

ABSTRACT

The National Food Consumption Survey of 1999, among children aged 1-9 years indicated a high prevalence of stunting (21.6%) and overweight and obesity (17.1%). One in two children had an intake less than half the recommended requirements for vitamins A, C, riboflavin, niacin, B6, folate, calcium, iron and zinc. Studies in children with HIV report multiple micronutrient deficiencies and levels of underweight and stunting as high as 50% before commencement of antiretroviral therapy.

Nutritional problems in children are currently being addressed through the Integrated Nutrition Programme. Key focus areas with goals and targets have been set for 2007. This chapter discusses information and findings of studies relating to the evaluation of the different focus areas of the Integrated Nutrition Programme. Progress has been made and targets have or are likely to be met in areas including: the Baby-Friendly Hospital Initiative; legislation relating to the mandatory fortification of maize meal and wheat flour with multiple micronutrients; mandatory iodization of salt; the provision of Road-to-Health Charts; and aspects relating to the National School Nutrition Programme. Other focus areas of the Integrated Nutrition Programme such as coverage of vitamin A through supplementation; legislation relating to the protection of breastfeeding mothers in the workplace and reducing morbidity and mortality in children from under-nutrition, over-nutrition and HIV / TB, require more attention if set targets are to be achieved.

Key constraints in achieving the set goals and targets include high rates of household food insecurity and lack of adequate service delivery. Recommendations on how to address these challenges and strengthen the components of the Integrated Nutrition Programme are made.

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INTRODUCTION

In South Africa (SA) the nutrition transition which includes the co-existence of under- and over-nutrition, is evident between and within populations and across all ages.^{1,2} Superimposed on this is the HIV pandemic, giving rise to the nutrition related 'triple burden' of disease. It has been recognised that as a result of the prevalence of under-nutrition, micronutrient deficiencies, and emergent over-nutrition, both primary and secondary interventions are essential.³ Given the estimated infant mortality rate of 60 per 1 000 live births and an estimated under-5 mortality rate of 95 per 1 000 live births⁴ as well as issues related to household food insecurity in SA, this presents a complex picture for health workers and policy makers.

The objectives of this chapter are to:

- ◆ Review the nutritional status of children in SA;
- ◆ Discuss how HIV impacts on the growth and nutritional status of HIV-infected children;
- ◆ Outline the focus areas of the Integrated Nutrition Programme (INP) and its impact in addressing nutritional problems in children; and
- ◆ Make recommendations for improving children's nutritional status.

NUTRITIONAL STATUS OF CHILDREN

UNDER-NUTRITION

In 1995 it was estimated that 2.3-2.5 million South Africans were undernourished, the majority of who were African children aged 0-15 years.⁵ A study undertaken by the South African Vitamin A Consultative Group (SAVACG) in 1994 on children aged 6-72 months showed that the national prevalence for underweight,^a stunting^b and wasting^c were 9.3%, 22.9%, 2.6% respectively.⁶ In 1999 a study by the National Food Consumption Survey (NFCS) on children aged 1-9 years showed a national prevalence for underweight

a weight-for-age < -2SD Proportion of children with weight for age under 2 standard deviations from the norm (reference population median).

b height-for-age < -2SD Proportion of children with height for age under 2 standard deviations from the norm (reference population median).

c weight-for-height < -2SD Proportion of children with weight for height under 2 standard deviations from the norm (reference population median).

of 10.3%, stunting 21.6%, and wasting 3.7%. The prevalence of under-nutrition was highest in rural areas, particularly on commercial farms and in informal settlements compared with urban areas.⁷

OVER-NUTRITION

An emphasis on under-nutrition may well have led to overlooking the overweight problem in children. However, in 1994, 9.0% of children aged three to six years, from a representative sample of African children in the Cape Metropole were reported to be overweight.^{d,1} More recently, utilising NFCS data, secondary analyses were performed on the weighted sample of children in terms of body mass index reference percentiles from the International Obesity Task Force⁸ (Table 1). Prevalence of overweight was found to be highest in urban formal areas, especially in the 1-3 year old children, which is consistent with data from other developing countries.⁹ The data show that the prevalence of combination of being overweight and obese (17.1%) is comparable to that for stunting (21.6%) for this age group.

The increasing prevalence of overweight and obesity continues into adolescence and adulthood. These changes in body composition and the dietary intake shifts (including increases in intake of fat, salt and sugar) currently driving overweight and obesity in the bulk of the population, have been described elsewhere. Also associated with and exacerbating over-nutrition are important lifestyle changes in children such as decreased physical activity.¹¹

DIETARY INTAKE

According to the NFCS, dietary intake in most children was of low micronutrient status, with variable reported energy intakes, which were particularly inadequate in rural areas. These data were previously summarised³ and formed the basis of mandatory fortification of maize and wheat flour introduced in 2003.

d >+2 z-score for weight-for-age.



TABLE 1:
Percentage South African children classified as overweight or obese with BMI reference cut-offs of the International Obesity Task Force¹⁰ (based on the weighted NFCS sample)⁷

Domain Analysis		Number (n)	% BMI ≥ 30 [95% CI]		% BMI ≥ 25 [95 % CI]	
Area of residence p=0.006*	Farms	108	3.5	[0.77-6.3]	10.8	[6.03-15.5]
	Formal urban	946	6.2	[4.4-7.96]	20.1	[16.01-24.19]
	Informal urban	272	5.9	[3.15-8.63]	13.4	[10.02-16.8]
	Tribal	874	3.7	[2.55-4.93]	15.8	[13.52-18.14]
Rural / Urban p=0.0257*	Rural	982	3.7	[2.64-4.79]	15.3	[13.15-17.4]
	Urban	128	6.1	[4.55-7.67]	18.6	[15.15-22.06]
Age Group (years) p<0.0001*	1-3	795	7.8	[6.07-9.49]	23.7	[20.87-26.62]
	4-6	861	3.8	[2.5-5.12]	15.8	[12.84-18.75]
	7-8	544	3.0	[1.13-4.83]	9.5	[6.37-12.69]
SA	Total	2 200	5	[4.1-6.0]	17.1	[15.0-19.2]

Source: Cole et al., 2000;¹⁰ Labadarios et al., 2000.⁷

BMI ≥ 25 indicates overweight; BMI ≥ 30 indicates obesity

* Chi-square p-value for testing for associations, using weighted values, between BMI groupings, area of residence, urban versus rural, and age groups.

THE IMPACT OF HIV ON CHILDHOOD NUTRITIONAL STATUS AND GROWTH

HIV contributes to an increased prevalence and severity of under-nutrition and micronutrient deficiency in children. HIV-infected children on antiretroviral treatment, particularly those on protease inhibitors, are later at risk of acquiring diabetes, dyslipidaemia and atherosclerosis.¹² Obesity has become an important lifestyle illness in HIV-infected youth in the USA. Whether this will become a problem in Africa is not yet known.¹³

Studies done in Zambia and Rwanda found a higher prevalence of low birth weight in HIV-infected compared with non-infected mothers.^{14,15} Studies in Zaire^c showed that the effects of HIV infection on foetal growth were greater towards the end of pregnancy and with increasing severity of maternal illness.¹⁶

Similarly, HIV infection causes decreased growth as early as three months of age and may lead to irreversible stunting, underweight and wasting, unless antiretroviral therapy is given.^{17,18} Children born to HIV-infected mothers but who are uninfected may

catch-up in growth and their growth patterns could resemble that of children born to uninfected mothers.

Under-nutrition is a major problem in HIV-infected children in SA as illustrated in Table 2. More than 50% of children with HIV infection become stunted or underweight and at least 1 in 5 develop wasting.¹⁹

TABLE 2:
The effect of HIV on the anthropometric status of children <15 years of age before starting antiretroviral therapy

Anthropometric indices	Total Number	Number	(%)
Moderate or severe stunting	406	271	66.7
Moderate or severe underweight	408	232	56.9
Moderate or severe wasting	390	81	20.8

Source: Eley et al., 2006.¹⁹

Studies from several African countries have reported that severe wasting (marasmus) is more commonly encountered in HIV-infected children than oedematous under-nutrition (kwashiorkor).²⁰⁻²³ In an analysis

c Democratic Republic of Congo.

undertaken recently at Red Cross Children's Hospital, of 390 HIV-infected children, 26 (6.7%) had severe wasting.¹⁹ Low serum levels of vitamins A, E, B6, B12 and C, beta-carotene, selenium, zinc, copper and iron are common in HIV-infected individuals. Vitamin A deficiency has been associated with increased morbidity and mortality in HIV-infected children, as well as increased mother-to-child transmission of HIV in pregnant women.^{24,25} A study involving 48 HIV-infected children in Cape Town showed that 80% had marginal vitamin A status (serum retinol <20 µg/dl) and 15% had vitamin A deficiency (serum retinol <10 µg/dl). Twenty per cent had sub-normal zinc concentrations and 62% had two or more micronutrient deficiencies.²⁶ In another South African study of 60 HIV-infected children, 52% were iron-depleted and 18% had iron deficiency anaemia.²⁷

The severity of under-nutrition in HIV-infected children is associated with an increased risk of dying.²⁸⁻³⁰ The wasting syndrome characterised by persistent weight loss with chronic diarrhoea or protracted fever is a cause of a high morbidity and mortality.³¹

Deficiencies of micronutrients required for normal immune functioning such as copper, zinc, iron, selenium, magnesium, folic acid, vitamin A, vitamin C, vitamin B6, vitamin B12, β-carotene and vitamin E may compound the risk for acquiring opportunistic infection and facilitate the progression to AIDS and death.³²⁻³⁵

HIV encephalopathy can occur in 70-80% of children with moderate to advanced infection resulting in significant neuro-developmental and cognitive dysfunction.³⁶ A study at Red Cross Children's Hospital showed that 70% of the children evaluated prior to the commencement of antiretroviral therapy had sub-normal cognitive function.³⁷ The extent to which under-nutrition contributes to impaired cognitive function in these children is unknown. However, a recent study in HIV-infected women showed that multivitamin supplementation during pregnancy was associated with a lower risk of neuro-developmental delay in their offspring.³⁸

In summary, HIV infection can lead to widespread under-nutrition and micronutrient deficiencies in children.³⁹ At present in SA, there are approximately

300 000 children <15 years of age who are infected. It is estimated that at least 50% are stunted and / or underweight, 10-15% have severe under-nutrition, and >70% have marginal vitamin A status. However, the true extent of growth failure and under-nutrition among HIV-infected children in SA needs further investigation.

NUTRITIONAL STATUS OF HIV ORPHANS

Studies evaluating the nutritional status of HIV orphans in Zimbabwe showed a three fold increased risk of underweight, a two fold increased risk of stunting and a 1.5 fold increased risk of wasting compared with children cared for by their parents.⁴⁰ Studies in other African countries showed that the nutritional status of orphans supported by their extended families was similar to that of non-orphans.⁴¹⁻⁴³

In 2004 the Medical Research Council (MRC) estimated that there were 625 000 HIV orphans in SA; however, their nutritional status is unknown.³⁹

HOUSEHOLD FOOD INSECURITY AND HIV INFECTION

Children with HIV infection develop nutritional deficiencies for several reasons. The HIV epidemic has undermined the fight against hunger and household food security leading to under-nutrition in sub-Saharan Africa. In the short term HIV undermines food security through loss of labour; increased cost of health care and funerals; decreased household agricultural production; diminished ability to care for vulnerable individuals; and erosion of wealth. In the long term it impacts on social and economic systems in countries with high prevalence rates.⁴⁴

The food crisis in southern Africa points to a relationship between food insecurity and the worsening regional HIV epidemic. The resultant under-nutrition completes a vicious cycle linking poverty and inequality, food insecurity, under-nutrition, and HIV infection. An estimated 60% of the population in the region are under-18 years and as a result children are particularly vulnerable because many lose their parents or caregivers to the epidemic.^{45,46}

Even though SA is considered to be relatively food secure, more than 14 million people (35%) are vulnerable to



food insecurity. Rural areas are particularly threatened as they include 70% of the country's poorest households. However, not all of the poorest households are the most food insecure.^{47,48} In addition, food shortages in neighbouring countries affect SA, which is a major food supplier to the region during crises.

In the absence of national data, the analyses of the impact of interventions relating to the focus areas of the INP, is based on studies that relate to the different focus areas. A summary of the different evaluations is shown in Table 3.

EVALUATION OF STRATEGIES TO ADDRESS NUTRITIONAL DEFICIENCIES IN CHILDREN

THE INTEGRATED NUTRITION PROGRAMME

Nutritional deficiencies in both uninfected and HIV-infected children are currently being addressed through the INP^f which has a strategic plan containing eight interlinked focus areas with goals, objectives and targets. These focus areas are supported by a nutrition information system, a human resource plan and a financial and administrative system.⁴⁹

TABLE 3:
Evaluations of the INP and nutrition-related programmes

Focus area	Programme	Main Findings of Evaluation
Disease-specific nutrition support, treatment and counselling	Nutrition Supplementation Programme	<i>Western Cape Province</i> ⁵⁰ Of 831 children in Mitchell's Plain District: 37% dropped out; 38% showed catch-up growth and 25% deteriorated in growth. Evaluation done at 17 clinics in Southern Cape, ⁵⁴ 33% of children were enrolled for >1 year; limited improvement in the growth. <i>Northern Cape Province</i> ⁵¹ 76% of NSP budget was spent; 85% of health facilities implemented NSP; covered 50% of undernourished children and 60% of at-risk pregnant and lactating women; 10% of children moved into normal percentile range.
	Management of severe under-nutrition	<i>Mt Frere District, Eastern Cape</i> ⁵⁵ Guidelines were piloted in the Eastern Cape between 2000 and 2001. At Mary Theresa Hospital, case-fatality rates fell from 46% before implementation to 21% after implementation. At Sipetu Hospital, the rates fell from 25% pre-implementation to 18% during 2000, but then rose to 38% during 2001, when inexperienced doctors who were not trained in the treatment of malnutrition were deployed. The rise in case-fatality rates was associated with less frequent prescribing of antibiotics, potassium and vitamin A.
Growth monitoring and promotion	Guidelines	<i>Western Cape's – peri-urban area</i> ⁵⁷ Included 134 children and caregivers. Unemployment, poor household food security and financial dependency were significantly higher in families with nutritionally at-risk children. Weights obtained by the nurses and researcher differed significantly because of different scales and weighing methods. Researcher found 50% of children nutritionally at-risk; nurses found 10.4% at-risk children.

^f INP is a South African comprehensive nutrition strategy that focuses on children under-6 years, at risk pregnant and lactating women and those affected by communicable and chronic diseases of lifestyle.

Focus area	Programme	Main Findings of Evaluation
Control of micronutrient deficiencies	Vitamin A Supplementation	<i>Vitamin A supplementation nationally</i> ⁵⁸ Vitamin A coverage children 6-11 months (excluding W Cape): 72.8% Vitamin A coverage children 12-59 months (excluding W Cape): 13.9%
	Salt Iodization	<i>Vitamin A Supplementation in Western Cape</i> ⁵⁹ The study included 234 children in the Cape Metropole and 66 children in the West Coast Winelands Regions. The mean age of the children was 24.3 months. Only 34% of the children who were eligible for supplementation received vitamin A (Cape Metropole 29%; West Coast Winelands 52%). Vitamin A given was recorded on 76% of the RTHC; 24% of the mothers knew why their child had been given vitamin A; and 11% of the mothers knew about the programme.
	Food fortification	<i>Iodization of table salt</i> ^{60,61} Within 2 years, iodine content of salt increased from 14 to 42 mg/kg; 19% of salt iodine content was still <20 mg/kg. In a national representative sample of 2043 households across the nine provinces, salt was always available in 95.4% of households. National coverage of adequately iodized table salt (i.e. >15 mg/kg) increased from 30% to 62.4%. Coverage was low for Mpumalanga (45.1%), Limpopo Province (39%) and the North West Province (48.3%). Household use of iodized salt increased from 30% to 62.4% nationally. There was a significant association between iodine concentration of household salt and low socio-economic status.
		<i>Fortification of maize meal on the anthropometric and micronutrient status of children aged 1-3 yrs</i> ⁶² Randomized intervention: 21 children in experimental group on fortified maize meal; 23 children in control group on unfortified maize meal. After 12-months, weight gain of children in experimental group was significantly greater (4.6 kg vs 2.0kg); no significant differences in height were noted; children in the experimental group had a non-significant increase haemoglobin and micronutrient status group.
Promotion, protection and support of breastfeeding	SA Breastfeeding guidelines for health workers and the BFHI	<i>Evaluation of the SA Code</i> ⁷³ Evaluation done of violations of the international code on the marketing of breast milk substitutes in Poland, Thailand, Bangladesh and South Africa. In SA the study covered 46 health facilities and 804 pregnant women and mothers of infants ≤6 months in Durban. Results: 20% of the health facilities received free breast milk samples; 2% of health workers received free gifts and 17% of the health facilities received information that violated the code. One per cent of pregnant women and 3% of mothers with infants ≤ 6 months received free samples. Results confirm ongoing violations of the international code.
Contribute to household food security	National School Nutrition Programme (NSNP)	<i>Evaluation of NSNP</i> ^{78,79} Implemented since 1 September 1994. Up to March 2002, an average of 5 million learners from 15 000 schools have benefited from the scheme (i.e. 47% of all primary school learners). In 2003/04 the Programme reached about 95% of schools targeted and 95% of children targeted. Findings previously reported: problems with targeting; human resources; feeding times, days covered and menu options; nutrient density and acceptability; wastage; adherence to guidelines, monitoring.
Social assistance	All social grants	<i>Social and economic impact of SA's social security system</i> ⁹⁸ Grants reduced the poverty head count by 4.3%. Grants reduced total rand destitution gap by 45% and total rand poverty gap by 29%.
	Extension CSG ¹⁰⁰	Lower CSG uptake rates in Eastern Cape, KwaZulu-Natal and North West Province. Beneficiaries need to reapply if cut-off age reached before start of next CSG phase. Dissemination of inaccurate information on eligibility criteria. Lack of national monitoring, standards and norms. Lack of human resources. Problems with the data system.

Source: Compiled from multiple sources as indicated in the table.



DISEASE-SPECIFIC NUTRITION SUPPORT, TREATMENT AND COUNSELLING

This relates to nutrition counselling, support and treatment of children with under-nutrition, over-nutrition, tuberculosis and HIV based on the guidelines of the Integrated Management of Childhood Illness (IMCI), WHO's 'Ten Steps' on the management of severe under-nutrition and the Nutrition Supplementation Programme (NSP).⁵ The target in children aged 1-9 years is to reduce underweight from 10.3% to 8%, stunting from 21.6% to 18% and overweight from 6% to 4% by 2007.

Management of moderate under-nutrition

A national evaluation of the NSP of the Health Facility-based Nutrition Programme in addressing under-nutrition in children <6 years as well as other target groups has not been done. However, evaluations based on limited separate studies show that NSP had a partial impact on the growth of the children studied. For example, in the Western Cape,⁵⁰ 38% of undernourished children who were supplemented showed catch-up growth while in the Northern Cape,⁵¹ only 10% of children moved back into the normal percentile range after supplementation for a mean period of 8 months. The main constraints identified included lack of staff training; inadequate coverage and targeting of undernourished children; a high drop out rate; incorrect distribution of nutrition supplements; ineffective counselling of mothers and caregivers; and lack of integration with other nutrition programmes.⁵²⁻⁵⁴

Management of severe under-nutrition

In 2003, the Department of Health (DoH) developed guidelines on the management of severe under-nutrition based on WHO's 'Ten Steps' on the management of severely undernourished children. The implementation of the WHO guidelines was evaluated in the Mt. Frere District of the Eastern Cape.⁵⁵ Despite an initial positive outcome, the case fatality rate increased at one of the hospitals, which was linked to the high turnover of staff, errors in management and lack of supervision. Adding to this was the impact of HIV on an over burdened health system.

Prevention and management of over-nutrition

The DoH also focuses on the prevention and treatment of over-nutrition and nutrition-related chronic diseases. Eleven food-based dietary guidelines (FBDGs)^h were developed for the general public, targeting children above seven years and adults. The overall aim of the guidelines is to promote consumption of local foods that are high in nutrient density, affordable, accessible and culturally acceptable.

These guidelines were endorsed by the consortium in 2003 and have been consumer tested in various provinces.⁵⁶ Educational material including fact sheets, booklets and flip charts have been developed and made available for use in clinics to inform mothers and children in schools. A Working Group has also developed draft paediatric FBDGs for parents of infants and children below seven years, and consumer testing is currently underway.

GROWTH MONITORING AND PROMOTION

Guidelines and training materials have been developed on growth monitoring and promotion (GMP)ⁱ nationally. Provision of Road-to-Health Charts (RTHC) and training of health workers are essential in ensuring effective GMP. In 1998, 74.6% of children aged 12-13 months had a RTHC and the target is to increase this to 85% by 2007.⁴⁹

Few studies have assessed GMP practices of primary health care (PHC) nurses. A study⁵⁷ done at a PHC clinic in a peri-urban area of the Western Cape showed that PHC nurses missed children in need of nutrition intervention because of failure to plot weights on the RTHC. The study highlights the need to improve GMP practices among PHC nurses, and to consider using other criteria to identify children nutritionally at-risk.

h The development of the guidelines is a joint initiative between the Nutrition Society, Association for Dietetics in South Africa, Industry, the Medical Research Council, academic institutions and DoH.

i Growth monitoring and promotion (GMP) includes the regular measurement and recording of weight, and action needed to improve growth.

g Former known as Protein Energy Malnutrition (PEM) Scheme.

NUTRITION PROMOTION, EDUCATION AND ADVOCACY

This relates to effective communication in improving knowledge, awareness and practices that could affect nutrition-related behavioural change among the public. It also includes creating nutrition awareness and advocacy for implementation of the INP among policy-makers. Educational and promotional material on breastfeeding, TB, HIV, micronutrients (vitamin and iodine), food fortification and FBDGs for adults have been developed by the National Nutrition Directorate. There are no data on the current status and targets for this focus area.

CONTROL OF MICRONUTRIENT DEFICIENCIES

Control of micronutrient deficiencies is through supplementation, dietary diversification and food fortification. The micronutrient deficiencies of public health significance are vitamin A, iron, zinc and iodine deficiency. High-dose vitamin A supplementation is being implemented nationally in children aged 6-60 months and in postpartum mothers within 6-8 weeks of delivery. Regulations for the mandatory fortification of all maize meal and wheat flour with vitamin A, thiamine, niacin, riboflavin, pyridoxine, folate, iron and zinc, came into effect in 2003 and compulsory iodization of salt in 1995. The targets set for vitamin A coverage is 95% for infants and postpartum mothers and 80% for children aged 1-5 years. The target is to reduce vitamin A deficiency from 33% to 19%, iron deficiency from 10% to 7.5% and iodine deficiency from 10.6% to 5%, by 2007 respectively.⁴⁹

Vitamin A Supplementation

The vitamin A coverage rates for the different provinces from April 2004 until March 2005 are shown in Figures 1 and 2. For children aged 6 to 11 months and 12 to 59 months, vitamin A supplementation coverage rates nationally were 72.8% and 13.9%, respectively.⁵⁸ The differences in vitamin A supplementation (VAS) coverage rates probably reflect the poor clinic attendance of children aged 2 years and above after completing the immunisation schedule.

A study conducted in the West Coast Winelands and Cape Metropole Regions of the Western Cape between April 2003 and October 2004⁵⁹ showed that only 34%

of the children who were eligible for VAS received it, despite the fact that 80% of staff had received training.

VAS coverage is low in all the provinces, especially for children aged 12-59 months. The study done in the Western Cape shows that mothers are not aware of the programme and the benefits of VAS for their children. Also, despite receiving training, health staff may still fail to provide vitamin A supplementation when indicated.

Iodine Deficiency

SA introduced compulsory iodization of table salt in 1995, increasing the level of iodine in salt from 10-20 mg/kg to 40-60 mg/kg at the site of production. Within one year the mean iodine content of table salt available in shops in three of the nine provinces had more than doubled.⁶⁰ The use of adequately iodized salt was found in 62.4% of households in a national survey. However, lower coverage rates were found in three of the rural provinces because of using cheaper non-iodized salt (agricultural salt and salt purchased directly from the producers).⁶¹ It is therefore important to ensure that a sustainable supply of adequately iodized salt is available to the poorer sector of the population. The leakage of non-iodized agricultural salt to low socio-economic households in rural provinces occurred mainly because it is exempt from mandatory fortification.

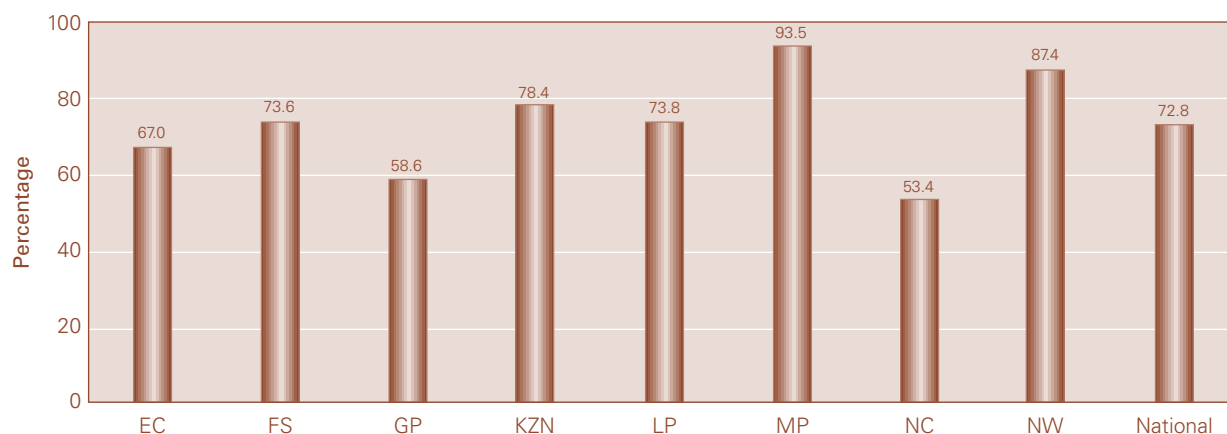
Food fortification

A monitoring framework has been set up for the national food fortification programme, the results of which are not yet available. However, a study⁶² in the North West Province evaluated the effectiveness of a vitamin-fortified maize meal in improving the nutritional status of 1-5 year old malnourished children.^j Despite the small sample size, the study showed that fortified maize meal could significantly improve the growth and micronutrient status of one to three year old children.

j Participants in this study were provided with free maize meal.

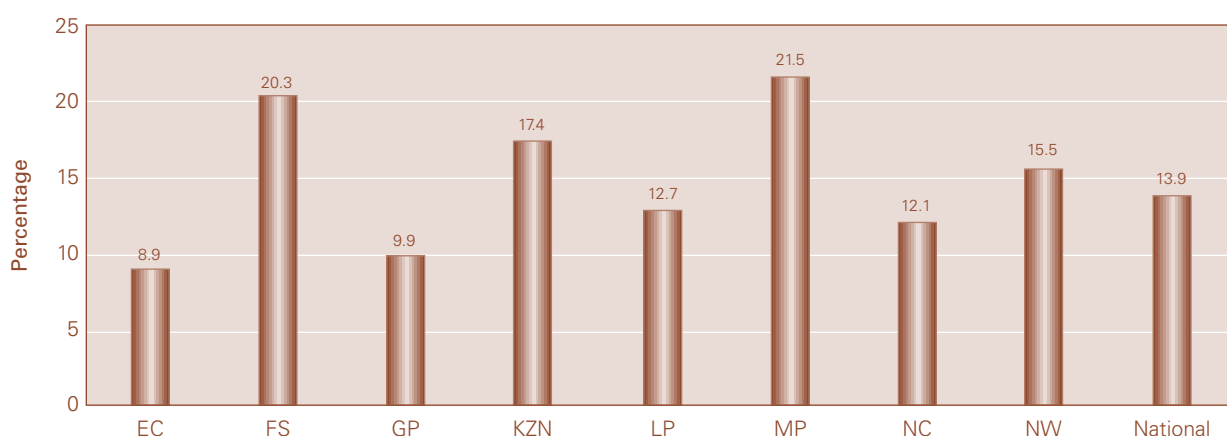


FIGURE 1:
Vitamin A coverage in children aged 6-11 months (April 2004-March 2005)



Source: Department of Health 2005.⁵⁸

FIGURE 2:
Vitamin A coverage in children aged 12-59 months (April 2004-March 2005)



Source: Department of Health 2005.⁵⁸

Note: No information is provided for the Western Cape as the Vitamin A supplementation programme targeted children with specific medical conditions (1999-2005) as opposed to the targeting of all children under-five years in the other provinces.

PROMOTION, PROTECTION AND SUPPORT OF BREASTFEEDING

The South African Demographic and Health Survey (SADHS) Preliminary Report (2003) indicates that, only 11.9 % of infants aged 0-4 months were exclusively breastfed and 20.1% were never breastfed.⁶³ To improve rates of breastfeeding a combination of strategies to promote, protect and support breastfeeding is needed.

Support for and Promotion of Breastfeeding

SA has adopted and implemented the Baby Friendly Hospital Initiative (BFHI) and health facilities are being transformed to comply with the Ten Steps to Successful Breastfeeding, which was launched in

1993.⁶⁴ These guidelines form the basis of the South African Breastfeeding Guidelines for Health Workers (2000).⁶⁵ The number of baby-friendly hospitals in SA was estimated to be 3 (1%) in 1995 and a target was set for 15% by 2007.

At the end 2005, 178 health facilities had been declared 'Baby Friendly'. This is 37% of the total health facilities in the country, thus the target of 15% for 2007 has been exceeded.⁶⁶

In addition, Breastfeeding Liaison Groups have been established in Gauteng, the Western Cape (Metropole Region), and the Eastern Cape provinces. These groups focus on promoting, supporting and protecting breastfeeding and membership is open to anyone with

an interest in breastfeeding, including health professionals (private and public sectors), lactation consultants, lay breastfeeding counsellors, and members of the lay public.

Protection of Breastfeeding

The WHO International Code of the Marketing of Breast milk Substitutes⁶⁷ was drafted by the World Health Assembly (WHA) because of inappropriate marketing of breast milk substitutes.⁶⁸ In 1986, SA adopted the WHO Code,⁶⁹ which is known as the South African Code of Ethics for the Marketing of Breast milk Substitutes (referred to as the South African Code). It is identical to the WHO Code, with the omission of Article 11, which deals with monitoring of the code. Protection of breastfeeding also relates to legislation on maternity leave and the establishment of crèches in or near the workplace.

To date, the South African Code has been implemented on a voluntary basis. At the time that the WHO and South African Codes were drafted, infant food companies agreed to comply with the principles of these codes. Despite this, compliance of companies has repeatedly been called into question and frequent violations of the code have been consistently reported internationally and in SA.⁷⁰⁻⁷³

The Protection of Maternity Benefits

The Maternity Protection Convention⁷⁴ (No. C183) and the Maternity Protection Recommendation,⁷⁵ of the International Labour Organization (ILO), provide recommendations for the protection of maternity benefits. These include maternity leave of more than 18 weeks with a minimum of six weeks compulsory leave after delivery; daily breaks or a reduction in work hours for breastfeeding mothers; establishment of facilities for nursing at the workplace; and payment of maternity leave benefits of not less than two-thirds of the salary. The Convention has not been fully adopted in SA and maternity benefits are legislated through the Basic Conditions of Employment Act, 1997. The latter includes: four months of maternity leave, and no work for six weeks after birth; prohibition of work hazardous to the health of the mother and alternative employment if the employee works at night or work poses a danger to the mother and her child's safety. Payment of maternity

benefits is under the amended Unemployment Insurance Act.⁷⁶ The Act provides for maternity benefits of a maximum of 60% of the applicants salary over the period of four months maternity leave. Linking maternity benefits to unemployment benefits is discriminatory to employed mothers as they are forced to use up their unemployment benefit. This discourages employed women from drawing maternity benefits, which in turn, negatively impacts on breastfeeding practices. The Act also makes no mention of the right of breastfeeding mothers to take nursing breaks when they return to work, or to have nursing facilities at the workplace.

CONTRIBUTION TO HOUSEHOLD FOOD SECURITY

The Integrated Food Security Strategy (IFSS) is a national strategy comprising all the food security programmes that aim to eradicate hunger, under-nutrition and food insecurity by 2015. The vision of the IFSS is to attain access to sufficient, safe and nutritious food for all South Africans at all times to meet their dietary and food preferences for an active and healthy lifestyle. The objectives of the IFSS are to:

- ◆ Increase household food production;
- ◆ Improve income generation, food safety, safety nets and emergency food management systems and information management systems; and
- ◆ Ensure capacity development; and stakeholder dialogue.⁷⁷

Household food security activities linked to the INP include:

- ◆ Education and promotion of school gardens and micronutrient-rich foods;
- ◆ Advocacy for the use of appropriate methods of food production and exemption of certain foods from value added tax (VAT);
- ◆ Nutrition guidelines for sectors caring for children e.g. crèches, HIV orphans;
- ◆ Provision of food to Early Childhood Development Centres;
- ◆ Establishment of day care centres linked to income generating activities for women's groups;
- ◆ Subsistence and commercial food production; and
- ◆ School feeding programmes.⁴⁹



The National School Nutrition Programme (NSNP) was introduced in 1994. From 1995 until April 2004 school feeding was managed by the DoH with the assistance of the Department of Education (DoE). Since April 2004, the NSNP has been taken over by the DoE. The aims of the NSNP were to alleviate hunger and improve attention and performance of school learners. The NSNP is required to provide meals with an energy content of not less than 25% of the Recommended Daily Allowance (RDA) to children aged 7-10 years and not less than 20% of the RDA to children aged 11-14 years. Priority is given to schools in poorest geographical areas (i.e. rural, farming and peri-urban schools). Targets for 2007 have been set in reaching 100% of targeted schools; to cover 100% of the actual school feeding days, and to achieve 100% compliance with the menu specifications.⁴⁹

Evaluations have found that school feeding improved the attentiveness, attendance and contributed to improving household food security of learners.⁷⁸⁻⁸⁰

Brand⁸¹ reported that the programme had been successfully implemented reaching 85% of all primary schools in 2001/02. Based on data trend, it was suggested that programme targeting had become more precise with more effective delivery of the NSNP to children identified as being in need. This also indicated a more cost-effective implementation of the programme. This was not in keeping with the assessment of the South African Human Rights Commission, which found that there was a reduction in the number of children benefiting from the NSNP.⁸² In 2003/04 the NSNP had reached 95% of the targeted schools and learners, which is within reach of the targets set for 2007. Ongoing monitoring and evaluation have indicated critical challenges to implementing the NSNP in an effective and efficient manner (Table 3).^{78,79}

The DoE has set the following targets for implementation of the NSNP in 2005/06:

- ◆ To reach 5 million learners at 15 000 poverty stricken schools;
- ◆ To improve coverage of planned feeding days to a minimum of 156 in all 9 provinces; and
- ◆ To comply 100% with nutritional criteria for school feeding.⁸³

The Integrated Sustainable Rural Development Programme (ISRDP) was started in 2001 as a presidential project aimed at improving rural development. The essential elements include rural economic development; sustainability through community participation and ownership; integration of efforts at a local level; and rural safety nets (social programmes). The main objectives are poverty alleviation, sustainable development, planning, budgeting and delivery of programmes and demonstration of a vision for local government development. Thirteen nodal sites (economic hubs) are being developed across the different provinces. These nodes have initiated different income generating activities including small scale agricultural and cattle-breeding, HIV orphan support and housing and sanitation projects. The main stakeholders include the community, national and local government, NGOs and the private sector.⁸⁴ The impact of the ISRDP has not yet been evaluated.

NUTRITION INTERVENTIONS FOR CHILDREN WITH HIV

Recent published guidelines for managing paediatric HIV infection in SA include a recommendation that food supplementation should be given to children whose weight is consistently below the 3rd percentile. Furthermore, specific food supplements (Philani Zymmune^k) are distributed at antiretroviral treatment sites to undernourished children and those at risk for under-nutrition.⁸⁵

Other guidelines for HIV-infected children include macro-and micronutrient supplementation and the WHO guidelines for the management of children with severe under-nutrition.⁸⁶⁻⁸⁸

Micronutrient supplementation

Randomised trials with high-dose vitamin A supplementation have resulted in reduced mortality and morbidity in HIV-infected children.^{89,90} A recent randomised trial showed that daily zinc supplementation in HIV-infected children was associated with reduced morbidity from diarrhoea.⁹¹ Another local study supports the routine use of zinc supplementation together with a standard multivitamin preparation. In that study children who received zinc

k Philani Zymmune: lactose, gluten free, enzymatically modified maize meal that is fortified with micronutrients and antioxidants.

plus multivitamins experienced fewer episodes of hospitalisation and diarrhoea compared to those who only received multivitamin supplements.²⁴ Beyond these studies there is no conclusive evidence that other micronutrient supplements reduce morbidity and mortality.⁹²

Antiretroviral therapy

Antiretroviral (ARV) therapy independently exerts a favourable effect on growth and body composition in HIV-infected children. Recovery from wasting and underweight precedes catch-up growth^{93,94} as illustrated by the results of a recent analysis of children receiving ARV therapy at Red Cross Children's Hospital (Table 4).

TABLE 4:
Changes in growth in HIV-infected children < 15 years after 1 year of antiretroviral therapy

Parameter	Total Number	Baseline assessment		1 year	
		Number	(%)	Number	(%)
Wasting	254	52	20.5	6	2.4
Underweight	266	149	56.0	51	18.2
Stunting	264	178	67.4	123	46.6

Source: Eley et al., 2006.⁹⁵

Shortly after the introduction of antiretroviral therapy the lipodystrophy syndrome characterised by insulin resistance, lipid abnormalities and fat redistribution, develops. This has been described in adults and subsequently in children. Prevalence of this syndrome in children ranges from 1-43% although its extent in African children is not known. Isolated lipid abnormalities have also been described in children. Regimens containing protease inhibitors, one of the major antiretroviral classes, have been implicated, but it is likely that fat maldistribution may occur with non-protease-inhibitor containing regimens.^{87,95} Attention should therefore be given to the quality of diets of HIV-infected children. Several nutritional interventions have not been adequately evaluated in HIV-infected children including food supplementation and determination of the recommended daily allowances of macronutrients and micronutrients for children on antiretroviral therapy. Furthermore, it is not clear whether the

lipodystrophy syndrome in children on antiretroviral therapy can be prevented or modified using specific dietary interventions. A recent study evaluated the role of home based care for severe under-nutrition using a ready-to-use therapeutic food (RTUF). This study showed that the intervention was highly successful.⁹⁶ A similar approach is required to determine the effectiveness of dietary and nutritional interventions in SA to ensure optimal utilisation of resources.

With respect to children affected by HIV, the Department of Social Development has initiated the 'Orphans and Vulnerable Children (OVC) Programme.' Programme activities include identification of vulnerable children and basic food provision. At the end of 2005 more than 120 000 (19%) orphans were receiving support.⁹⁷

SOCIAL ASSISTANCE

A study which looked at the social and economic impact of the various social grants⁹⁸ (Table 3) found that social grants were associated with:

- ◆ More resources to finance education for children;
- ◆ A greater share of household expenditure on food and less hunger;
- ◆ Less expenditure on health;
- ◆ Greater household access to piped water;
- ◆ Providing potential participants with resources to invest in job searches;
- ◆ Higher employment success rates; and
- ◆ Improved worker productivity.

Social grants therefore had a number of positive spin-offs for poor households. There has been a progressive take-up of social grants. In March 2006, an estimated 7.1 million children (80%) eligible for the child support grant (CSG) had access to it. Similarly there has been an increase in the take-up between April 2004 and March 2006 in the Foster Child Grant and the Care Dependency Grant by 57% and 15%, respectively.⁹⁹ Problems relating to the extension of the CSG¹⁰⁰ that need to be remedied are outlined in Table 3.



POLICIES AND PROGRAMMES RELATED TO NUTRITION

Following the increase in price of basic foodstuffs in 2002, government responded by increasing the availability of social assistance grants and directly providing food parcels and agricultural starter packs. As a medium to long-term measure other strategies were introduced including lowering of tariffs within SADC as an incentive to food production; support for cooperative milling among local communities; establishment of a food pricing committee to monitor food production, supply and pricing. Government has also set aside money specifically for food relief. At the end of October 2002, R400 million was set aside for the following three years for food relief.¹ A further R800 million was allocated for continuation of the programme through 2004 and 2005.¹⁰¹

CONCLUSION

WHAT ARE THE POSITIVE OUTCOMES OF THE INP?

Despite many setbacks, progress has been made with certain focus areas of the INP including:

- ◆ Implementation of the Baby-Friendly Hospital Initiative. Thirty-seven per cent (37%) of the health facilities have already been declared baby-friendly compared with a target of 15% set for 2007. However, it still needs to be seen whether this will translate into higher rates of exclusive breastfeeding during the first six months of the infant's life.
- ◆ Implementation of the legislation relating to the mandatory fortification of maize meal and wheat flour with multiple micronutrients and the iodization of salt. In the long-term these policy measures could reduce micronutrient deficiencies. Of concern is the low vitamin A coverage of children in all the provinces, especially those aged 12-59 months. This is far below the target of 80% coverage that has been set by the DoH for 2007.⁴⁹

- ◆ Increased availability of RTHC to 85% of children aged 12-24 months, where a coverage rate of 75% was achieved in 1998. However, this increase does not necessarily translate into effective GMP (Table 3).
- ◆ In terms of alleviation of short-term hunger, 96% of schools targeted were reached in 2000 and 85% of the actual school days were covered. However, in none of the provinces was there compliance with the menu options, a key factor in the effective implementation of the programme.

RECOMMENDATIONS

Improving the outcome of nutrition interventions for children should address inadequacies within the health system as well as those relating to the specific focus areas of the INP.

IMPROVING HEALTH AND NUTRITION-RELATED INTERVENTIONS

- ◆ Adequate numbers of health care workers are needed so that preventive and promotive interventions; e.g. breastfeeding and nutrition counselling and GMP are not compromised;
- ◆ Ongoing skills development and training must be implemented particularly with respect to VAS, GMP and the management of children with under-nutrition;
- ◆ Continued funding and strengthening of programmes that are linked to improvements in nutrition such as IMCI, PMTCT and Direct Observed Treatment, Short-Course (DOTS) for tuberculosis is needed;
- ◆ Prioritisation and targeting of resources to poor areas in SA where the need for intervention is greatest must be ensured; e.g. increasing coverage of social grants in the rural provinces;
- ◆ Accountability must be taken at different levels for the various health and nutrition-related outputs.
- ◆ Work-related problems confronting health workers need to be resolved as a matter of urgency; e.g. remuneration differentials between health and other professionals; and

¹ R170 million was for food aid to southern African countries, while R230 million was used for food parcels and agricultural starter packs once a month for three months for 240 000 poor households in SA who had no income or spent a maximum of R200 per month on food.

- ◆ Nutrition promotion must be provided through community health programmes; e.g. community IMCI and social marketing of programmes; e.g. vitamin A supplementation.

IMPROVING THE SPECIFIC FOCUS AREAS OF THE INP

Communities must be made aware of the benefits of vitamin A in improving growth and survival and reducing morbidity so that a demand for VAS is created. VAS should target preschools and be linked to community IMCI. Other categories of health personnel, e.g. nursing assistants and community health workers, must be trained and allowed to administer vitamin A. The supply of vitamin A should be monitored and problems identified in relation to shortages addressed at the appropriate level.

Advocacy to industry is needed to iodize agricultural and coarse salt so that vulnerable sectors of the population are adequately covered.

The South African Code needs to be fully legislated. This together with other strategies aimed at promoting, supporting and protecting breastfeeding, will contribute to improved breastfeeding rates, and ultimately to improving infant and child health in SA.

Provisions of the Maternity Protection Convention and recommendations need to be adopted to protect working mothers who need to breastfeed. This could improve economic gains and reduce unnecessary health costs by optimising the health of the infants in the first year of life. Hygienic facilities for nursing mothers as well as support for breastfeeding in the workplace are cost-effective investments which could increase employee morale, minimise absenteeism and reduce turnover.

It is imperative that adequate time and resources are dedicated to the promotion of breastfeeding as an important strategy in improving breastfeeding rates and practices.

Monitoring the impact of GMP should also include periodic evaluation of related practices at PHC facilities.

The extent of under-nutrition and micronutrient deficiencies among HIV-infected children, as well as those affected by the disease, should be established so

that appropriate interventions can be put in place. In children affected by HIV attempts should be made to determine the extent and appropriateness of the OVC programme with the aim of optimising and strengthening the nutritional and social support for HIV orphans.

In addressing the problem of overnutrition, implementation of food-based dietary guidelines must target different levels e.g. family, school, health sector, government, industry and the media. Policies aimed at regulating the food market must be implemented to reduce the susceptibility of children to the unhealthy consumption of high fat foods and soft drinks.

In HIV-infected children further research is needed to:

- ◆ Evaluate the effectiveness of food supplementation administered through the INP;
- ◆ Determine the optimal daily recommended allowances for infected children prior to and during antiretroviral therapy;
- ◆ Investigate the role of micronutrients other than vitamin A and zinc in infected children; and
- ◆ Determine whether specific dietary recommendations can prevent or modify lipid disorders and or lipodystrophysyndrome during antiretroviral therapy.

There should be regular ongoing monitoring and evaluation of all the focus areas of the INP. It is important that health workers and managers are kept informed of progress in relation to the nutrition goals and targets. The problems identified should be addressed at the various levels so that the interventions can be strengthened and the targets reached.



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