Kirya, et al. 1985. Slim disease: a new disease in Uganda and association with HTLV-III infection. *Lancet* 2:849-52.

32. Ekoru, K. 2007. Nutritional Status and Change in Nutritional Status among Hiv-Infected Adults Initiating Antiretroviral Therapy at Selected Health Facilities in Uganda, FHI 360/Food and Nutrition Technical Assistance (FANTA) project, DC Washington.

33. Personal communication with Robert Mwadime on 12th May 2009.

34. Bachou, H, T Thorkild, R Downing, and J Tumwine. 2006. Severe malnutrition with and without HIV-1 infection in hospitalised children in Kampala, Uganda: differences in clinical features, haematological findings and CD4+ cell counts. *Nutrition Journal* 2006, 5:27. http://www.nutritionj.com/content/5/1/27.

35. Wamsele, J, and R Kisenge. 2006. HIV/AIDS and associated morbidity and mortality among hospitalised children in Kilifi, Kenya. *Tanzania Health Research Bulletin* 8(2): 90-94.

36. , D Bagenda, L Marum, E Aceng, C Ndugwa, RJ Bosch, K Olness. 1997. Growth Failure as a Prognostic Indicator of Mort ity in Pediatric Infection. *Pediatrics* 100: e7.

37. UNICEF. 1990. *Conceptual framework for basic causes of malnutrition*. New York, NY: UNICEF.

38. Nuwaha, F, and A Mukulu. 2009. Trends in under-five mortality in Uganda 1954-2000: Can Millennium Development Goals be met? *African Health Sciences* 9(2):125-8.

39. Vella, V, et al. 1992. Determinants of child nutrition and mortality in north-west Uganda. *Bulletin of the World Health Organisation* 70(5): 637-43.

40. Kikafunda, J, A Walker, D Collett, and J Tumwine. 1998. Risk factors for early childhood malnutrition in Uganda. *Journal of the American Academy of Pediatrics* 102(4):1-8 .

41. Healthy Child Uganda, 2007. Health Child Uganda baseline survey of rural Southwesten Uganda communities. 2007.. http://www.healthychilduganda.org/. Accessed May, 2009.

42. Caulfield, L, M Onis, M Blössner, and R Black. 2004. Under-nutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria, and measles. *American Journal of Clinical Nutrition* 80(1): 193-8.

43. Esrey, SA, and RG Feachem. 1985. *Interventions for the control of diarrheal diseases among young children. In: Promotion of food hygiene*. Geneva: WHO. pp 1-22.

44. Hoyle, B, M Yunus, and LC Chen. 1980. Breastfeeding and food intake among children with acute diarrheal disease. *American Journal of Clinical Nutrition* 33: 2365-71.

45. Black, R. 1991. Would control of childhood infectious diseases reduce malnutrition? *Acta Paediatrica Scandinavica* 374(suppl): 133-40.

46. Brown, KH, and F Perez. 2008. Determinants of dietary intake during childhood diarrhea and implications for proper nutritional therapy. *Acta Paediatrica* 81: 127-32.

47. Fisher, WCL, and RE Black. 2007. Micronutrients and diarrheal disease. *Clinical Infectious Diseases* 45 (suppl 1): S73-7.

48. Muyeti, RS. 2008. Community Based Management of Acute Malnutrition in Uganda, a Process Review. Kampala, UNICEF

49. Valid International. 2006. *Community-based Therapeutic Care (CTC): A Field Manual*. First edition. Oxford, UK: Valid International.

50. Sserunjogi, L, and WJP Philip Harvey. 2005. Building a multisectoral vitamin A program in Uganda: Establishing sustainable roles for effective implementation. *Sight and Save Newsletter* Feb /2005.

51. Makerere University CHDC. 2007. *Review of Child Days Plus Strategy*. Kampala, Uganda: Makerere University.

52. Mugyenyi, P,W Mbabazi, and E Kabwongera. 2009. Child Days Plus in Uganda: Best practices and challenges. Presentation at Global Immunization Meeting, February 17-19, New York, NY.

53. Uganda MOH. 2002. *National Anemia Policy*. Kampala, Uganda: GOU.

54. Mwadime, RKN, PWJ Harvey, S Naikoba, S Sserunjogi. et al. 2002. *Overcoming barriers to effective maternal anemia interventions during antenatal services in Uganda*. Arlington, VA: MOST Project.

55. Namaalwa, M, A Kabogo, A Boyo, and L Tawfik. 2009. Supplies Availability in Uganda is an Obstacle to Improving Coverage of Vulnerable Groups with Life-Saving Micronutrients. Presentation under the Micronutrients Symposium at the Uganda Nutrition Congress, February 19-20, in Kampala, Uganda.

56. L, F Scheutz, SR Whyte. 2003. Postnat anaemia: neglected problems and missed opportunities in Uganda. *He th Policy and Planning* 18(2): 225-31.

57. Nsabagasani, X, J Nsungwa-Sabiiti, K Källander, S Peterson, G Pariyo, and P Tomson. 2007. Home-based management of fever in rural Uganda: community perceptions and provider opinions. *Malaria Journal* 6: 11.

58. Batega, WD, GJ Green, and BE Plowman. 2004. *Homebased management of fever strategy in Uganda. Assessment of implementation and operation at district and community levels*. Arlington, VA: BASICS II.

59. Ajayi, IO, EN Browne, B Garshong, F Bateganya, Y Bidemi, P Agyei-Baffour, L Doamekpor, A Balyeku, K Munguti, S Cousens, and F Pagnoni. 2008. Feasibility and acceptability of artemisinin-based combination therapy for the home management of malaria in four African sites. *Malaria Journal* 7: 6.

60. Fapohunda, BM, BA Plowman, R Azairwe, G Bisorbowa, and X Wang. 2004. *Home-Based Management of Fever Strategy in Uganda: A Report of the 2003 Survey*. Arlington, VA: Uganda MOH, WHO and BASICS II.

61. Ajayi, OI, EN Browne, F Bateganya, D Yar, C Happi, CO Falade, GO Gbotosho, B Yusuf, S Boateng, K Mugittu, S Cousens, M Nanyunja, and F Pagnoni F. 2008. Effectiveness of artemisinin-based combination therapy used in the context of home management of malaria: A report from three study sites in sub-Saharan Africa. *Malaria Journal*. 7: 190.

62. Mbule, M, A Nyaku, and A Boyo. 2009 Community Medicine Distributors: Opportunities in Increasing and Sustaining Vitamin A Supplementation Coverage. Presentation under the Micronutrients Symposium at the Uganda Nutrition Congress, February 19-20, in Kampala, Uganda.

63. Olico-Okui. 2005. Assessment of the success of Uganda's Universal Salt Iodization in the control of IDD after 10 years.Kampala, Makerere University School of Public Health. Reference 5601

64. Alderman, H, J Konde-Lule, I Sebuliba, D Bundy, and A Hall. 2006. Effect on weight gain of routinely giving albendazole to preschool children during child health days in Uganda: cluster randomised controlled trial. *British Medical Journal* 333 (15 July):122.

65. Orikushaba, P, et al. 2006. *Evaluation of accessibility and use of national guidelines on nutrition and HIV/AIDS in Uganda*. Unpublished Master's Thesis, Kampala, Makerere University.

66. Koniz-Booher, P, M Kyenkya, R Nangai, D Nuwagaba, and A Kigoonya. 2009. Facility Readiness to Introduce a Comprehensive Nutrition Package for PLHIV in Uganda. Presented at the Uganda Nutrition Congress, February 19-20, in Kampala, Uganda.

67. Steel, A, and L Sserunjogi. 1993. *Breastfeeding assessment in Uganda: qualitative research*. Trip report for March 13 - May 5, 1993. San Diego, CA: Expanded Promotion of Breastfeeding Project, Wellstart International.

68. Baume, C. 1994. *Breastfeeding in Uganda: Beliefs and practices, report of qualitative research*. Kampala, Uganda: MOH Nutrition Unit, Makerere University CHDC, and Wellstart International.

69. Fadnes, L, M Engebretsen, H Wamani, J Wangisi, JK Tumwine, and T Tylleskar. 2009. Need to optimize infant feeding counseling: a cross-sectional survey among HIV-positive mothers in Eastern Uganda. *BMC Pediatrics*.2009, 9:2. http://www.biomedcentral.com/1471-2431/9/2.

70. Edmond, KM, C Zandoh, MA Quigley, S Amenga-Etego, S Owusu-Agyei, M Engebretsen, H Wamani, et al. 2007. Low adherence to exclusive breastfeeding in Eastern Uganda: a community-based cross-sectional study comparing dietary recall since birth with 24-hour recall.BMC Paediatrics 2007, 7/10. http://www.biomedcentral.com/1471-2431/7/10.

71. CRS. 2007. *Nutrition knowledge attitude and practices survey in northern and western region (CRS program districts)*. Baltimore, MD: CRS.

72. Babirye, JN. 2005. *Infant feeding practices and adherence to Uganda infant feeding guidelines among HIV positive and HIV negative mothers*. Masters thesis, University of New South Wales.

73. Kagaayi, J, RH Gray, H Brahmbhatt, G Kigozi, F Nalugoda, et al. 2008. Survival of Infants Born to HIV-Positive Mothers, by Feeding Modality, in Rakai, Uganda. PLoS ONE: 2008, 3(12): e3877.

74. Magezi, MS, J Kikafunda, and R Whitehead. 2009. Feeding and Nutritional Characteristics of Infants on PMTCT Programs. *Journal of Tropical Pediatrics*.Feb; 55(1): 32-5. Epub 2008 August 28, 2008.

75. Engebretsen, et al. 2008. Determinants of infant growth in Eastern Uganda: a community-based cross-sectional study. *BMC Public Health* 8: 418.

76. Oyang, W. 2007. *Prevalence and factors affecting exclusive breastfeeding among mother-infant pairs in Kawempe division, Kampala*. Masters dissertation, Makerere University.

77. Wamani, H, AN Astrom, S Peterson, T Tylleskar, and JK Tumwine. 2005. Infant and young child feeding in western Uganda: knowledge, practices and socio-economic correlates. *Journal of Tropical Pediatrics* 51: 356-61.

78. Nankunda, J, JK Tumwine, Å Soltvedt, N Semiyaga, G Ndeezi, and T Tylleskär. 2006. Community based peer counsellors for support of exclusive breastfeeding: experiences from rural Uganda. *International Breastfeeding Journal* 1: 19.

79. Mulindwa, IN, and JPM Ntozi. Mothers in the informal economy and changes in child feeding and caring roles in Kampala, Uganda. Africa Development. CAB abstracts. Council for Development of Social Science Research in Africa. http://www.cababstractsplus.org/abstracts/Abstract.aspx.

80. GOU. 2008. *UNGASS Country Progress Report, Uganda*. Kampala, Uganda: GOU.

81. IGBM and UNICEF. 2005. *Monitoring the compliance with the International Code of Marketing Breastmilk Substitutes and the Food and Drugs (marketing of infant and young child foods) National Regulations in Kampala, Uganda*. New York, NY: UNICEF.

82. WHO. 2000. *WHO Complementary feeding: Family foods for breastfed children*. Geneva: WHO. WHO/NHD/00.1; WHO/FCH/CAH/00.6.

83. Nutrition and Early Childhood Development (NECD) Project. 2001. Q*ualitative research on complementary feeding practices in northern Uganda*. Washington, DC: World Bank.

84. Uganda Bureau of Statistics. 2006. Agricultural Module. In: *Uganda National Household Survey (UNHS) 2005/2006*. Agricultural Module. Kampala, Uganda: Uganda Bureau of Statistics.

85. Kikafunda, JK, AF Walker, and JK Tumwine. 2003. Weaning Foods and Practices in Central Uganda: A Cross-Sectional Study. *African Journal of Food Agriculture Nutrition and Development* 3 (2):1-13. .

86. Hung, M. Unpublished. *Energy and protein values of traditional staple foods used in child feeding in Uganda and feeding recommendations*. February 1998. Washington, DC: LINKAGES at FHI 360.

87. Taylor, A. 1998. Malnutrition in Uganda, a review of the causes and discussion of NECD program implications (for Save the Children UK). Kampala, Save the Children

88. Foote A. Unpublished. *Formative research on complementary feeding practices in Uganda*. Summary report. 24 February 1998. FHI 360, LINKAGES Project.

89. Baume CA, Nema S, Kibombo R, Cabanero-Verzosa C, (2004).Formative Communication Research on Early Childhood Development in Uganda. http://www.comminit.com/pdf/IECD_Uganda_Child_Formative_Research.pdf. Accessed on 28th April 2010.

90. Benson, T, S Mugarura, and K Wanda. 2007. Impacts in Uganda of rising global food prices: the role of diversified staples and limited price transmission.

91. FEWSNET. 2008. Uganda Food security update. November (2008).www.fews.net/Uganda. Accessed 27th January 2009.

92. ACDI/VOCA. 2008. *Assessment of the status of the prevailing conditions in ACDI/VOCA's multi-year assistance program (MYAP) target areas in northern and eastern Uganda*. Washington, DC: ACDI/VOCA.

93. Government of Uganda/UNICEF Country Program 2001-2005. UNICEF, E/ICEF/2000/P/L.3. Country Programme Recommendation Uganda 2001-2005.

94. Benson, T. 2008. Improving Nutrition as a Development Priority: Addressing undernutrition in national policy processes in Sub-Saharan Africa. IFPRI Research Report 156.

95. A2Z: The USAID Micronutrient and Child Blindness Project. 2008. *Country Program experience and results mid project report 2005-2008*. Washington, DC: A2Z at FHI 360.

96. World Bank. 2005. *Uganda: From Periphery to Centre A Strategic Country Gender Assessment*. Washington, DC: World Bank.

97. Smith et al. 2003. *The Importance of Women's Status for Child Nutrition in Developing Countries*. Research Report 131. Washington, DC: IFPRI. p xii.

98. Atuyambe, L, F Mirembe, NM Tumwesigye, J Annika, E Kirumira, and E Faxelid. 2008. Adolescent and adult first time mothers' health seeking practices during pregnancy and early childhood in Wakiso district, Uganda. *Reproductive Health* 5: 13.

99. Kikafunda, J, J Cheryl, E Agaba, T Nsubuga, N Natukunda, N Twenda, and D Ashaba. 2009. Community-based Growth Promotion and Monitoring (GPM) as a Strategy to Improve the

Nutritional Status of Under-five Children: The Gender Informed Nutrition and Agriculture (GINA) Experience. Presented at the Uganda Nutrition Congress, February 19-20, in Kampala, Uganda.

100. Lasky, D. 2002. Obesity and gender differences in the risk of type 2 diabetes mellitus in Uganda. International Journal of Applied Basic Nutrition 2002;18:417 – 421.

101. World Bank. 2009. Modified from: *Examining Preparedness for the Mainstreaming Nutrition Initiative: Country Case Studies in Uganda and Tanzania*. Draft. Washington, DC: World Bank.

102. UNDP and UNDP/Uganda. 2007. *Millennium Development Goals: Uganda's Progress Report 2007*. Geneva: UNDP. http://www.undp.or.ug/mdgs/25 (Accessed). 23rd January 2009.

103. WHO (2009). Global database on Child Growth and Malnutrition. Uganda profile based on WHO Growth Standards. http://www.who.int/nutgrowthdb/database/countries/who_standards/uga.pdf Accessed 28th April 2010.

104. ORC Macro. 2006. *Uganda Demographic and Health Survey 2006: Supplemental Test Report.* Calverton, MD: ORC Macro.

105. WHO. 1992. The prevalence of anemia in women. WHO/MCH/MSM/92.2. Geneva: WHO. http://whqlibdoc.who.int/hq/1992/WHO_MCH_MSM_92.2.pdf . Accessed 28th April, 2010.

106. ICCIDD. 1999. Indicators for assessing IDD status. IDD Newsletter Vol. 15 No. 3.

107. Williams, PCM, A Martina, RG Cumming, and J John Hall. 2009. Malaria Prevention in Sub-Saharan Africa: A Field Study in Rural Uganda. *Journal of Community Health* 34(4): 288-94.

108. UNDP and UNDP/Uganda. 2007. *Millennium Development Goals: Uganda's Progress Report 2007*. Geneva: UNDP. http://www.undp.or.ug/mdgs/25 (Accessed). 23rd January 2009.

109. WHO. 2003. Guiding principles for complementary feeding of breastfed child. http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf. Accessed 28th April, 2010.

110. GOU. 2000. *Health Sector Strategic Plan II (HSSP-2)*. Kampala, Uganda: GOU.

111. Karamagi, CAS, JK Tumwine, T Tylleskar, and K Heggenhougen K. 2003. Intimate partner violence and infant morbidity: evidence of an association from a population-based study in eastern .BMC Pediatric 7:34.

112. Ellsberg, MC, R Pena, A Herrera, J Liljestrand, and A Winkvist. 1999. Wife abuse among women of child bearing age in Nicaragua. *American Journal of Public Health* 89: 241-4.

113. Jejeebhoy, SJ. 1998. Associations between wife beating and fetal and infant death: Impressions from a survey in rural India. *Studies in Family Planning* 29: 300-8.

114. Uganda National Bureau of Standards (UNBS). 1997. Salt iodisation legislation. Kampala, Uganda: UNBS.

115. Uganda National Bureau of Standards (UNBS). 2005. Food fortification guidelines/legislation. Kampala, Uganda: UNBS.

116. *WHO, 2003. Global School-based Student Health Survey 2003: Uganda Country Report. http://www.who.int/chp/gshs/gshs_fs_UG_national.pdf. Accessed 28th February, 2010.*

117. Smith, LC and Haddad, L. 2000. Explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis. Research Report 111. Washington, DC: International Food Policy Research Institute.

118. Jonsson, U. 1993. "Integrating Political and Economic Factors within Nutrition-Related Policy Research: An Economic Perspective." In *The Political Economy of Food and Nutrition Policies,* ed. P. Pinstrup-Andersen, 193–205. Baltimore: Johns Hopkins University Press.

119. Healthy Child Uganda, 2007. Health Child Uganda baseline survey of rural Southwesten Uganda communities. 2007.. http://www.healthychilduganda.org/. Accessed 4th May, 2009

120. Human development statistics 2010: http://hdrstats.undp.org/en/countries/data_sheets/cty_ds_UGA.html

121. UNAIDS country profile

122. Okidi JA, McKay A. Poverty dynamics in Uganda: 1992-2000. CPRC Working Paper No. 27. May 2003

123. Ssewanyana NS, Okidi AJ, Angemi D, and Barungi V. Understanding the determinants of income inequality in Uganda. The Centre for the Study of African Economies. Working Paper Series. Paper 229. 2004.

124. Ellis A, Manuel C, Blackden CM. Gender and Economic Growth in Uganda: unleashing the power of women. Directions in Development Series. The World Bank 2006.

125. Human Rights Watch. Just die quietly: domestic violence and women's vulnerability to HIV in Uganda. Human Rights Watch. Volume 15, Number 15(A). 2003.

126. UDHS. 2006. Uganda Demographic and Health Survey 2006. http://www.measuresdhs.com/pubs/pdf

127. KDHS. 2003. Kenya Demographic and Health Survey 2003. http://www.measuresdhs.com/pubs/pdf

128. TDHS. 2004. Tanzania Demographic and Health Survey 2004-2005. http://www.measuresdhs.com/pubs/pdf

129. DRCDHS. 2007. Congo Democratic Republic Demographic and Health Survey 2007. http://www.measuresdhs.com/pubs/pdf

130. ZDHS. 2007. Zambia Demographic and Health Survey 2004-2005. http://www.measuresdhs.com/pubs/pdf

131. RDHS. 2005. Rwanda Demographic and Health Survey 2004-2005. http://www.measuresdhs.com/pubs/pdf

132. EDHS. 2005. Ethiopia Demographic and Health Survey 2004-2005. http://www.measuresdhs.com/pubs/pdf

133. Uganda MOH. 2009. Policy Guidelines on Infant and Young Child Feeding. January 2009. Page 8.

134. Uganda MOH. 2009. Policy Guidelines on Infant and Young Child Feeding. January 2009. Page 14.

135. World Food Summit definition: http://www.fao.org/wfs/index_en.htm, March 2010.

136. Engebretsen IMS, Wamani H, Charles Karamagi C, Semiyaga N, Tumwine J and Tylleskär T. 2007. "Low adherence to exclusive breastfeeding in Eastern Uganda: A community-based cross-sectional study comparing dietary recall since birth with 24-hour recall." In *BMC Pediatric* 2007, 7:10.

137. FAO Statistics Division. Prevalance of undernourished in total population by country. http://www.fao.org/fileadmin/templates/ess/documents/food_security_statistics/PrevalenceUndernourishment_en.xls. Accessed 30th April 2010.

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