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Original Research Article

Complementary feeding practices and its determinants in rural areas of Kamrup district, Assam, India

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Abstract: Complementary feeding practices are often far from optimal, involving food with poor quality and limited variety that are not hygienically prepared and that are given in too small amount or not frequently enough. These are mainly responsible for aggravating malnutrition.The present study is designed to assess the prevalence of optimal complementary feeding practices and its determinants in rural area of Kamrup, Assam**.** Across-sectional study was conducted from 1st February 2014 to 31st July 2014. Considering the prevalence of complementary feeding amongst 7-12 months infants in rural areas of Assam as 67% (DLHS-3), relative precision of 10% of P and design effect of 1.5, sample size was calculated as 250. A total of 250 infants were studied for complementary feeding practices (CF). CF was initiated by the 54.4% of mothers at the age of 6 months, 19.2% were initiated before 6 months and 26.4% were initiated after 6 months. Most of the mothers (33.3%) reason behind the early initiation of CF was insufficient breast milk and 50% of mothers replied reason behind the delayed initiation of CF was infant could not digest. The infants born at Govt. institution (61.5%) received CF at 6 months as compared to private institution (32.1%) or home (31.2%) (P<0.0001). 60.8% of normally delivered infants started CF at 6 months to as compared to 50% of infants born by caesarean section (P<0.0005). Most of the mothers (56.8%) have given semi-solid food followed by Animal milk (35.2%) as CF.
Keywords: Complementary feeding, determinants, practices, prevalence, IYCF

INTRODUCTION

Optimal infant and young child-feeding (IYCF) practices are crucial for nutritional status, growth, development, health, and ultimately the survival of infants and young children. Worldwide, suboptimal breastfeeding still accounts for deaths of 1.4 million infants and young children. The timely introduction of complementary feeding can prevent almost 6% of mortality. It was estimated that, if 90% of infants are covered with a package of intervention to protect, promote, and support the optimal IYCF practices, almost one-fifth of overall mortality can be averted. The poor complementary feeding practices mean that many children continue to be vulnerable to irreversible outcomes of stunting, poor cognitive development, and significantly increased risk of infectious diseases, such as diarrhoea and acute respiratory infection [1].

The WHO and UNICEF have developed the Global Strategy for Infant and Young Child Feeding (IYCF), which recognizes appropriate infant feeding practices to be crucial for improving nutrition status and decreasing infant mortality in all countries. WHO offers three recommendations for IYCF practices for children aged 6-23 months: Continued breastfeeding or feeding with appropriate calcium-rich foods if not breastfed; feeding solid or semi-solid food for a minimum number of times per day according to age and breastfeeding status; and including foods from a minimum number of food groups per day [2].

Child malnutrition status is an essential component of a country's overall human development. Inappropriate feeding practices are linked with the problems of malnutrition, overweight, obesity that may develop beyond 2 years. India is home to the largest number of underweight and stunted children in the world. Approximately 30% of children in India are born with Low Birth Weight (LBW) and rest of the damage happens during the following two years of life due to faulty feeding practices, infections etc [3].

The present study was conducted basically on complementary feeding practices and its determinants

among 7-12 months infants in rural areas of Kamrup, Assam.

MATERIALS AND METHODS

It is a community based cross sectional study on complementary feeding practices and its determinants amongst 7-12 months infants in rural areas (Villages under Rani Community Development Block) Kamrup district, Assam. The block consists of population of 94,728 as per Census 2011 [4]. Sex ratio estimated to be 1.15. The population pattern of Block is mixed one accounting 58% of tribal, which again comprises of the Bodos, the Rabhas and the Garos. About 80% of the population is Hindu while rest of the population is Muslim and Christians.

Study was conducted during February – July 2014.

Infant in the age group of 7-12 months of age was the study population.Only one infant (7-12 months) has been selected from each house hold and mothers of each child were interviewed and in the absence of mother, father or other guardians above 18 years of age were interviewed.

Inclusion Criteria

Infants (7 -12 months), both males and females residing in selected villages under the Rani Community Development Block, Kamrup district, Assam were interviewed.

Exclusion Criteria

Infants and children with congenital anomalies and metabolic disorders influencing growth, history of acute respiratory infection, diarrhoea in preceding 15 days, measles in 3 months prior to the date of survey.

The sample size for the study was calculated using the formula $N= 4pq/l^2$, where P=67% (prevalence of complementary Feeding amongst 7-12 months infants in rural area of Assam as 67% (DLHS-3) [5], q=33%, l= relative precision of 10% of P & design effect of 1.5 = 250. As per Census 2011 [6], Rani Community Development Block consists of 26 Sub-centres. Out of 26 Sub-centres, 5 Sub-centres were selected randomly and out of 5 Sub-centres 10 villages (2 villages from each sub-centre) were selected through cluster random sampling using the method of probability proportional to size. From each cluster 25 infants were selected to get the sample size of 250 i.e., 10x25 = 250 using cluster sampling method who fulfilled our inclusion criteria. If, the required number of sample units is not met in that village or ward, then the adjacent village or ward was taken to get the remaining sample units.

The study was conducted in each village by house to house visits and if one house is found locked the adjacent house is approached. Age of child was ascertained from birth certificate, hospital discharge certificate, mother and child protection card (MCPC) and local event calendar prepared for this purpose. The data were collected with the help of both open ended and closed ended proforma. Parents/Guardians especially mothers were interviewed and all the information's were recorded. Permission to conduct the study was obtained from the Institutional Ethics Committee, Gauhati Medical College, Assam. Data was analyzed and presented in suitable tables; chi-square test was applied to test statistical significance where ever necessary. Data was collected and entered in Microsoft Office Excel and analyzed by using SPSS-Version 18.Criteria of significance used in the study were $p< 0.05$.

RESULTS

Table 1 shows the sociodemographic characteristics of 250 infants of 7-12 months included in the study. Out of 250 infants 56% were males and 44% were Females .Majority of infants (84%) belonged to Hindu religion and most of the population belonged to Schedule tribe cast (56%). About 29.2% of fathers and 35.5% of mothers had received no formal education and 62% belonged to nuclear family. Most of the head of the families were cultivator (50%) and most of the mothers were housewives (67.2%). Most of the families were belonged to lower middle class (44%) and among the infants 78% were delivered at Govt. institutions, 10% at private institution and 12% were delivered at home.

As shown in Table 2, complementary feeding was initiated by 54.4% of mothers at the age of 6 months, 19.2% of mothers initiated complementary feeding before 6 months of age and 26.4% of mothers initiated after 6 months of age. Mothers with Hindu families were more likely to initiate complementary feeding in appropriate time as compared Muslim families and was found to be statistically significant (P<0.0001. Mothers of upper middle class family(67.2%) were more likely to initiated complementary feeding at 6 months compared to those with lesser income (P<0.005). Majority of mothers (81%) with middle educational status were more likely to initiated complementary feeding at 6 months as compared to illiterate (36.3%) and primary school mothers (51.3%) (P<0.0001). The proportion of infants who received complentary feeding at 6 months of age as higher in those born in Govt. institutions (61.5%) as compared to those born at private institution(32.1%) or home (31.2%) (P<0.0001). 60.8% of mothers were Initiated complementary feeding at 6 months as to those infants born by normal delivery as compared to 50% of infants born by caesarean section (0.0005). Most of the mothers (69.2%) with higher parity initiated complementary feeding at 6 months as compared to mothers with lower parity (52.3%) (P<0.0003).

Table-1: Sociodemographic profile of study population

Sociodemographic profile	**N (%)**
Sex	
Male	135(56)
Female	115(44)
Religion	
Hindu	210 (84)
Muslim	40(16)
Castes	
General	25(10)
OBC	65(26)
SC	20(8)
ST	140(56)
Type of Family	
Nuclear	155(62)
Joint	95(38)
Educational status of the fathers	
Illiterate	73(29.2)
Primary school	49(19.6)
Middle school	65(26)
High school	27(10.8)
Higher secondary	26(10.4)
Graduate	10(2)
Educational status of the mothers	
Illiterate	88(35.2)
Primary school	72(28.8)
Middle school	42(16.8)
High school	17(6.8)
Higher secondary school	24(9.6)
Graduate	07(2.8)
Occupational status of father	
Cultivator	125(50)
Daily wage earner	56(22.4)
Service holder	32(12.8)
Shop-keeper	27(10.8)
Others	10(4)
Occupational status of mother	
House wife	168(67.2)
Cultivator	38(15.2)
Daily wage earner	13(5.2)
Service	12(4.8)
Shop-keeper	19(7.6)
Socioeconomic status (Per capita income in Rs.)	
Upper high (5156 & above)	19(7.6)
High (2578-5155)	20(8)
Upper middle (1547 – 2577)	61(24.4)
Lower middle (773 – 2546)	110(44)
Poor (<773)	40(16)
Place of delivery	
Govt. Institution	190(78)
Private Institution	28(10)
Home	32(12)
Type of delivery	
Normal	194(77.6)
CS	56(22.4)
Parity	
<2	103(41.2)
>2	147(59.8)

As shown in Table 3,Most of the mothers (33.3%) reason behind the early initiation of complementary feeding was insufficient breast milk followed by elder's or relatives advise(20.8%).

As shown in Table 4,Most of the mothers (50%) reason behind the delayed initiation of complementary feeding was infant could not digest followed by ignorance (30.3%).

As shown in Table 5 most of the mothers (56.8%) has given semi-solid food followed by Animal milk (35.2%). Semisolid includes khishri, suji, gruels and animal milk includes – Cow's milk and goat's milk.

Exclusive breastfeeding was practiced by 66% of mothers and 61% of mothers continued breast feeding during the time of study.

Table-2: Factors associated with intiation of complementary feeding

Factors	<6 months	6 months	>6 months	P
Sex				
Male (135)	23 (17)	76(56.2)	36(26.6)	0.6
Female (115)	25(21.7)	60 (52.1)	30(26)	
Religion				
Hindu (210)	30(14.2)	126(60)	54(25.7)	<0.0001
Muslim(40)	18(45)	10(25)	12(30)	
Socioeconomic status				
Upper high (19)	5(26)	8(42.1)	6(31.5)	0.005
High (20)	5(25)	10(50)	5(25)	
Upper middle (61)	6(9.8)	41(67.2)	14(23)	
Lower middle (110)	17(15.4)	66 (60)	27(24.5)	
Poor (40)	15(37.5)	11(19.2)	14(35)	
Educational Status of mothers				
Illiterate (88)	17(19.3)	32(36.3)	39(44.3)	<0.0001
Primary school(72)	20(27.7)	37(51.3)	15(20.8)	
Middle school(42)	3 (7)	34(81)	5(12)	
High school(17)	3(17.6)	12(70.5)	2(11)	
Higher secondery(24)	3(12.5)	18(75)	3(12.5)	
Graduate(07)	2(28.5)	3(42.8)	2(28.5)	
Place of delivery				
Govt. Inst. (190)	20(10.5)	117(61.5)	53(27.8)	<0.0001
Private Inst. (28)	11(39.8)	9(32.1)	8(28.5)	
Home (32)	17(53.1)	10(31.2)	5(15.6)	
Type of delivery				
Normal (194)	34(17.5)	118(60.8)	42(21.6)	0.0005
Caesarean (56)	14(25)	18(50)	24(42.8)	
Parity				
<2 (103)	18(17.4)	54(52.4)	31(30)	0.0003
>2 (147)	30(20.4)	102(69.3)	15(10.2)	

Table-3: Distribution of infants according to early initiation of complementary feeding

Reasons of early initiation of complementary feeding	N=48	
	No. of infants	%
Insufficient breast milk	16	33.3
Working mother	8	16.6
Mothers illness	9	18.7
Elders/relatives advise	10	20.8
Others	5	10.6
Total	48	100

Table-4: Distribution of infants according to delayed inititaion of complementary feeding

Reasons of delayed initiation of complementary feeding	N=66	
	No. of infants	%
Ignorance	20	30.3
Infant could not digest	33	50
Elders/relatives advise	13	19.7
Total	66	

Table-5: Distribution of infants according to the Type of food given as complementary feeding

Type of food	N=250	
	No. of children	%
Formula milk	20	8
Animal milk	88	35.2
Semisolid	142	56.8
Total	250	100

DISCUSSION

The present study was conducted in a rural area of Kamrup district, Assam to study the complementary feeding practices among infants in the age group of 7-12 months. Initiation of complementary feeding was done at 6 months of age in 54.4% of infants. This is a bit lower than the figure of 57.3% found in a study conducted by Banapuramath CR [7] in 1996. Mahmood SE [8], in their study found that about 25% of mothers had started CF in <6 months**.** Sighal P [9]in a study found that 29.8% started complementary feeding at 6 months. Zhou H [10], in a study found that 81.1% of infants between 6 and 8 months of age were given CF. Meshhram II. *et al.* [11] found that 57% of children 6-11 months old received CF**.** Rasania SK [12]*et al.* in a study in urban settings found that 42.9% children started CF in optimal time, 24% children started early while in rest it was delayed. Roy S. [13] found that 71.6% were given CF at 6 months.Kumar D [14] in their study found that 48.3% mothers practiced CF during 6-9 months. In the present study found that 26.4% of mothers initiated complementary feeding in >6 months of the infants which is a bit higher than the figure 17.6% found in a study conducted by Dasgupta A [15] in 2014.In the present study found that 19.2% of mothers initiated complementary feeding in <6 months which is a bit lower than the figure 21.2% found in the same study conducted by Dasgupta A in 2004.

In the present study found that insufficient breast milk (33.3%) was the reason behind the early initiation of complementary feeding followed by elder's or relatives advise(20.8%) and most of the mothers (50%) reason behind the delayed initiation of complementary feeding was infant could not digest followed by ignorance (30.3%)**.** Agarwal and Agarwal [16] in 1982 observed that varied cultural beliefs prevailing in different parts of the India regulates the exact time for complementary food. Religious ceremony like 'Annaprasanna' is being carried out between the 6^{th} and 9^{th} months of the age in most of the communities. Mehta MJ [17] in 1972 in a similar study reported that 55.05% believed solid food should not be till eruption of the teeth occurs and child can stand and walk, otherwise infants cannot digest the solid, 21.42% delayed complementary food because of recurrent respiratory tract infection and diarrhoea.

CONCLUSION

Timely initiation of CF were higher in infants born in government institutions, infants delivered normally and mothers with high parity and therefore, awareness about Infant and Young child feeding (IYCF) practices has to be increased among the mothers.

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