

## ORIGINAL ARTICLE

**Impact assessment of nutritional education and motivation of mothers in food supplementation of malnourished 2-5 years old in an urban slum of Ludhiana: A field trial**Ragini<sup>1</sup>, Paramita Sengupta<sup>2</sup>, A I Benjamin<sup>3</sup><sup>1</sup> Final Year PG resident, <sup>2,3</sup> Professor, Department of Community Medicine, CMC Ludhiana, India

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**Abstract**

**Background:** Malnutrition in all its forms remains a major public health problem throughout the developing world and is an underlying factor in child mortality. India is home to 40 percent of the world's malnourished children. 2 million children die in India, accounting for one in five child deaths in the world. More than half of these deaths could be prevented if children were well nourished. **Objectives:** To assess the impact of maternal education and motivation in the nutritional supplementation of malnourished 2-5 years olds in an urban slum area of Ludhiana. **Methodology:** A community-based interventional study was carried out in 101 eligible children in an urban slum of Ludhiana. The mothers were given nutritional and health education and were also taught how to prepare different types of low cost energy-dense supplementary foodstuffs for the children. The results were seen in terms of continuation of the practice after educating and motivating the mothers of malnourished under-fives to provide the supplementary nutrition. The data was analyzed using Epi-Info version-6 software and SPSS version 16. **Result:** Post intervention showed that number of days in a month the mother gave nutritional supplement declined from mean 17.5 days to 10.5 days from first to sixth month follow up. **Conclusion:** Nutritional status of the children improves with continued nutrition and health education of the mothers.

**Key Words**

Childhood malnutrition; Nutrition education; Urban slums; Nutrition supplementation.

**Introduction**

Malnutrition in all its forms remains a major public health problem throughout the developing world. It is an underlying factor in over 50% of the 10-11 million deaths in under 5 years of age who die each year from preventable causes. [1] More than 70% of children with protein-energy malnutrition live in Asia. [2] India is home to 40 percent of the world's malnourished children. Every year, 2 million children die in India, accounting for one in five child deaths in the world. More than half of these deaths could be prevented if children were well nourished. [3] Government of India has 2 major large-scale national programs aimed at providing supplementary nutrition to children. Mid Day Meal

(MDM) Program and ICDS Program. MDM Program benefits the over-5 years old. ICDS Program has limited reach and coverage. Educating and motivating mothers to provide supplementary nutrition to their children may be the most practical strategy to maintain effective supplementation, but there is limited data about its feasibility and sustainability. The Goal-1 of MDG is to halve the prevalence of underweight children under five years of age in the period 1990-2015.[4]

**Aims & Objectives**

To assess the impact of maternal education and motivation in the nutritional supplementation of malnourished 2-5 years olds in an urban slum of Ludhiana.

## Material and Methods

**Study design:** A Community based Interventional study. **Study settings:** - An urban slum in the field practice area of the Department of Community Medicine, Christian Medical College, Ludhiana, Punjab. **Study population:** - Children between age group 2-5 years who reside in this area. **Study Sample:** - 101 malnourished children between age group 2-5 years. **Study period:** -12 months. **Study tools and data collection:** Approval of the institutional ethics committee was obtained prior to the study. The malnourished aged 2-5 years were listed from the available database of the department. The slum, Premnagar has a population of 10,206. In this population there were 112 malnourished 2-5 years old children. The mothers of 101 children consented to join the study, and were enrolled. A pretested questionnaire was used to collect data. The respondents were the mothers of the children. At the baseline level, the anthropometric indices of the children measured. The height/length was measured to the nearest 0.5 cm using stadiometer and weight was measured with light clothing using electronic scales. The median weight-or-age, height-for-age and weight-for-height of the NCHS standard were used as the reference anthropometric indices for the study. [5] Underweight was used here to indicate children whose weight was < 75 % of the median weight-for-age which is equivalent to 2<sup>nd</sup> and 3<sup>rd</sup> degrees of malnutrition according to Gomez classification. [6] The study was conducted in two stages of 6 months each. The first stage was educational and motivation phase and the second stage was stage for sustainability. The mothers of the recruited children were given nutrition and health education sessions of one hour each per day i.e., 3 hours of education in the first week of every month in the following manner: Monday- 35 mothers, Tuesday- 35 mothers and Wednesday- 34 mothers. The educations were given with the aid of video clips, flip charts, posters and chalk and talk method. They were also taught to prepare different types of food supplements from locally available materials by verbal methods. **Outcome measurements:** Weight gain over 3-monthly periods, Increase in height over 3-monthly periods, Increase in the MUAC over 3-monthly periods, Average number of days in a month the mother gave the child the supplementary nutrition advised, at 3 months and 6 months after the

educational and motivational stage. **Data analysis:** The data were analyzed using Epi-Info version-6 software and SPSS version 16. Statistical analysis was done using simple proportions and percentages. Repeated measures ANOVA, Paired t-test and Chi square test were applied where appropriate. The mean and standard deviation of the improvement in the anthropometric indices were calculated every 3 months. The sustainability of the intervention was assessed in terms of the average number of days per month the nutritional supplementation was given to the child by the mother, at 3 monthly intervals after the end of intervention.

## Results

Children in the 24-35 months are most prone to malnourishment. Out of that 58.3% were in the 1<sup>st</sup> degree. The maximum number of 2<sup>nd</sup> degree children were < 23 months old. Females were more malnourished than males. 75 Mothers were in 20-29 age group. Only one mother was graduate and her child was 1<sup>st</sup> degree malnourished. Most of the mothers were high school educated. Most of the families were upper lower class. Post-intervention weight, height and mid upper arm circumference gain were statistically significant ( $p=0.000$ ). Also showed that number of days in a month the mother gave nutritional supplement declined from mean 17.5 days to 10.5 days from first to sixth month follow up.

The findings indicate that though the nutritional status of the child improved, the effects of health education and motivation in terms of compliance declines in the absence of continued reinforcement.

## Discussion

Our study shows a significant improvement in the nutrition status of the study children with maternal education and supplementary nutrition. Roy SK et al [7] did a prospective randomized trial in Bangladesh which showed that intensive nutrition education significantly improves the status of moderately-malnourished children with or without supplementary feeding.

In the present study mean weight gain in each quarter was found to be highly significant ( $P=0.000$ ). Singh AS et al [8] in a randomized open label, controlled trial which showed that the mean (SD) weight gain at 3 months was higher in the RUTF group ( $P = 0.047$ ).

A study conducted by Banerjee B et al [9] in West Bengal found that nutrition education to mothers

have effect on weight gain of their children. Our study also showed significant weight gain in children after nutritional education to mothers.

### Conclusion

Our study shows that health education and motivation of mothers results in an improvement of the nutritional status of malnourished children. However, the effects of health education and motivation in terms of compliance decline in the absence of continued reinforcement.

### Recommendation

Educating and motivating mothers to provide supplementary nutrition to their children may be the most practical strategy to maintain effective supplementation. However, such health education and motivational activity needs to be continued for compliance to be maintained.

### Limitation of the study

There were no controls in the study.

### Relevance of the study

Nutritional and Health education should be a continued process and must be implemented by health workers through frequent meetings with mothers of malnourished children.

### Authors Contribution

R: carried out the data collection, conducted the literature review, data analysis and manuscript preparation. PS: conceptualized the study design and was responsible for manuscript preparation. AIB: contributed to data analysis and interpretation. The final manuscript was read and approved by all the authors.

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### References

1. Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? The Lancet2003; 36: 2226-34.
2. WHO. Turning the tide of malnutrition: responding to the challenge of the 21st century. Geneva: WHO, 2000 (WHO/NHD/00.7).Available from: [http://www.who.int/water\\_sanitation\\_health/diseases/malnutrition/en/](http://www.who.int/water_sanitation_health/diseases/malnutrition/en/) [accessed on 30/7/2012].
3. Braun VJ, Ruel M, Gulati A. Accelerating progress toward reducing child malnutrition in India. A concept for action. International Food Policy Research Institute. 2008. Available from : [www.ifpri.org/sites/default/files/.../indiachildmalnutrition.pdf](http://www.ifpri.org/sites/default/files/.../indiachildmalnutrition.pdf). [accessed on 16.8.2012.]
4. Sunder Lal, Adarsh, Pankaj. Textbook of Community Medicine: Preventive and Social Medicine. 3rd edition. New Delhi: CBS Publishers and Distributers Pvt. Ltd; 2011, p-647.
5. World Health Organization multi-centre growth reference study group. WHO child growth standards: Length/height for-age, weight-for-age, weight-for-length, weight-for-height and body mass index for-age: Methods and Development. Geneva WHO 2006.
6. Gomez F. Mortality in second and third degree malnutrition. Journal of Tropical Pediatrics 1956; 2: 77-83.
7. Roy SK, FuchsGJ, MahmudZ. Intensive Nutrition Education with or without Supplementary Feeding Improves the Nutritional Status of Moderately-malnourished Children in Bangladesh. Journal of Health, Population and Nutrition 2005; 23 (4): 320-30.
8. Singh AS, Kang G, Ramachandran A, Sarkar R. Locally Made Ready-to-Use Therapeutic Food for Treatmentof Malnutrition. Indian Pediatrics2010; 47.
9. Banerjee B, Mandal ON. An Intervention Study in Malnutrition among Infants in a Tribal Community of West Bengal. Indian Journal of Community Medicine 2005;30(1).
10. Bhalwar R Parashar SSL. Family Health History & Individual Medico-Social history-taking. In: Vaidya R, Tilak R, Gupta R, Kunte R, editors. Textbook of Public Health & Community Medicine, AFMC in Collaboration with WHO, India Office, Delhi: 2009; 613-8.

### Tables

TABLE-1 SOCIO DEMOGRAPHIC PROFILE OF CHILDREN UNDER STUDY

Variables	Malnutrition Grade				P value ( $\chi^2$ value)
	First degree	Second degree	Third degree	Total	
1] Sex	Male	29 [60.4%]	18 [37.5%]	1 [2.0%]	0.44 (0.59)
	Female	28 [52.8%]	24 [45.2%]	1 [1.9%]	
2] Age of the child	12-23 m	8 [32%]	17 [68%]	0	

	<b>24-35 m</b>	21 [58.3%]	14 [38.8%]	1 [2.7%]	36	0.02 (9.23)
	<b>36-47 m</b>	18 [72%]	7 [28%]	0	25	
	<b>48-59 m</b>	10 [66.6%]	4 [26.6%]	1 [6.6%]	15	
<b>3] Mother's age at birth of the child</b>						
	<b>&lt; 21 years</b>					
	<b>21-30 years</b>	1 [100%]	0	0	1	0.54 (0.37)
	<b>&gt; 30 years</b>	40 [54%]	32 [43.2%]	2 [2.7%]	74	
		16 [61.5%]	10 [38.4%]	0	26	
<b>4] Mother's education</b>						
	<b>Illiterate</b>	13 [48.1%]	14 [51.8%]	0	27	0.59 (1.04)
	<b>Middle school</b>	18 [60%]	10 [33.3%]	2 [6.6%]	30	
	<b>High school &amp; above</b>	26 [59%]	18 [40.9%]	0	44	
<b>5] Mother's occupation</b>						
	<b>Not working</b>	45 [57.6%]	31 [39.7%]	2 [2.5%]	78	0.96 (0.00)
	<b>Working at home</b>	11 [57.8%]	8 [42.1%]	0	19	
	<b>Working outside</b>	1[50%]	1[50%]	0	2	
<b>6] Socioeconomic status</b>						
	<b>Class I</b>	1 [100%]	0	0	1	0.33 (3.37)
	<b>Class II</b>	2 [50%]	2 [50%]	0	4	
	<b>Class III</b>	16 [51.6%]	15 [48.3%]	0	31	
	<b>Class IV</b>	29 [53.7%]	23 [42.6%]	2 [3.7%]	54	
	<b>Class V</b>	9 [81.8%]	2 [18.1%]	0	11	

\* The Socio-economic status has been calculated using BG Prasad's Scale.[10]

**TABLE-2 ANTROPOMETRIC MEASUREMENTS OVER 3 MONTHLY PERIOD IN THE STUDY CHILDREN**

	Baseline entry (MEAN±SD)	At 6 months (MEAN±SD)	At 9 months (MEAN±SD)	At 12 months (MEAN±SD)	P value (Repeated measures ANOVA)
<b>1] Height (cm)</b>	81.03±8.87	82.27±8.71	85.11±8.72	86.12±8.58	0.000
<b>2] Weight (gm)</b>	9657.43±1639.28	10093.07±1481.50	10909.90±1635.26	11648.51±1662.38	0.000
<b>3] Mid upper arm circumference (mm)</b>	125.61±7.06	127.98±6.89	131.28±7.62	132.79±7.35	0.000

**Figure**

**SHOWING NO OF DAYS IN A MONTH THE MOTHER GAVE NUTRITIONAL SUPPLEMENT AFTER INTERVENTIONAL PHASE**

