Original Research Article

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Pattern of complementary feeding among infants: a pilot study

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ABSTRACT

Background: The world health organization recommends exclusive breastfeeding for the first six months of life, with the addition of complementary feeds at six months with continued breastfeeds until at least the age of two. This study aimed to assess the period and pattern of initiation of complementary feeding and to find out the prevalence of malnutrition among infants (6-12 months).

Methods: A cross-sectional study was undertaken by taking 50 infants with the help of purposive sampling technique at pediatric OPD of Pradyumna Bal Memorial Hospital, KIMS, Bhubaneswar. A structured questionnaire was used to collect the baseline information by face to face interview and Anthropometric examination was conducted to assess the growth pattern. Anthropometric measurements were interpreted by using WHO Anthro Analyzer software and statistical analysis was done by using SPSS 20 Software.

Results: The study findings revealed that most of the mother (64%) has initiated the Complementary feeding after 6 months of age, 88% mothers were continuing breastfeeding along with CF. No infants were given cow's milk. There was significant association of initiation of complementary feeding with maternal education and source of information and age of the infant. Percentage of malnourished infants is 32%. Mothers were preferring to give formula food rather than the home made one.

Conclusions: The study concluded that late introduction of complementary feeding are still prevalent in our society. The most precious and vulnerable age group of our society are suffering from malnutrition. Antenatal counselling of mother and appropriate dietary modification should be done after thorough screening during antenatal and postnatal visit.

Keywords: Complementary feeding, Breastfeeding, Malnutrition

INTRODUCTION

The right food at right time is crucial for the infants and young children to grow and develop to their highest potential. In brief 1,000 day period from the start of a woman's pregnancy until a child's second birthday, good nutrition is very essential. Adequate nutrition during early years of life plays an important role in achieving every child's full human potential. The first two years of life are considered as the "critical window" for the optimum growth and development of a child. 2-4

Complementary foods must be introduced at the right time throughout infancy for nutritional and developmental reasons. The capacity of exclusive breastfeeding to provide macronutrient and micronutrient requirements decreases as an infant's age increases. The introduction of complementary foods are timed to coincide with the benefits of exclusive breastfeeding for neurodevelopment and the prevention of future comorbidities after 6 months.³ Apart from socio-cultural, economic, and demographic considerations, infant-feeding techniques are important part of child-care

practices. Despite their importance in children's growth patterns, these habits are one of the most overlooked drivers of young child malnutrition. In order to grow and develop to their greatest potential, infants require the proper diet at the right time. To reach their greatest potential, infants require the appropriate nourishment at the right time. With growing infant age, exclusive breastfeeding's capacity to provide macronutrient and micronutrient requirements becomes reduced. The timing of complementary food introduction is based on the benefits of exclusive breastfeeding after 6 months for neurodevelopment and the prevention of future comorbidities.

As per the global recommendations of WHO and UNICEF's, strategies are set out for optimal infant feeding. Those are exclusive breastfeeding for 6 months (180 days) and complementary feeding that is safe and adequate nutritionally, starting from 6 months of age with continued breastfeeding up to 2 years of age or beyond. Complementary feeding means giving other foods in addition to breast milk. India has very high rates of undernutrition in children with a prevalence of stunting among under five being 48%, wasting 20% and underweight 43%, which is highest in the world.

Objectives

Objectives of current study were to assess the period and pattern of initiation of complementary feeding and to find out the prevalence of malnutrition among infants (6-12 months).

METHODS

A Pilot study was undertaken with 50 infants (6-12 months) by using purposive sampling technique at paediatric OPD of Pradyumna Bal memorial hospital, Bhubaneswar, between March 1,2020 and March 8, 2020.

Inclusion criteria

The Inclusion criteria were; infants (6-12 months) who came to pediatric OPD of Pradyumna Bal memorial hospital, Bhubaneswar, and parents those who have given consent.

Exclusion criteria

The exclusion criteria were; premature infant, infants with chronic/congenital diseases, such as heart abnormality. Don't have any acute conditions such as fever, diarrhea and respiratory infections in last 2 weeks, previous history of hospitalization.

The data were collected by interview and observation method with the help of a structured questionnaire to assess the baseline information and the anthropometric examination was conducted by taking weight-weighing scale; length-infantometer; head circumference-measuring tape. Baseline information includes age and

gender of infant, birth weight, mother's education, socioeconomic status, source of information about initiation of complementary feeding, age of initiation of complementary feeding, frequency of home made complementary food, frequency of formula feeding, breast feeding status, feeding cow's milk.

Data analysis

Anthropometric data were interpreted by using WHO anthro analyzer software and statistical analysis was done by using SPSS 20 Software at a significant level of 0.05. Data were analyzed by using percentage distribution and Chi square test.

RESULTS

The mean age of subjects was 8 ± 1.18 months. Among them 42 % were 6-8 months, 42 % were 8-10 months and 16 % belongs to 10-12 months. Maximum that is about 56 % were male and 44 % were female. Most of the mothers of those infants (48%) had secondary level of education. Most of the infants (52%) belongs to middle class family. Maximum mothers (54%) got the information from the health worker, 36% mothers got to know about the initiation of complementary feeding from their family and 10% mothers did not have any idea about the period of initiation of complementary feeding (Table 1).

Table 1: Descriptive characteristics of demographic data (n=50).

Characteristics	N	%	
Age (Mean±SD)		8.0 ± 1.18	
Age (months)			
6-8	21	42	
8-10	21	42	
10-12	08	16	
Gender			
Male	28	56	
Female	22	44	
Maternal education			
Uneducated	0	0	
Primary	4	8	
Secondary	24	48	
Tertiary	22	44	
Socio-economic status			
Upper	20	40	
Middle	26	52	
Lower	04	08	
Source of information about initiation of			
complementary feeding			
Health worker	27	54	
Family	18	36	
No idea	05	10	

The percentage distribution of period of initiation of complementary feeding shows that 14 % mothers started

the complementary feeding at 6 months of age, 22 % mothers initiated complementary feeding after 6 months of age and 64% mothers didn't initiate the complementary feeding. Not a single mother had started the complementary feeding before 6 months of age (Figure 1).

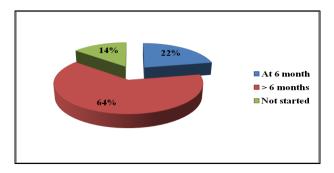


Figure 1: Percentage distribution of age of initiation of complementary feeding (n=50).

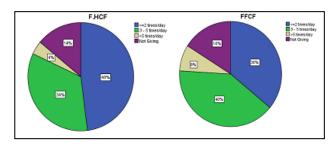


Figure 2: Percentage distribution of frequency of home-made and formula feeding of the infants (n=50).

The study concluded that late introduction of complementary feeding are still prevalent in our society. The most precious and vulnerable age group of our society are suffering from malnutrition. Antenatal counselling of mother and appropriate dietary modification should be done after thorough screening during antenatal and postnatal visit.

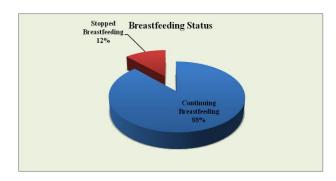


Figure 3: Percentage distribution of breast feeding status of baby along with CF (n=50).

About 88% mothers were continuing the breastfeeding along with complementary feed and 12% mothers had stopped breastfeeding to their baby (Figure 3). The Z-score values shows the prevalence of malnutrition among

the 6-12 months infants. About 92%, 72%, 98% and 92% infants had normal WFL, LFA, WFL and HCFA respectively. About 6%, 18% and 2% infants were underweight, stunted & wasted; 2% & 10 % infants were severely underweight and severely stunted respectively (Table 2).

Table 2: Percentage distribution of breastfeeding status of baby along with CF (n=50).

Anthropometric assessment, age (6 to 12 months)					
	Z - score				
Indicators	<-1 SD	<-2 SD	<-3SD		
	N (%)	N (%)	N (%)		
Weight for age	46 (92)	03 (06)	01 (02)		
Length for age	36 (72)	09 (18)	05 (10)		
Weight for	40 (08)	01 (02)	00		
length	49 (90)	01 (02)	00		
HC for age	46 (92)	04 (08)	00		

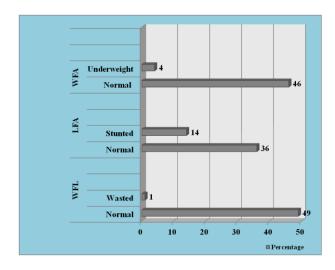


Figure 4: Percentage distribution of prevalence of malnutrition among the infants (n=50).

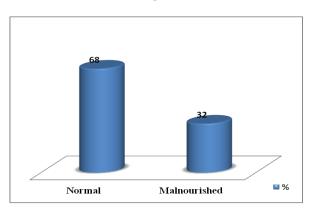


Figure 5: Percentage distribution of prevalence of malnutrition among the infants (N=50).

The result evaluated that out of all participants, only 4% infants were underweight and rest of them i.e. 46% were

normal weight. When we analyzed the length-for-age indices, we found that among all the participants, 14% were stunted and rest 36% had normal height. Only 1% of the total participants were wasted and 49% were normal weight-for-length (BMI) (Figure 4). After analyzing the

z-score of all the children, the study found that about 68% of infants are well nourished, where as 32% infants were malnourished (Figure 5). The association of various sociodemographic factors was done with different periods of initiation of CF as shown in Table 3.

Table 3: Demographic factors associated with initiation of complementary feeding (n=50).

	Initiation of complementary feeding					
Factors or category	Total	<6 months N (%)	At 6 months N (%)	>6 month N (%)	Not started N (%)	P value
Maternal education						
Primary	04	0	0	02 (50)	2 (50)	
Secondary	24	0	7 (29.16)	12 (50)	5 (20.83)	0.025*
Tertiary	22	0	4 (18.18)	18 (81.81)	0	
Socioeconomic status						
Upper	21	0	6 (28.57)	15 (71.42)	0	0.180
Middle	25	0	4 (16)	15 (60)	6 (24)	
Lower	04	0	1 (25)	02 (50)	1 (25)	_
Source of information						
Health workers	27	0	6 (22.22)	18 (66.66)	3 (11.11)	_
Family	18	0	4 (22.22)	14 (77.77)	0	0.000*
No idea	05	0	1 (20)	0	4 (80)	0.000
Gender						
Male	28	0	6 (21.42)	16 (57.14)	6 (21.42)	0.225
Female	22	0	5 (22.72)	16 (72.72)	1 (4.54)	
Age (months)						
6-8	21	0	6 (28.57)	9 (42.85)	6 (28.57)	_
8-10	21	0	4 (19.04)	17 (80.95)	0	0.049
10-12	08	0	1 (12.5)	6 (75)	1 (12.5)	

^{*}Statistically significant with p value ≤0.05

The mothers with tertiary level of education had initiated the CF after 6 months of age and it was statistically significant (p=0.025). A statistically significant association of initiation of complementary feeding was there with source of information about CF (p=0.000) and age of the infants (p=0.049) (Table 3). Sociodemographic variables were found to have strong association with the indicators of malnutrition. The frequency of CF was significantly associated with head circumference for age (p=0.021). There was a statistically significant association between frequency of breastfeeding and weight for length (p=0.012). Socioeconomic status had a statistically significant association with head circumference for age (p=0.008). There was no significant association of initiation of CF was there with the malnutrition (Table 4).

DISCUSSION

The initiation of complementary feeding is delayed in the majority of infants. According to this study, mothers prefer formula food over homemade cuisine. Malnutrition in its various manifestations still exists in our society. In this case, a comprehensive plan must be developed to address the malnutrition and infant feeding issues. After a comprehensive assessment during the Antenatal and

Postnatal visits, the woman should receive prenatal counselling and make suitable dietary changes. At 6 months, 31.6% mothers started the complementary feeding. Only 14.28% of working mothers' infants obtained the proper consistency of supplemental feeding. The most common reason for early complementary feeding was mothers are working, whereas the most common reason for delay is that the baby vomits or gags the additional food. Complementary foods such as animal milk and milk-based dishes were popular. Only 22% of mothers started complementary feeding at 6 months of age, according to our research. The mother's educational status has a significant relationship with the initiation of supplemental feeding (p=0.025).

The indices of underweight, wasting, and stunting were used to determine nutritional status. According to the findings, 39 percent of babies were exclusively breastfed, only 61 percent received prolonged breastfeeding, and 50 percent were given CF at the appropriate period. Underweight, wasting, and stunting were found to be prevalent in 26 percent, 23 percent, and 28 percent of the population, respectively. Underweight was linked to the child's age, birth order, birth weight, parents' education level, family size, and the occurrence of fever and

diarrhoea in the previous two weeks, while wasting was linked to the child's birth order, fathers' education level, mother's age, family size, completion of the ageappropriate vaccination, and frequency of fish consumption. Stunting was linked to a child's age, the occurrence of fever and acute respiratory infection, and the ingestion of fortified foods. $^{\bar{12}}$ In the 6-11 month period, the percentages of wasting, stunting, and underweight were 28 percent, 26.5 percent, and 30.7 percent, respectively.¹³ However, underweight, wasting, and stunting were shown to be prevalent in our study at 4%, 1%, and 14%, respectively. Breastfeeding frequency has a strong relationship with weight-for-length (p=0.012). It suggests that while malnutrition has decreased in prevalence over the last two years, it still exists in our community.

Table 4: Factors associated with prevalence of malnutrition (n=50).

Eastana	Indices of malnutrition; (P value)			
Factors	WFA	LFA	WFL	HCFA
Initiation of CF	0.464	0.286	0.162	0.528
Frequency of CF	0.122	0.714	0.105	0.021*
Frequency of BF	0.444	0.119	0.012*	0.252
Socioeconomic status	0.055	0.805	0.459	0.008*

^{*}Statistically significant with p value ≤0.05

Limitations

This study is limited to those child who has <-2SD Z-score and the malnutrition is calculated according to that, but the Z-score above 1 is taken as normal. As it is a pilot study, the result can not be generalized to all infants of 6-12 months.

CONCLUSION

Malnutrition in various kinds continues to be prevalent in our society. Malnutrition remains a serious issue that requires a concerted effort from the government, communities, and nonprofit groups working in the country to improve children's nutritional health. The mothers should be educated during the antenatal as well as post natal period about the complementary feeding. The provision of adequate and accessible education and health services to the population in order to facilitate effective health education and the prevention and treatment of child malnutrition at the individual level.

Recommendations

As various forms of malnutrition still exist in our society, we have to make the people, mostly the parents aware about this condition. In this scenario, a comprehensive plan is needed to address the malnutrition and infant feeding problem should be formulated. Antenatal counselling of mother and appropriate dietary

modification should be done after thorough screening during antenatal and postnatal visit. At every health setup for children, mothers should be educated about the continuation of breastfeeding and proper introduction of complementary feeding for their child as well as their near and dear ones too. Further, a large scale study should be done to get more clear picture of malnutrition.

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