KNOWLEDGE AND PRACTICES OF MOTHERS FOR COMPLEMENTARY FEEDING IN BABIES VISITING PEDIATRICS OUTPATIENT DEPARTMENT OF JINNAH HOSPITAL, LAHORE

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ABSTRACT

Objective: To assess the knowledge and practices of complementary feeding among mothers attending Paediatrics outpatient department.

Methods: A cross – sectional study was conducted in Pediatrics OPD Jinnah Hospital Lahore from march – september, 2012. A total 250 mothers of the babies aged 6 – 12 months were selected by non-probability purposive sampling technique. Their knowledge and practices regarding complementary feeding was assessed by using a close ended pre-tested questionnaire. Nine questions were asked for knowledge and eight questions for practices. Data analysis was done by using 'Likert's scale' and each correct answer was given one mark. The knowledge and practices was ranked as good, satisfactory and poor depending upon the overall score. If score was more than 70%, it was regarded as good, if 50 – 70%, satisfactory and if less than 50% then it was considered as poor both for knowledge and practices.

Results: About 79.6% mothers exclusively breastfed their babies and 84% continued breastfeeding along with complementary feeding. The correct knowledge of initiation of complementary feeding was found in 54% of mothers but it was practiced by only 43%. The overall knowledge of 24% mothers was good and 28% had poor knowledge of complementary feeding whereas only 7% women had good overall practices. There is statistically significant association of education of the parents with the practices of complementary feeding (p-value = 0.012 and 0.0295 of mothers and fathers). Occupation of the mothers and type of family had also shown statistically significant association (p-value = 0.018 and 0.001 respectively) with the overall practices about complementary feeding.

Conclusion: More than one third of mothers had poor overall knowledge regarding complementary feeding and a very few mothers had good overall practices. Education of parents, occupation of mothers and type of family had statistically significant association with complementary feeding.

Key Words: Pediatrics; Complementary feeding; Knowledge; Practices.

INTRODUCTION

Babies feeding from birth up to the first years of life influences an individual's whole life. It is common knowledge that breastfeeding is important for optimal infant feeding. Breast milk alone can be used for feeding babies in the first six months of life, but from then on, complementary feeding is necessary. The nutritional adequacy of complementary food is essential for the prevention of infant morbidity and mortality, including malnutrition and overweight.[1] Malnutrition is one of the most widespread conditions affecting child health. The 'germ' of malnutrition 'infects' a fetus in the intra-uterine life due to lack of sufficient antenatal care on part of the mother. The condition deteriorates further when after birth the infant is deprived of exclusive breast feeding or initiation of weaning is delayed. Weaning should be started after the age of 6 months and should contain energy rich semi – solid food. Malnutrition makes a child susceptible to infections and delays recovery, thus increasing mortality and morbidity.[2] Rapid growth of baby during the first year of life and specifically the first 6 months postpartum requires an adequate supply of nutrients to cope with rapid buildup of body muscle and other tissues.[3] This critical transition period is associated with dramatic increase in malnutrition among infants. The 24 hour dietary assessment revealed that children consumed mainly a thin porridge prepared from maize flour as complementary food. Carbohydrates contributed most energy (on average 69%), followed by fats (18.6%) and protein (on average 12.1%).[4] WHO and UNICEF recommend exclusive breastfeeding for the first 6 months of life starting within an hour after birth, followed by appropriate and adequate complementary breastfeeding for the first 2 years of life as an eco-

nomical and safe means of protecting children from infection and providing them with an ideal source of nutrients. Almost half of children below 6 months of age were exclusively breastfed (49 percent). More children living in rural areas (50 percent) were exclusively breastfed than in urban areas (44 percent). At 6 – 9 months of age 42 per cent of children were breastfed and received timely complementary feeding. By 12 – 15 months, 74 per cent of children were still being breastfed and by 20 – 23 months, 53 per cent continue breast feeding, with males breast feeding longer than females.[5] In a study conducted in Bangladesh regarding determinants of infant and young child feeding practices, it was reported that among infants under 6 months of age, 42.5% were exclusively breastfed and among those aged 6 – 9 months, 62.3% received complementary foods in addition to breast milk. Among the risk factors for an infant not being exclusively breastfed were higher socioeconomic status, higher maternal education, and living in the Dhaka region. Higher birth order and female sex were associated with increased rates of exclusive breastfeeding of babies under 6 months of age.[6] In other study, literature on complementary feeding educational interventions from 1998 onwards was reviewed which supports the evidence that educational intervention can effectively improve complementary feeding practices and child nutrition and growth.[7] Similarly another study was conducted to assess the determinants of early weaning in infants and it was noted that young maternal age, low maternal education, low socioeconomic status, absence or short duration of breastfeeding, maternal smoking, and lack of information or advice from health care providers were statistically associated with early weaning.[8] Infants are particularly vulnerable during the transition period when complementary feeding begins. Ensuring that the nutritional needs of the infants are met thus requires that complementary foods be:

- *timely* – meaning that they are introduced when the need for energy and nutrients exceeds what can be provided through exclusive and frequent breastfeeding;
- *adequate* – meaning that they provide sufficient energy, protein and micronutrients to meet a growing child's nutritional needs;
- *safe* – meaning that they are hygienically stored and prepared, and fed with clean hands using clean utensils and not bottles and teats;
- *properly fed* – meaning that they are given consistent with a child's signals of appetite and satiety, and that meal frequency and feeding method – actively encouraging the child, even during illness, to consume sufficient food using fingers, spoon or self-feeding –are suitable for age.

Appropriate complementary feeding depends on accurate information and skilled support from the family, community and health care system. Inadequate knowledge about appropriate foods and feeding practices is often a greater determinant of malnutrition than the lack of food.[9]

In the last few years, some important advances in breastfeeding promotion have been made, but unfortunately, the same does not apply to complementary feeding. New information about infant feeding acquired in the last 20 years has made obsolete several concepts and recommendations that had been common in pediatric practice for a long time. However, part of the population, including health professionals, does not know of the scientific advances in this field.[10]

The previous research studies have considered only some aspects of complementary feeding either the time of weaning or the frequency or consistency of complementary feeding but in this research study all the aspects of complementary feeding are included.

MATERIAL AND METHODS

A cross – sectional study was conducted in the Pediatrics outpatient department of Jinnah Hospital Lahore which is 1300 bedded tertiary level hospital. The average number of children visiting the OPD is 14500 per year. The duration of study was six months from March 2012 – September 2012. The inclusion criteria was babies having age 6 – 12 months accompanied by the mothers with minor ailments. The sample size was calculated by WHO soft ware SS. At 95% confidence interval with anticipated frequency of 50% and with a relative precision of 0.13%, the minimum sample size was 228 but we took a round figure of 250. Non probability purposive sampling technique was used for this study. The respondents were interviewed on a pre-tested structured questionnaire after their verbal consent. The dependent variables of the study were knowledge and practices regarding complementary feeding and independent variables were education, income per capita, sex of the baby and occupation of the respondents. There were six teams comprising of two females and one male student of 4th year MBBS class. Each team interviewed 5 respondents per day till the completion of sample size.

The operational definitions utilized for this study are:

Exclusive breast feeding: Exclusive "breast feeding" is defined as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the baby to receive Oral Dehydration Solution (ORS), drops and syrups (vitamins, minerals and medicines).

Complementary feeding: Complementary feeding is the process starting when breast milk alone or infant formula alone is no longer sufficient to meet the nutritional requirements of a baby and when other foods and liquids along with breast milk or a breast milk substitute are needed. The age range for complementary feeding is generally 6 – 24 months. Complementary feeding should be *timely*, adequate in amount, frequency, consistency and using a variety of foods to cover the nutritional needs of the growing of the child while maintaining breastfeeding.

Age of starting complementary feeding: will be considered correct if it is started at the age of 6 months.

Frequency of complementary feeding considered correct as follows:

Age	Frequency
6 – 8 months	2 – 3 meals / day
9 – 11 months	3 – 4 meals / day
12 months	3 – 4 meals / day

Amount of weaning food according to age is correct as follows:

Age	Amount/feed
6 – 8 months	2 – 3 tbsf – ½ cup
9 – 11 months	2/3 cup
12 months	1 cup

Consistency of weaning food is considered correct as follows:

Age	Consistency
6 – 8 months	Thick paste / thick porridge
9 – 11 months	Mashed / finely chopped food
12 months	Small pieces / chopped family food

Hygienic principles of complementary feeding are considered correct if:

Three / four following principles are applied:

- Washing of hands
- All utensils used for infant should be clean
- Fresh food to be prepared
- Food to be kept at safe temperature

Food groups:

There are seven food groups:

i) Grains, roots and tubers
ii) Legumes and nuts
iii) Dairy products (milk, yogurt, cheese)
iv) Vegetables
v) Fruit
vi) Mutton / eggs
vii) A small amount of ghee/oil

There should be at least 4 or > 4 food groups to be utilized / day by the infant as a complementary food.

Frequency of food to be given to the sick infant is considered correct if:

The infant receives 1 – 2 extra meals / day.

Data was analyzed by using SPSS version 17. Simple frequency distribution tables were generated for dependent and independent variables. 'Likert scale' was used. Nine questions were asked for assessing the knowledge and eight questions for determining the practices regarding complementary feeding. Each correct answer was given one mark.

Good knowledge: If cumulative score more than 70%
Satisfactory knowledge: If cumulative score between 50 – 70%
Poor knowledge: If cumulative score less than 50%
Good practices: If cumulative score more than 70%
Satisfactory practices: If cumulative score between 50-70%
Poor practices: If cumulative score less than 50%

Chi-square test was applied to find out whether there is any statistical association effect of socio demographic and economic factors on knowledge and practices regarding complementary feeding.

RESULTS

About 184 (74.4%) of the respondents belonged to the age group 21 – 30 years with a mean age of 27 ± (4.6) years. Out of 250 babies, 110 (44%) babies were 6 – 8 months of age with mean age of 8.94 ± (1.90) years. Regarding sex of the infants, 134 (54%) were males. About 210 (84%) of the respondents were residing in the urban area. Out of 250 respondents, 58 (23.2%) were illiterate and 51 (20.4%) were only primary pass. whereas 62 (24.8%) husbands of the respondents were matric pass. Nuclear family system was found in 126 (50.4%) families. Out of 250 respondents, 228 (91%) were housewives. The income per capita of 213 (85.2%) respondents was about Rs. 3000/- Out of 250 babies, 199 (79.6%) were exclusively breastfed and about 210 (84%) were having breast milk along with the complementary feeding. Regarding source of information for complementary feeding, 112 (44.8%) respondents get the information from their mothers (Table 1).

Knowledge and Practices for complementary feeding:

The knowledge about the correct age of starting weaning was known by 135 (54%) respondents but it was practiced by only 108 (43%). About 205 (82%) res-

pondents had the knowledge that homemade food is good for infants but only 106 mothers (42%) were giving them home made food. About 205 (82%) mothers knew the correct frequency of food / day to be

Table 1: *Socio demographic profile of the respondents and breastfeeding status of babies.*

Age of the Respondents in Years	*Frequency*	*Age of the Babies in Months*	
16 – 20	21 (8.4%)	6 – 8	110 (44%)
21 – 25	85 (34%)	9 – 11	104 (42%)
26 – 30	99 (40.4%)	12	36 (14%)
31 – 35	35 (13.2%)	*Educational Status of the Husbands*	
36 – 40	10 (4%)	Illiterate	48 (19.2%)
Sex of the babies		Primary	28 (11.2%)
Male	134 (54%)	Middle	20 (8%)
Female	116 (46%)	Matric	62 (24.8%
Residential area of the Respondents	210 (84%)	FA / FSc	24 (9.6%)
Urban	40 (16%)	Bachelor	38 (15.2%)
Rural		Masters and above	30 (12%)
Educational status of the Respondents		*Occupation of the Respondents*	
Illiterate	58 (23.2%)	House wife (Non working)	228 (91%)
Primary	51 (20.4%)	Working	22 (9%)
Middle	23 (9.2%)	*Income Per Capita (Rupees)*	
Matric	41 (16.4%0	< 1500	26 (10.4%)
FA / FSc	36 (14.4%)	1501 – 3000	187 (74.8%)
Bachelor and above	41 (16.4%)	3001 – 4500	29 (11.6%)
Type of Family of the Respondents		*Infants on Breast Milk (n = 250)*	
Nuclear	126 (50.4%)	Exclusively breastfed	199 (79.6%)
Joint	124 (49.6%)	Continued breastfeeding along with complementary feeding	210 (84%)
Source of Information Regarding Complementary Feeding			
Mother	112 (45%)	Mother in law	55 (22%)
Doctor / LHV / LHW	23 (9%)	Others	60 (24%)

given to the infants according to age but only 106 (42%) were giving correct frequency to their infants. Only 132 (53%) respondents had the correct knowledge about the amount of weaning according to age but practically 128 (51%) were giving the correct amount. The number of women knowing about the correct consistency of complementary food according to age of the infant was known by 136 (54%) but only 130 (52%) were giving the correct consistency. Three or more than three principles of hygiene were known by 175 (70%) but these principles were actually followed by 146 (58%). The food groups given to the infants last day were of 4 and more than four groups by 47 (19%) mothers. About 136 (54%) respondents had the knowledge to give more food to the sick child but actually this rule was followed only by 46 (18%) mothers (Table 3). The overall knowledge of 61 (24%) mothers is good (> 70%) and 120 (48%) had satisfactory knowledge (50 – 70%). The overall practices of 17 (7%) mothers out of 250 was good (> 70%)

but were poor (< 50%) in 122 (49%) of mothers (Table 3). There is no statistically significant association of age of mothers, sex of infants, area of residence, effect of education of parents, occupation of parents, type of family, income per capita with the knowledge of mothers regarding complementary feeding. There is statistically significant association of education of the parents and practices of the mother about complementary feeding (Chi-square = 6.26 and *p*-value = 0.012 and Chi-square = 4.7 and *p*-value = 0.0295 mothers and fathers respectively). Occupation of the mothers has also show statistically significant association with the practices of mothers about complementary feeding (Chi-square = 5.53 and *p*-value = 0.018). There is also statistically significant association between the type of family and practices of mothers about complementary feeding (Chi-square = 10.03 and *p*-value = 0.001) (Table 4).

DISCUSSION

The findings of the study indicated that 79.6% mothers exclusively breastfed their infants and 84% had continued breast feeding along with complementary feeding. The exclusive breast feeding rate depicted in this study is very high as compared to the neighbouring country India where as a study has shown, 31.5% mothers with exclusively breastfeeding and 89% with continued breastfeeding their children.[11] Similarly in another study, about 81% respondents exclusive breastfed their infants[12] and these results are comparable to our study. However in another study conducted in urban slums of Kolkata, only 28.33% of infants received exclusive breastfeeding.[13] The difference in rates of exclusive breastfeeding may be due to the religion of the respondents as importance of breastfeeding and its duration is being mentioned in the Holy Quran that is why it is more practiced in Pakistan as compared to India where mostly Hindus are living.

According to this study, the correct knowledge of initiation of complementary feeding at 6 months was reported by 54% of mothers but it was practiced by only 43%. The mean age of initiation complementary feeding (CF) in this study was 5.80 months. Whereas in India, only 17.5% mothers had started comple-mentary feeding at recommended ti-me in children 6 months – 2 years of age.[11] The reason for this may be the recall bias as children age was diffe-

Table 2: *Knowledge and practices of respondents regarding com-plementary feeding.*

Age in Months	*Frequency of Knowledge*	*Frequency of Practices*
< 6 months	90 (36%)	92 (37%)
At 6 months (Correct)	135 (54%)	108 (43%)
>6 months	25 (10%)	50 (20%)
Type of Complementary Food Given		
Homemade (Correct)	205 (82%)	106 (42%)
Commercially prepared	13 (5%)	63 (25%)
Combination of both	32 (13%)	81 (33%)
Frequency of Complementary Food / Day According to Age		
Correct frequency given	201 (81%)	155 (62%)
Incorrect frequency given	49 (20%)	95 (38%)
Amount of Complementary Feeding / Day According to Age		
Correct amount given	132 (53%)	128 (51%)
Incorrect amount given	118 (47%)	122 (49%)
Consistency of Complementary Feeding / Day According to Age		
Correct consistency given	136 (54%)	130 (52%)
Incorrect consistency given	114 (46%)	120 (48%)
Principles of Hygiene Followed by Respondents		
3 and >3 principles followed (Correct)	175 (70%)	146 (58%)
<3 principles followed	75 (30%)	104 (42%)
Food Groups Given to the Infants on the Previous Day		
4&>4 groups	47 (19%)	47 (19%)
<4 groups	81%	81%
Practice of Giving More Food to the Sick Infants		
Yes	136 (54%)	46 (18%)
No	78 (31%)	204 (82%)

Table 3: *Scores of Knowledge and practices of respondents about complementary feeding.*

Overall Score	*Knowledge*	*Practice*
Good knowledge if score is > 70%	61 (24%)	17 (7%)
Satisfactory knowledge if score is 50 – 70%	120 (48%)	111 (44%)
Poor knowledge if score< 50%	69 (28%)	122 (49%)

Table 4: *Association of variables with knowledge and practices regarding supplementary feeding.*

	Knowledge > 50%	*Knowledge < 50%*	*Practices > 50%*	*Practices < 50%*
Age				
16 – 25 years	73	33	55	51
> 25 years	108	36	73	71
Chi-square = 1.15 and P-value = 0.2837			Chi-square = 0.03 and P-value = 0.8531	
Sex				
Males	102	32	73	61
Females	79	37	55	61
Chi-square = 2.00 and P-value = 0.157			Chi-square = 1.24 and P-value = 0.265	
Residence				
Urban	155	55	108	102
Rural	26	14	20	20
Chi-square = 1.30 and P-value = 0.253			Chi-square = 0.03 and P-value = 0.868	
Education of Mother				
Illiterate, Primary	81	28	46	63
Middle and above	100	41	59	141

Chi-square=0.35 and P-value = 0.55			Chi-square = 6.26 and P-value = 0.012*	
Education of Father				
Illiterate, Primary	57	19	31	45
Middle and above	124	50	77	174
Chi-square = 0.37 and P-value = 0.543			Chi-square = 4.74 and P-value = 0.0295*	
Occupation of Mother				
Working	15	7	6	16
Non-working	166	62	122	106
Chi-square = 0.21 and P-value = 0.63			Chi-square = 5.53 and P-value = 0.018*	
Type of Family				
Nuclear	94	32	52	74
Joint	87	37	76	48
Chi-square = 0.62 and P-value = 0.432			Chi-square = 10.03 and P-value = 0.001*	
Income / Capita				
< 3000/-	154	59	108	213
> 3001/-	27	10	20	37
Chi-square = 0.01 and P-value = 0.923			Chi-square = 0.14 and P-value = 0.70	

rent from this study. However the results of another study conducted in Lahore reported that in 38% of infants, CF was initiated at the recommended age of 6 months.[14] The results of this study are comparable to other similar study conducted in Lahore thus indicating that even their knowledge is better than practices, the strong cultural factors and beliefs affect their practices.

The advice regarding complementary feeding was given by family members to 78% of mothers while in 23% mothers by doctors.[15] The results of source of information are comparable with our study showing the same proportion. The role of health care system in imparting the knowledge about complementary feeding is very important but this seems to be weak according to this study leading to inaccurate practices among the mothers. In a study conducted in India, the opportunity to give advice about complementary feeding during immunization session was only 21.4%.[11] Nutrition training of health workers can help to reduce child under nutrition. A systematic review of ten randomized control trials and cluster randomized control trials confirmed that overall health workers' nutrition training improved daily energy intake, feeding frequency and dietary diversity in the intervention group of children aged six month to two years of age as compared to the control group. This may improve child-feeding practices and thus reduce the risk of under nutrition among children of counseled caregivers.[16] Homemade food is given by 82% mothers like kitchri, dahlia etc. and only 18% were using market prepared food in this study. In Nigeria, over three – quarter 76.0 % of the respondents had preference for home – prepared weaning foods, while 9.0 % and 15.0 % of them had preference for commercially – prepared weaning foods and combination of home-prepared and commercially – prepared weaning foods respectively.[17] In another study in Lahore, 44% mothers used home – made weaning diets, 30% used mixture of homemade and commercially prepared diets, while 16% used only commercially prepared diets.[18]

About 80% of mothers had the correct knowledge regarding frequency of the food according to age of the infant by the mother but it was practiced by only 62% of mothers. In a study of India adequate meal frequency was observed in about one – half (48.6%) of children aged 6 – 23 months.[19] Regarding amount of complementary feeding / day correct knowledge for amount was known by 53% but only 51% of mothers were actually giving correct amount of complementary feeding in this study. Whereas another study reported that only 32% of mothers were giving an adequate quantity of complementary feeds.[20] About 46.5% of mothers in a study of India had correct knowledge regarding quantity of weaning food and practically quantity was adequate in (25%) infants.[11]

Regarding consistency of weaning food, correct knowledge of mothers was 54% but practically correct consistency was given by 51% mothers where as another study indicated that knowledge of mothers about adequate consistency of weaning food was 25.5% and in practice consistency of food was adequate in (38%) of infants.[11] In this study, regarding the food groups, 47 (19%) mothers had the knowledge that 4 and > 4 foods to be given to the infants and the same number of women were giving 4 and > 4 food groups. In a study of India, about 32.6% of children of 6 – 23 months were having food from 4 and more than 4 food groups.[19]

The overall good knowledge of respondents regarding complementary feeding was > 70% in 24% respondents where as satisfactory knowledge was found in 48% and poor knowledge in 28%. In contrast a study of Bangladesh reported that 59% of mothers had good knowledge about complementary feeding followed by 37% poor weaning knowledge category and 4% had medium knowledge category.[21] Similarly another study reported that majority of mothers lacked knowledge about complementary feeding. Only 16 (8%) mothers had proper knowledge of weaning age, frequency and consistency of complementary food.[11]

The overall good practices of respondents was 7% in this study where as in another study only 3.5% had started complementary feeding at proper time, in adequate quantity and with proper consistency. However a study of India, assessing consistency and frequency of CF reported that 30% of the mothers were giving CF in right consistency and only 6.6% in appropriate frequency.[22]

There is no statistically significant association of knowledge with the education of the parents but practices of complementary feeding are associated with education ($P < 0.012$ and $P < 0.012$ for mothers and fathers respectively). Whereas a study of Bangladesh has reported statistically significant association between maternal education and knowledge about complementary feeding ($p < 0.001$).[21] Another study revealed that the majority of Pakistani infants falling in various degrees of malnutrition belonged to the uneducated mothers. Similar relationship was observed between the educational status of respondents and the introduction of complementary foods at an appropriate age (six months) of infants ($P < 0.001$). It was noted that 34.8% mothers who introduced complementary foods to their infants at six months age belonged to educated class. Similarly educated Pakistani mothers were more aware of the appropriate frequency of complementary feeding in every age group.[23] There is a statistically significant difference in feeding practices of educated and uneducated ($P < 0.0001$).[15]

Income per capita had shown no statistically significant association with the knowledge and practices of mothers with the complimentary feeding in this study but a statistically significant association was observed in Bangladesh study between the economic status of family and weaning knowledge of

mothers ($p < 0.001$).[21]

Out of 250 mothers, 91% were housewives and there is significant statistical association between the occupation and the complementary feeding practices with P-value = 0.018. This shows that housewives have more time to take care of their children as compared to the working women and have better weaning practices as compared to working women however in study conducted in India, no significant statistical association was found among the mothers' occupation and complementary feeding practices (P-value > 0.05).[21]

This recent study has reported no statistical association between the knowledge of mothers regarding complementary feeding and type of family but significant statistical association was found in the practices of the mothers for complementary feeding and type of family system (P – value = 0.001). Qualitative assessments of one study found that inappropriate infant feeding practices were strongly influenced by traditional beliefs of the mothers and paternal grandmothers in the study areas.[24] Analysis of another study revealed that children of 4 – 9 years of age living in nuclear family were less likely to be breastfed, to be weaned later and to have grandmothers involved in childcare.[25]

It is *concluded* that about one third of mothers had good knowledge and approximately half of mothers were poor in their practices for complementary feeding. The determinants that affect the practices of mothers regarding complementary feeding were education of the parents, occupation of mother and type of family but knowledge was not affected by any of the factors mentioned in this study.

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