

Original Work

**Title**

**FEEDING PRACTICES ARE ASSOCIATED WITH LINEAR GROWTH**

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**INTRODUCTION:** The new norms of Infant and Young Child Feeding(IYCF) in India are exclusive breastfeeding for the first six months (replacing the 4-6 months age range of earlier guidelines), introduction of complementary foods at six months while continuing breastfeeding upto the age of two years or beyond (1).

Adequate nutrition through appropriate IYCF practices during infancy and early childhood is fundamental to the development of each child's full human potential. However, it is disheartening to note that the critical IYCF practices are faulty around the world, with the literature suggesting that only 37% of infants are exclusively breast fed for the first six months and only 55% are introduced to complementary food with continued breastfeeding in the age group of 6-9 months. Only half of the world's children are breast fed at the age of 20-23 months. (2)

The poor breastfeeding and complementary feeding practices, coupled with high rates of infections, are the principal proximate causes of malnutrition during the first two years of life. Although infants are supposed to start complementary feeding at the completion of six months, some of them are offered even earlier (3). The present study was conducted with main objective to assess the feeding practices of children and determine its association with nutrition status.

## **MATERIAL & METHODS**

A cross- sectional house to house study was conducted in district Lucknow in one rural block (Malhiabad) and one urban sector (Chowk) chosen randomly. Sample size was calculated based on the formula  $4PQ/L^2$ , where P is the prevalence (50.0%), Q is 100-P (50) and L is the permissible error i.e. 10% of P, sample size comes out to be ~400. (4) . Requisite sample size was reached in two stages:

**First Stage:** Number of household to be taken for the survey was decided according to Population Proportion to Size (PPS). In second stage, simple Random technique was used to select the first household for the survey. A household wise complete list of eligible sampling unit i.e. children 0-36

months of age, was prepared separately for all villages and mohallas. Serial number were allotted by sequence to household in each of the list, starting from randomly selected household and desired number of household were selected with the help of random number table.

In case of non availability of the child in selected household due to any reason, next household was selected for the survey in order to attain the adequate sample size.

Each respondent was explained the purpose of the study by the investigator prior to the administration of interview and informed consent was obtained. The confidentiality of the information was assured. Interview was started with general discussion to gain confidence and it slowly extended to specific points.

Using a pre-tested interview schedule, the following aspects were enquired from the respondents - background characteristics, type of feeding in early infancy, start of complimentary feeding. . Prasad's classification (1961) based on the per capita monthly income and later modified in 1968 and 1970, was used. In order to offset inflationary trends, All India Whole Price Index (AIWPI) of year 2010 was used.(5) The tools of investigation were: Interview Schedule, Calendar of local events, spring balance scale, Non stretchable height measuring scale, Wooden Length Board and WHO growth standards.

The schedule was pretested on a sample of 40 children, 20 each for rural and urban areas. Necessary modification was made in the schedule to overcome the difficulties encountered in pretesting.

Mother of child was preferred as primary respondent. In the absence of mother, father was taken as respondent. In case of absence of both of them, the adult in the household who remained with the child for most of the time was taken as respondent. Help of other available adult member of the household or near by household who was present at the time of birth of child was taken as respondent in case mother was not able to recall the event or absent. Exclusive breastfeeding for six months, followed by starting complimentary feeding at six months and continued breastfeeding at least two years was taken as appropriate feeding.

**Weight:** Standardized, potable, stepping, digital weighing machine, whose validation was done daily with standard random weight, was used

to measure the weight of the girl children to the nearest 100 gram (0.1 Kilogram), wearing minimal or no garment. The children were weighed preferentially before meals and asked to empty their bladder before weighing. Weighing of smaller or sick children was done with their mother and then weight of the mother was deducted to give the weight of the child.

**Height/Length:** children above 2years were asked to position themselves on an even surface with their feet parallel and heels, buttocks, shoulder and back of the head touching the wall. The head was held straight so that imaginary plane (*Frankfurt's plane*) drawn from the upper border of the external auditory meatus and lower margin of the orbit is parallel to the ground. Height was then measured using a nonstretchable measuring scale to the nearest 0.1 centimeters (Cms). For infants and other children who were not able to stand, their length was measured by laying the child on a clean hard surface, the knees extended by applying firm pressure and feet flexed at right angles to the legs. A wooden scale was positioned vertically in firm contact with the head and the length read to the nearest 0.1 cms.(6)

Anthropometric data was entered in WHO Anthro (version 2, 2005) and macros, and Z scores of Weight, Height/length and Weight for height were computed. Children were graded as **stunted** (height for age Z score <-2), **wasted** (the weight for height Z score of < -2) as severe wasting, similarly a weight for age Z score of -2 was graded as **underweight**.(7)

Data was entered by two different persons separately on Microsoft Access and cross matched to detect any discrepancy in data entry before the data was analyzed using SPSS software version 17.01 for Windows XP.

**RESULTS:** The study population of 402 children was differed little in religion, area of residence and sex. Majority of them were borne to illiterate mothers (73.6%) of Social Class V (60.9). 161(40.0%) children were of age group 12-36 months (Table 1)

Feeding charterstics of Children: exclusive breastfeeding for six months was practiced in 42 (10.4%), predominant breast feeding in 69(17.2%) and

206(51.2%) children were offered partial breast feeding. 85(21.2%) children were not offered breast milk at all. Mean duration of breast feeding was 16.2 months. Only 127(31.6%) of children were offered colostrum. Bottle feeding at any point of time was seen in 53.5% of children. Complementary feeds were started at six months of age in 105 (26.1%) children. This was more in urban children, although not statistically significant.(Table-II)

Only 57(14.2%) pre school children had appropriate feeding practices during their infancy and early childhood. Again there was no rural –urban variation. (Table III)

As depicted in Table IV, the most common form of malnutrition seen was stunting 51.4%, followed by underweight in 43.5% and 21.7% of children had wasting.

It was observed in the study that children with appropriate feeding had lower rates of underweight, stunting and wasting. There was statistically significant difference in stunting with feeding practices ( $p < 0.003$ ) (Table –V)

**Discussion:** The importance of child feeding practices for child nutrition is well recognized in the nutrition literature. (8, 9) Most research on the relationship between child feeding practices and health outcomes has focused on single behaviors, e.g., exclusive breast-feeding, timing of introduction of complementary foods or the importance of animal products in complementary feeding. These approaches, although valuable for evaluating the role of these individual practices, do not allow an examination of the effect of child feeding practices as a whole on children's health and nutrition outcomes, Even with optimum breastfeeding children will become stunted if quantity and quality of complementary foods after 6 months of age is not good, or there is bottle feeding especially in poor hygienic conditions, therefore, present study was planned to see affect of appropriate feeding on nutrition status of children.

IYCF guidelines state, exclusive breast feeding for six months, incitation of complementary feeding at six months and continuing breast feeding beyond two years. It was observed in the study that children with appropriate feeding had lower rates of underweight, stunting and wasting. There was statistically significant difference in stunting with feeding practices ( $p < 0.03$ ). The reason could be stunting, or cumulative linear growth retardation leading to stunting, is a long-term process that results from a series of insults often starting as early as the prenatal period and continuing throughout the first 3 y of life.

The study had some limitations. During the study, we collected information on the feeding practices of children for various duration. This might be influenced by some recall bias. The cross-sectional nature of the study lacks temporality in terms of examining the relationship between the feeding practices and the nutritional status of the child. Although we assumed that child-feeding practices influenced the nutritional status, a reverse causality might also happen.

**Conclusion:** The study indicated that majority of children were malnourished and majority of the mothers of infants followed inappropriate feeding practices. Inquiry should be made regarding knowledge of mothers regarding child feeding practices and barriers to proper child feeding should be elicited so as to improve feeding practices which can improve the precarious nutrition status of children.

### **References:**

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**TABLE- 1**

**Socio- Demographic Characteristics of Studied Population(N= 402)**

<b>Characteristics</b>	<b>N (%)</b>
<b>Religion</b>	
Hindu	193(48.0)
Muslim	209(52.0)
<b>Locality</b>	
Rural	194(48.3)
Urban	208 (51.7)
<b>Education of the Mother</b>	
Illiterate	296(73.6)
Literate	106(26.4)
<b>Social Class(Modified Prasad)</b>	
II	22(5.5)
III	47(11.7)
IV	88 (21.9)
V	245(60.9)
<b>Sex of children</b>	
Female	200(49.8)
Male	202(50.2)
<b>Children Age Group(months)</b>	
0-5	118 (29.4)
6-8	061(15.2)
9-11	062(15.4)

12-36	161(40.0)
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**TABLE- II**  
**FEEDING PRACTICES OF CHILDREN (N= 402)**

Variables	Rural(192)		Urban(210)		Total(402)	
	No.	%	No.	%	No.	%
<b>a. Type of Feeding</b>						
Exclusive	18	9.4	24	11.4	42	10.4
Predominant	38	19.8	31	14.8	69	17.2
Partial	105	54.7	101	48.1	206	51.2
Artificial	31	16.1	54	25.7	85	21.2
Chi Square(Df)	7.077(3)					
P- Value	0.069					
<b>b. Colostrum Offered</b>						
Yes	60	31.2	67	31.9	127	31.6
No	132	68.8	143	68.1	275	68.4
Chi Square(Df)	0.99(1)					
P- Value	0.989					
<b>d .Bottle feed</b>						
Yes	102	53.1	113	53.8	215	53.5
No	90	46.9	97	46.2	187	46.5
Chi Square(Df)	0.019(1)					
P- Value	0.891					
<b>e .Complementary Feeding</b>						
Timely	42	21.9	63	30.0	105	26.1
Not Timely	150	78.1	147	70.1	297	73.9

Chi Square(Df)	3.431(1)
P- Value	0.064

**TABLE- III**  
**DISTRIBUTION OF CHILDREN ACCORDING TO FEEDING PRACTICES(N=402)**

Variables	Rural(192)		Urban(210)		Total(402)	
	No.	%	No.	%	No.	%
<b>Child feeding Practices</b>						
Appropriate	22	11.5	35	16.6	57	14.2
Inappropriate	170	88.5	175	83.4	345	85.8
Chi Square(Df)	2.22(1)					
P- Value	0.39					

**TABLE- IV**  
**NUTRITIONAL STATUS OF CHILDREN (N=402)**

Characteristic		Underweight		Stunting		Wasting	
		175(43.5)		207(51.4)		87(21.7)	
Place of residence	No	No.	%	No	%	No.	%
Rural	192	90	46.9	108	56.3	40	20.8
Urban	210	85	40.5	99	47.1	47	22.4
Chi square (Df)		1.671(1)		3.330(1)		0.142(1)	
P Value		0.196		0.068		0.707	

**TABLE- V**  
**ASSOCIATION OF FEEDING PRACTICES WITH NUTRITION STATUS OF CHILDREN (N=402)**

Child feeding Practices		Under weight		Stunting		Wasting	
		175		207		87	
	No.	No.	%	No.	%	No.	%

Inappropriate	345	153	44.3	185	53.6	76	22.0
Appropriate	57	22	38.6	22	38.6	11	19.3
Chi Square(Df)	0.658(1)		4.422(1)		0.215(1)		
P value	0.417		<b>0.035</b>		0.643		