



# Reviews of Literature

## MALNUTRITION : CAUSES AND EFFECTS

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### ABSTRACT

The percentage of children under age 5 years who are underweight is almost 20 times as high in India as would be expected in a healthy, well nourished population and is almost twice as high as average percentage of underweight children in subsaharan African Countries. Although poverty is an

important factor in the poor nutrition situation, nutritional deficiencies are widespread even in households that are economically well off. Inadequate feeding practices for children make it difficult to achieve the needed improvements in children's nutritional status and nutrition programmes have been unable to make much headway in dealing with these serious nutritional problems.(1)

**KEYWORDS :** Malnutrition, Children, Feeding, Practices.

### MALNUTRITION –

Every Organism requires an adequate supply of nutrients in proper proportion in their diet for proper growth and development. There are two types of nutritional disorders like over nutrition and

under nutrition. The under nutrition, also called malnutrition is characterized by nutritional deficiency which may be both qualitative and quantitative the nutritional deficiency of a nutrient for a long period causes the structural and functional disorders of some body parts. Such disorders caused by under nourishment are called diet deficiency diseases (2) overnutrition can result in obesity and being overweight. In some developing countries overnutrition in the form of obesity is beginning to present within the same communities as undernutrition.

However, the term malnutrition is commonly used to refer to undernutrition only this applies particularly to the context of development cooperation. Therefore malnutrition is documented by the

World Health Organization save the children or other International non Governmental Organization on (NGOs) usually equated to undernutrition.

Under nutrition (hunger)- Undernutrition encompasses stunted growth stunting wasting and deficiencies of essential vitamins and minerals. The term hunger which describes a feeling of discount from not eating has been used to describe undernutrition, especially in reference to food insecurity.

**DEFINATION BY GOMEZ –**

In 1956 Gomez and Galan studies factors associated with death in a group of malnourished (undernourished children in a hospital in mexico city mexico and defined category of malnutrition,, first, second and third degree. The degree were based on weight below a specified percentage of median weight for age (3). The risk of death increases with increasing degree of malnutrition. An adaption of Gomez Original classification is still wed today. While it provides a way to compare malnutrition within and bewteen population. The classification has been criticized for being arbitrary and for not considering overweight as a form of malnutrition. Also height alone may not be the best indicator of malnutrition. Children who are born prematurely may be considered short for their age even if they have good nutrition.

Degree of PEM	% of desired body weight for age and sex
Normal	90-100%
Mild Grade-1 1 <sup>st</sup> Degree	75-89%
Moderate Grade-2 IInd Degree	60-74%
Severe III (IIIrd Degree)	< 60%

Sources – Serum total protein and Albumin levels in different Grades of protein emergy malnutrition.

**DEFINATION BY WATERLOW –**

John conward Wate low established a new classification for malnutrition (4), instead of using just weight for age measurements. The classification established by waterlow combines weight for heights (indicating acute episode of malnutrition with height for age to show the stunting that results from chronic malnutrition. One advantage of waterlow classification over the Gomez classification is that weight for height can be examined even if ages are not known.

Degree of PEM	Stunting % Height for age	Wasting (%) weight for height
Normal Grade 0	> 95%	>90%
Mild Grade-1	87.50-95%	80-90%
Moderate Grade-2	80-87.50%	70-80%
Severe Grade-3	< 80%	< 70%

**SOURCE :-**

Classification and defination of protein calorie malnutrition by waterlow 1972.

These classification of malnutrition are commonly used with some modifications by WHO (4)

**PROTEIN ENERGY MALNUTRITION –**

Deficiencies of proteins and total food calories. It is common in a number of underdeveloped countries of south and south east Asia, South America and Western and Central Africa. Two very commonly occuring diseases of infants and children due to PEM are 1) Kwashiorkar, 2) marasmus (7)

### KWASHIORKAR –

This disease was first reported from Africa but now it is prevalent in many parts of the world.

#### CAUSES :-

It is a disease caused by severe protein deficiency. It is one of the most commonly found deficiency disease and mainly occurs in small children in the age group of 1 to 3 years, especially belonging to poor families. An actively growing child needs about 2- 3.5 gm proteins per kg of body weight. Main causes of protein deficiency in them are,

1. Diet mainly containing carbohydrates and fats.
2. Prolonged breast feeding by mothers having inadequate proteins in their diet.
3. Late introduction of supplementary food
4. Ill-spacing of the children etc.

#### \* SYMPTOMS –

As the proteins are essential for the normal growth and repair of the body tissues, so the deficiency of proteins causes stunted growth in the children, loss of appetite; anemia; bulging eyes, protruded belly; darkening of the skin' repeated diarrhoea, atrophy of muscles and oedema of hands, feet and face.

### 2) MARASUMS –

It is a type of PEM in which there is simultaneous deficiency of proteins and total food calories. It is more common in infant below one year of age.

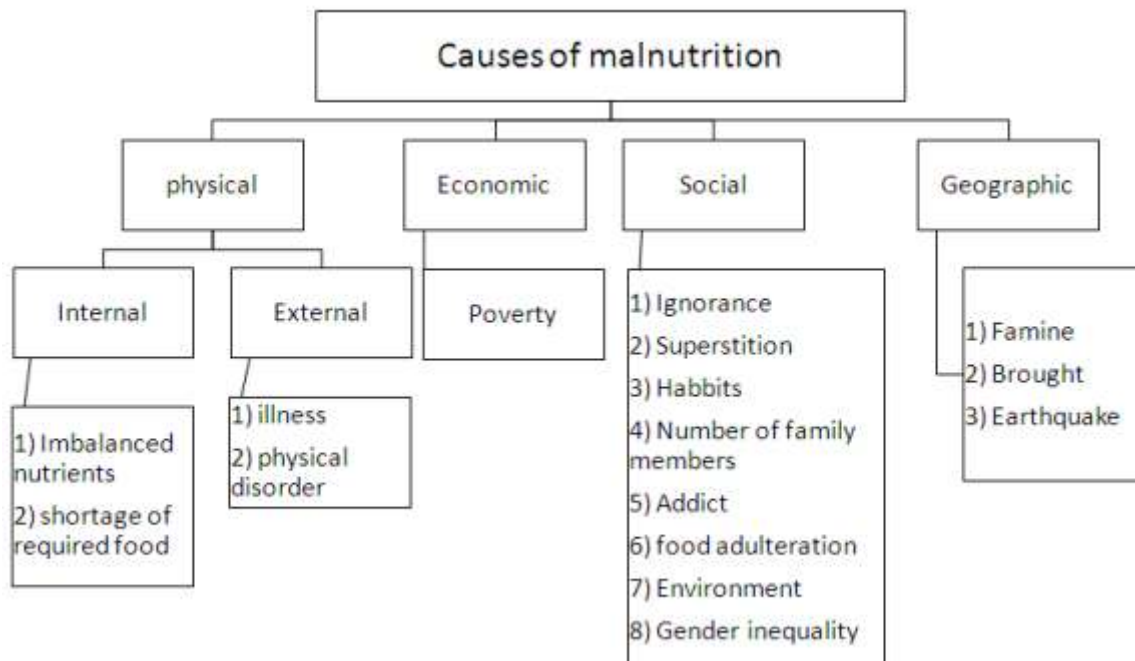
Symptoms – marasmus is characterised by

- 1) Shriveled appearance of child as the stored fats and tissue proteins are catabolised for energy production.
- 2) Extreme thinning of the limbs.
- 3) Ribs become prominent as the fat layer beneath the skin disappears
- 4) Skin become dry and wrinkled
- 5) Physical and mental growth retarded.
- 6) Atrophy of digestive glands and intestinal mucosa
- 7) Digestive disorders and repeated diarrhoea oedema does not occur in marasums.

#### HOW TO CONTROL –

1. Giving high quality proteins like dry milk
2. Education regarding nutrition to the people Diet should include one gm of proteins per kg body weight per day in the adult person, but two grams of proteins per kg body weight per day in the growing children.
3. Early introduction of supplementary food.
4. Main sources of proteins are cereals, pulses, meat, fish, leafy vegetables, peas, beans etc.

\* CAUSES –



Poor nutrition is one of the major factors that influence women and maternal health in developing countries. Poverty is an important factor in the poor nutrition. Through out the life cycle. There are distal and proximal causes affecting female nutrition causes of malnutrition in India are mainly founded in gender inequality.

A lot of factors contribute to malnutrition. Inadequate intake of food is just one of them. Malnutrition in early childhood causes serve impairments in motor, sensory and cognitive functions as well as in social and emotional development. (5)

Above all distal causes of malnutrition include the unfavourable status of women which affects their health status and their female children both directly and indirectly (World Bank 1996). Female children are discriminated against eg concerning breastfeeding or when it comes to the allocation of food within households. Even in households that have enough food the way of distributing it may leave women inadequately nourished. Given the nutritional demands of childbearing and location the lack of nourishment puts women at particular risk during their childbearing years. In addition to that Indian women may be malnourished because of the poor nutritive quality of what is available and because their system are unable to absorb iron effectively owing to intestinal parasites or malaria (World Bank 1996) Food intake a proximal cause of malnutrition (6).

Education and labourforce participation empower women and they increasingly take part in decision making within the family. The education of women and their nutrition related knowledge, attitudes and practices have been found to play a central role improving the health of women and their children. All in all the access to education involving women's empowerment is still a major problem and the impact of a poorly educated mother is passed on to the daughter (7).

**EFFECTS OF MALNUTRITION –**

Malnutrition increases the risk of infection and infectious disease and moderate malnutrition weakens every part of the immune system for example it is the major risk factor in the onset of active tuberculosis (18) protein and energy malnutrition and deficiencies of specific micronutrients and deficiencies of specific micronutrients (including iron, zinc and vit increase susceptibility to infection (8) malnutrition affects HIV transmission by increasing the risk of transmission from mother to child and also increasing replication of the virus.

Deficiencies in nutrition inflict long term damage to both individuals and society compared with their better fed peers, nutrition – deficient individuals are more likely to have infectious disease such as pneumonia and tuberculosis which lead to higher mortality rate. In addition nutrition-deficient individuals are less productive at work. Low productivity only gives them low pay that traps them in a vicious circle of under nutrition is but also brings inefficiency to the society especially in India where labour is a major input factor for economic production (8).

On the other hand over nutrition also has severe consequences in India national obesity rates in 2010 were 14% for women and 18% for men with some urban areas having rates as high as 40% obesity causes several non communicable disease such as a cardiovascular disease, diabetes, cancer and chronic respiratory disease (9).

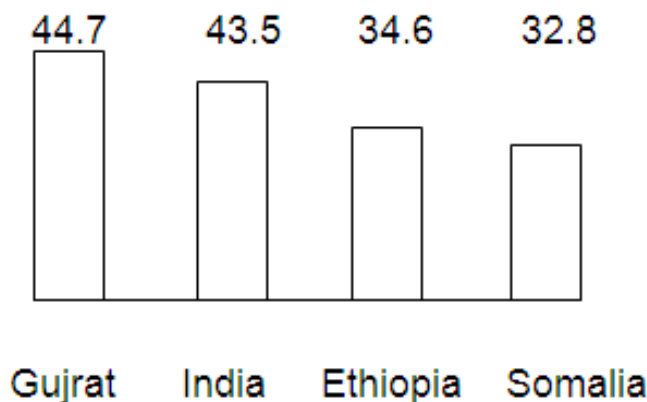
**\*SOME FACTS ABOUT NUTRITIONAL STATUS IN INDIA –**

India is home to the largest number of hungry people in the world. Their number is more than 200 million (A Report of International Food policy Research Institute's 2008 Hunger Index) so India is the home of about one third of world's malnourished children.(10)

Child malnutrition at 48% in Gujrat is higher than the national average for higher than the poorest African subsaharan countries of Somalian and Ethiopia where the rate is about 33% the infant mortality rate in Gujrat is 48 per thousands, which is the 10th worst in India.

Gujrat has a high maternal mortality rate First child malnutrition (defined by the weight to age ratio in Gujrat is 44.7% according to the India Human development Report Published by the planning commission

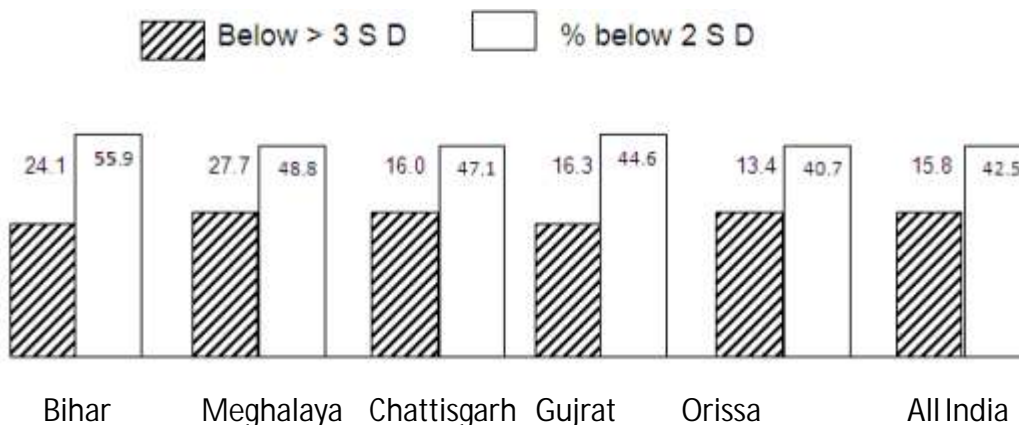
**FIGURE 1**  
**MALNOURISHED CHILDREN UNDER 5 IN INDIA & SUBSAHARAN AFRICA.**



SOURCE : Planning commission & IFPRI International Food Policy Research Insitute.

This set of figures show that Gujrat does have a higher proportion of malnourished children as compared to Somalia & Ethiopia but then so does all of India, at 43.5 to that extent, the comparision is not quite accurate as a matter of fact. Only the states of Kerala with 22.7 and Punjab with 24% have the lowest percentage of underweight under 5 children.

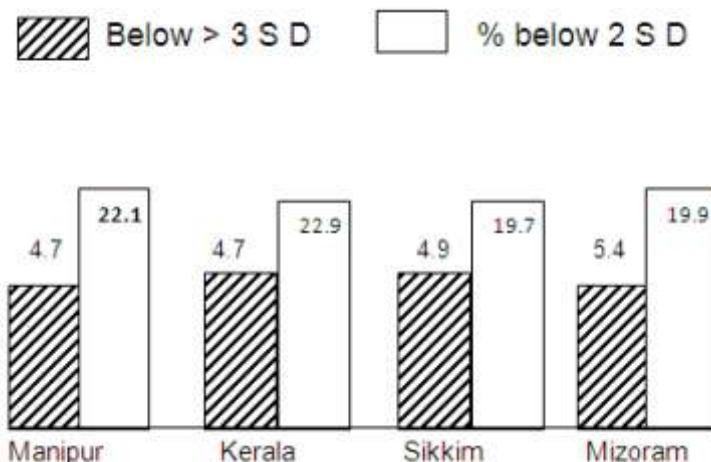
THESE FIGURES SHOW THE BEST AND WORST STATE IN INDIA.



Note : 3SD - Severe Malnutrition  
 2SD - Mild Malnutrition

Source : Planning commission Report

STATES WITH BEST MALNUTRITION FIGURES



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