

## Does IEC on Antenatal Care Have An Impact on Nutritional Status of Infants

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**Abstract:** Objective: To assess the effect of IEC on antenatal care and child health interventions on nutritional status of infants at 9 months of age. Material and Method: A cohort study conducted in a community among newborns born during the period of November 2011 to April 2012. IEC (Information, Education and Counseling) was given to their mothers from last three months of pregnancy till the newborns completed 9 months of age. This cohort was compared with another study conducted in the same field areas in which IEC only on child health services was provided.

Results: More than half of the infants i.e. 58 (72.5 %) gained weight to reach within the normal range and 29 (54.72%) of infants in the comparison group were having normal weight for age at 9 months.

Conclusion: IEC on combined antenatal care and child health services is essential for positive effect on nutritional status of infants.

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### I. Introduction

Good maternal nutrition is important for the health and reproductive performance of women and the health, survival, and development of their children.<sup>1</sup> The cumulative risks to which many children across the world, particularly in the developing nations are exposed to, suggest the need for intervention. Early child development programmes are designed to improve the survival, growth and development of young children, prevent the occurrence of risks and ameliorate the negative effects of risks.<sup>2</sup>

A child's future is shaped within the first 1,000 days – the critical period between conception and age two. The provision of maternal and newborn care through a continuum of care approach, ensuring care during critical periods of delivery and postnatal period, addresses the needs of the mother and the newborn through a seamless transition from home and village to the facility and back again. The impact of malnutrition during the first 1,000 days is largely irreversible, but the malnutrition itself is largely preventable. With adequate nourishment in the earliest years of life, children have an opportunity to grow, learn, become productive adults and break the cycle of poverty.<sup>3</sup>

A package of 16 interventions recently identified by The Lancet has the potential to avert 72% of newborn deaths. This includes: tetanus toxoid immunisation; skilled attendants at birth; access to obstetric care; immediate and exclusive breastfeeding; drying and keeping newborns warm; access to resuscitation, if needed; special care of low-birth weight infants; and treatment of infection (UNICEF, 2008)<sup>4</sup>.

Birth weight is affected to a great extent by the mother's own foetal growth and her diet from birth to pregnancy, and thus, her body composition at conception. Immediate proper care of newborn is vitally important for survival, growth and development of a baby<sup>5</sup>. In the home, a number of simple strategies have been shown to prevent infant and childhood illness and malnutrition, including breastfeeding, appropriate complementary feeding practices, basic hygiene practices (e.g., hand washing), and seeking a complete course of vaccines for infants in their first year of life. Health workers can promote essential nutrition behaviours by assessing feeding practices and counselling on proper feeding, encouraging the appropriate feeding of sick children both during and after illness, and distributing or promoting consumption of micronutrients (vitamin A, iron, and iodized salt).<sup>6</sup>

Growth assessment is used to promote child health and survival worldwide. This is because disturbances in health and nutrition, regardless of their etiology, almost always affect growth. Growth monitoring strives to improve nutrition, reduce the risk of inadequate nutrition, educate caregivers, and produce early detection and referral for conditions manifested by growth disorders. At the population health level, cross-sectional surveys of anthropometric data help define health and the nutritional status for purposes of program planning, implementation and evaluation.<sup>7</sup> Growth monitoring is also used in all settings to assess the response

to intervention. This study was carried out To assess the effect of IEC on antenatal care and child health interventions on nutritional status of infants at 9 months of age.

## II. Material and Methods

**Study Design-** A cohort study conducted in Jasra, a rural block in Allahabad District

**Sampling-** Multi-stage random sampling was done to select villages. In the first stage, two (Jasra and Ghoorpur) of the four total PHCs in Jasra block were randomly selected followed by selection of two sub-centres each from the two selected PHCs. These were Ghoorpur 2 and Birwal (from Ghoorpur PHC) and Jasra and Rera (from Jasra PHC). In the third stage, one village was randomly selected from each of the selected subcentre. Further complete enumeration of pregnant women presenting with amenorrhoea of 4-6 months duration during the period (1<sup>st</sup> August,2011 to 29<sup>th</sup> February,2012) was done in the four selected villages. A total of 80 women were study group. IEC during Antenatal period was given to these 80 women. The newborns born to these 80 women were followed from birth till they completed 9 months of age. This group was compared with a previous study conducted in the same field area one year back in which total 53 newborns were followed from birth till 9 months of age, i.e, the first group comprised of IEC during both antenatal period and upto 9 months after birth whereas second group comprised of IEC given only after birth of child upto 9 months of age.

**Exclusion Criteria-**

1. Newborns with congenital anomalies or malformations.
2. Infants lost to follow up due to migration or physical unavailability in subsequent visits.

### Procedure methodology

Every village was visited twice a month during the study period, once during their vaccination session and the second time 15 days apart. During each visit IEC for following child health services were given. During each visit pregnant women/mothers were counselled regarding new born care, age appropriate infant feeding, recognizing the danger signs according to structured IEC material provided in “Mother and Child protection card” of NRHM. Weights of the infants were recorded every month.

### Statistical analysis

The data collected was analyzed using statistical software, SPSS Version 17.0. Chi-square tests was used to test the associations between the different variables. While applying chi square test, if the expected count in any box was less than 5, Yates’ correction was applied.

## III. Result

**Table 1** Background characteristics of infants in study and comparison groups

Characteristics	Study group		Comparison group	
	n=80	%	n=53	%
<b>(a) Religion</b>				
Hindu	77	96.3	52	98.1
Muslim	3	3.8	1	1.9
<b>(b) Category</b>				
General	7	8.75	10	19.0
OBC	25	31.25	13	24.5
SC	48	60.0	30	56.6
<b>(c) Gender of infants</b>				
Male	43	53.8	27	50.9
Female	37	46.3	26	49.1
<b>(d) Socio-economic status of family</b>				
Lower Middle Class (III)	8	6.7	14	26.4
Upper Lower Class (IV)	36	30.3	33	62.3
Lower Class (V)	36	30.3	6	11.3

Table 1 shows the background characteristics of the study population. There was no statistically significant difference in both the groups.

**Table 2:** Feeding practices of infants in study and comparison groups

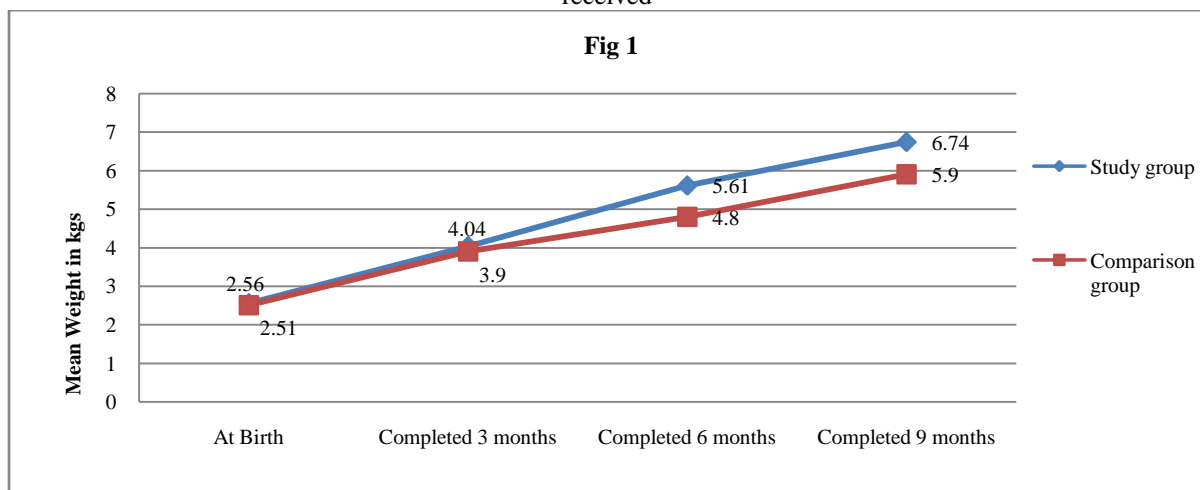
Feeding practices		Study group		Comparison group		
		n= 80	%	n=53	%	
Initiation of breast feeding	Within 1 hour	66	82.5	41	77.4	
	After 1 hour	14	17.5	12	22.6	
Colostrum	Yes	54	67.5	34	62.3	
	No	26	22.5	19	37.7	
Prelacteal	No	32	40	28	52.8	
	Yes	48	60	25	47.2	
Exclusive breast- feeding	Yes	45	56.25	15	28.3	
	No	Predominant	23	28.75	22	41.5
		Partial	8	10	13	24.5
		Only top feeding	4	5	3	5.7
Timely initiation of complementary feeding	Yes	43	53.75	25	47.2	
	No	Before 6 months	18	22.5	16	30.2
		After 6 months	19	23.75	12	22.6

**Table 3:** Classification of infants according to their weight for age (WHO growth charts for boys and girls up to 3 years age)

W/A	Study group		Comparison group		p value
	n=80	%	n= 53	%	
Normal	58	72.5	29	54.72	0.03
Underweight (-2 SD to -3 SD)	22	27.5	24	45.28	
Severely underweight (-3 SD)	0	0	0	0	

Table 3 and Fig 3 shows that the study group had 72.5% of babies with normal weight for age at 9 months of age whereas 54.72% in comparison group. This difference was found to be statistically significant.

**Fig.1:** Association between weight gain pattern in infants and various Maternal and Child Health Services received



#### IV. Discussion

Kumar D et al<sup>14</sup> conducted among under-five year children in selected four Anganwadi Centres of urban Allahabad, Uttar Pradesh, they reported that among all under five children surveyed, 36.4% children were underweight (< 2 SD weight for age) which is comparable to study group in the present study.

K Anand et al<sup>13</sup> in a study conducted in Atali and Garkhera villages of Faridabad district of Haryana on 250 children in the age group of 6-47 months who were followed up for one year reported the prevalence of moderate to severe malnutrition in 35% children under study out of which 8.8% were severely malnourished which is higher than the present study.

The lower percentage of underweight infants in the present study may be due to the fact that higher percentage of mothers practiced exclusive breastfeeding and timely and appropriate introduction of complementary feeding.

Ukegbu AU et al<sup>15</sup> conducted at three comprehensive health centers in Nigeria in which it was recorded that at 24 weeks of age exclusively breast fed infants achieved a better and more rapid growth in weight and length compared to those in the non-exclusively breastfed group ( $p = 0.000$ ) which is similar to present study findings.

Waithaka PM et al<sup>16</sup> in a cross-sectional study conducted in Nairobi Kenya on a total of 418 dyads (pair of mother and child, 0-24 month) reported a significant association between discontinuation of breastfeeding and underweight (OR4.5), as well as weaning before six months and underweight (OR 2.5). Chakraborty et al<sup>17</sup> in a cross sectional study on 101 mothers and their last child (58 males and 43 females) aged up to 5 years undertaken among Shabar tribal community in Khurda and Cuttack districts of Orissa in which they reported that estimation of odds ratio (OR) suggested that children who were exclusively breastfed for less than 6 months were 2.94 times higher risk of being underweight as compared to children who were exclusively breast fed for 6 months.

BF Kalanda et al<sup>18</sup> in a prospective cohort study found that infants with early complementary feeding had lower weight for age at 6 months ( $p < 0.05$ ), and at 9 months ( $p = 0.07$ ) of age.

In another study by Jumaan AO<sup>19</sup>, a positive association was observed between the intake of complementary food and the nutritional status of infants in Yemen.

## V. Conclusion

IEC about antenatal care and child health services have a positive effect on nutritional status of infants in terms of better weight for age. Growth monitoring strives to improve nutrition, reduce the risk of inadequate nutrition, educate caregivers, and produce early detection and referral for conditions manifested by growth disorders. These measures help to reduce infant morbidity and mortality and ensure a healthy childhood.

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