ORIGINAL RESEARCH

A Cross Sectional Study to Assess Nutritional Status of a Government High School Students in a Rural Area

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ABSTRACT

Introduction: Malnutrition affects adolescent age group which tallies with high school education, the 2nd fastest growth stage after infancy. Although many programmes are existing for improving and maintaining health status of high school students, still malnutrition continues and to assess degree of malnutrition the current study has been done.Aimof the study was to study the nutritional status of rural governmenthigh school students based on BMI.

Methodology: This was aCross-sectional study, conducted in agovernmenthigh schoolHirethogalerefrom 1st July to 31st August 2014, height and weight of 100 students were recorded studying from 8th to 10th standard. BMI was calculated. The results were analysed by applying Chi-square test and measures of location.

Results: The mean BMI of study subjects was 15.8.Out of 100 students 79 were undernourished despite of all school nutritional programmes.

Conclusions: In this study majority of the students weremalnourished, hence the family diet among all rural governmenthigh school students must be improved. This can be achieved by analysing the family diet and nutritional health education to the parents.

Keywords: BMI; Malnutrition; Rural; High school student;

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INTRODUCTION

It is well known that malnutrition due to multiple factors is precipitated during growth spurts of human body. Adolescence age is second fastest growth stage after infancy and childhood. The adolescence age tallies with high school education onwards. Inadequate nutrition in adolescence can put them at high risk of chronic diseases particularly if combined with other adverse lifestyle behaviours.[1] The adolescents have to copewith total life and adjust to total environment.This is more so in rural area, and is possible to certain extent when nutritional status is adequate.With this purpose a study entitled "A cross sectional study to assess nutritional status of agovernmenthigh school students in a rural area" had been taken up with an objective to study the nutritional status of rural governmenthigh school students based on BMI.

The anthropometric measurements have become a popular measure for the assessment of nutritional status among children and adolescents. It is well established that among other anthropometric measures body mass index (BMI) is not only the single most appropriate, cost effective and non-invasive tool for the assessment of the nutritional status of adolescents and adults but it is also the best indicator of thinness during adolescence.[2] Many research studies indicated that malnutrition including underweight constitutes major health problems among school children.

MATERIAL AND METHOD

The study was conducted ingovernmenthigh school located at Hirethogalere village.This village belong to Kurki subcentre and panchayath. The Hirethogalere governmenthigh school was selected based on some "*sanctioning criteria*" of governmenthigh school in rural areas, such as 1. The two governmentrural high schools were initiated during the year 2007-08[3] of which one is selected by lottery method. The reason for selecting governmenthigh school which were initiated during the year 2007-08

8 years have been elapsed after initiation of high school

By this time mid-day meal and other school pro-grammes were implemented effectively

2. In 5 km radius no governmenthigh schools exist

3. High percentage of SC and ST population in a village (In Hirethogalere village population consists of 70% of SC and ST). The high school students studying in this school were children of this population, most of the villagers of Hirethogalere were of low socio-economic status.

The information about anthropometric measurements such as height and weight were recorded on a pre-structured and pretested proforma. Proforma consists of general information of the students and table for recording height, weight and calculation of BMI.

This was a cross sectional study. The study was conducted for duration of two months from 1st July to 31st August 2014 without disturbing routines of academic activities. It was co- education.After taking verbal consent, all the boys and girls of 8th, 9th and 10th class were included in the study.Total of 108 (boys – 55 and girls - 53) students were enrolled to the school (include 8th, 9th and 10th standard) of which 8 were chronic absentees (boys – 6 and girls - 2), the remaining 100 students (boys – 49 and girls - 51) participated in the study. The nutritional status assessment was done on the basis of calculation of body mass index. Height in centimetres was marked on a wall in the school with the help of a measuring tape. All children were measured against the wall. Height was recorded to the nearest 1 cm. Weight was checked by using a weighing machine. It was calibrated. Weight was recorded to the nearest 500 gms.

After data collection, data was arranged for quantitative and qualitative analysis. In quantitative analysis of data ogive was constructed and measures of location were found out for range of BMI class intervals. In qualitative analysis of data the calculated BMI of individual students were grouped according to WHO classification and Chi-square test was applied.

STATISTICAL ANALYSIS

Microsoft excel was used to make graphs and tables. Chi-square statistical analysis was used to generate the results.

RESULTS

There was only one governmenthigh school in Hirethogalere.Total of 108 students were studying in 8th, 9th and 10th standard, out of 108 students 100 were participated in the study. Out of 100 students 51 were girls and 49

were boys, and majority of students were belonging to SC and ST caste (see fig 1).In this study about 79% students were undernourished as per WHO classification of BMI (table 1). Frequency curve showed positively skewed distribution with more number of students fall in left side of the curve, the mean of entire series was 16.44 as shown in table 2 and figure 2. Cumulative frequency curve showed median quartile of 15.8(Q2), upper quartile of 14.5(Q3) and lower quartile 17.8(Q1) as shown in figure 3.

DISCUSSION:

In the present study 79% (53%boys and 47% girls) of students were malnourished and the difference in BMIamong boys and girls was not statistically significant.Similar findings has been reported in the studies
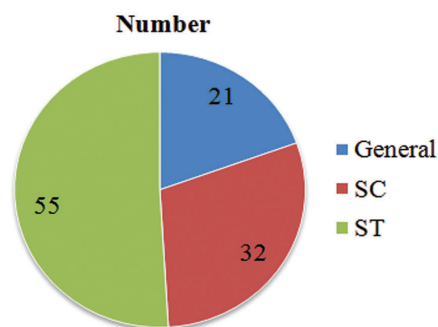

Figure-1: Distribution of students according to their caste

BMI	Boys N (%)	Girls N (%)	Total
<18.5	42 (53)	37 (47)	79
18.5 – 24.99	7 (33)	14 (67)	21
Total	49	51	100
X^2 = 2.613, d.f. = 1, P > 0.05 (statistically not significant)			
Table-1: Distribution of high school students according to WHO classification of Body mass index (BMI)			

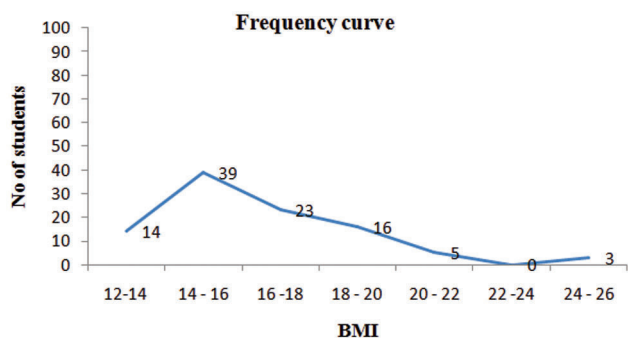| Body mass index (BMI)	Frequency in each group	Lower limit of BMI	Cumulative frequency
12 – 14	14	12	100
14 - 16	39	14	86
16 - 18	23	16	47
18 - 20	16	18	24
20 - 22	5	20	8
22 - 24	0	22	8
24 - 26	3	24	3
Figure-2: Frequency distribution of BMI of high school students			

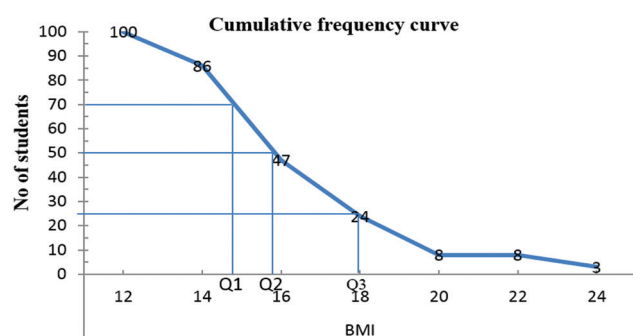**Figure-2:** Frequency distribution of BMI of high school students

Figure-3: Cumulative frequency curve of more than type

conducted by Garvita Jain and Dr S.K Bharadwaj,[4] the prevalence of under nutrition among boys was 12.82% and in girls was 7.04%. In the present study majority of the boys (42%) and girls (37%) were underweight. This pattern of nutritional status has been reported in a study by M Kalhan[5], in which 80% of the girls were under-nourishedand study by Malhotra and Passi[6] which also reported the prevalence of thinness among adolescent girls as 30.6%. In the study Shalini Srivastav and Harsh Mahajan[7] the prevalence of thinness among the adolescent age group was found to be 30.6% overall with prevalence of 24.1% thinness and 8.6% severe thinness among boys and 20.6% thinness and 3.9% severe thinness among girls.The study by M.K. Gupta[8] reports 86.5% children had BMI <18.5 (88.4% of total boys and 81.9% of all girls). Report from the study Randhir Vishnupant Dhobale[9] the prevalence of underweight among the students is 23.1%. Sweta singh[10] study reports26.6% of adolescent girls were undernourished (BMI < 18.5).

CONCLUSIONS

In this study majority of the students were malnourished, hence the family diet among all rural government high school students must be improved. This can be achieved by analysing the family diet and nutritional health education to the parents.

ACKNOWLEDGMENT

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