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India: A fight against child malnutrition

Bounded by the Indian Ocean on the south, the Arabian Sea on the southwest, and the Bay of Bengal on the southeast, meanwhile bordering on China, Nepal, Pakistan, Bhutan, Bangladesh and Myanmar, the Republic of India enjoys both maritime and land resources. Mainly due to its location on the windward slope, the proximity to the equator and the monsoon wind, the climate in India hinterland is typically hot, dry season and the rainy season distinctly differentiating from each other, leading to frequent droughts and floods which pose great threats to plantation. India, an active part of the BRICS countries, the biggest country on the South Asian Sub-continent, one of the Four Great Ancient Civilized Nations, as well as the second populous country in the world, has long been recognized for its advanced IT industry, proven to be a most significant country for the business of software and finance service, but has also long been troubled by the deeply-rooted discrimination resulted from the Caste system and the colonization period, with its social wealth unevenly distributed to the utmost. It continues to face challenges of poverty, corruption, malnutrition and inadequate public healthcare.

Malnutrition is a grievous problem throughout India, researches revealing one third of the adults in India have chronic protein energy malnutrition as expressed in body mass indices below the norm, and nearly half of the children are stunted, wasted or underweight. In fact, 42.5% of the children below five are underweight compared with peers, occupying the first place among the South Asian countries. The widespread under-nutrition is leading to unimaginable loss to the country's education clause, sustainable economic growth, and society stability. The problem more apparently demonstrates in rural areas, amid the poor, amid the scheduled tribes and castes, and amid the illiterate population. Particularly vulnerable likewise are those belonging to the unorganized section, such as landless vagrants, workers and artisans, single-woman supported families.

Table 1 Prevalence of underweight adults in selected Asian countries

Country	Underweight males BMI<18.5	Underweight females BMI<18.5	Year
India	33.7	35.6	2006
Bangladesh	27	29.7	2007
Nepal	33	24	2006
Pakistan	25	25.3	2001
Laos	12.1	14.8	2006
Vietnam	19.9	21.9	2005
Myanmar	26.01	21.95	2004

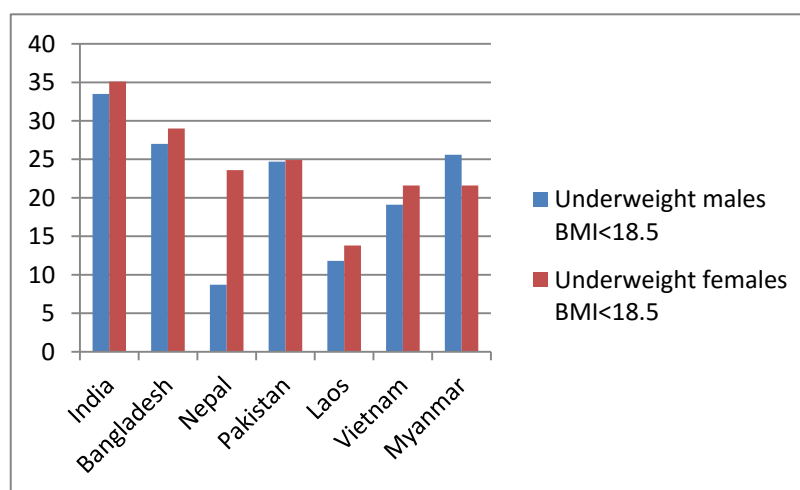
Source For Pakistan: Nube (2007); other countries: WHO Global Database on BMIs accessed at <<http://apps.who.int/bmi/>>. *Note* Data for underweight males in Bangladesh and Nepal were not available, hence a value 2% lower than the proportion of underweight females has been used based on

the average M-F variation in other South Asian countries

The negative effects of child malnutrition are overwhelmingly strong:

(1) First and foremost, child malnutrition gives rise to adult malnutrition, thereby generating threats towards the health of its whole population. It is analyzed that those kids who suffer lack of enough nutrition in the juvenile will become under healthy level when growing up. The negative influence of child and adult malnutrition is closely related to high morbidity, high mortality, and short life expectancy. Though not justified by convincing evidence, people still find connection between these two issues, with a saying that for those with BMIs below 16, the rate of morbidity and mortality is as nearly three times higher after a decade.

Figure 1 % Underweight Adults (15-64 years)



Source For Pakistan: Nube (2007); other countries: WHO Global Database on BMIs accessed at <<http://apps.who.int/bmi/>>. Note Data for underweight males in Bangladesh and Nepal were not available, hence a value 2% lower than the proportion of underweight females has been used based on the average M-F variation in other South Asian countries

(2) The child malnutrition can lead to great economic loss. The FAO emphasizes the need for a focus on adult nutrition as ‘the nutrition and health of adults are of particular importance because it is this age group that is primarily responsible for the economic support of the rest of society’ (Shetty and James 1994). (An adult with a BMI below 18.5 is classified as chronic energy deficient) (BMI: body mass index)

Firstly, the malnutrition of labor force will end with diminished work productivity. A BMI cut-off of 17.0 has been put forward as the point at which normal physical activity requiring a certain level of strenuous effort could become difficult for an adult to perform. As is pointed out, energy cost required by activities like household chores, light occupational tasks such as carpentry, sowing or harvesting crops would ‘frequently be 5 times than the basal metabolic rate(BMR) and both this degree of strenuousness and the nature of the activity would make it unlikely that there would be a

comparatively high physical stress to an individual with a low BMI(down to 17)' (Durnin 1992), not to mention an array of heavier activities such as loading , carrying piles of cotton or grain, or digging earth or coal. Secondly, not only is an undernourished individual unable to work so efficiently, but also the time he or she takes to finish a task is considerably longer. A research aiming at rural men in Guatemala launched by the Institute of Nutrition of Central America (INCAP) reveals that those who had lower muscle mass take a much longer time to accomplish the assigned tasks. What's more, the reduction in family income will also cause some poor families within the nation to be even poorer, harming the expansion of the consumer market, which, without doubt, can impose much more potential pressure to the economic development. In conclusion, the nourishment of adults, an evil consequence of child malnutrition, especially those aging from 18-45 to be exact, will extremely impact on the productivity of both agriculture and industry, greatly effecting the prospect of gross domestic product (GDP).

Table 2 Economic losses because of Adult Malnutrition measured by GNI (Gross National Income)

Underweight males (15-64)	Underweight females (15-64)	GNI contributed by underweight males (\$ million)	GNI contributed by underweight females (\$ million)	GNI contributed by Underweight Adults (\$ million)
128,547,329	128,089,586	151685.85	151145.7	302831.6

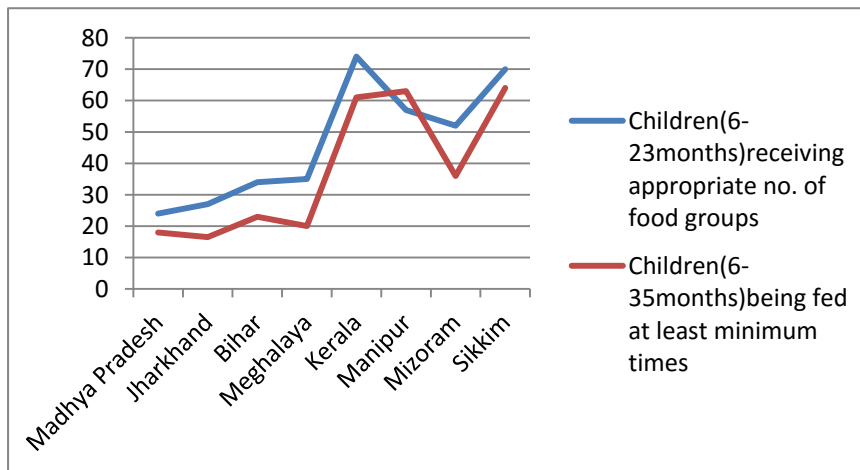
Note 1.The assumed GNI contributed is based on working full capacity. 2. GNI: world Development Report 2009. 3. The number of underweight males and females are selected from WHO Global Database on BMIs accessed at <http://apps.who.int/bmi/>

(3) It is obvious that the malnutrition of children will end up as a public health issue, and meanwhile place the society stability at a severity. The welfare system has become an increasingly arduous issue to be realized in reality. Adequate dietary diversity is provided to only about one-third of the children below two and only one quarter of these children can receive the minimum quantity of feeds required. The lack of feed contributes to high mortality rate of kids under five within the country and a low rate of kids with a qualified physique. What's worse, the under-nutrition acts as a most important role in immiserization in cities particularly. Since 1990, the urbanization is progressing faster than ever, indication showing the level of urbanization will be up to 40% by 2030. The roughly 100 million peasants swarming in the newly evolved cities, however, seem never to have been accepted by the urban society system, a lot of whose families are undergoing terrifying lack of nourishment. Without social insurance and welfare, they are only permitted to live in slums, where trash spreads all over the ground, several children and parents are crowded in crumple space, and crime driven by the indignation and desperation of the uneven distribution of nutrients is bred, making a chronic headache for the authority.

(4) As for a household, child malnutrition will certainly increase the expenditure of medical treatment of a kid during his or her growth to 18, and thus a heavier burden can be loaded on the family in limbo which is mere struggling to make its ends meet, taking into consideration that a representative India family of this level posses 3-7 children. Moreover, the individual loss of earnings

will also affect the family living standard. According to the World Bank, the economic loss for the undernourished workers is considerable during their lifetime. Strauss (2000) found that ‘individuals aged 26 who were born small for gestational age earned 10% less than individuals who had normal birth-weights.’ In addition, the productivity loss of parents resulting from lack of nourishment during their childhood can bring devastating decrease in living quality of the whole family, triggering the malnutrition of their next generation, which ‘perfectly’ completes the vicious cycle.

Figure 2 Indicators of child nutrition in four best and four worst performing states



Source Data from National Family Health Survey 2005-06

The causes contributing to the present phenomena are complicated, five leading reasons listed below:

(1) Surge of population and number of kids. The surging population in India is strongly dragging the country in its fight against child malnutrition. The tradition of bearing as many children as possible has historical, economical, and social causes. No matter believing in Hinduism or Islam, adherents are encouraged to have more children by the doctrine. Additionally the Caste system in India, which allows intermarry within every caste only, promotes breeding for rivalry with other races via enhancing its ability. The dense of population places the food insecurity at a more salient position, thus influencing the nourishment of Indian kids.

(2) Gender effect. The gender effect can never be neglected when this issue is discussed. Even until now, the distribution of food is related to gender when having meals in a typical Indian family, in the rural area in particular. The families are expecting boys hence young mothers are anticipating to get a little advanced in the family and in the society by bringing up prominent boys, which means that the nourishment status of girls are always worse off than boy infants. A real case in point depicts this gender impact. 33-year-old Kanu, an ordinary young mother in India, has given birth to 15 kids during the 18-year marriage with her husband, Ramsinh Sangod. It is reported that the first 14 kids were all girls, triggering Ramsinh’s ungovernable anger, who asserted that he would marry another concubine if Kanu still goes on without a boy. Hence it is not surprising that the couple’s final 15th infant—a boy has become the ‘best treasure’ ever, with all 14 girls’ nourishment being placed second to their little

brother, leaving them unfed and unadorned.

Table 3 Gender disparity in access to food by state

	disparity against women	Gender parity	Disparity against men
Access to nutrition	Andhra Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jammu&Kshmir, Jharkhand, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal	Assam, Gujarat	None

Selected from Persisting Undernutrition in India by Nira Ramachandran

(3) Maternal education and nutrition. Women in South Asia tend to have lower status and less decision-making power, which limits women's chances to access the resources needed for their own and their children's health and nutrition. As has been shown, it is strongly associated with low birth weights of their babies, as well as poor child feeding in the first 12 months of life. Besides, it has often been found that mothers are unaware that their children are undernourished until it is almost too late to seek for a cure, which indicates the lack of maternal education, or just the primary education for girls is a crucial pushing hand. Also the young first marriage age of women in India at around 17.1 in 1971 will probably tend to increase the possibility of premature infants and insufficient maternal responsibility.

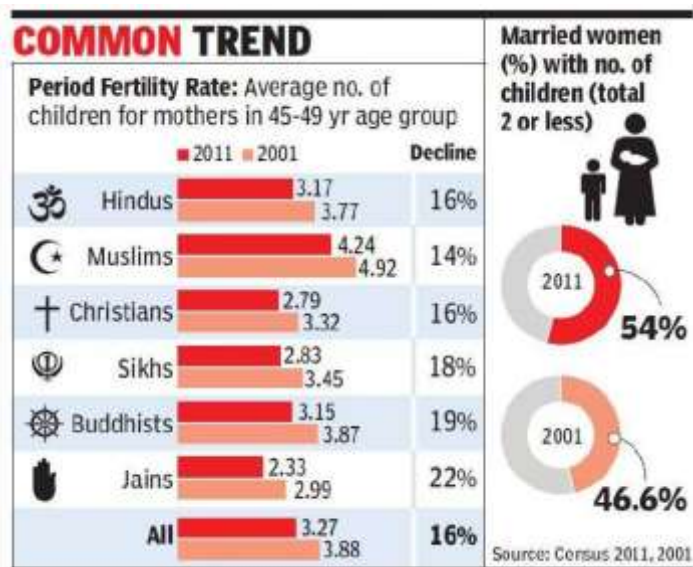
(4) Unsound hygiene and medical condition. Hygiene and sanitation standards in South Asia are well below than other countries and have a major role to play in causing the infections that lead to under-nutrition in the first 2 years of life. Therefore, communicable diseases falling on the already vulnerable immune system of those infants can be fatal.

(5) Family income. As has been discussed before, the under nourishment during childhood can trigger malnutrition of adults thereby affecting the productivity of workers, ending in the inadequate wages to support such a big family with so many children. Family income, however, does not contribute as much as maternal nutrition and training to the improvement of nourishment status of the young.

Fortunately, over the decades, the India government has realized the disaster child malnutrition brought to the country and a lot of effective measures have been taken towards this issue.

On the one hand, the population policy has been launched within the country with propagandas dispersing, calling for that each family should own only two children. Experts from the National

Commission on Population, the Department of Family Welfare and the Department of woman and Child Development assembling for better population regulations, the National Population Stable Foundation set up to prize those parents obeying the proposal, the crude birth rate has been lowered to 26.4 in 1998 compared to 40.8 in 1951, the mortality of infants has been lowered to 0.7% in 1998 compared to 14.6% in 1951, the couple protection rate has increased to 44% in 1999 compared to 10.4% in 1971, and the average longevity has been prolonged to 62 from 37.



Selected from santaihu.com

To examine the changes overtime, the author will take two states into consideration for exemplifying: Sikkim and Madhya Pradesh. Looking at the most basic cause of poor nutrition outcomes, underweight mothers, little seems to have changed over the 7 years' period. The ratio of underweight women remains stationary in Sikkim at 11%, whereas Madhya Pradesh records an increase of 4 percent points on the indicator. The persistence of gender discrimination probably remains a hard-solved problem. It is obvious the proportion of girls aging from 16 to 17 attending school is even experiencing a downturn over the years of enhancement, hardship faced by women from birth in terms of nutrition, caring, freedom, and security.

There are sure to be other factors adding to the list. For instance, it has been acknowledged that with the development of science and technology in the modern information era, media is playing a vital role on the stage. The data of under-nutrition population is becoming more accurate over time with media exposure, which also provides assistance in cutting down the high malnutrition rate. At the same time, Access to health related facility, infrastructure, and environment are important factors in reducing the prevalence of child malnutrition. For example, wider access to a flush toilet is likely to improve nutritional status of children. Easier access to drinking water reduces wasting. And it is added that some related topics, including water security, environment favorability for agriculture (for example, inappropriate monsoon rains may trigger droughts and floods which decrease the sources of crops available thus making the number of children under nourishment greater), the economic situation, governmental policies and so on.

Now that the problem of malnutrition appears most severely in the rural area of India, here I will define a typical family life in the rural area near the bank of the downstream of the Ganges River.

The family of 11-year-old Dheeraj consists of 7 people, including his parents—a 38-year-old woman and a 40-year-old man, his two older sisters—aged 12 and 14, his older brother—a 20-year-old handsome boy, and his 19-year-old sister-in-law. Dheeraj and his 12-year-old sister walk to their school, which is 9 kilometers away from their family farm, wearing clothes with school marks (kind of strange). Whereas the second oldest kid, Dheeraj's larger sister, plans to be a servant in the landlord's house. She confesses that though many people are discouraged to serve in the landlord's grand house for it is said that almost all landlords assume servants not to be men or women, but some service machines, manifesting that they often scold their servants, she has no choice as there are few opportunities left for girls of her social level. Dheeraj's brother graduates from high school and then were back here to help his parents managing the small family farm, meanwhile marries a girl in the same village—Dheeraj's present sister-in-law. The whole family lives in a small house made of bricks and earth. The family mainly feed on maize food such as maize pancakes and maize porridge, also include seasonal vegetables. The Indians are especially keen on a wide range of condiments, such as curry, hot pepper, black pepper, cardamun, clove, ginger, garlic, foeniculum vulgare, cinnamon, etc. They usually mix up all the elements of the meal together in a plate and sit down in a circle using their right hands, since their religion—Hinduism—regards left hands as 'unclean'. Sometimes Dheeraj and his younger sister get to have their meals on the road when the time is so limited. They appear never to use auxiliary instruments as assistance while eating. The neighbor of Dheeraj's family has some knowledge of medicine, making it possible that the Dheeraj's family get some elementary health help like the cure of a bad cold. Yet they have to walk at least 11 hours to the nearest clinic which equipped with basic medical facilities. What's more, in the family, the two girls are bony and short, diagnosed as stunted at around 5 or 6 years old, with the younger girl a premature infant, Dheeraj suffering from chronic gastrointestinal diseases, and Dheeraj's nephew—the 2-year-old son of Dheeraj's brother, always crying out during the night for not enough food fed

The structure of India agriculture remains a traditional one—small-scale family farms, influenced by feudalism and capitalism at the same time. It is startling that the 1.3% rich farmers hold 14% of the lands, but the 50% poorest small households own only 1%. Dheeraj's owns a small land of 1.8 acres (the average is 1.68), meaning that the average possession of land within the family is approximately 0.26 acres per person. Both Dheeraj's parents and the young couple work on the farmland. Majoring in the plantation of rice, the family workers get up early every morning and devoutly sweat under the brutal sun. Not mastering much modern agricultural technology, they mainly work with some traditional tools such as sickles, awaiting natural precipitation as irrigation.

The problems Dheeraj's family is facing can be expanded to all families of this level in India: How to have those advanced agricultural tactics applied in their production and get their production efficiency enhanced? How to get additive revenue to make a better life for the whole family? How to have more good arable land under their family to reach the aim of more produce? How to improve the family life standard and foster more healthy children?

Based on the phenomena and supposed causes discussed above, it is apparent to strengthen the impact

of the WHO, World Bank, the UNICEF and other governmental organizations as well as the NGOs, and to arouse the attention of the Indian society to change its ethos, and last but not least, to encourage each family to put forward those implementations.

(1) It is undeniable that the population policy should be kept on with more strict regulations to restrain the rapid population growth, with the children born by each couple limited to two, postponing the marriage and bearing age limits to ensure more healthy babies born. Medical checkups during the whole process of pregnancy need to be examined and ensured. Meanwhile the registration of new-born infants should also be perfected to help malnutrition analysis and data statistics, thus appropriately distributing the international and governmental nourishment aid. The author does believe all these will work out for enhancing the fertility quality to cure the infant malnutrition at the primary source.

(2) A mechanism for sanitation is also vital in the progress. Improved hygiene facilities should be put into the agenda, enabling all citizens to have qualified clinics within 2h's reach. Baby delivery clinics should be set up especially in remote states where parturition hygiene cannot always be guaranteed. The author also proposes World Bank and various NGOs to aid in money, with India government sharing part of the payment, to establish a similar 'Pay for nutrition and education' program, paying each child attending school monthly payments and nutrition supplements for children under school age. The subsidy will be directly distributed to mothers in family qualified into the aid mechanism, elevating women's status and importance in household management and child care. For mothers-to-be, each will receive a printed recipe for their pregnancy and will be required to have frequent checkups. Mothers in family under certain living levels will receive nutrition supplement monthly at the same time.

(3) There ought to be a special committee set up in India for this issue. In the case of health, all children under eight will be required compulsorily to have an annual health checkup, with all the data recorded into an online base, ascertaining that children stunted, wasted and underweight for age as well as suffered other diseases will be realized as early as possible. The data base as well ought to record each child's nourishment taken, from protein, sugar, to essential micronutrients like zinc and ferrum. Management for acute child malnutrition treatment is supposed to be streamlined, and prevention and treatment of common infectious diseases are supposed to be standardized.

(4) The Indian government should spare no efforts to reshape the present uneven distribution of wealth as well as farmland. What's more, laws must be implemented to protect the rights of women, giving them the same society status and share of food, calling for the whole society to be aware of the importance of well-off mothers for the future of the society.

(5) Maternal education must be a top priority. The author suggests that a 'love baby' group in each village as well as each neighborhood in the city be set up, where mothers will be compulsory to attend maternal classes before they are qualified to be mothers. They will also be able to get the most instant enquiry about baby care and communicate with each other to circulate their experience of taking care of children. It is highly recommend that the WHO send a group of specialists to these areas, offering needy courses in the 'love baby' clubs and cultivate possible local teachers to keep the mechanism

sustainable. Qualified local women as maternal care teachers in the clubs will become a governmental occupation, earning salary monthly, with the responsibility of solving the problems in child care of the local area. After the scheme is mature, the WHO should also send group of doctors annually to make sure all local clubs are running smoothly, providing proper assistance for mothers.

In the foreseeable future, when these measures are fully carried out, the Dheeraj's family will no longer suffer from chronic malnutrition and poverty, with him and his sister completing school without so many worries, his nephew getting annual check and treatment for the stunted disease, his mother as well as the two girls gaining more confidence in life and getting advanced in the society. It seems imaginary, but actually, with all efforts from the international society and inside the Indian government, to every individual Indian citizen, ranging from young mothers to old men. And it can be expected that the fight against child malnutrition in India will blow the winning bugles.

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