**Prevalence of malnutrition among the school going children in Varanasi district, Uttar Pradesh, India**

**Abstract**

Malnutrition among school going children in one of the major problems in India. School going age is a crucial period for physical, mental, emotional as well as Cognitive development of children. Inspite of so many efforts of government the prevalence of underweight children in India is highest in the world. This study was conducted to find out the eating habits and nutritional status of school children in rural and urban area of Varanasi district. The data revealed that 29.7% school going children were severely malnourished, 21.3 % were suffering from moderate type of malnutrition, 23.7% were had mild malnutrition while 25.3% School going children were normal. Therefore, the study suggested that there is a need for nutritional education so that the eating habit of school going children can be improved.

**Keywords**: School going children, nutritional status, underweight, anthropometry.

**Introduction**

School age is very crucial age for physical as well as mental growth and development of children. Children need special attention regarding their health and nutrition at this stage. One study was carried out in Bikaner, India and it was found that most of the school going girls did not consume proper amount of fruits, vegetables and pulses, which resulted into overall less intake of micronutrients such as beta carotene, iron etc. which are very important for a growing child (Shikatoli Wosta et al, 2019).

Malnutrition is a common problem among the school going children in India. Pragya Kumari (2020) assessed the nutritional status of preschool children enrolled in Anganwadi centre and she found that due to insufficient intake of diet children were suffering from malnutrition. In her findings it was mentioned that majority of infants were suffering from protein energy malnutrition, anaemia, vitamin a deficiency, vitamin B deficiency, vitamin C deficiency. Data indicated that 17.8% children in urban area were had severe degree of malnutrition. She further revealed that 39.8% urban children were suffering from Grade-II category of malnutrition while in case of rural children the percentage was 27.7 while 31% of children were in normal state of the nutritional status.

Nirupma et al*.* in 2020, found that nutritious and balance diet is good for health and imbalanced diet had harmful effect on human health. In modern life style the dietary pattern has change completely due to which the consumption of processed food has increase rapidly. Instead of consuming fresh fruits, vegetable people are eating high fat, calorie,salt and sugar food in their daily routine, which is not good for health.

Jyoti Kant selected two blocks of Bhandra and Kairo in the Lohardaga district of Jharkhand to find out the prevalence of malnutrition among 200 school going children of 7 to 9 years in rural areas in the year 2018-19 to find out the prevalence of malnutrition by using Waterlow’classification based on height for age (stunting). 200 respondents were selected out of which 55.5% children had mild malnutrition, 14% had moderate malnutrition while 30.5% children were normal. Similarly, out of 200 respondents based on weight for height (wasting), 45% children had moderate malnutrition and 32.5% had severe form. 16.5% children had mild malnutrition while 6.9% of the children were found to be normal (Jyoti Kant,2020). This study also indicated that nutritional status of school going children in Jharkhand was not good.

In 2016, Shashank K J and Chethan T K found out the nutritional level of school going children of 6 to 12 age group of Bijpaur city, they selected total 284 children for the study. In that study 178 boys and 106 girls were included. Out of 178 boys, 56 boys were underweight and 43 boys were stunted, whereas out of 106 girls included in the study, 41 girls were underweight and 28 girls were stunted, hence out of total 284 children, 97 children were found underweight and 71 children were found stunted (Shashanket.al*.*2016).

Data obtained from all the above studies revealed that in India most of the school going children are suffering from malnutrition, which is a severe matter of concern. To improve the nutritional status of school going children nutritional education must be given to the children so that they get awareness regarding the harmful effect of junk food and skipping the meals. Rathore et al. 2016 conducted one study and suggested that game based learning approach for nutrition education is more effective to get the nutrition knowledge regarding eating habits of 6-8 years old children.

**Objective**

The objective of this study was to assess the nutritional status of school going children of rural and urban area of Varanasi district.

**Methods and Material**

This study was carried out by using a questionnaire method. A self prepared questionnaire was used for collection of the relevant information regarding the study. The questions include general information and anthropometric measurement of school going children. Anthropometric measurement includes height, weight, head circumferences, chest circumstances and mid-upper arm circumferences of children. Anthropometric measurements were taken for the school going children between 10-12 years of the age. Random sampling method is used for collection of the data.

**Selection of location:** The location of present study was Varanasi district of Uttar Pradesh. Rural and urban areas were selected for the study.

**Sample size**: Total 400 school going children were selected out of which 208 student were from urban area and 192 were from rural area. 10-12 years students were selection for data collection.

**Area of the study**: The study was conducted in rural and urban area of Varanasi district. In rural area Sewapuri, Rohania, Banwaripur, Gosaipur, Cholapur, Shivpur etc., village were selected while urban area includes, B.L.W, Lohta, Cant, Pandaypur, Lahurabeer, Kachehari, Gurubaag, Pahadia, Bhojubeer etc.

**Statistical Analysis of data:** Statistical analysis for collected data was performed by using SPSS Software (version 23).

**Results and Discussion**

Result of the study on nutritional status of school going children in Varanasi district are discussed under the following tables.

**Table.1 Classification of school going children on the basis of their residing areas.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Area** | **Gender** | | | | | |
| **Boys** | | **Girls** | | **Total** | |
| **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **Rural**  **Urban** | 100  96 | 52.08  46.15 | 92  112 | 47.91  53.84 | 192  208 | 100  100 |
| **Total** | 196 | 49 | 204 | 51 | 400 | 100 |

Table no. 1 represents the total no. of school going children from urban and rural area of Varanasi district. Total 400 school going children were selected for the study. Out of 400 students 192 students were from rural area and 208 were from urban area of Varanasi. In rural area 52.08% students were boys while 47.91% students were girls. In case of urban area percentage of boys was 46.15 and girls percentage was 53.84.

**Table 2: Nutritional status school going children in rural and urban area on the basis of Gomez**

**classification.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Nutrition status** | **School Area** | | | | | |
| **Rural** | | **Urban** | | **Total** | |
| **No.** | **Percent** | **No.** | **Percent** | **No.** | **Percent** |
| **Normal**  **Mild**  **Moderate**  **Severe** | 57  59  40  36 | 29.7  30.7  20.8  18.8 | 44  36  45  83 | 21.2  17.3  21.6  39.9 | 101  95  85  119 | 25.3  23.7  21.3  29.7 |
| **Total** | **192** | **100.0** | **208** | **100.0** | **400** | **100.0** |

Note: **Gomez classification, 1990**

Table no. 2 indicates the nutritional status of school going children on the basis of anthropometric measurement. Data revealed that out of 400 students 25.3% children were nutritionally well nourished. 29.7 % children were severely malnourished, 21.3% were had moderate degree of malnutrition while 23.7% were suffering from mild degree of malnutrition. In rural area 29.7% students were nutritionally nourished while the percentage of mild, moderate and severely malnourished school going children were 30.7%, 20.8% and 18.8% respectively. In case of urban area the percentage of mild, moderate and severe malnourished school going children were 17.3%, 21.6% and 39.9% respectively while the percentage of nutritionally nourished children in urban area was 21.2%. Statistically significant difference (P<0.001) has been found in the given data.

**Table3: Nutritional status of school going boys and girls according to Gomez classification**

**(Weight for age, 1990).**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **School Area** | **Nutrition status** | **Gender** | | | | | |  |
| **Boys** | | **Girls** | | **Total** | |
| **No.** | **Percent** | **No.** | **Percent** | **No.** | **Percent** |
| **Rural** | **Normal**  **Mild**  **Moderate**  **Severe** | 24  32  24  12 | 26.1  34.8  26.1  13.0 | 33  27  16  24 | 33.0  27.0  16.0  24.0 | 57  59  40  36 | 29.7  30.7  20.8  18.8 | x²=6.69  df=3  P>0.05 |
| **Total** | 92 | 100.0 | 100 | 100.0 | 192 | 100.0 |
| **Urban** | **Normal**  **Mild**  **Moderate**  **Severe** | 28  20  20  44 | 25.0  17.9  17.9  39.2 | 16  16  25  39 | 16.7  16.7  26.0  40.6 | 44  36  45  83 | 21.2  17.3  21.6  39.9 | X²=3.06  df=3  P>0.05 |
| **Total** | 112 | 100.0 | 96 | 100.0 | 208 | 100.0 |
| **Both** | **Normal**  **Mild**  **Moderate**  **Severe** | 52  52  44  56 | 25.5  21.5  21.5  27.5 | 49  43  41  63 | 25.0  21.9  20.9  32.2 | 101  95  85  119 | 25.3  23.7  21.3  29.7 | x²=1.38  df=3  P>0.05 |
| **Total** | 204 | 100.0 | 196 | 100.0 | 400 | 100.0 |

Table 3 represents that the total 400 school going children were selected from rural and urban area of Varanasi district for the study. Out of which 204 students were boys while 196 students were girls. Data revealed that out of 400 students 25.3% children had normal weight while 23.7% students had mild underweight, 21.3% student had moderate underweight and 29.7% students were suffering from severe level of underweight according to Gomez classification. Among all the boys of rural and urban area 25.5% boys were having normal weight while the percentage of mild, moderate and severe underweight school going boys were 21.5%, 21.5% and 27.5% respectively. In case of girls the percentage of mild, moderate and severe underweight were 21.9%, 20.9% and 32.2% respectively while the percentage of normal weight girls was 25%. Statistically significant difference (P>0.05) has not been found in the given data.

**Table4: Nutritional status of students on the basis of private and government schools according to Gomez classification (weight for age, 1990)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **School Area** | **Nutrition status** | **Type of school** | | | | | |  |
|  | **Private** | | **Government** | | **Total** | |  |
|  | **No.** | **Percent** | **No.** | **Percent** | **No.** | **Percent** |  |
| **Rural** | **Normal**  **Mild**  **Moderate**  **Severe** | 45  31  12  04 | 48.9  33.7  13.0  4.4 | 12  28  28  32 | 12.0  28.0  28.0  32.0 | 57  59  40  36 | 29.7  30.7  20.8  18.8 | x²=46.48  df=3  P<0.001 |
| **Total** | 92 | 100.0 | 100 | 100.0 | 192 | 100.0 |
| **Urban** | **Normal**  **Mild**  **Moderate**  **Severe** | 44  16  17  31 | 40.7  14.8  15.7  28.8 | 0  20  28  52 | 0.0  20.0  28.0  52.0 | 44  36  45  83 | 21.2  17.3  21.6  39.9 | x²=52.25  df=3  P<0.001 |
| **Total** | 108 | 100.0 | 100 | 100.0 | 208 | 100.0 |
| **Both** | **Normal**  **Mild**  **Moderate**  **Severe** | 89  47  29  35 | 44.5  23.5  14.5  17.5 | 12  48  56  84 | 6.0  24.0  28.0  42.0 | 101  95  85  119 | 25.3  23.7  21.3  29.7 | x²=87.30  df=3  P<0.001 |
| **Total** | 200 | 100.0 | 200 | 100.0 | 400 | 100.0 |

Table 4 shows the total number of students in Privateand Government schools of selected samples of Varanasi district for the study. Here the purpose of selecting private and government school was to assess nutritional intake of their lunch box and to find out the nutritional status of students on the basis of mid day meal and home made lunch box. Data revealed that out of 200 students of private school 44.5% were normal, 23.5% students were having mild degree of malnutrition, 14.5% had moderate malnutrition and the percentage of severe malnourished students were 17.5%. On the other hand in case of government school the percentage of mild, moderate and severe malnourished students were 24.0%, 28.0% and 42.0% respectively. In government school the percentage of malnourished students were very high and the percentage of normal students were less. Data further revealed that all the students of government school of urban area of Varanasi were malnourished While in case of private schools the percentage of normal students were high and severely malnourished students were low. Therefore, data indicates that the nutritional status of private school students was good as compare to government schools. Statistically significant difference (P<0.001) has been found in the given data.

**CONCLUSION**

In this study the nutritional status of school going children was not very good in selected rural and urban areas of Varanasi district. Total percentage of malnourished (mild, moderate and severe) students was 74.7 while percentage of nutritionally nourished school going children was only 25.3 according to Gomez classification. Students who were studying in government school having very poor nutritional status in rural and urban area of Varanasi. In rural area only 12 % students of government school were normal while 88 % students were malnourished while percentage of normal students in government school of urban was nil and all the students of government school of urban area of Varanasi were malnourished. The reason behind this was their nutritional intake was not enough in term quality ant quantity. Therefore this study suggests that there is a need to develop some food based nutritional strategy to improve the nutritional status of school going children.

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