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Economic and Social Dimensions of Malnutrition among Women and Children

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Abstract—*Children and Women are the most vulnerable section of the society and play a very crucial role in growth and development of the economy. This paper aims at presenting the nutritional status of women and children in India and defining the economic and social dimensions of malnutrition. India today is facing the double burden of malnutrionn with under nutrition coexisting with overweigh and obesity in some parts of the country. This double burden has raised bigger concerns regarding the health of the children, adolescent and the young population of the country. Many new factors like stress, sedentary life style, digitalization of the world are playing crucial role in this dynamic environment. Therefore there is a need to look beyond the issue which is to maintain a balance nutritional status to other factors that influences and causes variation in it. The focus is not to look at the problem through the conventional outlook of lack of some basic nutrients in individual but to look beyond and to figure out the root cause for such condition. In this attempt we aim at classifying the determinants of malnutrionn in categories which are child specific, individual specific, household specific and community specific. We would also present some basic models as described in the existing literature on factors influencing individual's nutritional status. The focus is also on defining malnutrition and highlighting the conceptual issues in measuring the nutritional status of women and children and to explain different measures of malnutrition.*

Introduction

Malnutrition is a state that can be defined in different ways. According to UNICEF (1998) it results from inadequate intake of micronutrients or from disease factors particularly some sort of infectious diseases that affect dietary intake, digestion, utilization of nutrients and other processes. It can take a variety of forms such as vitamin A deficiency, iodine deficiency, iron deficiency, protein –energy malnutrition. According to UNICEF (1990), nutrition encompasses processes leading to and involved with the utilization of nutrients for growth, development, maintenance and activity. A distinction should be made between the psychological concept of nutrition and nutrition in a broader sense that encompasses social, economic, political and cultural causes of the nutrition problem Malnutrition has been associated with poverty for very long but it is not just the consequence but also the cause for it. However each type of malnutrition is not just related to poverty but is the result of inadequate food intake and large numbers of interacting exogenous factors such as household access to food, available health facilities, child health care, maternal healthcare, hygienic drinking water, sanitation, access to toilets etc. Beyond psychological factors, it is also associated with many other social, political, economic and cultural elements (UNICEF, 1998).

Malnutrition is a dual problem that either results in under nutrition or obesity /overweight. The second form of malnutrition is less studied and the research in this area is emerging in the recent past only with growing obesity across the world. Often malnutrition is understood as lack of nutrients that ill affects the individuals' health and is taken as synonym to under nutrition.

Malnutrition among women has long been recognized as a serious problem that leads to poor health quality and is expected to be correlated with women empowerment. It also produces an indirect effect on child's growth and nutrition too. A healthy mother raises a healthy child. Changing lifestyle with less physical activities and dietary habits transiting towards fast foods away from fruits and vegetables is responsible for today's new public health problems. Obesity increases the risk of number of chronic diseases like cardiovascular attacks, diabetes, hypertension, asthma etc. which are on rise in developing countries. Some evidences indicates that women with BMI below 18.5kg/m^2(malnourished) from developing countries shows arisk to illness and also progressive increase in mortality (Rotimi et al.,1999). It is also found that women of reproductive age are most vulnerable to malnutrition. India which was initially known for undernourishment now has a significant percentage of obese that coexists with undernourished. The transitioning trend is more commonly seen in urban high socio economic status households. As per official statistics 34% of women in Delhi followed by Punjab (30%) are obese/overweight and 11% of ever married women in age group 15-49 are overweight (NFHS 3).

The persistence of malnutrition has profound and frightening implications for children, society and the future of humankind. Malnourished children, unlike their well-nourished peers, not only have lifetime disabilities and weakened immune systems, but they also lack the capacity for learning, malnutrition dulls motivation and curiosity and reduces play and exploratory activities.

They are robbed of their mental as well as physical potential. Malnourished children become adults with lower physical and intellectual abilities, lower levels of productivity and higher levels of chronic illness and disability. The consequences of malnutrition go well beyond the individual, affecting total labor force productivity and economic growth (UNICEF 1998). Malnutrition contributes to more than a third of under-five deaths globally (UNICEF 2012).

Facts and Figures

Malnutrition among children and women is a major public health problem among number of developing countries mainly in Sub Saharan Africa and southern Asia that consists of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and SriLanka. Poor diet along with infectious disease leads to a vicious circle.

India is ranked at the bottom in terms of nutrition status of different countries of the world. According to FAO report it has the maximum number of unnourished people in the world in 2010-12 (189.9 million). It has ranked 30 among the list of 96 malnourished countries of the world with 24 % of population suffering from malnutrition in 2004-06.

According to global Hunger index South Asia has a highest child malnutrition rate of the world regions. And India contributes the most number in malnutrition in this region. A 2006 U.N study claimed that south Asia has followed inadequate feeding and caring practice for young children and has low status of women and have lack of nutritional knowledge.30% children in India are underweight which is one of the highest is in the world and double the rate of Sub-Saharan Africa (World Bank, 2015). Nearly 48% of women in India are anemic.Also it is suffering from the double burden of nutrition because obesity among adults is increasing. 22%of adults are overweight or obese and 9.5% suffers from diabetes (Global Nutrition Report 2016).

Table1: Missing nutritional Targets of India

MISSING NUTRITION TARGETS

Indicator	Rate (in %)	Global Rank (lower is better)	Asia Rank	Position of nutrition indicatiors compared to World Health Assembly targets
Under 5 stunting	38.7	114th out of 132	34th out of 39	Off track
Under 5 wasting	15.1	120th out of 130	35th out of 38	Off track
Under 5 overweight	1.9	11th out of 126	6th out of 37	On track
Anemia in Women	48.1	170th out of 185	45th out of 47	Off track
Exclusive breastfeeding	46.4	48th out of 141	12th out of 40	Insufficient data
Adult overweight/obesity	22	21st out of 190	10th out of 47	Off track
Adult diabetes	9.5	104th out of 190	16th out of 47	Off track

Source: Global Nutrition Report 2016

According to global nutritional report India has shown the worst performance in mitigating malnutrition whether it is in terms of malnutrition in children under 5 (ranked 114 out of 132) or in terms of anemia among women (Ranked 170 out of 185).It was ranked 97th out of 119 in in global hunger index in 2016 and its position slipped in subsequent yearsto 100th rank in 2017 and further to 103rd.

Models on Determinants of Malnutrition

The United Nations Children's Fund (UNICEF) framework

The UNICEF framework was developed in 1990 as part of the UNICEF Nutrition Strategy. It is a conceptual framework that consists of well-established knowledge combined with hypotheses about the probable underlying causes of malnutrition. The UNICEF framework emphasizes that multiple and interrelated determinants leads to malnutrition, the framework shows that causes of malnutrition are multisectoral, involving food, health and caring practices. It categorizes the causes into immediate causes, underlying causes and basic causes (Figure 1).

The *immediate causes* of child malnutrition manifest themselves at the individual level. Inadequate dietary intake and disease are the most significant immediate causes of malnutrition. These two factors operate in a vicious cycle that accounts for much of the high morbidity and mortality seen in developing countries. When children don't eat enough, their immune system lowers down, resulting in greater incidence, severity and duration of disease. Disease speeds nutrient loss. So sick children tend not to eat as they should and the cycle continues. It is useful to interpret the dietary intake as the result of four factors: meal frequency; amount of food per meal; energy and nutrient density of the food; and biological utilization. Breast-milk has a high-energy/nutrient density, and when given on demand, provides a frequent meal for the child(4-18 months). Inadequate breast-feeding is a common underlying cause of child malnutrition.

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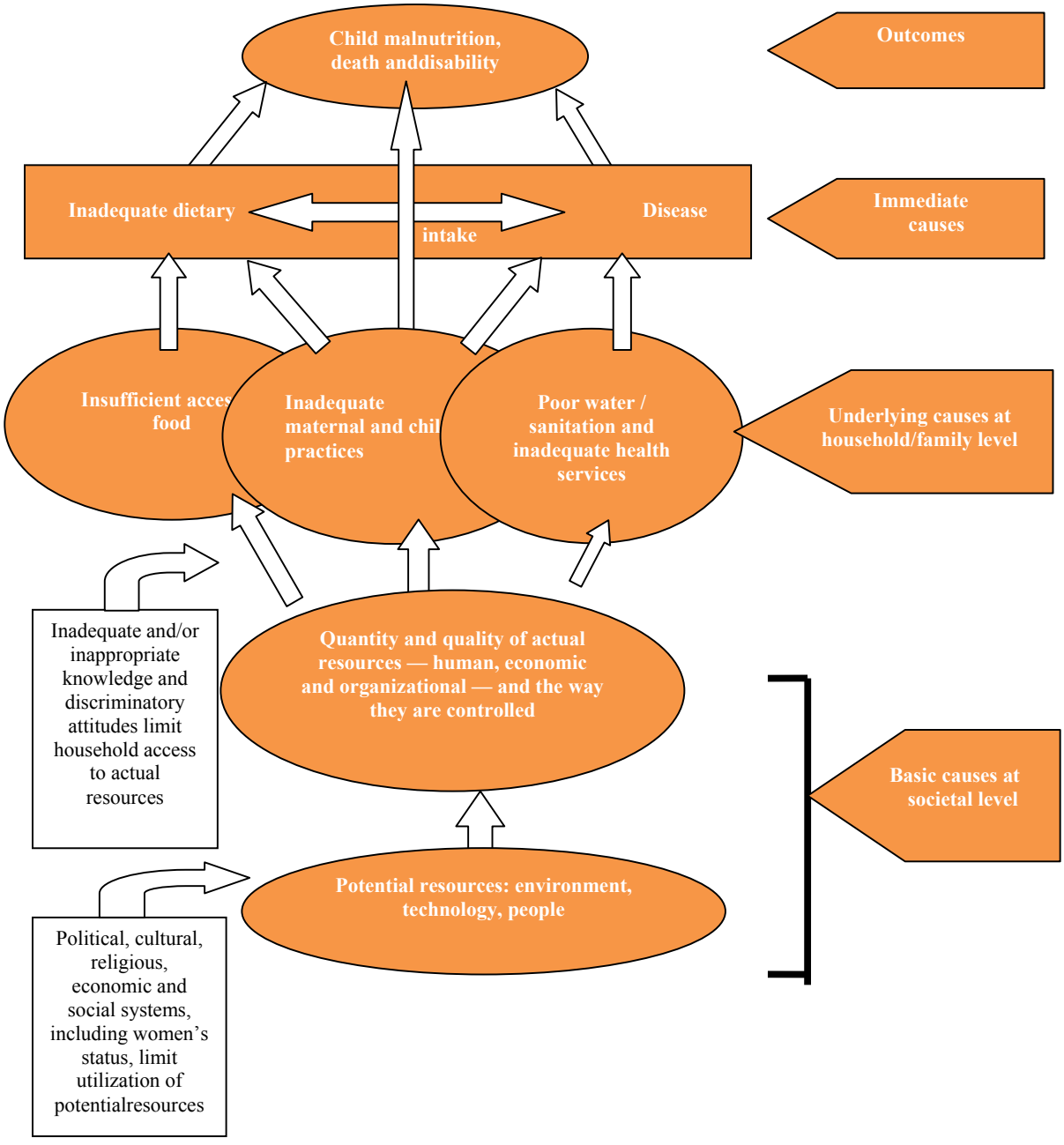
The immediate causes of child malnutrition are, affected by three *underlying causes* manifesting themselves at the household level. These are - inadequate access to food in a household; insufficient health services and an unhealthy environment (poor water and sanitation); and inadequate care for children and women.

Household food security is defined as sustainable access to safe food in sufficient quantity and quality — including energy, protein and micronutrients — to ensure adequate intake and a healthy life for all members of the family. In rural areas, household food security may depend on access to land and other agricultural resources to guarantee sufficient domestic production. In urban areas, where food is largely bought on the market, a range of foods must be available at accessible prices to ensure food security.



Source: UNICEF 1998

Figure 1: UNICEF's framework of the determinants of child malnutrition.

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An essential element of good health (control of common diseases) is access to curative and preventive *health services* that are affordable and of good quality. In terms of *environmental health*, the lack of ready access to a safe water supply and proper sanitation directly affect preparation of food, absorption of food, and general hygiene. Inadequate access to water also affects nutrition indirectly by increasing the work-load of women, thus reducing the time available for the child care.

Both mothers and children require adequate *care* from their families and communities. In communities where mothers are supported and cared for, they are in a better position to take care of their young children. Child care practices include feeding, protecting children's health, emotional support etc. Maternal care practices during pregnancy and lactation are extra quantities of good-quality food, reductions in workload, adequate time for rest, and skilled pre- and post-natal health. This in turn is determined by determined control of economic resources and autonomy in decision making physical and mental status and knowledge and beliefs.

The underlying causes of child malnutrition are further influenced by *basic causes* laid at the societal level. The basic causes include the potential resources available to a country or community, which are limited by the natural environment, access to technology, and the quality of human resources. Political, economic, cultural and social factors affect the utilization of these potential resources and how they are translated into resources for food security, care and health environment and services.

Behrman and Deolalikar framework

Behrman and Deolalikar (1988) developed a theoretical framework of household utility maximization. This framework consists of a one-period household model with constrained maximization of a joint utility function. The household is assumed to have a utility function (synonymous with household welfare) that can be expressed as:

$$U = U (H^i, C^p, C^i, T_L^i, E^{i|c}, S, \xi), i = 1,....., I, \quad (1)$$

H^i is the health of household member i(health status in micro empirical studies is measured by clinical indicators of bodily attributes; anthropometric measures of height, weight, etc; respondent-reported disease symptoms, mortality histories, and general health evaluation)

C^i is the consumption of household member i, with the superscript p referring to household pure public goods,

T_L^i is the leisure time of household member i,

$E^{i|c}$ is the education of household member i,

S is the number of surviving children,

ξ are taste norms,

i is the number of individuals in the household.

The household utility function is maximized subject to two sets of constraints, given assets and prices. The first set of constraints is a set of production functions which can be subdivided into three categories: ones that produce health and nutrition, ones in which health and nutrition affect other outcomes and ones in which health and nutrition do not enter. The second set of constraints is the time and income constraints that can be combined into a 'full-income' budget constraint.

The first order conditions for constrained maximization of the household utility function lead to reduced-form demand relations. According to the reduced-form health demand relation, the household demand for health depends on exogenous prices, endowments, transfers minus taxes and predetermined wealth.

The essence of the Behrman and Deolalikar framework is that household's demand for individuals/Child health is an outcome of a process by which the household maximizes well-being subject to a set of constraints.

A comparison of these frameworks leads to two important observations:

(i) The UNICEF framework emphasizes that multiple and interrelated determinants are involved in why malnutrition develops. It recognizes the potential multisectoral and multilevel nature of the malnutrition problem (UNICEF 1990). It categorizes the causes of child malnutrition into *immediate causes, underlying causes and basic causes*. On the other hand, the Behrman and Deolalikar framework uses a micro-economic approach of household level optimization in which the health demand relation is derived from constrained maximization of the household utility function. The limitation is under-emphasis on how a complex interplay of factors operates at different levels. And no consideration to the factors at the societal and institutional level that shape the set of options available to the households.

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(ii) The UNICEF framework however, fails to adequately highlight relative importance of certain child and household specific variables at household level. These variables include child-specific variables like birth weight, age, gender, birth order and month of birth; and household-specific variables like location of residence, household head's gender, religion and caste. On the other hand, the Behrman and Deolalikar framework takes into account these variables as components of individual's endowment and the household endowment.

Based on the above observations, it is clear that each of the two approaches by itself is incomplete. Therefore, there is a need to integrate both these frameworks if any comprehensive study of the determinants of child malnutrition is to be undertaken.

Measurement of Malnutrition

According to Radhakrishna & Ravi (2004), the extent of malnutrition is often estimated by comparing the food energy intake of persons with proposed norms. However, food energy intake is a poor measure of nutritional status because nutritional status depends not only on nutrient intake but also on non-nutrient food attributes, privately and publicly provided inputs and health status. Thus, due to the complexity in estimating malnutrition through food energy norms the assessment of malnutrition based on outcomes is preferred over food energy intake.

Anthropometric Indicators

Malnutrition is commonly measured using an anthropometric indicator which refers to body measurements. Adult malnutrition is commonly measured using the **Body Mass index.** It is the most commonly used anthropometric measure of adult malnutrition. BMI is expressed as weight in kilograms by height in meters(WHO,2005).The BMI less than 18.5 for an adult indicates malnutrition and a BMI of less than 16 refers to sever malnourishment.

Malnutrition measurement of children is based on their physical growth status and is mainly measured through weight and height in most of the developing countries studies including India. Hence the nutritional status is measured on the basis of health outcomes as indicated by these anthropometric measures.

Child Malnutrition are commonly measured as **Low height-for-age (stunting), Low weight-for-height (wasting) and Low weight-for-age (underweight).** Underweight is the most commonly and frequently used indicator of by WHO, UNICEF and other international organizations concerned with the health status of children, and most of the available empirical work and existing literature is in terms of this indicator.

Biochemical Indicators

The deficiency of micronutrients is not easily diagnosed unless it results in some illness. One such way to measure malnutrition when the disorder is not apparent otherwise is to rely on some biochemical indicators like testing of blood and urine.

Clinical Indicators

Clinical indicators should be used with caution and experts must do a detailed investigation of clinical history of each individual. The clinical examinations of individuals can be used to detect the deficiencies of certain micronutrients like iodine and vitamin A. A person having iodine deficiency may show a sign of large protrusion in the neck. So a person diagnosed with goiter reflects iron deficiency.

Socio-Economic determinants of Malnutrition

Over the past several decades, there have been a large number of empirical studies on the determinants of child and women malnutrition in developing countries, including India. We will classify the available literature on the Determinants in the following order: child-specific, parents-specific, household-specific, community-specific and women specific

The **child-specific variables** include gender, age, birth order, size at birth, month of birth,Child intake of food nutrients and duration of breastfeeding (in months).

The **parents-specific variables** include mother's age at first marriage and at first child birth, education, current nutritional status as measured by body mass index (BMI), status in the household, current employment status and father's education.

The **household-specific variables** include educational attainment of household members other than the child's parents, household size, gender of household head, household head's caste/tribe,religion, household location household income and type of cooking fuel.

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The **community-specific variables** include access to safe sanitation, access to maternal and child healthcare services, presence of anganwadi Centre, ante natal visits to or by health professionals, institutional delivery and access to child immunization services.

Women empowerment factors like access to resources, her education, freedom of movement, access over own earnings, participation in household decision, spouse violence and employment status.

Other factor includes stress, sedentary life style, digitalization of the world are playing crucial role in this dynamic environment.

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