

Assessment of Breast Feeding and Complementary Feeding Practices and Importance of Right Nutrition in the First 1000 Days of a Child's Life

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Abstract: *Optimum Nutrition during first 2 years of life is of paramount importance as this is a period of rapid growth, behavioral and cognitive development. The aim of the study is to elicit information about Maternal Nutrition, Breast feeding and weaning practices among mothers attending pediatric OPD at Apoorva Hospital, Hyderabad with pretested well - structured questionnaire. Anthropometric measurements were recorded to check the growth of the infants. In the study it was found that about 82% of the study subjects received exclusive breast feeding for 6 months. 54% of total study subjects received breast milk as their first feed while about 35% received honey (pre lacteal feed) as their first feed. The main problem noticed in the study was late initiation of breast milk only 14% of the mothers reported to initiate breast feeding to their babies as soon as their birth (within half an hour). In the study, majority of the participants 77% unanimously agreed to initiate complementary feeding after 6 months. Although the study revealed appreciable breastfeeding practices, there is still a need for health education programs aimed at educating mothers during the antenatal period about importance of maternal nutrition and particularly the need to initiate early breast feeding.*

Keywords: Optimum Nutrition, Maternal Nutrition, Exclusive breast feeding, Weaning practices.

1. Introduction

Adequate nutrition during infancy and early childhood is fundamental for development of full human potential. The period from birth to two years of age is a "critical window" for the promotion of optimal growth, health and behavioral development (WHO, 2003).

The first 1, 000 days are considered crucial for child's cognitive and physical development. The health and well-being of a pregnant and lactating woman is directly connected to the growth and health of her infant. The right nutrition for the mother and for the child during this time can have profound impact on the child's growth and development and reduce disease risk, as well as protect the mother's health. Under nutrition during pregnancy can affect fetal growth, is a major determinant of stunting and can lead to consequences such as obesity and nutrition-related non-communicable diseases in adulthood.

Growth rate in human being is maximum during the first year of life and infant feeding practices comprising of both the breastfeeding as well as complementary feeding have major role in determining the nutritional status of the child (National guidelines IYCF, 2004).

The WHO and UNICEF have developed the Global Strategy for Infant and Young Child Feeding (IYCF) which recognizes appropriate feeding practices to be crucial for improving nutritional status and decreasing infant mortality in all countries. WHO offers three recommendations for IYCF practices for children aged 6 to 23 months: Continued breast feeding for 23 months or feeding appropriate calcium rich food if not breast fed, feeding solid or semisolid food for minimum number of times per day according to

breastfeeding status and including foods from a minimum number of food groups per day according to the breast-feeding status.

Mother is the most important person in a baby's life for both physical as well as psychosocial care and growth. The mother infant relationship is the most vital formative relationship for the child. From the very first moments of life, a baby begins interacting with mother. Thus, mother's health, her education, her beliefs & attitude regarding child rearing are important milestones on the road of child's health right from in utero period. Also, faulty breast-feeding and weaning practices have their roots in socioeconomic and educational status of the parents, their cultural beliefs, number & spacing of siblings and the employment status of the mother. Improved breast-feeding practices & reduction of artificial feeding could save an estimated 1.5 million children a year (UNICEF, 2001).

2. Aim

The aim of this study was to assess the breast feeding and complementary feeding practices and importance of right nutrition in the first thousand days of a child's life

3. Objectives

- To elicit information about the importance of right nutrition in the critical phase of child life (i. e., the first thousand days from conception till two years of age)
- To assess the knowledge and attitude regarding breast feeding and complementary feeding practises among mothers with children below two years (6 months - 24 months)

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4. Literature Survey

A study conducted by Sinhababu A, et al., 2008 revealed late initiation of breastfeeding, low rates of exclusive breastfeeding, and inappropriate complementary feeding practices. A study undertaken by Rao S, et al., in 2010 disclosed that initiation of complementary feeding at the recommended time of six months was seen in the majority of children. However, the quantity of complementary feeding was insufficient. Similarly, a study conducted by Sinha R, et al., 2016 showed that majority of the mothers were practicing exclusive breast feeding, however a significant proportion of children was deprived of timely initiation of breast feeding. About 2/3 of the mothers were still practicing pre - lacteal feeds to their children. The study documents that there was significantly increased risk of PEM if the child is not exclusive breastfed for 6 months.

The study conducted by Lal M 2015 concluded that breast feeding is almost universal among the participants, but initiation of breast is very much delayed with faulty weaning practices and thus emphasized the need to equip mothers with knowledge through various ways. A cross sectional study conducted by Gupta A, et al., 2015 concluded that Children of mothers with higher education and boys were more likely to start timely complementary feeding than girls. The IYCF practices in the study population were not satisfactory, although better than the national average. Early initiation and EBF for 6 months were higher in children born in government institutions. Thus, stressed on creating awareness about IYCF practices among the health personnel in the public and private sectors and mothers.

A cross sectional study done by Cacodkar J, et al., 2016 among 307 rural mothers showed that the overall awareness about infant feeding practices such as early initiation of breast feeding and feeding of colostrum among mothers was low despite the study area having quality antenatal and neonatal services.

5. Methodology

To assess the breast feeding and complementary feeding practices and importance of right nutrition in the first thousand days of a child's life a survey was carried out among mothers attending pediatrics OPD at Apoorva Hospital, Mehdiapatnam, Hyderabad

Inclusion criteria of the study:

Children below 2 years (6 months to 24 months) who attended paediatric OPD with their mothers at Apoorva Hospital.

Exclusion criteria of the study:

- Critically ill children
- Children not accompanied by their mothers

Sample size:

A total of 100 children from 6 months to 24 months of both the sexes were included in the study.

Sampling:

Children who fulfilled the inclusion and exclusion criteria were included in the study and those mothers who gave the informed voluntary consent to participate were enrolled. The subjects were selected based on the order of arrival to the outpatient department during the study.

Tool of the study:

A structured, pretested and predesigned questionnaire was used to collect information on socio demographic profile (Name, Age, Religion, Education, Type of family and Child gender and birth weight). Examinations include anthropometric measurement such as height, weight and BMI (Body mass index). The next set of questions were aimed at eliciting information regarding maternal nutrition (prenatal practices) and breast feeding (details on initiation of breast - feeding nutrition knowledge and practices) followed by questions focused on weaning and complementary feeding practices and 24 - hour dietary recall of the child (Nutritive value for each complementary feeding mix given was calculated). Before collection of the data, the questionnaire was translated into local language to ensure all participants understood the questions asked in the survey.

Statistical Analysis:

Data entry and statistical analysis were performed using Microsoft Excel. The analysis was conducted to obtain statistics such as Mean \pm SD percentage for Height, Weight, BMI for age. Chi - square and other relevant statistical tests were applied.

6. Results and Discussion

Table 1: Socio - demographic profile and general information of study participants (Mother): (n=100)

S. no	Variable	Category	Percentage (%)
1.	Age group	18 - 25 years	43
		25 - 30 years	42
		30 - 35 years	15
2.	Occupation	Homemaker	98
		Employee	2
3.	Religion	Muslim	67
		Hindu	33
		Christian	-
		Any other	-
4.	Education	Illiterate	2
		Primary school	1
		Middle school	12
		High school	33
		University graduate	52
5.	Food preferences	Vegetarian	7
		Non vegetarian	93
6.	Type of family	Nuclear	43
		Joint	57
6.	No of children	One	34
		Two	44
		More than two	22

Table 1: The socio demographic profile of the study participants is illustrated in the above table. The study participants comprised of mothers with children between 6 - 24 months of age (n=100) of whom, 43% belonged to the age category of 18 - 25 years, 44% to the age group of 25 - 30 years and 15% to the age group of 30 - 35 years. About

98% of the participants were homemaker. Majority of the sample population were Muslims 67% and about 33% were Hindus. Regarding the educational status it was observed that 52% of the participants were University Graduates, Higher secondary school educated (33%), Middle school educated (12%), Primary school educated (1%) and about 2% of the total population comprised of illiterate mothers. Majority of the participants were Non vegetarian (93%) and about 7% Vegetarian. Most families in this area lived in joint families (57%) while remaining 43% were from nuclear family. About 34% of the participants have only one child, 44% have children two while the rest 22% of the participants have more than two children.

6.1 Anthropometric measurements:

Based on the anthropometric measurements (height, weight, BMI, Z score classification and percentile the following information was deduced.

Table 2: Nutritional status of the study population based on anthropometric measurements: (n=100)

S. no	Distribution of the study subjects on the basis of gender		
1.	Female infant (n=53)	Cases	Percentage
	Wasting:		
	• Severe	7	13.2%
	• Moderate	0	-
	Stunting:		
	• Severe	2	3.77%
	• Moderate	3	5.66%
2.	Male infants (n = 47)		
	Wasting:		
	• Severe	5	10.6%
	• Moderate	6	12.7%
	Stunting:		
	• Severe	0	-
	• Moderate	3	6.38%

Table 2 depicts the nutritional status of the study population. It was observed that there are 7 cases of severe wasting among female infants (13.5%) while 5 cases of severe wasting accounting to 10.6% among male. Over 3.77% of severe stunting cases were reported among female infants while about 6.38% of male infants showed moderate stunting. The Mean Height, Weight and BMI for age were in proportion to WHO standards.

6.3 Maternal Nutrition

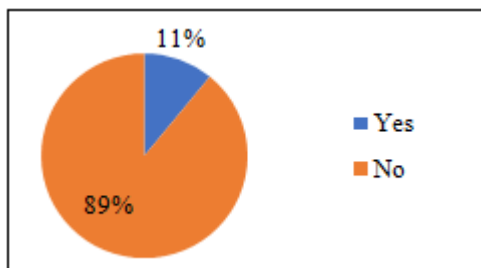


Figure 1: Special diet during pregnancy

Figure 1 illustrates the no of participants following special diet during pregnancy. It was found that majority of the study participants did not follow any special dietary regimen during pregnancy accounting to about 89%.

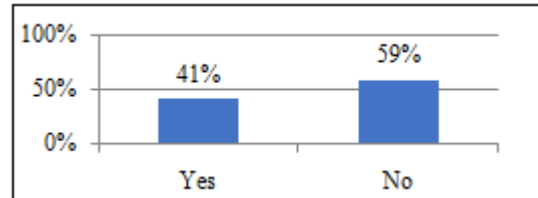


Figure 2: Distribution of the participants (mothers) based on Awareness of increased nutrient requirement during pregnancy

Figure 2: depicts the awareness regarding the increased need of nutrient requirements during pregnancy: In the study it was found that about 41% of the participants were aware about the increased requirement of Iron, folic acid and other micronutrients during pregnancy and almost 59% of the participants had no knowledge of the body's increased needs.

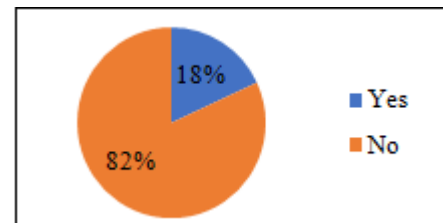


Figure 3: Distribution of the study participants based on Physical activity apart from household chores during pregnancy

Figure 3 illustrates the number of participants engaging in physical activity apart from household chores. In the study it was found that about 18% of the total participants had engaged in physical activities such as walking and majority of the population accounting to about 82% did not engage in any kind of physical activity.

6.4 Breast feeding practices

Table 3: Distribution of study subjects (infants) according to breast feeding practices

S. no	Variable	Distribution of children		Total (n=100)
		Male (n=47)	Female (n=53)	
1.	Colostrum given			
	Yes	31 (65.95)	45 (84.9)	76
	No	16 (34.04)	08 (15.0)	24
2.	Exclusive breast feeding for 6 months			
	Yes	38 (80.8)	44 (83.01)	82
	No	9 (19.1)	9 (16.9)	18
3.	Type of first feed			
	Breast feed	26 (55.31)	28 (52.83)	54
	Honey	15 (31.91)	20 (37.73)	35
	Sugar	1 (2.12)	2 (3.77)	3
	Any other specify	5 (10.63)	3 (5.66)	8
4.	Breast feeding initiation			
	a. As soon after birth	6 (12.7)	8 (15.09)	14
	b. Within six hours	7 (14.89)	12 (22.64)	19
	c. Within 24 hrs	15 (31.9)	18 (33.96)	33
	d. Within 48 hrs	7 (14.8)	6 (11.32)	13
e.	On or after 3 rd day	12 (25.53)	9 (16.9)	21

(Figures in parenthesis indicate percentages)

Table 3 illustrates the breast - feeding practices among the study subjects. In the study it was found that about 76% of

the total subjects received colostrum while about 24% did not receive due to various reasons such as elder’s advice (2%), inability of the child to suck (8%) child health and notion regarding c - section accounting to about (14%). About 82% of the study subjects received exclusive breast feeding for 6 months while about 18% did not receive due to inadequate milk secretion (14%), mother’s health (2%), child health (1%), and mother being busy (1%). About 54% of total study subjects received breast feed as their first feed while about 35% received honey as their first feed, sugar accounting for about 3%, other feed such as top milk (8%). Only 2% of the mothers had reported to express out breast milk to feed the baby. The expressed breast milk was stored in a glass/plastic container and kept in refrigerator. Over 14 % of the mothers reported breast feeding to their babies as soon as their birth (within half an hour). 19% of the study participants - initiated breast feeding within six hours after birth. About 33% mothers reported breast feeding within 24 hours after birth and 13% initiated after 48 hours after birth, and about 22% reported to breast feed their child after 3 days of delivery

As per WHO recommendation, a child should be breast fed exclusively up to the age of six months. The research findings of this study are comparatively similar to those reported by Bhandari D, et al., (2011) accounting to about 76.3% and 76.6% respectively while in the study conducted by Maiti A, et al., (2015) 60.8% had practiced exclusive breast feeding. Early initiation of breast feeding is associated with reduced risk of neonatal mortality. Breast feeding within the first hour of life is recognised vital for infants’ cognitive development.

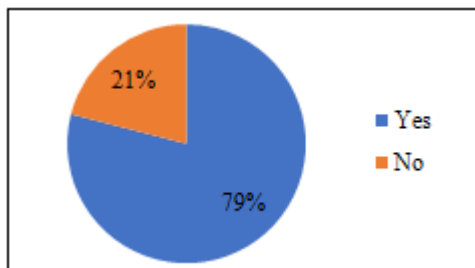


Figure 4: Distribution of participants (mothers) based on Awareness regarding benefits of breast feeding

Figure 4 shows that almost 79% of the mothers had awareness regarding the benefits of breast feeding while the remaining 21% of had no awareness regarding the benefits of breast feeding.

6.5 Complementary feeding practices

Table 4: Distribution of study subjects according to complementary feeding practices:

S. no	Variable	Distribution of children		Total (n=100)
		Male (n=47)	Female (n=53)	
1. Initiation of complementary feeding				
a.	2 - 3 months	0	1 (1.88)	1
b.	4 - 5 months	9 (19.1)	4 (7.54)	13
c.	6 - 7 months	33 (70.2)	44 (83.01)	77
d.	7 - 9 months	5 (10.6)	4 (7.54)	9
2. Amounts to be introduced during first meal				

a.	1 - 5 tsp	40 (85.1)	44 (83.01)	84
b.	6 - 10 tsp	4 (8.51)	8 (15.09)	12
c.	½ cup	2 (4.25)	1 (1.88)	3
d.	1 cup	1 (2.12)	0	1
3. Best method of giving additional feed to the baby				
a.	Bottle	10 (21.27)	8 (15.09)	18
b.	Cup	1 (2.12)	3 (5.66)	4
c.	Cup and spoon	27 (57.4)	35 (66.03)	62
d.	Hand	9 (19.14)	7 (13.20)	16
4. First food supplement given to the baby				
a.	Milk (cow/buffalo)	8 (17.02)	9 (16.98)	17
b.	Commercial infant formula	30 (63.8)	29 (54.7)	59
c.	Porridge	1 (2.12)	4 (7.54)	5
d.	Semi solids	2 (3.77)	0	2
e.	Any other	6 (12.76)	11 (20.75)	17
5. Method of feeding				
a.	By making the child sit on lap	25 (53.1)	29 (54.71)	54
b.	By making the child sit on chair	8 (17.02)	11 (20.75)	19
c.	Leaving the child to roam around	11 (23.4)	10 (18.86)	21
d.	By giving them toys/ gadgets while Feeding	3 (6.38)	3 (5.66)	6
6. Boiled water in drinking				
a.	Yes	40 (85.1)	45 (84.9)	85
b.	No	7 (14.89)	8 (15.0)	15
7. Use of separate container for drinking				
a.	Yes	39 (82.9)	48 (90.56)	87
b.	No	8 (17.02)	5 (9.43)	13
8. Use of milk in weaning mix				
a.	Yes	6 (12.76)	16 (30.18)	22
b.	No	41 (87.2)	37 (69.81)	78

(Figures in parenthesis indicate percentages)

Table 4: depicts the distribution of study subjects according to the complementary feeding practices and methods. In the study it was found that majority of the study participants 77% unanimously agreed to initiate complementary feeding after 6 months (recommended period) while about 13% agreed to initiate complementary feeding between 4 months - 5 months, 9% initiated complementary feeding within 7 months to 9 months (delayed weaning practices). About 84% of the study participant believed small amount (1 - 5 tsp) should be introduced to the baby during his/ her first meal. 62% of the participant reported that the best method to give addition feed to the child is with a cup and spoon, while about 18% gave additional feed through bottle, and about 16% believed that the additional feed should be fed with hand. Over 59% of the study participants gave commercial infant formula as the baby first food supplement and about 17% of the mothers gave diluted cow and buffalo milk as the first food supplement. Over 54% of the mother reported that the best method of feeding is by making child sit on lap. Majority of the participants (84%) used boiled water for drinking. About 87% used separate containers for feeding the child. 78% of the participants did not use milk in the preparation of weaning mix.

This can be correlated to the study reported by Som B, et al., 2016 only 63% of the mothers knew that complementary feed should be started after 6 months. Maiti A, et al., 2015 reported that only 55.9% of the total participants had known

about the correct time of weaning. A prospective interview study of 200 parents by Agarwal et al showed that only 17.5% of the mothers had started complementary feeding at the recommended time. In the present study participants were aware that breast feeding will be inadequate to support the growth of the child after 6 months and complementary feed had to be started like the one reported by Venugopal S, et al., 2018 accounting to about 82.9%.

6.6 Hour Dietary Recall

To know the significance in the difference of the mean dietary intake of the subject a t - test was applied by comparing the mean of their nutrient intake (nutritive value of the complementary food consumed) and RDA (Dietary guidelines of India. The results revealed that The Energy, Carbohydrates, Calcium and Iron consumed were less when compared with RDA at 5% level of significance. The protein intake was relatively higher when compared to RDA while the fat intake was in proportion to RDA at 5% level of significance.

6.7 Effect of Educational status on Exclusive breast - feeding practices

Chi square test was applied to assess the impact of education on exclusive breast - feeding practices. The results revealed that the educational status of the mothers was significantly associated with exclusive breast feeding and the participants who have awareness regarding the benefits of breast feeding showed positive correlation with EBF practices.

7. Summary and Conclusion

A study was planned to assess the importance of right nutritional practices in the first thousand days of child's life. The aim of the study is to elicit the information on maternal nutrition, breast feeding and weaning practices among mothers attending pediatric OPD at Apoorva Hospital, Mehdiapatnam, Hyderabad. Children below 2 years (6 months to two years) who attended paediatric with their mothers at Apoorva hospital were the prime target. A total of 100 children of both the sexes were included in the study. Anthropometric measurements like weight, height was recorded. The collected data was then analysed and BMI was computed. Growth and health predicting parameters like Weight for age, Height for age, BMI for age was calculated and Z - score was computed to assess the rate of malnutrition. The mean Height, Weight, BMI for age were compared with WHO standards. The anthropometric calculations irrespective of age and gender revealed that over 12% of the total study subjects were severely wasted while about 6% were reported to be moderately wasted as per their BMI for age and with respect to their height for age 2 % were severely stunted and over 6% fell under stunted category. The Mean Height, Weight and BMI for age were in proportion to WHO standards.

The study revealed that only 11% of the total study participants followed a special dietary regime during pregnancy and about 41% had correct knowledge of their increased nutrient requirements. Over 18% reported to engage themselves in physical activity apart from household

chores. Based on the findings, it was observed that practice of exclusive breast feeding (82%) and timely initiation of weaning (77%) was found to much higher than the expected mainly due to higher literate participants. Chi square (χ^2) analysis proved that educational status of the mothers was significantly associated with exclusive breast feeding. EBF and timely initiation of weaning are indispensable for the proper growth and development of children. The main problem revealed in the study was late initiation of breast milk. It was observed that only 14% of the study participants - initiated breast feeding within half an hour of delivery. It was also observed that pre lacteal feed like honey was given to almost 35% of the study subjects. Breast feeding is a vital part of sustainable development and a non - negotiable component of global action to end malnutrition. Exclusive and continued breast feeding is only possible by cooperation and collaboration across sectors and generations. Educating the elderly, newly married women, health care providers and local staff of the health care delivery system who has a strong hold in their areas can bring about a major impact.

It can be concluded that mothers had high level of knowledge about breastfeeding & complementary feeding. Also, practices of the mothers regarding breast feeding were appreciable. A significant relationship was obtained between exclusive breast feeding & mother's literacy rate.

Although the study revealed higher breastfeeding practices, there is still a need for health education program aimed at educating mothers on:

- 1) Early initiation of breast feeding
- 2) Exclusive breast feeding
- 3) Importance of feeding first milk (colostrum to the child)
- 4) Initiation of complementary feeding practices after 6 months
- 5) Importance of breast feeding till 2 years

8. Recommendations

Nutritional counseling of women of child bearing age can be done to spread awareness of the importance of maternal nutrition before and during pregnancy. Supplementation and fortification can make a contribution when recommended micronutrients intake is difficult to be met with food alone. Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods, while continuing to breastfeed for up to two years or beyond. (WHO, 2017).

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