

**NUTRITION AND SOUTH AFRICA'S CHILDREN**

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## 1. INTRODUCTION

The term nutrition is used in three different ways. In popular parlance “nutrition” is used to refer to the food that we eat. “Nutrition” also refers to the science that describes and explains the processes involved in consuming and utilizing food and its constituent nutrients. Thirdly, nutrition can be seen as an outcome and provide information regarding the health status of either an individual or a group.

Although the word malnutrition commonly implies undernutrition, it also includes overnutrition. The effects of malnutrition may not be apparent immediately but it has significant effects on mortality, morbidity, educability and productivity. In populations where undernutrition is a chronic problem, a cycle of malnutrition exists and undermines the development of a healthy productive population. The cycle begins when women are unable to meet their nutritional requirements during pregnancy. These women are more likely to produce low birth weight infants who are at increased risk of birth injury, illness and early death, and often grow up to be ‘stunted’ adults (i.e. not reaching their full potential). Girls born as low birth weight infants are more likely to become poorly nourished children and poorly grown women and are therefore likely to give birth to low birth weight infants themselves. Thus the cycle continues.

Chronically malnourished children are often stunted (short for their age) and experience compromised physical and mental development, becoming small adults with reduced muscle and brain power, which restricts their ability to be productive workers. Lost productivity due to physical and mental impairment from malnutrition results in lost income for the malnourished and their families, thus perpetuating poverty and retarding national economic development.

Undernourished children also have an impaired immune system which reduces their ability to fight infections. There are 50 million deaths, worldwide each year, 11 million being of young children. Ninety-seven percent of these are in developing

countries and most of the mortality is due to infectious diseases. Infections are characterized by a depressed appetite, increased energy requirements, and nutrient losses. This further worsens undernutrition. Infectious diseases, which may not be life-threatening to well-nourished children, can kill undernourished children. Mortality is increased even among children with only mild to moderate malnutrition.

In the past decade, the prevalence of obesity has increased dramatically, particularly in children and adolescents. People, who gain excess weight at a young age, often remain overweight. Childhood obesity is associated with several risk factors for later chronic diseases such as high blood pressure, heart disease, diabetes, stroke and cancers. The risk factors may operate through the association between childhood and adult obesity, but they may also act independently (Cole *et al.* 2000). In addition to medical problems, psychological and social problems are associated with being overweight. Overweight children are often teased and find themselves socially isolated from their peers. The health risks of obesity may not manifest as a disease for many years but the psychological and social problems are felt daily.

Eating disorders are more common in adolescents and young women and are associated with significant morbidity and mortality. Bulimia Nervosa is characterized by a pattern of binge eating followed by inappropriate compensatory behaviour, such as self-induced vomiting or laxative abuse. Other methods to eliminate the additional energy intake, include dieting and exercise. Anorexia Nervosa results when food intake is extremely restricted and weight loss is severe. This eating disorder can cause severe weight loss that can be fatal.

Compared to other middle-income countries, South Africa has high levels of undernutrition. Addressing undernutrition requires action across a broad front as it is not just the result of lack of food or ill health but there are many inter-related causes.

When making policy choices the nature of the nutrition problem needs to be understood. This includes the prevalence and severity of malnutrition, whether it

occurs throughout a country or is localized in certain areas, affects all or only some groups, what the most important contributing factors are in the affected areas as it could differ between geographical areas and populations and sub-groups, whether the problem is a long-term chronic one or a short-term event associated with natural or human disasters.

This article will be focusing on the third interpretation of nutrition and will thus be describing the nutritional status of children in South Africa. This includes protein-energy malnutrition, micronutrient deficiencies, and obesity. The consequences of undernutrition, the factors contributing to it as well as specific intervention strategies will also be discussed. Reference to nutrients will be made as part of the discussion on factors contributing to nutrition status outcomes. Eating disorders will also be discussed briefly, but as a separate issue. Statistics in this paper have mainly been drawn from the two national studies done on nutritional status of children in South Africa to date. A third national study will be conducted in the beginning of 2004 and will include information on biochemical micronutrient status.

## **2. UNDERNUTRITION**

### **2.1 PROTEIN-ENERGY MALNUTRITION**

Protein-energy malnutrition (PEM) refers to a condition characterized by an increased susceptibility to infection that results from long-term consumption of insufficient energy and protein to meet needs, often aggravated by repeated infections. It is important to note the fact that the body will use nutrients to first meet energy requirements. If energy intake is insufficient the protein consumed may be used to supply energy needs and not the protein functions, giving rise to PEM. Most protein-energy malnutrition (PEM) is not immediately obvious and can only be detected by measuring different parameters of growth such as weight and height. However, children with severe PEM present with clinical syndromes known as kwashiorkor and marasmus. Kwashiorkor usually occurs when there is a sudden change in both quality and quantity of the child's diet, such as during the weaning period. It is characterized by underweight with oedema (fluid retention), weakness, skin lesions and changed

colour of the hair. Marasmus is a form of severe undernutrition that develops over a long period of time and is characterized by extreme underweight, wasting (loss of muscle and fat under the skin so that the bone structure becomes visible), irritability and fretfulness. Kwashiorkor and marasmus are severe forms of undernutrition, representing only the 'tip of the iceberg' of undernutrition or the top of an almost submerged hippopotamus, where the whole animal represents the totality of undernutrition in a population.

Evidence suggests that undernutrition can substantially impair physically growth and retard the brain's growth processes to different extents, depending on the time of onset, duration and severity of the malnutrition. Permanent damage can be caused if undernutrition occurs during the time of maximal brain growth. Intellectual development can also be impaired as a result of the inability of an undernourished child to respond to learning opportunities due to a lack of energy and specific micronutrients. Malnutrition during infancy and childhood has a profound effect on growth and development as well as susceptibility to infectious diseases.

Birth weight is an indicator of peri-natal health reflecting fetal growth as well as maternal well-being. It also serves as a risk factor for mortality and morbidity in childhood. Illness and death following low birth weight (i.e. a full-term baby weighing less than 2.5kg at birth) is not uncommon in SA and is largely as a result of the small baby's reduced immunity and its impaired ability to suck and thus establish good maternal lactation. Low birth weight infants who do survive require extra nutrients, which are usually not available as a result of them being born into a specific environment that has contributed to them being LBW. Maternal factors that affect birth weight include poor maternal nutrition and smoking, alcohol and drug abuse during pregnancy.

The National Food Consumption Survey (NFCS) was conducted in South Africa in 1999 and focused on the nutritional status and dietary intake of children between the ages of 1 and 9 years. This study found that 23% of children were stunted (i.e. height-

for-age below  $-2$  standard deviations, SD, when compared to a reference population). This implies that 23% of the population is short for their age which is an indication of widespread long-standing undernutrition. The prevalence of stunting was higher in rural areas (26.3%) and especially so in commercial farming areas (30.8%). Younger children aged 1-3 years old (25.5%) were also more affected by stunting than older children. Severe stunting (i.e. height-for-age below  $-3$ SD of a reference population) affected 6.3% of children.

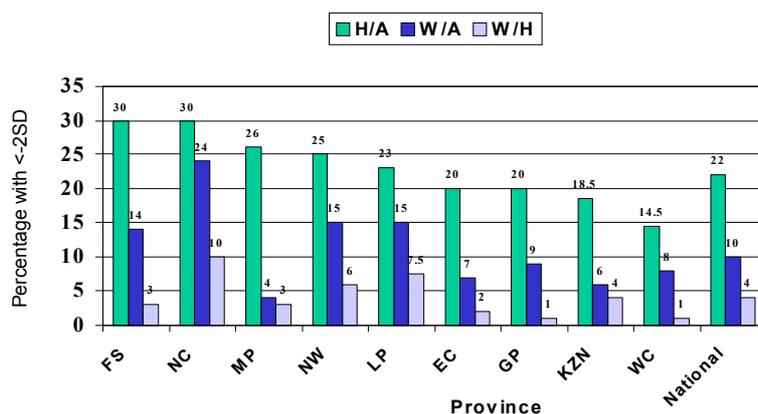
When weight is inappropriately low for a specific age, a child is considered underweight. Since weight is usually one of the first parameters affected by dietary deficiency and/or disease, underweight is considered an important indicator of recent nutritional stress. Nationally, 10% of the population (NFCS 1999) was underweight (weight-for-age below  $-2$ SD of reference population), with the highest prevalence of severe underweight (weight-for-age below  $-3$ SD of reference population) in commercial farming areas (5%).

A wasted child has a weight for height that is below  $-2$ SD of the reference population. Wasting therefore reflects acute undernutrition, independent of possible chronic undernutrition that might have compromised the height of the child. According to the NFCS (1999), 4% of children aged 1 to 9 years old were wasted. According to the WHO classification of the severity of the problem (1995) the overall prevalence of stunting in South Africa is a moderate public health problem with underweight and wasting being a low public health priority. For children living in commercial farming areas the prevalence of stunting and underweight would be a high priority public health problem.

Similar results were found by the only other national study i.e. the South African Vitamin A Consultative Group (SAVACG) study which was conducted in 1994 on children 6-71 months. Both the NFCS and the SAVACG study found that the prevalence of malnutrition was highest in rural and informal areas and the worst affected province was the Northern Cape. Even though the situation did not

deteriorate from 1994 to 1999, it is important to note that no improvements have occurred since the establishment of democracy.

**Figure 1: The anthropometric status of children 1-9 years by province:  
South Africa 1999**



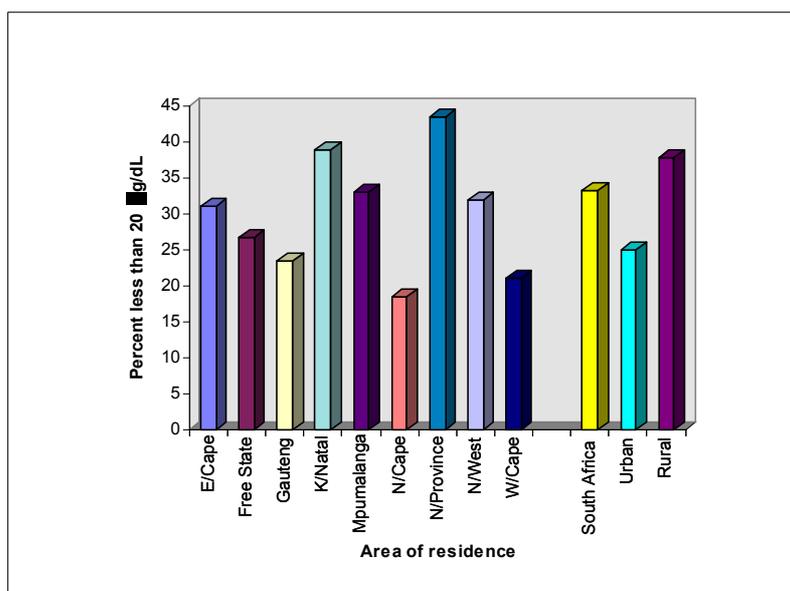
## 2.2 MICRONUTRIENT MALNUTRITION

Vitamins and minerals are micronutrients as only small amounts are required in the diet to maintain health. Micronutrients do not provide energy but regulate the production of energy from carbohydrates, lipids, and proteins. They are needed for bone growth, oxygen transport, and tissue growth and development. Dietary deficiency of vitamins and minerals can lead to learning disabilities, mental retardation, poor health, low work capacity, blindness and premature death. Micronutrient malnutrition is regarded as a public health problem of considerable significance in South Africa. Deficiencies of Vitamin A, iron and iodine are the most common micronutrient deficiencies internationally and in South Africa and will be discussed.

Thirty three percent of children in SA were found to have an inadequate Vitamin A status, according to the SAVACG study. Children in rural areas and those of mothers

with limited education were the worst off. Forty percent of stunted children were found to have marginal or deficient Vitamin A status. As with PEM, the problem is most severe in the Northern Cape.

**Figure 2: Vitamin A Status by Province: South Africa 1994**



For almost every infectious disease, Vitamin A deficiency is known to result in greater frequency, duration, severity and/or mortality. Vitamin A deficiency has specifically been linked to worse outcomes from infectious diseases such as respiratory diseases, diarrhoea and measles and lately also to HIV/AIDS. Other symptoms of Vitamin A deficiency include loss of appetite, inhibited growth, skeletal abnormalities, and night blindness, which could lead to blindness in cases of extreme deficiency.

Anaemia (a reduced number of red blood cells or amount of hemoglobin, which reduces the oxygen-carrying capacity of the blood) is a significant problem among young children in South Africa. In the SAVACG study 10% of children were found to be anaemic and 20% were iron deficient. Children most affected were the younger age group and those in rural areas. Symptoms of iron-deficiency anaemia include fatigue, weakness, and headache, decreased work capacity, an inability to maintain

body temperature in a cold environment, changes in behaviour, decreased resistance to infection and impaired development in infants. An interesting finding was that children with Vitamin A deficiency were also at greater risk of being anaemic.

Iodine is a trace element that is an essential constituent of the thyroid hormones. Iodine deficiency is mainly found in areas that rely heavily on locally produced food and have soil that is iodine deficient. Globally, iodine deficiency is considered to be the greatest single cause of preventable brain damage and intellectual impairment. Iodine deficiency during pregnancy increases the incidence of stillbirths, spontaneous abortions and developmental abnormalities, ranging from subtle dysfunction to extreme forms such as cretinism. Cretinism (a congenital deficiency of thyroid hormone) is characterized by irreversible mental and physical retardation. Children with iodine deficiency have lower IQ and impaired school performance. Iodine deficiency causes goiter (an enlarged thyroid gland) and is associated with apathy and decreased initiative and decision-making capabilities.

There is no national dataset on iodine deficiency in SA. Localized studies up to 1995 indicated a prevalence of 14-30% goiter, and mild to severe iodine deficiency. A follow-up study in Langkloof and other areas (post legislated salt fortification with iodine) in 2000 indicated a remarkable improvement ( $\pm 10\%$  goiter), but that specific vulnerable groups identifiable by geographic area, socio-economic group and salt use practices, are still at risk of iodine deficiency (Jooste 2003 personal communication). There is still work to be done to align ourselves with international goals of eradicating iodine deficiency and sustaining the eradication.

### **3. OVERNUTRITION**

#### **3.1 OBESITY**

Obesity is a condition characterized by excess body fat. When weight is inappropriately high for a specific height (above +2SD of a reference population), a

child is considered overweight. In adults, a body mass index (BMI)<sup>1</sup> of 30kg/m<sup>2</sup> or greater or a body weight that is 20% or more above the desirable body weight standard, is considered obese. A BMI of greater than 25kg/m<sup>2</sup> in adults is regarded as overweight. In 1997, the World Health Organisation (WHO) emphasized that obesity is becoming a major health problem in many developing countries, particularly in adult females. Obesity is associated with an increased risk of hypertension, heart disease, diabetes, stroke, and certain cancers. There is a trend towards higher levels of obesity in urban areas, especially for black South Africans. This may be related to the fact that being overweight is perceived to represent affluence and happiness by many African population groups. The causes include changes in eating patterns, increased urbanization, cheapness and availability of fast foods, passive entertainment, and a decrease in physical activity.

According to the NFCS, the prevalence of overweight children (weight-for-height >+2SD of NCHS reference population) was 6% with the highest prevalence in urban areas (7.5%) and the lowest prevalence in commercial farming areas (2.5%). The prevalence of obesity in different ethnic, cultural and gender groups in South Africa varies greatly (De Villiers et al 1988, Jooste et al 1988, Steyn et al. 1990, Steyn et al 1998, Walker 1998). The South African National Demographic and Health Survey (SADHS) conducted in 1998, found the prevalence of obesity was 29.2% in adult males and 56.6% in adult females. Obesity increased with age, and higher levels of obesity were found in urban, African females (Puoane et al 2000). Abdominal obesity (i.e. where the waist-hip ration is >1 in males and >0.8 in females) has more adverse health consequences than peripheral obesity and was found to be highest in women.

There is no national data available on the prevalence of obesity in South African adolescents. Cut-off points to interpret the prevalence of overweight and obesity, similar to those developed by the WHO for the interpretation of undernutrition, has

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<sup>1</sup> Body mass index is an index of weight in relation to height that is used to compare body size with a standard. It is equal to body weight in kilograms divided by height in metres squared.

not been developed yet. If the general principle of a statistical normal distribution would apply, then it is assumed that based on weight-for-height in children a prevalence of <5% would be regarded as a low prevalence, 5-10% moderate, 10-15% being a high prevalence and >15% being a very high prevalence and public health importance. This would imply that for South African children aged 1-9 years overweight is a moderate problem compared to other countries such as the United States with 30% overweight children. Of greater concern than the actual proportion of children being overweight is however the increase in overweight reported over time, combined with reported changes in dietary composition and a general perception that physical activity is lower. Another development in the area of childhood obesity is the possible utilization of BMI in children and the development of cut-points that corresponds to those in adults (i.e. >25 kg/m<sup>2</sup> as overweight and >30kg/m<sup>2</sup> as obese) (Cole 2000).

### 3.2 NUTRITION TRANSITION

The nutrition transition is traditionally described as a change from high-fibre, low fat diets to a more affluent type of diet rich in animal fat and low in fibre (Vorster *et al.* 1999: 342). According to Drewnowski & Popkin (1997: 40) the nutrition transition now occurs at lower socio-economic levels than before. Concurrent with the changes in diet structure there is a shift in activity and body composition patterns amongst all age groups. Subsequently developing countries experiencing rapid urbanisation are subject to a double burden of disease where non-communicable diseases become more prevalent and infectious diseases remain undefeated (Vorster *et al.* 1999: 341). It is suggested that particularly in countries where maternal and child malnutrition exists, alongside rapid economic development and urban migration, abdominal obesity and related chronic diseases are likely to increase (Schroeder *et al.* 1999: 177; Caballero 2001: S866). Analyses of six countries revealed that a considerable proportion of households had undergone a nutrition transition and that overweight and underweight co-exist in 3-15% of all households. Leisure activities have become more sedentary with the increase in TV ownership (Popkin 2001: S873) and technology (Ruel *et al.* 1999: 1926). In SA, with rising crime levels and especially

safety of children as reported in popular media daily, the situation will also contribute to changes in children's free play activities and further contribute to sedentary lifestyles at earlier stages of the lifecycle. Initially the nutrition transition has been related to migration and exposure to urbanisation and modernisation linked to socio-economic development. The process is expected to continue independently beyond the initial causal factors especially with the developments in modern communication technology. In 1940, the African population had a fat intake providing 16% of total energy. This has changed dramatically and in 1990 contributed 26% of total energy intake of urban Africans.

Analyses of data on the nutritional status of the mothers and grandmothers collected as part of the NFCS, but not reported in the NFCS, indicated that the proportion of children being underweight, wasted and stunted decrease as the BMI for mothers and grandmothers increase. Obesity of mothers co-exists in the NFCS study population with children being stunting in 4.7% households and with 1.8% underweight, with 0.6% wasting and 2.5% overweight. In China parental obesity was found to be predictive of child nutritional status (Wang *et al.* 2000) with the odds ratio of an overweight child having an overweight mother being 0.7 (Wang & Popkin 2000: 1019). According to Monteiro *et al.* (1997) undernutrition in both children and adults would appear as a common family determinant only for those in the early stages of the nutrition transition.

Stunted children are at risk of obesity and may gain weight over time when food supplies become sufficient to allow ad lib consumption. This might explain the increased prevalence of obesity among stunted children and short adults in developing countries (Hofman *et al.* 2000: 706). Impaired fat oxidation has been identified as possible mechanisms for this process. It is suggested that in developing countries stunting, together with age-adjusted BMI for children should be used in assessing the disease risk (Caballero 2001: S867). Data from a number of cross-sectional surveys from countries with different socio-economic levels indicate that the

risk for obesity is higher in the highest socio-economic groups, but that it is on the increase for developing countries and that urban residence *per se* is not a cause for obesity (Monteiro *et al.* 1995: 105; Drewnowski & Popkin 1997: 40; Caballero 2001: S868; Griffiths & Bentley 2001: 2689; Robertson *et al.* 1998: 1519). In some developing countries the poor are at risk of becoming more obese than the rich. In highly developed countries the turnabout in obesity levels is believed to be related to conscious effort to control body weight (Harrison *et al.* 2000: 2049) and to consume healthier diets (Roos *et al.* 1998: 1519). Janes *et al.* (1999: 112) proposed that higher proportions of intra-household malnutrition of women and children are regarded as in need of food security. Intra-household wasted children and normal/obese mothers are designated in need of public health measures and improved parental care rather than food security.

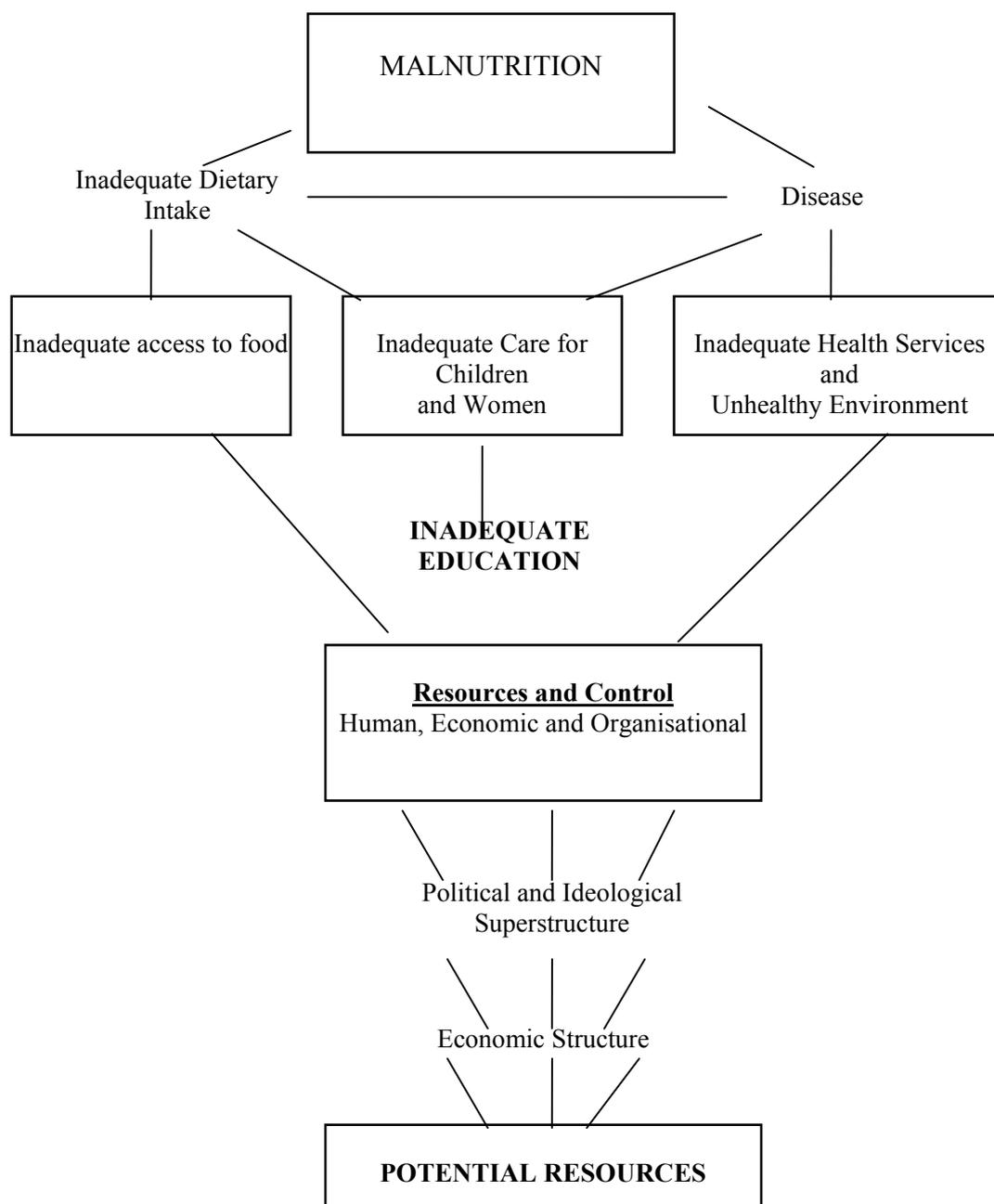
#### 4 CAUSES OF MALNUTRITION

UNICEF has developed a conceptual framework that outlines in diagrammatic form the multiple causes of malnutrition that operate at various levels in developing countries. The precise weight of each of the many causative factors varies according to location and even households. For example, a poor rural household in the Eastern Cape may experience severe household food insecurity all year round, but experience inadequate child care practices only at certain times – when mother is working away from home. The key assumptions of the conceptual framework are:

- Nutritional status is an outcome of processes in society
- Malnutrition is a result of immediate, underlying and basic causes occurring hierarchically
- The necessary conditions for nutritional well-being (nutritional security) are access to food, adequate care of children and women, and access to basic health services, together with a healthy environment
- The potential for fulfilling three of the necessary conditions (food, health and care) for nutritional security is determined by availability and control of resources (human, economic and organizational resources)

- The choice and use of resources in efforts to achieve the necessary conditions for nutrition security, is influenced by education
- The availability and control of resources (i.e., entitlements) are determined by previous and current technical and social conditions of production and political, economic and ideological/cultural factors (Figure 3).

**Figure 3. The Conceptual Framework**



**Sources:** Unicef (1993) and World Bank, 1994

The conceptual framework is not intended to predict the causes of malnutrition. It is meant to guide assessment, analysis and action on a context-specific basis. The cycle of assessment, analysis and action is called the Triple A approach. Apart from guiding analysis of the causes of malnutrition and decisions to improve nutrition, the conceptual framework also guides the design of information systems to enhance the quality of decision-making.

## **4.1 IMMEDIATE FACTORS CAUSING MALNUTRITION**

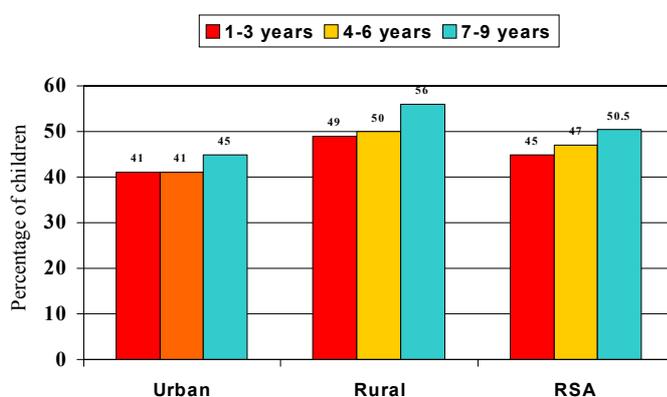
### **4.1.1 DIETARY INTAKE**

Nutrients are substances found in food and are required to maintain life and allow for growth, repair, and reproduction. The energy-containing nutrients are carbohydrates, lipids, and proteins. These are also referred to as macronutrients as they are required in large amounts in the diet.

Protein sources include fish, poultry, meat, milk and milk products and legumes such as beans, peas, lentils and soy. Grains also provide proteins, although in much smaller quantities. Protein is needed for growth and maintenance of body structures as well as to regulate body processes. Lipids include fats and oils, which are found in meat, fish whole milk, vegetable oil, margarine, butter, nuts and seeds and avocado pear. Fat is the storage form of energy in the human body and provides heat and insulation. Carbohydrates include both starches found in vegetables and grains and also sugars found in fruit and milk and refined sugar. Carbohydrates are a readily available source of energy. Water is also a macronutrient but it is non-energy-providing. It is important to regulate body temperature and serves as a lubricant and a mode of transport for other nutrients and substances. As mentioned before, vitamins and minerals are called micronutrients as only small amounts are required in the diet.

The NFCS assessed the nutrient intake of children aged 1 to 9 years in SA and found that 50% of children had an insufficient energy intake. The recommended daily dietary allowance (RDA) are intakes that are sufficient to meet the nutrient needs of almost all healthy people in a specific life-stage and gender group. The RDA serves as a target, and an intake less than the RDA does not necessarily indicate inadequacy in an individual. Usually, an intake of at least 67% of the RDA is regarded to be essential to prevent illnesses whereas an intake of less than 50% of the RDA is regarded as a severe deficiency. The worst affected province was the Northern Cape and the least affected was the Western Cape.

**Figure 4: The percentage of children by age category with energy intakes less than two-thirds of the RDA: South Africa 1999**

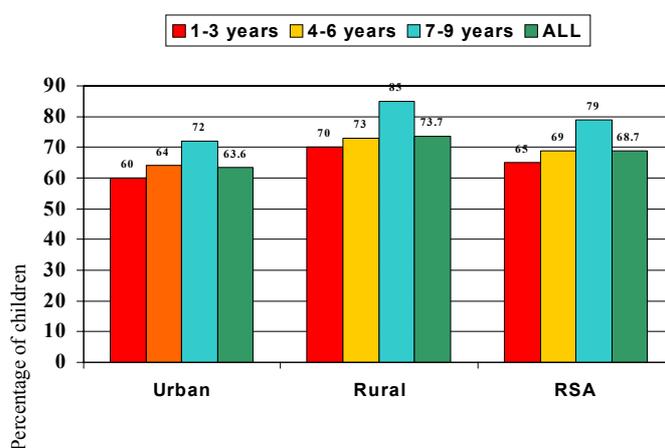


Nationally, the average protein intake of children aged 1 to 9 years was higher than the RDA. However, the Free State (14%) and Northern Cape (20%) had the highest proportion of children with a protein intake of less than two thirds of the RDA. The

lowest intake of carbohydrates was in the rural areas, affecting the Northern Cape most severely. There was a significantly higher intake of fat in urban areas than rural areas.

Sixty eight percent of the study population had a vitamin A intake, which was less than two thirds of the RDA, except in the Western Cape. The intake of iron was significantly higher in urban areas than rural areas. Twenty five to thirty seven percent of children had an iron intake of less than half the RDA and 68% had an intake less than two thirds of the RDA. Other vitamins and minerals for which children aged 1 to 9 years had an intake of less than the two thirds of the RDA were Calcium, Zinc, Selenium Vitamins D, C, and E. Riboflavin, Niacin, and Vitamin B6.

**Figure 5: The percentage of children by age category with vitamin A intakes less than two-thirds of the RDA: South Africa 1999**



Comparing the nutrient intake to the prevalence of undernutrition in the surveys cited reveals that the energy intake is significantly related to stunting in 5 provinces and underweight in 4 provinces. The protein intake, namely milk, dairy, and animal

products, is related to stunting in 5 provinces and underweight in 7 provinces (Labadarios ed. 2000).

#### **4.1.2 DISEASES**

##### **4.1.2.1 DIARRHOEA**

In developing countries, diarrhoea is the main cause of infant death. The cause of diarrhoea is usually a bacterial or viral infection, which leads to dehydration which can result in death. Diarrhoea has a potent negative impact on nutrition as a result of increasing nutritional requirements while at the same time reducing intake and aggravating losses. The importance of correct case management cannot be overemphasized. Oral rehydration therapy, continued breastfeeding and feeding of familiar, energy-dense soft foods are essential. Most cases of diarrhoea can be managed at home. Home-made mixes such as sugar-salt solution are effective in preventing dehydration but traditionally used soups or cereal-salt solution are not only more effective than oral rehydration therapy and sugar-salt solution, but are also more practicable and cheaper.

##### **4.1.2.2 HIV**

A close relationship exists between HIV and malnutrition. The nutritional status of HIV infected people is compromised by the disease, which increases their susceptibility to other infections. Malnutrition negatively affects the immune system of individuals and therefore worsens the effects of HIV.

Currently, more than 36 million people are infected with HIV and more than 24 million are in Africa. Most countries in East, Central, and Southern African countries have more than 10% of adults aged 15 – 49 infected in most countries. HIV/AIDS will reduce life expectancy by 20 years or more by 2010 – 2015. It is estimated that in SA, the risk of death before the age of 50 will approach 80%.

Clinical studies have shown that HIV progression is more rapid in individuals with poor nutritional status. Malnutrition in HIV/AIDS presents as muscle wasting, weight loss, and vitamin and mineral deficiency. Wasting is recognized as an

important factor for HIV mortality and vitamins and minerals are essential to fight infections.

In a study in Abidjan, two thirds of patients with HIV were malnourished and 45% reported a reduced appetite and had dietary intakes well below that recommended. Studies on Vitamin A supplementation of HIV infected children in SA and Tanzania found a 50% reduction in diarrhea, morbidity, improved immunity, and a significant reduction in mortality. More information regarding the supplementation of Vitamin A (in adults specifically), zinc, iron, and Vitamin E is still required.

Vitamin A supplementation of malnourished women during pregnancy has been shown to decrease pre-term deliveries and HIV transmission in these pre-term infants. Multivitamin supplementation during pregnancy increased maternal weight gain.

In SA, it was found that HIV transmission rates were similar at 6 months in infants who were formula-fed and exclusively breastfed for 3 months or more. The rate of mother to child transmission (MTCT) was much higher in the group that was breastfed and formula-fed simultaneously.

Safe breastfeeding practices for mothers who are HIV-positive and who choose to breastfeed include the following:

- exclusive breastfeeding for the first six months only
- prevention, early detection and treatment of breast problems of the mother
- prevention, early detection and treatment of oral lesions in the infant
- expressed heat-treated breastmilk if breast problems arise or if replacement feeding is not possible

HIV-positive mothers who choose not to breastfeed and who qualify for the Mother to Child Transmission (MTCT) Programme are supplied with breastmilk substitutes

during the first six months of the infant's life. These mothers are educated as to how to prepare breastmilk substitutes in a safe and hygienic manner.

Mixed feeding (i.e. breastfeeding and formula feeding simultaneously) increases the risk of MTCT and should be avoided at all costs.

#### **4.1.2.3 TUBERCULOSIS**

Tuberculosis (TB) affects millions of people, worldwide. In SA, TB is regarded as one of the most serious health problems affecting the country. There are 366 new cases per 100 000 population each year, with the highest prevalence in the Western Cape, although this may in part reflect a better reporting system. Patients with TB often present with malnutrition, which is exacerbated if they are also infected with HIV. Studies have also found that TB patients are often deficient in Vitamin A and zinc.

It has been suggested that Vitamin A deficiency may be a major risk factor for the progression of TB. In a study looking at the role of Vitamin A supplementation in TB, no effect was found on childhood morbidity. It has also been suggested that zinc supplementation may be of benefit by improving resistance to certain infections. Zinc is also important in preventing lower respiratory tract infections in children in developing countries.

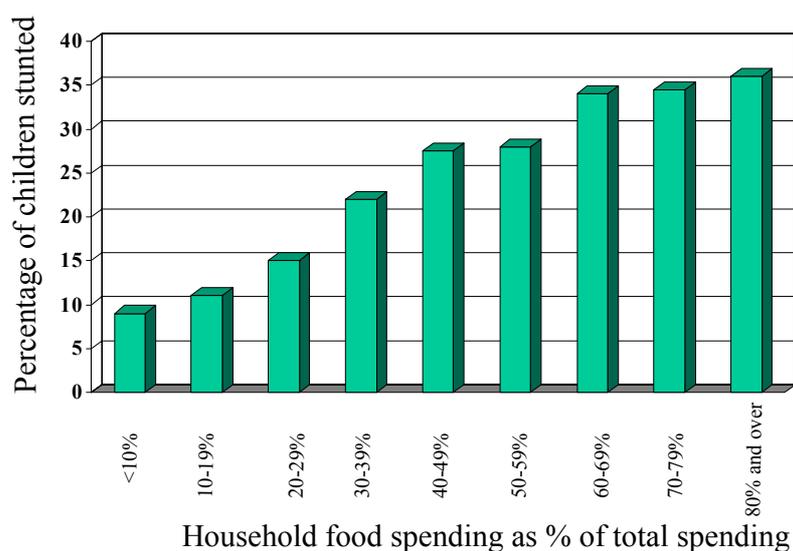
## **4.2 UNDERLYING FACTORS CAUSING MALNUTRITION**

### **4.2.1 HOUSEHOLD FOOD SECURITY**

Food security has been defined as the availability of sufficient food at all times for all people in order to ensure an active and healthy life. Good health is dependent on the quality and quantity of the food. The NFCS found that 50% of SA households experience hunger, 25% of households indicated being at risk of hunger, and only 25% reported that they regarded themselves as food secure. Rural areas had a significantly higher percentage of households who experienced hunger when compared to urban areas. These households had the lowest monthly income and spent the least amount of money on food.

Mwadime and Baldwin (1994) propose that spending 60% of total income on food could be regarded as a cut-off point for adequate access to food. Having to spend more than 60% of income on food, would negatively affect access to other necessary services to maintain health and nutritional well-being, such as water, energy, transport, sanitation, housing, and clothing. They suggest that if households are able to allocate less than 30% of their expenditure to food, they are able to choose a more varied diet. In a study in Eastern and Southern African countries, it was found that the proportion of income spent on food was an indicator of household access to food, and negatively correlated with nutritional status.

**Figure 6: Prevalence of stunting by food share**



The above diagram indicates that stunting, a reflection of chronic dietary inadequacy, increases in direct relation to the percentage of household income spent on food. Those households spending as much as 80% of income on food showed the highest rates of stunting, indicating that even this food expenditure was insufficient to maintain food security. This implies that the poorest households, even when spending as much as they possibly can of their income on food, still cannot meet their needs.

## **4.2.2 CARE**

Care refers to meeting the physical, psychological and social needs of children and other household members, through the provision of time, attention and support in the household and community. In the context of nutrition, caring implies meeting their dietary needs and protecting them from disease and ensuring optimal health. Mental stimulation and psycho-social support are equally important and in turn contribute to nutritional well-being. Breastfeeding and infant feeding practices, as well as the role of education and women's time use and control over resources, are key issues influencing caring behaviour.

### **4.2.2.1 INFANT FEEDING**

It is widely recognized that breastfeeding, particularly exclusive breastfeeding during the first four to six months of life, provides optimal nourishment, care and protection for infants. Exclusive breastfeeding is associated with lower infant mortality and morbidity and better growth. Data on feeding practices show that breastfeeding is still widely practiced in South Africa; although a decline is observed in urban areas and exclusive breastfeeding rates appear to be low. Mothers seem to be adding water and other foods at a very early stage, and start to add solids by the age of three months. With the early introduction of complementary foods, breast milk intake declines and its beneficial effects, particularly protection against infection, is reduced.

The SAVACG study found that 88% of three year old children had been breastfed. The NFCS (1999) found that 86% of children had been breastfed. Both studies found that there was a higher prevalence in rural areas and these children were also breastfed for a longer period of time than urban children. A tendency to breastfeed for less than three months, particularly in urban areas and of children with well educated mothers, was highlighted. Hirshowitz and Orkin (1995) also found an inverse relationship between breastfeeding and educational levels, and between duration of breastfeeding and income levels. Amongst the urban South African population, breastfeeding frequency was generally higher in the African group.

Local studies have found that complementary feeding starts early, consists of a small variety of low-energy dense foods and is associated with growth faltering and increased infections. The reason for the energy deficit in the diets of children in underdeveloped countries is due to the fact that the staple weaning food is usually an unrefined cereal or grain. This starch is very bulky when cooked and when made into a soft or watery porridge. It is therefore difficult for young children with small stomachs to eat sufficient amounts to meet their energy requirements. Studies have also shown that the traditional practice of giving a mix of maize or a vegetables, with peanuts is no longer in use. A study performed in Venda showed that almost 40% of infants received only carbohydrates (mostly maize) as complementary food (Zollner and Cartier, 1993).

#### **4.2.3 EDUCATION AND CONTROL OVER RESOURCES**

As discussed earlier, the nutritional status of children has been correlated with maternal education. There is a significant reduction in the prevalence of stunting, wasting and underweight in all age groups, as maternal education improves. This is especially the case in urban areas but less so in informal areas. The converse applies to overweight children living in urban areas, as its prevalence increased as maternal education increased. Madrid and Breslin found that undernourished children were more likely to have mothers who were single, with limited support networks and fathers who were not involved with the child.

In 1995, a participatory poverty appraisal lent support to the observation that the constraints on women's time due to their other responsibilities limit the time they can devote to childcare. Rural people regard time as a scarce resource and food preparation as a time consuming task. It is estimated that rural households spend 2 – 3 hours daily collecting wood and water. Women's control over their own income has been shown to be vitally important for nutrition.

#### **4.2.4 ACCESS TO HEALTH AND OTHER SOCIAL SERVICES**

The poor health and nutritional status of people in poverty is exacerbated by inadequate access to health care and inadequate provision of health facilities. PSLSD data show that 25% of ill people seek no treatment when ill. The major deterrent for more than half these people is the perceived high cost of transport and treatment. Rural people have limited access to water and sanitation, proper housing and energy. A quarter of rural African households state that available water is insufficient and a third have to walk more than 500 meters to the water source. In general, households using water from unprotected sources use less water on a per capita basis (May et al, 1995). Numerous studies in developing countries have related low volume of water usage to poorer food and personal hygiene – including handwashing. This in turn is related to increased incidence of childhood diarrhoea.

On the basis of analysis of the PSLSD data, Alderman (1997) surmises that improvement in services such as water and sanitation is likely to improve nutritional status even if income growth is slow. Conversely, he suggests that income growth alone would have little impact on nutritional levels in the absence of improvements in service provision.

#### **4.3 BASIC CAUSES OF MALNUTRITION**

Basic causes of undernutrition relate to the allocation of and control over resources in society, and thus to the structural causes of poverty and inequality. The depth and distribution of poverty in South Africa is a stark reminder of the ways in which economic and social policies under the apartheid system combined to disadvantage black people. Policy measures to improve poor people's access to productive resources, income, and opportunities to enhance their capabilities, are central to the eradication of malnutrition in the long term.

While there are limitations to using income as a basic indicator of poverty, it does provide comparative information, and can be used to monitor trends over time. Using

the Household Subsistence Level, the following table indicates the share and depth of poverty in urban and rural areas. The poverty rate is a measure of the number of the population that fall below a set poverty line (in this case R267 per adult equivalent), while the poverty share indicates the proportion of the poor that live in a particular area (e.g. rural). The poverty gap measures the depth of poverty, by giving an indication of the amounts required to lift people over the poverty line.

Table 2 shows that the majority of rural dwellers (69%) are poor and that most poor people (74%) live in rural areas.

**Table 1: Distribution of poor individuals by rural/urban classification\***

	<b>Population share (%)</b>	<b>Poverty share (%)</b>	<b>Poverty rate (%)</b>
<b>Rural</b>	51	74	69
<b>Urban</b>	49	26	27
<b>All</b>	100	100	48

\***Note:** the definitions of urban and rural (strictly speaking, non-urban) used here are slightly different from those released with the PSLSD data-set. **Source:** May, 1997

The distribution of poverty (household expenditure of <R800/month) among the provinces in South Africa mirrors the distribution of malnutrition. Poverty rates are highest in the Eastern Cape and the Free State where almost three-quarters of the population is poor. In Gauteng and Western Cape, the poverty rates are below 20% (Statistics SA 2000).

Race is a strong predictor of poverty in South Africa. Poverty rates among Africans and Coloureds are high, whereas only a small proportion of the White and Asian population is poor.

Poor people experience critical shortages in material, social and human resources and have access to few opportunities. These factors limit their options and combine to keep them trapped in poverty. Nevertheless, poor people are resourceful and actively manage their resources and negotiate their rights to get by (May, 1996). Poor households combine their resources in a variety of ways to enable them to meet a minimum level of living. These livelihood strategies form the basis of their long term survival. However, when faced with external shocks such as drought, strategies are put under severe strain, and people have to resort to a range of other coping strategies to survive.

#### **4.3.1 RESOURCES**

The resources of rural South Africans include land and livestock, property, capital and credit, labour and human capital, and entitlements to pensions and intra-household transfers, and social networks.

##### **4.3.1.1 LAND AND LIVESTOCK**

According to the PSLSD survey, 26% of African households had access to land for cultivation in 1993. Over 80% of this land is communally owned but in many areas, only a portion of the available land is used for cultivation. While the average per capita land used was 4,6 ha, the ultra-poor used only 0,3ha per capita, in contrast to the wealthiest, who used on average 64 ha per capita (RDP, 1995). Only 24% of African households in rural areas owned livestock. May et al (1995) note a decline in herd size, probably as a result of droughts and crowding. Only 18% of African rural households have access to agricultural equipment and 8% to other productive equipment. Common property resources, such as grazing land, water, thatching grass, trees and wild foods are important resources for poor people, and their depletion or changes in access can have negative effects on poor people's ability to cope.

#### **4.3.1.2 PROPERTY, CAPITAL AND CREDIT**

Very few households have savings of any kind - only 14% reported savings in the PSLSD survey. Savings constituted only 2% of household expenditure among all Africans, urban and rural, and 1,6% for all rural households, regardless of race. Their access to credit is equally limited. Less than 1% of households in debt borrowed money from a government or non-governmental agency. Just fewer than 80% of rural African households have property that can be sold in case of dire need. The participatory poverty assessment found that housing is regarded as an important investment, the loss of which, for example through natural disaster or violence, would make families more vulnerable.

#### **4.3.1.3 HUMAN CAPITAL**

Poor households generally have below average skill levels when compared to the rest of the adult population. PSLSD figures show that 53% of the rural poor have not completed primary school and another 41% have not completed secondary school. Inadequate education is a causal factor in poverty but it is also a result of poverty and inadequate access to quality education in an earlier period. This trend is still being reinforced. The poorest 20% of people have slightly lower rates of primary enrolment for the relevant age group, but notably lower rates of enrolment at secondary level. The average rate of primary enrolment was 87% in 1993, compared with 85% for the ultra-poor. The rates for secondary enrolment are 60% and 46%. Tertiary enrolment rates are 11% on average and 4% among the ultra-poor.

#### **4.3.1.4 INCOME TRANSFERS**

Monetary claims (income transfers) include remittances, social pensions, welfare payments (including disability grants) and in a few cases, government or private sector pensions. The right to remittances is only an assumed claim which can be lost when a migrant worker becomes unemployed or as a result of double-rootedness (a migrant having two families). Still, a dormant claim can be invoked as a last resort. In rural areas around 37% of African households have a migrant family member and a quarter of poor households depend on remittances as the main source of income.

Social grants are an important survival mechanism in rural areas. Data from the PSLSD survey show that nearly 30% of rural African households have a member of pensionable age, and a quarter of the rural poor depend on social pensions as their main source of income.

#### **4.3.1.5 SOCIAL NETWORKS AND MOBILITY**

The practice of double-rootedness is well-established due to historical patterns of labour migration. Having a base in urban and rural areas means that households have fluid boundaries. A narrow focus on rural households can therefore be misleading. Households need certain spatially mobile members in order to take advantage of distant employment opportunities. Mobility in rural areas is constrained primarily by the spatial location of the poor. However, it is also influenced by access to information networks, employment history, access to cash and the constraints imposed by the reproductive roles of women.

Social networks serve to maintain family links, and are called upon to deal with financial crises, childcare problems, and accommodation needs, and as a source of advice. Households may also vary in size and composition as their fortune change. Networks are not necessarily as extensive and strong as outsiders believe, and may be a source of conflict in communities, particularly for young women, who often feel constrained by the rules laid down by older women (May, 1996 ).

#### **4.4 OPPORTUNITIES**

Given the lack of a sustainable economic base in rural areas and in many small towns, employment opportunities in the formal sector are limited. In 1993, only 22% of households had at least one member who worked in the formal sector in a stable job (the primary economy), while 37% had access to secondary employment opportunities such as temporary on-farm employment. Regular wage income is the primary source of income for only 32% of the poor. However, it is the primary source of income for 72% of the non-poor. Where rural African households were able to

obtain regular wage income, the average income was close to R1 500 per month. Wage income from less secure jobs amounted to R450 on average. Around 5% of the poorest quintile had to rely on casual employment as their primary source of income. These households would obviously be vulnerable to changes in employment conditions. Among the poorest 20% of households, less than half the number of adults of working age participate in the economy - many of the rest cannot participate due to illness, disability, continuing education or responsibilities at home. Of those who do participate, only 23% are actually employed.

Formal sector employment opportunities in rural areas are mainly on commercial farms. These jobs are often seasonal and remuneration is poor. Since 1980, employment on commercial farms has declined. Employment on mines has also declined. The growing number of migrant workers who lost their jobs increases the pressure on existing resources in rural areas. Unemployment in South Africa has been increasing since the 1960s and is estimated to be 37% currently (CIA 2003: 7). There are however major differences in the unemployment rate of different groups. The unemployment rate among black Africans is 50,2%, compared with 6,3% among White South Africans (Census 2001). The Eastern Cape is the province with the highest unemployment rate (54.6%).

Given the decline in employment opportunities and the low participation rates, non-wage opportunities for generating income are especially important. These include agricultural production, small, medium and micro-enterprise activity such as hawking, small shops and spazas, petty commodity production (building, sewing, carpentry and crafts) or niche services such as traditional healers. Among rural African households around 36% traded agricultural products in some form or another. The opportunities in enterprise were only available to a small percentage of households. Only 5% were involved in hawking and trading, 4% in petty production and 1% in niche services. For those households who were able to find employment or who were self-employed in the informal sector, incomes varied between around R320 per month for trading and crafts and up to R900 for services.

Households combine income based strategies with other types of strategies, particularly in times of economic stress. For example, they may use the environment more or less extensively, fetching and gathering, building and thatching materials, wood and dung, water, materials for crafts, medicinal plants, and wild foods. These are used for home consumption, to exchange for staples, or for selling. In addition, households may make qualitative dietary changes towards less costly food, indigenous crops and unusual food such as small game and insects.

## **5. ADDRESSING MALNUTRITION**

Available data suggest that nutrition is a significant and increasing public health problem in South Africa. Stunting rates are high, particularly among African and Coloured children, and micronutrient malnutrition, particularly vitamin A and iron deficiencies, is widespread. Malnutrition rates are highest in provinces which include former homeland areas, and where poverty rates are highest.

Available information suggests that malnutrition in South Africa is as much related to poor people's living conditions and the social and psychological consequences of poverty, as to the economic dimension of poverty. Most at risk are children in the poorest families, living in areas with poor services, and whose mothers have a weak support network and limited education. However, the relative importance of different causes in particular groups or geographical areas is less well understood. For example, adequate explanations for high stunting levels, low birth weights, high anaemia rates and the occurrence of over-and underweight in the same households and communities are not available, and it is not clear whether the same causal factors operate in different geographical areas.

Improved management of sick children (most notably through diarrhoea control and expanded immunisation coverage) will positively influence nutrition. However, to effect a sustained change in nutritional status, it will be necessary for behaviour at the household and individual level to change. Most directly, the feeding practices and

health related behaviours of the care givers of children and the eating habits and related practices of adults are at issue. Traditional prescriptive ways of attempting to change behaviour by trying to change preferences or attitudes through nutrition education have largely been discredited, although not abandoned everywhere. The focus is shifting to measures to address constraints to effective behaviour and initiatives to change the relative power position of vulnerable individuals (Pinstrup-Andersen, et al 1995). As indicated above, some of the factors operating in the South African context include constraints on access to food, due to a lack of assets and economic opportunities, and time and information constraints, particularly for women. Unequal gender relations which have a negative effect on women's decision making power in the household and the broader community also require attention, given that women are the primary carers of children, and that there is considerable evidence that women allocate resources in ways that are more beneficial for children's nutrition (Pinstrup-Andersen et al, 1995).

There is strong empirical evidence that addressing single causal factors is seldom effective, since constraints are often interrelated. Thus, strategies to remove constraints on access to food either through income generation, food supplementation or agricultural production have limited impact on nutritional status if not accompanied by efforts to remove other constraints, such as lack of water and sanitation, or a lack of knowledge about appropriate feeding. Pinstrup-Andersen et al (1996) argue that attention to income issues may in the long run have nutritional benefits, because people will begin to demand better services, and will be able to pay for them. It should not, however, be necessary to wait that long. The nutritional benefits of enhancing incomes can be maximised by, for example, combining economic and educational interventions (MkNelly, et al, n.d., De Groote, et al, 1994).

Given the range of potential constraints, it is essential to identify - together with those affected - the binding constraints in particular settings, and focus activities on these, if interventions are to be effective. For this reason, successful interventions include situation analyses, which involve local participants (Gillespie et al 1996). Local level

participation throughout the process is in fact regarded as a cornerstone for effective nutrition action. Thus Gillespie et al (1996) identify “genuine community involvement (as) a key feature of those programmes that work.”

National economic and social policies, although not directly aimed at changing nutritional status, still have a marked effect. Policies that influence food prices, wage rates, employment, social transfers, access to education, health and other social services are all relevant (Gillespie, et al 1996). Furthermore, for improvements in nutrition to be sustainable, focused nutrition activities must take place in a broader context conducive to human development. This requires economic growth that involves the poor, and social spending focused on the needs of the poor.

Equitable growth relies on labour intensive strategies and increasing the productivity of labour to integrate poor people into the economy. Key components are therefore employment generation, and improved access to resources required for other income generating activities, including land, credit, technology, infrastructure, markets and other services. Specific poverty alleviation strategies such as public works programmes and special credit facilities for poor people are appropriate in situations where large inequalities prevail, and where the transformation of previous growth strategies toward a more poverty focused approach may take a long time.

Social expenditure, on health care, education, welfare and other social services addresses a range of issues that affect nutrition, and can have short and long term nutritional benefits. Education, for example, has intergenerational effects, as mother’s education has been shown to be positively correlated with children’s nutritional status. To the extent that social expenditure improves access to health and care of women and children, it is not only important in itself, but also ensures maximum benefit from other interventions, such as initiatives to improve access to food.

Not all social spending would have equivalent beneficial effects on nutrition. Of concern is whether health expenditure is directed toward primary rather than tertiary

care, and education expenditure, toward basic rather than tertiary education. Similarly, the level of basic services and housing provided and the cost recovery required influence affordability levels, and therefore the number of people able to benefit.

## **5.1 POLICIES AND PROGRAMMES TO COMBAT MALNUTRITION AND POVERTY**

Policy formulation to guide development and poverty alleviation in South Africa has progressed rapidly since the election of the democratic government in 1994. This section gives a brief overview of relevant policy and programme development, to provide a context for the discussion of the challenges in combating malnutrition.

### **5.1.1 POLICIES AND PROGRAMMES BEFORE 1994**

Early initiatives to address poverty and food insecurity, largely among the white population, focused on food-based strategies, including support for small scale farmers, improved marketing of basic food stuffs, school feeding, direct food aid and nutritional surveillance. This focus on food-based strategies persisted until the early nineties, but was not a high priority of the national party government once the standard of living of whites had improved. The government did continue to provide a small subsidy to some local authorities to combat protein-energy malnutrition. This Protein Energy Malnutrition Scheme was promoted as a ‘treatment’ for malnutrition, providing food as ‘medicine.’ It was poorly integrated with other health services, and provided too little energy for needy children. Its nutrition education component was poorly developed, with outdated and even misleading messages, and which were often undermined by practices in the health services, with breast milk substitutes being widely distributed to young babies (McLachlan and Marshall, 1995). Most nutrition education activities focused on nutrition-related diseases of lifestyle.

Agricultural policies focused on national food self-sufficiency, and had little to say about access to food by individuals. The last few years of the National Party

government saw an attempt to address the issues of nutrition and poverty more comprehensively. A Committee for the Development of a Food and Nutrition Strategy for Southern Africa, appointed in 1989, prepared a draft food security and nutrition policy report. Later, in 1990, the Calitz Committee on Poverty considered direct means to address poverty and malnutrition. These processes led to the implementation, albeit with poor planning and inadequate infrastructure, of a Nutrition Development Programme with a treasury allocation of R220 million in 1990/1991. This programme, later became known as the National Nutrition and Social Development Programme, with a budget of some R400 million per annum continued largely as a food assistance programme. Currently it forms part of the Social Development programme on Poverty alleviation.

#### **5.1.2 POLICY DEVELOPMENT SINCE 1994**

The Reconstruction and Development Programme (RDP), adopted by the Government of National Unity in 1994 as an overarching policy framework, identifies food as a basic need that should be met in the democratising environment. It recognised poverty as a direct consequence of apartheid and the skewed nature of incomes which accompanied it. It set out the principles within which strategies to tackle poverty, including employment creation and safety nets, were to be implemented. Key among these are that development had to be an integrated and sustainable process, as well as a people driven one, relying on the energies of all the people of South Africa. The RDP was not to be about delivery of goods and services to a passive citizenry, but about active involvement and empowerment of people, building on existing forums and structures at all levels. Furthermore, the RDP placed emphasis on democratisation, with the transformation of ways in which policy was made and implemented. The realisation of these principles necessitate the engagement of all relevant government sectors, and the strengthening of community self-organisation. Lead projects, including the Primary School Nutrition Programme, were to serve as models and learning sites, to achieve empowerment of local communities to take ownership of development initiatives, and to contribute to the development of a responsive civil service.

### **5.1.2.1 THE RECONSTRUCTION AND DEVELOPMENT PROGRAMME**

The RDP was conceived at a time of political transition and reflects the thinking of the mass based democratic movement, and therefore the aspirations and expectations of people across a broad front. The RDP Offices at national and provincial levels were tasked with coordinating and developing integrated projects, such as the Lead projects, in a manner that would influence the functioning and budgeting of line ministries. At the same time, at community level, the people driven nature of the RDP was to be given effect through the establishment of RDP forums, where proposed projects were to be discussed and further developed to meet local needs.

### **5.1.2.2 HEALTH POLICY**

The new White Paper for the Transformation of the Health System in South Africa emphasizes a Primary Health Care Approach, which gives priority to the development maternal, child and women's health programmes. This focuses on the needs of pregnant and lactating women, pre-school children, and adolescents. The Primary Health Care package provides free health care for mothers and young children as well as school and institutional health services for children.

### **5.1.2.3 WELFARE POLICY**

The Welfare White Paper (Department of Welfare, 1997), recognizes poverty as an important cause of malnutrition and hunger and proposes that all Welfare Departments include nutritional objectives and activities into relevant components. The provision of social security in the form of old age pensions, disability grants and state maintenance grants have been important measures to alleviate poverty in SA and will continue to be a central part of the overall provision of welfare.

The state maintenance grant systems, although open to all South Africans, has to date largely benefited people classified as 'Coloured' and to a lesser extent, Asian and White South Africans. Where grants were accessible and taken up, they made a significant contribution to household income and thus to meeting the costs of raising

children. The grant is intended to reach a much higher proportion of vulnerable children and is expected to assist children in the poorest 30% of children in the age group 0-6 years by the year 2005. The aim is to reach some 3 million children.

#### **5.1.2.4 INTEGRATED NUTRITION PROGRAMME**

The report of the committee on nutrition appointed by the Minister of Health in 1994 on an Integrated Nutrition Strategy (1994) has been accepted in principle as the guiding policy framework for nutrition within the health sector and has been incorporated into the Health Policy. The brief makes specific reference to ensuring that nutritional status is used as an outcome indicator of the RDP.

With Health as the lead agency, the nutrition strategy focuses on specific initiatives within the health sector, including the restructuring of existing programmes at the time. The need for surveillance systems to monitor trends in nutritional status of children was highlighted.

The strategy uses the UNICEF conceptual framework (Figure 1) as a basis for its analysis and proposals. It focuses strongly on identifying the determinants of malnutrition and basing interventions on a sound understanding of the causes of malnutrition in specific situations. It proposes an interactive and participative process of problem assessment and analysis, followed by action and reassessment, be adopted at all levels. The approach is child-focused, identifying chronic protein-energy malnutrition, particularly stunting affecting the child below three, as the most important nutritional problem. Diet related non-communicable diseases and therapeutic nutrition are also addressed, but in less detail.

The following elements are incorporated into the INP:

- A health facility based nutrition programme, including the Protein Energy Malnutrition (PEM) Scheme. Also included are nutrition education, food supplementation, food fortification, growth monitoring

and the appropriate management of infectious diseases (including rehydration therapy and parasite control).

- A community based nutrition Programme (CBNP) which includes the Primary School Nutrition Programme (PSNP) and the National Nutrition and Social Development Programme (NNSDP). It aims to develop projects that will strengthen household food security, improve knowledge about nutrition, support the care of women and children and promote a healthy environment.
- A nutrition promotion programme focusing on improving communication, advocacy and appropriate legislation. Priority areas for this programme are the promotion of breastfeeding and sound infant feeding practices and information about the causes of childhood malnutrition. Food based dietary guidelines (FBDGs) are to be launched in the near future.

## **5.2 NUTRITION RELEVANT ACTIONS**

As explained earlier, the conceptual framework explicitly identifies the immediate, underlying and basic causes of malnutrition and the interaction between them. The Triple A approach is guided by the conceptual framework. The assessment of health concerns must be seen on an individual basis as well as on a population basis. The two national studies, namely the SAVACG (1994) and the NFCS (1999), specifically investigated the nutritional status of the population. Anthropometry (body composition) and clinical assessment is used to evaluate nutritional status on an individual level, which is usually done in a health clinic or center. Anthropometry involves growth monitoring to detect early malnutrition. There are concerns regarding growth monitoring which include incapable staff, lack of staff and lack of proper equipment. As mentioned before, the causes of malnutrition have been analysed according to the conceptual framework. This includes the immediate causes, the underlying causes and the basic causes. The third aspect of the Triple A approach is actions. This paper will only cover some key actions, which will include the following:

### **5.2.1 DIETARY IMPROVEMENTS:**

**Promotion of breastfeeding.** The advantages of breastfeeding need to be disseminated, especially by those training health personnel. The promotion of non-human milks in health facilities should be avoided and infant formula suggested only after all attempts to institute breastfeeding have failed; here personnel trained in lactation management have an important role. Use of feeding bottles in health establishments should be abolished and hospitals should be encouraged to implement the ten steps of UNICEF's baby-friendly hospital initiative. A comprehensive document on breastfeeding in cases of HIV/AIDS is attached.

**Improving the weaning process.** Breastfeeding for as long as possible and until the age of at least 18 months should be vigorously advocated. Solids should be introduced at 4-6 months with weaning staple foods supplemented by cheap, high-energy, oily foods such as peanut butter, margarine vegetable oil. Cheap sources of protein such as beans, lentils, sour milk and eggs, together with various vegetables, particularly vitamin A-rich pumpkin, carrot, pawpaw and mango, as well as fresh fruit and, where possible, animal products, will ensure a 'balanced' diet.

Improving the quantity of the food intake is best achieved by frequent feeding (4-6 times a day) where feasible. Energy-dense, soft, non-spoiling snacks such as bananas, peanut butter and fermented porridges should be promoted.

**Primary school nutrition programme (PSNP).** The (PSNP) was implemented on first September 1994 following the announcement by President Mandela that "a nutritional feeding scheme will be implemented in every primary school where such a need was established" during the State of the Nation Address on 24 May 1994. It was one of 100 day Presidential Lead Projects of the Reconstruction and Development Programme (RDP). The PSNP was primarily designed to provide direct services to primary school learners to counteract the effect of poor nutritional status and short-term hunger on the learning abilities of primary school learners. The intention, therefore, was not to improve the nutritional status of school learners, but to improve

educational outcomes. In addition, school feeding was to be used as a vehicle for nutrition education in schools and enhancing other developmental and health initiatives.

The number of primary/combined schools targeted for school feeding in 2003/04 is 84% of the registered primary/combined schools in South Africa. In 2002/03 school feeding reached 78% of the total number of primary/combined schools and 95% of the targeted number of primary schools.

Considering that approximately 6.1 million (67%) children between the ages of 6 and 15 live below the poverty line in South Africa, school feeding could contribute extensively to the well being of these children. Provincial and national evaluation reports (Wentzel-Viljoen et al 1999 & Louw et al 2000) have indicated that the PSNP does not meet its objectives. Problems are related to consistency of food supply, quality of food products provided, limitation of teaching time as a result of teacher involvement in feeding activities, and displacement of home-based foodshare of children if they receive food at school. A major concern with the PSNP, as with any other feeding scheme, is the limited scope of the intervention (impact only on dietary intake and not on any other level of causation), the relative high cost and resultant low sustainability.

#### **Protein-energy malnutrition (PEM) scheme.**

One of the health facility based interventions of the INP is the protein-energy malnutrition scheme whereby children who fail to thrive or who falls below the 3<sup>rd</sup> percentile (equivalent to  $-2SD$ ) of weight-for-age receive food supplements from the health facility. Currently, utilization of this programme is however dominated by chronically ill adult patients (such as TB patients) and by children of mothers who are HIV positive but not necessarily malnourished. This programme is also plagued by breakdowns in supply, criticism of the food products included in the programme, and the lack of supportive community based programmes that addresses the underlying causes of malnutrition. Subsequently very few children is ever “discharged” from the programme and often needs to be re-admitted soon after discharge from the PEM scheme.

**Food fortification.** Legislation was passed in 1995 to iodate all household salt at a higher level (40-60 parts/million) than the previous optional levels (10-20 parts/million), and thus help to decrease iodine deficiency. Although monitoring of levels of fortification sometimes reveals insufficient levels of fortification, follow-up evaluations have already shown that the iodine status of children has improved dramatically and that school performance is also affected positively in previously deficient communities. In order to eradicate iodine deficiency it is important to ensure that the WHO objective of 90% of households having access to sufficiently iodated salt be reached and maintained.

Information obtained from the NFCS brought about legislated fortification of bread flour and maize meal with a multi-nutrient mix including Vitamin A, thiamin, niacin, riboflavin, folate, vitamin B6, iron and zinc as of 8 October 2003. If the intake of children as reported in 1999 as part of the NFCS remains unchanged, then the majority of children will now consume close to 100% of the RDA as a result of the legislated fortification. A pilot project by the University of the Western Cape would attempt to monitor and evaluate the impact of the legislated fortification on the nutritional and health status of children. The Department of Health also announced that it would evaluate the programme in 3-years time.

**Nutrition education and promotion.** Nutrition education has a limited value in situations of poverty where there is limited choice. Yet, especially in view of the nutrition transition it is important to ensure that nutrition education messages would not only address undernutrition, but also speak to problems related to overnutrition. The development of South African evidence based Food Based Dietary Guidelines (FBDG's) was initiated by the Nutrition Society of South Africa (NSSA) and completed in partnership with the Department of Health, Nutrition Directorate and the Association for Dietetics in South Africa (ADSA). These guidelines are focused on the population older than 7 years. FBDGs are to be positive, practical, affordable, sustainable and culturally sensitive. It is intended to help those 7 years and older, to choose an adequate but prudent diet. It is based on the existing consumption of locally available foods and aims to address identified nutrition-related public health problems. Each statement has been tested in different language and geographic

settings to ensure that the population of South Africa understands them and that the terminology is understood as intended. The intention is to review these guidelines regularly, based on the impact it has, changes in the socio-economy, and as new evidence on nutrition-health relationships becomes available. These FBDGs are to be launched officially in 2004. These guidelines will form the core of the Government's nutrition education messages with a view to promoting a healthy lifestyle among all South Africans. Guidelines suitable for children aged 0-7 years are also being developed at the moment. A technical support paper for each of the FBDGs has been published in the South African Journal of Clinical Nutrition (2001) and is attached.

Currently there are 11 FBDGs:

- Enjoy a variety of foods
- Be active
- Make starchy foods the basis of most meals
- Eat plenty of vegetables and fruits every day
- Eat dry beans, peas, lentils and soy regularly,
- Chicken, fish, milk, meat or eggs could be eaten daily
- Eat fats sparingly
- Use salt sparingly
- Drinks lots of clean, safe water
- If you drink alcohol, drink sensibly
- Use foods and drinks containing sugar sparingly and not between meals

### **5.2.2 DISEASE MITIGATION**

**Feeding during and after illness.** The mainstay of management is feeding of a high-energy, high-protein diet, liquid at first and becoming more solid as the child recovers. Replacement of potassium and magnesium is important, together with vitamin A, the b-complex vitamins and zinc. Warmth and early treatment of (even suspected ) infection with broad-spectrum antibiotics reduces the fatality rate. Diarrhoea, which often accompanies severe PEM, must be managed with oral rehydration and continued feeding. The principles of nutrition rehabilitation are early progression to nutrient-dense, frequent feeds and further rehabilitation in an infection-

free homely environment, located where possible, close to the child's family home. This approach to rehabilitation depends on the development of a community-based nutrition programme.

### **5.2.3 HOUSEHOLD FOOD SECURITY**

**Food gardens.** Projects such as these aim to encourage communal awareness, enterprise and organization. In terms of their nutritional impact, vegetable gardens make a limited contribution, which is very difficult to measure. While vegetables contain significant concentrations of minerals and vitamins, its energy content is low. The energy input by participants in these projects is often higher than the energy output. Food gardens projects should primarily be promoted as income-generating efforts, particularly if communally organized. Participation in food gardens has been found to improve the number of portions and variety of vegetables consumed by households (Bentley et al 1999, Webb 2000, Asomani-Boateng 2002), income (Dovie et al 2003, Shack et al 1990, Schipani et al 2002, De Pee et al 1999), and the general health status (De Swardt 2003 personal communication). It should be remembered that the impact of food gardens might also have beneficial effects in terms of coping mechanisms, psychological value as a provider, etc even though it might not necessarily contribute significantly to the nutritional status of participants. It is also possible that it might not improve nutritional status, but could contribute to maintaining the level of nutrient intake in difficult times.

Currently the Department of Social Development through its Integrated Programme on Food Security, together with the Department of Agriculture and other governmental, community based and private organizations, has embarked on a Food Gardens pilot project. Through this project it is envisaged that suitable land – especially government and local authority land will be used in organized “communal” food gardens to assist communities to improve their own food security. This project is supposed to link with and support the feeding schemes of the Department of Social Development.

**Child support grants (CSG).** Currently children under the age of 9 years are eligible for CSGs. The proposal that CSGs be extended to older children has been accepted by the Department of Social Services and will be phased by extending it to children under the age of 11 as of April 2004 and to children under the age of 14 by April 2005. The income and assets of the applicant and spouse or the concerned foster child are assessed to determine if an applicant qualifies for a grant. Households/families who earn less than R800 per month in urban areas (formal housing) or less than R1100 per month in non-urban areas and informal housing in urban areas, are eligible for CSGs. Currently the CSG's provide R160 per child, per month and currently about 3.6million South African children receive the CSG (ACCESS personal communication 2003). A major concern of these grants is still that the qualifying requirements include that applicants must be in possession of an identity document and that the child must have a birth certificate. Many of the children and caretakers who qualify for the CSG's are not in possession of any of these documents. Also, many of the eligible children are still not aware of its existence. Work to improve access to CSG's is currently being done and it is now allowed that a person might be granted the CSG whilst applying for the necessary documentation.

**Long-term employment.** For many households, particularly in urban areas, the relationship between income and the price of food determines the level of household food security. Therefore, interventions should focus on employment creation and on income and price policies, including targeted consumer subsidies and/or VAT exemption. Food production is primarily the responsibility of women. It is therefore important to minimize the workload of women in their efforts to ensure household food security.

#### **5.2.4 CARE**

**Maternal and child care.** The care of the child is inextricably linked with the situation of the household and the situation of women. A mother's knowledge about child care and her access to and control of resources, determines to a large extent, the

care she can provide for her child. The establishment of community-based child-care arrangements, income-generating activities for women and the training and education of families should all aim to give women the skills and knowledge required to create better opportunities for improved care for themselves and their children.

### **5.2.5 HEALTH AND ENVIRONMENTAL SERVICES**

**Immunization.** Nutrition programmes often fail because of the high incidence of infectious disease impedes dietary intake and utilization, resulting in malnutrition. Unless the most common childhood infectious diseases are controlled, it will be very difficult to reduce the prevalence of malnutrition. The achievement and sustainability of universal child immunization is, therefore, one of the most important premises for improved nutrition. Measles, an infectious disease which is often fatal in Africa, also exerts a severe impact on nutritional status. Measles vaccination is effective in prevention, and support for increasing vaccination coverage is important in its own right but also as an indirect means of safeguarding childhood nutrition.

**Vitamin A supplementation.** Studies have shown that improving the vitamin A status of vitamin A deficient children aged 6-59 months increased their survival by:

- reducing measles mortality by 50%
- reducing diarrhoeal disease mortality by 33%
- reducing all-cause mortality by 23%

The improvement of vitamin A status can also lead to a significant reduction in the severity of illnesses and the length of hospital stays. Currently the national policy provide for high dose oral vitamin A supplementation (100 000 – 200 000 IU depending on age) every six months of all children aged 6months – 6 years as well as a once off dose to women post-partum. This is a low cost intervention with possible major health benefits to children, yet many problems are currently experienced such as insufficient coverage. This is mainly due to a break in the supply chain to health services. Children in greatest need who do not visit health services for immunization or otherwise, would also not receive the benefit of vitamin A supplementation.

### CASE STUDY: EASTERN CAPE VITAMIN A SUPPLEMENTATION PROGRAMME

Vitamin A supplementation of all children 6 – 24 months is a central component of the Eastern Cape Department of Health’s micronutrient strategy. The Eastern Cape has a high prevalence of vitamin A deficiency and high infant mortality, vitamin A supplementation as a preventative measure is the most cost-effective health intervention for reducing the risk of childhood death and disease. Since the body can store vitamin A, large single doses can protect a child for 4 – 6 months. After this period, deficiency returns (in the absence of adequate diet) and the child remains at risk. This fact underlines the importance of ensuring that all children aged 6 – 24 months receive vitamin A twice a year – every 6 months at a maximum to provide adequate protection and achieve maximum impact.

Target Group		Dosage	Schedule
Infants	6 – 11 months	100 000 IU	A single dose at the age of 6 months
Children	12 – 24 months	200 000 IU	A single dose at the age of 12 months and then every 6 months until age 24 months

#### How is vitamin A distributed to the target population

Vitamin A supplementation of children 6 – 24 months will be given through the routine Expanded Programme on Immunization (EPI) at the local health facility. At each immunization contact and at each clinic visit the health worker will have an opportunity to screen if both the mother and child are eligible for vitamin A supplementation. Every vitamin A supplementation given will be recorded on the child’s Road-TO-Health Card.

**Water and sanitation.** Universal access to safe drinking water and sanitary means of excrete disposal are major goals for children and development. Improved water supply is often the priority concern selected by communities because it improves quality of life in so many ways. Many households still do not have access to potable water or sanitation. More emphasis should be given to the maintenance of water supply systems, the use of local technologies and the hygienic use of water.

**CASE STUDY: THE INTEGRATED MANAGEMENT OF MALNOURISHED CHILDREN IN THE EASTERN CAPE**

Severe malnutrition is an important cause of morbidity and mortality among young children in South African. In rural areas, many children only get sent to a hospital after they have become seriously ill. However, many of these children admitted with severe malnutrition, still die. Studies have shown that implementation of the WHO guidelines for management of severe malnutrition can substantially decrease fatality rates. Two hospitals in the Mount Frere health district were selected to assess the management of severely malnourished children. Data collection instruments were developed which were based on the WHO guidelines for inpatient care of children with severe malnutrition. The case fatality rate for severe malnutrition was found to be 32%. Areas of concern were inadequate feeding, poor management of rehydration and infection, and a lack of knowledge and motivation among staff.

Since 1998, the University of the Western Cape, Health Systems Trust and the London School of Hygiene and Tropical Medicine have been assisting the Eastern Cape Department of Health in implementation of the WHO's 'Ten Steps' for the management of severely malnourished children. As a consequence of this project and the work and dedication of the nursing and medical staff, hospital case fatality rates due to malnutrition have been significantly reduced throughout the region.

A great concern was what was happening to children who have recovered from severe malnutrition post-discharge. To understand this issue, a group of children were followed-up one month after discharge. Forty percent of participants received a pension grant as a source of income, 25% received income from migrant labourers, 20% were no income families and 15% of families received income from domestic workers. By right, all children visited in this study qualified for the Child Support Grant (CSG) but none had managed to obtain it. Problems encountered included, caregivers not having identity books, difficulty obtaining birth certificates and the high cost involved in getting to the appropriate government offices. It was also found that there was no significant difference between the children's discharge weights and their weights after one month at home. Almost all caregivers were able to recall nutrition messages they had learned in hospital. But its application was often impossible because of lack of food and income at home. These children were found to be in a cycle of poverty, disease and malnutrition and unless the cycle is broken, they will never reach their full potential of physical and mental development.

This research has brought about quite a few improvements, which include the following:

- The data was presented to Government Commission on Social Welfare.
- Awareness was increased as newspaper articles were addressing issues on malnutrition

and child welfare.

- Awareness was further increased as an alliance was formed with the Alliance for Children's Entitlement of Social Security (ACCESS) which resulted in the development of a TV documentary being screened (Special Assignment). This programme elicited an unexpected response both from government as well as the public.
- The Minister of Social Development visited Mount Frere and ordered a mobile team into the area for a period of 6 months to help process CSG's.
- A massive Child Support Grant Campaign in the Eastern Cape was initiated in October 2002.

## **6. EATING DISORDERS**

Eating disorders refer to a group of conditions that share a pathological concern with body weight and shape. According to Fairburn and Walsh (1995) "...an eating disorder can be defined as a persistent disturbance of eating behaviour or eating-related behaviour that results in the altered consumption or absorption of food and that significantly impairs physical health or psychosocial functioning". The following syndromes are currently classified as eating disorders: Anorexia Nervosa, Bulimia Nervosa, binge eating disorder and other atypical eating disorders. The latter group would include those generally obsessed with weight loss and body image. It is estimated that Anorexia nervosa, which is characterised by self-starvation and a distorted body image despite an extremely low body weight, affects about 1% of women aged 14-25 years in Western Societies. Sometimes the self-starvation is also combined with compulsive exercise to ensure and increase further weight loss. Persons with Bulimia Nervosa are often within a "normal weight range" but binge eat which is followed by guilt and depression and thus purging, such as self-induced vomiting, is initiated. About 4% of women aged 14-25 in Western Societies are affected by Bulimia Nervosa. According to anecdotal reports some countries like Sweden have a prevalence of up to 10% and have instituted national prevention programmes (Senekal personal communication 2003). There is no national data on the prevalence of eating disorders in South Africa. Rehabilitations organisations

involved in the treatment of eating disorders like TARA however are of the opinion that both Anorexia Nervosa and Bulimia Nervosa is on the increase in specifically the 14-25 years age group in all social and cultural groups and is now also found in men in this age group. Causes of eating disorders are multi-factorial and may include socio-cultural, psychological and biological factors. Eating disorders are more likely to begin during adolescence when physical, psychological and social development occurs at a rapid pace. Dieting is currently seen as one of the most important factors that activate the individual's vulnerability to particular risk factors (Senekal 1999).

Certain personality characteristics and psychological problems are common among individuals with eating disorders. Self-esteem is very low in these individuals and they have poor self-control. A typical anorexic could be described as intelligent, an overachiever and adolescent. Some evidence has suggested that genetics may also play a role.

The American Dietetic Association (ADA 1994) has expressed its concern regarding the use of the word 'eating disorder'. This term implies that the real problem is disordered eating and suggests that the solution is to learn to eat correctly. Eating disorders are "complex disorders involving two sets of issues and behaviours: those directly relating to food and weight and those involving the relationships with oneself and with others (ADA 1994). Eating disorders are a symptom of psychological or social stress. The treatment of eating disorders requires a multidisciplinary approach. The general aims of the treatment of a person with eating disorders would include:

- address physical or medical problems or complications
- restore healthy weight. It is generally accepted that weight restoration must occur for psychological treatment to be effective
- restore acceptable eating behaviour
- address dysfunctional thoughts relating to food, weight, body image as well as the relationship between food, body image and the relationship with others
- correct affective (of the emotions) disorders

- address any associated or underlying psychological problems
- ensure family support and treatment where necessary
- prevent relapse and ensure maintenance of a healthy life-style
- investigate the use of support groups (Senekal 1999).

On a general preventative level, a multi-disciplinary approach is also required to not only promote healthy eating practices and healthy body size perceptions (i.e. discourage the general image portrayed in the media and by industry that a smaller body size is essential at all cost), but also improving communication, development of a healthy self-esteem and prevention of abuse (verbal, emotional, physical, etc) that could undermine the perception of self-worth.

### **SUGGESTED READING ATTACHED**

Breastfeeding and HIV/AIDS

SA Journal of Clinical Nutrition (2001) which contains all the technical support papers for the Food-based Dietary Guidelines.

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