

Nutrition 101

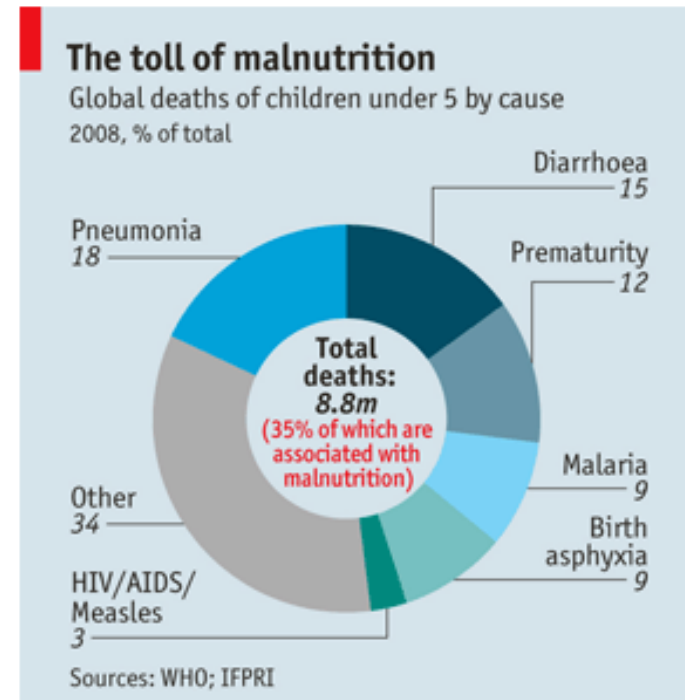


Image source: UNICEF

For Children Under the Age of Five

Undernutrition is the single largest risk factor for death and disability, affecting one in four children worldwide.

- Stunting, severe wasting, and intrauterine growth restriction (IUGR) are directly responsible for an estimated 2.2 million deaths and 21% of Disability-Adjusted Life Years (DALYs) every year.
- Given the interaction between undernutrition, immunodeficiency, and infectious disease, insufficient food intake is directly or indirectly responsible for 35% of all child deaths.



Child Development Index 2012. (n.d.). *Scribd*. Retrieved April 4, 2013, from <http://www.scribd.com/doc/102548595/Child-Development-Index-2012>

Katona, P., & Katona-Apte, J. (2008). The Interaction between Nutrition and Infection. *Clinical Infectious Diseases*, 46(10), 1582–1588. doi: [10.1086/587658](https://doi.org/10.1086/587658)

Rawe, K., et al. (2012). *A Life Free from Hunger: Tackling Childhood Malnutrition*. London: Save the Children. Retrieved from <http://www.savethechildren.org.uk/sites/default/files/docs/A-Life-Free-From-Hunger-UK-low-res.pdf>

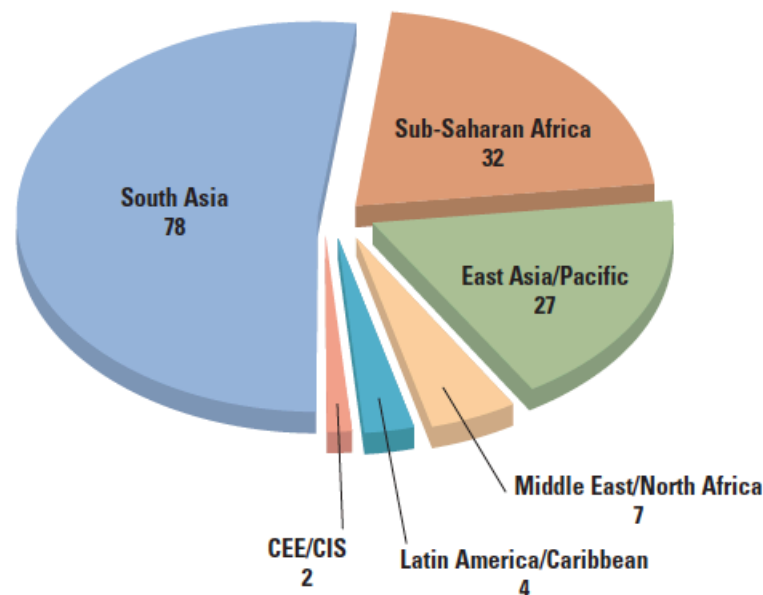
WHO | Severe Acute Malnutrition. (n.d.). *WHO*. Retrieved April 4, 2013, from <http://www.who.int/nutrition/topics/malnutrition/en/index.html>

Geography of Hunger

- Four out of five children suffering from malnutrition live in just 20 countries, concentrated in South-Central Asia and Sub-Saharan Africa.

More than half of underweight children live in South Asia

Figures in millions



Graphics reproduced from UNICEF

Where chronic malnutrition is highest

Countries where stunting in under-fives is 40 per cent or more

| | |
|---------------------------|----|
| Korea, Dem. People's Rep. | 60 |
| Zambia | 59 |
| Burundi | 57 |
| Nepal | 54 |
| Afghanistan | 52 |
| Yemen | 52 |
| Ethiopia | 51 |
| Madagascar | 49 |
| Malawi | 49 |
| Cambodia | 46 |
| Guatemala | 46 |
| India | 46 |
| Nigeria | 46 |
| Bangladesh | 45 |
| Congo, Dem. Rep. | 45 |
| Lesotho | 44 |
| Mauritania | 44 |
| Tanzania | 44 |
| Rwanda | 43 |
| Comoros | 42 |
| Lao PDR | 41 |
| Bhutan | 40 |
| Niger | 40 |

Horton, R. (2008). Maternal and child undernutrition: an urgent opportunity. *The Lancet*, 371(9608), 179. doi:[10.1016/S0140-6736\(07\)61869-8](https://doi.org/10.1016/S0140-6736(07)61869-8)

Long-Term Effects of Malnutrition

- Shorter adult height, fewer years of schooling, and lower adult income are all linked to malnutrition during early childhood.
- There is a “golden interval” for nutrition intervention. It spans from a mother’s pregnancy to a child’s second birthday. According to *The Lancet*, poor nutrition during the first two years of a child’s life can have devastating consequences on his or her physical and cognitive development.

Victora, C. G., Adair, L., Fall, C., Hallal, P. C., Martorell, R., Richter, L., & Sachdev, H. S. (2008). Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet*, 371(9609), 340–357. doi:[10.1016/S0140-6736\(07\)61692-4](https://doi.org/10.1016/S0140-6736(07)61692-4)

Bhutta, Z. A., Ahmed, T., Black, R. E., Cousens, S., Dewey, K., Giugliani, E., ... Shekar, M. (2008). What works? Interventions for maternal and child undernutrition and survival. *The Lancet*, 371(9610), 417–440. doi:[10.1016/S0140-6736\(07\)61693-6](https://doi.org/10.1016/S0140-6736(07)61693-6)

Approaches

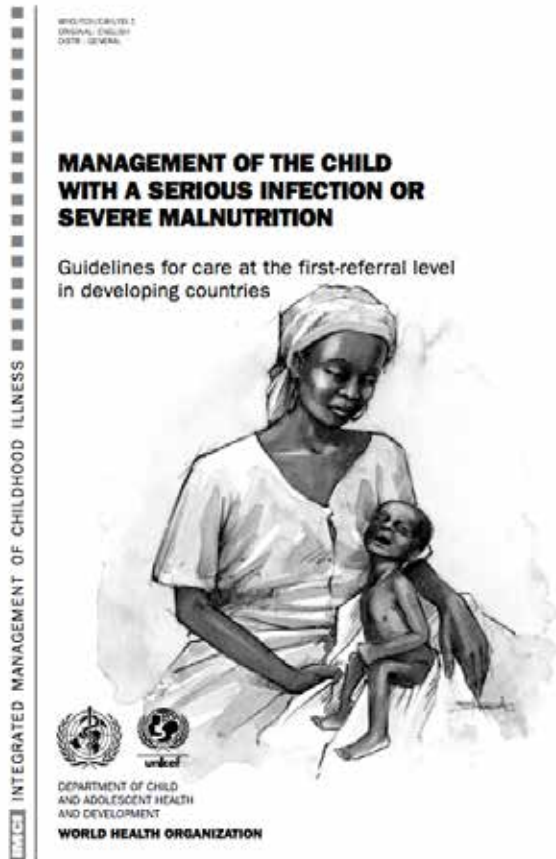


Image source: WHO

Optimal breastfeeding and complementary feeding practices can save the lives of 1.5 million children under the age of five every year.

Vitamin A supplementation in children is associated with a 23% reduction in mortality and can aid in the prevention of diarrhea, measles, and night blindness.

Mayo-Wilson, E., Imdad, A., Herzer, K., Yakoob, M. Y., & Bhutta, Z. A. (2011). Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: systematic review and meta-analysis. *BMJ*, 343(aug25 1), d5094–d5094. doi:[10.1136/bmj.d5094](https://doi.org/10.1136/bmj.d5094)

WHO | Infant and young child feeding. (n.d.). WHO. Retrieved April 4, 2013, from <http://www.who.int/mediacentre/factsheets/fs342/en/index.html>

Exclusive Breastfeeding

- One of the least expensive and most effective methods for preventing infant death.
- Breast milk contains all of the nutrients an infant needs in the first six months of life, protects against common childhood diseases such as diarrhea and pneumonia, and has been shown to decrease undernutrition-related mortality and morbidity.



Bhutta, Z. A., Ahmed, T., Black, R. E., Cousens, S., Dewey, K., Giugliani, E., ... Shekar, M. (2008). What works? Interventions for maternal and child undernutrition and survival. *The Lancet*, 371(9610), 417–440. doi: [10.1016/S0140-6736\(07\)61693-6](https://doi.org/10.1016/S0140-6736(07)61693-6)

Image source: Save the Children

Complementary Feeding

- Used to supplement breastfeeding when it can no longer satisfy all of a child's nutritional needs.
- It has been proven that appropriately designed practices in populations with sufficient food can result in increased height and reduced odds of stunting and death in children.



Image source: WHO

WHO | Infant and young child feeding. (n.d.). WHO. Retrieved April 4, 2013, from <http://www.who.int/mediacentre/factsheets/fs342/en/index.html>

Dalmiya, N., & Palmer, A. (2007). *Vitamin A Supplementation: A Decade of Progress*. New York: UNICEF. Retrieved from http://www.unicef.org/publications/files/Vitamin_A_Supplementation.pdf

Micronutrient Fortification

- Involves supplementing water supplies and foods with iodine, iron, vitamin A, zinc, or calcium.
- Studies have shown that iodization of water and salt, as with fortification of foods with vitamin A and iron, have a positive effect on micronutrient status and infant mortality.

Bhutta, Z. A., Ahmed, T., Black, R. E., Cousens, S., Dewey, K., Giugliani, E., ... Shekar, M. (2008). What works? Interventions for maternal and child undernutrition and survival. *The Lancet*, 371(9610), 417–440. doi:[10.1016/S0140-6736\(07\)61693-6](https://doi.org/10.1016/S0140-6736(07)61693-6)

Where We Stand

- Despite the simplicity of many nutritional approaches, many children still don't have access to these life-saving interventions.
- On average, only 35% of infants 0-6 months old are exclusively breastfed.
- In many countries, only a third of infants 6-23 months of age meet the criteria for age-appropriate dietary diversity and feeding frequency.
- Less than half of the 60 countries that have adopted vitamin A supplementation programs are attaining effective coverage.



WHO | Infant and young child feeding. (n.d.). WHO. Retrieved April 4, 2013, from <http://www.who.int/mediacentre/factsheets/fs342/en/index.html>
Dalmiya, N., & Palmer, A. (2007). *Vitamin A Supplementation: A Decade of Progress*. New York: UNICEF. Retrieved from http://www.unicef.org/publications/files/Vitamin_A_Supplementation.pdf

Solutions

- Expand proven approaches such as exclusive breastfeeding, complementary feeding, and micronutrient supplementation.
- Establish community-based health systems to provide nutritional education and support for mothers and young children.
- Click to read about the [Care Group model](#), a peer-based approach to improving the nutritional status of infants and young children in resource-poor areas.

Key Terms

Undernutrition: the outcome of insufficient food intake
a deficiency of calories or of one or more essential nutrients

Underweight: *moderate – below minus two standard deviations from median weight for age of reference population; severe – below minus three standard deviations from median weight for age of reference population*

Stunted: being too short for one's age
Moderate and severe – below minus two standard deviations from median height for age of reference population

Wasted: being dangerously thin for one's height
Moderate and severe – below minus two standard deviations from median weight for height of reference population

Micronutrient Deficient: lacking necessary vitamins and minerals, often vitamin A, iodine, iron, or zinc

Intrauterine Growth Restriction (IUGR): poor growth in the womb during pregnancy
a fetus whose estimated weight is below the 10th percentile for its gestational age

Disability-Adjusted Life Year (DALY): one year of a healthy life lost to illness
quantification of overall disease burden from mortality and morbidity

Exclusive breastfeeding: when an infant is fed only breast milk—recommended for the first six months of life