

A COMPARATIVE STUDY ON MID-DAY MEAL AND NON-MID-DAY MEAL BENEFICIARIES OF BUDGAM DISTRICT

NAZNI P^{1*}, ABDUL QAYOUM LONE²

¹Department of Clinical Nutrition and Dietetics, Periyar University, Salem, Tamil Nadu, India. ²Department of Food Science and Nutrition, Periyar University, Salem, Tamil Nadu, India. Email: naznip@gmail.com

Received: 27 February 2017, Revised and Accepted: 07 March 2017

ABSTRACT

Objective: The present research has been conducted with the objectives of comparing the anthropometric measurements, intellectual, and social development of mid-day meal (MDM) and non-MDM (NMDM) beneficiaries of Budgam district, Kashmir province of Jammu and Kashmir state.

Methods: A total number of 62 of each beneficiary from both MDM schools and NMDM schools children under the age group of 6 years were included in this cross-sectional study. The anthropometric measurements such as weight, height, and mid-upper arm circumference (MUAC) were recorded for each student. The various intellectual abilities studied in this research paper were verbal, word, numerical, space, memory, perceptual, and reasoning. The social behaviors such as competition, cooperation, leadership, sympathy, dependency, aggression, negativism, and jealous were studied.

Results: The results of the study revealed that there was a significant difference ($p < 0.001$) between the anthropometric measurement of MDM and NMDM beneficiaries. The NMDM beneficiaries have better development in terms of height and MUAC when compared to MDM beneficiaries. No such significant differences were found in intellectual and social development between these two groups.

Conclusion: Results from his research findings concluded that the possible effects of the MDMs on anthropometric measurements, intellectual, and social development of the school children are very less. The reason could be irregular attendance of children in school, less amount of MDM, poor quality of food items in MDMs, less number of appointed teachers, combined teaching of different standard, and lack of classroom. All these parameters need to be further improved and strengthened to fill the nutrient gaps to have a positive impact of MDMs on school-going children.

Keywords: Mid-day meal, Non-mid-day meal, Anthropometric measurements, Intellectual abilities and social behavior.

INTRODUCTION

The mid-day meal (MDM) program in India was first introduced in the year 1925 for disadvantaged children of Madras Municipal Corporation. At a national level, the scheme was introduced in the year 1995 by the Ministry of Human Resource Development, Department of School Education, and Literacy by the name National Programme of Nutritional Support to Primary Education (NP-NSPE) as a centrally sponsored scheme. The objectives of this program were enhancing school enrollment, student retention, improving student attendance, and improving nutritional status of children [1,2]. The NP-NSPE was revised in September 2004. At present, the NP-NSPE is the world's largest school feeding program reaching out to about 12 crore children in over 9.50 lakh schools across the country [1].

Children are the most vulnerable segment that suffers from various kinds and grades of malnutrition and nutritional deficiency. Childhood inadequacies will certainly have irreversible and serious consequences in the adulthood. Undernutrition during any period of childhood, even for relatively short-term episodes can have negative effects on the intellectual and social development that leads to poor school performance among children [3]. National Nutrition Monitoring Bureau (NNMB) [4] indicate that about 70% of the children are undernourished, and there is about 30% deficit in energy consumption and over 75% of the children have dietary micronutrient deficit about 50%.

The Government of India after the independence started various nutritional supplementation programs to uplift the nutritional status of the children and community as whole [5]. Among them, the NP-NSPE popularly known as MDMs scheme is meant for school-going children. The objective of this scheme was to give boost to universalization of primary education and to impact the nutrition of students in primary classes [6].

The MDMs is also called the school lunch or school meal program. As the name indicates the children attending the elementary section of school are the chief beneficiaries. Supply of one supplementary meal is the main purpose of this program [7]. The MDM scheme has been revised in 2004, and as per the Supreme Court directive, it envisages provision of cooked, nutritious MDM to primary and secondary school children. Importantly, it mentions about setting up of an appropriate mechanism for quality checks [8]. The MDMs scheme was launched country wide by the Ministry of Human Resource Development (Department of Education) with effect from August 15, 1995 for the benefit of students in primary class 1st-5th in schools run or funded by the Government or local bodies throughout the country under the Employment Assurance Scheme [9].

A world bank report states that India has 42% of the world's underweight children. According to the studies by NNMB, National Institute of Nutrition and Indian Council for Medical Research, 58.6% of the children of the age group 6-9 years and 77.9% of the children of the age group 10-13 are underweight. If the mild undernutrition is added to underweight, this number increases to 94.1% and 96.4%, respectively. 30.1% of all children of 10-13 age group are severely underweight. The school dropout rate is as high as 60% [10].

The medical officer of the local primary health center is expected to periodically undertakes the health checkups of the children and maintains the records of height, weight, and clinical status of the children. The state of Jammu and Kashmir implemented the MDMs scheme throughout the state from October 02, 1997. Initially, the students were distributed "Tahir" boiled and fried rice with onion and turmeric. From April 2005, cooked meals according to the menu that is based on children's preference and local availability of raw materials are given to the children [11]. The school-age children are in the phase

of rapid growth and development, and hence, their nutritional needs are considerable. Thus, the present study was undertaken with the objective to compare the anthropometric measurements, intellectual development, and social development between MDM and non-MDM (NMDM) school-going children in Budgam district of Jammu and Kashmir province.

METHODS

The methodology adopted for the study was a cross-sectional study conducted in the Kashmir province of Budgam district of Jammu and Kashmir state. Ten schools were selected in Budgam district, i.e., 5 MDMs schools and 5 NMDMs schools. A total number of 62 beneficiaries from MDM schools and 62 from NMDM schools underneath 6 years of age group were selected.

Research design

The present study is a comparative study. The comparative method is a scientific method, in which comparative data are collected with the specific purpose, analyzed and specific conclusions were derived from the results [12]. In this study, a comparison is made between the MDM beneficiary preschool children and NMDM beneficiary preschool children.

Tools used

A self-constructed questionnaire for an individual child was framed to get the anthropometric measurements, intellectual development, and social development. The criteria assessed under each category are as follows:

Anthropometric measurements

Physical development applies to all aspects of growth of human organism. Anthropometric measurements such as weight, height, and mid-upper arm circumference (MUAC) were recorded for each child.

Intellectual development

Reasonable learning opportunities provided during the preschool years are crucial for the development of intelligence. By assessing the intellectual development, one can foretell the educational outcomes and individual performance in the future [13]. The various intellectual behaviors such as verbal, word, numerical, space, memory, perceptual, and reasoning were assessed in this study.

Social development

Social development is the acquisition of the ability to behave in accordance with social expectations [14]. A study in the social development during preschool years will give a glimpse of how sociable the child is and how he is likely to be in the future [15]. The criteria assessed in this study to evaluate social development were competition, cooperation, leadership, sympathy, dependency, aggression, negativism, and jealous.

Statistical analysis

The data collected were coded and tabulated according to the exhaustive categories in the pro forma and were then subjected to statistical analysis, i.e., mean, standard deviation, and t-test.

RESULTS AND DISCUSSION

Anthropometric measurements of MDM and NMDM beneficiary preschool children

Afridi and Farzana (2010) [15] In this study, NMDM subjects showed mean height of 1.23 cm than MDM (1.18 cm) subjects. The school-age children are in the phase of rapid growth and development, and hence, their nutritional needs are considerable. The growth refers to the natural changes in size resulting from multiplication of cells or increase in intercellular substances [16]. The results on the anthropometric measurements of MDM and NMDM beneficiary preschool children were given in Table 1. The above data revealed that the MDMs program

does not have a very positive impact on the nutritional status of the children when compared to NMDM program. The quantity and the quality of the MDM supplements need to be further improved to fill the nutrient gaps and should be implemented in a decentralized manner, i.e., the areas where the children are mostly from the above poverty line households need the nutritional support and where most of the children are from below poverty line [17].

Intellectual development of MDM and NMDM beneficiary preschool children

The intellectual ability or mental development of the MDM and NMDM preschool children were assessed and tabulated in Table 2. Comparing the results, it was observed that there is no significant differences ($p > 0.001$) between MDM and NMDM preschool children in all aspects of intellectual development except memory and reasoning.

According to Thurstone [18], mental development is characterized by such abilities such as verbal, word, numerical, space, memory, perceptual, and reasoning. The overall intellectual ability of MDM and NMDM children aged 6 years were developed to some extent. As the age increases, the increase in the intellectual ability will be gradual and steady [19]. The same results were also more or less reliable the work done by Anandhasayanam *et al.*, 2015 [20].

Table 1: Comparison on anthropometric measurements between MDM and NMDM beneficiary preschool children

Anthropometric measurements	(n=62) Mean±SD		t value
	MDM	NMDM	
Height (cm)	1.18±7.13	1.23±4.49	-4.343**
Weight (kg)	20.81±3.25	22.62±2.69	-3.091 ^{NS}
MUAC (cm)	15.04±1.08	15.91±0.90	-4.310**

**Significant at 1% level ($p < 0.001$), NS: Not significant. MDM: Mid-day meal, NMDM: Non-mid-day meal, MUAC: Mid-upper arm circumference, SD: Standard deviation

Table 2: Comparison on intellectual development between MDM and NMDM beneficiary preschool children

Intellectual development	(n=62) Mean±SD		t value
	MDM	NMDM	
Verbal	8.79±4.67	11.33±3.34	-3.528 ^{NS}
Word	14.53±3.49	15.48±2.64	-1.780 ^{NS}
Numerical	7.69±4.19	9.09±3.98	-1.885 ^{NS}
Space	6.48±2.64	7.58±2.28	-2.599 ^{NS}
Memory	7.79±2.72	11.22±2.96	-6.961**
Perceptual	6.01±3.98	8.06±3.68	-2.972 ^{NS}
Reasoning	1.93±1.63	3.82±2.19	-5.457**

**Significant at 1% level ($p < 0.001$), NS: Not significant, MDM: Mid-day meal, NMDM: Non-mid-day meal, SD: Standard deviation

Table 3: Comparison on social development between MDM and NMDM beneficiary preschool children

Social development	(n=52) Mean±SD		t value
	MDM	NMDM	
Competition	6.56±1.16	6.50±1.09	0.316 ^{NS}
Cooperation	8.16±1.24	7.93±0.90	1.131 ^{NS}
Leadership	3.88±1.04	4.00±0.97	-0.639 ^{NS}
Sympathy	6.08±0.98	6.32±0.95	-1.340 ^{NS}
Dependency	8.09±1.70	7.62±1.53	1.473 ^{NS}
Aggression	7.98±1.39	8.25±1.07	-1.315 ^{NS}
Negativism	7.96±1.11	8.27±1.08	-1.466 ^{NS}
Jealous	9.33±1.08	9.11±1.13	1.027 ^{NS}

NS: Not significant, MDM: Mid-day meal, NMDM: Non-mid-day meal, SD: Standard deviation

Social development of MDM and NMDM beneficiary preschool children

Hurlock [21] defines social development as the ability to behave in accordance with social expectations. By considering the views [22], the present study considered eight aspects of social development such as competition, cooperation, leadership, sympathy, dependency, aggression, negativism, and jealous. The entire development of the child is very much influenced by its social contact. The nature of experiences makes the child positive or negative in his or her social behavior [23,24]. The results on the social development between MDM and NMDM beneficiary preschool children were given in Table 3. The above data conclude that there are no significant differences ($p>0.001$) between MDM and NMDM beneficiaries in respect to social behavior.

CONCLUSION

The NMDM beneficiaries have shown better development in terms of height and MUAC when compared to MDM beneficiaries. The possible effects of the MDMs on anthropometric measurements, intellectual, and social development of the school children are very less. The reason could be irregular attendance of children in school, less amount of MDM, poor quality of food items in MDMs, less number of appointed teachers, combined teaching of different standard, and lack of classroom. All these parameters need to be further improved and strengthened to fill the nutrient gaps to have a positive impact of MDMs on school-going children.

REFERENCES

- National Programme of Nutritional Support to Primary Education, 2006. Mid-Day Meal Scheme. Guidelines Ministry of Human Resource Development, Department of School Education and Literacy. September. 2006.
- Park K. Textbook of Preventive and Social Medicine. 19th ed. Jabalpur: M/S Banarsidas Bhanot; 2005. p. 465, 527-8.
- Chhabra P, Garg S, Sharma N, Bansal RD. Health and nutritional status of boys aged 6 to 12 years in a children observation home. *Indian J Public Health* 1996;40(4):126-9.
- National Nutrition Monitoring Bureau (NNMB), 2000. Report of Repeat Surveys, (1988-90). National Institute of Nutrition, ICMR. 1991.
- Misra SN, Behera M. Child nutrition and primary education: A comparative study of mid day meals program in Orissa and Tamil Nadu. *Indian J Soc Devel* 2003;3(2):267-99.
- Laxmaiah A, Sarma KV, Rao DH, Reddy G, Ravindranath M, Rao MV, *et al.* Impact of mid day meal program on educational and nutritional status of school children in Karnataka. *Indian Pediatr* 1999;36(12):1221-8.
- Afridi F. Midday meals: A comparison of the financial and institutional organization of the program in two states Karnataka and Madhya Pradesh. *Econ Polit Wkly* 2005;40(15):9-15.
- Sankhala A, Sankhala AK, Bhatnagar B, Singh A. Impact of intervention feeding trial on nutritional status of 6-10 year old malnourished children. *Anthropologist* 2004;6(3):185-9.
- Sunita K, Jain R. Assessment of the nutritional status of the children from rural Bihar. *Indian J Nutr Diet* 2005;42(7):326-34.
- India and United Nations - Human Rights. Archived from the original on 2 May. 2010. <http://www.ngo-monitor.org/>. [Last retrieved on 2013 Jul 28].
- Agarwal S, Shah P. Pilot study 5 Rajasthan India: An Assessment of Mid Day Meals CUTS centre for Consumer Action Research and Training Hyderabad, India. March. 2007.
- Bajpai S. Mid day meals in primary schools. *Yojana Issue Child Rights* 1985;52:36-8.
- Oninla SO, Owa JA, Onayade AA, Taiwo O. Comparative study of nutritional status of urban and rural Nigerian school children. *J Trop Pediatr* 2007;53(1):39-43.
- Mian RM, Ali M, Ferroni PA, Underwood P. The nutritional status of school aged children in an urban squatter settlement in Pakistan. *Pak J Nutr* 2002;1(3):121-3.
- Sethi B. Mid Day Meals Program and its Impact in Improving Enrolment: A Study in Respective of Raygada District of Orissa; 1999.
- Hurlock EB. Child Growth and Development. 5th ed. New Delhi: Tata McGraw Hill Publishing Company Ltd.; 1981. p. 200.
- Shariff ZM, Bond J, Johson N. Nutritional status of primary school children from low income households in Kuala Lumpur. *Malays J Nutr* 2000;6(1):17-32.
- Thurstone S. Multiple Theory of Intelligence in his Primary Mental Abilities. Chicago: University of Chicago Press; 1941. p. 20.
- Bhatia HR, Tanden RK, Somvanshi R, Saxena JK. Moradabad M, construction and standardisation of performance tests of intelligence for ages. *J Development Stud* 1990;4(5):3-13.
- Anandhasayanam A, Jimshad MI, Kannan S, Chander JS. Perception of paramedical students in a teaching institute on BMI, diet and social habits-a cross sectional survey. *Int J Pharm Pharm Sci* 2015;7(10):226-31.
- Hurlock EB. Developmental Psychology. New Delhi: Tata McGraw Hill Publishing Company Ltd.; 1990. p. 96.
- Thompson GG. Child Psychology. Delhi: Surjeet Publications; 1996. p. 457.
- Jain J, Shah M, Sahyog SP. Mid-Day Meal in Madhya Pradesh. Bagli: Samaj Pragati; 2005.
- Guha P, Talukdar A, De A, Bhattacharya R, Pal S, Dasgupta G, *et al.* Behavioral profile and school performance of thalassaemic children in Eastern India. *Asian J Pharm Clin Res* 2013;6(2):49-52.