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RESEARCH ARTICLE

CROSS SECTIONAL STUDIES ON HEALTH AND NUTRITION PRACTICE AMONG CHILDREN BETWEEN 6-10 YEARS AT SELECTED RURAL AREAS OF NORTH TWENTY FOUR PARGANAS DISTRICT, WEST BENGAL, INDIA: AN ONTOLOGICAL COMMUNITY BASED DESIGN

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ABSTRACT:

To overcome or modify the health and nutrition practice among the children between 6-10 years of rural areas is too much crucial in India. The cross sectional studies has been done but at North Twenty Four Parganas district in West Bengal such research works are very rare. Especially no work has been reported yet in the five selected rural areas of this study. It is important to evaluate the health condition of the children of 6-10 years in the selected rural regions and also find the association between the health condition of children and socio-economic status of the population to minimize such problems.

KEYWORDS: Cross Sectional, Rural, Health, Nutrition, Community.

INTRODUCTION:

Childhood nutrition is an important thing for the growth and development. Young children need energy from food and nutrients such as protein, fat, carbohydrate, vitamins and minerals to make sure their body work properly and can repair themselves. At this age, children grow very quickly and are usually very active, so they need plenty of calories and nutrients [1]. Foods and their nutrients are important to life. Infants and young children can self-regulate the amount of calories they need. Weaning from the breast starts from six months of age and can continue up to 5 years of age. Protein and calories intake are required for the physical and mental development of the child. Consuming nutritious foods helps children and teens grow, develop, do well academically and feel good about them [2].

Research Problem Statement:

Most of the people in rural area are not too much educated and aware regarding child health nutrition and management. So, they are not properly known about the height and weight of their children. In rural area of West Bengal, peoples are not economically strong and they are not able to provide balance diet to their children. In rural area many children are suffering nutritional deficiency disease due to lacking of proper food.

Significance:

- To assess the health condition of the children of 6 to 10 years age.
- To know the distribution of BMI among different gender.
- To know how family economical status influence health condition of the children.
- To know how health condition varies with age of children.
- To know how number of children in a family influence the health condition of children.

Aim and Objective:

The study is aimed at investigating health and nutrition management among the children between 6 to 10 age group in five selected rural areas of North Twenty-Four Parganas district

of West Bengal. The five selected villages are Patulia of Barrackpur II block, Tangra of Bangoan block, Chandpur of Rajarhat block, Amlani of Hasnabad block and Kadambagachi of Barasat I block. The results of these findings can be enhanced awareness and positive attitude of parent for child. The main objective of this study is to evaluate the health condition of the children of 6-10 years in the selected rural regions and also find the association between the health condition of children and socio-economic status of the population.

MATERIALS AND METHODS:

Data Source:

Primary data: Primary data were collected from the 6 to 10 years aged children of five selected rural villages (Patulia, Tangra, Chandpur, Amlani and Kadambagachi) of North 24 Parganas district of West Bengal.

The questionnaire contains two sections:

- i) The demographic details of the participant's parent which include questions to obtain some personal information like education qualification, occupation and family income.
- ii) The other part of the questionnaire includes some questions regarding body weight and height of the children, age and sex of the child etc.

The selected questionnaires were duly approved by the Head, Department of Health Care, JIS Institute of Skill Development, Baruipur, West Bengal. The study was conducted among 500 children of North 24 Parganas district.

Secondary data: Information related with this study from different review paper, journals, books, articles, website etc. were considered as secondary source of data.

Research Design:

Exploratory design has been selected as data has been collected from the secondary source in order to understand the health and nutrition management among children between 6 to 10 years old and data has been collected from primary source in order to satisfy the research objectives.

Sampling Plan:

Research type: Exploratory

Population: Children between 6 to 10 years of age across all demographic characteristics.

Sampling method: Children were selected randomly for the study and with the consent of their parents the information are recorded.

Tools for data collection: It is a questionnaire based study.

Sampling frame: 6 to 10 years aged children of North 24 Parganas of West Bengal.

Sampling area: Five selected rural areas (Patulia, Tangra, Chandpur, Amlani and Kadambagachi) of North 24 Parganas district of West Bengal.

Sample unit: Children belong in between 6 to 10 years.

Sample size: 500.

Data Analysis:

First of all body mass index (BMI) was calculated using BMI calculator for children and teens (www.stanfordchildrens.org) from height and weight of the children. Here, Height was represented in feet and inches whereas weight was represented in pounds (lbs). All the data were entered into Microsoft Excel and then imported and analyzed in statistical software called IBM SPSS (Statistical Package for the Social Sciences). Descriptive statistics as frequency distribution and chi-square tests were performed. P values were calculated by using the website of social science statistics (www.socscistatistics.com).

RESULTS AND DISCUSSION:

Testing of Hypothesis, Data Analysis and Interpretation:

Area wise Distribution of BMI:

- **Hypothesis 1:**

H1_a : There is no association of BMI pattern among the people of selected rural areas.

H1_b : There is association of BMI pattern among the people of selected rural areas.

Here, total sample populations have been categorized into four parameters on the basis of BMI. These are 'Under Weight', 'Ideal Weight', 'Over Weight' and 'Obese'. In Amlani Village 75%

of child belongs to under weight, 15% of children belong in ideal weight and 5% of children belongs to both over weight and obese categories. In Patulia village, maximum numbers (50%) of children belong in ideal weight group whereas only 5% of children belongs to obese categories. In Tangra village, 60%, 25%, 5% and 10% of children belongs to underweight, ideal weight, over weight and obese categories respectively. In Chandpur village, maximum (40%) of children belong in ideal weight group while only 5% of children belong in over weight category. Similarly, In Kadambagachi village, 25%, 40%, 25% and 10% of children belongs to underweight, ideal weight, over weight and obese categories respectively.

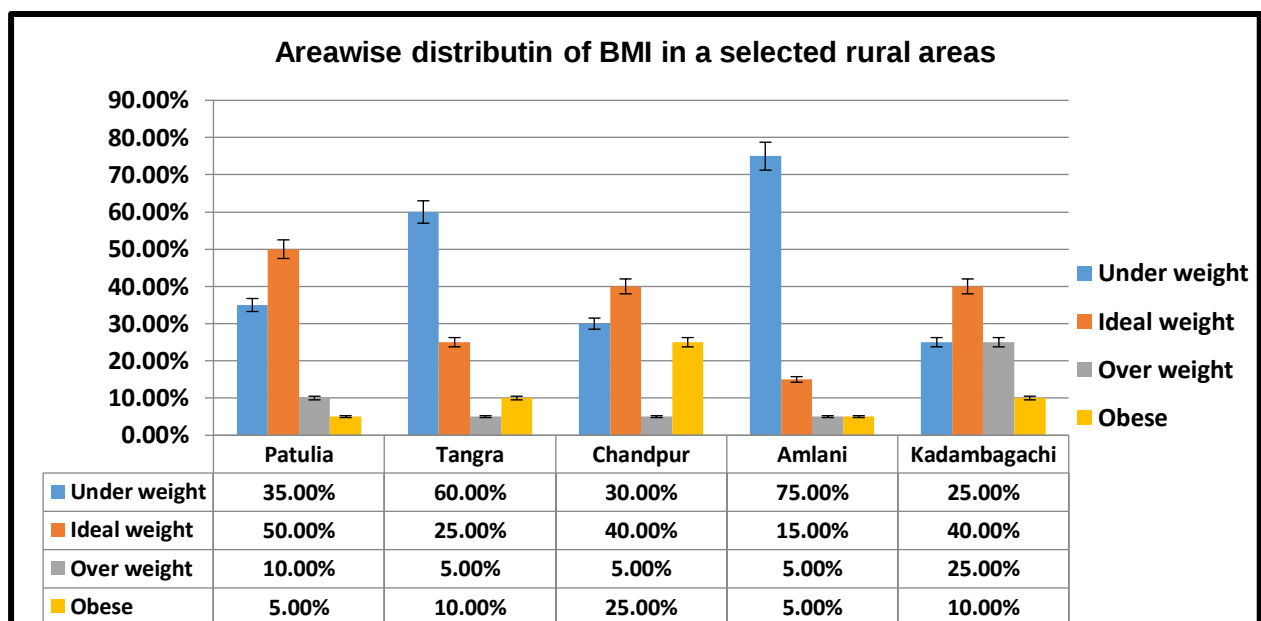


Figure 1: Area wise distribution of BMI in selected rural areas

According to the statistical analysis, Chi square value 37.958, degree of freedom (df) value 12, P value 0.000156 (less than 0.01). Therefore null hypothesis (H_{1a}) is rejected and alternative hypothesis (H_{1b}) is accepted. So, there is significantly association of BMI patterns among the people of selected rural areas.

Gender wise Distribution of BMI:

- Hypothesis 2:**

H_{2a} : There is no association of BMI pattern among the different gender of selected rural areas.

H_{2b} : There is association of BMI pattern among the different gender of selected rural areas.

In this study, the entire sample has been divided gender wise. 45.90% of girls belong in underweight categories whereas only 5 % of girls belong to obese categories. Similarly, maximum (50.80%) numbers of boys belong to underweight categories while only 3.20% belong to overweight categories.

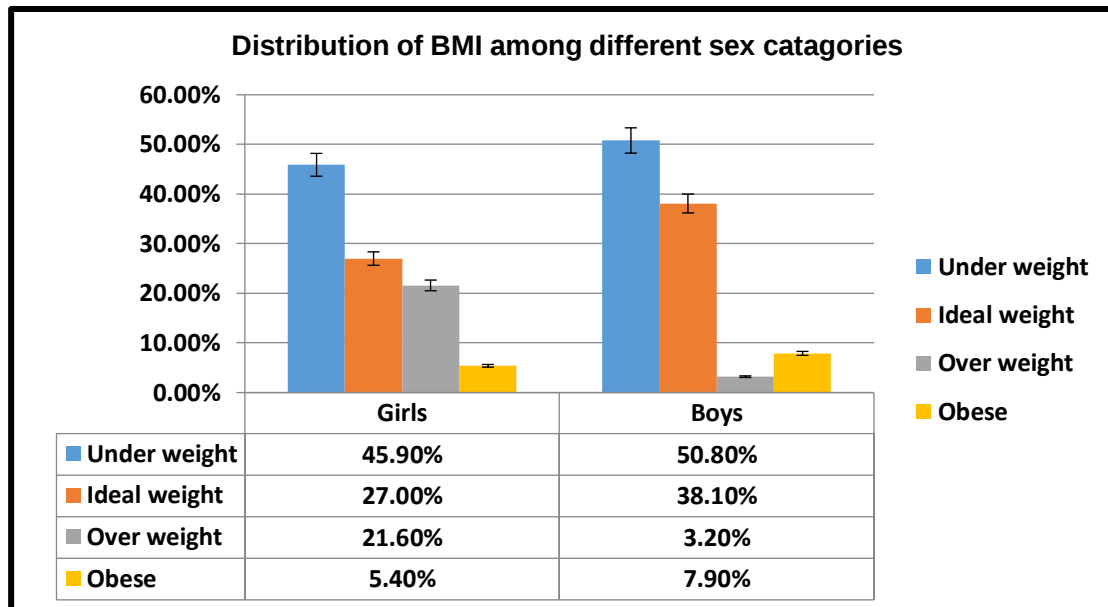


Figure 2: Distribution of BMI among different sex categories

According to the statistical analysis, Chi square value 9.097, degree of freedom (df) value 3, P value 0.028029 (less than 0.05). Therefore null hypothesis (H_{2a}) is rejected and alternative hypothesis (H_{2b}) is accepted. Therefore, there is association of BMI pattern among the different gender of selected rural areas.

Family Income wise Distribution of BMI:

- Hypothesis 3:**

H_{3a} : There is no association of BMI pattern and the family income of selected rural areas.

H_{3b} : There is association of BMI pattern and the family income of selected rural areas.

Here total sample population has been distributed in three groups on the basis of their family income per month that is 'Below 10K' rupees per month, '10K to 30K' rupees per month and 'above 30K' rupees per month. In 'Above 30K' category, 55% of children are overweight whereas only 5% of children are under weight. Similarly, In 'Below 10K' category, maximum

(71.60%) number of children are underweight and only 5% of children are overweight. In '10K to 30K' category, maximum (58.50%) number of children are ideal weight.

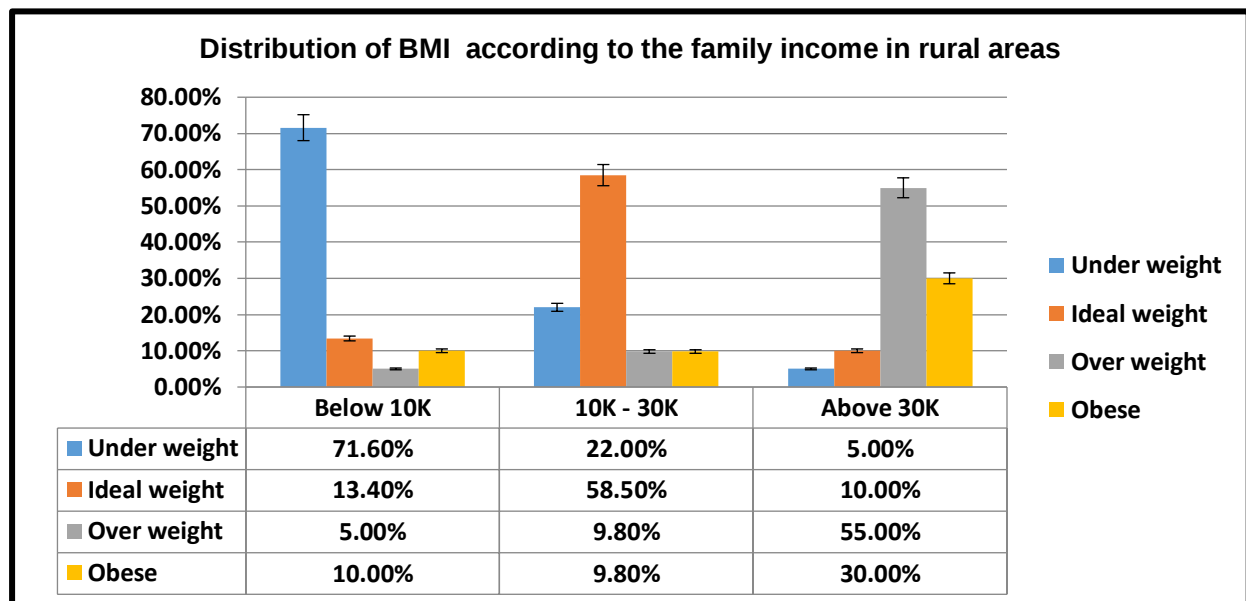


Figure 3: Distribution of BMI according to the family income in rural area

According to the statistical analysis, Chi square value 75.481, degree of freedom (df) value 6, P value 0.00001 (P value is less than 0.01). So, alternative hypothesis (H_{3b}) is accepted and the result is highly significant. Therefore, of BMI pattern according to the family income in the five selected rural regions of North 24 Parganas district.

Area wise Distribution of BMI against the Different Gender:

Hypothesis 4:

H_{4a} : There is no association of BMI pattern among different gender in selected rural areas.

H_{4b} : There is association of BMI pattern among different gender in selected rural areas.

Here, total sample population of each village has been divided in two groups that are 'boys' and 'girls'. After that each group have been categories into four parameters on the basis of BMI. These are under weight, ideal weight, over weight and Obese. In Tangra village, maximum (62.70%) numbers of girls are underweight whereas only 3 % of girls are obese. In Amlani village, 60% of girls are underweight and 5 % of girls are overweight. Similarly in

Kadambagachi village, 60.50% of girls are overweight and only 2% are obese. In Patulia and Chandpur village, 42.90% and 37.50% of girls are ideal weight respectively. In this same way in Amlani village maximum (83.70%) numbers of boys are underweight. In Chandpur, 41.70% of boys are ideal weight. In patulia, 7.70% of boys are overweight and in Chandpur maximum (24.50%) of boys are obese.

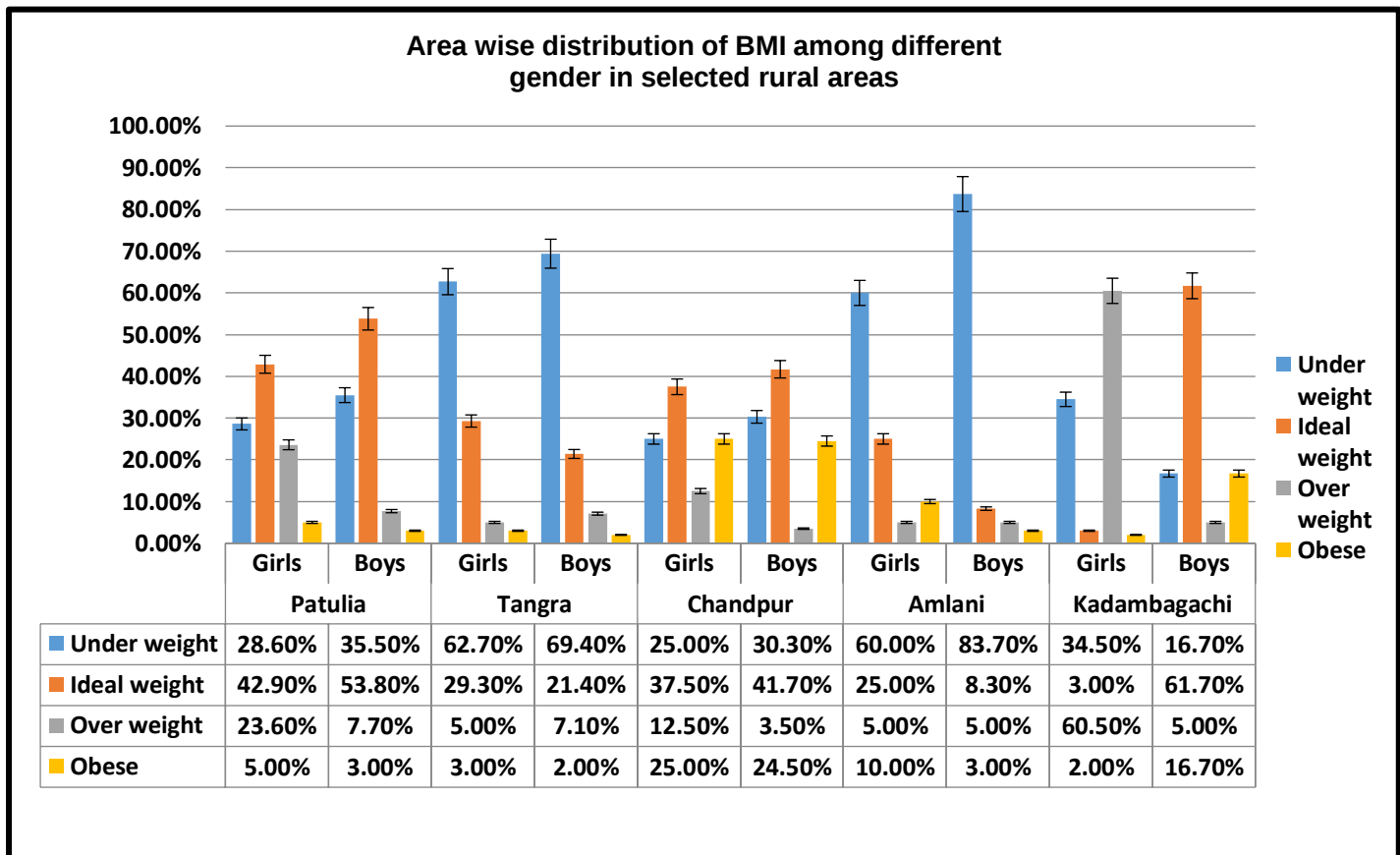


Figure 4: Area wise distribution of BMI among different Gender in selected rural areas

According to the statistical analysis, Chi square value for boys 27.574 and girls 23.539; degree of freedom (df) values for both cases 12; P values for boys 0.006383 ($P < 0.01$ Highly significant) and for girls 0.023483 ($P < 0.05$ Significant). For both cases, values are significant of BMI distribution against boys and girls in selected rural areas. Here, null hypothesis (H_{4a}) is rejected and alternative hypothesis is accepted (H_{4b}). So, there is significant association of BMI among different gender in selected rural areas.

Age wise Distribution of BMI:**Hypothesis 5:**

H5_a : There is no association of BMI pattern among the different age group of the people of selected rural areas.

H5_b : There is association of BMI pattern among the different age group of the people of selected rural areas.

The total samples have been divided into five age groups as '6, 7, 8, 9 and 10 years old. The children in '10' age group are showed 42.90% are ideal weight while who belong to '6' age group showed 17.20% are overweight. The children in '6' age group showed 46.20% are underweight and the children in '8' age group, 26.70% are Obese.

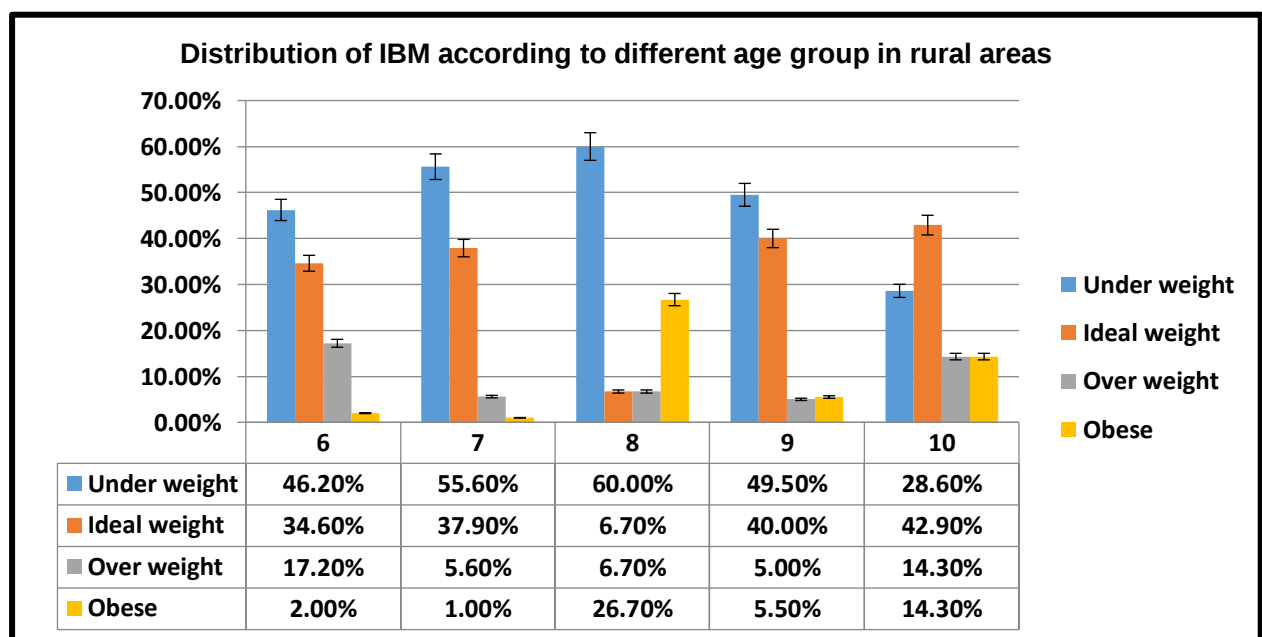


Figure 5: Distribution of BMI according to the different age group in rural area

According to the statistical analysis, Chi square value 26.459, degree of freedom (df) value 12, P value 0.009237 (P value is less than 0.01). So, alternative hypothesis (H3_b) is accepted and the result is highly significant. Therefore, of BMI pattern according to the family income in the five selected rural regions of North 24 Parganas district.

Number of children wise distribution of BMI:

- Hypothesis 6:**

H6_a : There is no association of BMI pattern and the number of children of a family of selected rural areas.

H6_b : There is association of BMI pattern and the number of children of a family of selected rural areas.

Here, Distribution of BMI depends on the number of children present in a family. The total sample has been divided in three parameters. These are '1 to 2'; '3 to 4' and 'more than 4'. In '1 to 2' group, maximum 50.80% of children are ideal weight and 10.80% of children obese. In '3 to 4' group, maximum 88.30% of children are under weight, 3.7% of children are ideal weight, 5% of children are overweight and 3% of children are obese. Similarly, in 'more than 4' group 94% of underweight while only 1% of children are ideal weight.

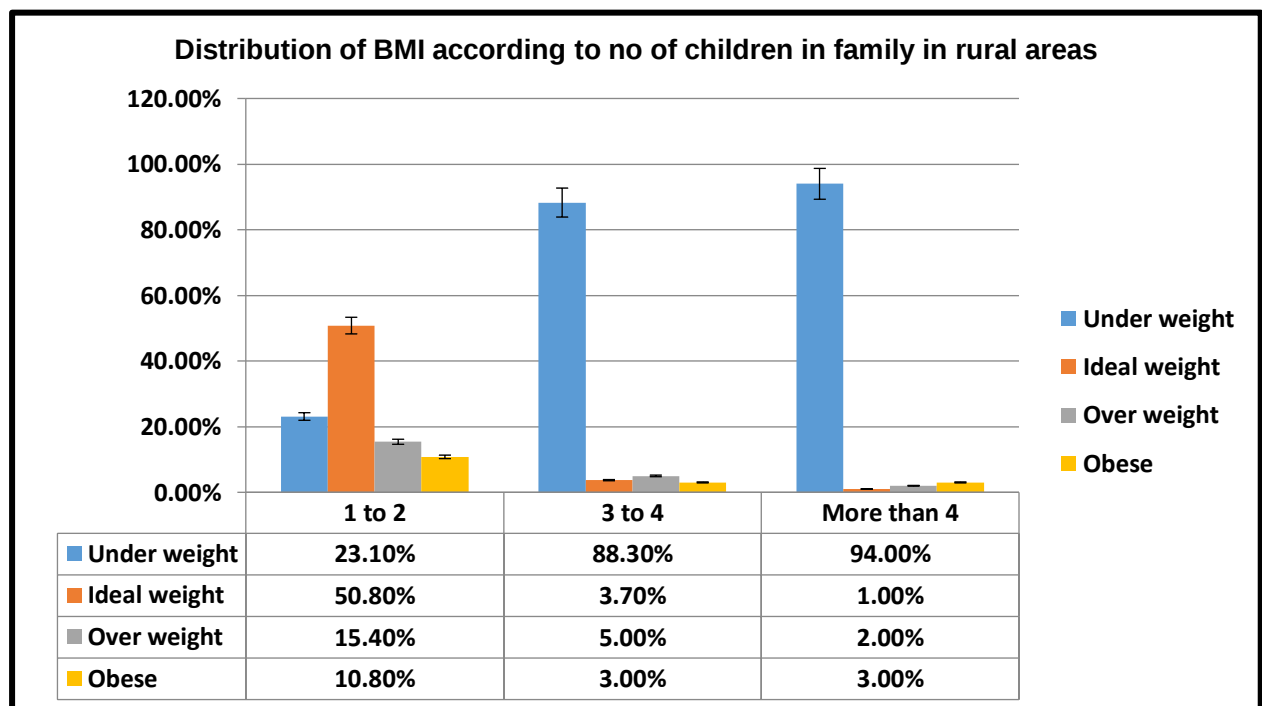


Figure 6: Distribution of BMI according to number of children in family in rural areas

According to the statistical analysis, Chi square value 50.026, degree of freedom (df) value 6, P value 0.00001 ($P < 0.01$ Highly significant). Therefore null hypothesis (H_{5a}) is rejected and alternative hypothesis (H_{5b}) is accepted. So, there is highly significant association of BMI pattern and the number of children of a family of selected rural areas of North 24 Pgs district.

CONCLUSION:

Malnutrition is a worldwide problem in school going children now a day. For that reason child (6 to 10 years) health and nutrition management help to reduce this problem.

- According to the area wise distribution of BMI, in some village maximum children were ideal weight, while some villages have underweight or overweight children. Whereas somewhere maximum children are obese. This report was significant by the statistical analysis.
- Although in the selected rural areas the percentage of the ideal weight boys was more than the girls but there was no significant difference in the distribution of BMI in respect to the gender of the children.
- This study showed that economic condition has influence on child health and nutrition. The respondents belong in different income levels has different rates of BMI distribution. The BMI rate was lower among the low income group while it was higher among high income groups.
- From this study, it was showed that the respondents belong in '10 years' age group was maximum (42.90%) ideal weight. Here it was found that with increasing age of the children the BMI pattern was also develop this was because as the children were able to take proper nutritional food. It was statistically significant.
- Health condition of children depends on number of children present in a family. It was found that the health condition of the children who belong to the family with less number of children was better than the children who belong to the family where the total number of children was more. It was significantly confirmed by the statistical analysis. So, all rural people had required awareness regarding child health and nutrition management.

LIMITATIONS:

- The primary limitation of this research study was small sample size. But response rate was relatively high.

➤ The other limitation of this study was inability to collect data from the rural area because rural people were not too much literate and known the actual height and weight of their children. Even some time they were not disclosing any information about their children with outsiders. It was a big issue for preparing survey report.

SCOPE OF FUTURE RESEARCH:

The following are the various scope of future works those conducted by applying the knowledge of this study.

➤ This study was conducted only in small population of five district of West Bengal. This same investigation can be followed over the whole state to find out the original scenario of the child health and nutrition management among the whole population of both rural and urban area of West Bengal.

➤ Epidemiological study can be conducted to demonstrate the health and nutrition management among the 6 to 10 years old children in West Bengal.

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