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Exclusive Breastfeeding Practice and Nutritional Status of Infants Attending University of Nigeria Teaching Hospital Enugu, Nigeria

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Abstract:

Introduction: *Exclusive breastfeeding is a unique and essential practice that promotes healthy growth and development of an infant especially at the first six months of life.*

Objectives*: The study assessed the exclusive breastfeeding practices and nutritional status of infants (0-12months) attending Institute of Child Health University of Nigeria Teaching Hospital Enugu, Nigeria.*

Materials and methods: *A cross-sectional study design was used, 150 samples of infants (0-12 months) and their mothers were selected with a random sampling technique in a purposefully selected hospital. Data collection was done with a structure and pre-tested questionnaire and anthropometric measurements of the infants. Data were statistically analyzed using correlation and Chi-square test with SPSS Version 16 at significance level of ($p<0.05$).*

Results: *Results showed that 98% of children were breastfed, 38.6% had early initiation of breastfeeding, 10.5% were exclusively breastfed for first 6 months, 39.5% were breastfed exclusively for 2-3 months, 14.7% were wasted, 20.0% underweight, 12.0 % stunted and 3.3% overweight, mothers' age, education, occupation, monthly income and child's sex showed no significant ($P>0.05$) association between exclusively breastfed and non exclusively breastfed children, there was a significant ($P<0.05$) relationship in infant nutritional status (weight for age and weight for height) between exclusively breastfed and non exclusively breastfed children, but there was no significant ($p>0.05$) association in their height for age.*

Conclusions: *This study established an unacceptable low rate of exclusive breastfeeding and poor nutritional status owing to high coexistence of under nutrition and over nutrition among infants studied. Efforts must be intensified on research and education of Exclusive breastfeeding practice.*

Keywords: *Exclusive breastfeeding, breastfeeding, infancy, growth and nutritional status.*

1. INTRODUCTION

The first 1000 days of the child marks the most crucial time to meet a child's nutritional requirements which include the period of pregnancy and ending with the child's second birthday (1). Optimal nutrition during this infancy period is critical to meet up with their increasing nutritional needs to support rapid growth and mental development as well as reduce linear growth retardation, iron deficiency anaemia and boost their immune system to fight infections. In infants, this is achieved through exclusive breastfeeding for the first six months and adequate and nutrient-dense complementary foods thereafter. Exclusive breastfeeding (EBF) is a unique and essential practice that promotes healthy growth and development of an infant especially at the first year of life and beyond. According to WHO (2) and de Onis *et al.*, (3) Exclusive breastfeeding is defined as the consumption of no other food or liquids except breast milk and drops or syrups consisting of vitamin-mineral supplements or medicines for at least 4 and if possible the first 6 months of life.

Nutritional status is the condition of the body resulting from the nutrient content of the food we eat in relation to our nutritional needs, and from the ability of our bodies to digest, absorb and use those nutrients. It is influenced by three broad factors: food, health and care. Child overnutrition and undernutrition are assessed by measuring height and weight and screening for clinical manifestations and biochemical makers. Indicators based on weight, height and age are compared to international standards and are most commonly used to assess the nutritional status of a population. Stunting (inadequate length/height for age) captures early chronic exposure to undernutrition; wasting (inadequate weight for height) captures acute undernutrition; underweight (inadequate weight for age) is

a composite indicator that includes elements of stunting and wasting (1).

According to UNICEF, (4), there are a number of socio-cultural practices in the region which do not support good nutrition and deprive infants of the irreplaceable protection that breast milk provides. Some examples of such practices include giving water, herbal teas and porridge to babies less than six months old. Child malnutrition is linked to poverty, poor feeding practices, low levels of education, and poor access to health services, including reproductive health and family planning.

Globally, 165 million children (1 in 4 children under age 5) are chronically malnourished (1). Malnutrition is responsible for almost half of all deaths of children under the age of 5 (1), with maternal and child under nutrition contributes to 35% of the disease burden in under 5 children and cause 3.5 million deaths worldwide. Malnutrition often begins at conception and the first year of life represent an especially challenging period for infant's nutrition and health because their relatively high metabolic rates and rapid rates of growth during this period impose proportionately greater nutrient requirements (5). Under nutrition early in life clearly have major consequences for future educational, income and productivity outcomes. Reduced school attendance and educational out-comes result in diminished income-earning capacity in adulthood (1). Surprisingly, twenty three out of the 40 countries with child stunting prevalence of 40% or more are in Africa (6). EBF is one of the key actions for child survival, which has a rate of only 17% in Nigeria and 21% of infant mortality is attributed to poor breastfeeding. Hence, this study is therefore aimed at assessing the exclusive breastfeeding practices and nutritional status of infants (0-12months) attending Institute of Child Health (ICH) University of Nigeria Teaching Hospital Enugu, Nigeria.

2. METHODS

Area of study

The study was carried out at the Institute of Child Health, University of Nigeria Teaching Hospital, Ituku/ Ozalla, Enugu, Enugu State, Nigeria. Enugu is the capital of Enugu State between April and October, 2012.

Study design

A study design was a cross sectional investigation of infants aged 0 -12 months brought to the Institute of Child Health (ICH), University of Nigeria Teaching Hospital, and Enugu for variable reasons. Information was obtained on breastfeeding patterns for each infant and its nutritional status. Basic information on their mothers' demographic and socio-economic statuses was also obtained.

Sample size determination

Sample size (n) of 150 mother-infant pairs was determined using the following formular:

$$n = \frac{N}{1+N(e)^2}$$

Where:

N= Size of Population of mothers pair infants that came for immunization and vitamin A supplementation in ICH UNTH (205 mother-infant pairs).

e = margin of error test significance 5% (0.05).

n = size of the sample.

1= Constant

Sampling procedure

One hundred and fifty mothers of infants aged 0-12 months, visiting ICH for their Childs' immunization and other Childs' welfare counseling were randomly selected for the study. The sampling procedure used was a random sampling method (simple balloting).

Data Collection

Anthropometric measurements: including length (cm), weight (kg) and age (months) of selected infants were obtained from the infant's immunization card.

Length (cm): lengths of the subjects were measured using infant measuring board to the nearest 0.01 cm following standard procedure and measurements were accurately recorded.

Weight (kg): The nude (without cloth or diapers) morning weight of each subject was weighed with a portable pediatric beam balance scale of 13kg capacity (accuracy 0.01kg) and recorded accurately.

Anthropometric indices: weight-for-age z-score, weight-for-length z-score, length-for-age z-score were process using World Health Organization Anthro Software Version 3.2.2 and following the standard instruction.

Questionnaire method: A structure and validated questionnaire was used to collect information on socio-economic characteristics and breastfeeding practices among mothers of selected infants.

Data analysis

After the data have been collected, it was subjected to the task of analysis by classifying them into some purposeful and usable categories through coding operation, editing

and tabulation using SPSS Version 16 software. Analyses were performed based on the computation of various percentages, frequency, mean and standard deviation, and Statistical analysis by pearsons correlation and Chi-Square were done in the process of analyzing relationship and association supporting or opposing the hypothesis with significance level (p) of <0.05.

3. RESULTS

Table 1 presents the patterns of breastfeeding practices among mothers visiting the ICH UNTH, Enugu. Majority (98.0%) of the mothers breastfed their babies while very few (2%) did not. Of the infants breastfed, more than half (56.0%) were breastfed exclusively with only few (10.5%) infants who were breastfed exclusively for the first six months.

Table 1: *Breastfeeding Practices, Exclusive Breastfeeding (EBF) and Duration of EBF.*

Variables	Frequency	Percent %
Practice of Breastfeeding		
Yes	147	98.0
No	3	2.0
Total	150	100.0
Exclusive Breastfeeding		
Yes	84	56.0
No	66	44.0
Total	150	100.0
Duration of Exclusive Breastfeeding		
below 2 months	26	30.2
2-3months	34	39.5
4-5months	17	19.8
6months	9	10.5
Total	86	100.0

Figure 1 Shows initiation of breastfeeding. Two-fifths of mothers (38.6%) reported that they initiated breastfeeding within one hour after delivery, 33.30% initiated breastfeeding within 2-23 hours, while 9.30% initiated breastfeeding 2 days and above after delivery.

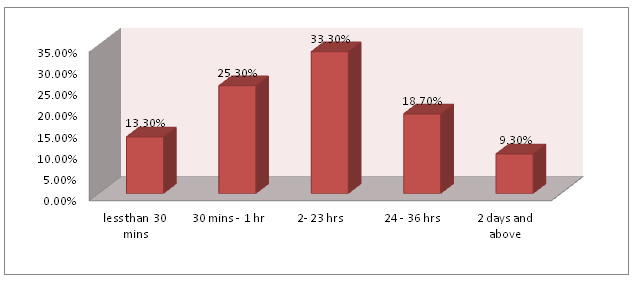

Figure 1: *Initiation of Breastfeeding*

Figure 2 present foods fed to infants. Slightly more than half (51.3%) of the infants were fed on only breast milk (exclusive breastfeeding), 18.0% were fed on breast milk and water (Pre-lacteal or predominant breastfeeding), 24% were fed on breast milk and local complementary foods (Pap, Dawa, Agidi, Mashed family foods), 5.3 % were fed on both breast milk and Commercial formulae, 1.3% were fed on only Commercial infant formulae (Exclusive on breast milk substitute).

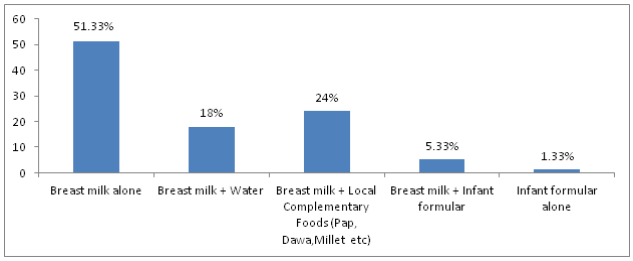

Figure 2: *Foods Fed to Infants*

Table 2 shows the mean, standard deviation and percentage of infants' anthropometric indices. One fifth (20.0%) of the infants were underweight with a mean value of (-3.50 ± 1.27), 2.0% were overweight with mean value (2.95±0.61) using Weight-for-age anthropometric index, 12.0% were stunted with a mean value (-3.74 ± 1.19), 7.3% were tall (overgrowth) with a mean value (2.73 ± 0.5) using Height-for-age anthropometric index, 14.7% were wasted with a mean value (-4.18 ± 1.75), 3.3% were Overweight with a mean value (3.04 ± 0.88) using Weight-for-height anthropometric index.

Table 2: *Mean, Standard deviation and Percentage of infants' anthropometric index*

Variable	N	X±S.D	%
Weight for Age Anthropometric Index			
Overweight	3	2.95 ± 0.61	2.0
Normal weight	117	-0.30 ± 0.91	78.0
Underweight	30	-3.50 ± 1.27	20.0
Total	150	-0.87 ± 1.77	100.0
Height for Age Anthropometric Index			
Tall	11	2.73 ± 0.5	7.3
Normal growth	121	0.38 ± 0.88	80.7
Stunting	18	-3.74 ± 1.19	12.0
Total	150	2.05 ± 0.44	100.0
Weight for Height Anthropometric Index			
Overweight	5	3.04 ± 0.88	3.3
Normal weight for height	123	-0.03 ± 0.97	82.0
Wasting	22	-4.18 ± 1.75	14.7
Total	150	-0.53 ± 1.95	100.0

Growth References: (a) ≥ + 2 S.D indicates Tallness, Overweight or Obesity (3.3% and 2.0%); (b) <+ 2 S.D and >-2 S.D indicates Normal or Healthy body range; (c) ≤-2 S.D indicates Underweight (20%), Stunting (12%) and wasting (14.7%)

Table 3 presents the maternal age distribution and their practice of exclusive breastfeeding. Exclusive breastfeeding were practiced more (45.2%) by mothers within the age of 25-29 years, and there was no significant (P>0.05) association in maternal age between exclusively breastfed and non exclusively breastfed children. However the null hypothesis was accepted.

Table 3: *Distribution of maternal age and their practice of exclusive breastfeeding*

Age-Group	Number Examined	Number Practicing EBF	Rate Of EBF (%)
below 20 yrs	5	3	3.6
20 -24 yrs	27	17	20.2
25 - 29 yrs	64	38	45.2
30 - 34 yrs	33	19	22.6
35 - 39 yrs	17	6	7.1
above 39 yrs	4	1	1.2
Total	150	84	100
X^2cal.= 5.411	X^2tab.= 11.142	df= 5	P>0.05

P<0.05 indicates Significance P>0.05 indicates No Significance

Table 4: Presents the influence of socio-economic status on exclusive breastfeeding practices. More than half (53.6%) of mothers who had Tertiary education, 29.8% who are traders, and 48.8% less than N10,000 monthly income practiced exclusive breastfeeding, though there were observed association in mother's education, occupation and monthly income between exclusively breastfed and non exclusively breastfed children, but were not statistically significant (P>0.05), Hence the null hypothesis were accepted.

Table 4: *Influence of Mothers' Socio-Economic Status on Exclusive Breastfeeding Practices*

Socio-Economic Variable	Number Examined	Number Practicing EBF	Rate Of EBF (%)
Maternal Education			
Primary	18	9	10.7
Secondary	57	30	35.7
Tertiary	75	45	53.6
Total	150	84	100.0
X^2cal.= 1.012	X^2tab.= 5.991	df= 2	(p>0.05)
Maternal Occupation			
Farmer	3	1	1.2
Trader	40	25	29.8
Civil servant	39	19	22.6
Private worker	14	8	9.5
Artisan	9	5	6.0
Student	15	11	13.1
Housewife	30	15	17.9
Total	150	84	100.0
X^2cal.= 4.426	X^2tab.= 12.592	df= 6	(p>0.05)
Maternal Monthly Income			
Less than N10,000	80	41	48.8
N11,000 - N30,000	39	21	25.0
N31,000 - N50,000	9	5	6.0
N51,000 - N70,000	10	9	10.7
Above N70,000	12	8	9.5
Total	150	84	100.0
X^2cal.= 6.052	X^2tab.= 9.488	df= 4	(p>0.05)

Table 5: Shows the distribution of infants' sex and exclusive breastfeeding practice. There was no significant (P>0.05) association in sex (male and female) of infants exclusively breastfed and non exclusively breastfed. Hence the null hypothesis was accepted.

Table 5: *Distribution of Infants' Sex and Exclusive Breastfeeding Practice*

Infant Variable	Number Examined	Number Practicing EBF	Rate of EBF (%)
Sex of the Infants			
Male	67	37	44.0
Female	83	47	56.0
Total	150	84	100.0
X^2cal.= 0.030	X^2tab.= 3.841	df= 1	(p>0.05)

Table 6: Shows the distribution of anthropometric indices (WAZ, WHZ & HAZ) between exclusively breastfed and non exclusively breastfed infants. There was weak negative significant (P<0.05) relationship in weight for age and weight for height between exclusively breastfed and non exclusively breastfed infants, hence the null hypothesis were rejected and alternate hypothesis were accepted. But no significant (p>0.05) relationship in their height-for-age, therefore the null hypothesis was accepted.

Table 6: *Anthropometric Indices (WAZ, WHZ & HAZ) of Exclusively Breastfed Infant and Non Exclusively Breastfed Infants.*

Anthropometric Indices	Number Examined	Number Practicing EBF	Rate of EBF (%)
Weight for Age			
Overweight	3	3	3.6
Normal weight	117	71	84.5
Underweight	30	10	11.9
Total	150	84	100.0

r-value	- 0.308	(P<0.05)	
Height for Age			
Tallness	11	9	10.7
Normal growth	121	66	78.6
Stunted	18	9	10.7
Total	150	84	100
r-value	- 0.121	(P>0.05)	
Weight-for-Height			
Overweight	5	5	6.0
Normal body weight	123	72	85.7
Wasting	22	7	8.3
Total	150	84	100
r-value	- 0.294	(P<0.05)	

Key: WAZ =Weight for age z-score; HAZ= Height for age z-score; WHZ=Weight for height z-score

4. DISCUSSION

This study found that almost all the mothers breastfed their children, indicating that breast milk is generally accepted as an ideal food for infants and virtually all mothers can breastfeed.

There was delay in the initiation of breastfeeding after delivery in the study, which could be linked to caesarean mode of delivery, lack of support, poor knowledge of mother, and host of socio-cultural practices.

There was observed decline in the duration of exclusive breastfeeding with very few (10%) infants breastfed exclusively for the first six months of life. This finding is lower compare to the rate of exclusive breastfeeding reports by previous studies (7). The unacceptable low rate of exclusive breastfeeding could be attributed to the fact that the infants are at different ages, delay in the initiation of breastfeeding, lack of support, early nutrition transition, pressure from marketing of breast milk substitute and host of other socio-economic factors.

The observed differences in the coexistence of undernutrition and overnutrition (stunting 15.5%, wasting 14.7%, underweight 18% and overweight 3.3%) among infants in this study could be related to their being at different stages in the nutrition transition, quality and quantity of food fed to them, quality of care, hygiene and environmental sanitary condition and host of other factors. This finding is consistent with the previous report on malnutrition in under 5 children in different countries including Nigeria (7).

Exclusive breastfeeding was found to be independent of Maternal age, education, occupation, monthly income and infant's gender ($p<0.05$). This is contrary to previous studies research reports (8; 9).

It was observed in this study that infants' nutritional status (weight for age and weight for height) has significant ($P<0.05$) relationship in exclusive breastfeeding, except for weight-for-height that has no significant relationship ($p>0.05$). This finding is similar to the reports by previous research authors (10; 11; 12; 13). This could be due to the fact that weight for age and weight for height are among the acute malnutrition that manifest them self early in life on account of nutrient deficiency.

5. CONCLUSION

This study established an unacceptable low rate of exclusive breastfeeding among infant aged (0-12 months) attending ICH University of Nigeria Teaching Hospital Enugu. Poor nutritional status owing to high coexistence of under nutrition and over nutrition (stunting 15.5%, wasting 14.7%, underweight 18% and overweight 3.3%) among infants. From this study, there was no established association between maternal demographic, socio-economic status and their practice of exclusive breastfeeding practices. There was a significant relationship between exclusive breastfeeding practice and infant nutritional status especially in weight for age, and weight for height.

In view of these findings, Efforts must be intensified to re-educate the benefits of Exclusive breastfeeding and address the identified constraints while dispelling breastfeeding myths. However more research work need to be done on longitudinal study of infant feeding practices among low-income mothers in the house hold to capture the trend and pattern of infant feeding in cultural context.

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