



# Factors Affecting to the Child Health in Urban India: A Comparative Study between Two Mega Cities

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## Abstract

Child health is the one of important indicator of development of the nation. It also indicates the demographic status of any country and illustrates the future of human resource capital potential of the nation. Three standard indices of physical health/ growth of children, proposed by WHO, are “Height-for-age (stunting), Weight-for-height (wasting) and Weight-for-age (underweight)”. Child health was started emphasised and majorly focused globally during ICPD 1994 with considering it as a co-domain of Maternal health and named as MCH (Maternal and Child health). In the present study, we try to investigate the label of child health status in two demographically important mega cities as Meerut and Chennai. The prime objective of the study is to examine the relationship between background characteristics of the city and the status of child health and its influencing significant factors. NFHS-3 data was used for analysis. To examine the differential health status of the child across slum and non-slum population, bi-variate technique execute while Chi-square test has been used to understand the significant of background characteristics on child health status. The results show that the stunting is higher for Meerut than Chennai, as a little less than double. This difference is not much greater for slum children (27.7, 45.8) compare to non-slum (25.7, 42.2) in both the cities Meerut and Chennai respectively. For wasted and underweight characteristics, Chennai has a greater contribution than Meerut, and subsequently it is higher for slum over non-slum population. Wasted difference gap between slum and non-slum is higher for Chennai compare to Meerut, that is, 10.4 points and 4.1 points respectively. As a part of policy implication, one should enhance the nutritional status of the child as well as mother breastfeeding must be encouraged.

**Keywords:** Child health, urban, slum, stunting, underweight, wasting.

## Introduction

In 20th century, many social changes have been warmly welcomed, and urbanization was one of them. Like other developing nations, India has also experienced a good pace of urbanization in the last several decades after post-colonial periods. Recent estimates show that about one-third (31%) of the Indian population were living in urban areas, that is almost five folds higher than in 1951<sup>1</sup>. Urbanization is a process of structural changes in socioeconomic and demographic aspects of life of a society. So, the answer of the same question should be searched about the urbanization in Indian context too. In India, there is an enormous gap between the need of urban population and the pace of urbanization. Hence, there appears to be broad accord that many socio-economic disparities are arises in these urban centers. It puts certain groups of people on the verge of disadvantage in terms of economically, socially, and politically and their possibilities to be healthy<sup>2</sup>. Until the early 1980s, Urban health was not the prime focus as an issue of public health policies in developing countries. Moreover, urbanization was perpetually looked as advantageous in terms of health services and health condition because of the

expectations of having well-developed health care infrastructures and better accessible for a broad spectrum of health care services. More than that the urban groups were considered as homogenous with respect to economic health status<sup>3</sup>. But in the last two decades of 20th centuries, studies made known a massive diversity of the extent and depth of poverty in urban regions in developing nations and its impact on health outcomes<sup>4,5</sup>. The utilization of the highest attainable standard of health is one of the fundamental rights of every human being without differencing of the race, sex, culture, religion and political belief. However, the differential social customs and behavioral pattern are promoting health inequalities and leading to poor health status, in spite of improvement in medical technology and health services<sup>6,7</sup>. Hence, the most emphasis has been given by governmental and non-governmental organizations on the need for reduction in health inequalities among different social, cultural and economic groups. As per the declaration of Alma Ata of 1978, Indian government even targeted to achieve the goal of health for all up to A.D. 2000.

As cities grow, more than its pace the slum population also increases. According to the Global Report on Human

Settlements<sup>8</sup>, almost one-third of the world's urban population (924 million people), lived in slums in 2001 and the majority of them in the developing countries. The proportion of the urban population living in slums was about seven times as high in less developed countries (43%) as in more developed countries (6%).

A number of studies illustrated that urban poor are in more worsen condition of their health compare to their counterpart urban population and hence, this population is more often compare its the health to the rural reside populations<sup>9 10 11</sup>. After analyzing the maternal and child health services of slum population, it was found that they are on the verge of disadvantages compare to non-slum urban populations<sup>12</sup>. Study held in African countries like Nairobi and Kenya illustrated that mortality rate of under-5 children was about 2.5 time higher (151/1000 Live Births) in slum dwellers compared to non-slum population of the same city. Further, it was more cleared and speculated that there was a dramatical variation in the level of mortality and morbidity rates between the areas, with the inappropriate services and better –equipped and adequate of the services like water supply, proper sanitation facilities and health care services of the same slum of the city. A survey made in seven slum dwelling areas in Karachi concluded that considerable variations in IMR (infant mortality rates) and it varies from 33 to 209 for per thousands live births<sup>13</sup>. In developing countries like India, Bangladesh, Haiti and Ethiopia, rural are better than slums of urban in terms of child malnutritions and health<sup>14</sup>. The study made by Non-Governmental Liaison Services by UN, in Ethiopia, found that about half of the slum populated child were malnourished while this ratio was only 27% for the non-slum children. In Brazil and Côte d'Ivoire to the child malnutrition was much higher for slum dwelling children, and it is about three to four times higher than those children who were non-slum resident. As the concentration of urban slum population increase, it is expected that it leads to increase in urban poverty. Moreover, it has considered that the worst of the urban poverty and inequality has been represented by these urban slums. Slum contains the populations having highest concentration of poverty and the worst housing and environmental conditions. Hence, the thought emerged as the third world countries are moving towards the locus of global poverty of cities due to rapidly increasing the slum population in their urban regions, and that is considered as urbanization of poverty. In NFHS third round survey, the eight megacities were covered separately and that slums were recognized and defined as a manifestation of the two main challenges that facing human settlement development at the beginning of the new millennium i.e. rapid urbanization and the urbanization of poverty<sup>15</sup>. Mostly, the prominent argument about slums are that it is the ocular manifestations of extreme poverty, and the slum population is unambiguously in rugged conditions than their counterparts of non-slums. To pointing out about urban poverty, many studies also illustrated that considerable

proportion of poor in the city resides outside of the slum. Moreover, these outsider non-slum homeless population were unable to undercover and missed out any health and other interventions those target only slum-dwellers. India's record urbanization represents an enormous prospect for enhancing the quality of life of urban people, but it also poses dreadful challenges for handling with escalating socioeconomic urban disparities along with mounting health inequalities. The present study examines the Factors Affecting to the Child Health in Urban India, with particular reference to their Meerut and Chennai. With these, the prime concern of the study was to examine the prevalence and significant factors that were influencing of health status of the child in two mega cities, Meerut and Chennai, in India. Along with that, we also tried to investigate the economic inequality of nutrition status of children in the two mega cities in India. The main reason for selected these two cities because these two cities represent the north and south India, and both cities are industrial hub, also in both the cities the have large number of slum population.

## Methodology

**Data:** For the present study National Family Health Survey - 3 (NFHS-3) data have been used that was conducted during 2005-06<sup>16</sup>. The main instrument for the collection of the data in NFHS -3 was the set of structured questionnaires. Information of the child health was from all children age less than five year age group has been consider as unit of analysis and mother of child was over unit of enquiry in five year preceding the survey. For the present study cross-tabulation and chi-square have been employed to fulfill the aforesaid objective. Concentration indices

**Description of Variables: Outcome variables:** Three standard indices of physical growth that depict the nutritional status of children are consider as a dependent variables, namely:

Height for –Age (stunting): defined as children below minus three standard deviation (-3SD) from the median of the reference population are considered short for their age.

Weight- for –height (wasting): defined as children whose Z score is below minus two standard deviation (-2SD) from the median of the reference population are considered thin (wasted).

Weight -for –Age (underweight): defined as children whose Weight -for –Age is below minus two standard deviation (-2SD) from the median of the reference population are classified as underweight.

**Main Predictors:** All background variables i.e. age of mother, birth order, breastfeeding, religion cast, mother education, household economic status, respondent work status, having health card, using bed net, water facility, type

of toilet facility, type of locality, etc. used as predictor variables in the analysis.

**Analytical Approach:** To examine the status and level of inequality of child health status in different groups, bi-variate and concentration curve were performed. Bi-variate analyses are used to examine the nature of association between child health status among social groups by selected socioeconomic and background characteristics. However, chi-square test was applied to examine the significant factors which contributed in determining the health status of children in the study areas. Concentration curve explores the level of inequality in child health status within different economic groups in Meerut and Chennai. For this analysis Statistical Package of Social Science (SPSS) version 21 have been used.

The concentration curve (C) is computed using the following formula through spread sheet:

$$C = (p1L2 - p2L1) + (P2L3 - p3L2) + (pT-1LT - pTLT-1)$$

Where, P is the cumulative percentage of the sample, ranked by economic status. L is the corresponding concentration curve ordinates. T is the number of socio-economic groups (wealth quintile).

## Results and Discussion

Sample distribution of child aged less than 5 year during the five years preceding the survey by background characteristics in Meerut and Chennai

Table 1 represents the unweighted percentage distribution of the children under 5 during the five years preceding the survey date, by background characteristics in Meerut and Chennai. Women reported that 28.2 % child belonged to women age 30 and above, and only 2.2 percent child belongs to mother age less than 20 in Meerut. In Chennai, 29 percent child belong to mother age 30 and above. In Meerut, 55 percent belonged to Hindu religion, and 44.5 percent belonged to other religion. About 18% were child belonged to SC/ST cast group, and 81.6 % of children were from others classes. Out of total children, 7.4% belonged to poor economic status and 80% were from rich economic status. About 34% of the children belong to slum area, and 65.2 % children belonged to non-slum area. In Chennai, 81 % of children belonged to Hindu religion, and only 18.1 % children belonged to others religion. About 29 percent children belonged to SC/ST cast group, and 70.8 percent belonged to others cast groups. About 17 % children belonged to the mother who has higher and more education. 5.1% children were from poor economic status, and 76.6 % were from rich economic status. About 53% of the children belong to slum area, and 47.6 % children belonged to non-slum area.

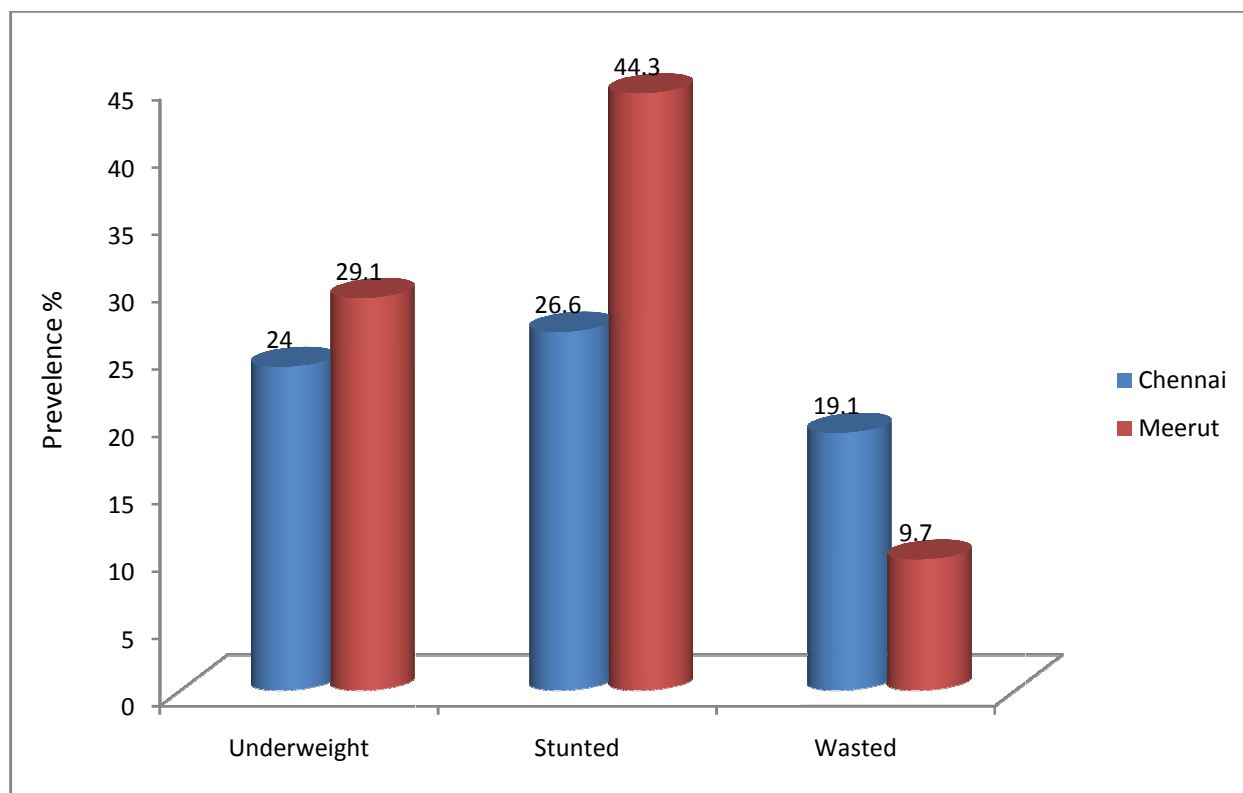
The prevalence of underweight and stunting is higher among children belongs to Meerut city than Chennai in India. Although the prevalence of wasting among children is higher in Chennai than Meerut. More than 29 and 44 percent child in the Meerut are either underweight or stunted in Meerut compared to 24 percent and 26.6 percent of child in Chennai (Figure 1). More than 19 percent of child in Chennai are stunted than only 9.7 percent of child in Meerut.

**Health status of children in Meerut and Chennai:** Table no 2 present the child nutrition in two Indian cities namely Meerut and Chennai by background characteristics. To see the association between child nutrition status and independent variable chi-square test employed. From the table, it can be easily seen that mother age and birth order is the important factor that is influencing the child nutrition status. Mother age below 20 and above 30 years of age is most important in both the cities in respect to nutrition status of children. In Chennai, mother age is a significant association with the wasted child (weight to height). As the birth order increases the child nutrition status, continuously decline in both the cities. Out of three about every one child was underweight in birth order 4 and above in Meerut. Similar situation also observes the Chennai, about 40 percent of children under age five are underweight. The proportion of children suffering from wasted (weight to height) is less compared to children suffering from underweight and stunted in both the cities. About one-fifth Children were underweight, and about one third child were stunted from Hindu religion in Meerut. But in Chennai, about 25 percent children were underweight, and 27 percent children were stunted. Cast of the households was significantly associated with the nutrition status of the children in Chennai. Out of three, one child were underweight and 40% children were stunted in Chennai from SC/ST cast group and 26.5 percent children were wasted. Similar situation also observed in the Meerut. The study found that The prevalence of underweight and stunting is higher among children belongs to Meerut city than Chennai in India. Although the prevalence of wasting among children is higher in Chennai than Meerut. Among communities, the strong confirmation of variations in child malnutrition is unswerving with the presence of the contextual and socio-environmental effects of households and surroundings. These findings are lies on the same line as the most studies concluded and attempt to disentangle contextual from compositional effects on health status<sup>17 18</sup>.

More than half children of children are underweight and stunted from poor economic strata in Meerut, and about 14 percent children were wasted. Similarly, 47 percent children were underweight, out of every three, and two children were stunted and one child was wasted those who belongs to poor economic strata in Chennai.

**Table-1**  
**Population of child aged less than 5 year during the five years preceding the survey date, by background characteristics in Meerut and Chennai, NFHS-3, 2005-06**

Background Characteristics	Meerut		Chennai	
	Percent	n	Percent	n
<b>Mother Age</b>				
< 20 Year	2.2	26	3.6	21
20-29 Years	69.6	830	76.5	448
30 and Above	28.2	337	20.0	117
<b>Birth order</b>				
1	29.8	355	48.5	284
2-3	42.3	505	49.5	290
4+	27.9	333	2.0	12
<b>Month of Breast Feeding</b>				
Never Breastfeed	6.6	78	5.5	32
0-6 Month	25.1	297	21.9	127
<b>Religion</b>				
Hindu	55.5	662	81.9	480
Non-Hindu	44.5	531	18.1	106
<b>Cast</b>				
SC/ST	18.4	219	29.2	170
Others	81.6	971	70.8	412
<b>Level of Education</b>				
No Education	42.7	509	9.2	54
Primary	10.1	120	14.5	85
Secondary	26.8	320	59.4	348
Higher	20.5	244	16.9	99
<b>Economic Status</b>				
Poor	7.4	88	5.1	30
Middle	12.7	151	18.3	107
Rich	80.0	954	76.6	449
<b>Husband Education</b>				
No Education	21.7	256	6.7	39
Primary	11.3	133	16.5	96
Secondary	48.0	567	56.8	331
Higher	19.1	225	20.1	117
<b>Respondent Work Status</b>				
Not Working	82.0	978	77.3	453
Working	18.0	215	22.7	133
<b>Health Card</b>				
No Card	71.6	793	61.5	352
Has Card	28.4	315	38.5	220
<b>Has Bed Net</b>				
No	75.6	895	93.2	546
Yes	24.4	289	6.8	40
<b>Hygienic Toilet Facility</b>				
No	37.8	428	47.5	263
Yes	62.2	705	52.5	291
<b>Water</b>				
Unsafe	0.5	6	40.0	223
Safe	99.5	1133	60.0	334
<b>Locality</b>				
Slum	34.8	415	52.4	307
Non-Slum	65.2	778	47.6	279
<b>Total</b>	<b>100</b>	<b>1193</b>	<b>100.0</b>	<b>586</b>



**Figure 1**  
**Child nutritional differential in Chennai and Meerut, 2005-06.**

Mother education is an important factor for child nutritional status. But it is significantly associated with stunted in Chennai. In Meerut, 41 percent of children were underweight, 57 percent were stunted and 9.7 percent children were wasted with mother no education. As well as mother educational level are increased child nutritional health status are declining. 9.5 percent children underweight, out of five every one child was stunted, and 7.3 percent of children were wasted with higher educated mother category. Similar result also observed from Chennai. The child nutrition status were good those mothers had reported that they are currently working compare to those reported that they were not currently working in both the cities. Household holding health card also reduce the risk of child malnutrition in both the cities. Those, mother who had reported that they were using the bed net for sleep; the risk of malnutrition was less compared to those reported that they were not using the bed net for sleeping purpose. About one-third children were underweight, out of total half of the children were stunted, and every tenth children were wasted from those household reported that they were not using the hygienic toilet facility in Meerut. Similar result also found in the Chennai. The study shows that mother’s age, her education and working status and birth order, Caste, and economic strata are the important factors that influence the child nutrition status. Households have health card, using the bed net for sleep and have the hygienic toilet facility were also reduced

the risk of child malnutrition. No breastfeed and slum dweller children were more deprive than their counterparts. The similar result has been found in the other studes, where the maternal variables like her age, working status, economic conditions her utilization of natal care for the particular child, contributes much to the status of child health<sup>19 20</sup>.

Child nutrition health status varies according to month of breastfeeding in both the cities. Children health status was worst in those mothers reported that they never breastfeed the child compare to those who had reported 0-6 month breastfeed to their child. About 30 percent children were underweight, about every second children were stunted and 16.4 percent children were wasted in Meerut among those mother’s who had reported that they never breastfeed to their child. Similarly, 15.3 percent were underweight and same proportion were wasted and about 22 percent children were stunted among those mothers who had never breastfed to their child. Children from slum area were more deprive compared to those from non-slum areas, in both the cities. In Meerut, about 27 percent of the children were underweight, about less than half children were reported as stunted, and 11 percent of children were wasted, those who were residing in slum area. Similarly, about one-third children reported as underweight, 30 percent reported as stunted and 22.4 percent children reported as wasted from slum area in Chennai.

**Table-2**  
**Present the child nutrition status in two Indian cities namely Meerut and Chennai by background characteristics**

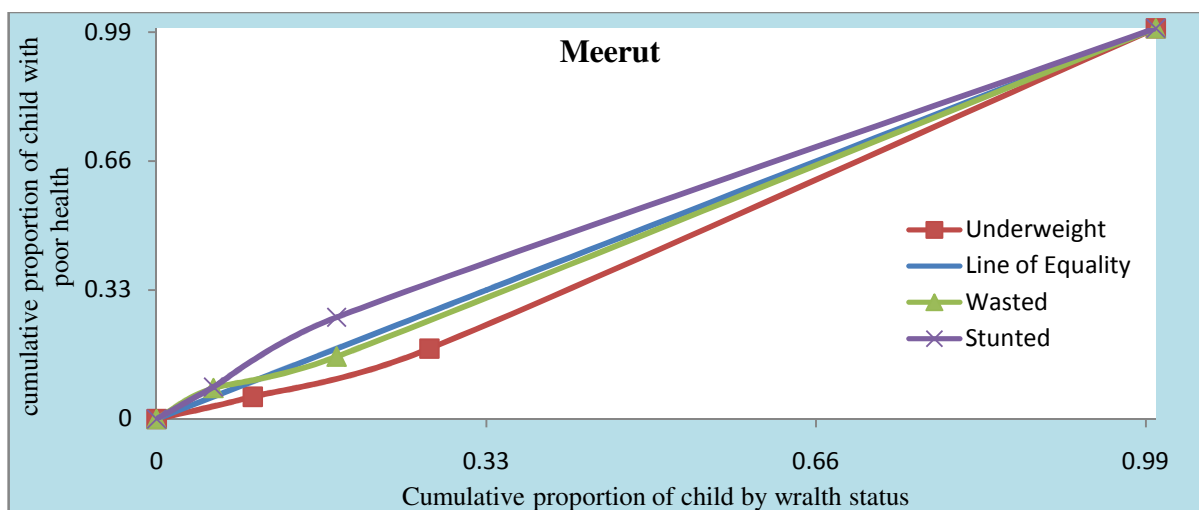
Background Characteristics	Meerut			Chennai		
	Underweight	Stunted	Wasted	Underweight	Stunted	Wasted
<b>Mother Age</b>	(1.286)	(2.374)	(1.145)	(0.506)	(3.390)	(7.151)**
< 20 Years	41.4	59.6	10.6	23.6	30.1	22.9
20-29	29.7	42.6	9.2	24.5	31.3	16.3
25-29	23.8	35.1	9.3	20.6	15.9	21.6
30 and Above	25.9	52.7	10.7	27.7	25.5	19.5
<b>Birth order</b>	(0.553)	(1.302)	(0.590)	(1.925)	(3.380)	(0.434)
1	21.8	35.9	6.9	19.2	19.5	17.7
2-3	28.7	42.4	10.6	27.8	32.9	20.6
4+	36.6	55.6	11.2	39.8	33	13.6
<b>Religion</b>	(2.574)	(1.903)	(0.151)	(0.509)	(0.282)	(0.061)
Hindu	20.6	36.7	8.5	24.6	27.2	19.5
Others	39.5	53.6	11.1	19	20.8	16.6
<b>Caste</b>	(0.166)	(0.005)	(0.036)	(4.358)**	(4.603)**	(1.149)
SC/ST	25.9	47.8	7.9	37.6	40.9	26.5
Others	29.1	43.0	9.8	19.1	21.2	16.8
<b>Wealth Index</b>	(3.013)	(2.390)	(0.885)	(5.281)	(14.981)	(1.586)
Poor	50.6	64.8	13.6	47.4	68.9	36.7
Middle	41.8	64.3	6.4	40.9	53.6	21.2
Rich	25.2	39.4	9.8	19.4	19.1	17.8
<b>Mother Education</b>	(4.740)	(5.737)	(0.410)	(5.629)	(13.962)***	(0.152)
No Education	41.1	57.2	9.7	43	65.2	22.8
Primary	26.1	53.7	11.1	36.7	36.1	19.4
Secondary	27.3	40.1	10.9	22.4	26.2	18.9
Higher	9.5	20.5	7.3	13.2	8	17.9
<b>Working Status</b>	(0.135)	(0.153)	(0.036)	(4.811)**	(5.294)***	(0.011)
Not working	27.4	42.3	9.3	19.5	21.5	19.2
Working	34.3	50.9	11.1	39	43.2	18.3
<b>Have Health card</b>	(1.031)	(1.993)	(0.159)	(0.106)	(0.002)	(0.019)
No Card	32.9	50.3	9.5	24.5	26.4	19
Has card	19.4	29.6	10	22.3	25.5	19.1
<b>Using Bed Net</b>	(1.416)	(0.457)	(0.117)	(1.119)	(1.434)	(0.084)
No	32.3	46.5	10.9	24.5	27.1	18.6
Yes	17.4	35.8	5.6	12.6	12.6	24.6
<b>Water availabilityType</b>	(0.030)	(5.005)	(0.431)	(1.260)**	(3.936)***	(1.727)***
Unsafe	27.5	100	NA	30.5	38.7	26.3
Safe	29.1	44.1	9.7	21.0	20.9	15.8
<b>Hygienic Toilet Facility</b>	(0.206)	(0.857)	(0.018)	(0.383)	(0.000)	(0.027)
No	32.8	51.9	9.9	26.4	26.2	20
Yes	26.8	39.8	9.6	21.4	25.9	18.7
<b>Months of Breastfeed</b>	(0.690)	(2.129)	(0.899)	(3.509)	(2.379)	(2.749)
Never breastfeed	29.9	51.4	16.4	15.3	21.3	15.3
0-6 month	22.1	28.8	16.4	25.5	17.2	30.8
<b>Locality</b>	(1.840)	(1.382)	(0.001)	(5.993)***	(0.175)	(1.944)
Slum	26.9	46.1	10.6	31.5	30.2	22.4
Non Slum	30.2	43.5	9.2	17.7	23.6	16.4

Chi-Square Test: \*\*\*p<0.01; \*\*p<0.05; \*p<0.1 (at 95% of CI), NA: Value not found

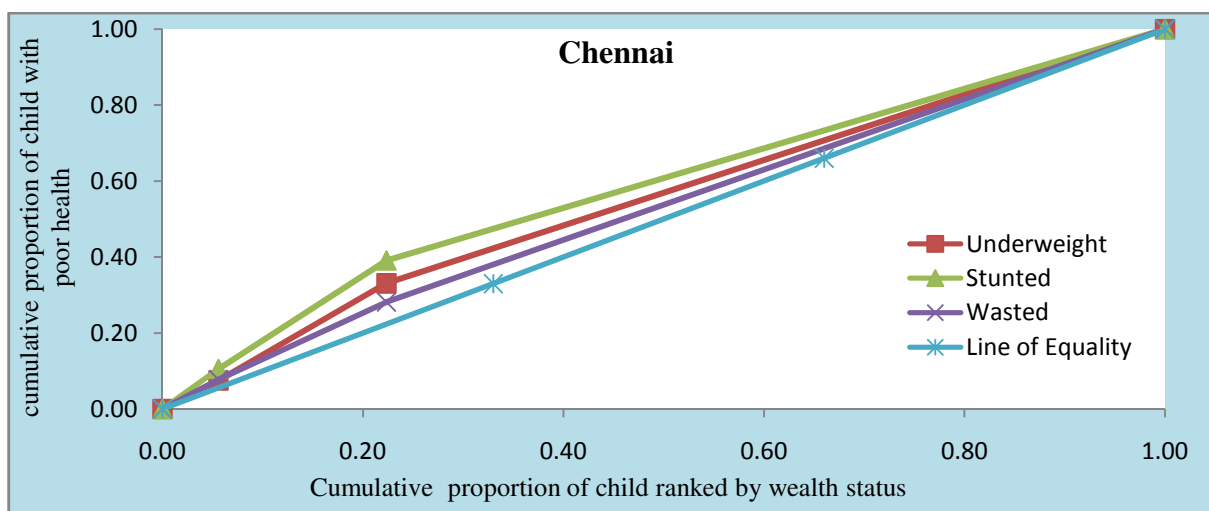
**Economic equality in health status of children in Meerut and Chennai:** In sequence of measuring the degree of economic inequalities concentration curve has been employed in the analysis for both the cities. Figure-2 shows the economic inequality in child health status by wealth index for the Meerut City. The concentration curve for Stunting lies above the line of equality, indicating that child stunting was concentrated amongst the poor. The child health indicators, namely underweight and wasted, lies below the line of equality. It is suggesting that children underweight and wasted concentrated among the rich and the inequalities was higher in stunted and underweight and less in the wasted category. Child stunting was concentrated amongst the poor. That child underweight and wasted child concentrated among the rich and the inequalities was higher in stunted, underweight and less in the wasted category. Economic inequalities were higher among stunted category followed by underweight and least in wasted category.

in India, a large share of urbanized population are underprivileged for the basic needs of amenities like as the pucca house, the safe drinking water, electricity in their houses, the pollution free cooking gas, improved sanitation facilities, better education and regular paid work<sup>20 21</sup>. so the health status of children belonging to these strata of population was very adverse.

Figure 3 shows the economic inequality in child health status by wealth index for the Chennai City. The concentration curves for all child health indicators were lies above the line of equality, indicating that worse child was concentrated amongst the poor household. The green line is so far from the line of equality compare to red and purple colour line. It means the economic inequalities was higher among stunted category followed by underweight and least in wasted category.



**Figure-2**  
 Concentration curve showing the economic inequality in child health in Meerut



**Figure-3**  
 Concentration curve showing the economic inequality in child health in Chennai

Due to rapid urbanization in India, a huge gap has been created among rich and poor and consequence to that, specially in urban areas, the socioeconomic disparities are rising. This also affects the level of utilization of health care services among rich and poor and hence, health inequality has risen as emerging challenges in the urban population. The unexpected and unplanned growth of level of urbanization has threatened and reduced the entertainment of well supposed public health advantages of urban life in many ways. This is a burning issue for social scientists that is yet to consider<sup>22,23</sup>. In India like developing nations, the pace of unplanned urbanization poses dreadful challenges for handling with escalating urban economic disparities and its outcome as the rising health inequalities<sup>1 18 24</sup>.

## Conclusion

In the concluding remarks, this paper strongly recommends that environmental conditions should be improved because these are the most important factors that highly contributed in the poor health status of child health in Urban slums. Since basic amenities were also lacking in such social groups of urban residents and it effects adversely on overall health and through that child health also influences. Government should focus their policy execution on availability of safe drinking water, proper and hygienic sanitation facility in urban slums.

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