

Nutrition - Iron deficiency in children

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Definition

This indicator reflects the percentage of children aged 1 - 9 years who are iron deficient (have a low serum ferritin level) or suffer from anaemia due to iron deficiency.

Proportion of children aged 1-9 years, who were iron deficient by province, 2005

Province	IRON DEFICIENCY	IRON DEFICIENCY ANAEMIA
	2005	2005
Eastern Cape	1,2	4,8
Free State	18,9	11,6
Gauteng	4,8	7,1
KwaZulu-Natal	3,6	5,9
Limpopo	5,3	11,8
Mpumalanga	4,5	7,9
North West	6,9	5,2
Northern Cape	5,6	-
Western Cape	7,5	9,4
South Africa	5,7	7,6

Source Labadarios D (ed) (2007) The National Food Consumption Survey - Fortification Baseline (NFCS-FB): The knowledge, attitude, behaviour and procurement regarding fortified foods, a measure of hunger and the anthropometric and selected micronutrient status of children aged 1 - 9 years and women of child bearing age: South Africa, 2005. Pretoria: Department of Health, Nutrition Directorate.

- Notes**
1. Iron deficiency prevalence is defined as less than 12% ferritin (ug/dL) levels, and haemoglobin (g/dL) levels of greater than or equal to 11% in the blood.
 2. Iron deficiency anaemia prevalence is defined as less than 11% haemoglobin (g/dL) and less than 12% ferritin (ug/dL) levels in the blood.

What do the numbers tell us?

Adequate nutrition is essential for optimal growth and development in children. Poor nutrition will adversely affect a child's physical and mental capacity. ¹ Malnutrition has both short-term and long-term effects, impacting on an individual's educability and productivity in later life. It therefore has implications for the perpetuation of poverty. ² Severe forms of malnutrition in childhood can lead to the development of chronic diseases later in life. In particular, if a child does not have sufficient iron in his or her diet, they can develop

iron-deficiency anaemia. Iron deficiency can have a negative impact on the learning capacity and cognitive development of children, and can also lead to increased vulnerability to infections and cardiac failure.³

The right to basic nutrition in Section 28 (1) (c) of the South African Constitution means that the food that children receive must contain all the essential micronutrients that children need for their physical and mental development. The extent to which children are iron deficient indicates the extent to which children's right to basic nutrition is being realised in South Africa.

The iron status of children in South Africa appears to have deteriorated since 1994.⁴ In 2005, 6% of children aged 1 – 9 years were iron deficient. Children most affected by iron deficiency were those aged 1 – 3 years. Children aged 1 – 9 years who lived in formal rural areas (13%) were worse off, followed by children in informal urban areas (6%). Three provinces had higher iron-deficiency prevalence rates than the national rate. The Free State had the highest proportion of children aged 1 – 9 years with deficient iron levels, at close to 20%. Comparatively, five of the nine provinces had rates of 5% or below.

The national prevalence rate of 8% for iron-deficiency anaemia in children aged 1 – 9 years is considerably low. However, a prevalence rate of 17% in the 1 – 3 years age group – more than double the rate for children aged 1 – 9 years, is cause for concern. The Limpopo and Free State provinces share the highest rate for children aged 1 – 9 years, at 12%, followed by the Western Cape (9%). Children living in formal (9%) and informal (8%) urban areas were most affected by iron-deficiency anaemia.

The causes of iron deficiency are multi-faceted. Worm infestations are known to cause blood loss⁵, and gastrointestinal infections are common in young children. Infants are prone to iron deficiency because their iron requirements due to rapid growth and other factors outweigh their iron intake.⁶ There is also evidence to suggest that iron-deficiency anaemia may result from inadequate vitamin A intake.⁷ As children younger than four years have higher rates of iron deficiency than older children, it is crucial to target interventions to this age group. Promotion and preventative programmes that target pregnant and breastfeeding mothers are critical.

Technical notes

Iron deficiency is determined by the ferritin concentration in the blood. Children with ferritin levels of less than 12 ug/dL and haemoglobin levels of greater than or equal to 11g/dL (for children between 6 months and 5 years) or 11.5 g/dL (for children older than 5 years) were considered to be iron deficient. Children with haemoglobin levels of less than 11 g/dL (for children between 6 months and 5 years) or 11.5 g/dL (for children older than 5 years) and ferritin levels of less than 12 ug/dL were regarded as suffering from iron deficiency anaemia.

Strengths and limitations of the data

This study consisted of a cross-sectional survey of a nationally representative sample of children aged 1 – 9 years in South Africa, using the Census 2001 data. The survey population consisted of all the children aged 1 – 9 years (12 – 108 months) and women of reproductive age living in the same households in South Africa. This initial sample was adapted by means of 25% over-sampling to accommodate for children and women who would not be home at the time of the survey. A total of 226 Enumerator Areas (EAs) were included in the survey, 107 of which were urban-formal, 23 urban-informal, 15 rural-formal and 81 tribal areas. All qualifying EAs were selected with a known probability. A qualifying household for inclusion in the survey was defined as any household with at least one child aged between 1 – 9 years and at least one woman of reproductive age living in it.⁸

Validated questionnaires were administered by trained fieldworkers and a blood and urine sample was taken from the respondents of each household to assess micronutrient status. Samples of tap water and maize were collected from each household and tested for iodine and vitamin A respectively, the latter at the household level. All questionnaires were translated in the country's official languages for use as appropriate. Quality assurance measures were employed throughout the survey.⁹

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> <http://ci.org.za/depts/ci/pubs/pdf/poverty/facts/Foodforthought.pdf>

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References

¹ Swart R, Sanders D & McLachlan M (2008) Nutrition: A primary health care perspective. In: Barron P & Roma-Reardon J (eds) South African Health Review 2008. Durban: Health Systems Trust.

² Ibid.

³ Schrimshaw NS (1991) Iron deficiency. In: Labadarios D, Moodie I & van Rensburg A (2007) Selected micronutrient status. Iron status. In: Labadarios D (ed) (2007) The National Food Consumption Survey – Fortification Baseline (NFCS-FB): The knowledge, attitude, behaviour and procurement regarding fortified foods, a measure of hunger and the anthropometric and selected micronutrient status of children aged 1 – 9 years and women of child bearing age: South Africa, 2005. Pretoria: Directorate: Nutrition, Department of Health.

⁴ Swart R, Sanders D & McLachlan M (2008) Nutrition: A primary health care perspective. In: Barron P & Roma-Reardon J (eds) South African Health Review 2008. Durban: Health Systems Trust.

⁵ Labadarios D, Moodie I & van Rensburg A (2007) Selected micronutrient status. Iron status. In: Labadarios D (ed) (2007) The National Food Consumption Survey – Fortification Baseline (NFCS-FB): The knowledge, attitude, behaviour and procurement regarding fortified foods, a measure of hunger and the anthropometric and selected micronutrient status of children aged 1 – 9 years and women of child bearing age: South Africa, 2005. Pretoria: Directorate: Nutrition, Department of Health.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

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