

**IMPACT OF NUTRITION AND  
HEALTH EDUCATION ON  
RURAL PRE-SCHOOL  
CHILDREN**

**Ramesh Puri  
Saroj Mehta**

**ABSTRACT**

*Preschool children (n=155) belonging to low socio-economic group from eight creches in villages around Chandigarh, were imparted nutrition and health education (NHE) for one year. Appropriate teaching material in the form of songs, rhymes and roleplays were scientifically developed for the purpose. For impact evaluation, objective tools in the form of checklists were formulated and used. NHE on three aspects, i. e., personal hygiene (PH), food hygiene (FH) and recognition of foods (RF) was imparted by Balsevikas (BSs) incharge of the creches, daily in a non-formal manner, for one year and evaluated periodically. On PH only, children of the lowest income group improved significantly. On FH and RF, all children registered significant improvement as these two aspects, were under the direct control of BSs who enthused and involved the children by providing an interacting and stimulating environment. The results are encouraging and indicate the preschool children are educable in NHE provided participatory and appropriate material and methods are used.*

**Key words:** *Preschool children, Nutrition and Health education, Non-formal Education*

Children are the most vital human resource a country possesses. They hold the potential and set the limits of future development of any country. Pre-school children constitute 20% of the Indian population. This is a huge human resource which needs to be developed and nurtured for the country to progress. For the young children to develop into responsible citizens with correct attitudes towards food and hygienic practices, nutrition and health education (NHE) should be started as early as possible. NHE in the formative years of pre-school age will help to inculcate correct habits and will aid in instilling right beliefs. Non-formal pre-school education is a novel approach and seeks to lay the foundations for proper physical and mental development of the child. The expectation to educate pre-school children is based on the evidence that they are able to learn new skills and grasp basic concepts at a much younger age than was previously thought(1,2). In terms of NHE, day care centres like Balwadis, Anganwadis and Creches can play a crucial role because children are there for most part of the day. They can provide not only adequate nutritious foods supplements but also be a means by which NHE can be imparted to the children. Keeping the above objective in view, this study was planned to assess the feasibility and impact of NHE on rural pre-school children.

**Material and Methods**

Pre-school children (n= 155) aged 24-60

---

*Reprint requests: Professor (Mrs.) R. Puri, Associate Dean, College Development Council, Punjab University, Chandigarh.*

*Received for publication: Octobers, 1992;*

*Accepted: May 19, 1993*

months from eight creches of villages around Chandigarh were purposively selected. Each creche had 18-22 children who were supervised by one Balsevika and a female helper/cook who cooked mid-day meal and assisted in other activities of the creches. There were 82 male and 73 female children. Nearly all parents were unskilled workers both of them working either in the fields or in the city. Twelve per cent mothers worked in the village as household help. All mothers were illiterate, only 10% fathers could read or write but none had passed primary school. These creches are run by Indian council for Child Welfare (ICCW), Chandigarh. Children were divided in three groups based on per capita monthly income of the family. These were: Group I: <Rs. 250; Group II: Rs. 251-500; and Group III: Rs. 501-500.

Most of the children remain in the creches from 8.00 A.M. till 5.00 P.M. The daily activities of the children include free play and group activities including story telling, drawing, singing, napping and meal times.

Nutrition and health education (NHE) was imparted to the children by Balsevikas (BSs), incharge of the creche. BSs had been previously trained to impart NHE, in a non-formal way through an orientation programme of one month at ICCW, Chandigarh wherein experts in nutrition, health and education participated. Since no material for imparting NHE to this age group was available, songs, rhymes, stories, role-plays carrying messages of nutrition and health had to be scientifically developed and tested with children before being used. These had to be suited to their age and comprehension level. NHE was imparted in three aspects, *i.e.*, personal hygiene (PH), food hygiene (FH) and recognition of foods (RF).

Activities related to importance and habituation of ten aspects of personal hygiene

were imparted. These were (i) brushing teeth, (ii) taking bath, (iii) wearing clean vest, (iv) underwear and (v) clothes, (vi) combing hair, (vii) trimmed nails, (viii) clean ears and eyes, (ix) having handkerchief, (x) which is clean. Since these required the cooperation of the parents, BSs had to educate and persuade them continuously about the importance of hygiene for their children. Daily checking of the children was done in a participatory and persuasive manner.

Food hygiene involved five activities like washing of hands before and after eating and cleaning of mouth after eating, using their own towel for cleaning hands and eating from one's own plate. This aspect was habituated by the BSs twice during the day. Once when children got their supplementary mid-day meal and then while eating their lunch brought from home.

Recognition of foods was done by showing the children locally available nutritious foods, like' few cereals, pulses, vegetables, fruits, jaggery, groundnuts and sesame seeds (Til). Through rhymes, role-plays, stories and manipulation of these, children learnt the names of these foods and their benefits.

NHE on these three aspects was imparted every day, six days a week in the creche for one year. Activities concerning NHE were interspersed in the daily routine of the creche by BSs. Supervision to ensure its inclusion was ensured by surprise visits of the researcher (RP) in the spirit of guidance and participation.

For evaluation of the impact of NHE, pre and post test design was used to assess the extent and significance of change in the knowledge and behavior of children. Check lists specifically developed for the purpose and tested for their objectivity, reliability

and validity were used. Pre test was done before the commencement of the NHE with children. Evaluation of the impact of NHE was done, first after four months and then repeated every two months in case of PH and FH and every four months for RF till one year.

Appropriate statistical techniques were employed to find out the extent and significance of change in knowledge and behavior of children during one year. Differences in the learning of children belonging to different age, sex and income groups were also analysed(3).

Gain in knowledge and behavior at different intervals of NHE was assessed by paired 't' test and the difference in learning

between the groups was analysed by Students 't' test.

**Results**

The data was analysed for the effect of age, sex and income on the learning of NHE by pre-school children. The differences in the initial scores of children, of the three age groups, *i.e.*, 24-36, 36.1-48, 48.1-60 months, continued throughout the study period. However, the differences were non-significant to begin with and remained so all through. To enlist differences in the learning of the two sexes, analyses revealed no significant differences between them.

The effect of income as a variable on the learning of different components of NHE by children is presented in Tables I—III.

**TABLE I-Impact of NHE on Rural Pre-school Children-Personal Hygiene**

Groups		Interval in months					
		Initial	4	6	8	10	12
(---- Per cent scores ----)							
Group I	N	103	92	94	88	83	82
<Rs. 250	X	71.70	73.50	74.50	76.50	78.30	84.90
	SE	1.60	1.40	1.50	1.60	1.70	1.40
	Period -	(4-1)	(6-4)	(8-6)	(10-8)	(12-10)	(12-initial)
	t	1.17	0.94	1.28	1.06	2.91*	6.05*
Group II	N	37	30	32	32	30	29
Rs. 251-500	X	77.00	78.00	79.70	80.30	85.70	81.00
	SE	2.80	3.20	2.70	2.50	2.50	2.80
	t	2.00	0.11	0.29	1.65	0.76	1.27
Group III	N	15	13	14	7	7	10
Rs. 501-550	X	88.00	90.80	93.60	1.40	90.00	88.00
	SE	2.80	4.50	3.40	4.00	5.80	4.90
	t	0.90	0.88	0.64	0.34	1.16	0.23
	t between Groups						
	I and II	1.66	1.27	1.69	1.28	2.44+	1.25
	II and III	2.79*	7.30*	3.20*	2.30+	0.68	1.24
	III and I	5.08*	3.68*	5.09*	3.43*	1.94	0.61

+ P <0.01, \* P <0.001

*Personal Hygiene*

As evidenced from Table I, there was significant difference in the initial scores of children belonging to different groups, with Group III having significantly highest scores. After 10 months of NHE, Group I showed significant improvement and came up to the level of Group III after 12 months. Group II improved a little (4%) but not significantly. At the end of the study period of 12 months all groups had more or less the same scores with no significant differences between them. Group I children registered (13 %) maximum improvement.

*Food Hygiene*

All groups had different initial scores with significant difference between them, except for groups II and III (*Table II*). After 4 months of NHE all groups improved significantly. Group I showed progressive improvement at all stages of evaluation, whereas Group II showed sporadic improvement. Group III showed significant improvement at 4 months and then at the end of the study. Group I showed maximum gain (22.4%) in scores. Initial difference between groups continued except for Groups I and II.

**TABLE II - Impact of NHE on Rural Pre-school Children - Food Hygiene**

Groups		Interval in months					
		Initial	4	6	8	10	12
(---- Per cent scores ----)							
Group I	N	103	92	94	88	83	82
< Rs. 250	X	47.20	57.80	57.80	64.8 0	67.00	69.60
	SE	1.40	1.60	1.60	1.40	1.60	1.40
	Period	(4-1)	(6-4)	(8-6)	(10-8)	(12-10)	(12-initial)
	t	6.50*	1.44	5.83*	2.19*	3.50*	12.40*
Group II	N	37	30	32	32	30	29
Rs. 251-500	X	55.20	56.60	60.00	64.4 0	64.60	64.80
	SE	2.60	2.20	2.60	2.20	2.80	2.60
	t	3.37*	1.00	2.25*	0.00	1.00	4.43*
Group III	N	15	13	14	7	7	10
Rs. 501-550	X	58.60	70.80	75.80	71.4 0	74.20	78.00
	SE	1.40	3.60	2.20	4.00	3.80	3.60
	t	4.36*	1.92	0.00	0.00	0.00	6.25*
	t between Groups						
	I and II	2.70+	0.42	0.74	0.15	0.75	1.62
	II and III	1.17*	3.27*	4.63*	1.54	2.07+	1.98*
	III and I	5.71*	3.26*	6.44*	1.54	1.79	2.15*

+ P < 0.01, \* p < 0.001

*Recognition of Foods*

*Table III* showed that initial scores of all children in different groups were more or less the same with no significant difference.

Significant and progressive improvement was evident in all groups. Group II improved the maximum (64%) followed by Groups I (56%) and III having the least improvement of 41%.

**TABLE III - Impact of NHE on Rural Pre-school Children-Recognition of Foods**

Groups		Interval in months					
		Initial	4	6	8	10	12
(----- Percent scores -----)							
Group I	N	103	94		83		82
< Rs. 250	X	30.48	48.89		71.90		86.24
	SE	2.47	2.80		2.20		1.80
	Period	(4-1)	(8-4)		(12-8)		(12-initial)
	t	10.25*	9.68*		9.64*		19.54*
Group II	N	37	32		30		29
Rs. 251-500	X	22.87	36.08		73.37		86.71
	SE	4.14	5.47		3.20		2.60
	t	3.90*	7.84*		6.03*		14.13*
Group III	N	15	14		7		10
Rs. 501-550	X	31.55	52.89		67.63		72.70
	SE	6.47	5.74		8.60		4.74
	t	3.85+	3.79		3.65*		4.53*
t between							
Groups							
	I and II	1.58	2.08+		0.38		0.15
	II and III	1.13	2.12+		0.63		2.59+
	III and I	1.15	0.63		0.48		2.67*

\* P <0.001, + P <0.01

**Discussion**

The study was an effort in non-formal education of pre-school children in a setting where free play and guided experiences were utilized to inculcate some behavioral components and knowledge about foods. Differences in age and sex of pre-school children did not reveal any significant role in the learning process in this age group.

It is known that among the important factors in the physical environment of children, which effect the learning outcomes, income plays a role(4). All the children of the study belonged to essentially low income group. However, in these the lowest income group children improved the most on all aspect of NHE, registering maximum learning. On personal hygiene, the most difficult aspect to bring about changes in behavior

which could not be achieved without parents cooperation. Teachers (BSs) constant insistence and educational contact with parents and demands from children were heeded by the lowest income group parents, within the available economic resources. Little better-off parents of Groups II and III perhaps gave scant regard to BSs counsel and the demands of their children as reflected in the negligible improvement on this aspect.

The components of recognition of foods and food hygiene which were directly under the control of BSs, children of all groups improved significantly. Here also as for PH, Group I children registered maximum learning. It seems likely that the stimulating environment of the creche, permission to manipulate toys and food articles and participate in activities, coupled with encouraging adult interaction, resulted in greater learning for the lowest income group children. This type of environment is missing in these homes. It is well known that children learn most when they feel secure and are encouraged<sup>^</sup>).

In recognition of foods, all children showed significant improvement as NHE for this was built around pre-preparation period for mid-day meal where children were allowed to handle foods and sing related rhymes, songs and role plays. It is an established concept that children learn best by active involvement with concrete materials<sup>(6,7)</sup>.

It is encouraging to note from the study that pre-school children can learn NHE, when appropriate methods and materials are used by trained teachers in a setting which

provides interactive and stimulating and supportive environment. Such a setting is available in most day care centres, where children are sent for a part of the day. With little organized effort and planning these opportunities could be utilized for imparting NHE and giving correct knowledge and inculcating right habits.

#### REFERENCES

1. Bartels MD. Observations on the UNESCO report on the survey of the position of nutrition within the educational system. *In: World Nutrition and Nutrition Education*. Ed Sinclair H. Oxford, Oxford University Press, 1980, pp 180-201.
2. Brophy JE, Good TL, Nedlar S. *Teaching the Preschool Child*. New York, Harper and Row Publishers, 1975, pp 54-114.
3. Guilford JP, Fruchter B. *Fundamental Statistics in Psychology and Education*. London, McGraw-Hill, 1981.
4. Brun J. Evaluation of nutrition education, a review. *In: Teaching Nutrition*. Ed Gloter N. Cambridge, Abi Books, 1981, pp 111-140.
5. Kissinger JB. Young child and the educative process. *In: Joe LFH Early Childhood Education Rediscovered*. Ed New York, Rinehart and Winston Inc., 1980, pp 240-267.
6. Piaget J. *Play Dream and Imitation in Childhood*. New York, Norton and Co Inc., 1982, pp 74-141.
7. Estvan P. Teaching the very young: Procedure for developing inquiry skills. *In: As the Twig is Bent Eds. Anderson RH, Shane HG*. Boston, Houghton Mifflin Co, 1971, pp 108-124.