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DETERMINANTS OF MALNUTRITION AMONG CHILDREN

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ABSTRACT

Malnutrition has become an urgent global health issue, with under nutrition killing or disabling millions of children each year. Malnutrition also prevents millions more from reaching their full intellectual and productive potential. In children, severe malnutrition accounts for approximately 1 million deaths annually (Trehan, I *et al*, 2013). Malnutrition causes children to be more susceptible to illness, and results in long-term effects on children's development and health. The objectives of this study are to understand the indicators of malnutrition among children and to examine the determinants of malnutrition among children. It has been observed that child's environment, nutrition and parental care are factors influencing the growth and development of children. Adequate maternal nutrition, health and physical status are crucial to prevent child under nutrition. Stunting and other forms of under nutrition are major contributing factors to child mortality, disease and disability. It becomes necessary to encourage children to eat variety of foods like fish, meat, eggs, beans, soya, plenty of vegetables and fruits every day.

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INTRODUCTION

Malnutrition has become an urgent global health issue, with under nutrition killing or disabling millions of children each year. Malnutrition also prevents millions more from reaching their full intellectual and productive potential. In children, severe malnutrition accounts for approximately 1 million deaths annually (Trehan *et al.*, 2013), with approximately 20 million children under the age of five suffering from severe malnutrition. In 2010, 7.6 million children across the world died before reaching their fifth birthday, while in 2011 an estimated 165 million children under the age of five were stunted (low height for age) and 101 million were underweight (UNICEF, 2012). Malnutrition causes children to be more susceptible to illness, and results in long-term effects on children's development and health. Child malnutrition occurs when a child's intake of nutrients (fat, protein, vitamins and minerals, etc.) is insufficient to sustain the needs of her body. Malnutrition – used here in the restricted sense of under-nutrition³ originates in a complex set of causes of both biological and socio-economic nature. The two main direct determinants of malnutrition are the insufficient quantities of food absorbed as well as the poor quality of the nutrients consumed.

Overall children's health has a strong impact on their nutritional status: children exposed to diseases tend to suffer more from malnutrition. This can notably be explained by the fact that diseases (such as diarrhea) can cause a depletion of key minerals and prevent the body from efficiently absorbing and assimilating the nutrients necessary to grow and fully develop (WHO 1995, p.162). Nutritional status reflects a larger set of deprivations related to the living conditions to which a child is exposed and to the social and economic opportunities of her care-takers. A set of underlying determinants of nutritional status have been identified as potential obstacles to progress. They go from little access to good-quality food, to a lack of sanitation and clean water, poor health services and absence of immunization programmes, from low levels of education, to gender discrimination, or lack of knowledge on breastfeeding practices, etc. As emphasized by Braveman and Egarter (2008, p.23): "Behaviors, as well as receipt of medical care, are shaped by living and working conditions, which in turn are shaped by economic and social opportunities and resources." According to the United Nations Children's Fund (UNICEF, 2009), children who are breastfed in the first six months of life have a six times greater chance of survival as opposed to non-breastfed children. Evidence also indicates that breastfeeding could lead to a 13% reduction in deaths of children under five, if infants are exclusively breastfed for six months and continue to be breastfed for up to one year. Breast milk contains the antibodies that help

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strengthen a baby's immune system, providing protection against common illnesses such as diarrhoea and pneumonia. Consequently, breastfeeding contributes to reduced infant morbidity and mortality due to diarrhoea, respiratory or ear infections and other infectious diseases. People are malnourished if their diet does not provide adequate nutrients for growth and maintenance or they are unable to fully utilise the food they eat due to illness (under nutrition). They are also malnourished if they consume too many calories (over nutrition). Under nutrition is the outcome of insufficient food intake, inadequate care and infectious diseases. It includes being underweight for one's age, too short for one's age (stunting), dangerously thin for one's height (wasting) and deficient in vitamins and minerals (micronutrient deficiencies). Exclusive breastfeeding refers to providing a baby (less than six months old) with only breast milk and no supplementary feeding of any kind, in other words no water, juice, other kinds of milk and solid food except for vitamins, minerals, and medications prescribed by a doctor or healthcare worker when medically indicated (Victora, Cesar *et al.*, 2008). Severe acute malnutrition is defined as the percentage of children aged 6 to 59 months whose weight for height is below minus three standard deviations from the median of the WHO Child Growth Standards, or by a mid-upper-arm circumference less than 115 mm, with or without nutritional oedema. Overweight is defined as the percentage of children aged 0 to 59 months whose weight for height is above two standard deviations (overweight and obese) or above three standard deviations (obese) from the median of the WHO Child Growth Standards. Low birth weight is defined as a weight of less than 2,500 grams at birth.

Objectives of the study

- To understand the indicators of malnutrition among children
- To examine the determinants of malnutrition among children

Indicators of malnutrition

Nutritional status is the result of complex interactions between food consumption and the overall status of health and care practices. Numerous socioeconomic and cultural factors influence decisions on patterns of feeding and nutritional status. Adequate nutrition is critical to child growth, health, and development, especially during the period from conception to 2 years of age. Every child develops and grows at her/his own pace and in her/his own time through reaching the various developmental milestones. Children's growth and development do not occur in a linear fashion, but are influenced by each child's environment, nutrition and parental care. These factors play a critical role in a child reaching her/his full potential. Recent evidence indicates that good nutrition, particularly in early childhood, is critical to the positive health outcomes of children. In fact, children's nutritional status can be viewed as a good proxy indicator of a community's state of health. The nutritional status of a child is usually described in terms of anthropometry, i.e. body measurement, such as weight, in relation to age or height, which is reflective of the degree of underweight or wasting of that child. Anthropometry is the most common method used to assess the nutritional status of children. Anthropometric

indicators are computed using individual data on age, weight, height (or length of babies) and gender. Three anthropometric indices – weight for height, height-for-age, weight-for-age – can be computed to evaluate the nutritional status of a child. A poor nutritional status will then be assessed according to the following characteristics (WHO 2007):

Wasting or thinness: expressed as a low body weight relative to height– results from a current significant loss of weight observable by a deficit in tissue and fat mass. Wasting can be caused by insufficient nutrients intake (lack of access to food) or absorption (poor health status and disease).

Stunting or shortness – expressed as low height relative to age– results from a slowing in skeletal growth. Stunting can be caused by poor dietary intake over time as well as poor health conditions and reflects a failure to reach growth potential.

Underweight – expressed as low weight for age – results from either a failure to gain weight relative to age or a loss of weight relative to height. Underweight is a combination of the weight-for-height and height-for-age indices.

Though wasting and stunting are often jointly observed, they are not linearly correlated. Both deficits result from different processes and patterns: Wasting is observable in populations where children are exposed to dietary deficiencies and diarrheal diseases causing rapid weight loss, while stunting reflects a slower and longer process of deprivation. However recurring situations causing acute weight loss have sustained impacts on the development and growth of a child and will in the end lead to signs of stunting.

Extent of malnutrition

Worldwide, malnutrition and specific nutrient deficiencies are the leading underlying cause of immune deficiency, leading to infections and other diseases.

- Of the 13-14 million children in developing countries, 70 percent die of infectious diseases and most are malnourished. Failing immunity as a consequence of malnutrition is the leading cause of death of children, the elderly, and adults. In comparison to the overall mortality of AIDS caused by HIV, the consequences of nutrition-related AIDS are much more deadly.
- Nutrition-related AIDS deaths exceed 15 million per year, about seven times more than HIV-related causes.
- Poor nutrition in the first 1,000 days of children's lives can have irreversible consequences. For millions of children, it means they are, forever, stunted. This is a tragedy for the 165 million children under the age of 5 afflicted by stunting in the world today. It is a violation of their rights. It is also a huge burden for nations whose future citizens will be neither as healthy nor as productive as they could have been.
- Globally, about one in four children under 5 years old are stunted (26 per cent in 2011). An estimated 80 per cent of the world's 165 million stunted children live in just 14 countries.
- South Asia has the highest rates – and by far the largest number – of malnourished children in the world.
- Thirty per cent (167 million) of children under five years of age are currently underweight in developing countries.

- one in three pre-school children is undernourished in the developing world.
- In fact, the average rate of malnourishment for under-3 years of age is 30 percent in Sub-Saharan Africa. 30 out of 37 countries in Sub-Saharan Africa report lower levels of child malnutrition than India.

India's corresponding rate is 37 percent. Bihar (54 per cent), Orissa (54 per cent) and Madhya Pradesh (55 per cent) report child malnutrition rates higher than the maximum reported in Sub-Saharan Africa by Angola (51 per cent) (<http://www.littlemag.com/hunger/shiv2.html>).

Determinants of malnutrition among children

The causes of child malnutrition are complex, multidimensional, and inter related. They range from factors as broad in their impact as political instability and slow economic growth to those as specific in their manifestation as respiratory infection and diarrheal disease. In turn, the implied solutions vary from wide spread measures to improve the stability and economic performance of countries to efforts to enhance access to sanitation and health services in individual communities. The main determinants examined in the cross-country health determinants literature are national incomes, poverty, education, and the state of countries' health environments, including the availability of health services. Adequate maternal nutrition, health and physical status are crucial to prevent child under nutrition. Pregnancy increases nutrient needs, and protein, energy, vitamin and mineral deficiencies are common during pregnancy. Deficiencies are not solely the result of inadequate dietary intake: Disease can impair absorption of nutrients and reduce appetite, and environmental and psychosocial stress affecting the mother can contribute to child under nutrition (Walker *et al.*, 2011). Poor maternal nutrition impairs foetal development and contributes to low birth weight, subsequent stunting and other forms of under nutrition.

Undernourished girls have a greater likelihood of becoming undernourished mothers who in turn have a greater chance of giving birth to low birth weight babies, (Özaltın *et al.*, 2010) perpetuating an intergenerational cycle. This cycle can be compounded further in young mothers, especially adolescent girls who begin childbearing before attaining adequate growth and development. Short intervals between pregnancies and having several children may accumulate or exacerbate nutrition deficits, passing these deficiencies on to the children. Low birth weight is associated with increased morbidity and mortality: An estimated 60 to 80 per cent of neonatal deaths occur among low birth weight babies (2005 estimate) (Lawn *et al.*, 2005). In South Asia, an estimated 28 per cent of infants are born with low birth weight (UNICEF Global Databases, 2012). After birth, a number of practices can directly lead to poor growth: inadequate breastfeeding practices such as non-exclusive breastfeeding; inappropriate complementary feeding, such as starting at the wrong age; poor access to or use of diverse types of food and inadequate intake of micronutrients. Poor growth can be aggravated further by frequent incidence of infectious diseases like diarrhea, malaria or infestation with intestinal worms. Nutritional status is influenced by three broad factors: food, health and care. Optimal nutritional status results when children have access to affordable, diverse,

nutrient-rich food; appropriate maternal and child-care practices; adequate health services; and a healthy environment including safe water, sanitation and good hygiene practices. These factors directly influence nutrient intake and the presence of disease. The interaction between under nutrition and infection creates a potentially lethal cycle of worsening illness and deteriorating nutritional status. Food, health and care are affected by social, economic and political factors. The combination and relative importance of these factors differ from country to country. The determinants of malnutrition include: inadequate financial, human, physical and social capital, household food insecurity, inadequate care and feeding practices, unhealthy household environment and inadequate health services, inadequate dietary intake, various diseases, such as diabetes, cancer and infections.

The other causes of malnutrition are

- Physical and psychological trauma, which increases cellular requirements for some nutrients (e.g. vitamin C).
- The use of pharmaceutical drugs (corticosteroids, estrogen, cholesterol-lowering drugs, and chemotherapy agents) depletes the body of various vitamins, minerals, and micronutrients, lowering natural body resistance barriers and increasing vulnerability to infections.
- Foreign bodies (vascular prostheses, catheters, implants) that mobilize immune responses on a long-term basis also put a strain on the body's nutritional resources, which, if not correctly replenished, has a negative impact on immunity.
- Various environmental factors, pesticides, food chemicals, exposure to radiation and air/water pollution increase the requirements for antioxidants and burden the liver's detoxification system.

Consequences of malnutrition

Stunting and other forms of under nutrition are clearly a major contributing factor to child mortality, disease and disability. For example, a severely stunted child faces a four times higher risk of dying, and a severely wasted child is at a nine times higher risk (Black *et al.*, 2008). Specific nutritional deficiencies such as vitamin A, iron or zinc deficiency also increase risk of death. Under nutrition can cause various diseases such as blindness due to vitamin A deficiency and neural tube defects due to folic acid deficiency.

Conclusion

Sufficient nutrition in early childhood is critical in maintaining healthy growth, proper organ formation and functioning, a strong immune system, and neurological and cognitive development in children. Children who are undernourished, not optimally breastfed, or suffering from micronutrient deficiencies have substantially lower chances of survival than children who are well nourished. They are much more likely to suffer from a serious infection and to die from common childhood illnesses such as diarrhoea, measles, pneumonia and malaria, as well as HIV and AIDS.

Preventive measures and type it as Suggestion

- Encourage children to eat a variety of foods
- Feed children five small meals a day

- Make starchy foods the basis of a child's main meals
- Children need to eat plenty of vegetables and fruit every day
- Children need to drink milk every day
- Children can eat chicken, fish, meat, eggs, beans, soya or peanut butter every day
- Offer children clean, safe water regularly
- Take children to the clinic every 3 months
- Encourage children to play and be active

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