



ISSN: 0975-833X

Available online at <http://www.ijournalcra.com>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

International Journal of Current Research  
Vol. 14, Issue, 09, pp.22387-22392, September, 2022  
DOI: <https://doi.org/10.24941/ijcr.44098.09.2022>

## REVIEW ARTICLE

### SPATIO-TEMPORAL CHANGE IN MALNOURISHED CHILDREN OF WEST BENGAL

\*Panna Khatun

Kalna, Burdwaan, west Beangal-713501

#### ARTICLE INFO

##### Article History:

Received 25<sup>th</sup> June, 2022  
Received in revised form  
17<sup>th</sup> July, 2022  
Accepted 19<sup>th</sup> August, 2022  
Published online 30<sup>th</sup> September, 2022

##### Key words:

Malnutrition, Health,  
Rural, Children, West Bengal.

\*Corresponding Author:  
Panna Khatun

Copyright©2022, Panna Khatun. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Panna Khatun. 2022. "Spatio-Temporal Change in Malnourished Children of West Bengal.". *International Journal of Current Research*, 14, (09), 22387-22392.

#### ABSTRACT

With the majority of its losses being found in underdeveloped countries, malnutrition poses a serious risk to maternal and child health worldwide. It is the condition that arises from eating a diet that is deficient in some nutrients. Mothers and children in rural areas as well as in slums and shanties of urban areas, as well as in the state of West Bengal, present a depressing picture of malnutrition and under nutrition. The most common illnesses in children caused by malnutrition include kwashiorkor, Marasmus, and rickets. Numerous nutritional deficiency syndromes tend to have an impact on a child's overall physical and mental development, depicting them more vulnerable to different ailments common to children.

## INTRODUCTION

A dissertation is a substantial essay based on unique investigate. It is typically submitted as a component of a PhD or Master's degree. The longest writing assignment is undoubtedly a dissertation and it might be difficult to know where to begin. It entails extensive amounts of research and writing which is carried out under the supervision of a faculty supervisor. Dissertation is usual academic studies in the humanities, social sciences, and arts. It included an extensive test of a certain subject based on the application of theoretical knowledge to information previously available (texts, documents, artworks). The science of food and its relationship to health can be summed up as nutrition. It is mostly focused on the role that nutrients have in body growth, development, and maintenance (WHO, 1971). Therefore, it is clear that a balanced, nutrient-rich diet is necessary for the body to function properly. The most prevalent nutritional and health issues in developing nations including India are protein energy malnutrition (PEM) and growth retardation (Mehta, 2000). Between 3.5 to 5.0 million children under the age of five years die each year due to malnutrition worldwide. According to UNICEF, there are over 195 million malnourished children in the world. Therefore, malnutrition is tentatively a type of sickness that involves under nutrition, obesity and a lack of certain vitamins and minerals.

#### Objectives of the study

This research was done to reach the following goals:

- To evaluate the effectiveness and reporting of child nutrition programmes.

- To note the differences in Supplemental Nutrition Program coverage between districts (SNP).
- To demonstrate SNP's spatio-temporal variations in KMC.
- To determine the causes of childhood malnutrition.
- To examine in Kolkata the geographic variations in malnutrition and its causes.

## METHODOLOGY

Mainly, Secondary data are combined in this paper. Information was formed on the health status of malnourished children under the age of five years in West Bengal over a spatio-temporal change. The Department of Health and Family Welfare, Government of West Bengal and the National Family Health Survey (NFHS) provided the majority of the secondary data. In addition to publications published in a number of relevant journals, a number of reports issued by the World Health Organization (WHO), UNICEF and Indian Academy of Pediatrics (IAP) have been consulted for the point. Using statistical and graphical methods we can display the nutritional situation in West Bengal. After gathering the data, it was analyzed using Microsoft Excel. In this dissertation, the Standard deviation (SD) method has been used to find out the percentage of less than five years malnourished children of West Bengal. It had found out that the two variables i.e. - "rural" and "urban" malnourished children in percentage.

**Sources of data:** Because of the Covid-19 situation, we were unable to collect primary data for this study. It is based on secondary data sources.

Information was produced about the health of expectant mothers, nursing mothers and kids under the age of six. The Department of Health and Family Welfare, Government of West Bengal and the Kolkata Municipal Corporation (KMC) provided the majority of the secondary data. The Department of Health and Family Welfare, Government of West Bengal, the National Family Health Survey, WHO, UNESCO, UNICEF, and other sources provided the majority of the secondary data. Surveys were created for the target groups of doctors and the general public in the area.

## RESULTS

The Standard Deviation (S.D.) approach has been used to determine the percentage of West Bengali children under the age of five years who are malnourished. I've discovered that I've taken the percentages of the two variables, namely malnourished children in rural and urban areas. In comparison to metropolitan regions, the standard deviation (S.D.) of malnourished children in rural areas is higher (SD Value-9.17%). It asserts that a low standard deviation (S.D.) indicates that data are grouped around the mean, whereas a high S.D. suggests that data are dispersed widely. While a high or low standard deviation (S.D.) implies that data points are respectively above or below the denote a standard deviation (S.D.) close to zero suggests that data points are close to the mean. Thus, it is understood. This study shows that some districts have unfortunate child health conditions. Maldah, Murshidabad, Uttar Dinajpur and South 24 Parganas districts have notably high rates of infant and cot fatalities combined with malnutrition. Jalpaiguri, Coochbihar, Bardhaman, Howrah, Purba Medinipur and Paschim Medinipur are some of the other districts that were identified as having a high percentage of malnourished children. These districts' rural areas are marked by deprivation, illiteracy, ignorance and carelessness. The degree of malnutrition among girl children is higher after birth due to gender bias than male. Early marriage of girls is still common in rural districts as well as in the city's slums and shantytowns. In these areas, girls typically marry between the ages of 15 to 18. As a result, there is an early pregnancy. Due to a lack of a good nutritious diet being provided during pregnancy and the carelessness of family members, the women suffer from intrauterine development retardation, malnutrition, and other pregnancy-related issues.

During pregnancy, high protein foods, vitamins and minerals are strongly advised. The majority of the male family members earn between Rs. 1,000 to 4,000 in a month as labors, rickshaw pullers, auto drivers, and industrial employees in the city's slums and in the field. Male employees in the shantytowns perform sweeping, rag picking and scavenge duties. The women maintain homes with cooking and some operate food carts along the road side. They are not given any care, such as antenatal checkups, a healthy diet and enough rest throughout pregnancy or during the lactation phase. Home deliveries are still common in rural areas and also some slums & shantytowns of the KMC. This is particularly common in the north and east Kolkata's slum households.

- Since the method of delivery is not scientific, it is not only bad for the newborn but also for the mother who runs a high risk of both maternal and neonatal death.
- The average number of children per family in these areas is between 4-5.
- Birth intervals that are health-conscious are not observed. As a result, the mother frequently experiences malnutrition and their progeny after Birth comes into the signs of malnutrition.
- Another factor contributing to the high prevalence of malnutrition among adolescent girls is neglect of the girl child.
- The child is frequently denied maternal feelings throughout childhood.

In the city's slums and shantytowns, malnutrition among children is associated with their unstable living conditions and low socio-economic status.

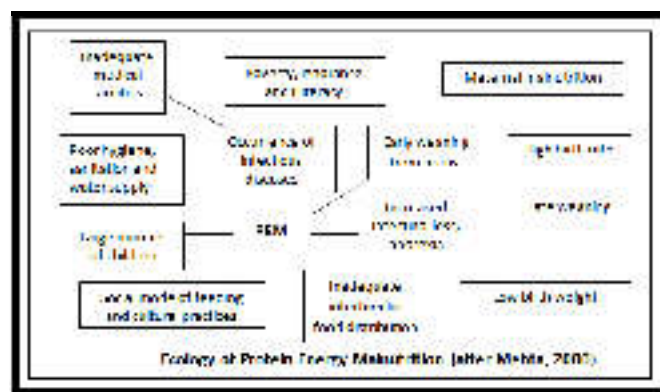
But the situation is severe among the privileged class, where women are less likely to practice breastfeeding due to their financial and social independence with busy lifestyles.

### Major Causes of malnutrition are founded, these are:

Malnutrition has been recognized as a long significant health and nutrition issue in India, particularly among young children in preschool. Children under the age of five die from it in 46% of cases. The following is a concise list of the causes of malnutrition:

- **Poverty**- People from low-income groups cannot afford to buy enough food of the right kind and quantity to satisfy their dietetic needs. Their ability to perform physical labour is negatively impacted by this deprivation, which leads to low earnings and poverty. Thus, there is a connection between malnutrition and the cycle of poverty.
- **Early pregnancy** - teenage pregnancy is hazardous to both the mother's and the newborn's health. If a girl gets pregnant before her body reaches physical maturity, her chances of maternal and neonatal death as well as pregnancy-related problems are significant.
- **Low birth weight**- A high occurrence of low weight (less than 2.5 kg) at birth is caused by malnutrition during pregnancy. Due to their bodies poor nutritional status, these babies are at risk for growth retardation.
- **Infection and disease** - Illnesses like diarrhea, pneumonia, measles, malaria and tuberculosis cause sensitive malnutrition and make worse the current nutritional deficiency. Protein metabolism demands are increased when an infection is present.
- **Poor breastfeeding techniques** - Without breastfeeding, a child is more likely to suffer from malnutrition. Because of the superior quality of the substitute milk, excessive strength and use of unhygienic feeding bottles, nipples, artificial feeding frequently proves to be devastating for the baby.
- **Other causes**- Malnutrition in children is frequently brought on by repeated pregnancies, improper birth spacing, social taboos and parental separation.

The complex interaction of interacting and connected components in the person, family and community leads to malnutrition. Diseases and improper unbalanced nutritional intake are the direct causes of many malnutrition-related signs and symptoms. It makes infections more likely to occur and to be more severe in teenagers. Malnutrition is a result of a variety of other factors, such as environmental, agricultural and cultural. As a result, it is commonly acknowledged that a multi-sectoral plan is required to address the issue of malnutrition.



**Child Nutritional Status of the Kolkata Municipal Corporation Area:** Malnourished children's immune systems are less able to fend off common childhood illnesses. Malnutrition plays a significant influence in child mortality. Because of this, a malnourished infant can die from simple diarrhea. The country has unacceptable high rates of child health problems and malnutrition. In India, the appalling state average for malnutrition is 43.50 percent, affecting 45.9 percent of children under the age of three.

Even though the infant mortality rate (IMR) has dropped from 75% to 48% over the past ten years, hunger continues to play a role in these fatalities. Children under the age of five are most likely to experience malnutrition. The state has been separated into the Jalpaiguri Division, which consists of the six districts of Darjeeling, Jalpaiguri, Coochbihar, Uttar Dinajpur, Dakshin Dinajpur, and Maldah, for a more thorough investigation. The Presidency Division is made up of six districts: Murshidabad, Nadiya, Howrah, North 24 Parganas, South 24 Parganas, and Kolkata. The Barddhaman Division is made up of seven districts: Bankura, Birbhum, Barddhaman, Purulia, Hooghly, Purba Medinipur, and Paschim Medinipur. In 1975, the state implemented the Integrated Child Development Scheme (ICDS), as part of which the Supplementary Nutrition Programme (SNP) was implemented to improve the nutritional status of the population's children, pregnant women, and nursing mothers. The success of the SNP programme can be evaluated by separating the total number of children into two age groups: 0-3 and 3-6 years.

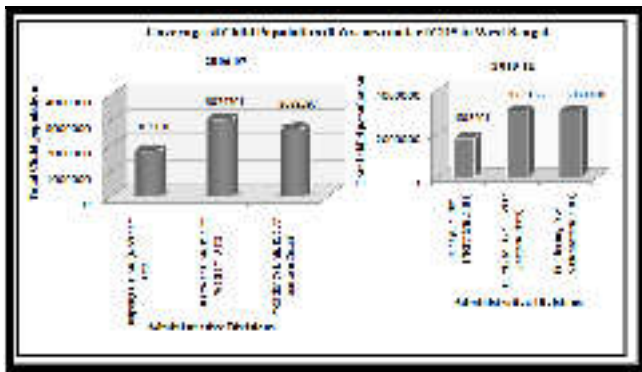


Fig. 1. Data Source-Govt. of West Bengal

Although the state's overall coverage of children in the 0–6 age range under the feeding programme is increasing, some districts, including Uttar Dinajpur, Malda and Paschim Medinipur, have seen declines in the total percentage of targets met. The coverage of the 3-6 age range has been increasing steadily for the Jalpaiguri and Presidency divisions since 2006–2007, at the same time as the Barddhaman division first increased in 2006–2007 before declining in 2010–2011. In Kolkata, the coverage of children aged 0 to 6 years has been increasing consistently from 49,012 in 2006–2007 to 61,279 in 2008–'09, with a percentage achievement of 79.98 and 79,421 in 2010–'11 with a percentage achievement of 77.16. (Fig.2). The quantity of children with normal nutritional status has increased.

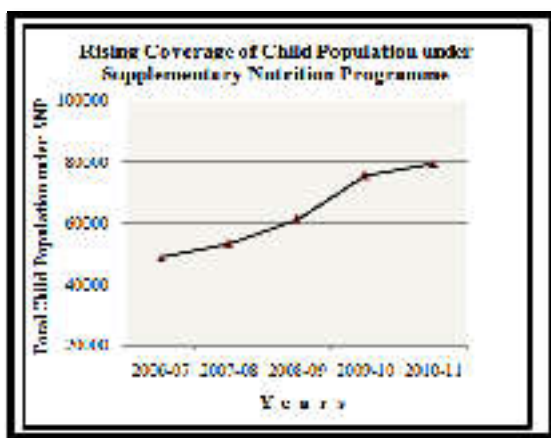


Fig.2: Data Source-Govt. of West Bengal

In the religious minority-dominated slums of east and south-west Kolkata particularly in the Garden Reach region a preference for male children over female children is prevalent. Women in this area of the city have a poor socio-economic standing. Here the average age of marriage is between 14 to 16 years and a woman gives birth to her first kid at just 17 years old.

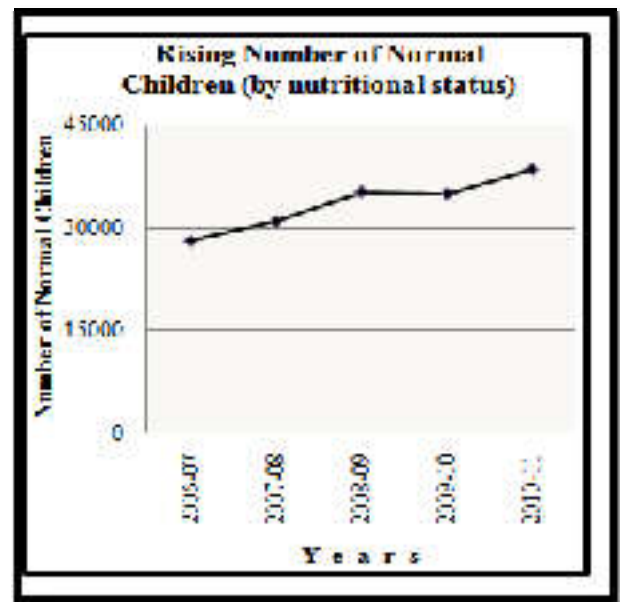


Fig.3. Data Source-Govt. of West Bengal

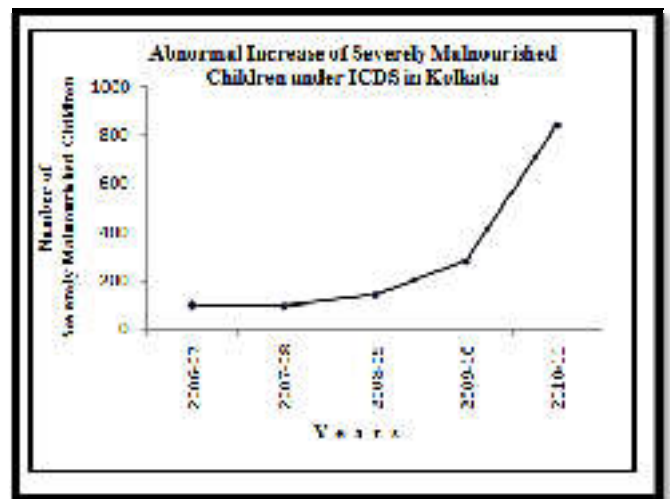


Fig. 4. Data Source-Govt. of West Bengal

Table 1. District-wise Percentage Share of Underweight children (< 2.5 kg) during birth in West Bengal, 2005-'06 to 2011-'12

Administrative Divisions	Districts name	Percentage Share
Jalpaiguri	Darjeeling	17.21
	Jalpaiguri	19.95
	Cooch Behar	21.97
	Uttar Dinajpur	18.74
	Dakshin Dinajpur	19.64
	Maldah	13.33
Barddhaman	Bankura	21.94
	Birbhum	14.56
	Barddhaman	17.64
	Purulia	23.71
	Hooghly	13.53
	Purba Medinipur	11.85
	Paschim Medinipur	20.37
Presidency	Nadia	21.88
	Murshidabad	15.09
	North 24 Parganas	14.14
	South 24 Parganas	11.11
	Kolkata	30.21
	Howrah	16.19
State	West Bengal	17.41

Source: Computed from the data provided by Govt. of West Bengal

**Table 2. Highlights on Child Population (0-6 years) in Kolkata, 2001-2011**

Child Population (2001)	Child Population (2011)	Percentage of Child Population to total population (2001)	Percentage of Child Population to total population (2011)
390282	339323	8.53	7.55

Source: Computed from the data provided by Census of India

**Table 3. Child Sex Ratio (0-6 years) in Kolkata, 2001-2011**

Criteria	Borough No.
Borough with positive change in child sex ration	I,III,IV,VI,VII,IX,XIII,XV
Borough with negative change in child sex ration	II,V,VIII,X,XI,XII,XIV

Source: Computed from the data provided by Census of India

The average age of marriage in parts of the slums of south-east and old south Kolkata which are primarily populated by migrants from Bihar, Jharkhand, Odisha and Chhattisgarh is 13 to 14 years for females & 15 to 17 years for boys. The mothers of those families give birth to their first child between the ages of 15 to 16 years. The mother's health is particularly poor in Borough No. 1 of the north Kolkata slums. The majority of pregnant women who reside in slums travel to their home country throughout their pregnancy which may include isolated rural areas in Bihar and Jharkhand as well as north and south 24 Parganas, where family members and the villagers most senior lady do home births. In Borough No. XI of south-east Kolkata, where tuberculosis is a prevalent illness among households and the male members of the family frequently become crippled with the disease. As a result, the effects of poverty on the household are exacerbated. The maternal and child health scenario in Borough No.- VII paints a similarly harsh picture, particularly in the areas of Borough No. 6 that are dominated by religious minorities (Table.2). Municipal slums in Borough no.- XIV and XV experience a similar state of affairs. The number of girls aged 0 to 6 per 1,000 boys in the same age range was found to be decreasing in some of the boroughs of the city between 2001 to 2011. The ratio of children to adults has increased significantly in Borough No. VII (Table.3). The non-slum population, when the neonate is breastfed after 24 hours after birth, lacks healthy breastfeeding habits. This is harmful to the newborn because they need their first mother's milk to develop immunity to illnesses as soon as they are born. Contrarily, neonates are breastfed by slum mothers within 24 hours after birth, despite the fact that in certain households, the infant is delivered to the mother after 24 hours. Children are breastfed in some of the slums of old south Kolkata and north Kolkata until they are one year old. This picture of a non-slum household is unusual. Children in Borough I, VII, XIV, and XV slums experience stunted growth. Children who are underweight or malnourished have a reduced probability of surviving than those who are properly fed. These kids are more prone to common ailments including pneumonia, measles, malaria, diarrhea and more. To guarantee appropriate brain formation and development which begins when a teenager is in the mother's womb, proper and balanced nutrition is crucial. Nutritional inadequacies can have a negative impact on a child's IQ. Later phases of the condition result in low weight, height and an increased risk of chronic diseases. It increases a child's risk for developing certain long-term cardiovascular and diabetes illnesses. The most frequent causes of nutritional dwarfism are PEM and anemia due to iron insufficiency. When there is a severe nutritional shortage, weight increase is sluggish and muscles are lost (Ghai et.al. 2005).

## DISCUSSION

Although the state total coverage of children in the 0-6 age range under nutrition programmes is increasing. The overall percentage of targets achieved has been trending down Borough in some districts including Uttar Dinajpur, Maldah and Paschim Medinipur.

The coverage of the 3-6 age range has been increasing progressively for the Jalpaiguri and Presidency divisions since 2006-2007. At the same time, the Bardhaman division first increased in 2006-2007 before declining in 2010-2011. In Kolkata the coverage of children aged 0 to 6 has been increasing consistently from 49,012 in 2006-2007 to 61,279 in 2008-2009 with a percentage achievement of 79.98 and to 79,421 in 2010-2011 with a percentage achievement of 77.16. Malnutrition is a condition that can be avoided. Malnutrition is a persistent issue of family deprivation brought on by poverty that impacts millions of children. Major community-based health care interventions for malnutrition are at danger. According to the report, among the malnutrition targets in the various districts of West Bengal the rate of wasting has been most negatively impacted. It can be inferred from data analysis in several West Bengal districts that the literacy rate is lower in rural than in urban West Bengal. According to census data from 2011, women insulate behind males by a wide margin and child malnutrition is a significant factor in mothers' illiteracy. The primary problem it might be claimed, is the mothers illiteracy and lack of knowledge about their children. This article provides a thorough overview of the health care system and infrastructure, maternal illiteracy rates, poverty and income levels, trends in childhood stunting and therapeutic technology available in both public and private hospitals. The State Government Hospitals primary healthcare system is the most ineffective situation for treatment. People suffer from improper inquiry, pointless medication and high costs.

## Suggestions

### Management of malnutrition in children (< 5 years)

- Nutrient requirements are often high during the growth years. These demands must be addressed. It's crucial to schedule regular visits with the pediatrician so they can monitor your child's progress in height and weight.
- Malnutrition affects children more than any other age group, contributing to recurring illnesses and retarded growth (both physical and mental).
- Protein energy malnutrition (PEM) in children must be detected. Children who have Kwashiorkor and Marasmus are included. These kids need combative therapy.
- Treatment for malnutrition is required as a preventative step for children with chronic illnesses. Supplemental nutrition, vitamins and minerals are included in this. Malnutrition must be avoided by effectively treating the underlying illness.
- Treatment at a hospital is necessary for children who have severe malnutrition. This covers both parenteral feeding and the gradual ingestion of nutrients. When their condition has stabilized a normal diet can be progressively introduced.

### Management of malnutrition at home of children (< 5 years)

**This is appropriate for those who can consume and process meals normally:**

- The patient discusses their diet with the diet planner and advisor, who then offers suggestions and diet programmes to increase nutritional consumption.
- Intake of protein, fat, water, minerals and vitamins needs to be gradually increased in the majority of malnourished patients..
- Protein bars or supplements may be necessary for those who are protein energy malnourished to make up for the shortage.
- For people with disabilities who are unable to prepare or shop for themselves or for those who have mental disorders, dementia, occupational therapists a team of physicians of different specialties may be required.

### Management of malnutrition at the hospital of children (< 5 years)

- Nasogastric tube feeding, PEG feeding, intravenous infusion, parenteral nutrition may be administered in the hospital for



moderate to severely malnourished patients who are unable to take food via the mouth.

- The team of doctors and health care providers who manage malnutrition patients includes a gastroenterologist who specializes in treating digestive conditions, a dietician, a nutrition nurse, a psychologist and a social worker.

### Malnutrition prevention methods

**For the purpose of preventing malnutrition, a healthy, balanced diet is advised. There are four main food groups, which are as follows:**

- Stiff foods including bread, rice, potatoes. This makes up the majority of the diet and offers calories for energy as well as carbohydrates that break down into sugars, which also offer energy.
- Dairy products like milk are essential sources of lipids, simple sugars like lactose, minerals like calcium.
- Meat, poultry, fish, eggs, beans and other non-dairy sources of protein - These are the building blocks of the body and aid in a variety of physical and enzyme functions.
- Fruits and vegetables - Essential sources of vitamins and minerals as well as fiber and roughage for better digestive health.

Preschool child from isolated rural locations are shown to have a significant prevalence of malnutrition, which is concerning. The importance of feeding habits requires special consideration. Education of parents about the benefits of breastfeeding and appropriate weaning techniques should be given first priority. In this regard medical professionals can be quite helpful throughout immunization procedures. Changing one's diet to include more vitamins and protein-rich meals will benefit a child under the age of five. Support for families to assist them in controlling variables impacting the child's dietary intake. Over the past few years, the state government's health programmes have expanded their coverage. But in order to improve health outcomes strategy must be changed. Additionally, malnutrition must be assessed in all hospital patients, child, expectant mothers, and senior residents of care homes. The practice of exclusive breastfeeding and proper nutrition for the mother during pregnancy are two ways to prevent malnutrition in children. In addition to everything mentioned above, there are four key measures for maintaining child malnutrition levels across all districts:

**Nutritional instruction:** After determining the ideal nutritional combination, it's critical to make sure that child get it. The proper type and quantity of nutrition must be taught to mothers and others. A range of calorie-dense foods should be encouraged. For instance, many rural mothers might not be aware that they should give their infant more fluids while continuing to feed them normally if they have diarrhea. Instead of, according to statistics from the National Family Health Survey (NFHS)-3, four out of ten mothers give their child's fluid consumption and nine out of ten mothers ignore this advice.

**Improve lunchtime meals:** The Mid-Day Meal Scheme (MDM) of India, around Rs 13,000 crore aims to feed 10 crore children in over 12 lakh schools ranging from classes 1 to 8 in regular meals. It has specific nutritional objectives (450 to 700 calories and 12 to 20 grams of protein respectively for primary and upper primary school children). It has two major problems:

**Hygiene concerns:** Numerous instances of unclean mid-day-meal lunches have occurred. Every year meals have been found to include pests. Water testing, the lack of glove use and menu violations are among problems.

**Fortification:** Iron, folic acid and vitamin-A deficiencies affect 85% of Indian children between the ages of 7 to 12 and can harm cognitive development, impede focus, lead to school absences and even cause disease. Premixes can be used to fortify mid-day-meal like rice and

wheat with vitamins. However, fortification is a relatively new concept in several states.

**Contribute to an NGO's fundraising efforts:** In India most under developed communities child rights organizations like 'Save the Children' are striving to improve the nutritional quality of children. Health professionals trained by the NGO assist in providing nutrition rehabilitation and other healthcare services to children. Additionally, a community awareness programme has been started (mothers, elders of the family, school teachers, etc.). Children who are malnourished are transferred to government health facilities. WASH programmes, which improve community sanitation and hygiene to avoid diarrhea, a major contributor to malnutrition.

**Put money into social welfare:** The best examples of how social welfare programmes can reach good nutrition indicators are seen in Kerala, Tamil Nadu and Himachal Pradesh. A vast range of healthcare services, access to clean water, social security, fundamental infrastructure are all provided by the state government. Disadvantaged groups are urged to take part in making their voices heard about political party support for social development. For instance, Tamil Nadu offers innovative programmes for maternity benefits, community kitchens and nursing facilities at bus stops.

## CONCLUSION

Our university warned and instructed the students not to take any risks in the dissertation preparation process due to the challenging circumstances of the current Corona epidemic. In order to prepare our dissertation, it has studied about many organizations, websites, books and periodicals from home. Our university has formed a number of partnerships and plans in order to do this. Our dissertation data and statistics were confirmed with the aid of other sources. With the outstanding assistance of the university, it was possible to report on this epidemic condition. Each student made an effort to come up with a plan that would allow us to create ideas easily while yet keeping our work safe. With several attempts implemented by the State Government in recent years, the state of mother and child health has been in a terrible state in West Bengal. The ICDS efforts in this area have been admirable. In many municipal Boroughs of Kolkata, the Anganwadi schools designed for children from low socio-economic backgrounds have been operating successfully. The health professionals have been going door to door to provide pregnant women iron supplements. In the Anganwadi schools, the child are fed healthy meals including khichudi, vegetables, boiled eggs and pulses etc. In cases of severe malnutrition, they are additionally given medicine and regularly transported to the doctor for height and weight checks. The city's government run health centers perform institutional deliveries and antenatal exams.

## REFERENCES

- Mehta, M.N. 2000. Protein Energy Malnutrition, Ed. A. Parthasarathy et.al. Textbook of Pediatrics, Jaypee Brothers, New Delhi.
- Bir, T. 2001. Dynamics of Health Culture: Urban Slum Community and Behavior, Rajat Publications, Delhi.
- Government of India and World Bank (2006): Strengthening ICDS for Reduction of Child Malnutrition, Ministry of Women and Child Development, New Delhi.
- Government of India (2012): Children in India 2012- A Statistical Appraisal, Ministry of Statistics and Programme Implementation, New Delhi.
- Ghai, O.P., Gupta, P., Paul, V.K. (2005): Essential Pediatrics, 6th edition, CBS Publishers and Distributors, New Delhi. Ghosh, M. (1983): Metropolitan Calcutta: Economics of Growth, O.P.S Publishers Private Ltd, Calcutta.
- Svedberg, P. (2006): Declining child malnutrition: A Reassessment, Journal of Epidemiology, Vol.35, Issue 5, Oxford University Press.
- <https://www.kmcgov.in/KMCPortal/jsp/KMCPortalHome1.jsp> (accessed on: 07.08 2022)

<https://idswb.in> (accessed on: 26.09.2022)

<https://censusindia.gov.in/> (accessed on: 07.09.2022)

<https://www.wbhealth.gov.in/> (accessed on: 25.09.2022)

<https://en.wikipedia.org/wiki/UNESCO> (accessed on: 02.09.2022)

<https://www.who.int/> (accessed on: 08.09.2022)

<https://www.unicef.org/> (accessed on: 25.09.2022)

<https://www.savethechildren.in/child-protection/five-ways-for-reducing-child-malnutrition-in-india/> (accessed on: 12.08.2022)

\*\*\*\*\*