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## Assessment of malnutrition among school going children of lower income group

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### Abstract

A large part of this migrating population lives in slums under inhuman conditions; as a result, urban poverty and hunger are increasing in many developing countries, especially in India. Ignorance and difficult conditions of healthy living in slums are more likely to result in improper food habits, low access to health care and lack of hygiene awareness and knowledge of the origins of disease and proper treatment. Malnutrition among school-age children is becoming a major public health concern globally, especially in India, as children are the future of any country. The development of any child is the most important indicator of health, which is influenced and measured by adequate intake of food and nutrients and decreased susceptibility to disease. A total of 200 children (Age group – 6 -12 years) who were residing in different areas of Trilokpuri were selected from Nigam Prathmic Bal Vidhyalaya and Sarvodaya Bal Vidyalaya Kalyanpuri, for study through systematically random sampling. Data were collected from both primary and secondary sources. Information about socio-economic details, body height (cm), weight (kg) collected. Malnutrition was calculated with the help of WHO AnthroPlus software, developed by WHO in 2007. At present, the nutritional condition of children in India is much poor than many other Asian country, and same situation is visible in children residing in slums of Trilokpuri of Delhi. The nutritional condition of both boys and girls was found very poor, but it is also remarkable that girls showed better degree of nutritional status than boys. Study also find that the most of the children have many siblings, insufficient income and many members in a family also lead to unhealthy life style which is the main cause of the malnutrition.

**Keywords:** nutritional status, malnourished, slum, school going children

### 1. Introduction

People from rural areas are coming to the cities on a large scale with the hope of a better life, due to which the urban population is increasing rapidly. Cities and towns are also expanding rapidly but the large number of people compromises the city's ability to meet its basic needs. A large part of this migrating population lives in slums under inhuman conditions; as a result, urban poverty and hunger are increasing in many developing countries, especially in India. Ignorance and difficult conditions of healthy living in slums are more likely to result in improper food habits, low access to health care and lack of hygiene awareness and knowledge of the origins of disease and proper treatment. The situation is further worsened by myths and shortages of essential health centers, medicines and health care workers. Children living in such poor and unhygienic conditions are at particularly high risk for health and nutritional problems. India's urban population grew at a record 31.2% between 1991 and 2001 - almost double the 17.9% growth in the rural population in the same period. High population density characterizes India's urban population, which is the second largest in the world after China. Due to the rapid growth of urban population, it is estimated that India's urban population will reach 660 million by 2025.

The development of any child is the most important indicator of health, which is influenced and measured by adequate intake of food and nutrients and decreased susceptibility to disease. The national family health survey (NFHS) data show that 53.0 percent of children in rural areas of India are underweight and this varies across states. The percentage of underweight children in the India was 53.4 in 1992; it decreased to 45.8 in 1998 and rose again to 47 in 2006. 1 in 10 children born among the urban poor is not likely to reach his or her fifth birthday (Agarwal, *et al.* 2005). Urban areas in India have less than 4% of government primary health

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care facilities (*Ibid*). There is, on average, only one health facility for every 150,000 people in India's largest cities (*Ibid*).

Malnutrition among school-age children is becoming a major public health concern globally, especially in India, as children are the future of any country. Despite currently accelerating economic growth in developing countries, malnutrition, and especially under-nutrition, is still more prevalent among children. Malnutrition in children has long-term negative effects on his/her physical, emotional and cognitive development. Addressing nutritional problems of urban slums' children is therefore must for overall development of the country. Therefore, keeping in mind all these facts, the present study has been done with the aim of finding the malnutrition among school going children of lower income group.

## 2. Methodology

A total of 200 children (Age group – 6 -12 years) who were residing in different areas of Trilokpuri were selected from Nigam Prathmic Bal Vidhyalaya Main Road, Part 1,

Trilokpuri and Sarvodaya Bal Vidyalaya Kalyanpuri, Near Police Station, Block 2, Part 1 Trilokpur, for study through systematically random sampling. Data were collected from both primary and secondary sources. Information about socio-economic details, body height (cm), weight (kg) collected. Malnutrition was calculated with the help of WHO Anthro Plus software, developed by WHO in 2007, as Severe thinness ( $< -3SD$ ), Thinness ( $\geq -3SD$  &  $< -2SD$ ), normal ( $> -2SD$  &  $< +1SD$ ), Overweight ( $> +1SD$  &  $\leq +2SD$ ) and Obesity ( $> +2SD$ ) for BMI-for-age, Normal, Mild underweight ( $> -2SD$  &  $< -1SD$ ), Moderate underweight ( $\geq -3SD$  &  $< -2SD$ ), and Severe underweight ( $< -3SD$ ) for weight-for-age and Normal, Mild stunting ( $> -2SD$  &  $< -1SD$ ), Moderate stunting ( $\geq -3SD$  &  $< -2SD$ ) and Severe stunting ( $< -3SD$ ) for height-for-age according to WHO 2007 classification, and compared with the World Health Organization (WHO) 2007 classification, based on BMI-for age (z-score), Weight-for-age (z-score) and Height-for-age (z-score). Further, appropriate statistical techniques were applied to derive the results of the present study.

## 3. Results & Discussion

**Table 1:** Distribution of School going children according to the socio-economic characteristics

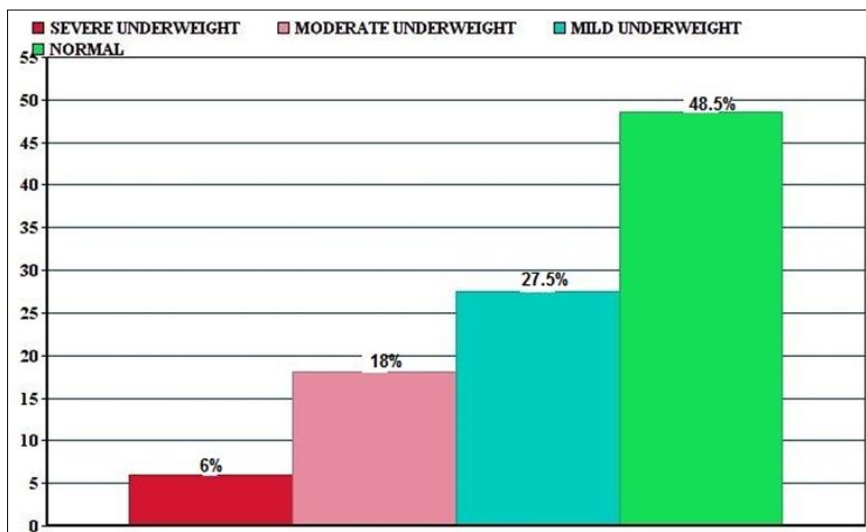
| Variables                        | Frequency (n) | Percentage (%) |
|----------------------------------|---------------|----------------|
| <b>Age</b>                       |               |                |
| ▪ 6-8 years                      | 71            | 35.50          |
| ▪ 8-10 years                     | 65            | 32.50          |
| ▪ 10-12 years                    | 64            | 32.00          |
| <b>Gender</b>                    |               |                |
| ▪ Male                           | 102           | 51.00          |
| ▪ Female                         | 98            | 49.00          |
| <b>Category</b>                  |               |                |
| ▪ General                        | 29            | 14.50          |
| ▪ OBC                            | 78            | 39.00          |
| ▪ SC/ST                          | 93            | 46.50          |
| <b>Religion</b>                  |               |                |
| ▪ Hindu                          | 119           | 59.50          |
| ▪ Muslim                         | 65            | 32.50          |
| ▪ Sikh                           | 05            | 02.50          |
| ▪ Christian                      | 11            | 05.50          |
| <b>No. of siblings</b>           |               |                |
| ▪ 0-1                            | 13            | 06.50          |
| ▪ 2                              | 33            | 16.50          |
| ▪ 3                              | 83            | 42.50          |
| ▪ >3                             | 71            | 35.50          |
| <b>Type of family</b>            |               |                |
| ▪ Nuclear                        | 168           | 84.00          |
| ▪ Joint                          | 32            | 16.00          |
| <b>Family Income /Month (Rs)</b> |               |                |
| ▪ <2000                          | 29            | 14.50          |
| ▪ 2001-5000                      | 59            | 29.50          |
| ▪ >5000                          | 112           | 56.00          |

Table-1 shows the data on socio-demographic profile of the school going children. According to the table most of children (35.5%) were 6-10 years old. 8-10 years and 10-12 years of the children were 32.5% and 32% respectively. Male respondents were found more than female respondents. Near about half (46.5%) of the children were belonging to SC/ST category followed by 39% OBC and 14.5% of the general category. More than half (59.5%) of the children were Hindu. Near about one third (32.5%) of the children were belonging to Muslim religion, only 2.5% of the children were Sikh, while 5.5% of the respondents were belonging to Christian religion.

42.5% of the children had 3 siblings while 35.5 of the children had more than 3 siblings. It is evident from table-1 that a large number of the children (84%) were belonging to nuclear family; where as the rest (16%) were from joint family. The income of family was computed by inquiring about their income from all the family members and various sources, it was observed that 14.5% of the children's family income was Rs. <2000, some of family (29.5%) earned Rs. 2001-5000 in every month, however there were 56% of the family earned more than Rs. 5000 in every month.

**Table 2:** Nutritional Status of School going Boys & Girls as Per Weight-For-Age

| Children | Severe underweight < -3SD |       | Moderate underweight ≥ -3SD & < -2SD |       | Mild underweight > -2SD & < -1SD |       | Normal |       | Total |     |
|----------|---------------------------|-------|--------------------------------------|-------|----------------------------------|-------|--------|-------|-------|-----|
|          | (n)                       | (%)   | (n)                                  | (%)   | (n)                              | (%)   | (n)    | (%)   | (n)   | (%) |
| Boys     | 03                        | 02.94 | 19                                   | 18.63 | 31                               | 30.39 | 49     | 48.04 | 102   | 100 |
| Girls    | 09                        | 09.18 | 17                                   | 17.35 | 24                               | 24.49 | 48     | 48.98 | 98    | 100 |



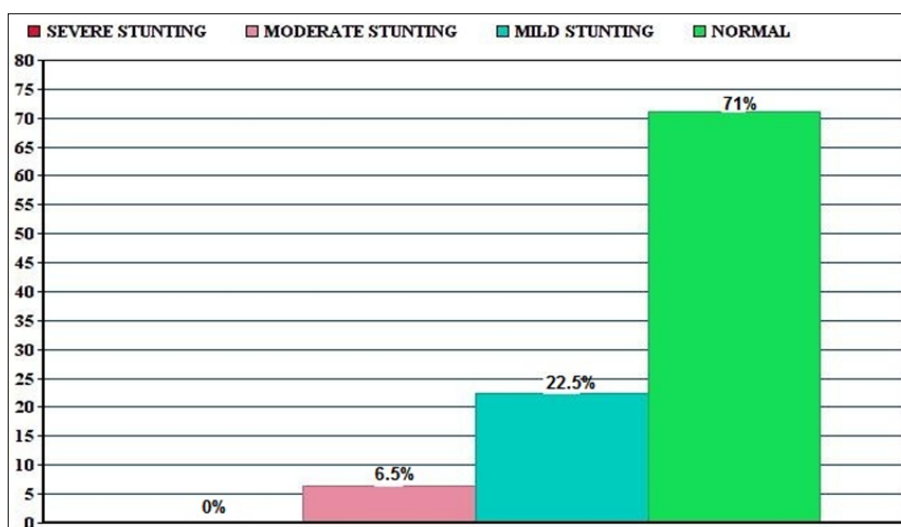
**Fig 1:** Overall Weight-For-Age of school going children

The weight-for-age of the respondents are presented in table-2 the percentage wise distribution of children revealed that 48.04 percent of the boys and 48.98 percent of the girls had normal weight-for-age, in both girls and boys normal status was seemed similar. Mild underweight found in 30.39 percent of the boys and 24.49 percent of the girls. The moderate underweight was observed in 18.63 percent boys and 17.35 percent of the girls. The severe level of underweight was

found more in girls (9.18 percent) than boys (2.94 percent). Figure-1 revealed the data on overall weight -for -age of the school going children. According to the data near about half (48.5 percent) of the school going children residing in slums of Trilokpuri had normal weight-for-age, while rest of them were suffering underweight problems i.e., 27.5 percent mild underweight, 18 percent moderate underweight and 6 percent severe underweight.

**Table 3:** Nutritional Status of School going Boys & Girls as Per Height-For-Age

| Children | Severe stunting < -3SD |     | Moderate stunting ≥ -3SD & < -2SD |       | Mild stunting > -2SD & < -1SD |       | Normal |       | Total |     |
|----------|------------------------|-----|-----------------------------------|-------|-------------------------------|-------|--------|-------|-------|-----|
|          | (n)                    | (%) | (n)                               | (%)   | (n)                           | (%)   | (n)    | (%)   | (n)   | (%) |
| Boys     | -                      | -   | 04                                | 03.92 | 19                            | 18.63 | 79     | 77.45 | 102   | 100 |
| Girls    | -                      | -   | 09                                | 09.18 | 26                            | 26.53 | 63     | 64.29 | 98    | 100 |



**Fig 2:** Overall Height-For-Age of school going children

School going Children residing in slums of Trilokpuri were categorized into their nutritional grade on the basis of their height-for-age and results obtained are presented in table – 3. It was found that the most of the boys and girls were found in normal height-for-age (77.45 percent boys and 64.29 percent

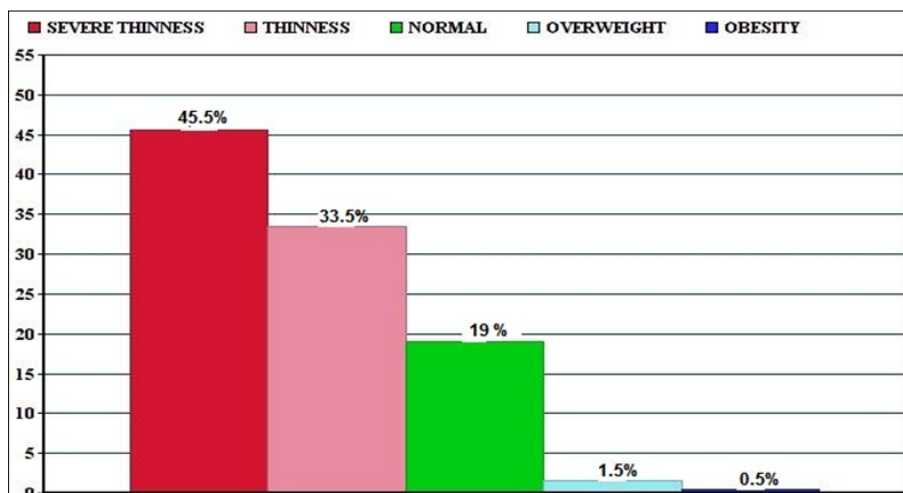
of the girls). Girls were found more in mild stunting (26.53 percent of the girls and 18.63 percent of the boys) and moderate stunting (9.18 percent of the girls and 3.92 percent of the boys). It is also remarkable that any boys or girls were not found in severe stunting. According to figure-2, 71.0

percent of the school going children had normal height-for-age, 22.5 percent and 6.5 percent of them were suffering mild

stunting and moderate stunting respectively.

**Table 4:** Nutritional Status of School going Boys & Girls According to BMI-for-age

| Children | Severe Thinness<br>< -3SD |       | Thinness<br>≥ -3SD & < -2SD |       | Normal<br>> -2SD & < +1SD |       | Overweight<br>> +1SD & ≤ +2SD |       | Obesity<br>> + 2SD |       | Total |     |
|----------|---------------------------|-------|-----------------------------|-------|---------------------------|-------|-------------------------------|-------|--------------------|-------|-------|-----|
|          | (n)                       | (%)   | (n)                         | (%)   | (n)                       | (%)   | (n)                           | (%)   | (n)                | (%)   | (n)   | (%) |
| Boys     | 53                        | 51.96 | 34                          | 33.33 | 14                        | 13.73 | 01                            | 00.98 | -                  | -     | 102   | 100 |
| Girls    | 38                        | 38.77 | 33                          | 33.67 | 24                        | 24.49 | 02                            | 02.04 | 01                 | 01.02 | 98    | 100 |



**Fig 3:** Overall BMI-For-Age of school going children

The sex wise distribution of respondents for their nutritional status is shown in table -4. The present study showed that both boys and girls had very poor nutritional status. It was found that the only 13.73 percent of the boys and 24.49 percent of the girls were normal. Thinness of nutrition was present in 33.33 percent (boys) and 33.67 percent (girls). The severe thinness level of malnutrition was found more in boys (51.96 percent) while it was observed in girls 38.77 percent. In slums of Trilokpuri girls showed better degree of nutritional status than boys. Overall nutritional status of the school going children was present in figure-3. According to the figure data most of the children were suffering from malnutrition (45.5 percent severe thinness, 33.5 percent thinness, 1.5 percent overweight and 0.5 percent obesity). Only 19 percent of the children showed normal BMI.

#### 4. Conclusion

Due to socio-demographic study, it is clear that most of the slum family earns insufficient or very less income, insufficient income lead to lack of basic amenities like safe drinking water, proper sanitization, balance diet, nutritional supplements, drainage and excreta disposal make this population vulnerable to infections and malnourished. Study also find that the most of the children have many siblings, insufficient income and many members in a family also lead to unhealthy life style which is the main cause of the malnutrition. At present, the nutritional condition of children in India is much poor than many other Asian country, and same situation is visible in children residing in slums of Trilokpuri of Delhi. The nutritional condition of both boys and girls was found very poor, but it is also remarkable that girls showed better degree of nutritional status than boys.

#### 5. Recommendation

Sustainable nutrition education and promotion programs should be developed to raise the public knowledge of the importance of good nutrition and proper sanitation especially in slums area.

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