

# Feeding Practice and Nutritional Status of Under Five Children: A Cross Sectional Descriptive Study in a Slum Community of West Bengal

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## ABSTRACT

**Background:** Adequate nutrition during infancy and early childhood is the key for the development of each child to reach his/her full human potential. <sup>1</sup> Poor nutrition during the first 1000 days of a child's life leads to stunted growth which is irreversible. It is also seen to be associated with impaired cognitive ability and reduced school performances. <sup>2</sup>

**Objective:** To assess socio demographic profile, feeding practices of mothers/ caregivers, nutritional status of under five children and to find out any association between feeding practice and nutritional status.

**Methodology:** Community based observational descriptive study with cross sectional design was done at Baghbazar slum area in Kolkata among 76 under five children by house to house visit with a predesigned, pretested semi-structured proforma. Anthropometric measurements of them were also done. Data were analysed with SPSS version 16 software.

**Results:** 97.4% of the children were hospital born, 96.1% had birth weight  $\geq$  2.5 kg. Only 21.1% received breastfeeding within first hour after birth, 71.2% were exclusively breastfed. 23.7% received pre lacteal feeding and 93.4% received colostrum. Timely initiation of complementary feeding was found in 87.9%, 56.06% consumed fast food on regular basis and 59.1% received supplementary nutrition from ICDS center. Feeding during illness was decreased in 81.6%. 18.2% had stunting and it was significantly more in children of lower socio-economic classes (p value 0.010). 15.8% were underweight and it was significantly more

in low birth weight children (p value 0.024), whose mothers were less educated (p value 0.017), who did not receive exclusive breast feeding (p value 0.008) and supplementary nutrition from ICDS (p value 0.002). 5.2% were overweight and 2.6% were moderately wasted. **Conclusion:** Reinforcing nutritional education including IYCF practices are to be stressed.

**Key Words:** Feeding practice, Stunting, Under nutrition, Under five

## INTRODUCTION

Children are the backbone of any nation as they are the future generation and hold the key to prosperity of the nation. The first few years of childhood especially the under five period is the most pivotal and formative period of life. These years truly lays the foundation for sound physical, mental and social development of a child. <sup>3</sup> During this period, about 40% of physical growth and 80% of mental development of a child happen. <sup>4</sup>

Adequate nutrition during infancy and early childhood is the key for the development of each child to reach his/her full human potential. <sup>1</sup> Improper nutrition during this period may cause severe hindrance in their development. <sup>5</sup> Optimal infant and young child feeding practices give a child best possible start and provide the boost in life to be succeeded. <sup>6</sup>

It is now widely accepted fact that malnutrition is one of the gravest threats to

the world's public health.<sup>7</sup> Under nutrition is a major public health threat in developing countries. The infant and young children are the most vulnerable victims of it. Their physical, cognitive growth and resistance to infection are retarded severely. Also the susceptibility, frequency, severity of common infections increases whereas the recovery delays. Poor nutrition during the first 1000 days of a child's life leads to stunted growth which is irreversible. It is also seen to be associated with impaired cognitive ability and reduced school performances.<sup>2</sup>

Similarly, consumption of high fat, high sugar, high salt and energy dense food with lower levels of physical activity results in overweight or obesity. Overweight or obese children are having increased risk of developing health problems like hypertension, diabetes, fatty liver disease, cardiovascular disease, some type of cancers, reproductive disorders beside mental, emotional, social health problems.

Under nutrition in India has also been called the 'silent emergency'.<sup>8</sup> Out of three malnourished children in the world, one lives in India.<sup>9</sup> According to National Family Health Survey 4 (NFHS-4), the prevalence of stunting, wasting, severe wasting, underweight among under five children in India was 38.4%, 21%, 7.5%, 35.7% and in West Bengal was 32.5%, 20.3%, 6.5% and 37.6%, respectively.<sup>10</sup> Globally, 38.3 million children were overweight of which 17.8 million lives in Asia.<sup>11</sup> According to NFHS-3 study 1.9% of under five children in India are overweight.<sup>12</sup>

The nutritional status of poor urban children is worst among the urban groups and even poorer than the rural average child.<sup>13</sup> As per the reanalysis of the NFHS III data, about 47.1% of urban poor children under-three years are underweight which is much higher than the urban average of 32.8% and rural average of 45%.<sup>14</sup>

Under this background, this study is carried out among the under five children of Baghbazar slum area, Kolkata, which is the

urban field practice area under Department of Community Medicine, R. G. Kar Medical College, Kolkata with the following objectives:-

1. To describe the socio demographic profile of under five children.
2. To assess the feeding practices of caregivers of children under study.
3. To assess the nutritional status of those children.
4. To find out any association between feeding practice and nutritional status.

## MATERIALS AND METHODS

It was a community based descriptive, observational study with cross sectional design. After getting approval of institutional ethics committee the study was conducted in the year 2019 at Baghbazar slum area [KMC, Ward7] which is the urban field practice area of R. G. Kar Medical College, Kolkata.

All 455 families were visited from house to house in the slum. All under five children [total enumeration] residing in Baghbazar slum were included in the study. The total count of under five children were 76. Interview was taken from all 76 mothers/caregivers with a predesigned, pretested, semi-structured proforma after getting their written consent. Those who were not found on first or second visit, were again visited according to their convenience.

Anthropometric measurements of under five children were done using bathroom weighing machine, infantometer, non-stretchable measuring tape, WHO growth chart etc. Those under five children whose mothers / caregivers did not give consent for this study, were excluded. Review of records was done by using birth certificate and immunisation card of the child.

Data were entered into excel sheet followed by analysis in SPSS version 16 software. Results were expressed in percentage and relative frequencies. Chi-square, Fisher's test was done to test the association.

## RESULTS

Interview was taken from all 76 mothers/caregivers. Their characteristics

like socio-demographic profile, feeding practice, nutritional status are presented below with tables.

**Table 1: Distribution of study children according to their Socio-demographic profile (n = 76)**

Socio-demographic profile		Number	Percentage(%)
Age in months	0-6	10	13.2
	6-<24	26	34.2
	24-60	40	52.6
Sex	Male	40	52.6
	Female	36	47.4
Religion	Hindu	75	98.7
	Muslim	1	1.3
Socio-economic status (as per Modified Kuppuswamy Scale inflation rate adjusted for the year 2018)	Upper lower	38	50.0
	Lower middle	34	44.7
	Upper middle	4	5.3
Place of birth	Hospital	74	97.4
	Home	2	2.6
Birth weight	≥ 2.5 kg	73	96.1
	<2.5 kg	2	2.6
	Not known	1	1.3

Table 1 showed that 52.6% study subjects were male and belonged to the age group of 24-60 months. Majority were Hindu (98.7%), from nuclear family (80.3%) and upper lower (50%) socio

economic status. Most of the mothers (57.9%) had education of middle school level. Among the study children 97.4% were hospital born and 96.1% had birth weight ≥ 2.5 kg.

**Table 2: Distribution of the study children according to the feeding practice of their mother/caregiver**

Feeding practice variables		Number	Percentage(%)
Time of initiation of breast feeding n=76	<1 hr	16	21.1
	1-6 hrs	36	47.4
	6-72 hrs	19	25.0
	>72 hrs	2	2.6
	Not applicable	3	3.9
Pre-lacteal feeding n=76	Given	18	23.7
	Not given	55	72.4
	Not applicable	3	3.9
Colostrum feeding n=76	Given	71	93.4
	Not given	2	2.6
	Not applicable	3	3.9
Frequency of breast feeding in 24 hrs n=76	<6 times	1	1.3
	≥6 times	72	94.7
	Not applicable	3	3.9
Exclusive breast feeding n <sub>1</sub> =66 (6-60 months)	Yes	47	71.2
	No	19	28.8
Time of initiation of complementary food n <sub>1</sub> =66	<6 months	5	7.6
	6-8 months	58	87.9
	>8 months	3	4.5
Fast food consumption n <sub>1</sub> =66	Regular (≥3 days/week)	37	56.1
	Occasional/never	29	43.9
Supplementary nutrition from ICDS n <sub>1</sub> =66	Yes	39	59.1
	No	27	40.9
Hand washing before feeding n <sub>2</sub> =40 (24-60 months)	Done	23	57.5
	Not done	13	32.5
	Fed by mothers	4	10.0
Feeding during illness n=76	More	6	7.9
	Same	8	10.5
	Less	62	81.6

Regarding feeding habits, 73 (96.1%) of the study population received breast feeding for various duration, 2 (2.6%) were never breastfed and one child was adopted so the early feeding history of the

child was not known. Table 2 shows feeding practice of the mothers/caregivers. Bottle feeding was found in 52.6% of the children and among them only 55% was found to use boiled feeding bottles. 13.2% of mothers /

caregivers of children did not wash their hands before feeding and 15.1% did not store food in covered containers.

**Table 3: Distribution of the study children according to their nutritional status**

Nutritional status		Number	Percentage(%)
Weight for age n=76	Not underweight	64	84.2
	Moderately underweight	10	13.2
	Severely underweight	2	2.6
Weight for height/length n=76	Overweight (>+2SD)	4	5.2
	Moderately wasted (<-2SD)	2	2.6
	Not overweight, obese, moderately or severely wasted (+2 SD to -2SD)	70	92.2
Height/length for age n <sub>1</sub> =66	Stunted	12	18.2
	Not stunted	54	81.8

Table 3 shows that 15.8% children suffered from underweight, 5.2% from overweight, 18.2% from stunting and 2.6% wasting.

**Table 4: Distribution of the study children according to association between feeding practice and their nutritional status (n<sub>1</sub>=66)**

Feeding practice		Nutritional status		Result
		Underweight Number (%)	Not underweight Number (%)	
Exclusive breast feeding	Yes	3 (6.4)	44 (93.6)	X <sup>2</sup> =12.64 Df=1 P value= 0.001
	No	9 (47.4)	10 (52.6)	
Supplementary nutrition from ICDS	Yes	2 (5.1)	37 (94.9)	X <sup>2</sup> =10.32 Df=1 P value= 0.002
	No	10 (37.0)	17 (63.0)	

Table 4 shows significant statistical difference of underweight children between exclusively breast fed and non-exclusively breast fed children (p value 0.001). Significant statistical difference of underweight children was seen between those children who got supplementary nutrition from ICDS and those who did not get it (p value 0.002). Underweight was significantly more in low birth weight children (p value 0.024), whose mothers were less educated (p value 0.017). Stunting was significantly found more in children of lower socio-economic classes (p value 0.010).

## DISCUSSION

The study population consisted of 13.2%, 34.2% and 52.6% in <6; 6 -<24 and 24-60 months age respectively. This was comparable to a study of malnutrition in under five children by Sathy et al in slums of Odisha.<sup>15</sup> Majority of them was male (52.6%) as compared to females. This finding was also similar with the previous study. Most of the children (98.7%) were Hindus. Half (50%) of the under five children were from upper lower, rest 44.7%

and 5.3% were from lower middle and upper middle socio economic class respectively. This finding was comparable to the finding of similar studies done by Mondal et al in Rajabazar slum area of Kolkata.<sup>16</sup> 97.4% of the study children were born in hospital which was much higher than the NFHS -4 data of institutional birth rate in urban area of West Bengal (83.6%).<sup>10</sup>

All most all the children (96.1%) received breast feeding for various duration. This was in contrast with similar studies of Sarkar et al in Chetla slum of Kolkata,<sup>17</sup> Gandhi et al in Gujarat<sup>18</sup> where 100% of the study children received breast feeding. Among the study population 21.1% received it within first hour after birth which was much less than the NFHS-4 data (41.6%-National level and 47.4% in West Bengal),<sup>10</sup> a study in Gujarat by Gandhi et al (56.4%),<sup>18</sup> a study by Sarkar et al in Chetla slum of Kolkata (67%).<sup>17</sup> In the present study 23.7% of the study population received pre lacteal feeding which was much less than a study in slum of Lucknow by Gupta P et al (50.6%).<sup>19</sup> 93.4% of the study children received colostrum which was much higher than a study in urban

Allahabad by Kumar et al (45.2%).<sup>20</sup> Exclusive breast feeding was present in 71.2% of the study children which was much higher than the NFHS-4 data of urban India (52.1%) & urban West Bengal (61.1%),<sup>10</sup> a study in slums of Allahabad by Kumar et al (23.5%).<sup>20</sup> Timely initiation of complementary feeding was found in 87.9% of the study children which was much lesser than a similar study in Gujarat by Gandhi et al (97.5%).<sup>18</sup> In the present study 59.1% received supplementary nutrition from ICDS center whereas this percentage of ICDS beneficiaries was less (50.7%) in a study by Kumar et al in slums of Allahabad<sup>20</sup> and more (77.8%) in a study by R. et al in Thrissur.<sup>21</sup>

In the present study 18.2% of the study children had stunting which was less than NFHS -4 data<sup>10</sup> (India – 31%, West Bengal – 28.5%), a study by Sarkar et al in Chetla slum, Kolkata (27.5%).<sup>17</sup> This finding was similar to the finding of a study in rural West Bengal by Roy et al (16.7%),<sup>22</sup> a study in Gujarat by Gandhi et al (15.6%),<sup>18</sup> In this study stunting was significantly found more in children of lower socio-economic classes (p value 0.010). A study in Mumbai by Ghane and Kumar found stunting to be significantly associated with birth weight, immunization, exclusive breast feeding, maternal education and socio-economic status.<sup>23</sup> In the present study 15.8% were underweight. The percentage of underweight was lower than NFHS -4 data (India – 29.1%, West Bengal – 26.2%),<sup>10</sup> a study in rural West Bengal by Roy et al (29.2%),<sup>22</sup> a study in Mumbai by Ghane and Kumar (35.5%),<sup>23</sup> but higher than a study in Gujarat by Gandhi et al (11.5%).<sup>18</sup> Underweight was significantly more in low birth weight children (p value 0.024), whose mothers were less educated (p value 0.017), who did not receive exclusive breast feeding (p value 0.008) and supplementary nutrition from ICDS (p value 0.002). Being underweight was found to be significantly associated with birth order of the child, birth weight of the child and time of initiation of the breast-feeding to the

child (p < 0.05) in a study by Gandhi et al in Gujarat.<sup>18</sup> A study in Mumbai by Ghane and Kumar found being underweight to be significantly associated with birth weight, immunization, exclusive breast feeding, maternal education and socio-economic status.<sup>23</sup> In the present study 2.6% were moderately wasted which was less than NFHS -4 data (India – 27.5%, West Bengal – 22.7%),<sup>10</sup> a study in Gujarat by Gandhi et al (8.6%),<sup>18</sup> a study in rural West Bengal by Roy et al (22.2%).<sup>22</sup> In the present study 5.2% children were overweight which was higher than the joint child malnutrition estimate by UNICEF, WHO and World Bank (2.1%).<sup>11</sup>

## CONCLUSION

It was observed that among the study children 97.4% were hospital born, 96.1% had birth weight  $\geq$  2.5 kg. Only 21.1% of them received breastfeeding within first hour after birth, 71.2% were exclusively breastfed. 23.7% of the study population received pre lacteal feeding and 93.4% received colostrum. Timely initiation of complementary feeding was found in 87.9% of the study children aged between 6 and 60 months. Among the children aged between 6-60 months 56.06% consumed fast food on regular basis and 59.1% received supplementary nutrition from ICDS center. Feeding during illness was decreased in majority (81.6%) of the study population. In the present study 18.2% of the study children had stunting. Stunting was significantly found more in children of lower socio-economic classes (p value 0.010). Among the study children 15.8% were underweight. Underweight was significantly more in low birth weight children (p value 0.024), whose mothers were less educated (p value 0.017), who did not receive exclusive breast feeding (p value 0.008) and supplementary nutrition from ICDS (p value 0.002). In the present study 5.2% were overweight and 2.6% were moderately wasted.

## Recommendation

Literacy status of the parents should be improved. Mothers can be self employed by self-help group formation for the economic improvement of the family to some extent. Providing quality antenatal care to the pregnant women will reduce the incidence of low birth weight. Reinforcing nutritional education including IYCF practices are to be stressed. Parents should be encouraged to send children to ICDS centre regularly.

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