

Status and Challenges of Child Malnutrition in West Bengal with Special Reference to Area under Kolkata Municipal Corporation

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Abstract: *Malnutrition is a grave threat to maternal and child health across the world with its most of the victims observed in the developing nations. It is the condition that results from consuming a diet in which certain nutrients are lacking. A miserable picture of malnutrition and under-nutrition is prevalent among mothers and children in rural areas on one hand and slums and shanties of the urban areas on the other in India as well as in the state of West Bengal. Kwashiorkor, Marasmus, Rickets are the common diseases seen among children due to malnutrition. A number of nutritional deficiency syndromes tend to affect the overall physical and mental development making the child susceptible to various childhood diseases. Children living in the unhygienic slum areas cursed with malnutrition are vulnerable to pediatric tuberculosis as well. Early marriage coupled with early pregnancy, improper feeding habits, inadequate diet and negligence culminates into signs and symptoms of malnutrition among pregnant women, the result of which is reflected after birth of the infant who is also vulnerable to inherit symptoms of malnutrition, under-nutrition and anaemia.*

Key words: *malnutrition, kwashiorkor, marasmus, poverty, child stunting*

I. INTRODUCTION

Nutrition may be defined as the science of food and its relationship to health. It is concerned primarily with the part played by nutrients in body growth, development and maintenance (WHO, 1971). Therefore it is quite evident that a balanced nutritious diet is required for proper functioning of the body. Protein Energy Malnutrition (PEM) and growth retardation are probably the most widespread health and nutritional problems of the developing countries including India (Mehta, 2000). Malnutrition contributes to between 3.5-5.0 million annual deaths of children under five years of age. UNICEF estimates that there are nearly 195 million children suffering from malnutrition across the globe. Malnutrition therefore is technically a category of disease that includes under-nutrition, obesity and micronutrient deficiency due to improper and inadequate dietary habits. WHO, UNICEF and United Nations World Food Programme recommended community management of severe acute malnutrition with ready to use therapeutic foods. Severe PEM often associated with infection contributes to high incidences to child morbidity among underprivileged communities in West Bengal. The state shows a striking contrast between rural and urban health infrastructure. The initiatives of the Government to improve health conditions in various aspects have proved to be inadequate. In 1975, the Integrated Child Development Services (ICDS) was first implemented. It is a major programme to tackle malnutrition and the ill health of mothers and children which followed the adoption of a National Policy for Children.

II. OBJECTIVES OF THE STUDY

This study was conducted to fulfill several objectives noted below:

- To understand the maternal and child health scenario in the state
- To assess the coverage and success of child nutrition programmes
- To take note of the inter-district disparities in coverage of Supplementary Nutrition Programme (SNP)
- To reveal the spatio-temporal variations of SNP in Kolkata
- To identify the factors responsible for malnutrition among children and pregnant women
- To analyse the spatial variations of malnutrition and its causes in Kolkata.

III. DATA BASE AND METHODOLOGY

This work is a combination of primary and secondary data. Information was generated on health conditions of the pregnant women as well as lactating mothers and children below six years of age. Most of the secondary data were collected from the Department of Health and Family Welfare, Government of West Bengal and Kolkata Municipal Corporation (KMC). A number of reports published by World Health Organization,

UNICEF and Indian Academy of Pediatrics have been consulted for the purpose apart from articles published in several relevant journals. Apart from the computation of the available secondary data and their cartographic representation, questionnaires were framed for the target groups of doctors and the mothers. Purposive method of sampling was followed with a sample size of 30 doctors and 90 mothers from slums and 90 from non-slum areas including both the pregnant women and lactating mothers representing 15 Boroughs of the city.

IV. AREA UNDER STUDY

Among 19 districts of the state of West Bengal, the city of Kolkata has been taken up for detailed study. The Kolkata Municipal Corporation has a total area of 187.33 km² with a geographical extension between 22°27'N to 22°39'N latitude and 88°14' E to 88°26' E longitude. The territorial jurisdiction of Kolkata Municipal Corporation (KMC) has been divided into 15 Boroughs consisting of 141 wards. Spatially the city can be divided into North, South, East and Central Kolkata. The reason behind its selection lies in an odd contrast in terms of health awareness, accessibility to health care facilities and health conditions among the poor slum and shanty dwellers on one hand and upper non-slum dwellers on the other.

V. PREVALENCE OF MALNUTRITION AT NATIONAL, STATE AND DISTRICT LEVELS

In India, as in most of Africa, where no notable decline in child stunting took place over the 1990s, the rate of decline over the 2001-15 period must be very high in view of the Millennium Development Goals (MDGs) to be realized. For this to occur, large reductions in poverty through equitable and high income growth are necessary (Svedberg, 2006). India has a higher level of PEM than most parts of the world, including sub-Saharan Africa. Over 75 percent of pre-school children suffer from iron deficiency anemia, and 57 percent have subclinical Vitamin A deficiency (ICDS Report, 2006). Iodine deficiency is endemic in India. The prevalence of different micronutrient deficiencies varies widely across states. According to National Family Health Survey-III (NFHS-III, 2005-06) conducted by the Ministry of Health and Family Welfare, India has 48 per cent stunted, 20 per cent wasted and 43 per cent underweight children below five years of age. The size of child population in the age group (0-6 years age group) is declining with decline in the share of children to total population; the share of girls in 0-6 years is declining faster than that of boys of 0-6 years. During the period 1991 -2011, child sex ratio declined from 945 to 914, whereas the overall sex ratio showed an improvement from 927 to 940 (Ministry of Statistics and Programme Implementation, 2012) (Table.1).

Table 1: Child Sex Ratio (0-6 years) in India, 1991-2011

Census Years	Rural	Urban	Total
1991	948	935	945
2001	933	906	927
2011	919	902	914

Sources: i) Census of India, ii) Registrar General of India

The prevalence of severe malnutrition among children in the 0-6 age group has emerged as one of the grave issues of child health in India while West Bengal is no exception. Kwashiorkor and Marasmus are the dangerous outcomes of PEM briefly conceived as malnutrition. The word 'Kwashiorkor' was suggested by Dr. Cicely Williams in the early 1930s. It is an African word which means "the disease that occurs when the child is displaced from the breast by another child". Marasmus can develop in the initial months of life and results if the mother's milk supply is insufficient as a result of which the mother feed the baby with diluted milk of buffalo and cow. Hence the common age of occurrence is 0-2 years though can also occur at later age as well.

The state of West Bengal shows a large number of Grade III and Grade IV children affected by deficiency of protein, vitamins and minerals under Integrated Child Development Services Scheme (ICDS). Poverty, low birth weight, improper birth spacing, lack of inadequate nutritious diet coupled with low level of parental awareness and poor breast-feeding practices have contributed to prominent appearance of child malnutrition in the state. Most of the lactating mothers are unaware of the importance of breast-feeding to infants. Mother's milk is known to provide an infant with resistance from diseases after birth which persists up to six months of early infancy. The first milk of the mother contains a yellowish substance known as Colostrums which is vital for every child. But most of the infants remain deprived of its benefits. Malnutrition is highly prevalent among low-income slum and shanty dwellers of Kolkata. The poor unhygienic living conditions, the

overcrowded damp environment, improper feeding habits makes a child vulnerable to symptoms of malnutrition.

One of the dangerous outcomes of severe malnutrition is pediatric tuberculosis which is a result of poor body functions and resistivity. Malnutrition during pregnancy often results into still birth, premature delivery and other complications during post-partum period. Incidences of premature delivery, miscarriage and still birth are quite high in the impoverished slums and shanties of Kolkata.

VI. IMPORTANCE OF MOTHER'S MILK TO A CHILD

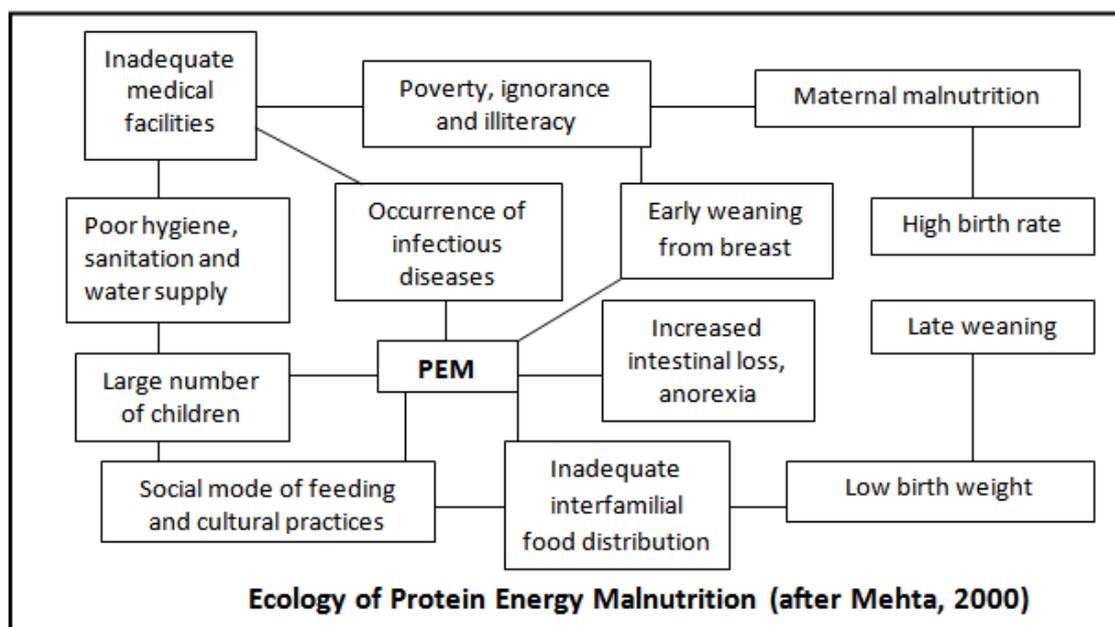
Breast milk is vital to a child in the early years of life, but it is insufficient. During the first six months of life an infant requires only the mother's milk for survival and to fight against diseases. After 4-6 months, it must be supplemented by solid foods rich in high quality protein, essential fats and carbohydrates, vitamins and minerals are introduced in the diet of the infant. Mother's milk is therefore extremely important for the baby as it helps to develop the immune system in the infant. It has a profound impact on the physical development of the child. It creates a psychological and emotional attachment between the mother and the baby.

VII. CAUSES OF MALNUTRITION

Malnutrition has been known to be a major health and nutrition problem in India with a high prevalence among the pre-school children. It accounts for 46 per cent death among children below five years of age. The causes of malnutrition can be briefly stated below:

- ▶ *Poverty*: People from low-income groups cannot afford to procure proper quality and quantity of food to meet their nutritional requirements. This deprivation adversely affects their capacity for physical work resulting in low earning and poverty. Malnutrition is thus related to the vicious cycle of poverty.
- ▶ *Early pregnancy*: Early teenage pregnancies are dangerous not only for the health of the mother but also for the neonate. Chances of maternal and neonatal mortality and pregnancy related complications are high in case a girl conceives before her body attains physical maturity.
- ▶ *Low birth weight*: Malnourishment during pregnancy culminates into high incidences of low weight (<2.5 kg) during birth. Such infants are vulnerable to face growth retardation due to poor body nutritional reserve. The mothers may also show poor lactation performance.
- ▶ *Infection and diseases*: Diseases such as diarrhoea, pneumonia, measles, malaria and tuberculosis precipitate into acute malnutrition and aggravate the existing nutritional deficit. Metabolic demands for protein are higher during infections.
- ▶ *Poor breast-feeding practices*: In absence of breast-feeding a child becomes susceptible to malnutrition. Artificial feeding often proves to be disastrous for the baby because of the poor quality of the substitute milk, excessive dilution and use of unhygienic feeding bottles and nipples.
- ▶ *Other causes*: Repeated pregnancies, improper birth spacing, social taboos and separation of a child from parents often results into malnutrition among children.

Malnutrition is the result of a complex interplay of interacting and related factors in the individual, family and community. Improper and unbalanced dietary intake and diseases are the immediate determinants of various signs and symptoms of malnutrition. It increases the susceptibility and severity of infections among children. A number of other factors such as environmental, agricultural, and cultural including various other factors have contributive effects resulting in malnutrition. Therefore it is widely recognized that a multi-sectoral approach is necessary to tackle the problem of malnutrition.



VIII. CONSEQUENCES OF MALNUTRITION

Malnourished and undernourished children have lower chances of survival than well-nourished ones. These children have more susceptibility to childhood illnesses such as diarrhoea, measles, malaria, pneumonia etc. Proper and balanced nutrition is important to ensure proper brain formation and development which starts when a child is in the mother's womb. Nutritional deficiencies can adversely affect a child's Intelligence Quotient (IQ). It results in increased risk of chronic diseases, low weight and height at later stages. It makes a child prone to a number of chronic cardiovascular and diabetic diseases. PEM and iron deficiency anaemia are the common causes of nutritional dwarfism. In gross nutritional deficit, the weight gain is slow and the muscles are wasted (Ghai et.al., 2005).

IX. CHILD NUTRITIONAL STATUS IN WEST BENGAL WITH SPECIAL REFERENCE TO KOLKATA MUNICIPAL CORPORATION AREA

Malnutrition plays a huge role in child mortality because the immune systems of these children are less resistance to common childhood diseases. That is why common diarrhoea can kill a malnourished child. Child health and malnutrition rates are unacceptably high in the country. A shocking 45.9 per cent of children under the age of three are affected by malnutrition in India, with a state average of 43.5 per cent. Although the Infant Mortality Rate (IMR) has slashed down in the last decade from 75 to 48 per cent but the contribution of malnutrition to these deaths remain still the same. Incidences of malnutrition are most common among children in under-five age group with peak incidence occurring between six months to three years. Children who are artificially fed and remain deprived of mother's milk are more prone to various diseases especially Kwashiorkor and Marasmus. For a detailed study the state has been divided into Jalpaiguri Division consisting of six districts of Darjiling, Jalpaiguri, Koch Bihar, Uttar Dinajpur, Dakshin Dinajpur and Maldah, the Barddhaman Division consisting of seven districts of Bankura, Birbhum, Barddhaman, Puruliya, Hugli, Purba Medinipur and Paschim Medinipur and lastly the Presidency division consisting of six districts of Murshidabad, Nadia, Haora, North 24 Parganas, South 24 Parganas and Kolkata. The Integrated Child Development Scheme was launched in the state in 1975 under which the Supplementary Nutrition Programme (SNP) was undertaken to elevate nutritional status of pregnant women, lactating mothers, adolescent girls and child population. The achievements of the SNP programme can be analyzed by dividing the total child population into 0-3 and 3-6 years age group (Table.2). During 2006-07 the coverage of 0-3 age group in Jalpaiguri Division under SNP was 406,307 which showed an increase of 78 per cent during 2008-09 and recorded a drop to 69 per cent during 2010-11. In case of Barddhaman Division, the coverage was 996,401 children in the 0-3 age group during 2006-07 which rose by 94 per cent during 2008-09 with an eventual drop to 80 per cent during 2010-11. For Presidency Division the coverage during 2006-07 was 958,494 which rose by 82 per cent during 2008-09 and by 89 per cent during 2010-11 (Fig.1).

Table 2: District-wise Percentage Share of Underweight Babies (<2.5 kg) during Birth in West Bengal, 2005-06 to 2011-12

Administrative Divisions	Districts	Percentage Share
Jalpaiguri	Darjiling	17.21
	Jalpaiguri	19.95
	Koch Bihar	21.97
	Uttar Dinajpur	18.74
	Dakshin Dinajpur	19.64
	Maldah	13.33
Barddhaman	Bankura	21.94
	Birbhum	14.56
	Barddhaman	17.64
	Puruliya	23.71
	Hugli	13.53
	Purba Medinipur	11.85
	Paschim Medinipur	20.37
	Nadia	21.88
Presidency	Murshidabad	15.09
	North 24 Parganas	14.14
	South 24 Parganas	11.11
	Kolkata (Mn.Corp.Area)	30.21
	Haora	16.19
	State	West Bengal

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

Though the overall coverage of child population in the 0-6 age group under nutrition programme is rising in the state but the overall percentage achievement of target has been showing declining trends for some districts like Uttar Dinajpur, Malda and Paschim Medinipur. The coverage of 3-6 age group has been steadily rising for Jalpaiguri and Presidency divisions since 2006-07 though Barddhaman division showed an initial rise during 2006-07 with an eventual drop during 2010-11. In case of Kolkata the coverage of 0-6 age group has been steadily rising from 49,012 during 2006-07 to 61,279 in 2008-09 with a percentage achievement of 79.98 and to 79,421 during 2010-11 with a percentage achievement of 77.16 (Fig.2). The number of normal children in terms of nutritional status has been rising from 28,188 during 2006-07 to 38,514 in 2010-11 with a percentage achievement of 73.19 (Fig.3). There has been an abnormal increase in the number of Grade III and Grade IV children usually considered as malnourished children in the city which has been of serious concern (Fig.4).

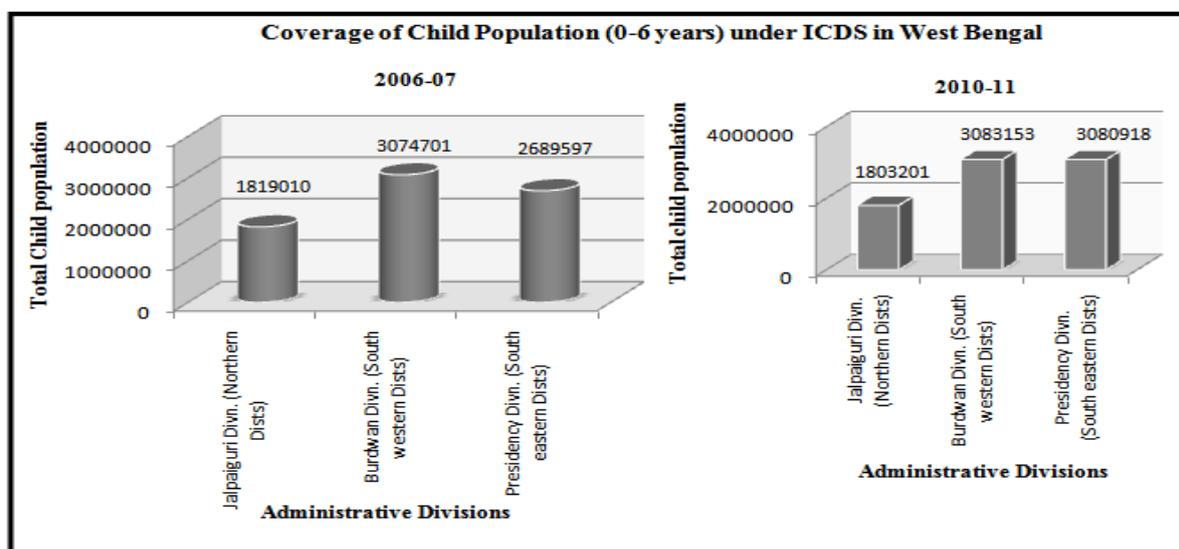


Fig.1 Data Source: Govt. of West Bengal

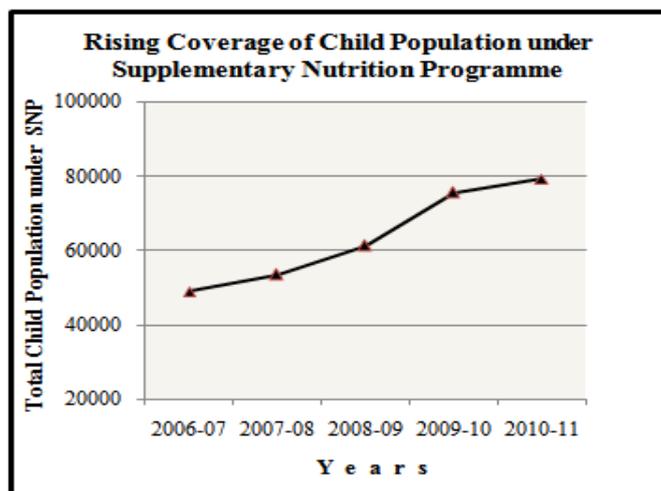


Fig.2 Data Source: Govt. of West Bengal

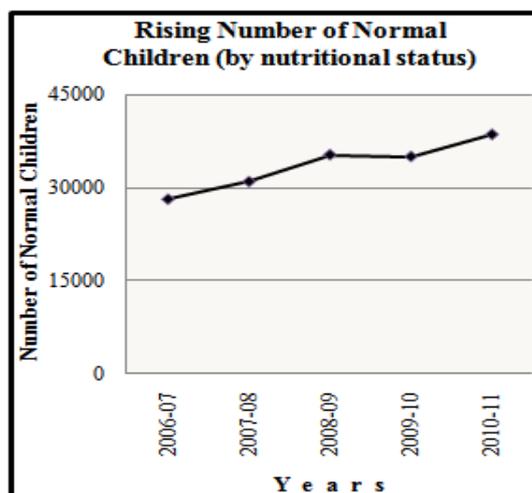


Fig.3

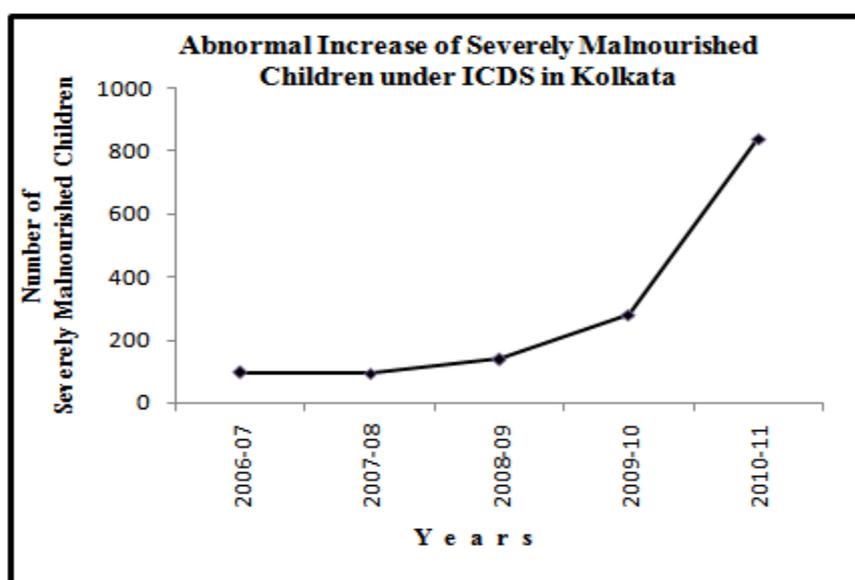


Fig.4 Data Source: Govt. of West Bengal

Preference of male children over females pre-dominates in the religious minority dominated slums of East and South-west Kolkata especially in the Garden reach area. This part of the city suffers from low socio-economic status of women. The mean age of marriage here is 14-16 years and the first child is born when a woman is only 17 years of age. In some of the slums of South-east and old South Kolkata dominated by migrated population from Bihar, Jharkhand, Odisha and Chhattisgarh the mean age of marriage is 13-14 years for girls and 15-17 years for boys. The women from those families have their first child during 15-16 years of age (Fig.5). In the slums of North Kolkata especially in Borough no.1 the health status of mother is poor in terms of immunization given during pregnancy and treatment of pregnancy related complications. Most of the female slum dwellers visit their native place during pregnancy which includes the remote rural areas of Bihar and Jharkhand and some in North and South 24 Parganas where domiciliary deliveries are conducted by family members or by eldest woman in the village. The picture of slums is dreadful in Borough no.XI of South-east Kolkata where tuberculosis is a common disease in the households and the male members of the family often become crippled with the disease.

As a result the household becomes even more affected by poverty condition. The situation of maternal and child health scenario in Borough no. VIII reveals a similar miserable picture especially in the religious minority dominated areas in municipal wards of 65, 67, 69 and 68 under Borough no. VII (Table.3). Similar condition prevails in the same for municipal slums under Borough no. XIV and XV. In some of the Boroughs of

the city child sex ratio (no. of 0-6 years girls / 1,000 boys in the same age group) have been found to be declining during the period 2001-11 especially in Borough nos. I, II, V, VIII, X, XI, XII and XIV. Child sex ratio has registered a strong positive growth in Borough no. VII (Table.4). The average number of children per family is comparatively high in East and South-west Kolkata where it is found to be 4-5 while in North and Central Kolkata the average number of children per family is 3-4 (Fig.6). Lack of proper breast-feeding practices is observed among the non-slum community where the neonate is breast-fed after 24 hours of birth. This is dangerous for the infant since the first mother's milk is essential for the baby which provides resistance against diseases immediately after birth. On the contrary, among the slum women a neonate is breast-fed within 24 hours of birth though in some households the baby is given to the mother after 24 hours of birth. (Fig.7). In some of the slums of old South Kolkata and North Kolkata children are been breast-fed up to one year of age. This is a rare picture in case of non-slum households. The children in the slums of Borough I, VII, XIV and XV suffer from stunted growth and light-coloured hair which is mainly due to prevalence of malnourishment and under-nourishment among them.

Table 3: 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)
390,282	339,323	8.53	7.55

Source: Computed from the data provided by Census of India

Table 4: Child Sex Ratio (0-6 years) in Kolkata, 2001-2011

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

Source: Computed from the data provided by Census of India

X. FINDINGS FROM THE STUDY

This study reveals a poor state of child health condition in some districts. Crib and cot deaths coupled with malnutrition is particularly high in districts of Maldah, Murshidabad, Uttar Dinajpur and South 24 Parganas. Other districts enlisted as having high proportion of malnourished children include Bankura, Bardhaman, Purba Medinipur and Paschim Medinipur. The rural areas of these districts are characterized by poverty, illiteracy, ignorance and negligence. Gender bias among male and female children has contributed to higher degree of malnourishment among the girl children immediately after birth. The rural areas as well as the slums and shanties of Kolkata are still dominated by early marriage of girls. The mean age of marriage of girls in these areas are between 15-18 years. This results into early pregnancy. Due to low economic condition and negligence of family members, proper nutritious diet is not provided during pregnancy and as a result the women suffer from malnutrition, intra-uterine growth retardation and other pregnancy related complications. Food rich in protein, vitamins and minerals are highly recommended during pregnancy. In the slums of the city majority of the male members of the family work as labourers, rickshaw pullers, auto drivers and industrial workers; their monthly income ranges between Rs.1,000-4,000. In the shanties the male workers work as sweepers, rag pickers and scavengers. The women work as household maids, cook and some runs roadside food stalls. They do not receive any care like ante-natal check up, nutritious diet, adequate rest during pregnancy or during period of lactation.

In some slums and shanties domiciliary deliveries are still practiced. This is especially prevalent among the slum households of North and East Kolkata. This is not only harmful for the new-born but also for the mother since this unscientific conduct of the delivery process brings high risk of maternal as well as neonatal death. The families of these areas are characterized by an average of 4-5 children per family. Health conscious birth spacing is not followed. As a result the mother often suffers from under-nourishment and after birth their

children inherit the symptoms of malnutrition. Negligence of the girl child is another reason behind prevalence of malnutrition among adolescent girls. In the slums and shanties of the city malnutrition among children are linked with their impoverished situation and low socio-economic background but the picture is dreadful among the elite class where low prevalence of breast-feeding practices are seen among women owing to their financial and social independence and hectic lifestyle. Often the child remains deprived of the motherly emotions throughout childhood.

XI. CONCLUDING REMARKS

The condition of maternal and child health has been in a tragic state in West Bengal with some initiatives taken by the State Government in recent years. The activities of ICDS in this respect have been praiseworthy. The *Anganwadi* schools meant for the children of low socio-economic background has been running successfully in various municipal wards of Kolkata. The health workers have been visiting households to distribute iron tablets among pregnant women. The children in the *Anganwadi* schools are given nutritious food like *khichdi*, vegetables, boiled egg and pulses. They are also provided with medicine in case of severe malnourishment and taken to doctors for height and weight check-up at regular interval. The Government run health centers in the city conduct institutional deliveries, ante-natal check up and post-natal check up for mothers. In spite of such initiatives worth mentioning, the coverage has not been satisfactory in various wards of the city. The pregnant women and lactating mothers of the vulnerable groups in some areas are not aware of Government initiatives and consequently they remain deprived of the benefits of the welfare programmes.

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