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Study of malnutrition status of school going boys and girls in Ranikhet Tehsil of Almora District (Uttarakhand)

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Abstract
The objective of the study was to study the malnutrition status of school going boys and girls aged 11-18 years in Ranikhet tehsil of Almora, district of Uttarakhand. To study the malnutrition status a total of 200 students were selected randomly from the two government and two non-government schools of the study area. Questionnaire method, dietary survey and anthropometric measurements have been used to collect the data. Stunting (short height for age) and wasting (low weight for height) coexist in teenagers, according to data obtained from the use of anthropometric height measuring equipment to assess the degree of malnutrition among students. Adolescents attending government schools were found to exhibit 2% higher rates of stunting and wasting than those attending non-government school. It was discovered that approximately 10% of the students had general malnutrition, 54% had mild malnutrition, 18% had moderate malnutrition and 28% had severe malnutrition after weighing the students and matching it to the Gomez classification.

The study found that 20% of students in non-government schools suffered from general malnutrition, 59% from mild malnutrition, 21% from moderate malnutrition, and 20% from severe malnutrition. When the levels of malnourishment among students attending government and non-government schools were compared, it was discovered that government school students had higher rates of mild malnutrition by 5%, moderate malnutrition by 3% and severe malnutrition by8% in comparison to non-government school students.

Keywords: Adolescence, nutritional level, malnutrition, health, adolescent girls

Introduction

Adolescence is the age of 13-18 years. This state is characterized as a state of change. Adolescence is derived from the Latin word 'Adolescere', which literally means 'to grow to Malescere'. Adolescence can also be called 'age of growth'. It is a stage of physical and mental changes which begins with the appearance of symptoms of puberty and growth also completes when adolescence ends. (Khanuja Reena, 2014) [2].

In adolescence stage sexual changes begin and get completed. Girls undergo maturity and sexual changes sooner than boys. The pace of development of boys and girls is rapid during adolescence and there is not only physical development in them but also functional, mental, social, emotional development in them also i.e. their complete personality develops. Changes that come under physical development include growth of bones, increase in the amount of muscles and accumulation of fat in soft fibres, broadening of shoulders of boys, enlargement of buttocks of girls etc. These changes occurring during adolescence affect physical, mental and emotional development. Secretions of various hormones occurred from all the endocrine glands. In this stage, due to physical growth, changes occur in the body structure. Along with sexual change, feminine and masculine characteristics develop which are influenced by growth hormones and sexual characteristics. The emergence of gender characteristics is very important during adolescence. Major sexual changes in girls include enlargement of the breasts, growth of hair in the thighs and armpits. The prostate gland becomes active in boys. The second rapid growth spurt after birth occurs during adolescence. Growth spurts occur between 11-14 years for girls and 13-16 years for boys. Within 2 or 3 years the child acquires the form of an adult body. During adolescence, appetite increases and their nutritional needs also increase. Hormonal changes are evident in the form of secondary sexual

characteristics. The onset of menstruation in girls and development of feminine characteristics whereas in boys, heaviness in voice, growth of beard and moustache, development of sense of masculinity, strength of muscles etc. are seen. Boys come to maturity somewhat late when compared with girls. If there is a lack of nutrients at this time, it has a greater impact on their bones and they remain stunted. Teenagers become unnecessarily conscious about their body weight due to which sometimes their diet becomes unbalanced. Boys interest in exercise, sports etc. increases while girls start dieting to reduce their weight. Emotional tension also exists in teenagers due to social immaturity. They also remain tired due to school and college work. Sometimes at home too, they remain worried due to stressful behaviour caused by their parents and due to financial dependence which also reduces their appetite.

Malnutrition is the condition when food items are taken inadequate in quality and quantity due to which physical needs are not fulfilled by food. This is the exact opposite of good nutrition. Everyone needs proper nutrition to stay healthy. We get proper nutrition from a balanced diet. The person who gets a balanced diet remains physically and mentally healthy. Another form of malnutrition occurs when there is imbalance of nutrients in the diet, there is a deficiency of nutrients or a particular type of nutrient exceeds the requirement. Malnutrition is an abnormal condition which arises from lack or excess of one or more nutrients.

Nowadays malnutrition is seen in both developed and underdeveloped countries. Lack of essential nutrients is a major problem in developing countries like India and other less developed countries. At the same time, in many western countries, problems of malnutrition also arise due to excessive nutrition. Keeping this in mind, a present study is planned to evaluate the nutritional status of adolescence girls and boys studying in government and non government school and to find out the rate of malnutrition among the selected sample population. The effect of daily diet on the malnutrition level of boys and girls studying in government and non-government schools was also studied.

Methodology

In the present study a sample size of 200 students were selected of both boys and girls age between the ages of 11 to 18 years. Out of 200 students, 100 students were taken from government school and another 100 were taken from non-government school. A survey method have been employed for collection of data by preparing a standardized questionnaire, anthropometrics and clinical analysis have also been performed. RDA 2020 has been used to study the effect of daily diet on the malnutrition level of boys and girls.

Results and Discussion

Effect of daily diet on the malnutrition level of boys and girls

The dietary pattern of students in the table no. 1 showed around 25.45% of students in the government schools and 37.67% of students in the non-government schools consume milk on daily basis, despite being undernourished. The majority of nutrients are found in milk, yet poor households conditions cannot afford to purchase milk. They occasionally consume curd and milk. In weekly basis 54.1% of students in non-government schools and 26.49% of students in government schools indulge in eating fast food. Students in government schools eat vegetables twice a week, compared to 37.5% of students in non-government schools.

However, they are extremely undernourished. The majority of nutrients, including vitamins and mineral salts, are found in vegetables. But their financial situation prevents them from consuming them on daily basis. Every 15 days, 30.11% of students in non-government schools and 29.54% of students in government schools consume eggs. Students in government schools (29.68%) and non-government schools (37.60%) consume fish and chicken meat in every two months.

Table 1: Dietary eating pattern of students in percent

Nutritional Food eaten	Govt.	Non-Govt.	Govt.	Non-Govt.	Govt.	Non-Govt.
Milk	25.45	37.67	6.03	13.22	7.25	16.63
Curd	29.77	44.77	7.66	14.11	4.34	20.52
Pulses	28.65	42.25	4.34	13.45	9.54	14.20
Fast food	26.49	54.1	2.52	17.43	3.34	13.31
Vegetables	28.27	37.5	7.58	14..52	5.27	17.44
Fruits	31.11	36.45	9.78	16.19	8.20	16.76
Eggs	29.45	30.11	6.98	11.00	4.38	15.08
Chicken	27.87	34.55	6.45	17.45	7.66	13.01
Meat	25.56	31.88	7.23	12.67	6.23	17.37
Fish	29.68	37.60	9.43	15.98	8.33	18.00
Mean Value	2.823	3.86	0.68	1.46	0.64	1.64

The surveyed students are categorized based on their weight in table no.2. According to table no. 2, 24% of students were found with weight between 25 and 35 kgs of which 28% of these students attended government schools and 20% attended non-government schools. Students' weights ranged from 36 to 55 kg for 56.5% of the sample, of which 54% attended government schools and 59% non-government schools; similarly, 19.5% of the sample weighed between 56 and 75 kg, of which 18% attended government schools and 21% attended non-government schools.

Table 2: Measured weight of the students

	Government		Non-government		Total	
Weight	Students	Percentage	students	Percentage	Total no	Percentage
25-35 kgs	28	28	20	20	48	24
36-55 kgs	54	54	59	59	113	56.5
56-75 kgs	18	18	21	21	39	19.5
Total	100	100	100	100	200	100
Mean Value	44.4		46.2			

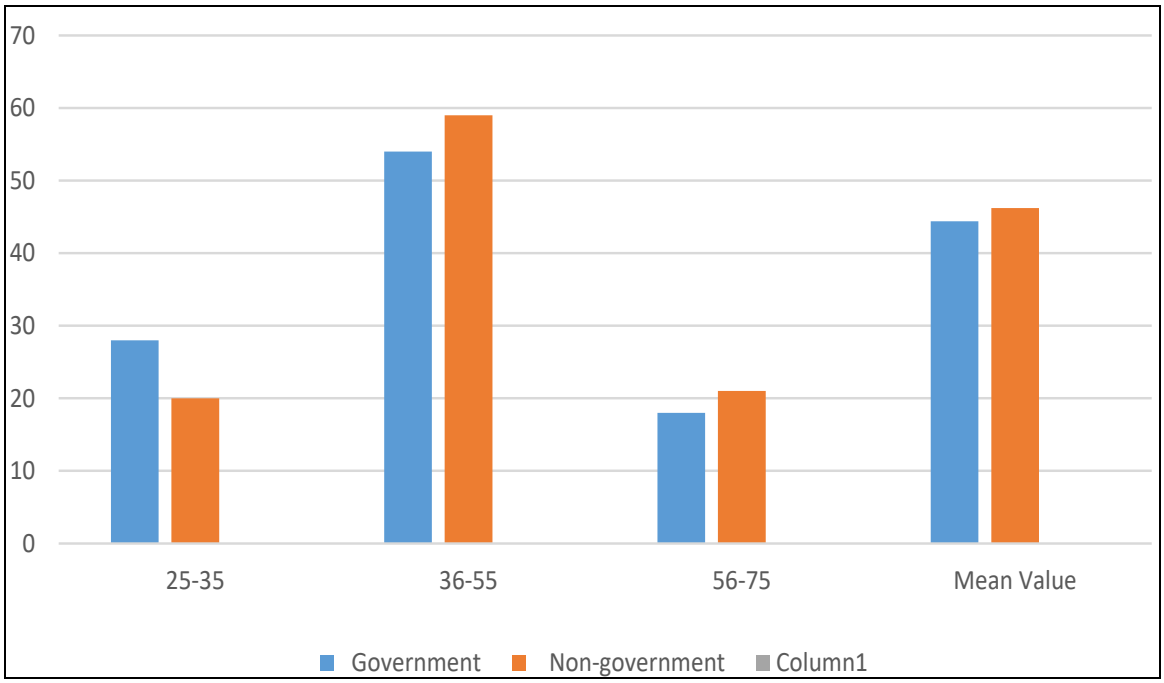

Fig 1: Measured weight of students in kgs

Height of the student

The students have been categorized based on their height according to age in the table no. 2. Survey revealed that 27.5% of the students were between the heights of 101 and 120 cms of which 34% of these children attended government schools, and 21% attended non-government schools. The findings indicated that 52% of the students were between the ages of 121 and 140 cm; of these, 49% were from government schools and 55% were from non-government schools; 20% of the students were between the ages of 141 and 160 cm; of these, 17% were from government schools and 24% were from non-government schools. It was found that average height for age among government schools students were of 26.2% of the standards, while non-government school students had an average height of 30.6% of the standards.

Table 2: Height chart of the students

	Government		Non-government		Total	
Height in cms	**students**	**Percentage**	**students**	**Percentage**	**Total no**	**Percentage**
101-120	34	34	21	21	55	27.5
121-140	49	49	55	55	104	52
141-160	17	17	24	24	41	20.5
Total	100	100	100	100	200	100
Mean Value	26.2		30.6			

Table no. 3 showed the results of a comparison between the weight of the surveyed students according to Gomez classification. It indicates that 10% of students in government schools have general malnutrition, 54% have mild malnutrition, 18% have moderate malnutrition, and 28% have severe malnutrition.

Students in non-government schools were found to have varying levels of malnutrition: 20% had general malnutrition, 59% had mild malnutrition, 21% had moderate malnutrition, and 20% had severe malnutrition.

On comparing the malnutrition level of students studying in government and non-government schools, it was found that malnutrition was found to be higher in students of government schools.

Table 3: Assessment of malnutrition status

Stage of malnutrition	Government	Non-government
Normal	10%	20%
Mild	54%	59%
moderate	18%	21%
severe	28%	20%

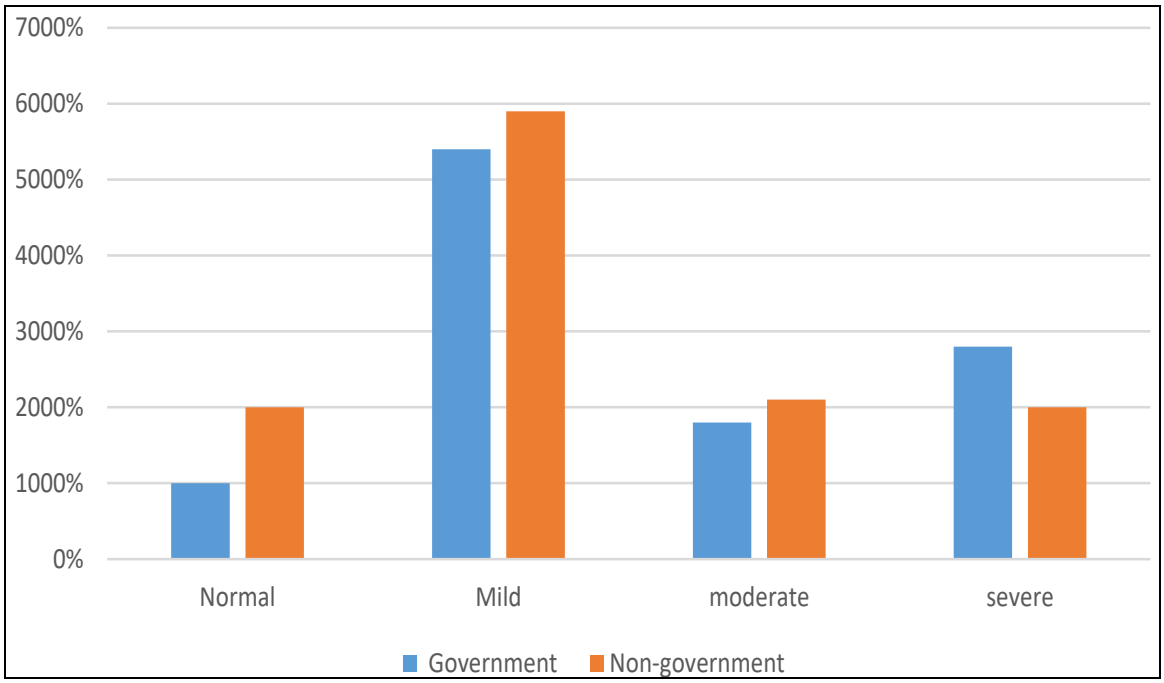

Fig 2: Assessment of malnutrition status

Conclusion

Adolescents students attending Ranikhet tehsil's government and non-government schools showed both with stunting (short height in relation to age) and wasting (low weight in relation to height). Adolescents attending government schools were found to exhibit 2% higher rates of stunting and wasting than those attending non-government schools. Dietary pattern of non-government school students showed consumption of more nutritious food on daily basis. While the fast food consumption was found to be higher in both the groups. Keeping these findings in mind it is extremely necessary to give nutrition education to the students for making them aware and improving their nutritional status which will in turn strengthen the human resource of our country.

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