

Nutritional Status of Beneficiaries of Mid-Day Meal Programme in Kashipur (Udham Singh Nagar District, Uttarakhand)

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Abstract— The present study entitled “Nutritional status of beneficiaries of Mid-Day Meal programme in Kashipur (Udham Singh Nagar District) Uttarakhand” The study was undertaken with the following objectives to find out the nutritional status of selected beneficiaries of mid-day meal in government schools and to find out the nutrient content of mid-day meal provided by the government schools. A total of 150 mid-day meal beneficiaries were selected for the present study. Seventy five from Uday Raj Hindu Inter College and seventy five from Roop Kishore Lalmani Arya Kanya Inter Collage, Kashipur (Udham Singh Nagar District) Uttarakhand were selected randomly for the study. Among the 150 students, 75 percent were boys and 75 percent were girls. Survey method was adopted to collect the data from selected respondents with the help of pre tested schedule. The mid-day meal beneficiaries were personally interviewed during the period of study for the collection of required information, schedule included data on a general information, Anthropometric measurement, Clinical assessment and Dietary information. The results obtained after the survey conducted showed that the average height and weight of Mid-Day Meal beneficiaries girls were better than the boys. In boys mean daily intake of energy, protein, calcium, vitamin A, β carotene and vitamin C were lower than the RDA and in girls, protein, calcium, vitamin A, β carotene and vitamin C were lower than the RDA. So it is concluded that nutritional status of Mid-Day Meal beneficiaries Both Boys and girls were lower than the ICMR RDA (2010) because of poor economic condition. The nutrient content of Mid-Day Meal which were provided by the government schools were found be higher in macro nutrients like energy, protein, fat, carbohydrate and calcium.

Key words: MDM, RDA, 24th Recall, Mid-day Meal, Nutrient Content, NCHS, Significant, Non-Significant

I. INTRODUCTION

The Midday Meal Scheme is the well-known name for school meal programme in India which started in the 1995. It includes provision of lunch free of cost to school-children on all working days. Nutritional status is the condition of health of an individual as influenced by nutrient intake and utilization in the body. Malnutrition is major public health problem in developing countries. Children are the wealth of any nation as they constitute one of the important segments of the population. Children in the age group of 6-14 years are often considered as school age. One fifth of the population in every country constitutes school age children (6-14 yrs.). In India, approximately 19% (190 million) of the growing population comprises school-aged children (Srihari G. et al., 2007).

The midday meal scheme is the largest school lunch programme in the nation. It has been reported that mid-day meal has catered to the nutritional needs of school children in both rural and urban areas (Mehta et al., 2013).

Nutrition plays an important role in promotion of health and prevention of disease, food in the chief source of essential materials, which the body needs for its well-being. Good nutrition is a basic component of health. Nutritional support to primary education is considered as a means to achieve the objective of providing free and compulsory universal primary education of satisfactory quality to all the children below the age of 14 years by giving a boost to universalization of primary education through increased enrolment, improved school attendance and retention and promoting nutritional status of primary school children (Afridi, 2007).

II. OBJECTIVES

The study was undertaken with the following objectives- :

- To find out the nutritional status of selected beneficiaries of mid-day meal in government schools.
- To find out the nutrient content of mid-day meal provided by the government schools.

III. REVIEW OF LITERATURE

Blue (2005) assessed the impact of mid-day meal on tribal communities and subsistence farmers in rural Udaipur and revealed that cooked mid-day meal had become a permanent part of the daily routine of rural primary schools in Udaipur. There were efforts in introducing variety of menus. Mid-Day Meal Scheme is helping to improve the nutritional needs of poor children. Enrolment and attendance had increased.

Satish et al.,(2010) attempted to explain and justify the Mid-Day Meal Scheme (MDMS). They visited to several government schools and observed the food quality. They also considered other various aspects like hidden food quality attributes, nutrition, food safety, etc. In their study they observed the fact that in a developing country like India, the general level of awareness and cleanliness is low and it is not specific to MDMS alone. Nonetheless, in our opinion, there is a potential for general increase in hygiene and cleanliness at the schools and kitchens.

IV. MATERIALS AND METHODS

Kashipur (Udham Singh Nagar District) Uttarakhand was chosen for the research. 150 mid-day meal beneficiaries were selected randomly for the study. Interview schedule was used to collect data. All the data were recorded for all the children from class VII-VIII and the age group was 10 -12 years as per the interview schedule prepared by the researcher. Each students height, weight were compared with NCHS standard, home food consumption frequency was also recorded using by the 24 hour dietary recall method prescribed by “Swaminathan” The quantity of mid-day meals food were recorded which served on 6 days of week and the nutritive value of MDM and home diet was computed using the book

Nutritive value of Indian foods” (Gopalan C. et al., 2004). The total nutrient content of mid-day meal also computed.

V. RESULTS AND DISCUSSIONS

A. Nutritional Status of mid-day meal beneficiaries

Nutritional status was observed by the anthropometry method; Clinical sign & symptoms method and diet method.

Boys (n=75)						
Age (yrs)	No. of respondents	Observed mean ± SE (cm)	50 th percentile NCHS value (cm)	Difference	t-cal value	Result
10	24	146.41± 0.69	137.5	8.91	23.44	S
11	24	138.70± 2.04	143.3	-4.6	23.58	S
12	27	145.66± 2.16	149.5	-3.84	22.09	S
Girls(n=75)						
Age (yrs)	No. of Respondents	Observed mean ± SE (cm)	50 th percentile NCHS value (cm)	Difference	t-cal value	Result
10	30	143.78± 0.82	138.3	5.43	54.2	S
11	28	146.5± 0.99	144.8	1.45	47.3	S
12	17	145.05± 1.32	141.5	- 1.62	31.49	S

Table 1: Comparison of mean Height of Mid-Day Meal beneficiaries (Girls and Boys) 10-12 years with NCHS standard

Boys (n=75)						
Age (yrs)	No. of respondents	Observed mean ± SE (kg)	50 th percentile NCHS Value (kg)	Difference	T-cal value	Result
10	24	39.16 ± 1.39	31.4	7.76	8.92	S
11	24	34.83 ± 1.46	35.3	-0.47	8.25	S
12	27	38.62 ± 1.18	39.8	-1.18	8.23	S
Girls (n=75)						
Age (yrs)	No. of respondents	Observed mean ± SE (kg)	50 th percentile NCHS Value (kg)	Difference	T-cal value	Result
10	30	40.08 ± 1.20	32.5	7.53	10.38	S
11	28	42.21 ± 1.29	37	5.21	10.49	S
12	17	39.88 ± 1.32	41.5	-1.62	11.18	S

Table 2: Comparison of mean weight of Mid-Day Meal beneficiaries (Girls and Boys) 10-12 years with NCHS standard Source: Srilakshmi, (2010) S.E.= Standard Error (±) S= Significant P ≤ 0.05 NS= Non Significant P ≥ 0.05

The anthropometry of beneficiaries revealed that the community higher and lower than international (NCHS) standards as shown in table 1 and 2 shows that the total beneficiaries (N=150) height for age and weight for age were compared with NCHS standard values. Table 3 shows that overall underweight children were found to be 3.70 percent in 10 years age group, 7.69 percent in 11 years age group and 6.81 percent in 12 years age group, Undernourished children 7.69 percent were found more in the age group of 11 years.

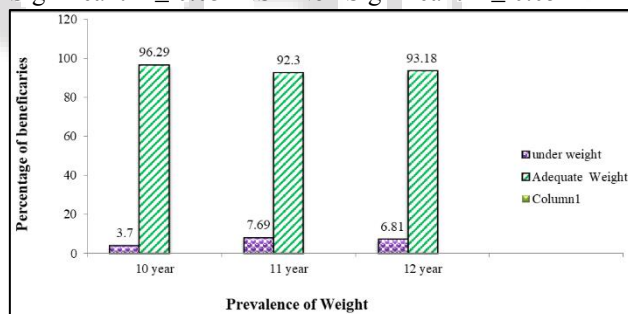


Fig. 1: Prevalence of under nutrition among Mid-Day Meal beneficiaries (10-12 years)

Weight Status	Age group							
	10 year (n= 54)		11 Year (n= 52)		12 Year (n= 44)		Total (N= 150)	
	N	%	N	%	N	%	N	%
Underweight (Wt for ages 2SD)	2	3.70	4	7.69	3	6.81	9	6
Adequate weight	52	96.29	48	92.30	41	93.18	141	94

Table 3: Prevalence of under nutrition among Mid-Day Meal beneficiaries (10-12 years):

Clinical Assessment	Boys n= 75		Girls n= 75		Total N = 150	
	N	%	N	%	N	%
General appearance						
Fair	17	22.66	19	25.33	36	24
Good	55	73.33	49	65.33	104	69.33
Poor	3	4	7	9.33	11	7.33
Pale Conjunctiva						
Absent	72	96	70	93.33	142	94.66
Present	3	4	5	6.66	12	8
Visible thyroid						
Absent	74	98.66	73	97.33	147	98
Present	1	1.33	2	2.66	3	2

Nails colour						
Normal	72	96	70	93.33	142	94.66
Pale yellow	3	4	5	6.66	8	5.33
Less of Appetite						
Absent	73	97.33	72	96	145	96.66
Present	2	2.66	3	4	5	3.33
Shortness of breathe						
Absent	75	100	75	100	150	100
Present	-	-	-	-	-	-
Headache						
Absent	67	89.33	69	92	136	90.66
Present	8	10.66	6	8	14	9.33
Weakness						
Absent	66	88	57	76	123	82
Present	9	12	18	24	27	18
Gum						
Normal	70	93.33	73	97.33	143	95.33

Bleeding Gum	5	6.66	2	2.66	7	4.66
Pale / Grayish skin						
Absent	69	92	71	94.66	140	93.33
Present	6	8	4	5.33	10	6.66

Table 4: Presence of clinical sign and symptoms of malnutrition in mid-day meal beneficiaries (10-12 years)
Source- Swaminathan, M. (2007)

4 percent boys and 9.33 percent girls were showed poor appearance, 4 percent boys and 6.66 percent girls showed pale conjunctiva, 1.33 percent boys and 2.66 percent girls were showed visible thyroid, 4 percent boys and 6.66 percent were showed that pale yellow nails.2.66 percent boys and 4 percent girls were showed less of appetite, 10.66 percent boys and 8 percent girls were showed presence of headache, 12 percent boys and 24 percent girls were showed weakness and tiredness,5 percent and 2.66 percent girls were showed abnormally bleeding gums,8 percent boys and 5.33 percent girls showed pale/ grayish skin.

Parameters	Energy (kcal)	Protein (g)	Fat (g)	Ca (mg)	Iron (mg)	Vita A (µg)	β carotene (µg)	Vit. C (mg)
Boys (n=75)								
ICMR (RDA)	2100	39.9	35	800	21	600	4800	40
Intake	2051	30.2	36.29	581	35.04	447.8	3092	35.28
Differ.	49	9.7	-1.29	219	-14.04	152.2	1708	4.72
Cal (t)	26.17	8.14	13.04	7.72	7.44	8.99	7.29	8.10
Result	S	S	S	S	S	S	S	S
Girls (n= 75)								
ICMR (RDA)	2010	40.4	35	800	27	600	4800	40
Intake	2039	37.32	44.59	598.2	30.27	556.2	3860.4	40.56
Differ.	-29	3.08	-9.59	201.8	-3.27	43.8	939.6	-0.56
Cal (t)	14.53	15.71	11.27	15.02	12.16	13.28	8.95	17.66
Result	S	S	S	S	S	S	S	S

Table 5: Average nutrient intake per day by mid-day meal beneficiaries (10-12 years)

S = Significant $P \leq 0.05$, NS = Non Significant $P \geq 0.05$

After comparing the average nutrients intake of girls respondents with ICMR RDA (2010) was observed that protein, calcium, vitamin A and, β carotene intake was found less than the RDA but energy, fat, iron and vitamin C were higher than the RDA. On applying t- test significant differences were found between the intake and RDA for calories, protein, fat, calcium, iron, vitamin A, β carotene and vitamin C.

Food Habits	Boys n=75		Girls N=75		Total (%) N=150	
	N	%	N	%	N	%
Vegetarian	16	21.33	21	28	37	24.66
Non vegetarian	35	46.66	35	46.66	70	46.66

Eggitarian	24	32	19	25.33	43	28.66
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Table 6: Distribution of Mid-Day Meal beneficiaries according to their food habits:

Day	Menu
Monday	Dal, Vegetable, Rice, Oil
Tuesday	Rice, Soyabadi, Oil
Wednesday	Kala chana, Rice
Thursday	Dal, Vegetable,Rice,Oil
Friday	Rice, Soyabadi, Oil
Saturday	Kala chana, Rice
Weekly	2 Banana

Table 7: Weekly menus for MDM beneficiaries in government schools.

Day	Name of food (sources)	Quantity (g)	Energy Kcal	CHO (g)	Protein (g)	Fat (g)	Calcium (mg)
Monday	Rice	150	517.5	115.05	11.25	0.75	15
	Dal	30	111.6	17.94	6.24	1.68	16.8
	Vegetables	75	47.8	1.55	20.09	0.4	4
	Oil	7.5	337.5	-	-	37.5	-
Tuesday	Rice	150	517.5	115.05	11.25	0.75	15
	Soyabadi	75	324	32.4	15.67	14.6	180
	Oil	7.5	337.5	-	-	37.5	-
Wednesday	Rice	150	517.5	115.05	11.25	0.75	15
	Kala Chana	75	270	45.6	12.8	3.97	151.5
	Oil	7.5	337.5	-	-	37.5	-
Thursday	Rice	150	517.5	115.05	11.25	0.75	15

	Dal	30	111.6	17.94	6.24	1.68	16.8
	Vegetables	75	47.8	1.55	20.09	0.4	4
	Oil	7.5	337.5	-	-	37.5	-
Friday	Rice	150	517.5	115.05	11.25	0.75	15
	Soyabadi	75	324	32.4	15.67	14.6	180
	Oil	7.5	337.5	-	-	37.5	-
Saturday	Rice	150	517.5	115.05	11.25	0.75	15
	Kala Chana	75	270	45.6	12.8	3.97	151.5
	Oil	7.5	337.5	-	-	37.5	-
Weekly	2 Banana	200	232	54.4	2.4	0.6	34
Total Nutrient			5,854	792	180	231	829

Table 8: Nutrient content Mid-Day Meal provided by government schools

Table 8 shows that the Nutrient content of mid-day meal provided by government schools on weekly basis. The energy, CHO, protein, fat and calcium derived from the mid-day meals on the days of survey shown in table 7, on the entire week, the total energy content ranged from 5,854kcal, carbohydrate 792g, 180g, protein, 231g fat and 829mg calcium.

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VI. CONCLUSION

After conducting the survey in government school namely Uday Raj Hindu Inter Collage and Roop Kishore Lalmani Arya Kanya Inter Collage, Kashipur (Udham Singh Nagar, District) Uttarakhand all the observation is concluded that the average height and weight of Mid-Day Meal beneficiaries girls were better than the boys. In boys mean daily intake of energy, protein, calcium, vitamin A, β carotene and vitamin C were lower than the RDA and in girls, protein, calcium, vitamin A, β carotene and vitamin C were lower than the RDA. So it is concluded that nutritional status of Mid-Day Meal beneficiaries Both Boys and girls were lower than the ICMR RDA (2010) because of poor economic condition

The nutrient content of Mid-Day Meal which were provided by the government schools were found be higher in macro nutrients like energy, protein, fat, carbohydrate and calcium.

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