

WEANING PRACTICES AND THEIR DETERMINANTS AMONG MOTHERS OF INFANTS

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This study was designed to assess the weaning practices among mothers of infants 6-12 months of age and to compare these practices among different socio-economic and demographic variables. This is a cross-sectional study conducted in D & E blocks of AIMC residential colony, from May 2006 to September 2006. A total of 50 infants (6-12m of age) were included in the study. Their feeding pattern and weaning practices were studied using self-administered questionnaire. They were grouped in two categories according to their age of commencement of weaning. Forty two (84%) infants were receiving weaning foods in addition to milk. Recommended age (6 months) was noticed in 42 cases (84%), while delayed weaning was seen in 8 (16%). Timely weaning was noticed in breastfed infants, 34 (70%). Even if weaning was started at the correct age, several problems were observed. This included infrequent feeding, use of expensive commercial cereals given in diluted form instead of home prepared foods and improper food preparation practices were also observed. The quality, type and choice of food was not ideal for an adequate growth. Recommended weaning time (4-6 m) and delayed weaning was analysed in relation to socio-economic and demographic characteristics of the infant's mothers and their families. Delayed commencement of weaning had a statistical significant relationship with age, education, family income, occupation of father and mother, parity of mother and also large family size ($p < 0.05$). Bottle-fed babies had significantly delayed weaning i.e more than 9 months. Sex of the child was not significantly related to early or delayed weaning ($p > 0.05$). Incorrect weaning practices are an issue of public health in developing countries. The identification and analysis of weaning practices prevalent in low socioeconomic households can lead to remedial strategies for improving the nutritional status of infants and, thereby, help to reduce infant mortality and morbidity rate.

Fulfilling the nutritional requirement helps to achieve the basic goal of satisfactory growth and prevention of acute and chronic illness.¹ Human milk is the most appropriate of all available milk for the human infants because it is uniquely adapted to its needs. A healthy mother can produce enough (400-800ml/day) milk to meet the caloric requirements of child till the age of 6 months. Hence, WHO recommends exclusive breast feeding till this age.² Due to this superiority of breast milk to other kinds of milk, the duration of exclusive breast feeding has been increased up to 6 months³. In Pakistan there is commendable Government. Policy from the "Ministry of Health" according to WHO guidelines⁴. The term "weaning" has been traditionally described as withdrawal from breast feeding, i.e when breast feeding is gradually replaced by fresh or modified animal milk, or by semisolid food⁵. It is transitional to change from liquid to solid diet, the feeding behaviour changes from sucking to chewing and biting and the obligatory introduction with the mother or other caretaker changes to independent feeding⁶. Malnutrition and micronutrient deficiencies during weaning period is

reported from Pakistan⁷⁻⁸ and many other developing countries⁹⁻¹⁰. Complementary feeding as described by WHO refers to the addition of energy and non-energy containing fluids, non-human milk, and semi-solids or solids to children's diet¹¹. Weaning is easier if a child has taken milk from some other source besides mother's breast before that time. So it's a good idea to give an occasional bottle of breast milk to the child around 4 to 7 months (or sooner if you decide to wean earlier) - even if one plans to continue breastfeeding, this can facilitate the weaning process in the future.¹² Natural weaning occurs as the infant begins to accept increasing amounts and types of complementary feedings while still breastfeeding on demand. When natural weaning is practiced, complete weaning usually takes place between two and four years of age. Planned weaning occurs when the mother decides to wean without receiving signals from the infant that he is ready to stop breastfeeding. Some reasons commonly given for planned weaning include the following: not enough milk or concerns about the baby's growth, painful feedings or mastitis, returning to work, a new pregnancy etc¹³. The

objectives of this study were to estimate the average age of commencement of weaning, and to determine the feeding pattern of infants, including the types of commonly used foods for weaning, their frequency and preparation in the studied population.

SUBJECTS AND METHODS

A cross-sectional study was conducted among mothers of infants 6-12 months of age, resident of D&E blocks of AIMC, colony Lahore. All the infants of 6-12 months old were included in study. A house to house survey was conducted and the researcher herself filled the closed ended structured questionnaire. The related information regarding introduction and administration of weaning foods to infants was collected. Structured questionnaire required 20 min. to half an hour. Data was collected in one week.

The data analysis was done using a statistical package, Epi-info ver 6.0. Chi-square test for comparison between groups was undertaken. In all statistical analysis only p-value < 0.05 were considered significant.

RESULTS

Among the 50 infants included, 24 were males and 26 females. The male to female ratio was 1: 1.08. The mean age was 8.13 (S.D+2.24) months and the median age was 8 months. The age of index children was grouped in 2 categories based on recommended feeding practices for the particular age group and start of weaning foods.

The mean age of mothers in the study was 27.2 (S.D+4.2) years and median age was 27 years. The youngest mother interviewed was 20 years old and the oldest mother was 40 years of age. Other maternal characteristics included education, occupation

and parity. Assessment of educational status of mothers showed that 19 (38%) were illiterate. Among literate, 9 (18%) and 22 (44%) were under matric and above matric respectively. Regarding occupation large majority of mothers, i.e 44 (88%) were housewives.

Regarding parity 30 had < than 4 alive children, 10 had 4 and 10 had >4 alive children. The average family size was 5. Thirty-two infants lived in a family of < 3, and 18 had > 6 family members. The type of family was nuclear in 35 cases and extended in rest of the cases. The family income was < Rs. 1800 / capita / month in 66% respondents while 34% had an income of above Rs.1800/capita/month. Thus majority of respondents belonged to the low-income group.

The analysis of feeding pattern included the type of milk infants were taking at the time of the study and their weaning practices in regard to age

Table 1: Age, gender and breast feeding pattern distribution of children.

Age in m.	Male	Female	Excl. B. Feeding	No B.F	Mixed F
6 - 8 m.	19 (79%)	20 (76%)	24 (96%)	10 (100%)	5 (33%)
8 - 12 m.	05 (21%)	06 (24%)	01 (4%)	00 (0%)	10 (67%)
Total	24	26	25	10	15
n =	50		n=	50	

Table 2: Late weaning by socio-economic and demographic variables (n=50).

Socio-economic and demographic variables	No. of Subjects	Late weaning		P- value
		No	(%)	
Mother's age	20-30	45	6 (13.3)	0.0014368
	34-40	05	2 (40)	
Education	Illiterate	18	5 (28)	0.041221
	Literate	32	3 (6.36)	
Occupation of mother	Working	5	2 (40)	0.0013791
	Non working	45	6 (13.33)	
Parity	<4	30	1 (33.33)	0.0003
	>4	20	7 (35)	
Family income/ capita	<1800	32	5 (62.9)	0.491234
	>1800	18	3 (37.1)	
Family Members	<3	32	2 (6.25)	0.0221
	3&>	18	6 (33.3)	
Sex of infant	Male	24	3 (15)	0.648
	Female	26	5 (19)	
Top feeding	Bottle / mixed	25	14 (6)	0.0031
	Excl. Brest	25	23 (94)	

of commencement, type of food, their frequency and preparation. Twenty-five (50%) children were on exclusive breast-feeding while 10 (20%) were bottle-fed, 15 (30%) infants were fed on both breast and bottle milk.

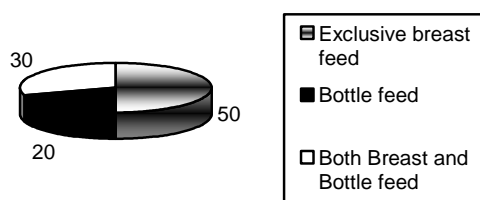


Fig. 1: Analysis of feeding pattern.

The distribution of age of weaning was <6m. in 22 (44%) of infants (early), six months in 19 (38%) recommended age and > 6m. in only 8 (16%) of infants (delayed weaning). The age of introduction of weaning ranged between 3-9m. At the time of study 84% infants were receiving semi-solid food besides breast and bottle milk while weaning had started in about all the infants though delayed (at the age of 9 months) in 16%.

Amongst the 16% of infants, who had delayed weaning were analyzed in relation to socioeconomic and demographic characteristics of their mothers and families. It was also cross-tabulated with bottle feeding. Delayed commencement of weaning had a statistically significant relationship with education, occupation, income of the family, parity of mothers and also large family size ($p < 0.05$). Thirty percent (30%) and 20% of the infants who were on mixed and only bottle feeding respectively had not started weaning foods up to 9 months of age as compared to 50% who were exclusively breast fed.

Thirty-two percent infants were given commercially prepared ready-to-feed milk-based cereals. Tea with crackers (Rusk) was given in 7 (14%) cases. The frequency was thrice or more in 68% of cases and in 32% it was once or twice and not more than this. Amongst mothers who gave homemade food, 80% mothers prepared it especially for the infant while the rest gave the child the regular family diet. Mothers were also asked about reasons for starting semisolids, 58% percent showed awareness of the need for extra calories for the growing child after the age of 4-6 months.

Other major reasons noted were 'not enough breast milk' (36%) and custom of the family (6%). The sources of information regarding weaning var-

ied from family members and friends (52%), health-workers / medics / paramedics (30%) and media (18%). As far as the reasons for delayed weaning were concerned, 25% showed the attitude of having no knowledge about extra caloric needs of the child while 37.5% and again 37.5% did not bother about it and no guidance from health personnel's respectively.

DISCUSSION

In our study of 50 children, 84% infants were taking semisolids and out of these 56% were taking home prepared semisolids and other 28% were on milk based commercial cereals. Only 14% were having tea with rusk. Early and timely weaning (< 6m. and 6m.) was noted in 84% of infants, the age proposed for introducing semisolid food.

Delayed weaning (> 6 months) was observed in only 8 (16%) children in the present study. These figures are in contrast to the findings of a study reported from Lahore,¹⁴ another study conducted in Karachi,¹⁵ where 44% of the children under study had delayed weaning, and another study, in Bangladesh¹⁶. However these findings are comparable to the findings of studies conducted in developed countries where the commencement of weaning begins at age 4 months in almost 45% of cases and almost all others are put to weaning foods at 6 to 7 months of age.¹⁷ This could be due to their higher socioeconomic and educational status but in our study though the socioeconomic status is not very high, reasons for high percentage of early weaning is due to health education, educational status and impact of a closed community associated with tertiary care level health facility.

Significant association was observed between early weaning and educational status of the mothers. Literate, under secondary and higher secondary educated mothers started weaning at an appropriate age while mothers with lower levels of education and illiterate mothers ($P = 0.0041221$), sometimes delayed it till the end of one year. Delay in weaning is a risk factor for nutritional rickets¹⁸ and other micronutrients deficiency.¹⁹ In our study 68% of the mothers were used to feed the infants more than 3 times / day.

Rest of the 32% mothers were infrequently feeding their infants. This results in less intake of food with reduced total calories per day leading to growth faltering and undernutrition. The studies conducted in other developing countries, about results of infrequent feeding, as study conducted in Maharashtra and Gujrat, titled socioeconomic, environmental, maternal attributes and children's age at introduction of supplementary foods. All above factors resulted in frequent delays in the in-

roduction of supplementary foods, even to later than 12 months of age, and in the poor nutrition and health status of children.²⁰

Among other attributes of early weaning in our study were the occupation of the mothers and fathers. The mothers who were house wives showed early weaning practices ($p=0.00137$). The wives of paramedic staff had timely weaning than the administrative staff ($p=0.003811$).

The 16% of mothers who had delayed weaning (some had >12m.) were noticed with parity of the mother, large family size and bottle feeding. Delayed weaning was particularly noticeable when the mother had 5 or more children or the extended family size was more than 5 members. This could be due to poor time management, as mothers, when busy looking after a large family, tend to neglect the nutritional needs of the young child. Among the above 16% who had delayed weaning 10% started complementary feeding with top milk instead of giving semisolids, when they felt that their own milk was not sufficient. The hazards of bottle feeding are well known, especially nutritional factors and bacterial contamination.²¹

Although 84% of the mothers in our study introduced weaning foods to their infants at the correct age, The quality and choice of foods was not ideal for adequate growth. There was a tendency to give unbalanced diet with limited intake of expensive animal proteins.

Fifty six percent (56%) of the infants were administered banana with khichri and porridge at the time of starting weaning foods and 52% were still having the same food without adding egg, minced meat, vegetables and soup. In very few cases egg comprised the supplementary food for a child. Meat was almost never used in many cases, as these high protein foods are quite expensive in Pakistan. Similar types of food was noticed to be given by mothers, in results of a study conducted in a small town in Karachi²² and results were compared to weaning foods in England²³. Also seasonal fresh fruits and vegetables, which were abundantly available and less expensive were not offered to the infants. Instead, commercial milk based cereals were used in 32% of the cases. The considerable percentage of cases having instant milk based cereals could be attributed to effective marketing strategies on media and their easy availability in Lahore.

Twelve percent (12%) of the infants were given tea with crackers and rusk. This is one of the most popular food items for breakfast. Tea was started as early as 2 to 3 months of age and was given routinely to the infants at the end of one year. The reason was convenience and economy. The high

incidence of using tea with crackers in infants was also noted in a study conducted at the Institute of Public Health Lahore. The findings were 40 % as the study was conducted in Katchi Abadi, a low socioeconomic group.²⁴ The hazards of tea include its content of tannic acid which impairs iron absorption. Tea also reduces the appetite²⁵, hence its use should be discouraged. Health education interventions are needed in such situation.

Banana was the only fruit given to the child. The soft consistency and easy availability of bananas round the year in our country makes it a popular item. No other seasonal fruits as mango, grapes and fresh citrus fruit juice were administered to the infants. This may be due to the fact that fruits are difficult to buy in families of low socioeconomic group in Pakistan. This is in contrast to developed countries where all types of fruit, both fresh and puried, are a popular infant food during weaning. Among vegetables potatoes were frequently used; once again they are both economical and easily available. Similar type of food was noticed to be given by mothers in a small town in Karachi.²⁶ This is in contrast to developed countries where fruits, eggs and meat are routinely used during weaning.²⁷

Gender discrimination was not found to have a significant association with time and type of weaning foods ($p = 0.64894$). The 84% of mothers who had timely weaning for their infants, were asked about reasons for early weaning, about 36% of them showed awareness of the need for extra calories for growing child. Rest of them 48% gave the reason "not enough breast milk" and "custom of the family".

The sources of information regarding weaning varied from family members, friends and neighbours (52%), health personnel, (30%) and media (18%).

It is **Concluded** that mothers of this community are aware of right timing of weaning, but incorrect weaning practices including under-feeding and lack of nutritionally balanced diet are major problems especially during the second 6 months of an infant's life in low socio-economic group in Pakistan.

RECOMMENDATIONS

We need to introduce educational programs for improvement in weaning practices to prevent malnutrition in children. Mothers need instructions in preparing infant food from main family ingredients to make it soft, palatable and nutritionally balanced. Infant food can also be prepared at cottage level to make it more affordable as recommended in some studies from Nepal and India.²⁷⁻²⁸ More over mother's attention should be focused on haz-

ards of giving unsuitable food items such as tea, rusk and diluted commercial cereals during weaning period.

Along with public awareness programmes for breast-feeding, the appropriate use of semi-solids after 6 months of age need to be promoted as an essential health message.²⁷⁻²⁸ All sources of information including electronic and print media should be tapped to strengthen the knowledge about infant feeding practices, as has already been done in the case of diarrhea in Pakistan.

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