

## Study of compliance and impact of infant and young child feeding counseling in Patna district, Bihar

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### ABSTRACT

**Background:** The infant and young child feeding (IYCF) practices have crucial role for physical and mental development of the child. **Objective:** To study the compliance to IYCF practices and impact of IYCF counseling in and around Patna district. **Methods:** Cross-sectional study was done in a hospital-based survey to find out compliance, and impact of IYCF practice counseling among infants and children attending a tertiary level hospital, Patna. Children in the age group, 6-24 months in and around Patna, were studied. **Results:** About 24% of the mothers initiated breastfeeding within an hour after birth. Exclusive breastfeeding for 6 months was practiced only by 36% of the mothers. Nearly, 43% of the mothers started complementary feeding at 6 months, and 45% of the infants were breastfed for 2 years. In the present study, 26% of mothers were using as age-appropriate complementary feeding and 35% of the mothers were feeding actively their child both during and after illness. **Conclusion:** Despite 3 years of counseling, compliance to IYCF practice in our area is low, and thus, the impact of IYCF counseling is poor in our area. Low knowledge score of mothers, lesser number of antenatal care visit is found to be an important factor responsible for low compliance.

**Key words:** *Complementary feeding, Breastfeeding, Infant and young child feeding, Mother's knowledge status*

Adequate nutrition in the first 24 months through optimal infant and young child feeding (IYCF) is fundamental for the growth and development of a child. Positive parental attitudes toward infant feeding are an important component in child nutritional health [1]. In India, poor breastfeeding and complementary feeding practices are widespread, one-third to half of the deaths taking place in children under 5 years of age is due to under-nutrition [2]. Worldwide, it has been estimated that only 34.8% of infants are exclusively breastfed for the first 6 months of life, the majority receiving some other food or fluid in the early months [3]. About 70% of the world's 182 million stunted children aged <5 years live in Asia. One in every third malnourish children lives in India [4]. From HUNGama Survey Report 2011, in 100 focus districts, 58.8% of children were moderately or severely stunted, 42.3% were moderately or severely underweight, and 11.4% were moderately or severely wasted [5].

IYCF is a set of well-known and common recommendations for appropriate feeding of newborn and children <2 years of age and is a critical component of care in childhood. Optimal IYCF is presented in the WHO/UNICEF Global Strategy for IYCF (2003) as follows: "As a global public health recommendation, infants should be exclusively breastfed for the first 6 months of life to achieve optimal growth, development, and health. Thereafter, to meet their evolving nutritional needs, infants should receive safe, and nutritionally adequate complementary foods while breastfeeding (BF) continues for up to 2 years of age or beyond [4,5].

Guidelines for enhancing Optimal IYCF practices as recommended by the Ministry of Health and Family Welfare, Government of India in 2013 [2] are as follows: (a) Early initiation of BF; immediately after birth, preferably within 1 h. (b) Exclusive BF (EBF) for the first 6 months of life, i.e., 180 days (no other foods or fluids, not even water; but allows the infant to receive oral rehydration salts, vitamins, minerals, and medicines. (c) Timely introduction of complementary foods (solid, semisolid, or soft foods) after the age of 6 months, i.e., 180 days. (d) Continued BF for 2 years or beyond. (e) Age appropriate complementary feeding for children 6-23 months, while continuing BF. (f) Active feeding for children during and after illness.

NFHS-3 has reported the compliance to timely initiation of breastfeeding at 25%, 46% for exclusive breastfeeding, and 53% for timely initiation of complementary feeding for India and for Bihar has been reported at 36%, 58%, and 73%, respectively. Compliance has improved over the years and its better as compared to national data. It ranks among top 10 for all the practices in the country [6-7].

The Government of Bihar as a pilot project started IYCF training program for the front line workers/service providers in 2009, to promote the breastfeeding practices at the earliest to enhance the knowledge and skills among expectant mothers and to reduce infant mortality rates and under-five mortality. Since 2013, Department of Pediatrics, NMCH is working closely with UNICEF to promote the IYCF practices all across Bihar

and identified as a nodal center for the implementation of IYCF practices by State Health Society, Bihar. For more than 3 years, NMCH as nodal center, coordinated with State Health Society, Bihar to ensure the quality of IYCF program implementation, formulated the strategy to BFHI compliance in NMCH, Patna and facilities of Gaya and Punrea, created awareness on IYCF and promoting a better understanding of IYCF for the improvement of planning, management, and policy.

Till date, no study was done to assess the compliance of IYCF and impact of IYCF training in Bihar. This study was done in NMCH, Patna, Bihar with the aim of assessing the compliance of key IYCF practices as recommended by WHO and UNICEF and to determine the impact of 3 years of IYCF training and counseling in Bihar. Thus, an attempt is made to unveil important aspects of the IYCF practice such as breastfeeding, complementary, and dietary practices.

## METHODS

This descriptive, cross-sectional study was carried out in NMC Hospital, Patna, Bihar from October 2016 to January 2017. The study was approved by the Hospital Ethics Committee. Children from 6 months to 2 years of age group attending pediatrics outpatient department, whose parents were previously registered and counseled any time during antenatal visits, postnatal ward stay, and well-baby clinics were included in the study. Only those children, whose parents were willing to participate, were included and their written consents from parents were taken. Children who were sick, with a history of low birth weight, children with congenital malformations, and known cases of growth and developmental delays, chronic diseases, and history of nursery admission were excluded from the study.

Mothers of these children were interviewed by IYCF counselors, mother was asked set of 20 questions regarding bio data of children, immunization, socioeconomic, and demographic profiles, breastfeeding practices, complementary feeding practices done for children are recorded on pre-designed format. Their socioeconomic status was labelled on modified Kuppuswamy scale. A knowledge assessment of mother was done, which classified the mothers on the basis of their knowledge regarding various key components relating to the infant feeding practices, then their knowledge status classified as having excellent, good, and average and below average knowledge. Mothers knowledge of all six key indicators were labeled excellent, 5 indicator as good, 3-4 indicators average, and 2 or less below average.

As all these parents were previously counselled hence for IYCF practice so compliance in these follow-up cases show the impact of 3-year IYCF counselling. Following indicators of IYCF feeding such as early initiation of BF, EBF under 6 months, continued BF at 1 year, the introduction of solid, semi-solid or soft foods, minimum dietary diversity, minimum meal frequency, minimum acceptable diet and consumption of iron-rich or iron-fortified food were used [6]. All the data were entered into Excel and appropriately analyzed.

## RESULTS

A total of 300 children were studied, out of which, 54.33% were boys, and 45.66% were girls. The majority of the mothers were illiterate (45.66%) followed by up to educated till primary level (18.33%). The majority of the patients were from lower (30.33%), upper lower (23.33%), and lower middle (26%) socioeconomic status. About 69% of the mothers were non-working. Nearly, 41.33% of the mothers had average, and 27.66% had poor knowledge regarding IYCF practice. Table 1 gives the information about the socio-demographic profile of the population studied.

In the present study, 72 (24%) of the mothers started breast feeding within 1 h, 186 (62%) of the mothers started complementary feeds at 6 months of age, 108 (36%) mothers had practice on EBF for the first 6 months, only 135 (45%) of mothers practiced breastfeeding for 2 years, 78 (26%) of the mothers are using as age-appropriate complementary feeding and only 105 (35%) of mother are feeding actively their child both during and after illness.

Mother's educational qualification has no significant impact on compliance; but, mother's knowledge status of IYCF practice showed significant association with the compliance to IYCF practices. A significant association was found between the knowledge status and all six parameters 55.91%, 68.81%,

**Table 1: Demographic data of child and mother**

Parameter	Group	Frequency (%)
Gender	Male	163 (54.33)
	Female	137 (45.66)
Age of the child (months)	6-12	85 (28.33)
	12-18	91 (30.33)
	18-24	113 (37.66)
Religion	Hindu	131 (43.66)
	Dalit	82 (27.33)
	Muslim	97 (32.33)
Qualification	Illiterate	137 (45.66)
	Primary	55 (18.33)
	Matric	62 (20.66)
	Intermediate	22 (7.33)
Mother's knowledge status	College	24 (8.00)
	Excellent	45 (15)
	Good	48 (16)
	Average	124 (41.33)
Socio-economic status (modified Kuppuswamy scale)	Poor	83 (27.66)
	Upper	23 (7.66)
	Upper middle	38 (12.66)
	Lower middle	78 (26)
	Upper lower	70 (23.33)
Working status of mother	Lower	91 (30.33)
	Working	93 (31)
	Not working	207 (69)

68.81, 74.19%, 62.36%, and 66.66%. Socio-economic status of the family and child's gender did not show any association with the compliance to key IYCF practices. Timely initiation of breastfeeding within an hour of birth was found to more in normal delivery 34.58% compare to assisted (22.22%) and lower segment cesarean section (LSCS) (11.22%). The presence of complication during delivery was found to have a statistically inverse association with the timely initiation of breastfeeding and the practice of continued breastfeeding up to 2 years. Mother's working status was found to have a statistically inverse association with the timely initiation of complementary feeding at 6 months (22.58% vs. 55.07%). Various factors in relation with compliance of IYCF practice are shown in Table 2.

## DISCUSSION

Optimal IYCF practices are the cornerstones of child care and development. The medical personnel have a key role in influencing child care practices of the mothers. Initiation of breastfeeds within 1 h of birth is the key for successful breastfeeding. In the present study, 24% of the mothers had compliance to the first key IYCF indicator, 39.43% of mothers who received 3 or more antenatal care had started breastfeeding within 1 h. Many studies found that mothers who received breastfeeding counseling during antenatal check-ups were less likely to cause delay in initiation of breastfeeding [8-12]. Only 24.5% and 40.5% of the mothers practiced initiation of breastfeeding within 1 h of birth according

**Table 2: Correlation of factors with compliance of IYCF practice**

Factors	Group	N	Early initiation of BF (72)	EBF till 6 months (108)	Timely introduction of complementary feeding (129)	BF till 2 years (135)	Age appropriate complementary feed (78)	Active feeding during and after illness (105)
Religion	Hindu	131	32	44	60	55	38	45
	Dalit	82	18	31	31	36	18	34
	Muslim	97	22	33	38	44	22	26
Qualification	Illiterate	137	27	42	59	47	27	45
	Primary	55	13	19	23	34	13	19
	Matric	62	12	20	27	34	14	18
	Intermediate	22	10	11	11	9	10	13
College	College	24	10	10	9	11	12	11
	Excellent	45	34	38	34	32	31	37
	Good	48	18	26	30	37	27	25
	Average	124	12	31	47	49	11	35
Below average	Below average	83	8	13	18	17	9	8
	Upper	23	9	16	15	17	12	14
	Upper middle	38	11	21	28	22	17	21
	Lower middle	78	16	25	26	26	21	19
Upper lower	Upper lower	70	14	26	31	32	16	27
	Lower	91	21	19	29	38	12	24
	Working	93	23	31	28	21	21	23
Not working	Not working	207	49	77	101	114	57	82
	Home	96	21	25	29	39	21	39
Government Hospital	Government Hospital	105	37	52	69	64	40	35
	Private Hospital	99	14	31	31	32	17	41
	Yes	96	21	32	32	30	20	32
No	No	204	51	76	98	95	58	73
	<3	158	17	23	29	33	21	28
>3	>3	89	27	39	48	53	25	39
	Monthly	53	29	46	42	43	32	38
NVD	NVD	130	45	53	61	65	29	38
	Assisted	72	16	31	29	35	22	31
	LSCS	98	11	24	19	35	27	36

LSCS: Lower segment cesarean section, NVD: Normal vaginal delivery, IYCF: Infant and young child feeding, EBF: Exclusive breastfeeding, BF: Breastfeeding

to data from NFHS-3 [7] and DLHS-3 [13], respectively. Our result is similar to NFHS-3 data but very low compared to DLHS-3 data [7,13]. In the present study, compliance of mothers on colostrum's feeding was low 24%. In the present study, knowledge on avoiding pre-lacteals was low. 76% of mothers could not start breastfeeding and most of them practiced pre-lacteal feeds which is very high. Pre-lacteal feeding of honey, sugar water, water, etc., to the newborn is a popular custom in Bihar, which needs to be addressed.

The second IYCF indicator that is exclusive breastfeeding for 6 months protects the child from malnutrition and infections and ensures overall development. In the present study, 36% mothers had practice on EBF for the first 6 months which was similar to other studies (Table 3). In the present study, knowledge of mothers on proper position and attachment during breastfeeding is low.

The third IYCF indicator is the initiation of complementary feeding after 6 months. After 6 months of age, breast milk alone is not enough to sustain the growth and development of infant. During the complementary feeding, children are at high risk of undernutrition. In the present study, 43% of mothers were aware of the correct age of introduction of complementary feeds, but knowledge of mothers on frequency and quantity of complementary feeds was low. Hence, it is necessary to improve awareness among mothers in these aspects.

The fourth key IYCF indicator, a continuation of breastfeeding up to the age of 2 years or beyond is important as it provides useful amounts of energy, good quality protein and other nutrients essential for brain development. In the present study, only 45% of mothers practiced breastfeeding for 2 years. Premature cessation of breastfeeding contributes to malnutrition. After nutritional education, there was a significant improvement of the knowledge of mothers in various aspects of breastfeeding and complementary feeding. Studies done by Galhotra et al. [14] showed similar results. Despite nutritional education, in the present study, the knowledge of mothers in various aspects of breastfeeding and complementary feeding is very low, only 31% have good or excellent knowledge status.

Fifth IYCF indicator is the age-appropriate complementary feeding, are often of poor quality, introduced too early or too late, in too small quantity and not frequent enough. In the present

study, 26% of mothers are using age-appropriate complementary feeding.

Sixth key IYCF indicator is the continuation of feeding both during and after illness, and only 35% of mother are feeding actively their child both during and after illness. No other published data is available in this regard. In the present study, compliance of mothers on the continuation of breastfeeding during the illness of mother and child was low 35%. Temporary cessation of breastfeeding during illness is common leading to lactation failure and feeding with bottle is hazardous to the infant increasing the risk of diarrhea and otitis media. In the present study, the knowledge of mothers on avoidance of bottle feeds is low, i.e., 24%. Even after nutritional education, only 64% mothers had correct knowledge in this aspect. Repeated reinforcement by health-care personnel is needed to improve their knowledge.

It was found that mother's educational qualification has no significant impact on compliance; however, mother's knowledge status showed significant association with the compliance to IYCF practices. A significant association was found between the knowledge status and all six parameters 55.91%, 68.81%, 68.81, 74.19%, 62.36%, and 66.66%. Thus, the extent of compliance to IYCF policy also showed statistically significant association with the knowledge status of the mother.

Socio-economic status of the family and child's gender did not show any association with the compliance to key IYCF practices. Some of the common reasons which were responsible for the poor compliance in this study group included place of delivery, regular ante-natal visits, and knowledge assessment status of the mother. Timely initiation of breastfeeding within an hour of birth was found to more in normal delivery 34.58% compare to assisted (22.22%) and LSCS (11.22%) (Table 2). The presence of complication during delivery was found to have statistically inverse association with the timely initiation of breastfeeding and the practice of continued breastfeeding up to 2 years. Mother's working status was found to have statistically inverse association with the timely initiation of complementary feeding at 6 months (22.58% vs. 55.07%). The lack of knowledge among the mothers is an important factor responsible for low compliance as the mother's with better knowledge score showed better compliance (Table 2). In the present study, the services of the nutritional counselings were well utilized to educate mothers regarding IYCF practices.

**Table 3: Knowledge on key IYCF indicators in different studies [8-10,12,14]**

Study	Initiation of BF within 1 h of birth	EBF for 6 months	Complementary feeds from 6 months	BF till 2 years of age	Age appropriate complementary feed	Active feeding, during and after illness
Present study	24	36	43	45	26	35
Chaudhary et al.	10	15	20	-	-	-
Meshram et al.	70.6	96	74	-	-	-
Shafee et al.	22	41.4	59	-	-	-
Sriram et al.	47	29				
Mukhopadhyay et al.	39.6	52.1				
Qiong et al.	33	36.6				

IYCF: Infant and young child feeding, EBF: Exclusive breastfeeding, BF: Breastfeeding

## CONCLUSION

The present study has shown that the optimal IYCF practice is low in Patna, Bihar, and the majority of mothers are not having appropriate knowledge regarding the IYCF practice. The lack of knowledge among the mothers (not the educational qualification) is an important factor responsible for low compliance as the mother's with better knowledge assessment score showed better compliance. The situation can be improved by training of health workers on IYCF policies of WHO and MoHFW, stressing on the benefits of appropriate feeding practices by the hospitals, rural Maternity centres and Anganwadi centres and making these services universally available.

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