Child nutrition

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Section 28(1)(c) of the Constitution of South Africa gives children the right to basic nutrition.[1]

Article 14(1) of the African Charter on the Rights and Welfare of the Child states that "every child shall have the right to enjoy the best attainable state of physical, mental and spiritual health", and article 14(2)(c) says that State Parties shall take measures "to ensure the provision of adequate nutrition…".[2]

Article 24 of the UN Convention on the Rights of a Child says that State Parties should recognise "the right of the child to the enjoyment of the highest attainable standard of health" and obliges the State to take measures "to combat disease and malnutrition… through, inter alia… the provision of adequate nutritious foods and clean drinking water…".[3]

Children living in households where there is reported child hunger

This indicator shows the number and proportion of children living in households where children are reported to go hungry "sometimes", "often" or "always" because there isn't enough food.

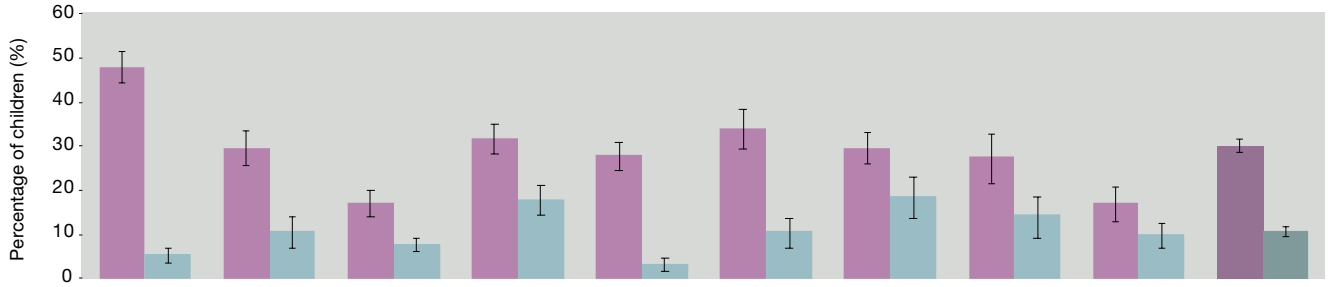
Section 28(1) (c) of the Bill of Rights in the Constitution gives every child the right to basic nutrition. The fulfilment of this right depends on children's access to sufficient food. There are a number of ways in which access to food can be monitored. At a global level, the Food and Agriculture Organization (FAO) regularly publishes estimates of the prevalence of undernourishment, which is defined as the percentage of a population without access to sufficient dietary energy needed for an active and healthy life.[4] South Africa's average undernourishment rate for the 2016 – 2018 period was calculated at 6%, an increase from an average of 4.4% that was reported for the 2002 – 2004 period. The relatively low rate of undernourishment in South Africa, compared to other countries in the region which have undernourishment rates above 20% (Botswana, Namibia and Eswatini), suggests that there is enough food to cater for the majority of the country's population. However, distribution and accessibility constraints, coupled with high rates of poverty and inequality, mean that a substantial proportion of the country's population is food insecure.

At the household level, one of the main indicators used to monitor food insecurity is reported hunger. Child hunger is emotive and subjective, and this is likely to undermine the reliability of estimates on the extent and frequency of reported hunger, but it is assumed that variation and reporting error will be reasonably consistent so that it is possible to monitor trends from year to year.

In 2018, 11% of children (2.1 million) lived in households that reported child hunger. More than a third of these children (36%) are from KwaZulu-Natal, while a fifth are from Gauteng. Child hunger rates in 2018 were 19 percentage points lower than they were in 2002 when 30% of children (5.5 million) lived in households that reported child hunger. The largest declines have been in the Eastern Cape, Limpopo and Mpumalanga. One of the main contributors to this decline is the expansion of the Child Support Grant which in 2018 covered over 12 million children.[5] Another is the National School Nutrition Programme, which by 2016/2017 reached over 9 million learners in approximately 20,000 schools[6, 7] (though only during term-time and excluding children who are too young to attend school).

Analysis of child hunger rates within provinces shows that child hunger rates are highest in the North West and KwaZulu-

Figure 4a: Children living in households with reported child hunger, 2002 & 2018



	EC	FS	GT	KZN	LP	MP	NW	NC	WC	**SA**
2002	48.0%	29.7%	17.1%	31.7%	27.9%	34.0%	29.7%	27.5%	17.1%	30.1%
	1,407,000	297,000	503,000	1,314,000	675,000	518,000	346,000	109,000	275,000	5,455,000
2018	5.4%	10.8%	7.8%	18.0%	3.4%	10.7%	18.8%	14.4%	10.0%	10.7%
	135,000	111,000	325,000	753,000	80,000	180,000	260,000	63,000	197,000	2,110,000

Source: Statistics South Africa (2003; 2019) *General Household Survey 2002; General Household Survey 2018.* Pretoria: Stats SA.
Analysis by Katharine Hall & Winnie Sambu, Children's Institute, UCT.

Natal provinces, affecting 19% and 18% of children living there respectively. The lowest hunger rates are in Limpopo and Eastern Cape provinces (3% and 5% respectively). Despite high poverty rates, Limpopo has always reported child hunger rates below the national average, perhaps because of its highly fertile and productive land in rural areas where most of the population lives. However, there is no clear explanation for the dramatic decline in reported hunger in the Eastern Cape. Over the period from 2002 – 2018, reported child hunger rates in that province fell from 48% (higher than any other province) to 5% (the second lowest). This is despite the fact that the Eastern Cape has the highest poverty rates in the country, with 48% of children living below the food poverty line.

There are no differences in reported child hunger across gender or age groups. However, there are significant differences across race; 12% of African children live in households that reported child hunger, compared to 7% of Coloured children and less than 1% of Indian and White children. Differences are even more pronounced across income quintiles. While 18% of children living in the poorest 20% of households experienced hunger, only one percent of children in quintile 5 (the richest 20%) lived in households that reported child hunger.

Children who suffer from hunger are at risk of various forms of malnutrition, including wasting, stunting, overweight and micronutrient deficiencies. It must be recognised that child hunger is a subjective indicator and does not capture other important aspects of food security such as dietary diversity and consumption of nutrient-dense foods, both of which are important for children's healthy growth especially in early childhood. Children may live in households that do not report hunger but may still not have access to sufficient nutritious food and are therefore at risk of malnutrition. In 2018, approximately 30% of children who lived in households that did not report child hunger were classified as living below the food poverty line, an indicator that their households lacked the financial resources needed to meet minimum dietary requirements for children and other household members.[8]

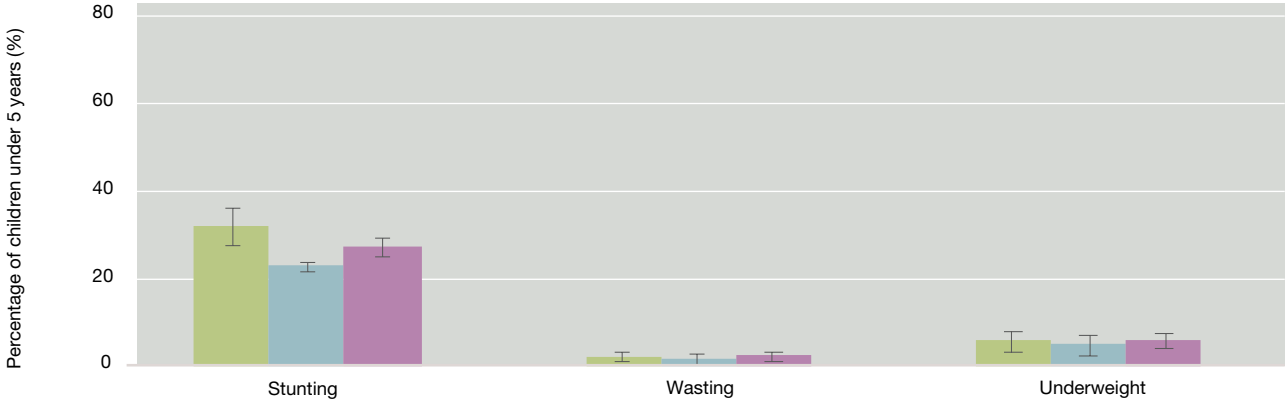
Undernutrition in children: stunting, wasting and underweight

Children who consume diets that are insufficient in energy and nutrients are at risk of undernutrition, which can manifest in the form of stunting, wasting, or underweight.

- **Stunting** occurs when a child's height-for-age is low compared to healthy children in the same reference population. Stunting is a chronic form of malnutrition that manifests over a relatively long period of time compared to other forms of malnutrition.
- **Wasting** is an acute form of malnutrition and is present when the child's weight-for-height is below the WHO reference point.
- **Underweight** is defined as low weight-for-age and occurs when child's weight-for-age is below the WHO reference point.

A child is classified as stunted, wasted or underweight if their height-for-age, weight-for-height, or weight-for-age scores respectively are more than two standard deviations below the globally accepted reference cut-off point as defined by the World Health Organization (WHO). Analysis of the 2016 South Africa Demographic and Health Survey (SADHS) shows that stunting is the most common manifestation of malnutrition in South Africa and affects 27% of children under five years old. Wasting and underweight rates for children under five are substantially lower, at 2.5% and 5.9% respectively. The prevalence of stunting is higher among young boys (30%), than girls (25%). Rural areas have significantly higher stunting rates (29%) than urban areas (26%). Provincial estimates show that stunting is highest in the

Figure 4b: Stunting, wasting and underweight, in children under five years, 2016



	Stunting	Wasting	Underweight
0 – 2 years	32.0%	2.3%	5.9%
3 – 4 years	22.9%	1.8%	5.1%
Under five	27.4%	2.5%	5.9%

Source: Department of Health, Statistics South Africa, South African Medical Research Council and ICF (2017) *South African Demographic & Health Survey 2016: Key Indicators.* Pretoria and Rockville, Maryland: DOH, Stats SA, SAMRC & ICF. Analysis by Winnie Sambu.

Free State and Gauteng (both at 34%), and lowest in Mpumalanga and Northern Cape provinces (both at 21%). However, it must be noted that the South African Demographic and Health Survey sample size is small and therefore the confidence intervals are wide when the data is disaggregated to lower levels, especially in provinces with small populations, like Northern Cape.

Maternal health is one of the most important predictors of child nutritional outcomes. Pregnant women who are undernourished are more likely to deliver babies with low birthweight who are in turn at risk of being stunted.[9, 10] Other maternal factors, such as education, can also affect a child's nutritional status in that mothers with higher education levels are more likely than those without to make informed decisions around feeding and may make more regular visits to health care facilities during and after pregnancy.[11] While 33% of children whose mothers do not have matric are stunted, the percentage among those whose mothers have at least a matric qualification is 17%.[12]

An important driver of stunting and other forms of malnutrition is the consumption of inadequate diets that are not sufficient in quantity and quality. In South Africa, only 23% of children aged 6 – 23 months were reported to have been fed a minimum acceptable diet that had minimum dietary diversity, meal frequency and appropriate milk feeds.[12]

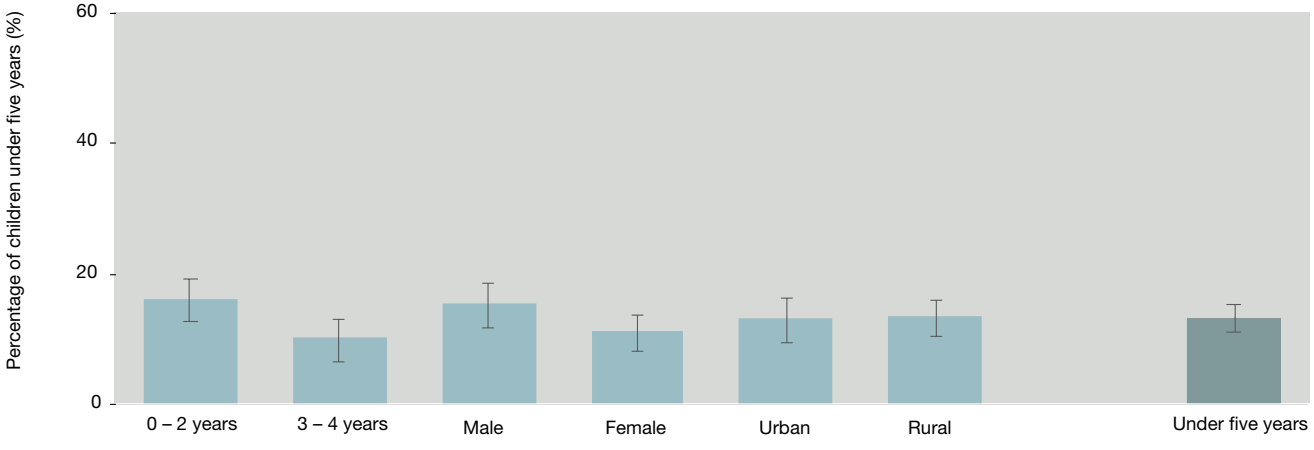
Poverty is the main underlying cause of undernutrition, leading to more direct causes of poor nutritional status. Hunger and low dietary diversity are more prevalent in poor households. Similarly, inadequate living conditions such as inadequate water and sanitation, are more common among poor households. These conditions can cause children to suffer from infections like diarrhoea and pneumonia, increasing the risk of them becoming wasted. If these infections occur frequently or become severe, they can result in more chronic forms of malnutrition.[9, 13] Under-five stunting rates are highest in the poorest wealth quintile (36%), and lowest in the richest quintile (13%).[12]

Undernutrition rates are higher among young children particularly those in the first 1,000 days of life. This is mainly because early childhood is a period of rapid growth and development and inadequate dietary intake can easily compromise this process. During this stage, children are also prone to illness due to poor feeding or exposure to poor living conditions in the home and environment. A third of children aged 0 – 2 years are stunted, compared to nearly a quarter for children aged 3 – 4 years.

Undernutrition increases the risk of infection in early childhood, which in turn compromises the child's health and increases healthcare costs for the child's household and government. Undernutrition is an underlying cause of mortality in children. An audit of hospital child deaths in South Africa found that 30% of infants (28 days – 1 year) and 42% of 1 – 5-year olds who died in 2012/13 were severely malnourished (suffering from Kwashiorkor, Marasmus, or Marasmic Kwashiorkor).[14] Of those who died from diarrhoeal causes, almost 40% were severely malnourished.[14]

Older children who are undernourished are more likely to be absent from school, and this compromises their learning. In addition, malnutrition is a risk factor for poor child development, with various studies showing associations between stunting and poor motor and cognitive development.[15-17] The effects of malnutrition also extend to adulthood, where productivity has been shown to be significantly affected.[18] It can be difficult for children who are stunted to recover, and for those who do, the negative effects experienced while stunted (such as poor cognitive development), may be irreversible.[11]

Figure 4c: Children under five years who are overweight or obese, 2016



	0 – 2 years	3 – 4 years	Male	Female	Urban	Rural	Under five years
2016	16.2%	10.2%	15.5%	11.1%	13.2%	13.5%	13.3%

Source: National Department of Health, Statistics South Africa, South African Medical Research Council and ICF (2017) *South Africa Demographic and Health Survey 2016: Key Indicators*. Pretoria and Rockville, Maryland: NDOH, Stats SA, SAMRC & ICF. Analysis by Winnie Sambu.

Overnutrition in children: overweight and obesity

Overnutrition occurs when there is an excessive intake of dietary energy. It manifests in two main forms: overweight and obesity. Children under five years old are defined as **overweight** when their weight-for-height is greater than two standard deviations above the WHO reference cut-off point. They are defined as **obese** when their weight-for-height is more than three standard deviations above the WHO Child Growth Standards. Among children older than five years, body mass index (BMI) is used to classify children into four categories: normal weight, thin, severely thin, overweight, and obese.

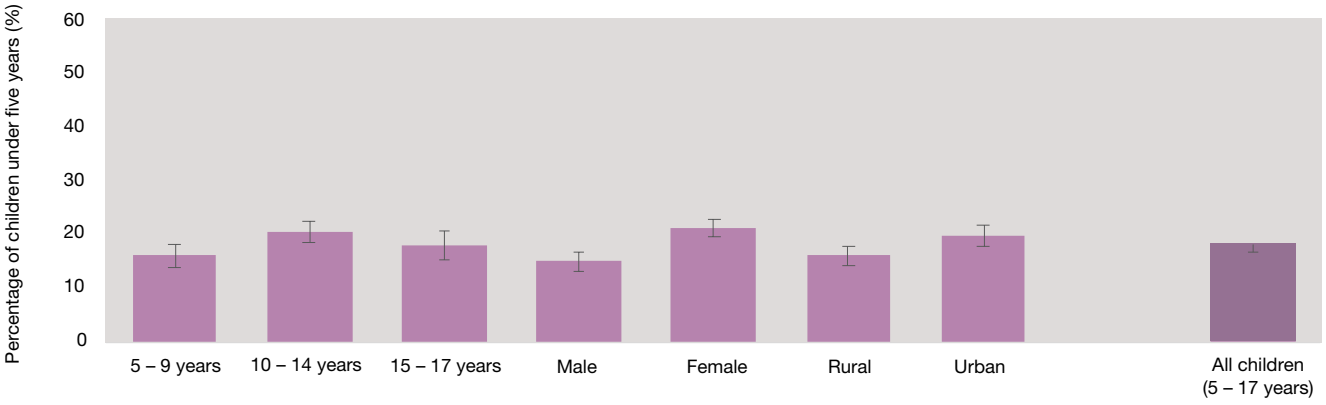
Overweight and obesity in early childhood increases the risk for adult obesity, as well as associated conditions like high cholesterol, diabetes and high blood pressure,[19, 20] All of these are conditions with rising prevalence in South Africa.

Consumption of high-calorie diets, including those that are rich in salt, sugar and fats, is a main cause of overweight and obesity among children and adults. This is in turn influenced by other factors such as household poverty coupled with the high cost of healthy foods. Another contributing factor is an increasingly sedentary lifestyle. Maternal feeding practices and cultural beliefs about ideal child weight have also been linked to overnutrition. In addition, the consumption of infant formula milk has been associated with childhood obesity because protein and energy intake are higher among infants who are formula-fed.[21, 22] Therefore, exclusive breastfeeding for the first six months of a baby's life is important as it protects against overweight and obesity in childhood, in addition to numerous other positive effects.[23]

Approximately 13% of South Africa's children under five years are overweight. Overnutrition rates are higher among young boys than girls (15% vs 11%). There are no significant differences in overnutrition rates across urban and rural areas. Compared to estimates from the 2008 National Income Dynamics Survey,[24] overweight rates have remained fairly stable at 13%.

Overweight and obesity rates are significantly higher among older children. Data from the most recent wave of NIDS (2017) show 16% of children aged 5 – 9 and 22% of those aged 10 – 14 are classified as overweight or obese. Overall, 18% of children aged 15 – 17 years were found to be overweight or obese. The rate was significantly higher for girls (22%) than boys (15%), and for children living in urban areas (20%) compared to rural areas (16%).

Figure 4d: Children over five years who are overweight or obese, 2017



	5 – 9 years	10 – 14 years	15 – 17 years	Male	Female	Rural	Urban	All children (5 – 17 years)
2017	16.3%	20.7%	18.3%	15.2%	21.5%	16.3%	20.1%	18.4%

Source: Southern Africa Labour and Development Research Unit (2018) National Income Dynamics Study 2017, Wave 5 [dataset]. Version 1.0.0 Cape Town: SALDRU [producer]. Cape Town: DataFirst [distributor]. Analysis by Winnie Sambu.

Micronutrient deficiencies

Early childhood is a period of rapid growth with a high demand for micronutrients (vitamins and minerals) such as zinc, iron and vitamin A. Inadequate nutrient intake causes micronutrient deficiency, which has negative effects for children given that micronutrients are crucial for healthy growth and development. For example, zinc plays an important role in brain functioning, and inadequate intake can cause poor cognitive development. Iron deficiency affects motor and cognitive development in children younger than 4 years.[13] Vitamin A deficiency causes illness, can cause visual impairment and increases the risk for mortality.[13]

In South Africa, the main forms of micronutrient deficiencies that affect children are vitamin A, iron and zinc deficiencies. However, because data on the prevalence of micronutrient deficiencies is not regularly collected at national and regional levels, it is difficult to monitor prevalence and trends. A national survey conducted in 2012, the South Africa Health and Nutrition Examination Survey (SANHANES), estimated vitamin A deficiency among children under five years at 44%, with the deficiency rates higher among boys (49%) than girls (39%).[25]

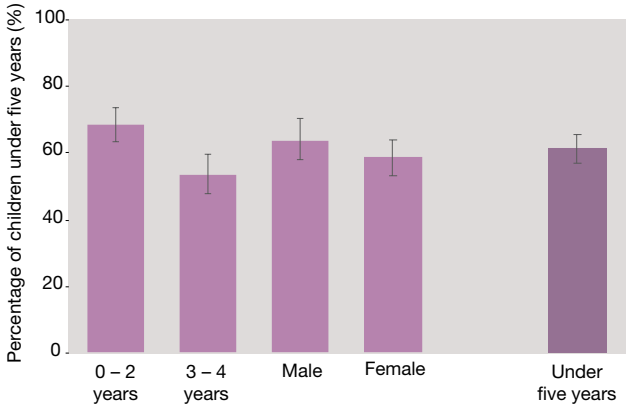
A global analysis of vitamin A deficiency in 138 low- and middle-income countries estimated that 1.7% of deaths among children under five years in 2013 could be attributed to vitamin A deficiency.[26] To prevent micronutrient deficiencies, South Africa introduced a national food fortification programme in 2003 which requires all maize and wheat products to be fortified with

vitamins and minerals. The government has also been running a national vitamin A supplementation programme since 2002, to combat vitamin A deficiency and reduce the mortality risk in young children.[27, 28] In 2017/2018, 54% of children aged 12 – 59 months received vitamin A supplementation.[29]

The prevalence of anaemia among young children is also high. The 2016 South African Demographic Health Survey classified 61% of children under five years as anaemic. A quarter (24%) suffer from mild anaemia while 35% are moderately anaemic and 2% are severely anaemic. Anaemia rates are higher among poor children; 35% of those in the poorest wealth quintile were moderately anaemic, compared to 18% in the top quintile. The anaemia estimates reported here are significantly higher than those reported in previous national surveys. There is no clear reason for this and so these estimates must be treated with caution.[12]

There are no recent national level estimates on zinc deficiency. The 2005 National Food Fortification Baseline Survey found that 44% of children aged 1 – 9 years had inadequate zinc status and were therefore at risk of zinc deficiency.[30] Some recent studies, although with small sample sizes, have found a high prevalence of zinc deficiency. One such study, involving 349 children from a rural area of Limpopo province, found that 43% of the children were found to be zinc deficient.[31]

Figure 4e: Anaemia, in children under five years, 2016



	0 – 2 years	3 – 4 years	Male	Female	Under five years
2016	68.4%	53.7%	63.9%	58.7%	61.3%

Source: National Department of Health, Statistics South Africa, South African Medical Research Council and ICF (2017) *South African Demographic & Health Survey 2016: Key Indicators*. Pretoria and Rockville, Maryland: NDOH, Stats SA, SAMRC & ICF. Analysis by Winnie Sambu.

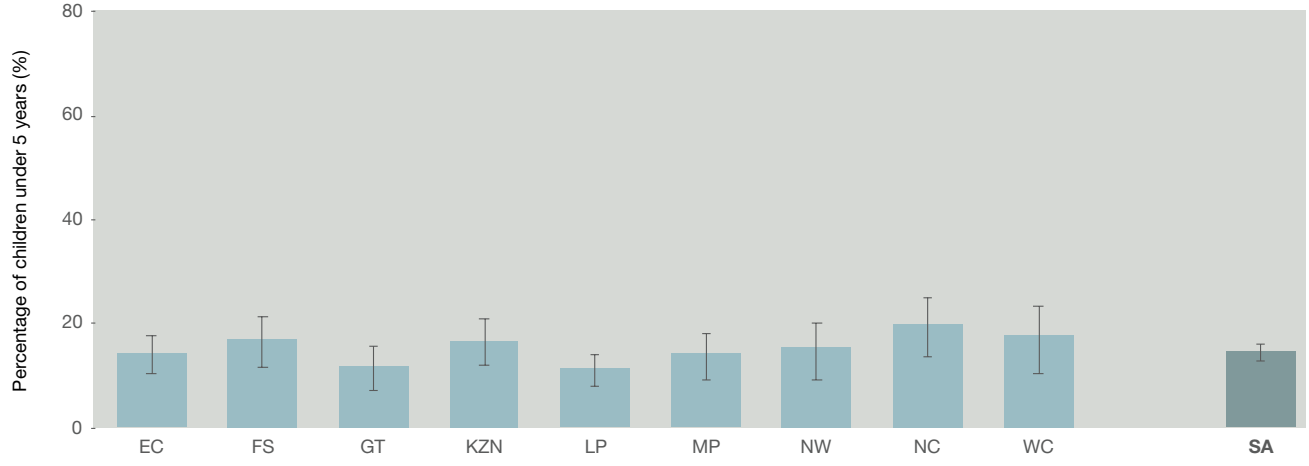
Low birth weight

The WHO defines low birth weight as less than 2500 grams. However, the term low birth weight encompasses a set of complex outcomes: pre-term neonates (babies born before 37 weeks of gestation), small for gestational age neonates at term (those born smaller in comparison with other neonates with similar number of weeks of pregnancy), and neonates who are both pre-term and are small for gestational age.[32]

Birth weight is an important predictor of child health and nutritional outcomes. During the neonatal and infancy period, low birth weight increases the risk for illness and death. Children who are born with low birth weight are also more likely to be stunted, compared to those who are not. Birth weight is also an important predictor of schooling outcomes,[33] and of long-term health in that low birth weight increases the risk for chronic illnesses (such as diabetes) and mortality in adulthood.[34]

There are many causes of low birth weight, ranging from foetal and placental factors during pregnancy, to maternal and environmental factors. Low birth weight is associated with preeclampsia, a medical condition which only occurs during pregnancy. Preeclampsia reduces placental function and affects

Figure 4f: Children under five years born with low birth weight, by province, 2016



	EC	FS	GT	KZN	LP	MP	NW	NC	WC	SA
%	14,3%	17,0%	12,0%	16,9%	11,4%	15,6%	15,6%	19,8%	17,9%	14,5%

Source: National Department of Health (NDoH), Statistics South Africa (StatsSA), South African Medical Research Council (SAMRC), ICF. *South Africa Demographic and Health Survey 2016*. Pretoria, South Africa and Rockville, Maryland, USA; 2019. Analysis by Winnie Sambu.

the transfer of nutrients from a mother to her unborn baby, increasing the risk for preterm birth and/or small-for-gestational age delivery.[32, 35] Risk factors for preeclampsia include chronic hypertension, diabetes, obesity and adolescent pregnancy.[36] Poor maternal nutrition during pregnancy also increases the risk for low birth weight; an analysis of low-income countries found that 25% of low birth weight incidences were attributable to maternal anaemia during pregnancy.[37] Other maternal factors associated with low birth weight include smoking and alcohol consumption during pregnancy.[38, 39]

In South Africa, 14.5% of infants are born with low birth weight (regardless of gestational age). This estimate is similar to the global and eastern and southern Africa estimates (15% and 14% respectively), but significantly higher than the average estimate for Latin America and the Caribbean (9%).[40] Low birth weight rates in South Africa are slightly higher among females (16%), than males (14%). There are no significant differences in low birth weight rates across rural and urban areas, or across wealth quintiles. However, across provinces, low birth weight rates are highest in the Northern Cape (20%), Free State (17%), Western Cape (16%) and KwaZulu-Natal (16%). There is also a significant association between maternal age and low birth weight; 19% of children with low birth weight were born to mothers aged 35 – 49 years, compared to 14% born to under 20-year olds, 15% born to 20 – 24-year olds, and 12% of children born to 25 – 29-year-old women. The incidence of low birth weight has increased since 1998 when 8% of children under 5 years were reported to have been born weighing less than 2,500 grams.[41]

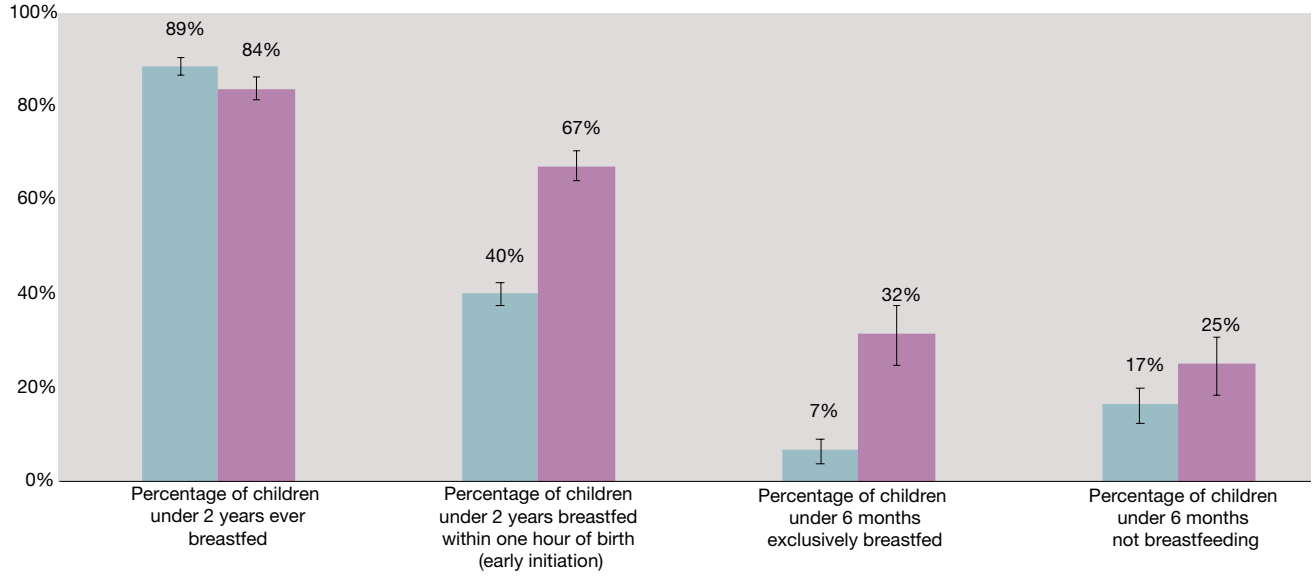
Adequate nutrition for pregnant women of reproductive age is important to ensure improved birth weight outcomes. Nutrient supplementation for those with micronutrient deficiencies (e.g. iron and folic acid) is important. Other measures include smoking cessation during and after pregnancy, and improving household living conditions to ensure access to adequate water and sanitation.[32] Health facilities should offer timely and effective care for pregnant women who present with symptoms of preeclampsia. For infants born with low birth weight, medical and nutritional care are important to ensure that infants gain weight and reduce the risk of illness and malnutrition.

Exclusive breastfeeding

This indicator shows the proportion of children who are exclusively breastfed for the first six months of life. The WHO recommends early initiation and exclusive breastfeeding for the first six months. Complementary feeding should commence from six months with the introduction of foods that are nutritionally adequate, safe and appropriate, coupled with ongoing breastfeeding which should continue for up to two years or more.[42]

Breast milk alone has all the nutrients needed for child growth and development during the first six months. Breastfeeding, and in particular exclusive breastfeeding, for the first six months, builds a child's immunity and protects against the risk of respiratory illnesses and gastrointestinal infections like diarrhoea.[43] Breastfeeding therefore improves the chances of a child's survival; one study estimated that 11.6% of all global child deaths in 2011 were attributable to sub-optimal breastfeeding.[13] Additionally, breastfeeding has been found to improve cognitive

Figure 4g: Breastfeeding among children under two years, 1998 & 2016



1998	89%	40%	7%	17%
2016	84%	67%	32%	25%

Source: Department of Health, Macro International. South Africa Demographic and Health Survey 1998 [Internet]. Pretoria, South Africa; 2002. Available from: http://dhsprogram.com/pubs/pdf/FR131/FR131.pdf;. National Department of Health (NDoH), Statistics South Africa (StatsSA), South African Medical Research Council (SAMRC), ICF. South Africa Demographic and Health Survey 2016. Pretoria, South Africa and Rockville, Maryland, USA; 2019. Analysis by Winnie Sambu.

development in young children, and has a protective effect against overweight/obesity (in both childhood and adulthood) and diabetes.[23] In addition, breastfeeding also allows a mother to bond with her baby and has health benefits for the mother, including quicker contraction of the uterus, post-pregnancy weight loss and reduced risk of non-communicable diseases like breast cancer and diabetes.[44]

There are several factors that may affect choices about exclusive breastfeeding. Poor infant feeding counselling can influence a pregnant woman's choice to breastfeed once the baby is born or can result in early cessation of breastfeeding. Some research conducted in South Africa has found that higher maternal education and socio-economic status are inversely related to exclusive breastfeeding,[45] and this may be due to a lack of maternity leave and breastfeeding support in the workplace, and wealthier women being more able to afford the cost of breast milk substitutes. The use of infant formula has historically been common among women with higher socio-economic status but usage has increased significantly among low-income mothers in part due to the excessive marketing of these products, as well as time constraints faced by mothers as they engage in income generating activities or return to work too soon after child birth because of a lack of paid maternity leave.[46, 47]

South Africa has introduced national regulations (Regulation 991) to remove commercial pressures from the infant feeding arena in line with the International Code of Marketing of Breastmilk Substitutes which prohibits advertising of substitutes to the general public, including through health professionals and the provision of free infant formula, and it has introduced other measures to promote and support breastfeeding.[48-50] However, the international code and Regulation 991 are not always adhered to.[51]

Despite clear policy recommendations that it is safe for HIV-positive mothers who adhere to antiretroviral therapy to exclusively breastfeed their infants for the first six months, HIV-positive women remain less likely to initiate breastfeeding after birth and exclusively breastfeed their infants[52] – partly due to fear of HIV transmission from mother to child and a lack of adequate counselling on infant feeding.[53]

In 2016, 32% of children aged 0 – 5 months were exclusively breastfed. This represents an improvement from the 7% and 8% exclusive breastfeeding rates reported in the 1998 and 2003 South African Demographic and Health Surveys, yet at the current rate of progress South Africa is not on track to reach the global target of 50% by 2025.[32] While 80% of mothers of children under two years initiated breastfeeding in the first day of life, exclusive breastfeeding rates decrease with age down to 23% of infants aged 4 – 5 months shaped in part by mothers' return to work and their misperception that breastmilk is not enough for a growing baby.[54]

A much higher proportion of children aged 0 – 5 months (75%) are breastfed at least sometimes (though with some complementary feeding). Thereafter, breastfeeding rates decline to 56% (6 – 12 months), 47% (12 – 17 months), and 18% (18 – 23 months). Overall, 84% of children under two years were breastfed at least sometimes in 2016, a decline from nearly 90% in 1998.

Breastfeeding rates were highest among children in the poorest quintile and lowest for those in the wealthiest quintile (58% vs 42% respectively). Early initiation of breastfeeding (within an hour of birth) is recommended by WHO. Two thirds of children under two years were breastfed within the first hour after birth in 2016, an improvement from the 40% recorded in 1998.

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