Journal of Academia and Industrial Research (JAIR)
Volume 7, Issue 12, May 2019

ISSN: 2278-5213

Research Article

A Study of Determinants on Infant and Young Child Feeding Practices among Mothers attending Primary Health Centers in Rural Area of Tamil Nadu, India

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Received: March 05 2019/Accepted: 26 April 2019/Published: 07 May 2019

Abstract

Optimal infant and young child feeding (IYCF) practices are fundamental for the survival, health, growth, and development of children. It is important to study the factors that determine these practices in a community. The present study is designed to assess the prevalence of optimal IYCF practices and its determinants in rural areas of Tamil Nadu. A health center based, cross-sectional study was conducted in a rural setting of Kanchipuram. The study population included mothers of children 0-23 months attending Maternal and Child health Clinic (MCH) under the field practice area of the rural training center of Tagore Medical College, Kanchipuram. They were interviewed using a structured and semi open-ended questionnaire to record information on IYCF practices. A total of 200 children were included in the study. Breastfeeding (BF) was initiated within 1 h of birth in 49.5% of children. Prelacteal feeds were given by only 20% of mothers, significant association was found between birth order of baby and initiation of prelacteal feeds, Colostrum was given by 92% of the mothers. The prevalence of exclusive BF (EBF) for 6 months or more was 80.5%. It was higher in children in joint family with mother being literate and unemployed (P<0.05). Complementary feeding was started at 6 months in 90.5% of these children. In this study, 135(67%) children had breast feeding continued up to two years. Uncomplicated deliveries (p=0.03), grandmother living with family (p=0.001), unemployed mothers (p=0.01) were found to have significant association with continuation of breast feeding. Overall compliance to IYCF practices is found to be good among mothers attending primary health centers of rural Tamil Nadu. The study highlights that still inappropriate IYCF practices are still very much prevalent in the community.

Keywords: IYCF practices, MCH clinic, primary health center, cross-sectional study, Prelacteal feeds.

Introduction

Optimal infant and young child-feeding (IYCF) practices are very crucial for nutritional status, growth, development, health and ultimately the survival of infants and young children. Poor and inadequate child feeding practice and high rate of infection reduces cognitive development, educational achievement, productivity and growth (Ruel, 2004; Grantham-McGregor *et al.,* 2007; Black *et al.,* 2013). In a developing country like India, malnutrition is one of the commonest causes of mortality in children under five. Nutritional deficiency is found mostly at the critical period usually after six months (Bhalwar *et al.,* 2009). WHO recommends the introduction of complementary foods at six months of age, as breast milk alone is not enough to meet the nutritional requirements of 6-23 months of age children. After 6 months of age and with only optimum exclusive breastfeeding, children are prone to become malnourished if they do not achieve appropriate dietary diversity and meal frequency (Black, 2008; Martines *et al.,* 2005).

Thus, the transition period from exclusive breastfeeding to two years is critical for optimal growth and development of children who need appropriate, safe, adequate amounts of complementary food, whereas suboptimal infant feeding results in malnutrition (Dwyer *et al.,* 2010). Out of the 10.9 million under-five year deaths that occur worldwide annually, malnutrition is, directly or indirectly, responsible for 60% of them. Over 3.4 million children less than five die each year due to inappropriate feeding practices (UNICEF, 2013). In many developing countries, inadequate complementary feeding of 6-23 months old children is a major problem. Only 50% of children receive the minimum number of meals, less than one-third achieve minimum dietary diversity, and only 21% meet the criteria for the minimum acceptable diet (Arnold *et al .,* 2009; Lutter *et al.,* 2011). In a recent Annual Health Survey conducted in India from 2010 to 2013 covering all the 284 districts (as per 2011 census) of 8 Empowered Action Group (EAG) States (Bihar, Uttar Pradesh, Uttarakhand, Jharkhand, Madhya Pradesh,

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Chhattisgarh, Odisha and Rajasthan) and Assam, the percentage of children breastfed within one hour of birth was observed to vary from 30% in Bihar and Uttar Pradesh to around 70% in Assam and Odisha. Children exclusively breastfed for at least 6 months ranged from 17.7% in UP to 47.5% in Chhattisgarh. Complementary feeding is introduced in only 53% infants between 6–8 months, with only about 44% of breastfed children being fed at least the minimum number of times recommended. Overall, only 21% of breastfeeding and non-breastfeeding children are fed in accordance with the infant and young child feeding (IYCF) recommendations. Multiple efforts are being envisaged to improve feeding practices in children. WHO and United Nations Children's Fund (UNICEF) launched the Baby-Friendly Hospital Initiative in 1992, Integrated Management of Childhood Illness (IMCI) in mid-1990s and IYCF in 2002 which stress the importance of breastfeeding. All these programs have been adopted by India since the last one to two decades to promote appropriate feeding practices in children under-five years.

Appropriate breastfeeding and complementary feeding practices depend on accurate information and support from the family, community, and healthcare system. Inadequate knowledge about feeding practices is an equally important determinant of malnutrition, as is the lack of adequate and hygienic food. However, in spite of all the efforts deployed as information, education, or training campaigns, the prevalence of proper feeding practices remains low. Tamil Nadu is one of India's more progressive states, ranking in top 3 on several economic and social indicators. The Government of Tamil Nadu has introduced several progressive policies and programs for women and children that have together helped in drastically improving the nutritional status of the children. However, The UNICEF reports that within Tamil Nadu, several regional and social disparities exist, in addition to several caste and gender-related poverty issues posing a great problem for children belonging to some regions, and in rural areas. Education of mother, socioeconomic status of family, social customs and beliefs like avoidance of colostrum etc. affect the feeding practices directly or indirectly. Current study has focused on some of the core indicators of IYCF practices to reflect upon the prevailing feeding practices in the rural area of Tamil Nadu state. Considering the above facts in view this study was aimed to evaluate the infant and young child feeding practices among mothers with children up-to two years attending primary health centers, in Kanchipuram district, rural Tamil Nadu and to find out the relationships between mothers socio-demographic characteristics and practices of infant and young child feeding. The study also determined the factors associated with early cessation of breastfeeding before 24 months.

Materials and methods

Methods: A health center based, cross-sectional study was conducted in a rural setting of Kanchipuram from June 2016 to September 2016. The study population included mothers of children (0-23 months) attending Maternal and Child health Clinic (MCH) under the field practice area of the rural training center of Tagore Medical College, Kanchipuram. The mothers attending the centers were selected using simple random sampling technique. The inclusion criteria included mothers of children aged 0-23 months and exclusion criteria were those unwilling to cooperate with the study.

Study subjects: Mothers with children up to 2 years attending Maternal and Child health Clinic (MCH) clinics of Ezhichur and Kelambakkam Primary health Center. Infants who were immuno-compromised, born prematurely, who have any disabilities like cleft lip, or any other medical ailment like mental or physical retardation which would interfere with their suckling ability were not included in the study.

Sampling: Simple random sampling, At 95% confidence level and taking the prevalence of exclusive breast feeding to be 48% and with a relative error of 10 %, using the formula $n = Z\alpha^2\ p\ q\ /\ L^2$, Where n = sample size, Zα = 1.96 value of the standard normal variate corresponding to level of significance alpha 5 %, p = prevalence of exclusive breast feeding =48% (as per NFHS 4 data) and q = 1 – p =52%, L = Allowable error =15%. The sample size comes to be 192 which was rounded off to 200.

Data collection: After obtaining written informed consent, the content of questionnaire was explained to the study participants. Self-administered questionnaire was given to the participants and data was collected. A total of 200 eligible mothers were approached through one on one interview in the study. Oral Informed consent was obtained and data collected with interview technique using a structured questionnaire which captures socio-demographic features, knowledge and practices of infant and young child feeding practices. The KAP of mother's toward IYCF questionnaire items were rated and scored according to the following patterns.

Scoring: For this study purpose, IYCF practices (14) were given a score of 1 for each positive response. A score of >5/7 is considered an "Ideal and good IYCF practices" for children less than 6 months. A score of >10/14 is considered an "Ideal and good IYCF practices" for children more than or equal to 6 months to 2 years.

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Table 1. Sociodemographic profile of the study population.

S.No.	Parameters	Categories	Frequency (N)	Percentage (%)
1.	Gender	Male Female	103 97	52 48
2.	Religion	Hindu Muslim Christian	160 18 22	80 9 11
3.	Mother's educational status	Illiterate School Post school (diploma, graduate, postgraduate)	15 144 41	8 72 20
4.	Father's educational status	Illiterate School Post school (diploma, graduate, postgraduate)	7 129 64	3.5 64.5 32
5.	Mother's occupational status	Unemployed Employed	162 38	81 19
6.	Socioeconomic status*BJ Prasad classification	I (Upper) II (Upper middle) III (Lower middle) IV (Upper lower) V(Lower)	185 14 1 0 0	92.5 7 0.5 0 0
7.	Type of family	Joint Nuclear	53 147	26.5 73.5
8.	Mode of delivery	Normal Caesarean	151 49	75.5 24.5
9.	Place of delivery	Institutional Home	196 4	98 2
10.	Complications during delivery	Yes No	24 176	12 88
11.	Positive family attitude to ideal IYCF	Yes No	197 3	98.5 1.5
12.	Guidance on IYCF by family and relatives	Yes No	196 4	98 2
13.	Husband promotes BF by sharing household work	Yes No	182 18	91 9
14.	Grandmother living with family to support IYCF	Yes No	161 39	81 19

Statistical analysis: Data was entered and analyzed in Statistical Package for Social Sciences (SPSS -IBM) software version 21. Qualitative variable proportions and quantitative variable mean, median, range and standard deviation was calculated. Bivariate analysis was used to find the association between determinants like mothers education, income etc. P value of <0.05 was considered significant.

Ethical consideration: Informed written consent was taken from all study subjects. No pressure coercion was exerted on subjects for participation in the study. Confidentiality and privacy was ensured at all stages. Institutional Ethical Committee clearance was obtained for the study.

Results

Our total study population consists of 200 samples out of which 103(52%) are male child and 97(48%) are female child. Among the mother of the child included in the study, 15(8%) are illiterate, 144(72%) have completed school education, 41(20%) have completed graduation or diploma and 162(81%) are unemployed and 38(19%) are employed. About 185 (92.5%) of the population belong to the upper-class, 14(7%) belong to the upper middle class and 1(0.5%) belong to the lower middle. Most of the study population 147(73.5%) were nuclear family and 53(26.5%) belong to joint family. Mode of delivery in these study population include normal delivery 151(75.5%) and caesarean 49(24.5%). Out of the total population, 196(98%) mothers delivered at hospital whereas 4(2%) delivered at home (Table 1).

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Table 2. Practices related to infant and young child feeding practices among mothers.

S. No.	Parameter	Compliance	Frequency (N=200)	Percentage (%)
1.	Prelacteal feeds given	Yes No	39 161	20 80
2.	Colostrum given	Yes No	184 16	92 8
3.	Initiation of breastfeeding in an hour	Yes No	154 46	77 23
4.	Exclusive breastfeeding	Yes No	161 39	80.5 19.5
5.	Complementary feeding> 6 months (N=136)	Yes No	123 13	90.5 9.5
6.	Continued breastfeeding practices (up to 2 years)	Yes No	134 66	67 33
7.	Compliance to IYCF practices	Yes No	153 47	76 24

Table 3. Factors affecting prelacteal feeds.

S. No.	Parameter	Variables	Yes (39)	No (161)	Total (200)	P value
1.	Religion	Hindu Muslim Christian	30 (18.8) 4 (22.2) 5 (22.7)	130 (81.3) 14 (77.8) 17 (77.3)	160 18 22	0.86
2.	Mode of delivery	Normal Vaginal Caesarean	33 (21.9) 6 (12.2)	118 (78.1) 43 (87.8)	151 49	0.14
3.	Place of delivery	Institution Home	37 (94.8) 2 (5.2)	159 (81.1) 2 (50)	196 4	0.17
4.	Mothers educational status	Illiterate Literate	4 35	11 150	15 175	0.46
5.	Mothers working status	Unemployed Employed	35 (21.6) 4	127 (78.4) 34	162 38	0.12
6.	Complications during Pregnancy	Yes No	7 (29.2) 32 (18.2)	17 (70.8) 144 (81.8)	24 176	0.20
7.	Type of birth outcome	Singleton Twin	39 (19.9) 0	157 (80.1) 4 (100)	196 4	1.00
8.	Birth order of baby	1st baby 2nd and 3rd baby	30 (23.4) 9 (8.3)	98 (76.6) 63 (91.7)	128 72	0.05*

*Significant @P<0.05.

Majority of the study population reported good family support, husband sharing household work with them and had grandparents support. Majority of our study population received IYCF advices from health care workers both during antenatal period and postnatal period as 178 (89%), 184 (92%) respectively.As depicted in Table 2, 39(19.5%) were given prelacteal feeds, 184(92%) were given colostrum, 154(77%) were initiated breast feeding within an hour, 161(80.5%) were given exclusive breast feeding, 123(90.5%) started complementary feeding after 6 months, 134(67%) continued breast feeding up to 2 years, 153(76%) were compliance to IYCF practices (Table 2).

In this study 39(20%) infants had received prelacteal feed and there is no significant association found between variables such as religion, mode of delivery, mother's educational status, working status, type of birth outcome, complications during delivery on giving pre lacteal feeds. Exclusive breast feeding was given for 161(80.5%) children. Among them 53(33%) were less than 6 months of age and 108(67%) were in 6months to 2 years of age (Table 3). Uncomplicated deliveries (p=0.001), grandmothers living with family, mothers educational status and working status were found to have significant association with exclusive breast feeding (Table 4). In this study, 135(67%) children had breast feeding continued up to two years (Table 5).

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Table 4. Factors influencing exclusive breast feeding.

S. No.	Parameter	Variables	Yes (161)	No (39)	Total (200)	P value
1.	Religion	Hindu Muslim Christian	126(78) 16 (10) 19 (12)	34 (87) 2 (5) 3 (8)	160 18 22	0.960
2.	Type of family	Joint Nuclear	28 (17) 133 (83)	25(64) 14 (36)	53 147	0.001 *
3.	Received advice from health care worker	Yes No	144(89) 17 (11)	34 (87) 5 (13)	178 22	0.68
4.	Mode of delivery	Normal vaginal Caesarean	120(75) 41 (25)	31 (79) 8(21)	151 49	0.423
5.	Place of delivery	Institution Home	158(98) 3 (2)	38(97) 1(3)	196 4	0.43
6.	Complications during delivery	Yes No	4 (2) 157(98)	20(51) 19 (49)	24 176	0.001*
7.	Type of birth outcome	Singleton Twin	158(98) 3 (2)	38 (97) 1 (3)	196 4	0.430
8.	Birth order of baby	1st 2nd 3rd	116(72) 36 (22) 9 (4)	12 (31) 24 (62) 3(7)	128 60 12	0.10
9.	Grandmother living with family	Yes No	129(80) 32 (20)	23(85) 16 (15)	152 48	0.005*
10.	Mothers educational status	Illiterate Literate	8(5) 153	7(18) 32	15 185	0.05*
11.	Mothers working status	Unemployed Employed	149 (79) 12	12 (87) 27	161 39	0.001*

Table 5. Factors influencing continuation of breast feeding up to 2 years.

S. No.	Parameter	Variables	Yes (161)	No (39)	Total (200)	P value
1.	Religion	Hindu Muslim Christian	105 (78.4) 15 (10.4) 15 (11.2)	54 (83.1) 4 (6.2) 7 (10.8)	159 19 22	0.600
2.	Type of family	Joint Nuclear	101 34	45 20	146 54	0.394
3.	Received advice from health care worker	Yes No	120 15	58 7		0.56
4.	Mode of delivery	Normal vaginal Caesarean	104 30	46 20	150 50	0.293
5.	Place of delivery	Institution Home	133 2	63 2	196 4	0.598
6.	Complications during delivery	Yes No	10 125	14 51	24 176	0.03*
7.	Type of birth outcome	Singleton Twin	132 2	64 2	196 4	
8.	Birth order of baby	1st 2nd 3rd	88 36 10	40 23 2	128 59 12	0.27
9.	Grandmother living with family	Yes No	114 21	38 27	152 48	0.001*
10.	Mothers educational status	Illiterate Literate	8 127	7 58	15	0.27
11.	Mothers working status	Unemployed Employed	130 5	31 34	161 39	0.001*

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Uncomplicated deliveries (p=0.03), grandmother living with family (p=0.001), unemployed mothers (p=0.01) were found to have significant association with continuation of breast feeding.

Discussion

In this study, only 20% of children received prelacteal feeds which is similar to NFHS-3 Tamil Nadu as 21% and less compared to NFHS-3 India, and studies done by Garg *et al.* (2015), Raval *et al.* (2011), Kulkarni *et al.* (2004) who showed 57%, 30% and 43% respectively. Whereas it was high when compared to Fazilli *et al.* (2011) and Hungama (2011) who showed 11 and14% respectively. Rate of initiation of breast feeding within 30 minutes was found to be similar (15%) as compared with study done by Garg *et al.* (2015) and low as compared to NFHS-3 data for Tamil Nadu (58%) as well as for the country (24%). However, the rate of initiation between 30 minutes to one hour was observed to be high (62%) in our study done in Udupi district compared to the study (34%) by Garg *et al.* (2015), NFHS-3 studies done in Tamil Nadu (59%) and India (25%) and NFHS-4 India (54%). About 23% of infants were given breast milk after 1 h of birth is found to be low when compared to Garg *et al.* (2015) study (86%), NFHS-3 India (55%) and Tamil Nadu (91%)(Fig. 1).

In this study, 80% of children were exclusively breastfed; initiation of complementary feeding after six months was done for about 81%, 67% continued breast feeding till 2 years of age as compared to 58.7%, 66.6% and 100% respectively in a study done in West Bengal (Das *et al.*, 2013). In this study 77% of children were breast feed within 1 h of birth which is high compared to 45.5% among marginalized population of Odissa state in a study done by Sonali *et al.* (2015) and 34.2 % in rural West Bengal (Das *et al.*, 2013). Annual Health Survey conducted in India from 2010 to 2013 covering all the 284 districts (as per 2011 census) of 8 Empowered Action Group [EAG States-Bihar, Uttar Pradesh, Uttarkhand, Jharkhand, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan and Assam] reports the percentage of children breastfed within one hour of birth vary from 30% (Bihar and Uttar Pradesh) to 70% (Assam and Orissa). In this study it is found to be 62% (Fig. 2).

In our study 94.8% of institutionally delivered mothers gave pre-lacteal feeds to their children. This was found to be very high when compared to 51.8% of home-delivered and 37.2% of institutionally delivered mothers reported by Parmar *et al.* (2000). According to our study, exclusive breast feeding was given for 80%. Which was high in comparison with other studies as 46%, 34%, 48.3%, 66%, 17.7% in NFHS-3 India and Tamil Nadu, NFHS-4 Tamil Nadu, Ahmedabad study done by Rana *et al.* (2016) and Uttar Pradesh studies respectively (Fig. 3).

Fig. 1. Prelacteal feeds.

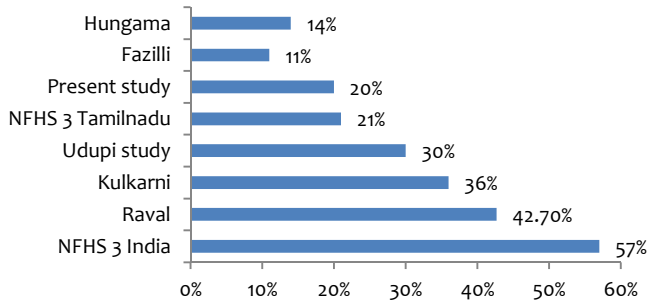


Fig. 2. Initiation of breast feeding.

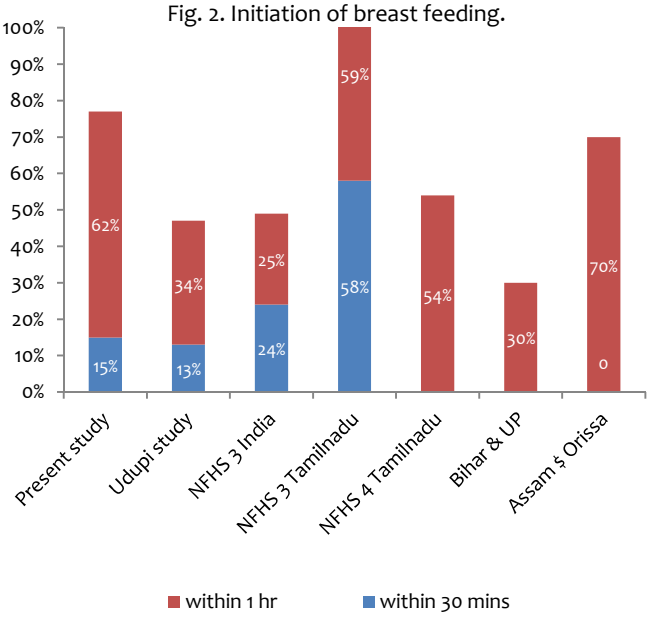
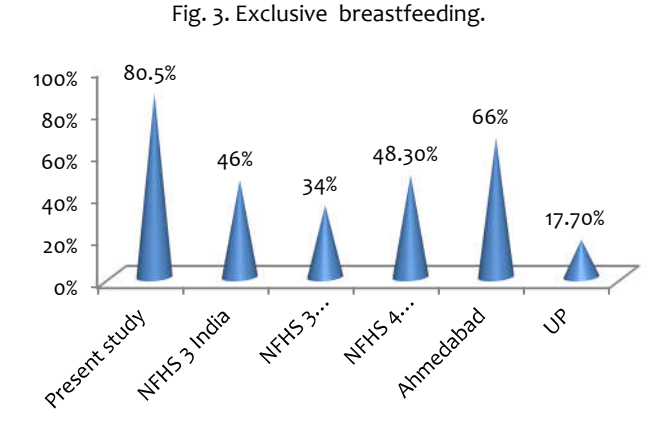


Fig. 3. Exclusive breastfeeding.



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The overall compliance to IYCF was 76%, whereas in less than 6 months infants it was 92% and in 6 months to 2 years it was 69%. This finding is consistent with study done in rural Varanasi by Srivatsav *et al*. (2014) who reported the overall compliance as 67%.

Conclusion

Initiation of BF within an hour (77%) and exclusive breast feeding (80%) practices seems to be satisfactory. Giving prelacteal feeds (94.8%) among institutional deliveries was found to be very high. Grandmothers living with family in initial six months post-delivery is found to have positive influence on exclusive breast feeding practices and continuation of breast feeding (BF) up to two years. Unemployed mothers have been found to have early initiation of BF and also continuation of breastfeeding practices up to two years. Overall compliance to IYCF practices is found to be good among mothers attending primary health centers of rural Tamil Nadu.

Acknowledgements

Authors are thankful to Indian Council of Medical Research (ICMR) for considering this study under 'Short Term Studentship Programme 2016'. We heartily acknowledge the cooperation and support of Department of Community Medicine, Tagore Medical College, Chennai for supporting this study.

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Cite this Article as:
Madhan Kumar, V., Reetheeswaran, J. and Arumugam, B. 2019. A Study of Determinants on Infant and Young Child Feeding Practices among Mothers attending Primary Health Centers in Rural Area of Tamil Nadu, India. *J. Acad. Indus. Res*. 7(12): 162-168.

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