CHILD MALL NUTRITION AND ITS EFFECTS ON EDUCATION

Dr. K. Anji Reddy

Associate Professor of Economics,

Mahatma Gandhi University,

Nalgonda, Telangana-508254

I.   Introduction:

Proper nutrition for children is important as it sets the stage for them towards living a healthy and balanced life for the rest of their lives. Nutritious healthy balanced diet is essential for the growing and developing children in early years of life. Developing good eating habits right from childhood is essential to lay strong foundation for healthy life. Early childhood nutrition has important benefits like it helps in building immunity against various infectious diseases, ensures proper development of brain and other vital organs, and improves a child's activity levels and cognitive functioning.

According to Global Nutrition Report 2018, nearly half of all under-five child mortality in India is attributable to under nutrition. Poor nutrition in the first 1000 days of a child's life can also lead to stunted growth, which is associated with impaired cognitive ability and reduced school and work performance. According to another estimate around 47 million or 4 out of 10 children in India are not able to meet their full human potential because of chronic nutrition or stunting. Children need proper nutrition in the form of healthy, balanced meal each and every day. The important reasons for malnutrition in children are poverty, maternal health, illiteracy, diseases like diarrhea, home environment, dietary practices, hand washing and other hygiene practices etc. A child's meal should consist of fruits, vegetables, dairy, protein, and grainy.

Deficiency of minerals and vitamins during childhood and adolescence has a negative impact on general health, growth, neuropsychological behavior, cognitive and motor development, intelligence quotient (IQ), attention, learning, memory, language ability, and even educational development.

Children with insufficient diets are reported to have more problems with health, academic learning, and psychosocial behavior. Malnutrition can result in long-term neural issues in the brain, which can impact a child's emotional responses, reactions to stress, learning disabilities, and other medical complications. Deficiency of minerals such as Iron, Foliate or Vitamin B12 results in anemia, which negatively impacts work capacity, intellectual performance, and child cognitive development.

II.   Promote Diet Quality for Positive School Outcomes:

Sociologists and economists have looked more closely at the impact of a student's diet and nutrition on academic and behavioral outcomes. Researchers generally find that a higher quality diet is associated with better performance on exams, and that programs focused on increasing students' health also show modest improvements in students' academic test scores. Other studies find that improving the quality of students' diets leads to students being on task more often, increases math test scores, possibly increases reading test scores, and increases attendance. Additionally, eliminating the sale of soft drinks in vending machines in schools and replacing them with other drinks had a positive effect on behavioral outcomes such as tardiness and disciplinary referrals.

According to the Mind is the Master there are seven major reasons child nutrition is important;

1. Supports the immune system:-A child has daily healthy nutrition can produce immune cells and antibodies that are needed for any illness and germs that the body needs.
2. Establishes good eating habits: - Healthy eating habits ensure that children can maintain the correct bodyweight for their body type. In some cases children may have to be put on an eating schedule or given in certain quantities.
3. Provides essential vitamins and minerals: - Providing proper nutrition to every child is important. Vitamins and minerals are not only help in growth but also helps in bone growth, to fight against infections, and child organs such eyes to see.
4. Ensures physical growth and development: - If a child is not able obtain the nutrients that needed for growth, there are risks. Malnourished child will not be able to achieve the physical growth that they are capable of having. This can result in lowered height, weight, and physical performance. Malnourishment can also contribute for quick tiredness. Child may look for more relaxation and does not show any interest in games or outdoor play. Nonuse of muscle may cause for muscle problem risks i.e. degeneration of muscle or weakening of it.
5. Promotes brain development:- Every child needs nutrient food for brain development and organ functioning. Throughout childhood, brain constantly changes and gathers new information daily. This information is obtained from electronics, parents, other family members, friends and teachers.
6. Helps to establish sleep patterns: - Nutritious food is important for good sleep. By providing nutritious food helps in to regulate the child sleeping patterns. Sleep is huge part of growing and being able to function throughout the day. Good eating habits also can help with relation to child proper nutrition.
7. Affects moods: - Nutrition directly affects children's mood and behavior. Poor nutrition or too much nutrition can cause moods other than irritability to occur. Children suffers from malnutrition can become depressed or develop anxiety. Those who feel hungry consider that they do not have food as much as required and ashamed of it, others may consider them as poor. This can directly affect their mood as well as social interaction and concentration in school.

III.   Does Nutrition Affect Learning?

Every student has the potential to do well in school. Failing to provide good nutrition puts them at risk for missing out on meeting that potential. However, taking action today to provide healthier choices i schools can help to set up students for a successful future full of possibilities. Students tend to focus more after breakfast, lunch, and snack time, this not only allow them take a small break from learning and for the kids to relax their mind but also provide them with a well needed boost for energy.

Ramu Rawat & Sayeed Unnisa (2021) have made an investigation on the association between children nutritional status and their educational performance in rural areas of UP by following a cross-sectional study. The study conducted among 313 school going children (aged 6–14 years) from 300 Scheduled Caste households in the rural Barabanki district of Uttar Pradesh. Children nutritional status and their educational performance, i.e. reading, writing and math, were analyzed. They found that children studying in the same standard but their educational abilities were varies widely. The children educational performance was increased with their years schooling especially in reading and writing. However, the estimates revealed that healthy children (not-stunted & not-wasted) were performing better (in medium & high categories) as compared to malnourished. Further, multivariate results show a significant association between child health and their educational performance. They concluded that the children health and nutritional status are a significant input for their educational performance.

The nutritional status and its impact on the academic performance of Grade 8 Students was studied by Beredo and others by following descriptive correlation method by using four variables which include poverty, health condition, eating habits, and illiteracy. They found that the average mean value of contributing factor health condition is 3.06 and illiteracy 3.58. They said that most often poverty and eating habits contributed to the cause of malnutrition. They also found that a negligible negative correlation existed between weight and academic performance based on the computed r value which was less than the tabular value of 0.349 at 5% level of significance. The obtained chi-square value between nutritional status and academic performance was found to be insignificant since the obtained chi-square value was less than the tabular value of 9.488 at 5% level of significance. Therefore, they recommended that school based feeding programme to be continued and strengthened.

Marion Kramer and others presented experimental evidence on the impact of the use of double-fortified salt in school meals on anemia, cognition, and the learning outcomes of primary school children in rural Bihar, one of the poorest regions of India. They find that a year-long intervention had statistically significant positive impacts on hemoglobin levels and reduced anemia by 20%; however, these health gains did not translate into significant impacts on cognitive performance, test scores, and school attendance. Treatment effects on anemia and test scores were larger for children with higher school attendance. The findings indicate that school-based

health interventions are a cost-effective and scalable approach for reducing anemia among school children in resource-constrained countries.

The study by Sendhil and others examined (2020) the dynamics in intake of calories, protein and fat over years and across states and also inequality, determinants and regional prioritization of nutrients consumption. They have extracted the data from National Sample Survey reports of various rounds between 1972-73 and 2011-12. They found that in majority of state calorie intake has witnessed significant changes and reduction over time. Further, they found that the intake of protein remained consistent, per capita fat intake increased with highest in rural Punjab and lowest in rural Odisha. The per capita fat consumption is higher in Urban than rural and there is a declining trend variation (CV) and inequality (Gini Coefficient) in intake of calorie, fat and protein across rural urban is observed by them. Regression analysis using panel data indicated that the nutrient intake in rural India is influenced by per capita expenditure on food items, household size and literacy rate, and negatively by poverty rate. The nutrient consumption level is low in a majority of states by any norm which gets reflected in the nutritional outcomes.

IV. Nutritional Status:

Many studies have shown that improvements in nutrient intake can influence the ability and intelligence level of school-aged children. So, the nutritional status can directly affect mental capacity among school children. It can cause for decrease in dopamine transmission that negatively impacting cognition. Deficiencies in micro nutrients, vitamin E, vitamin B, iodine, and zinc are shown to prevent cognitive abilities and mental concentration. Additionally, amino acid and carbohydrate supplementation can improve perception, intuition, and reasoning. All these are increases the Brain Function.

Good nutrition intake definitely helps the students to demonstrate for school preparedness to learn. It causes for students healthier and likely to have fewer absences to school and class more frequently. Studies have shown that malnutrition leads to behavior problems and sugar has a negative impact on child behavior. But these effects can be counteracted by consuming a balance diet which includes protein, fat, complex carbohydrates and fiber. Therefore, the students will have more in class and they will have less interruption in learning over the course of the school year. Further, students' behaviour may improve and cause fewer disruptions in the classroom and creating a better learning environment for each student in the class.

To understand the nutritional status of the under-five year's children three important indicators have been used by the many researchers. They are Height for Age, Weight for height and weight for Age. According to National Family Health Survey (NFHS) the stunting, wasting and underweight are assessed as below.

Stunting (assessed via height-for-age) Height-for-age is a measure of linear growth retardation and cumulative growth deficits. Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted), or chronically undernourished. Children who are below minus three standard deviations (-3 SD) are considered severely stunted.

Wasting (assessed via weight-for-height) Weight-for-height index measures body mass in relation to body height or length and describes current nutritional status. Children whose Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered thin (wasted), or acutely undernourished. Children whose weight-for-height Z-score is below minus three standard deviations (-3 SD) from the median of the reference population are considered severely wasted.

Underweight (assessed via weight-for-age) Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic undernutrition. Children whose weight-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are classified as underweight. Children whose weight-for-age Z-score is below minus three standard deviations (-3 SD) from the median are considered severely underweight.

A child whose height-for-age is less than −2 SD is considered stunted, because the chances of the child's height being normal are less than 3 percent. *Stunting* results from chronic undernutrition, which retards linear growth.

A child whose weight-for-height is less than −2 SD is considered wasted, because the chances of the child's weight being normal are less than 3 percent. Was*ting* results from chronic under nutrition, non-availability of food and less immunity, this leads to more likely to die.

A child whose weight-for-age is less than −2 SD is considered underweight, and one whose weight-for-height is less than −2 SD is deemed wasted. Wasting results from inadequate nutrition over a shorter period.

Nutritional status Children under 5 Years of Age in India & Telangana (%)

Sl. No	Indicators	NFHS-4	NFHS-5
	India		
1	Anemia	58.6	67.1
2	Stunting	38.4	35.5
3	Wasting	21.7	18.9
5	Weight –Age	35.7	32.1
6	Over weight	2.1	3.1
	Telangana		
1	Anemia	60.7	70.0
2	Stunting	28.0	33.1
3	Wasting	18.9	21.7
4	Underweight	28.3	31.8

Source: NFHS-4 and NFHS-5

One can observed from the table that though there is a small decline in stunting in India from 38.4 to 35.5 but still more than one third of children under-five age are suffering from stunting which results from an undernutrition between NFHS-4 and NFHS-5. Similarly in case of Telangana rather than decline it has increased from 28.0 to 33.1 indicates that the children in Telangana are more suffering from undernutrition. This may result in underdevelopment of brain, which will have painful consequences like diminished mental ability and learning capacity, poor school performance in childhood. Further, it may cause for reduced earnings and increased risks of nutrition-related chronic diseases like diabetes, hypertension and obesity in future life.

There is a decline in wasting of children in India from 21.7 to 18.9 but still one fifth of under five years children are suffering from wasting. On contrary to India the wasting has increased from 18.9 to 21.7in Telangana between the two surveys i.e. NFHS-4 and NFHS-5. Children with less weight or loss of weight are more prone to diseases like diarrhea and respiratory infections due to inadequate dietary intake. Further, poor nutritional status of women during pregnancy, poor breastfeeding and feeding practices, lack of sanitation and hygiene, poor access to quality health services and food insecurity.

India secured 107th rank out of 121 countries in the Global Hunger Index (GHI) is constructed by GHI the year 2022 and all the neighboring countries like Pakistan (99), Bangladesh (84), Nepal (81) and Sri Lanka (64) have fared better than India in Global Hunger Index.

Many research studies have shown that socio economic factors are responsible poor nutrition of children in India and inequalities are increasing in vulnerable groups such as girls, individuals in lower socio-economic groups. According to World Bank report malnutrition costs India at least $10 billion annually in terms of lost productivity, illness, and death and is seriously retarding improvements in human development and further reduction of childhood mortality.

V. Learning Levels:

Recent discussions and debates more are taking place on learning levels of the students in the education system. There are two orgamisations conducts survey on learning levels of students in the country. Pratham a Non-Governmental Organisation (NGO) is conducts survey on learning levels of students every year and publish a report. Another Government organization NCERT also conducts a survey at regular intervals. According to the surveys of both the organisations the achievement levels of students at every stage are disappointingly low, achievement scores are more in language but less in mathematics. It varies from grade to grade and there is negative relation between grade and achievement level. Performance declined as students progressed to higher classes. These achievement levels vary across regions and social groups. The scores are less among STs followed by SCs and OBCs. Learning deficiencies continued beyond elementary and secondary education. The learning crisis will last for several generations and hit the disadvantaged hardest unless steps are taken to redress them. The reason for low levels of learning include prevalence of malnutrition, multi-grade teaching, many schools with few students, inadequate and unequal funding, deficiencies in teaching, lack of effective monitoring and supervision.

World Development Report of 2018 has suggested three points formula to address the learning crisis. First, assess learning to make it a serious goal. NCERT and ASER surveys have been providing enough information on the status of levels of education in India. They are also throwing enough light on the learning deficiencies among our children.

Second act on evidence to make schools work for learning, multiple factors have contribute to the low levels of learning. They range from providing nutrition food, basic facilities, to improve teaching, to strengthening monitoring and supervisory system and recognising the schools based on the need than on norm. Mention may be made strengthening the pre-primary education system to make the children ready to enter formal school.

Third, align actors to make the entire system to work for the learning. Political will in the form of increasing state funding and restructuring the school system is needed.

 To make education as an instrument of social and economic development it is necessary to address the issues challenging the education system that lead to poor learning levels.

VI. Early Child Care Education to address the nutrition and learning problem:

Over 85% of a child's cumulative brain development occurs prior to the age of 6, indicating the critical importance of appropriate care and stimulation of the brain in the early years in order to ensure healthy brain development and growth. Presently, quality ECCE is not available to crores of young children, particularly children from socio-economically disadvantaged backgrounds. Strong investment in ECCE has the potential to give all young children such access, enabling them to participate and flourish in the educational system throughout their lives. Universal provisioning of quality early childhood development, care, and education must thus be achieved as soon as possible, and no later than 2030, to ensure that all students entering Grade 1 are school ready (NEP 2020).

Research studies providing evidence to the fact that there is a learning crisis in India. Children are enrolled in school but failing to learn even the basics. This crisis may begin long before children ever enter grade 1. Identifying the support that children need in their early years may help prevent learning problems from occurring and accumulating later on.

Conclusion:

Child health and nutrition are strongly associated with educational achievement and health may have considerable effects on post schooling productivity, employment, income and poverty. For good health of the child providing balanced diet with nutrition that enable children to overcome the mentioned difficulties and can built healthy society. For this the national and state governments are planned to provide nutrition kits particularly where the suffrage is more on priority basis to eliminate inequalities in health indicators.

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