

Assessment of infant feeding practices at a tertiary care hospital

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Abstract

Objective: To assess the practice and knowledge of mothers regarding breast feeding, complimentary feeding, and to find out socio-economic correlates of feeding practices.

Methods: A cross sectional survey conducted at paediatric department of Liaquat University Hospital (LUH) from Jan-Dec 2008. During that period 500 mothers with children less than 24 months were included. Infant feeding patterns were assessed in relation to recommendations and household socio-economic factors by an Interview Technique.

Results: Out of 500 mothers, 8.4% started exclusive breast feeding (EBF) while Pre-lacteal use was seen in 31.6%. Regarding the duration 52.2% mothers continued breast feeding for 2 years. Median duration of EBF was 3.5 months. It was seen that 60% of the 0-5 month-old infants breastfed 8 or more times per day. However, exclusiveness of breast feeding decreased from 60% at (0-2 months) to 40% (3-5 months).

Majority 64.2% were poor and 61.5% had no education. There is a statistically significant difference in feeding practices of educated and uneducated ($P < 0.0001$) and also in poor and middle class mothers ($P < 0.0003$). Regarding, age of their last born babies, 180 babies were under 6 months, and 320 were 6 to 23 months of age. The knowledge about complimentary feeding (CF) was inadequate. Around 21% of 2-3 months old babies received complementary food and 19% of 6-8 month-olds were only breastfed. In 78% mothers CF was advised by family members while in 23% mothers by doctors.

Conclusion: Exclusive breastfeeding was not maintained upto recommended age of 6 months. Knowledge about CF was lacking in the mothers. Regarding, mothers' education and socioeconomic conditions, a positive correlation was noted with feeding practices (JPMA 60:1010; 2010).

Introduction

The nutritional status of the infants mainly depends on feeding practices in the community. It is seen that child rearing practices vary among people and regions of districts and provinces.

The new WHO recommendation is of exclusive breastfeeding for 6 months and complementary feeding after 6 months of age.¹

Childhood malnutrition remains a common health problem and one of the major underlying causes of morbidity and mortality in children of developing countries including Pakistan.² Poverty, ignorance and lack of knowledge about balanced diet are a leading cause of primary malnutrition.

Exclusive breast feeding (EBF) up to the completion of sixth month of life is the national feeding recommendation. Breast milk is no doubt the ideal food for infants because it provides all the basic needs for growing infants up to 6 months, but is insufficient to cover all the needs beyond that period.

WHO programmes regarding malnutrition and Lactation management are running since decades but malnutrition and child mortality remained unchanged. The UNICEF survey has shown that from 1999 to 2003 the

prevalence of malnutrition has remained the same that is 57% in South Asia, while in 2006 it has been reduced to 53%.³

Most cost effective intervention to reduce infant mortality in developing countries is promotion of exclusive breast feeding and appropriate complementary feeding practices. This can be achieved by health education and public awareness programmes. This would lead to the achievement of the fourth MDG (Millennium developing goal) which is: to reduce by two-thirds the mortality rate of children under five, from the base year 1990 to the year 2015.⁴ Hence, an improvement in the feeding practices is recommended by the policy for implementation of Integrated Management of Neonatal Child Illness (IMNCI) Feeding Assessment guidelines for young infant feeding.⁵

According to a study conducted in Nepal approximately 7.7 and 19.1% of all neonatal deaths may be avoided with universal initiation of breast-feeding within the first day or hour of life, respectively.⁶ Around 54% of children living in Pakistan are malnourished.⁷ Malnutrition is associated with >50% of child deaths in addition to impairing child development. Identifying approaches to reduce the prevalence of malnutrition particularly in the vulnerable first 2 year of life is a priority in developing countries.⁸

Socioeconomic condition of families is assessed by housing, occupation, education and income levels in comparison to their country's statistical average from surveys. Socioeconomic indicators of poverty (poor housing conditions, low per capita income and energy consumption) are significantly associated with a greater risk of malnutrition and under 5 year mortality.⁹

Literature has shown that malnutrition rates increase between 6 and 18 month, due to inappropriate complementary feeding practices.^{2,7} Other contributory factor is low birth weight. Breast and complementary feeding, if adequately promoted and practiced, according to recommended guidelines by WHO; can prevent up to 19% of all childhood deaths in low-income countries.¹⁰

Hence, the objectives of our study were: as national health programmes were running since decades but < 5 year mortality is still the major threat, so in order to know the base line data regarding young infant feeding practices this study was conducted in LUH.

To assess the practice and knowledge of mothers regarding breast feeding, complimentary feeding and to find out socio-economic correlates of infant feeding practices.

Subjects and Methods

This descriptive cross sectional study was carried out in the Paediatrics department, Liaquat University Hospital Hyderabad/ Jamshoro, from January to December 2008. Total 500 mother-baby pairs were included. Sampling technique was non-probability purposive. Sample size was determined by using method appropriate for descriptive study (cross sectional).¹¹

For age group 0-6 months to assess the breast feeding practices, correct feeding practices were assumed to be observed in 35% (0.35 anticipated population proportion), precision level at 0.1, and confident limit of 95% with design effect of 2, estimated sample was 180(176). For age group 6-24months to assess the CF practices, the correct feeding practices were assumed to be observed in 55% of young infants (0.55 35 anticipated population proportion), precision level at 0.1, and confident limit of 95%, estimated sample was 320 (315). An interview of each mother after taking

informed consent was conducted using a questionnaire to obtain information regarding their age, parity, level of education, and socioeconomic condition. To assess the socioeconomic status we had inquired about family income, parental education, family size, employment/occupation status, land ownership, cows or goats ownership and type of housing. They were consolidated in a single index, socioeconomic status (SES), defined by the product of monthly per capita income times mean familial daily energy consumption.¹² However our working definition of Low SES consists of those having monthly income less than 80 US dollars (< 7000 Pak rupees).¹³

For assessing the knowledge regarding breast and complimentary feeding practices we included recommended feeding assessment questions in our questionnaire as mentioned in IMNCI (integrated management of neonatal and childhood illness) feeding assessment chart. This tool contains the WHO recommended questions to assess the feeding practices of young infant.

All feeding practices for children were elicited using a 24-h recall method, except pre-lacteal use, which was through a historical recall (was any other food offered to the young infant before the breast milk at the time of birth).

The age of last born baby was obtained through vaccination cards, health cards or recall. Information on educational level of parents, household durable assets, and land ownership was used as proxy makers of household socio-economic status. The information regarding vaccination status of their children and knowledge about EPI was also obtained.

Data was analyzed using SPSS 14 version. Qualitative as well as quantitative data and various frequencies were calculated. Association of inappropriate feeding practices and socio-demographic characteristics were analyzed using chi-square test.

Results

Total number of subjects in this study was 500 mother and baby pairs. Majority of mothers 324 (64.8%) were between the ages of 21 - 30 years. While below 21 years were {60 (12%)}, and above 35 years were {39 (7.8%)}. When parity of these mothers was observed it was found that

Table-1: Breast feeding practices in relation to socioeconomic status (N = 500).

Socioeconomic status	Breast feeding practices					
	Exclusive breast feeding	Top feeding	Total	P- value	* OR	95% CI
Poor	246 (64.2%)	137 (35.7%)	383	0.0004	0.392	0.234 to 0.658
Middle class	96 (82.0%)	21 (17.9%)	117			
Total	342	158	500			

OR= Odd ratio, CI= confidence interval.

*{That odds of having inadequate feeding practices in poor families is 0.39 times greater than socially well with 95% confidence that the actual value will be between 0.234 to 0.6583 in population.}

Table-2: Comparison of feeding practices with literacy status of mothers (N=500).

Literacy status	Exclusive Breast feeding	Top feeding	Total	P-value	*OR	95% CI
Educated	192	120	312	0.0001	2.467	1.61 to 3.75
Uneducated	150	38	188			
Total	342	158	500			

*It means the odds(probability) of incorrect feeding practices in uneducated is 2.467 time greater than educated mothers with 95% confidence that the actual value will be between 1.61-3.75 in the population.

Table-3: Distribution of mothers regarding their knowledge of complimentary feeding (CF) (N = 500).

Complimentary feeding	Frequency	%			
Time of start	Adequate knowledge	369	(73.8)		
	Inadequate knowledge	131	(26.2)		
Quality	Adequate knowledge	358	(71.6)		
	Inadequate knowledge	142	(28.4)		
Amount	Adequate knowledge	189	(37.8)		
	Inadequate knowledge	311	(62.2)		
Frequency	Adequate knowledge	050	(10.0)		
	Inadequate knowledge	450	(90.0)		
Comparison of CF practices with educational status					
Status	Correct practices	Incorrect practices	P- value	OR	95% CI
Educated	120	68	0.0001	3.741	2.556-5.476
Uneducated	100	212			

231(46%) mothers had < 3 children, while 269 (53.8%) mothers had 3 or > 3 children. Out of 500 mothers 383 (76.6%) belonged to poor socioeconomic class and 312 (62.2%) were illiterate. Regarding the age of their last born babies 180 babies were under 6 months, and 320 were 6 to 23 months of age. About 112 (22.4%) mothers had 3 or more children below 5 year of age.

Initiation of breast feeding was almost universal. Regarding exclusive breast feeding 342 (68.4%) mothers started breast feeding at birth while Pre-lacteal use was seen in 158 (31.6%). In the 24-hr recall, 60% (45) infants and 40%, (42) of 105 infants aged 0-2 and 3-5 months respectively, were reported to have been exclusively breastfed. This showed that initially most of the women do exclusive breast feeding. Inappropriate feeding practices were compared with socioeconomic-demographic characteristics. There was statistically significant difference in EBF practices among poor and middle socioeconomic groups (Table-1). {Chi-squared equals 12.358 with 1 degree of freedom, the two tailed p values 0.0003 with OR=0.3928, 95% CI from 0.234 to 0.6583}. It means odds of having inadequate feeding practices in poor families was 0.39 times greater than well to do families.

Regarding the knowledge of breast feeding practices (66-80%) mothers were well informed regarding age for exclusive breastfeeding, need for on-demand breastfeeding, and that breast feeding should be continued up to 2 years.

Use of bottles was significantly higher among mothers with a low level of education. Un-educated mothers

were more likely to have given pre-lacteals; and formula feeding had the same pattern of association with statistically significant difference observed among breast feeding practices and level of education. (Chi squared equals 17.245 with 1 degree of freedom. The two-tailed P value is less than 0.0001 with OR 0.405, 95% CI from 0.265 to 0.618). It means the probability of incorrect feeding practices in uneducated was 2.467 time greater than educated mothers with 95% confidence that the actual value being between 1.61-3.75 in the population. Comparison of feeding practices with literacy status of mothers is shown Table-2.

The median duration of exclusive breastfeeding was 3.5 months; 60% (108) of the 0-5 month-old infants had taken breastfeeds 8 or more times per day. It was also observed that 261 (52.2%) mothers continued breast feeding for 2 years. Failure to breastfeed exclusively for the recommended 6 months was attributed to: mother getting pregnant or sick, breast milk was not sufficient for the baby, child interested in complimentary food added, and a small number reported to have followed the advice by health workers.

Regarding existing CF practices observed in the study, only 100 (50%) children of 12-23 months age received complementary food at the recommended frequency of 3 or 4 times in a day. Of children aged 6-11 months who were given complementary food 24 hours prior to the study, only 40 (33%) were given meals specially prepared for them. On the other hand 21% of 2-3 month-old babies received complementary food instead of breast milk only and 19% of 6-8 month-old were only breastfed instead of receiving C F. Only 36% of

breastfed children between 6-23 months received dairy milk. Knowledge about CF was inappropriate. CF practices were observed regarding time for starting complimentary feeding, frequency, quantity and quality. About 40% mothers knew about improving complementary food by adding milk, and that a sick child needs more fluids than usual. Nonetheless, knowledge gaps were identified regarding the fact that the child's food, can be improved by adding oils (42%) and that a sick child needs more food than usual (53%).

Regarding the source of knowledge for infant feeding, in 390 (78%) CF was advised by family members while in 110 (22%) by doctors and health workers. Regarding mothers perception of C F, it was essential in 456 (91.2%), while 44 (8.8%) mothers considered it not essential.

Regarding the comparison of CF practices with socioeconomic status, CF practices did not correlate with any socio-economic indicator except maternal education. Father's education, household asset index and land ownership did not have any correlation with infant feeding practices. Regarding use of specially-prepared food, mothers who had completed primary school and above were more likely to give specially prepared food compared to those without formal education. There is statistically significant difference observed in CF practices among educated and uneducated mother (Table-3) (Chi squared equals 46.799 with 1 degrees of freedom. The two-tailed P value was less than 0.0001 with OR 3.741, 95% CI from 2.556 to 5.476). It means the odds (probability) of having incorrect CF practices among uneducated mother is 3.741 times more than educated with 95% confidence that the true estimate in the population will be from 2.556 to 5.476.

Discussion

The present study investigated infant and young child feeding knowledge and practices using interview technique with 24-hour recall questions.

This study showed that knowledge of mothers regarding various aspects of CF and breast feeding were inadequate. A methodological problem in studies of this nature is bias due to lack of recall.¹⁴ Except for the question about pre-lacteal use that was elicited through long recall, the others were based on 24-hours recall, which is demonstrated to be valid and acceptable in studies of infant and young child nutrition.¹⁵

When socio-demographic characteristics of mothers were observed, it was found that majority of mothers 324 (64.8%) were between the ages of 21 - 30 years. Similar age group of mothers (42.4%) was reported by Galhotra et al from India.¹⁶ In the present study, the majority of mothers 383 (76.6%) belonged to poor socioeconomic status while 312 (62.2%) were illiterate. Similar high rate (79.75%) of illiteracy was reported by Ali et al from Karachi.¹⁷ Galhotra

et al¹⁶ and Ram M et al¹⁸ reported the rate of illiteracy as (36.6%), (34.1%) respectively from India. No definite association of socioeconomic condition of families with their knowledge about feeding of their infants was observed except maternal education. Surprisingly, even the fathers' education and land ownership, perceived by many as the ultimate form of security or socio-economic status, did not independently predict any infant- and young child feeding practice. This could imply that fathers' education and land ownership are not as vital as mothers' education in determining feeding practices in our rural community. According to a study conducted in Islamabad Pakistan, a positive relationship was found between the nutritional status of infants and maternal education. The study revealed that majority of malnourished infants belonged to mothers with virtually no school education. A similar relationship was observed for introduction of complementary foods at an appropriate age (6 months) of infants.¹⁹ When parity of mothers was observed, it was found that most of mothers 130 (26.0%) had 1 child followed by 102 (20.2%), having 2 children, 86 (17.2%) had 3 children and 71 (14.2%) had 4 children. Similar results were reported from India by Galhotra et al.¹⁶

The exclusive breast feeding observed in our study was 342 (68.4%) at birth while 31.4% mothers gave the history of use of pre-lacteals, similar pattern was seen in mothers of Nigeria and Ghana. Exclusive breastfeeding rates in the whole sample for 2, 4, and 6 months were 39.1%, 27.5%, and 7.5%, respectively.²⁰

According to another study nursing mothers usually do not breast-feed because of personal frustration and painful experience, fear of losing weight, nature of job, lack of confidence in breast-feeding, long period of recommended exclusive breast-feeding and the fact that infant may become addicted to it.²¹

Maternal education was the only predictor for use of pre-lacteal fluids, with uneducated mothers more likely to give pre-lacteals than their educated counterparts. The reasons for giving pre-lacteals documented in various studies were 'waiting for spontaneous milk flow and purging the gut of meconium, there is no literature to explain why mothers indulge in this practice. This suggests that despite improvement in breastfeeding practices there is little change due to strong cultural beliefs.²²

The reasons for failure to breastfed exclusively observed in this study were close to other studies done in Pakistan. As in our study similar (66%) EBM practices were reported by Afzal M et al from Multan.²³ While, (63.5%) and (67.1%) were reported from India by Galhotra et al¹⁶ and Anju A¹⁰ respectively. Another study from Sirilanka by Agampodi S B et al²⁴ showed similar results (61.6%). Except the low rate of exclusive breastfeeding, other indicators such

as frequency and the median duration of breastfeeding compared favorably with national recommendations. The less educated mothers were more knowledgeable with regard to on-demand breastfeeding for infants 6-11 months than their more educated peers. This might also reflect a negative attitude towards breastfeeding on the part of more educated women and thus support previous evidence that educated mothers in non-industrial communities breastfeed poorly compared to their less educated counterparts.²⁵

The optimal age for introducing complementary food was 6 months. In this study, 21% of the mothers of infants aged 2-3 months confirmed complementary feeding during the last 24 hours. On other hand, 19% of children aged 6-8 months were exclusively breastfed in the last 24 hours instead of being complemented with other food. This problem of early and late introduction of complementary food is undesirable and, unfortunately, practiced in Pakistan.²¹ The knowledge of mothers regarding complimentary feeding was found inadequate with 37.8% mothers having inadequate knowledge about recommended time of starting complimentary feeding and 142 (28.4%) had inadequate knowledge about quality of food. The knowledge of mothers about quantity 311 (62.2%) and frequency 450 (90.0%) of food was also inadequate. Similar results were reported by Chaudhry R et al²⁶ from Lahore and Anju A et al¹⁰ from India. In the present study, knowledge regarding quantity and frequency of complementary feeding was poor among most of the mothers. It has been seen that malnutrition is more common from 6 to 18 months of age mainly due to incorrect complementary feeding practices, a major issue of public health problem affecting child nutrition in developing countries like Pakistan. Hence more knowledge about complementary feeding practices is needed for improving nutritional status of infants and thus reducing their morbidity and mortality rates.

The mothers with good knowledge of EPI were 217 (43.4%) only in this study. This low coverage of complete immunization may be due to lack of knowledge and illiteracy as shown in this study. It was also shown that only 22% mother had received advices for breast or complementary feeding from doctors or health personnel. Though national health programmes were running since decades but there was no system of proper health education or implementation. This needs to be improved by increasing mothers knowledge regarding breast feeding, complementary feeding, and child immunization for vaccine preventable diseases.

It is also helpful if one can utilize infant visit time of immunization to advice about complementary feeding. Attention should be paid especially to female child education. Utilizing the immunization visits to implement knowledge about timing, quantity, quality and frequency of C F is advisable. Mothers should be encouraged about C F practices

that are recommended to continue good feeding practices.

Attention should focus on socio-economic empowerment especially education of the girl child, discouraging use of pre-lacteals, promoting use of oil to increase energy content of complementary food and the timeliness of complementary feeding so as to optimize the benefits of breastfeeding and complementary feeding.

We suggest the following recommendations to improve the feeding practices of our mothers: Promotion of Health education of mothers regarding infants feeding, lady health workers programme should be utilized to educate mothers by implementation of National immunization and nutritional programmes, media should be involved in promotion of complementary feeding practices, IMNCI should be implemented in all concerned health sectors. Issues on child nutrition especially in feeding practices should be given high priority in national plan.

Conclusion

Infant and young child feeding practices observed in this study are far from the recommended norms given in the methodology used to collect the data (IMNCI feeding assessment protocol). Mothers have insufficient knowledge of complementary feeding. Of the socio-economic factors, only mothers' education positively correlated with feeding practices.

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