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Original Research Article

Optimal feeding practices in Tamilnadu, breast feeding and complementary feeding: the reality

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ABSTRACT

Background: Optimal feeding of infants under two years of age has the greatest potential impact on child survival of all preventive interventions. This study was done to evaluate feeding practices of infants in first two years of life.
Methods: In this cross sectional study, 161 mothers with infants 6 mo to 24 mo of age, attending the well-baby clinic of this hospital were selected for study from April 2014 to March 2015 and interviewed using a structured questionnaire.
Results: The prevalence of exclusive breastfeeding for 6 mo was 44% with a median duration of 4.9±1.8 mo. The proportion of infants who received continued breast feeding at 1 year of age (12-15 mo) was 67%. The median duration of any breast feeding was 13.6 mo by survival analysis. Early introduction of cow's milk and bottle feeding were associated with nonexclusive breast feeding under 6 mo and early termination of breast feeding.
Conclusions: While rate of exclusive breast feeding was comparable to the state average (48%), there was a higher rate of introduction of cow's milk and bottle feeding which contributed to early termination of breastfeeding before one year of age. This study emphasis the fact that bottle feeding and inappropriate complementary feeding should be tackled to improve IYCF indicators in Tamilnadu.

Keywords: Bottle feeding, Early weaning, Exclusive breast feeding, Infant feeding, Infant and young child feeding

INTRODUCTION

Optimal breastfeeding of infants under two years of age has the greatest potential impact on child survival of all preventive interventions. Suboptimal breastfeeding has been linked with numerous adverse child health outcomes including increased incidence of diarrhea and pneumonia and increased mortality.[1,2] The Lancet's Child Survival Series estimated that 13% of all child deaths in low-income countries could be prevented if breastfeeding prevalence was increased to optimal levels.[3] The Lancet's 2013 Maternal and Child Nutrition Series also found suboptimal breastfeeding to be responsible for 804,000 under five deaths in 2011.[4]

WHO has issued several breastfeeding recommendations which include three key components: timely initiation (within one hour of birth) of breastfeeding, exclusive breastfeeding up to the age of six mo, and continued breastfeeding through 24 mo together with safe, nutritionally adequate, age appropriate, responsive complementary feeding starting in the sixth mo.[5]

While breastfeeding rates are no longer declining at the global level, with many countries experiencing significant increases in the last decade, only 39 per cent of children less than six mo of age in the developing world are exclusively breastfed and just 58 per cent of

20-23 mo olds benefit from the practice of continued breastfeeding.[6]

As per National Family Health Survey (NFHS)-4, the prevalence of exclusive breast feeding in children under 6 months in Tamilnadu was 48%.7 The success of breast feeding promotion is largely influenced by the regional social, economic and cultural factors as well as the local beliefs regarding breast feeding. Regional studies provide inputs for the early sensitization, assistance and continued support for breast feeding practices in the community. Therefore, the present study was carried out to evaluate feeding practices of infants in the first two year of life and to determine the variables associated with early weaning.

METHODS

This cross sectional study was done in the rural areas of Kancheepuram district in north Tamilnadu from April 2014 to March 2015. The study participants were mothers with infants of age 6 mo to 2 years visiting the well-baby and immunization clinic of Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur during the above period.

Inclusion criteria

All mothers with children 6 mo to 2 years who were willing to share the information.

Exclusion criteria

Mothers with children outside the study range and not giving consent. Children brought by caregivers other than mother.

A total of 161 mothers were interviewed with a structured questionnaire after verbal consent. The mothers were from homogenous group with comparable socioeconomic variables. The questions were easy, non-leading and involved only single responses. The questions included information on demographic and socio-economic variables and on factors assisting or hindering optimal infant feeding practices like, infant age and sex, birth order, birth weight and present weight, maternal age, education, family type, mode and place of delivery, pre-lacteal feeds, delay in initiation of feeds and reasons for delay, prior counseling on exclusive breast feeding and complementary feeding, first complementary feeds, details of complementary feeds, duration of exclusive breast feeding and continued breast feeding.

Breastfeeding is defined here into following categories, as proposed by World Health Organization: exclusive breastfeeding as when child is fed exclusively on human milk; predominant breastfeeding when child is fed on human milk and other liquids like water, tea, juices; general breastfeeding when all kind of milk, liquid and semisolid diet is given. Early weaning in this text refers to introduction of complementary feeding prior to 6 mo of life, with interruption of exclusive or predominant breastfeeding before this period.[8]

The following indicators were used for assessing infant and young child feeding practices: early initiation of breast feeding (within 1 hour), exclusive breast feeding rate under 6 mo, continued breast feeding at 1 year, continued breast feeding at 2 years and bottle feeding rate. Statistical analysis was done using SPSS 19.0.

RESULTS

The socio-demographic variables were comparable between the exclusive breast feeding group and the early weaning group. In this study, there were 43% boys and 57% girls. The average maternal age was 25 years (18-38 years). Most of the mother were above 20 years of age at the time of interview (95%) and almost all of them were literate (98.5%). Almost 99% of mothers had institutional deliveries. A total of 22% infants were born with low birth weight (less than 2500 grams) and 20% of infants at the time of study were found to be underweight (weight for age below -2 Z score) (Table 1).

Breast feeding was initiated within first hour of delivery in 87.5% and within the first six hours in 95 % of babies. The reasons for delayed initiation of breast feeding in 20 cases were due to NICU admission (45%), maternal exhaustion or post-operative sedation (25%), lack of secretions (20%) and post-partum hemorrhage (2%). Pre-lacteals were given in 10 % of cases.

Although 70% of mothers received exclusive breast feeding advice, only 44% of infants under 6mo (0-5 mo) were given exclusive breast feeding. The rate of exclusive breast feeding at 1, 2, 3, 4, 5 and 6 mo were 100%, 97%, 90%, 80%, 58% and 44% respectively. The median duration of exclusive breast feeding was 4.9±1.8 mo (1-11 mo).

All the babies in the study were breast fed at least once. The proportion of infants who received continued breast feeding at 1 year of age (12-15 mo) was 67% (23 out of 34 infants at 12-15 mo). Only two infants continued to receive breast feeding at 20-23 mo out of the 13 infants in that age group (15%). The median duration of any breast feeding computed by survival analysis was 13.6 mo (Figure 1).

Early introduction of solid, semisolid or soft foods before 6 month was noted in 56 % of infants. The bottle-feeding rate was almost 50%, while cow's milk was being given in 60% of infants. Among these infants the milk was given in varying proportions of dilution in 49%. Cow's milk was started at an average age of 7.3 mo (1-18 mo). The first complementary foods given to infants in this study were commercial instant cereal (30%), cow's milk (24%), cereals with pulses (15%), cereals alone (14 %), biscuit (14%) and milk substitutes (3%).

Table 1: Chi-square analysis of variables associated with early weaning before 6 months.

Variable		Early weaning		Chi square test		
		No (n=71)	Yes (n=90)	p	χ2	Df
Sex	Male	34	36	0.316	1.005	1
	Female	37	54			
Birth order	Primiparous	40	49	0.792	0.069	1
	Multiparous	30	40			
Family type	Nuclear	12	19	0.890	0.059	1
	Joint	14	25			
Maternal education	0-5 years	2	9	0.231	2.93	2
	6-10 years	29	41			
	Above 10 years	24	28			
Mode of delivery	Vaginal delivery	48	55	0.328	0.956	1
	Caesarean delivery	22	35			
Birth weight	<2500 g	15	20	0.867	0.028	1
	>2500 g	56	70			
EBF advice given	Yes	54	58	0.135	2.229	1
	No	17	31			
Delayed initiation	Yes	9	11	0.931	0.008	1
	No	62	79			
Weight for age	Underweight	14	19	0.828	0.047	1
	Normal	57	71			
Bottle fed	Yes	27	53	0.009*	6.909	1
	No	44	37			
Cow's milk	Yes	34	62	0.007*	7.272	1
	No	37	28			
Continued breast feeding at 1 year	Yes	26	22	0.018*	5.593	1
	No	7	20			

*= p <0.05 means statistical significance

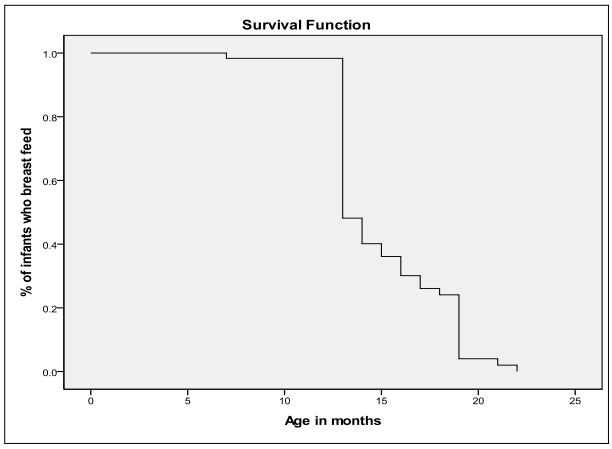
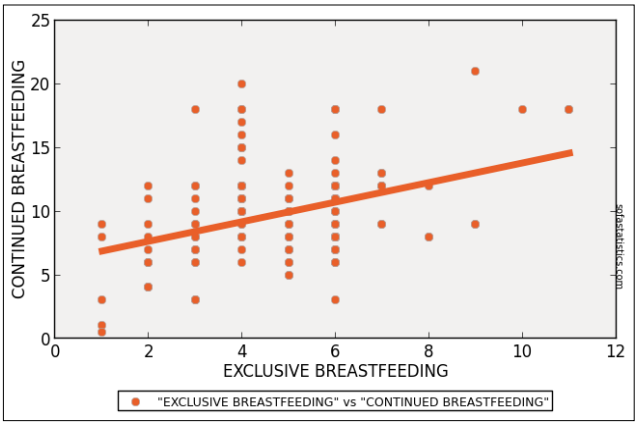


Figure 1: Survival curve showing probability of duration of continued breast feeding.

Among all the variables analyzed in this study, introduction of cow's milk and bottle feeding were the only variables associated with early weaning in this study. The duration of exclusive breast feeding showed positive correlation with duration of continued breastfeeding at 1 year (p value <0.001 and Pearson's R statistic: 0.379) (Figure 2).



Two-tailed p value: <0.001Pearson's R statistic: 0.379
Degrees of Freedom (df): 159
Linear Regression Details: 2
Slope: 0.77
Intercept: 6.139

Figure 2: Pearson test of linear correlation showing relationship between duration of exclusive breastfeeding and continued breast feeding.

DISCUSSION

This study analyses the feeding practices of infants attending the well-baby clinic of this hospital and these infants are all hailing from the surrounding rural areas of north Tamilnadu in Kancheepuram district. The indicators for assessing infant and young child feeding practices were compared with the national and regional data.

Early initiation of breastfeeding within one hour was 87.5% in this study as compared to national rate of 41% and regional rate of 60% in Kancheepuram district.[7] The prevalence of exclusive breast feeding under 6 mo was 44%, which is comparable to the national average (46%) and the rate in Tamilnadu (48%). Comparing with the world data on breastfeeding the average rate of exclusive breast feeding in the world was 34.2%, with ranges from 3.5% in Djibouti to 77.3% in Rwanda.[9]

In this study, almost all the mothers were literate and there was near 100% institutional deliveries. Almost 70% of them confirmed to have received some form of breast feeding advice from health care professionals and neighbors. Probably these factors may have played a role in the high rates of early initiation of breast feeding in this population.

On the contrary, continued breastfeeding at 1 year in this study was 67% as compared to 69% in Tamilnadu and 89% in India. Continued breastfeeding at 20-23 mo in this study was 15% as compared to 37% in Tamilnadu. There was a sharp fall in breast feeding at 14 mo as shown by the survival analysis (Figure 1). The mean duration of breastfeeding in this study was only 13.6 mo, which was much lower than the national average of 24.4 mo. This can be attributed to the high prevalence of bottle feeding (50%) in this population as compared to the regional average of 35% and the national average of 14%. In addition the early introduction of solid, semisolid or soft foods before 6 mo was noted in 56% of infants. Similar trend (46%) was shown in a study from Gujarat, India.[10] Author also reported a high rate of cow's milk feeding and a large proportion of them were receiving diluted milk. All these may have contributed to early termination of breastfeeding in the studied population.

This study did not find any association with under nutrition and early weaning or early termination of breast feeding before 1 year. This study did not show any socio-demographic variable associated with early weaning. Instead only bottle feeding and introduction of cow's milk were negatively associated with exclusive breastfeeding. The duration of exclusive breast feeding was positively correlating with continued breast feeding at 1 year.

In this study author found that while all babies were put to breast at least once, most mothers initiated feeding within the first hour. While rate of exclusive breast feeding was comparable to the national average, there was a higher rate of introduction of cow's milk and bottle feeding which contributed to early termination of breastfeeding before one year of age. The authors suggest a relook at the educational strategies in breast feeding promotion and reinforcement of optimal complementary feeding practices in this region with special emphasis on reducing bottle feeding practices in infants and young children.

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