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A study on the nutritional status of school going children (10-12 Years) of mid day meal programme in Allahabad district

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Abstract
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 30 mid-day meal beneficiaries were selected randomly. Among the 30 students, 50 percent were boys and 50 percent were girls. Under socio economic status the subjects are categorized on the basis of family type and profession, economic and educational status of their parents. Dietary intake and food consumption pattern was studied by interview method and 24 Hours recall method for three consecutive days. Survey method was adopted to collect the data from selected respondents with the help of pre tested schedule. For the data collection general information, Anthropometric measurement, Clinical assessment and Dietary intake and food consumption pattern was taken by interview and 24 Hours recall method for three consecutive days. 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, 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 was provided by the government schools were found is higher in macro nutrients like energy, protein, fat, carbohydrate and calcium.

Keywords: MDM, TSF, clinical assessment, socioeconomic status

Introduction
The Mid day Meal Scheme is a school meal programme of the Government of India designed to improve the nutritional status of school-age children nationwide. The programme supplies free lunches on working days for children in primary and upper primary classes in government. The MDM Scheme in India is the largest school meal programme in the world, covering an estimated 139 million children with bold objectives: to enhance enrolment, retention and attendance among primary school children while simultaneously improving their nutritional status. The genesis of mid-day meals goes back much earlier, to 1925, when the Corporation of Madras introduced the scheme for school children. Although the scheme officially started as a centrally sponsored initiative in 1995, it was limited to providing dry rations and was not fully implemented in most states until 2002. Following a Supreme Court ruling in November 2001, all State Governments were mandated to introduce cooked school meals, and by 2003 most states had started providing school meals. Hamid *et al*., (2012) [6].

According to WHO malnutrition continue a major health problem in south East Asian region. Studies have reported a large section of children especially the urban area in India are suffering from varying grades of malnutrition. It has been estimated that about two-third of children do not take adequate nutrition that leads to malnutrition, besides macro and micro nutrients deficiencies continue to affect the physical and mental health of the children for 5-14 years old children, If they are too rich adult in a healthy state, it becomes necessary to provide target and concreted services with political commitment so that their nutritional status is improved. The present study was carried out to find out the nutritional status of children receiving mid-day meal in school in urban area of Aligarh City. Khalil *et al.,* (2004) [9].

In India most of the people are poor. Their source of income is cultivation. They depend on forests for 8 months and on agriculture for 4 months. They live on cultivation. The social-economic conditions of these people are not as good as other country. Most of the parents are also illiterate.

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Their illiteracy does not permit them to understand the long term values of education. As education does not yield them any immediate economic return, they prefer to engage their children in remunerative employment which supplements the family income and strengthens which supplements the family income and strengthens the family economy. Further a few parents, who have become aware of the values of education, fail to accord education of their children as they cannot afford finances for it. Due to the worst condition of the people they hesitate to send their children to schools. Actuality their primary aim is how to earn money. Education is not their primary aim. In order to enroll the children in the school we have to encourage both parents and children. If the parents are not encouraged then the enrolment of children is not possible. As such we have to create a situation that both parents and children can be motivated towards education. That encouragement can be possible only through different incentive schemes providing to the children. The children in our schools represent a vital segment of our population is obvious. They are our valuable human resources and will contribute to the bulk of our workforce by the turn of the century. Their health, nutritional status and educational attainments will to a considerable extent, determine the quality of our nation in the year to come. The objectives of the study were to assess the nutritional status of beneficiaries in schools which serve mid-day meal and to find out the nutritional contribution of mid-day meal towards the recommend dietary allowances of the school children.

Methods and Material
The present study entitled "A Study on the Nutritional Status of School Going Children of Mid-Day Meal Programme in Allahabad District". Study was conducted in Allahabad district. The Allahabad district is divided into 20 developmental blocks out of these 20 blocks, the Chaka or Karchana block is selected per positively because of nearness to our university campus. Another reason is the researcher is conversant (familiar) with the geography language and other aspect of the area.

Selection of respondents
There are 141 gram panchayat in the Chaka block of Allahabad district. The list of all the primary school of Chaka block was obtained from the basics Siksha Adhikari officer at Allahabad. All the list of the school was arranged systematically and from the list one school is from champatpur village.

Data Collection
The list of the student of 5th class only were obtained from selected school and all the students of 5th class were interviewed personally by the researcher with the help of pre-structured schedule specially designed for the purposed. The data collected was transferred on excel sheet of the computer they were analysis summarized and were given a statistical treatment in the light of the object set for the study.

General profile
Data regarding general profile of the respondents was collected using the first part of the schedule. This section was cover the aspects including respondent's demographic data such as name, age, sex, religion, number of person in household, occupation of father etc.

Anthropometric survey
Nutritional anthropometry concerned with the measurement of variation of physical dimension, the gross composition and degree of nutrition hence, anthropometry is a powerful tool for the assessment of nutritional status, particularly in the field conditions. Stature and weight are two basic measurements used for assessing nutritional status. (Joshi, 2010) [8]

Height measurement
Height (cm) of the subjects was taken with the help of a measuring tape by sticking it to the wall. The subjects was made to stand erect, looking straight in front, buttocks, shoulders and head touching the wall, heels together, toes apart and hands hanging loosely by the sides (Srilakshmi, 2016) [1]

Weight measurement
The respondents was made to stand erect on the weighing scale, without footwear, not leaning against or holding anything and the weight will be recorded in kg The scale was adjusted to zero after each measurement. Three consecutive reading will be taken. (Srilakshmi, 2016) [1].

Clinical survey
The nails, tongue, gums, teeth and general appearance of each selected respondents was examined in order to find out any sign of nutritional deficiencies
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Dietary Intake-(24 hr dietary recall method)
A diet survey was conducted as described by Swaminathan, 2003. The food consumption frequency was record in term of cereals, pulses, milk. And milk products, green leafy vegetables, other vegetables, fruits, poultry, sugar, jiggery, and salt intake. Information related to dietary pattern, food habits, food intake, food frequency will be also record. The food intake was record by 24 hr Dietary Recall Method and nutrient intake in term of energy, protein, carbohydrates, fats, calcium, iron, niacin, and vitamin A was also calculate . Calculation of nutrient intake was done with the help of the food composition tables. (Gopalan *et al.,* 2007) and compare with recommended dietary allowances given by (ICMR, 2006).

Results and Discussion
General information and Socio economic status of the subjects
Analysis of the questionnaire and interview data revealed that father of 36.6 percent of the school children were engaged in farming, 10 percent were labour and 20 percent in business and only 13 percent were engaged in service which include driver, staff, watchmen. Data revealed that 43 percent of the school children mothers were educated up to metric level and 15 percent were up to graduated and postgraduate, whereas, 43 percent were educated up to intermediate level. Equal respondent's 53.3 percent was belonging to joint and 46.6 percent were belonging to nuclear family. It was found at 36 percent and 34 percent children had two and three meal a day followed by 30 percent children had four meals a day. Most 16.6 percent of the children were vegetarian, 63 percent of the children are nonvegetarian and only 20 percent children were eggetarian. Meal was skipped by the 43 percent of the total children in which 14 percent, 6 percent, 17 percent, and 6 percent children skipped breakfast, lunch, evening tea and

dinner, respectively. Out of total children 60 percent children prefer to eat outside while only 40 percent liked to eat at home.

A. Nutritional Status of mid-day meal beneficiaries
Nutritional status was observed by the anthropometry method; Clinical sign and symptoms method and dietary method.

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

Beneficiaries (n=30)					
Sex (10-12)	No. of respondents	Observed mean	50th percentile NCHS value (cm)	Difference	Percentage %
Boys	15	144.7	149.5	4.8	96.7
Girls	15	143.78	144.8	1.02	99.29

Source: Srilakshmi, (2010).

Table 2: Comparison of mean weight of Mid-Day Meal beneficiaries (Girls and Boys aged 10-12 years) with NCHS standard

Beneficiaries (n=30)					
Sex (10-12)	No. of respondents	Observed mean	50th percentile NCHS value (kg)	Difference	Percent %
Boys	15	37.62	39.8	2.18	94.52
Girls	15	39.88	41.5	1.62	96.09

Source: Srilakshmi, (2010).

The anthropometry of beneficiaries of reveled that the community lower than international (NCHS) standards as shown in table 1 and 2 that the total beneficiaries (N=30) height for age and weight for age were compared with NCHS standard values. In this table out of total 15 boys 3.3 percent boys were underweight and 6.48 percent boys were stunting respectively and out of total 15 boys 6.48 percent girls were underweight and 4.98 percent girls were stunting respectively girls. National Family Health Survey (2005-06), survey that the prevalence of underweight, stunting and wasting among children under 3 years were 40 percent, 45 percent and 23 percent respectively.

B. Clinical sign and symptoms

Table 3: Clinical assessment of the Mid Day Meal taking school going children (age 10-12 years)

Clinical Assessment	Boys n=15	Girls n=15	Total n=30	Percent%
Pale / Grayish skin				
Absent	12	14	26	96.7
Present	1	3	4	13.3
Pale Conjunctiva				
Absent	13	15	28	95.4
Present	2	0	2	6.6
Visible thyroid				
Absent	15	15	30	100
Present	0	0	0	0
Nails colour				
Normal	13	13	26	87.67
Pale yellow	2	2	4	13.33
Less of Appetite				
Absent	9	11	20	66.7
Present	6	4	10	33.3
Weakenss				
Absent	15	12	27	90
Present	0	3	3	10
Headache				
Absent	13	14	27	90
Present	2	1	3	10

The table 3 shows that 13.33 percent girls showed pale/ grayish skin. 6.66 percent child showed pale conjunctiva, 13.33 percent showed that pale yellow nails of child. 33.3 percent child was showed less of appetite, 10 percent child were showed presence of headache, 10 percent child were showed weakness and tiredness. About half of the school children had normal appearance about 68 percent and 32 percent children had thin build and sickly build

A. Daily mean food intake of school children

Table 4: Consumption of food intake by boys aged (10-12 year)

Food stuffs	Every day		2-4 days		Occasionally		Never	
	No. of male (n=15)	Percent %	No. of male	Percent %	No. of male	Percent %	No. of male	Percent %
Cereals	15	100	0	0	0	0	0	0
Pulses	9	60	6	40	0	0	0	0
Milk and milk products	3	20	9	46.6	1	6.6	2	13.3
Fruits	2	13.3	4	26.6	7	46.6	2	13.3

Roots and tubers	13	86.6	2	13.3	0	0	0	0
Green leafy vegetables	3	20	8	53.3	4	26.6	0	0
Other vegetables	8	53.3	5	33.3	2	13.3	0	0
Sugar and jaggery	6	40	7	46.6	1	6.6	1	6.6

Table 5: Consumption of food intake by girls age (10-12 year)

Food stuffs (gm)	Every day		2-4 days		Occasionally		Never	
	No. of female (n=15)	Percent %	No. of female	Percent %	No. of female	Percent %	No. of female	Percent %
Cereals	15	-	-	-	-	-	-	-
Pulses	6	40	7	46.6	2	13.3	0	0
Milk and milk products	2	13.6	7	46.6	4	26.6	2	13.3
Fruits	1	6.6	4	26.6	7	46.6	3	20
Roots and tubers	11	73.3	3	20	1	6.6	0	0
Green leafy vegetables	2	13.6	6	40	5	33.3	2	13.6
Other vegetables	8	53.3	4	26.6	3	20	0	0
Sugar and jaggery	2	13.3	9	60	4	26.6	0	0
Fats and oil	5	33.3	6	40	3	20	1	6.6

Table no. 4 and 5 shows that cereals were consumed daily by all school children, about 68% of them reported the consumption of rice. Frequency of rice consumption by subjects was either daily or four to five days in a weak. Srihari *et al.,* (2007) [15] assessed the nutritional status of school children from middle and high income families in five cities of India and found wide variation in anemia (19-88 percent) and the prevalence of overweight and obesity were 8.5 percent to 29 percent and 1.5 percent to 7.4 percent respectively.

Among pulses legumes only half of the respondents reported intake of 60 percent of boys and 40 girls consume pulses daily and 40 percent boys consume 2-3 days in a weak respectively. 15 percent black gram, 22 percent of kabuli chana, 23 percent of lentil rajmah and soyabeans were consumed occasionally by 23 and 16 percent of the respondents, respectively. Among the root and tubers potato and onion were consumed by all school children most of them reported its consumption daily 86.6 percent boys consume daily and 13.3 percent boys consume 2-4 days in a weak. sweet potato and potato were consumed 18.3 and 62 percent respectively raddish and carrot were reported to be consumed by all respondents, majority of the respondents consumed them weekly, followed by twice in a week.

Green leafy vegetables are consume 20 percent of boys and 13.6 girl daily and other vegetables are consumed daily by boys 53.3 percent and 53.3 percent by girls 2-34 days respectively.

Milk and milk products are consumed by boy and girls are 20 percent and 6.6 percent respectively.

Table 6: The average nutrients intake of boys and girls respondents (10-12 years)

		Boy (n=15)			Girl (n=15)		
Nutrient	RDA	Mean nutrient intake(n=15)	%RDA	RDA	Mean nutrient intake(n=15)	%RDA
Energy (kcal)	2190	1992.067	90	2010	1841.733	91
Protein (g)	39.9	34.43	86	40.4	31.71333	78.4
Fat (g)	35	31.71333	88	35	30.83333	85.71
Calcium(g)	800	611.8	76.3	800	632.3333	79
Iron	21	18.68667	88.45	27	22.64	81.4
Vit. A	600	517.0667	86.17	600	576.4667	96

*Sources***:** ICMR, 2010

Table 6 shows that after comparing the average nutrients intake of respondents with ICMR RDA (2010) was observed that average intake of energy is 1992 kcal in boys and 1841 kcal energy intake by girls respectively. Protein is consumed 86 percent and 78.4 percent by boys and girls respectively. Calcium, vitamin A and, β carotene intake was found less than the RDA but energy, but among these energy and vitamin A were higher than other nutrient.

Conclusion
Anthropometric measurements of the school going girls of Prathmik Vidyala Champatpur village of Allahabad district was significantly lower than the reference value. Many clinical symptoms of multi nutrient deficiency were clearly visible from the nutrient deficiency clinical assessment of the subjects under study. Results of the study clearly reveal the need to impart the nutrition education to the mothers of the subjects to enable them to know about low cost and nutritious sources of food in their diet so they can help their children to consume appropriate foods. The results of the present study are 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, observed the nutritional status of Mid-Day Meal beneficiaries both boys and girls were lower than the ICMR, RDA (2010) because of poor economic condition and indicate that there was no good impact of Mid-Day Meal consumption on the nutritional status of the school going children under study. The nutrient content of Mid-Day Meal which was provided by the government schools were found is higher in macro nutrients like energy, protein, fat, carbohydrate and calcium.

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