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Evaluation of Malnutrition in India with Reference to its Poverty

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ABSTRACT: The World Bank estimates that India is one of the highest ranking countries in the world for the number of children suffering from malnutrition. The prevalence of underweight children in India is among the highest in the world, and is nearly double that of Sub Saharan Africa with dire consequences for mobility, mortality, productivity and economic growth. Though most of the population is still living below the National Poverty Line, its economic growth indicates new opportunities and a movement towards increase in the prevalence of chronic diseases. The Government of India has launched several programs like ICDS, NCF, and National Health Mission to converge the growing rate of under nutrition children. The multi-pronged strategy shows that a health issue like malnutrition can be tackled with the help of behaviour change communication (BCC) and other social aspects.

Keywords: malnutrition, poverty, chronic diseases, management

I. INTRODUCTION

Effective nutrition education can decrease the occurrence of diet-related chronic diseases, including obesity, type 2 diabetes, cardiovascular disease, and hypertension. Evaluating effectiveness, retention rates, educator perceptions of nutrition programs, and the perceived need for culturally relevant strategies in India within nutrition education interventions are important aspects for developing acceptable and appropriate interventions to increase positive outcomes.

India is the second most populous country in the world after China with a total population of 1,349,316,931 (1.34 billion) people represents almost 17.85% of the world's population. It is expected that India is all set to take the number one position by 2030. As it will cross 1.53 billion people by the end of 2030. About 50% of India's current population is below the age of 25 and over 65% below the age of 35 with 72.2% of the population livening in 638,000 villages and the rest 27.8% in about 5,480 towns and urban agglomerations. The birth rate is 22.22 births/1,000 populations while death rate is 6.4 deaths/1,000 populations. Fertility rate is 2.72 children born/woman and Infant mortality rate is 30.15 deaths/1,000 live births. The literacy rate of India as per 2011 Population Census is 74.04%, with male literacy rate at 82.14% and female at 65.46%. Kerala has the highest literacy rate at 93.9%, Lakshadweep (92.3%) is on the second position and Mizoram (91.6%) is on third.

Poverty, illiteracy, high fertility rate, rapid decline in death rates or mortality rates and immigration from Bangladesh and Nepal are some of the reasons for India's rapidly growing population. In fact India by launching the National Family Planning program in 1952 became the first country in the world to have a population policy. The family planning program and the contraceptive usage yielded some noticeable results, bringing down significantly the country's fertility rate. The efforts did produce positive results, however, failed to achieve the ultimate goal and the population of India since getting independence increased almost three times since 1947. Whereas, India has missed almost all its targets to bring the rate of population growth under control, China's 'One Child Policy' in 1978, to prevent between 250 and 300 million births from 1978 to 2000 and 400 million births from 1979 to 2010.

The Indian government takes a two-step approach to reducing child malnutrition: a Public Distribution System makes food available at subsidized prices, and the Integrated Child Development Services (ICDS) provides nutritional supplements, bundled child and maternal services, and day-care facilities to targeted households. The ICDS has been in place since 1977 and although it cost approximately $1.5 billion in 2008, previous evaluations using data from 1998-99 and earlier failed to show its effectiveness (World Bank, 2007a). Recently, the World Bank recommended that the Indian government redesign the ICDS for a total price tag of $9.5 billion. Given the hefty price tag of redesign, the potential impact on poor households and the availability of new data, the impact of the ICDS must bear closer evaluation and rigorous analysis.

Table 1: Current Population of India 2016.

Current Population of India 2016.				
Rank	**State or union territory**	**Population (2011 Census)**	**Density (per km²)**	**Sex ratio**
01	Uttar Pradesh	199,581,477	828	908
02	Maharashtra	121,362,092	365	946
03	Bihar	116,725,698	1102	916
04	West Bengal	91,347,736	1029	947
05	Andhra Pradesh	84,665,533	308	992
06	Madhya Pradesh	72,597,565	236	930
07	Tamil Nadu	77,881,463	555	995
08	Rajasthan	74,791,568	201	926
09	Karnataka	61,130,704	319	968
10	Gujarat	60,383,628	308	918
11	Odisha	41,947,358	269	978
12	Kerala	33,387,677	859	1,084
13	Telangana	35,193,978	307/km2 (800/sq mi)	-
14	Jharkhand	32,966,238	414	947
15	Assam	31,169,272	397	954
16	Punjab	27,704,236	550	893
17	Haryana	25,353,081	573	903
18	Chhattisgarh	25,540,196	189	991
19	Jammu and Kashmir	12,548,926	56	883
20	Uttarakhand	10,116,752	189	963
21	Himachal Pradesh	7,123,184	123	974
22	Tripura	3,671,032	350	961
23	Meghalaya	2,964,007	132	986
24	Manipur	2,721,756	122	987
25	Nagaland	1,980,602	119	931
26	Goa	1,457,723	394	968
27	Arunachal Pradesh	1,382,611	17	920
28	Mizoram	1,091,014	52	975
29	Sikkim	607,688	86	889
UT1	Delhi	18,686,902	9,340	866
UT2	Puducherry	1,244,464	2,598	1,038
UT3	Chandigarh	1,054,686	9,252	818
UT4	Andaman and Nicobar Islands	379,944	46	878
UT5	Dadra and Nagar Haveli	342,853	698	775
UT6	Daman and Diu	242,911	2,169	618
UT7	Lakshadweep	64,429	2,013	946
Total	India	1,210,193,422	382	940

Malnutrition causes impaired growth, developmental delay, decreased physical activity, behavioral abnormalities, and impairs cognitive function and school performance. Childhood, an important phase of life for acquisition of different empowering knowledge and skills through socialization, can badly be affected by compromised iron status of body which can be addressed by reaching them through the existing settings such as schools and health facilities for integrating nutrition education and actual services to reduce anemia. Primary school can be the most important strategic place to foster healthy life styles and valuable second front in war against ill health and malnutrition (Gopalan, 1974). Unfortunately, health education in rural primary schools is either limited to some routine touching of the syllabus or nonexistent. There is dearth of information about the impact of school-based health-nutrition education on nutritional anemia among primary school children. The present study was contemplated to estimate relationship between poverty and malnutrition in India.

II. MALNUTRITION AND ANEMIA RATES ARE HIGH AMONG CHILDREN

As per the reports from the ICDS, 2016 38.4% of children under age three are underdeveloped, and 46% are malnourished that is too thin for their age. This trend has been observed in both the sexes with more prevalent in rural areas and is strongly correlated with the level of maternal education showing a two-fold difference between non-educated mothers and 10-year and above educated mothers. The prevalence of anemia is slightly higher in rural areas and among non-educated mothers that may be linked to poor variety of diet, poor hygienic conditions and limited access to iron supplementation. Further, it was reported that breast feeding is slightly higher among the non-educated mothers and in rural areas. Still only 23.4% of children are breastfed within one hour of birth and the

prevalence is significantly lower among the non-educated mothers and in rural areas with an overall improvement from 9.5% in 1992-93 and 16% in 1998-99. Further, it is reported that only 55.8% of children aged 6-9 months receive solid or semisolid food and breast milk. Although the percentage is significantly lower among non-educated mothers and in rural areas, the prevalence in urban areas and among well-educated mothers is still less than 70% making complementary feeding a high-priority to be addressed. The poverty has exposed the mothers to extreme malnutrition problems as a result of which a significant percentage of women and men are malnourshied and its impact is clearly seen in their babies. About 33% of married women and 28% of men are too thin, according to the body mass index (BMI) which is more common among the poor, the rural population, adults who have no education are scheduled castes and scheduled tribes. However, reverse of the same has been observed in urban area with overweight and obesity affecting almost 15% of women and 12% of men. The irony is that this phenomenon is often observed among educated persons in urban India who do little or no physical activity.
56.2% of women and 24.3% of men suffer from anemia, and have lower than normal levels of blood haemoglobin and anemia has increased from 50% to almost 58% among pregnant women. Only 22.3% of pregnant women consume Iron and Folic Acid supplementation for 90 days and the percentage is less than 10% among the non-educated women compared to 50% among the well-educated. The deficiency of iodine, which can lead to mental retardation, goitre, and complications of pregnancy, is easily prevented by using salt fortified with iodine.

III. IMPACT OF MALNUTRITION ON HEALTH AND DEVELOPMENT

Malnutrition among under-five children is a major public health problem in India. This is reflected by the fact that the prevalence of under-weight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa. It is also observed that the malnutrition problem in India is a concentrated phenomenon that is, a relatively small number of states, districts, and villages account for a large share of the malnutrition burden - only 5 states and 50% of villages account for about 80% of the malnutrition burden (Schroeder, et al., 1999). These children experience developmental delays, weight-loss and illness as a result of inadequate intake of protein, calories and other nutrients. The soft targets are the orphaned and institutionalized children may experience one or several macronutrient and micronutrient deficiencies, they are at risk for a variety of short-term and long-term complications. Because so much development occurs in the first few years of life, nutrient deficiencies can have major short-term implications in young children. This can greatly compromise a child's immune system, making them more susceptible to infectious diseases. Zinc, iron and vitamin A are commonly associated with weakened immune function. Nutrient deficiencies and gastrointestinal infections commonly co-occur in orphans. A child may contract an infection due in part to poor nutritional status. In turn, a gastrointestinal infection places the child at even greater risk for nutrient deficiencies because nutrients are unable to be absorbed properly. Consequently, nutrient deficiency combined with infection can cause growth retardation. Malnutrition can also limit total bone growth. Further, children classified as low height-for-age (stunted) may never be able to regain lost growth potential if they continue to live in a nutritionally deprived situation.
Cognitive Implications
Malnutrition negatively effects brain development causing delays in motor and cognitive development, such as:
Attention deficit disorder
Impaired school performance
Decreased IQ scores
Memory deficiency
Learning disabilities
Reduced social skills
Reduced language development
Reduced problem-solving abilities

Malnutrition in India: States where malnutrition is prominent
i. Uttar Pradesh : Most children here, in India's densest state by population, under the age of 5 are stunted due to malnutrition.
ii. Tamil Nadu: The state, despite high education, has a prominent child malnutrition problem. A National Family Health Survey reveals that 23% of children here are underweight, while 25% of Chennai children show moderately stunted growth.
iii. Madhya Pradesh: 2015 data reveals that Madhya Pradesh has India's highest number of malnourished children - 74.1% of them under 6 suffer from anemia, and 60% have to deal with malnutrition.
iv. Jharkhand and Bihar: At 56.5%, Jharkhand has India's second highest number of malnourished children. This is followed by Bihar, at 55.9%.

Management of malnutrition and interventions:
Udipi *et al*., 1993 argued that health education learning can be promoted through children's games.. Nutrients of importance were identified as protein, energy, fat, vitamins A and C, and minerals such as calcium and iron.

Awate argued that the significant number of school-age children is in need of adequate source of health care and nearly one-fifth of the population of every country comprised these children. He recommended dietary modification, improvement of school sanitation and personal hygiene, strengthening school health services and awareness building as key factors to reduce the malnutrition. Saito *et al*., 1997 suggested a need for intensive nutritional programs targeted toward poor female children and their mothers. Conversely, medical care was considered indicated for diarrhea, colds, and worms. These findings indicate a need for intensive nutritional programs targeted toward the families of low-income female children. By pooling the results from five previously published prospective studies, Schroeder and Brown, 1994 obtained estimates of the relative risks of mortality among young children 6-24 months after they had been identified as having mild-to-moderate or severe malnutrition. The study suggested that child survival programmes should assign greater priority to the control of childhood malnutrition. Paramjit *et al*., 1996 selected 66 pregnant women from two hospitals and two urban family welfare centers in Ludhiana city, India. Women in the nutrition education group were more likely than the control group to consume more protein, vitamin A, thiamine, folic acid, and vitamin C. These authours suggest that nutrition education for pregnant women does improve nutrient intake but also that more needs to be done to bring intake levels up even higher.

Ramachandran 2007 argued that Living in areas of poor environmental sanitation they had high morbidity due to infections; nutrition toll due to infections was high because of poor access to health care. And as result of it, majority of Indians especially children were undernourished. Under the Integrated Child Development Services (ICDS) programme food supplements are being provided to children, pregnant and lactating women in the entire country. While poverty and mortality rates came down by 50 per cent, fertility rate by 40 per cent, the reduction in under-nutrition in children is only 20 per cent. National surveys indicate that a third of the children from high income group who have not experienced any deprivations are undernourished. Varadharajan *et al.,* 2013 indicated that many strategies and policies have been proposed to counter under-nutrition in India, but their implementation has not been uniform, and it is still too early to assess their lasting impact at scale.

The Indian government started midday meal scheme on 15 August 1995. It serves millions of children with fresh cooked meals in almost all the Government run schools or schools aided by the government fund. The government of India started a program called Integrated Child Development Services (ICDS) in 1975. ICDS has been instrumental in improving the health of mothers and children under age 6 by providing health and nutrition education, health services, supplementary food, and pre-school education. The National Children's Fund was created during the International Year of the Child in 1979 under the Charitable Endowment Fund Act, 1890. This Fund provides support to the voluntary organisations that help the welfare of kids.

IV. CONCLUSION AND SUGGESTIONS

Ongoing instillation of nutrients at government's cost should not be a permanent solution.(16) Inculcating healthy life styles and dietary patterns conducive for prevention of anemia is the most cost-effective way to make a real dent in the problem. Women need adequate nutrition and care, including health care, during pregnancy, after delivery and when they breastfeed. They need skilled counselling and support to begin breastfeeding within the first hour. During the six months of exclusive breastfeeding, they need to stay close to their children, at the risk of losing their wages. Therefore it is necessary to have maternity entitlements that include:

a. Compensation for staying home to breastfeed the very young child at the risk of losing wages or affecting their economic status,
b. Adequate nutrition during pregnancy and lactation, including good quality supplementary nutrition for pregnant and lactating mothers through the ICDS.
c. Adequate access to quality health care services.
d. Adequate access to skilled counselling and support for early initiation of breastfeeding and exclusive breastfeeding.
e. Exclusive Breastfeeding for children up to six months. ICDS and the Health System should mainstream providing skilled counselling and support for women
f. Skilled Counselling and nutritional support for children under three.
g. Pre-school and hot, cooked meals for all children in the age group of 3 years – 6 years.
h. promotes social equity,
i. provides income support to poor households,
j. acts as a form of nutrition education,
k. tackles hunger and can contributes all nutrients required.
l. Day Care Centres or Crèches.
m. Second Anganwadi Worker for ICDS Centres.
n. Convergence between Health and WCD Department
o. ANMs / AWWs and ASHA are trained and mentored together on tackling malnutrition.
p. Nutrition Rehabilitation Centres located at PHCs become the focal point of dealing with severe malnutrition.

q. Block and District level Health, RCH and WCD officials routinely monitor malnutrition together.
r. Improving governance and involving communities.
s. Procurement of food should be done at the village level without private contractors, as the Supreme Court has ordered.
t. Medicine kits and Pre-School Kits should be procured locally. Monitoring and evaluation should also be carried out at the block and district level with the active involvement of PRIs.

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