Promoting healthy growth: Strengthening nutritional support for mothers, infants and children

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The first 1,000 days[i] offers a critical window of opportunity to address the nutritional needs of children and enable them to grow into healthy productive adults.[1] After this time, the effects of undernutrition may be irreversible. It is estimated that, in developing countries, 200 million children fail to realise their developmental potential because of poverty, poor health and nutrition, and lack of care.[2] Investing in nutrition interventions in early childhood can enhance cognitive function, schooling outcomes and economic productivity later in adulthood.[3] Nutrition interventions should therefore be seen as a critical component of an essential package of early childhood development (ECD) services and support (see the essay on pages 26 – 33).

This essay seeks to answer the following questions:

- What key factors place young children at risk of malnutrition?
- What is needed to support children's optimal growth and nutrition?
- How can we improve the reach and quality of nutrition services for young children?
- What interventions are critical in the short and long term?

What key factors place young children at risk of malnutrition?

Undernutrition is a leading cause of child morbidity and mortality in Sub-Saharan Africa.[4] In South Africa, malnutrition is associated with more than 60% of all child deaths in hospitals.[5] The recent South African Health and Nutrition Examination Survey (SANHANES-1),[6] which included children aged 0 – 14 years, showed that 15.4% of children were stunted and 5.4% were underweight[ii]. This suggests a decrease in the overall rates of stunting and underweight compared to 2005.[7] High rates of stunting were especially prevalent in children aged 0 – 3 years (26.9% for boys and 25.9% for girls. There were also high rates of overweight and obesity (16.5% and 7.1% for girls compared to 11.5% and 4.7% for boys respectively).

There are also high levels of micronutrient deficiencies. The national prevalence of vitamin A deficiency (VAD) was 43.6%, with all the provinces having a significant public health problem of VAD. Of the children sampled, 10.5% were anaemic, 11% were iron deficient and 2.1% had iron deficiency anaemia. High levels of deficiency in other critical micronutrients reported in the 2005 survey included zinc (45%) and iodine deficiency (15%).

Immediate and underlying causes of malnutrition

The immediate determinants of malnutrition in childhood include inadequate food intake and illness. For example, diarrhoea is a leading cause of death in young children and is strongly associated with stunting, with the odds of stunting increasing with each episode of diarrhoea in the first two years of life.[8]

Lack of access to food and micronutrients (eg iron) and exposure to infection such as HIV/AIDS during pregnancy can result in maternal undernutrition and low birth weight, which in turn contribute to underweight and stunting in children.[9] Iron deficiency anaemia in the mother can also impact on the mother's emotional and cognitive functioning, on mother–child interaction and on the baby's development.[10]

The underlying determinants of malnutrition in childhood include food insecurity, inadequate maternal care, insufficient health services and an unhealthy environment. The SANHANES – 1 survey found that 45.1% of households nationally were food secure with 28.3% at risk of hunger and 26% experiencing hunger.[11] Severe acute malnutrition in children younger than 12 months is increasing in South Africa,[12] which points to poor infant feeding practices, most notably inadequate or no breastfeeding, the early introduction of other fluids and food before the age of six months, and inappropriate diets for older children.[13]

Overweight and obesity

The prevalence of overweight and obesity in children under five is increasing globally and child overweight is an important contributor to obesity, diabetes and other chronic diseases in adulthood.[14] Maternal overweight and obesity during pregnancy increase the risk for childhood obesity,[15] while breastfeeding protects children from overweight and obesity[16].

Consequences for child development

Childhood malnutrition is associated with poor developmental outcomes. Studies show links between height-for-age and cognitive or language ability at five years, school enrolment, and grades attained by late adolescence. Long-term outcomes associated with stunting include reduced formal employment at 20 – 22 years and poor psychological functioning.[17]

Micronutrients are also critical for children's development. For example, iron deficiency anaemia in infancy and the preschool

i Pregnancy and the first two years of life.
ii Underweight (low weight-for-age), stunting (low height-for-age) and wasting (low weight-for-height) are based on cut-offs of < - 2 standard deviations from the norm. Underweight reflects acute and chronic malnutrition; stunting points to chronic malnutrition; and wasting is the result of acute malnutrition.

period is associated with poor cognitive, motor, and social–emotional development.[18] Iodine deficiency during pregnancy impairs growth, motor and mental development of the foetus and could even lead to reduced intelligence quotient (IQ) when there is a chronic deficiency in the population.[19]

National policy context

A 2012 Save the Children global report noted that South Africa was not making sufficient progress towards Millennium Development Goal 4,[iii] and identified a lack of political commitment to reducing malnutrition as the main reason for South Africa's underperformance. Examples of underperformance included: only 60% of babies were put to the breast within an hour of birth, 8% were exclusively breastfed, 70% were introduced to complementary feeds between six and nine months, and 50% were breastfed until two years.[20]

The National Development Plan (NDP) places important emphasis on nutrition for pregnant women and young children. The Department of Health has also put in place a range of policies and programmes to address malnutrition:

- A dedicated Nutrition Directorate and an Integrated Nutrition Programme;
- A Roadmap for Nutrition in South Africa 2013 – 2017;
- The Tshwane Declaration of Support for Breastfeeding in South Africa (promoting exclusive breastfeeding regardless of the mother's HIV status);
- The Strategic Plan for Maternal, Newborn, Child and Women's Health and Nutrition in South Africa 2012 – 2016;
- The launch of the global Campaign for Accelerated Reduction of Maternal and Child Mortality in Africa;
- The revision of the guidelines on the prevention of mother-to-child transmission (PMTCT) to allow all HIV-positive women to continue breastfeeding their infants up to 12 months of age.

While the recent SANHANES-1 survey provides updated information against which to measure progress, the absence of robust monitoring and evaluation systems makes it difficult to assess on-going progress.[21] It is anticipated that the diagnostic review on nutrition for children under five years undertaken by the Department of Health and the Department of Planning, Monitoring and Evaluation in the Presidency will shed light on the current challenges and opportunities. The results are expected in October 2013.

What is needed to support children's optimal growth and nutrition?

There is strong evidence that proven interventions have a positive impact on maternal and child undernutrition.[22] Intervention during the first 1,000 days is crucial, and a curative rather than preventive approach to malnutrition is less successful as it intervenes too late. Studies describing the scaling up of critical and effective early interventions demonstrated high cost effectiveness, with high returns in cognitive development, individual earnings and economic growth.[23]

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Vegetable gardens help make nutritious food available to families and children.

There are currently six nutrition interventions which could save lives and prevent malnutrition and stunting in children: breastfeeding, complementary feeding, folate and iron, vitamin A, zinc and hygiene. These interventions should be linked to a broad range of services to promote or support the development of young children and respond to their multiple needs (see the essay on pp. 26 – 33 for a detailed discussion of these services). These interventions, discussed below, can be delivered at less than $20[iv] per child during the first 1,000 days.[24]

Breastfeeding

Significant protective effects can be achieved with exclusive breastfeeding in the first six months, the introduction of complementary feeding at six months, and continued breastfeeding until two years. Breastfed babies are more likely to survive and to have higher IQ scores and school grades than non-breastfed babies.[25]

iii MDG 4 requires a two-thirds reduction in under-five mortality between 1990 and 2015.
iv This amount is the equivalent of R207 as at August 2013.

Complementary feeding

Frequent, complementary feeds (five small meals are recommended) of locally available foods adequate in nutrients and micronutrients and safely prepared could decrease stunting by 20% at 12 months.[26] Optimal feeding from birth to two years can prevent 19% of all under-five deaths, which is more than any other intervention.[27] Food supplements to promote better growth benefit reading, comprehension and reasoning when given from birth to 24 months.[28]

Micronutrients

Zinc supplementation with oral rehydration solution reduces diarrhoea incidence, severity and duration.[29] A course of zinc treatment for diarrhoea costs about R2.20 (22 cents a tablet). Similarly, vitamin A can reduce child deaths by 23% at a cost of 20 cents per child a year for two capsules. Supplementation with multiple micronutrients improves motor development in children, while fortifying feeds with iron improves IQ.[30]

Hygiene

Poor access to safe water and sanitation exposes children to the risk of diarrhoea and dysentery. Hand washing with soap and water is one of the most inexpensive ways of preventing diarrhoea and lower respiratory tract infections. There is evidence to show that hand washing and hygiene can reduce the risk of diarrhoea by 30%.[31]

Maternal health, nutrition and well-being

Another critical area for intervention is ensuring adequate nutrition for mothers during the antenatal and postnatal period to meet their babies' nutritional and development needs. Inadequate nutrition in pregnancy impacts on maternal health, results in foetal growth restriction, and contributes to neonatal deaths[v] and higher rates of stunting in the children who survive.[32]

The emotional well-being of mothers is a key ingredient, since depressed mothers are likely to be less engaged with and responsive to the needs of their children, who may then become malnourished.[33] Programmes that use mother-to-mother support and home visits can enhance maternal well-being and improve children's nutritional outcomes. It is essential that ECD services integrate stimulation for early learning, nutrition and maternal psycho-social support as these interventions all impact on children's growth and development.

How can we improve the reach and quality of nutrition services for young children?

South Africa's "Nutrition Roadmap"[34] incorporates these six key interventions and emphasises adequate nutrition during the first 1,000 days (see table 5 on p. 48). It also proposes integrating the key nutrition interventions into existing policies and programmes and making use of a variety of delivery platforms including home visits, community-based services, health facilities and population-based services.[vi]

It is essential that programmes address co-occurring risk factors (such as poverty, stunting and lack of stimulation) by linking stimulation for early learning with nutrition interventions to optimise growth.[35] Improved access to social security (such as the Child Support Grant) and parental education and support programmes are other necessary components for improving children's nutrition and development (see the essay on pp. 56 – 61).

ECD centres

Incorporating key nutrition interventions into formal ECD centres could enhance young children's nutritional and developmental outcomes. These interventions include: growth monitoring and promotion; nutrition counselling for caregivers and centre managers using the Food-Based Dietary Guidelines (FBDG);[vii] vitamin A supplementation; deworming; modelling hygienic practices; and food security measures such as menu planning, providing nutritious meals, and establishing food gardens. Community health workers can now dispense vitamin A capsules, a service which could easily be integrated into ECD centres.

Therefore, the development of nutritional support materials and training of ECD workers are necessary. For example, the nutritional needs of children attending ECD centres in the Western Cape are being met by training ECD workers in meal preparation, developing a manual of affordable and nutritious meals, and establishing food gardens for meals and income generation. These activities can be replicated in other settings.

ECD centres provide a useful mechanism for the delivery of nutrition support to older children, as attendance is poor amongst 0 – 3-year-olds and amongst children in poor communities.[36] Hence, it is vital that nutrition services are provided through home visits by community health workers (CHWs), community-based services and parent support groups, focusing on the poorest communities.

Home- and community-based services

Primary health care (PHC) re-engineering aims to strengthen the health care system by establishing district specialist teams, community-based outreach teams and school health teams with a strong focus on maternal and child health. Community-based outreach teams could bridge the gap between health facilities and households and improve access to nutrition services for young children.[37] The district paediatrician is in an ideal position to coordinate the inclusion of nutrition across a range of services, and a dietician should be included in the district specialist team. CHWs have successfully implemented key nutrition interventions in Vietnam, Cambodia and Nepal. For example, stunting in Vietnam was reduced by 60% over two decades through screening for malnutrition, treating diarrhoea, and providing counselling about infant feeding and hygiene.[38]

v Neonatal deaths are deaths within 28 days of life.
vi For example, mass media campaigns on the value of breastfeeding.
vii The Department of Health's 2004 document, *South African Guidelines for Healthy Eating,* provides guidance on the appropriate content of meals to support adequate nutrition.

Community-based nutrition interventions can be delivered through:

- structured home visits starting within three days of birth;
- breastfeeding and other support groups;
- outreach from PHC clinics;
- child health-focused days or weeks to increase coverage of interventions such as vitamin A and deworming; and
- support to ECD centres.[39]

Some of these community services could include the key nutrition interventions to prevent malnutrition; assess children for malnutrition; treat common childhood conditions; and offer counselling and support for caregivers. CHWs, who are often from the community, understand local culture, practices and beliefs, and are thus in an ideal position to implement effective health care (see case 4 below).

If CHWs are to become frontline nutrition workers, they will need adequate support, training and remuneration. While CHWs now administer vitamin A, their scope of practice will need to be widened so they can administer other micronutrients (eg iron, folate and zinc) and treat common childhood conditions.

Health facilities

It is recommended that PHC facilities focus on improving the quality of health care by:

- scaling up existing programmes such as the integrated management of childhood illness (IMCI) and basic antenatal care (BANC), and incorporating nutrition-related interventions;[40]
- linking nutrition assessments with nutrition counselling messages;
- strengthening implementation of nutrition guidelines;
- providing assessment support and care for those with HIV or tuberculosis, especially as these conditions contribute to malnutrition;
- developing supervision tools; and
- strengthening linkages between facility- and community-based nutrition services to ensure that children with health and nutrition problems are referred to health facilities and those who are malnourished or at-risk are accessing an ECD service.

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Preparing lunch for young children at Jujurha preschool.

Schools

Schools provide an ideal site to reach older children and the National School Nutrition Programme provides meals to school-going children in the poorest quintiles. Schools also have the potential to promote good nutrition by incorporating the Food-Based Dietary Guidelines into the foundation phase curriculum.[41]

What interventions are critical in the short and long term?

This section identifies short- and long-term interventions that, if implemented at scale, are likely to prevent and manage childhood malnutrition. Table 5 on the next page illustrates key interventions in the short term, and potential delivery platforms.

Case 4: Mentor mothers reach into vulnerable homes
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The Yakhumndeni Mentor Mother Project operates in 11 neighbourhoods in the Endumeni local municipality in KwaZulu-Natal. Nineteen mentor mothers, trained by the Philani Child Health and Nutrition Project, do house-to-house and follow-up visits, where their brief is to *screen, refer, support, monitor* and *advise*.

The mentor mothers screen expectant mothers and malnourished young children within neighbourhoods regarded as vulnerable. They are equipped with precision medical scales, mid-upper arm circumference tape measures, cord care and rehydration kits. Caregivers and expectant mothers are advised about nutrition and how to access local services and resources. Detailed case folders are maintained for families and case details are communicated by sms to the project office where a registrar captures the data.

Linkages are maintained with government via the local project leader who participates in the Endumeni Local Task Team for Operation *Sukuma Sakhe* – the provincial "war on poverty". There is a detailed escalation process that monitors and documents actions by the clients and government services to ensure maximum benefit for vulnerable women and children.

For more information, see www.siyabhabhatrust.org.za.

Table 5: Nutrition interventions and multisectoral approaches to ECD services in South Africa

Life cycle		Evidence-based interventions	Delivery platforms	Existing programmes
First 1,000 days	Pregnancy	• Preconception care • Identification of malnutrition in pregnancy and prevention of low birth weight • Micronutrient supplements (iron, folate and calcium) • Iodised salt • Deworming • Reduction of air pollution and smoking • Prevention and treatment of malaria • Optimal weight management	• Basic antenatal care at primary health care clinics and hospitals • Community-based services	• Prevention of mother-to-child transmission • Mother and Baby-Friendly Hospital Initiative • Basic antenatal care • Infant and young child feeding
	Birth	• Immediate and exclusive breastfeeding • Delayed cord clamping (increase newborn's iron stores) • Access to the Child Support Grant	• Maternity units • Hospitals • Community-based services	• Mother and Baby-Friendly Hospital Initiative • Primary health care
	0 – 6 months	• Exclusive breastfeeding • Promotion of hand washing and hygiene • Management of infectious diseases eg diarrhoea, pneumonia • Treatment of moderate and severe acute malnutrition • Access to the Child Support Grant	• Primary health care clinics and hospitals	• Mother and Baby-Friendly Hospital Initiative • Primary health care, including Road-to-Health booklet
	6 – 24 months	• Continued breastfeeding • Complementary feeding • Micronutrient supplements (vitamin A, iron and zinc) • Food fortification and iodised salt • Promotion of hand washing and hygiene • Zinc supplementation for diarrhoea • Deworming • Growth monitoring and promotion • Prevention and treatment of moderate malnutrition • Treatment of severe acute malnutrition • Targeted supplementary feeding • Access to the Child Support Grant	• Primary health care clinics and hospitals • Early childhood development facilities • Community-based services	• Child health primary health care package • Community-based programmes
Continued investment in nutrition 2 – 9 years	2 – 5 years	• Growth monitoring and promotion • Treatment of severe acute malnutrition • Food fortification and iodised salt • Micronutrient supplementation (vitamin A, iron and zinc) • Deworming • Hand washing and hygiene • Nutrition education on healthy diets and risks associated with poor diets • Access to the Child Support Grant	• Primary health care clinics and hospitals • Early childhood development facilities • Community-based services	• Primary health care
	5 – 9 years	• Health screening • Deworming • Food-Based Dietary Guidelines • Hand washing and hygiene • School feeding • Access to the Child Support Grant	• Primary health care facilities • Hospitals • Schools • Community-based services	• Child health primary health care package • School health • National School Nutrition Programme

Sources: Modified from: Department of Health (2012) *Roadmap for Nutrition in South Africa 2012 – 2016*. Pretoria; Save the Children (2012) *Nutrition in the First 1,000 Days: State of the World's Mothers*. Westport, USA: STC.

Long-term progress will require political commitment and leadership to address policy and implementation challenges to ensure that every child gets the best start in life. This includes:

- Making nutrition a national priority, ensuring adequate funding and setting realistic targets for progress.
- Establishing a functional district health system which incorporates the PHC re-engineering strategy and strengthens the PHC system at facility and community level.
- Implementing key nutrition interventions during the first 1,000 days and integrating them into existing programmes (see table 5) by using multisectoral approaches that are sustainable and implemented at all levels.
- Strengthening inter-sectoral coordination and integrated service delivery by establishing a national task team which includes civil society and the Departments of Health, Education and Social Development.
- Targeting children living in poor communities and those with disabilities who are at risk of malnutrition.
- Ensuring the availability and equitable distribution of PHC workers, including CHWs who are trained and have the resources to implement nutrition interventions.
- Ensuring on-going monitoring and evaluation of a core set of nutrition indicators to track progress and inform decision-making at district level.
- Creating and building enabling environments in the community to support nutrition interventions and programmes to enhance growth and development.

Conclusion

Current nutrition policy in South Africa supports the prevention and management of malnutrition in early childhood and places a special focus on the first 1,000 days. There are six key nutrition interventions that can be implemented in the short term and linked to ECD services. However critical challenges within the health care system need to be addressed as a matter of urgency in order to achieve positive nutritional and developmental outcomes for children. This requires a shift from producing state-of-the art policies to action and effective policy implementation.

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