

Original research article

Assessment of feeding practices among under 5 children in a rural area of Tamilnadu, India

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Introduction: According to WHO, an estimated 78 million babies are not breastfed within the first hour of life, putting them at higher risk of death and disease. Majority of those babies were discontinued from breastfeeding. **Objectives:** 1. To assess the feeding practices of under-five children and its influencing factors. 2. To determine the factors associated with feeding practices of under-five children. **Materials and Methods:** It is a Community based analytical cross sectional study done on 440 under 5 children residing in a rural area of Tamilnadu. Data collection was careied out using a structured questionnaire containing sociodemographic details, feeding practices, antenatal, Intranatal and postnatal characteristics of under 5 children. Data analysis was done using MS Excel and SPSS Software Version 22. **Results:** Nearly 59.7% of them were males and 72.7% of the mothers of under 5 children had education upto high school. Among the study participants, 61.8% were initiated breastfeeding within half an hour of delivery, 83.5% were exclusively breastfed for the first 6 months, colostrum was given in 82.7% and 57% were undernourished. Variables significantly associated with exclusive breastfeeding were gender, nourishment of mother, birth order, early initiation of breastfeeding and nutritional status of the child. **Conclusion:** As per WHO guidelines on IYCF practices, every child between the age group 6-23 months of age should receive complementary foods comprising of following 4 or more of grains, nuts, vitamins, egg, fruits, vegetables, dairy products, meat, roots, tubers and legumes called as Minimum dietary diversity

Keywords: Breastfeeding, Nutrition, Diet, Colostrums

Introduction

Underweight and obesity are the two spectrums of malnutrition possessing a double burden worldwide.¹ Undernutrition among the under 5 children is the most adverse form of human deprivation. Various forms of undernutrition namely under-weight, wasting and stunting are termed as “Silent emergency” by the United Nations children’s fund (UNICEF). Inappropriate feeding practices contribute heavily to undernutrition in the early part of childhood globally.² The optimal feeding practice include early initiation of breastfeeding, exclusive breastfeeding for the first six months of life and supplementary feeding are introduced while breastfeeding is continued till the age of two years.³ Poor feeding practices in the early period of life will contribute to impaired cognitive and

social development, poor scholastic performance and reduced productivity in later part of life.⁴ As per the NFHS-5 National data, the prevalence of exclusive breastfeeding among children under 6 months of age was only 63.7% Proportion of children under 3 years of age who were breastfed within one hour of birth was only 41.8% with urban areas showing a slightly higher proportion (44.7%) when compared to rural areas (40.7%).⁵ According to WHO, an estimated 78 million babies or three in five babies are not breastfed within the first hour of life, putting them at higher risk of death and disease and making them less likely to continue breastfeeding. Most of these babies are born in low- and middle-income countries. Breastfeeding rates within the first hour of birth are highest in Eastern and Southern Africa (65%) and lowest in East Asia and the Pacific

(32%). In southern Asia, the breastfeeding rate within the first hour of birth is only 40% and it is very much worrisome.^{6,7} NFHS-5 Tamil Nadu data which showed the proportion of children who were initiated breastfeeding within one hour of birth to be 60.2%. Exclusive breastfeeding rates in Tamilnadu as per NFHS 5 data was 63.4% (Rural – 62.9%, Urban – 66.2%).⁵ As per the literature search, only few studies have assessed the feeding practice of children in rural area Tamilnadu state and still lacunae is there to be bridged the current study was undertaken to assess the feeding practice and determine the associated factors among the under 5 children from a rural area of Tamilnadu.

Material and methods

Study design: It is a community based cross-sectional, analytical study. **Study area:** The study was conducted in Veerapandi area, which is the field practice area attached to Vinayaka Missions Kirupananda Variyar Medical College and Hospitals, Salem. **Study population:** The study populations identified were children below 5 years of age, residing in the Veerapandi area, permanently at the time of the study as per their ration card. **Study period:** The study was carried out for a period of 12 months (June 2022 to May 2023). **Sample size:** The sample size was calculated based on a previous study conducted by Senthilkumar SK et al in the year 2014.⁸ The prevalence of exclusive breastfeeding among under 5 children was found to be 35.4%. This prevalence of 35.4% was taken as the reference value for the sample size calculation for this study. The sample size was calculated using the formula: $N = 4pq / [L]^2$ (where p - 35.4, q – 64.6.7, L - 5) Adding 20% non-response rate to the above obtained sample size, the final sample size was rounded off to 440. **Sampling method:** There were 6101 children under 5 years of age in the study area and they formed the sampling frame for the study. Simple random sampling method using computer generated random number tales was used to select the study samples. **Inclusion criteria:** Children belonging to the age group below 5 years of age residing permanently with their families in Veerapandi area whose mother consented for the study were included for the study. **Exclusion criteria:** Children who were not able to be contacted even after 2 visits and children with severe illnesses were excluded from the study. **Study tool:** Data was collected using a pre tested

semi-structured questionnaire. Pretesting was done in a sample of 30 children. The questionnaire consisted of the sociodemographic details, details pertaining to mother, details pertaining to children, feeding practices and anthropometric measurements. Anthropometric measurements were recorded which included height of the child, weight of the child and mid arm circumference of the child. The interview was conducted by the investigator himself and their responses were recorded in the questionnaire. The physical instruments used in the study include a standardized weighing scale, Infantometer and a non-stretchable inch tape. **Statistical analysis:** Data was entered in MS Excel and analysed using SPSS Version 22. Categorical variables were expressed in frequency and percentages whereas continuous variables as mean and standard deviation. Chi-square test was used to test the association between exclusive breastfeeding and selected variables. P value < 0.05 was considered as statistically significant. **Informed consent:** It was prepared in the local language as per the ICMR guidelines and was obtained from the mothers of under five children prior to conduction of the study. **Ethical clearance:** Study proposal was presented in front of the Institutional Ethical Committee (IEC) and proper clearance was obtained before data collection. (Ref No: VMKVMC&H /IEC/22/95)

Results

Nearly half (47%) of the study participants belonged to 1-3 years of age and about 59.7% of them were Males. Majority 80.5% of them were from nuclear family. Around 64.7% of them belonged to either upper lower or lower socioeconomic status as per Modified BG Prasad Socioeconomic status scale 2021. About 72.7% of the mothers of under 5 children had education upto high school and only 33.4% were involved upto skilled occupation. At the time of childbirth, nearly 61.8% of the mothers aged between 22-27 years and 27.3% aged \leq 21 years.

Table 1: Sociodemographic characteristics of Under 5 children (N-440)

S.No	Variable	n	%
1.	Age		
	< 1 year	77	17.5
	1-3 years	207	47
	> 3 years	156	35.5
2.	Gender		
	Male	263	59.7
	Female	177	40.3
3.	Family type		
	Nuclear	354	80.5
	Joint family	56	12.7
	Three generation family	30	6.8
4.	Socioeconomic status		
	Upper	13	3
	Upper middle / Lower Middle	142	32.3
	Upper lower / Lower	285	64.7
5.	Education of the mother		
	Illiterate	34	7.7
	Upto high school	320	72.7
	> High school	86	19.6
6.	Occupation of the mother		
	Unemployed	293	66.6
	Employed	147	33.4

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Around 61.8% of the children were initiated breastfeeding within half an hour of delivery and nearly 83.5% were exclusively breastfed for the first 6 months. Only 8.2% had a history of prelacteal feed use and Colostrum was given in 82.7% of the Under 5 children. Around 80% of the children were breastfed upto 2 years and

weaning was started within 6 months in 13.7% of them.

Table 2: Feeding practice of Under 5 children (N-440)

S.No	Variable	n	%
1.	Time of initiation of breastfeeding		
	Within half an hour	272	61.8
	Half an hour-1 hour	44	10
	1-2 hours	84	19.1
	> 2 hours	40	9.1
2.	Exclusive breastfeeding for first 6 months		
	Yes	344	78.3
	No	96	21.7
3.	History of prelacteal feed use		
	Yes	36	8.2
	No	404	91.8
4.	Type of prelacteal feed given (N-36)		
	Honey	8	22.2
	Sugar water	24	66.7
	Donkey milk	4	11.1
5.	Colostrum given		
	Yes	364	82.7
	No	76	17.3
6.	Breastfeeding continued upto		
	< 12 months	72	16.4
	1-2 years	352	80
	> 2 years	16	3.6
7.	Weaning started at		
	< 6 moths	60	13.7
	\geq 6 months	380	86.3
8.	Type of weaning food used		
	Vegetables	352	80
	Cereals	52	11.9
	Egg	16	3.6
	Others*	20	4.5
9.	Frequency of weaning food use in a day		
	\leq 3 times a day	212	48.2
	4-5 times a day	200	45.4
	> 5 times a day	28	6.4

Table 3: Antenatal, Intranatal and Postnatal characteristics of Under 5 children (N=440)

S.No	Variable	n	%
1.	No of antenatal visits		
	< 4	22	5
	4-7	358	81.4
	> 7	60	13.6
2.	IFA tablets taken upto the prescribed duration		
	Yes	317	72
	No	123	28
3.	Mother was immunised for tetanus		
	Yes	434	98.7
	No	6	1.3
4.	Mother was undernourished at the time of delivery*		
	Yes	111	25.3
	No	329	74.7
5.	Birth order		
	1	304	69
	2-3	97	22
	> 3	39	8
6.	Mode of delivery		
	Normal vaginal	286	65
	Cesarean section	154	35
7.	Birth weight		
	< 2.5 kg	93	21.2
	2.5-4 kg	305	69.4
	> 4 kg	42	9.4
8.	No of postnatal visits		
	< 4	11	2.5
	4-7	393	89.4
	> 7	36	8.1
9.	Child fully immunised or age		
	Yes	427	97.1
	No	13	2.9
10.	Utilizing Anganwadi services		
	Yes	301	68.4
	No	139	31.6
11.	Current Nutritional Status of the child*		
	Normal	189	43
	Underweight	61	13.8
	Stunting	106	24.2
	Wasting	123	28

*Multiple responses allowed
 * Mothers were considered undernourished if their Body Mass Index is < 18.5 at the time of delivery as per WHO Classification of Body Mass Index

In this study, majority 81.4% of the mothers underwent 4-7 antenatal visits and only 72% of them took their IFA tablets upto the prescribed duration. Nearly 65% delivered their baby by normal vaginal delivery. About 69% had a birth order of 1 and 21.2% were born with a birth weight of < 2.5 kg. During the postnatal period, 89.4% of the mothers had undergone 4-7 postnatal visits and almost 97.1% of the Under 5 children were fully immunised up to age. About 57% of the children had any form of undernutrition.

In our study, variables significantly associated with exclusive breastfeeding were gender (p value - 0.0001), nourishment of mother (p value - 0.030), birth order (p value - < 0.0001), early initiation of breastfeeding (p value - 0.001) and nutritional status of the child (p value - < 0.0001). Other variables were found to be not significant. (Table 4)

Discussion:

The results obtained from the current cross-sectional study are compared with other similar studies done in India and abroad and the resultant findings are discussed below. **Socio-demographic characteristics of the study population:** Nearly half (47%) of the study participants belonged to 1-3 years of age and 25.5% were < 1 years of age in the current study. Whereas in studies by Priyanka R et al and Reddy VB et al 35.3% and 41% of the children respectively belonged to 1-3 years of age.^{9,10} In Kumar D et al study majority 54.4% belonged to < 1 year of age and 31.3% of the children were of 1-3 years of age.¹¹ Majority 59.7% of them were Males in our study. Similarly, male preponderance was seen in studies by Senthilkumar SK et al and Padmanabhan PS et al studies where 51.4% and 56.4% were males.^{8,12} In contrast to our study Female preponderance was seen in studies by Reddy VB et al Dinesh PV et al and Priyanka R et al study and 48.7%, 49.27% and 48.9% were respectively males.^{10,13,9} In the present study, only 72.7% had studied upto high school and 19.6% had undergraduate/Postgraduate education. Similarly, in Priyanka R et al study 30% of mothers had high school education and 13.3% had education degree and above.⁹ Galgamuwa LS study recorded that 38% of the mothers had secondary or above education.¹⁴ Whereas in study by John J et al 12.2% were uneducated and 23.4% had high school education and similarly about

Table 4: Association between selected variables and exclusive breastfeeding among Under 5 children (N-440)

S.No	Variable	Exclusive breastfeeding		p value	Odds Ratio (Confidence Interval)
		Yes (344)	No (96)		
1.	Gender of the child				
	Female	156	21	0.0001*	2.96 (1.74 – 5.02)
	Male	188	75		
2.	Socioeconomic status				
	Upper/Middle class	119	36	0.598	0.88 (0.55 – 1.40)
	Lower class	225	60		
3.	Education of the mother				
	<High school	210	66	0.221	0.74 (0.45 – 1.19)
	≥ High school	133	31		
4.	Mother undernourished				
	Yes	95	16	0.030*	1.96 (1.05 – 3.42)
	No	249	80		
5.	Birth order				
	≤ 2	296	48	0.0001*	6.14 (3.71 – 10.16)
	> 2	48	48		
6.	Mode of delivery				
	Normal Vaginal	220	66	0.384	0.80 (0.49 – 1.30)
	Cesarean Section	124	30		
7.	Early initiation of breastfeeding				
	Yes	321	79	0.001*	3.03 (1.53 – 5.88)
	No	23	17		
8.	Nutritional status of the child				
	Normal 189	170	19	<0.0001*	3.95 (2.29 – 6.82)
	Undernourished (251) (Wasting/Stunting/Underweight)	174	77		

* P Value < 0.05 is statistically significant

50% had no formal education, 28% had education upto 9th standard and only 5% had completed graduation in Reddy VB et al study.^{15,10} This difference could be due to the difference in study settings. The proportion of the study population belonging to lower socio-economic status was 33.7% in the present study when compared to the findings of the study done by S.K.Senthilkumar in a tribal community of Coimbatore district, 83% belonged to lower socio-economic status and 65.5% belonged to lower socioeconomic status in Yadav SS et al study.^{8,16} Whereas in Priyanka R et al study about 44.4% and 42.2% belonged to upper lower and lower middle socioeconomic status.⁹ **Feeding practice:** In the present study, nearly 61.8% of the children were initiated breastfeeding within half an hour of delivery. NFHS-5 National

data and NFHS-5 Tamil Nadu data which showed the proportion of children who were initiated breastfeeding within one hour of birth to be 52% and 60.2% respectively.^{17,18} Studies that were conducted in India which showed a higher proportion of children who were initiated breastfeeding within one hour of birth when compared to the present study include Senthilkumar SK, Padmanabhan PS and Gladius Jennifer H et al.^{9,12,19} About 78.3% were exclusively breastfed for the first 6 months in the present study. The exclusive breastfeeding rate in the present study is significantly higher than the global exclusive breastfeeding rate of 37%.²⁰ Indian studies with lower exclusive breastfeeding rate compared to our study include Padmanabhan PS et al, Senthilkumar SK et al, Priyanka R et al

and Gladius Jennifer H et al in these studies 27.3%, 35.4, 66.7% and 68% respectively.^{12,8,9,19} High rate of awareness regarding breastfeeding and higher maternal literacy where the reasons for higher prevalence of exclusive breastfeeding in the present study. Proportion of children who received prelacteal feeds in the present study was 8.2% Whereas in studies done by Dandekar RH et al and Gladius Jennifer H et al proportion of children who received prelacteal feeds were 28% and 29.1% respectively.^{21,19} Proportion of children who were initiated weaning foods at the completion of six months in the present study was 86.3% and only 13.7% were initiated weaning foods before 6 months. In Dandekar RH et al study 52.04% were only started weaning foods at 6 months.²¹ Weaning was started before 6 months in 10.5% and 52.38% of children in studies by Rao S et al and Bhandari D et al.^{22,23}

Factors associated with exclusive breastfeeding: In our study, variables significantly associated with exclusive breastfeeding were gender, nourishment of mother, birth order, early initiation of breastfeeding and nutritional status of the child similar to studies by Senthilkumar SK et al and Priyanka R et al.^{8,9} Whereas in Woldie TG et study Mothers who have adequate knowledge on breastfeeding, those underwent ≥ 3 antenatal visits, Postnatal counseling on infant feeding, early initiation of breast feeding were significantly associated with exclusively breastfeeding.²⁴ Significantly associated variables with exclusive breastfeeding were maternal age, socioeconomic status, religion, parent's education, birth order, birth weight, type of family and number of antenatal visits in Mahmood SE et al study.²⁵

Conclusion: Feeding practice among the children was favourable compared to the NFHS 5 data for India and state. Measures to combat and prevent malnutrition in children include improving the nutritional status of the children adequate feeding practices, encouraging more number of children to utilise nutritional services from ICDS centres, early detection and effective treatment of common diseases of the children. As per WHO guidelines on IYCF practices, every child between the age group 6-23 months of age should receive complementary foods comprising of following 4 or more of grains, nuts, vitamins, egg, fruits, vegetables, dairy products, meat, roots, tubers and legumes called as Minimum dietary diversity. Additionally improvement of

environmental conditions, educating the mothers about proper hand washing techniques and proper personal hygiene measures for betterment of child rearing practices can be adopted.

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