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A comparative analysis of nutritional status of infants: Collision of nutrition education

Dr. Sarojini Jamadagni and Dr. Sunita Madaan

Abstract
The objective of this study is to assess the significant difference of imparting nutrition education to mothers on nutritional status of infants. Multistage sampling technique was used for the selection of the sample. Five urban slums of Kurukshetra District of Haryana were selected on random basis. Total 286 mothers of infants (0-24 months) were selected purposively on random basis. Data was collected using a pretested interview schedule and observation checklist. The length/height was taken by infant meter for small infants and ordinary tape for infants above 12 months (before imparting NE and after imparting NE). Nutritional Education Intervention Programme (Six lesson plans) was used to educate mother over the period of eight months. Percentage, Arithmetic mean, standard deviation, paired t-test were used. After statistical analysis there was a significant difference between length/height of male and female infants and it was improved after imparting NE when compared with WHO standards.

Keywords: NE –nutrition education, infant

Introduction
Several dietary and clinical surveys carried out in different parts of our country have revealed that malnutrition is rampart. Nutrition education assumes special significance in the Indian context because the problem of malnutrition in India is mainly due to ignorance, poverty and lack of knowledge regarding the value of foods. Dietary practices especially in children, pregnant and lactating mothers, are often governed by social taboos based on food fads. Nutrition Education is the foundation for improvements in the dietary habits of this vulnerable set of population. Rigid dietary habits need correction and only systematic nutrition education programmes can bring changes in dietary habits and creating nutrition awareness entirely depends on education and training.

Reasons for Imparting Nutrition Education to Mother
- Evaluate the personal nutritional intake
- Persuade everyone to make the correct choices of foods for the family.
- Use appropriate methods of cooking to get optimum nutrition.
- Make judious use of local food resources.
- Discourage food wastage.
- Promote the health of Infants.

Assessment of nutritional status can be done by anthropometric data. If infants and children do not get sufficient food they fail to grow properly.
Nutritional anthropometry is measurement of human body at various age and levels of nutritional status. It is based on the concept that an appropriate measurement should reflect any morphological variation occurring due to a significant functional physiological change. For example, a significant reduction in fat fold measurement reflects a shift in the individual's energy balance.

Methodology
Multistage sampling technique was used for the selection of the sample. Five urban slums of Kurukshetra District of Haryana, India were selected on random basis. Total 286 mothers of infants (0-24 months) were selected purposively on random basis.

Data was collected using a pretested interview schedule

Nutritional Education Intervention Programme

The mothers of infants received nutrition education over a period of 8 months. The nutrition education intervention programme covered five lessons and each topic was presented twice. Two related topics were presented on the same day with a break of five minutes in between presentations. The care givers and mothers assembled in group of 2-8 respondents or as per suitability of respondents at nearby areas on the day of nutrition education, as per the appointment made during the prior visit.

Six lesson plans were used

1. Keeping food safe and clean
2. Low cost notorious foods.
3. Balanced diet
4. Guidelines for mothers at the time of weaning.
5. Some Do's and Don'ts for mothers.
6. Imparting nutrition education through picture.

Height

The height of an individual is influenced both by genetic (hereditary) and environmental factors. The maximum growth potential of an individual is decided by hereditary factors while the environmental factors, the most important being nutrition and morbidity determine the extent of exploitation of that genetic potential. Inadequate dietary intake and/or infections reduce nutrient availability at cellular level resulting in growth retardation. During periods of severe deprivation, linear growth rate slow down and leads to stunting (short stature) in an individual. Thus stunting is a consequence of chronic deficiency.

Technique

For the infants below one year of age, infantometer was used for measuring length. Infant was made to lie down on infantometer with the head touching the fixed head piece, legs were extended fully by pressure on the knees and the movable sliding piece was allowed to touch the flat of the soles of the feet and then measurement was recorded.

Tape, reading was recorded to the nearest 0.5cm.

Interpretation

A vertical measuring tape was used for measuring the height for the infants above one year of age. The child was placed in standing position against the wall with bore feet on a flat floor but slightly apart at a 60^{o} angle that the weight is evenly distributed on both feet by touching heels, buttocks, shoulders and back of head against the wall with the help of flat object touching the top of head horizontally, a mark is made on the wall and with help of measuring tape.

The per cent level of height for age was calculated by comparing with WHO (World Health Organization) standards (2007) before and after imparting nutrition education.

Statistical Analysis

Percentage, Arithmetic mean, standard deviation, paired t-test were used

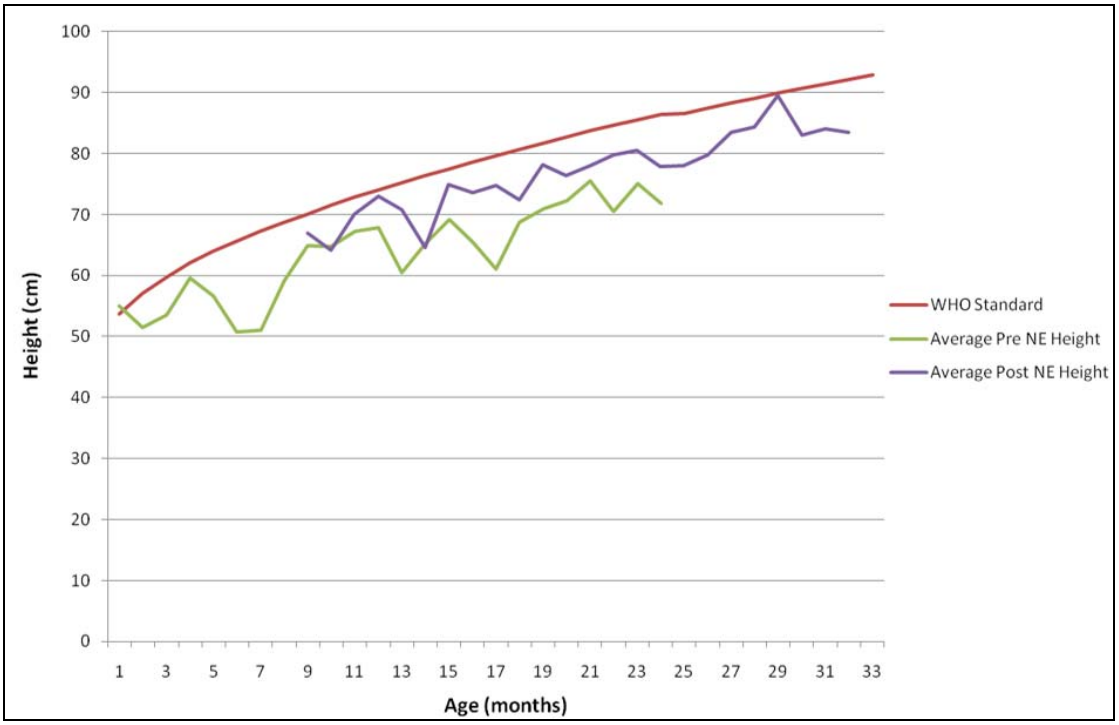
Results and Discussion

Table 1: Distribution of Female Infants according to Height/Length before and after imparting nutrition education as compared with WHO standards.

Before Imparting Nutrition Education					After Imparting Nutrition Education				Correlation	t	df	p
Age (months)	No.	Mean ±SD	WHO Std	Mean Height	Age (months)	Mean ± SD	WHO Std	Mean Height				
1	4	54.00 ±10.10	53.7	100.	9	66.25 ±8.66	68.7	96.43	.995	14.35	3	.001**
2	6	51.00 ±1.90*	57.1	89.31	10	64.17 ±4.31	70.1	91.54	.342	7.92	5	.001**
3	8	53.50 ±7.89	59.8	89.46	11	69.56 ±2.19	71.5	96.50	.720	7.00	7	.000**
4	5	60.60 ±3.85	62.1	97.58	12	73.20 ±1.30	72.8	100.54	.518	8.38	4	.001**
5	5	56.60 ±6.80*	64	88.43	13	70.00 ±6.28	74	94.59	.848	8.22	4	.001**
6	7	50.71 ±1.89*	65.7	77.18	14	64.64 ±4.55	75.2	85.95	.955	13.14	6	.000**
7	1	48.00	67.3	71.32	15	75.00	76.4	98.16				
8	9	59.00 ±7.05*	68.7	86.76	16	73.56 ±7.02	77.5	94.91	.827	10.56	8	.000**
9	5	64.80 ±3.27*	70.1	91.29	17	74.80 3.03	78.6	95.16	-.181	4.61	4	.010**
10	6	64.67 ±0.82*	71.5	90.44	18	72.42 ±2.62	79.7	90.86	-.437	6.20	5	.002**
11	11	67.27 ±4.29*	72.8	92.03	19	78.18 ±5.38	80.7	96.87	.729	9.78	10	.000**
12	5	67.80 ±6.91	74	91.62	20	76.40 ±6.50	81.7	93.51	.943	8.35	4	.001**
13	3	63.67 ±5.51*	75.2	84.66	21	78.00 ±6.93	82.7	94.31	.419	3.65	2	.068
14	4	65.13 ±8.41*	76.4	85.24	22	79.75 ±4.11	83.7	95.28	.941	6.16	3	.009**
15	8	69.06 ±6.88*	77.5	89.01	23	80.50 ±3.42	84.6	95.15	.842	7.35	7	.000**
16	4	65.50 ±4.20*	78.6	83.33	24	77.88 ±5.84	86.4	90.13	.907	9.21	3	.003**
18	6	65.50 ±3.27*	80.7	81.16	26	80.33 ±5.47	87.4	91.91	.559	8.01	5	.000**
20	3	72.33 ±3.79*	82.7	87.46	28	84.33 ±5.51	89.1	94.64	.999	12.00	2	.007**
21	2	75.50 ±9.19*	83.7	90.20	29	89.50 ±7.78	89.9	99.55	1.000	14.00	1	.045*
22	3	70.67 ±0.58*	84.6	83.53	30	82.67 ±1.15	90.7	91.14	.500	20.78	2	.002**
23	1	74.00	85.5	86.54	31	86.00	91.4	94.09				
24	6	71.83 ±1.47*	86.4	83.13	32	83.50 ±1.64	92.2	90.56	.703	23.60	5	.000**

** Significant at p<.01

* Significant at p<.05



Pre NE: Before Imparting Nutrition Education
Post NE: After Imparting Nutrition Education

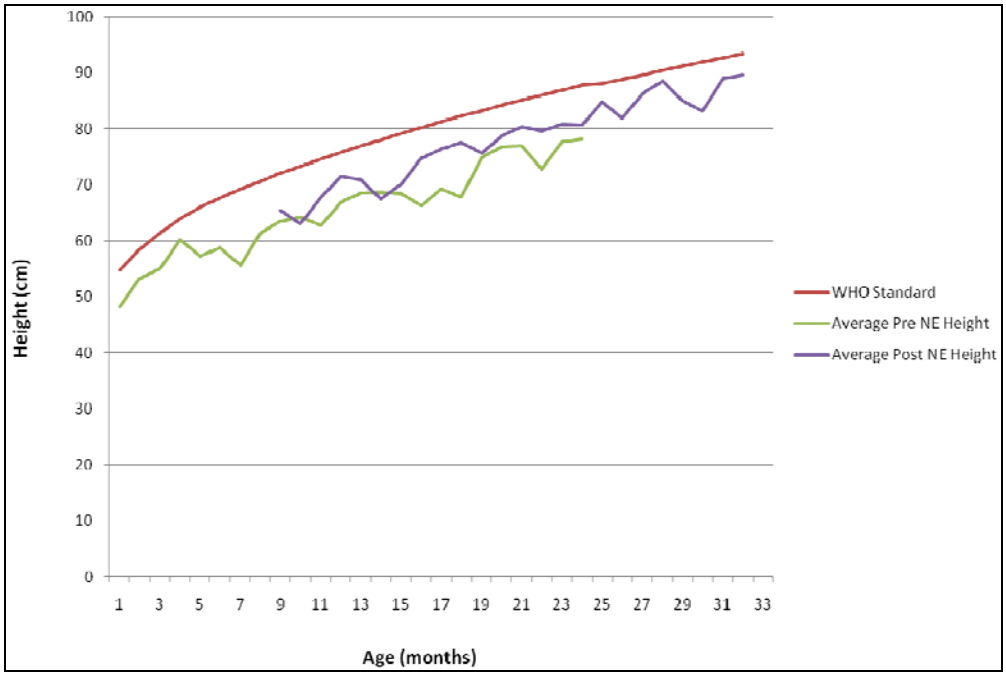
Fig 1: Distribution of Girls infants according to Height\Length before and after imparting nutrition education.

Table 1 & fig. 1 depicted that female infants falling in age group 2, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 months differ significantly from WHO standards according to their height/length. Change in mean height was analyzed for female the data indicate a positive improvement when there was compared with WHO standards. All this data was statistically analyzed for paired t-test the results indicated there was a significant difference between height/length of female infants before and after imparting nutrition education when compared with WHO standards.
Pre NE: Before Imparting Nutrition Education
Post NE: After Imparting Nutrition Education

Table 2: Distribution of Male Infants according to Height before and after imparting nutrition education as compared with WHO standards.

Before Imparting Nutrition Education					After Imparting Nutrition Education				Correlation	t	df	p
Age (months)	No.	Mean ±SD	WHO Std	Mean Height	Age (months)	Mean ±SD	WHO Std	Mean Height				
1	4	48.25 ± 2.63*	54.7	88.20	9	64 ± 7.39	72	88.88	.634	5.184	3	.014**
2	5	50.7 ± 1.3*	58.4	86.81	10	64.6 ± 6.43	73.3	88.13	.832	5.767	4	.004**
3	7	55 ± 3.83*	61.4	89.57	11	67.71 ± 3.86	74.5	90.80	.834	15.189	6	.000**
4	8	59.5 ± 4.5	63.9	93.11	12	71.63 ± 3.2	75.7	94.62	.203	6.901	7	.000**
5	9	57.22 ± 5.97*	65.9	86.82	13	71.33 ± 5.96	76.9	92.75	.847	12.845	8	.000**
6	14	58.79 ± 8.5*	67.6	86.91	14	71.93 ± 7.28	78	92.21	.649	7.339	13	.000**
7	8	55.38 ± 5.8*	69.2	80.02	15	70.25 ± 5.9	79.1	88.49	.673	8.887	7	.000**
8	11	61.27 ± 5.24*	70.6	86.78	16	74.68 ± 2.61	80.2	93.11	-.136	7.220	10	.000**
9	11	63.47 ± 4.65*	72	88.15	17	76.36 ± 3.23	81.2	94.03	.046	7.723	10	.000**
10	13	64.15 ± 5.16*	73.3	87.50	18	77.65 ± 3.15	82.3	94.34	.461	10.473	12	.000**
11	8	62.75 ± 12.57*	74.5	84.22	19	75.56 ± 7.88	83.2	90.80	.945	6.323	7	.000**
12	13	66.92 ± 3.17*	75.7	88.40	20	78.77 ± 4.3	84.2	93.55	.615	12.430	12	.000**
13	9	68.56 ± 1.94*	76.9	89.15	21	80.17 ± 1.58	85.1	94.20	.210	15.600	8	.000**
14	9	68.67 ± 6.16*	78	88.03	22	80 ± 4.58	86	93.02	.721	7.959	8	.000**
15	5	68.4 ± 5.27*	79.1	86.47	23	80.8 ± 6.38	86.9	92.98	.754	6.572	4	.003**
16	6	66.33 ± 11.55*	80.2	82.70	24	80.67 ± 6.68	87.8	91.87	.789	4.681	5	.005**
17	7	68.14 ± 7.08*	81.2	83.91	25	83.93 ± 5.89	88	95.00	.895	13.106	6	.000**
18	14	69.21 ± 5.49*	82.3	84.09	26	81.25 ± 4.74	88.8	91.49	.704	11.266	13	.000**
19	3	86.33 ± 3.51	83.2	103.76	27	75 ± 5.2	89.6	83.70	.822	-6.425	2	.023*
21	1		85.1	97.29	29		91.2					
22	3	83.67 ± 2.52*	86	98.38	30	73.33 ± 3.06	91.9	79.77	.217	-5.096	2	.036*
23	2	85.5 ± 4.95	86.9	102.08	31	73 ± 4.24	92.7	78.74	-1.000	-1.923	1	.305
24	4	89.63 ± 4.92	87.8		32	78.25 ± 7.93	93.4	83.77	.908	-5.647	3	.011*

** Significant at p<.01
* Significant at p<.05



Pre NE: Before Imparting Nutrition Education
Post NE: After Imparting Nutrition Education

Fig 2: Distribution of Male infants according to Height\Length before and after imparting nutrition education.

Table 2 & fig. 2 shows the Height/length of male infants. Male infants falling in all age groups except 4, 19, 21, 23 and 24 months differ significantly from WHO standards.

The results was clearly showed when data was statistically analyzed that there was a significant difference between height/length of male infants when compared with WHO standards before and after imparting nutrition education.

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