



## EXCLUSIVE BREASTFEEDING PRACTICE: ITS IMPLICATION ON NUTRITION STATUS, GROWTH AND MORBIDITY PATTERN AMONG INFANTS AGED 0-6 MONTHS

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### Abstract

Breast-feeding is an important determinant of a child's nutritional status that eventually influences his/her growth and development. This study sought to assess the exclusive breastfeeding rate and determine its association with nutrition status, growth and morbidity pattern among infants aged 0-6 months in a peri urban settlement of Kangemi-Nairobi County, Kenya. A descriptive cross-sectional study was conducted. A random sample of 334 infants was studied. Data collection tools and methods included a semi-structured questionnaire and anthropometric measurements. A chi-square test was used to find associations at a significance level of 0.05. Findings showed that over a half (52.7%) of study infants were girls and almost a half (47.3%) were boys. The mean age was  $3 \pm 1.8$  months. The exclusive breastfeeding rate was 45.5% and it was associated with growth and stunting (9.3%) among study infants. Wasting (3.1%), underweight (4.5%) and morbidity pattern were not related with exclusive breastfeeding.

**Key words:** feeding, practice, infant, growth.

### 1.0 Introduction

Poor infant feeding practices are known to have adverse consequences on the health and nutritional status of children, which in turn have consequences on the development of the child both physically and mentally (UNICEF, 2005). Breast-feeding is an important determinant of a child's nutritional status that eventually influences his/her growth and development. Exclusive breastfeeding is the most effective global public health intervention for child survival (WHO, 2003). A large global disease burden is attributed to sub-optimal breastfeeding accounting for 77% and 85% of the under-five deaths and disability-adjusted life years (DALYs), respectively (Black *et al.*, 2008). According to Black *et al.* (2008), sub-optimal breastfeeding especially non-exclusive breastfeeding in the first six months of life, results in 1.4 million deaths and 10% of disease burden in children younger than 5 years. In developing countries sub-optimal breastfeeding during the first months of life is an important risk factor for infant and childhood morbidity and mortality, especially resulting from diarrhoeal disease and acute respiratory infections (WHO, 2011).

Kenya is rated among 22 Countries in Africa with poor infant and young child feeding (IYCF) practices with a resultant high burden of under nutrition among the under-fives (UNICEF, 2011). The latest Kenya Demographic and Health Survey (KDHS) report showed that nutritional status of children under five in Kenya is poor with 35% stunted, 7% wasted and 16% underweight respectively (KDHS 2008-09). Infant feeding practices which according to the UNICEF model (1998) are immediate causes of childhood malnutrition were equally poor. According to the KDHS 2008-09 report, only 32% of infants under six months of age were exclusively breastfed.

The global strategy for IYCF describes essential activities to protect, promote and support appropriate IYCF (National Maternal, Infant and Young Child Nutrition Strategy, 2011-2017). It focuses on the importance of investing in this crucial area to ensure children grow to their full potential free from adverse consequences. Despite the well documented benefits of exclusive breastfeeding on child survival, growth and development, uptake of exclusive breastfeeding for six months as recommended remains low in Kenya. This study's intent was to assess the exclusive breastfeeding rate and determine its association with nutrition status, growth and morbidity pattern among infants aged 0-6 months in a peri urban settlement of Kangemi-Nairobi County, Kenya.

### 2.0 Materials and Methods

The study utilized a descriptive cross sectional study design. The ten villages of Kangemi, namely Marenga, Kang'ora, Machagucha, Gichagi, Rift Valley, Central, Waruku, NITD, Sodom and Watiti were used as clusters for sampling purposes. Sampling with probability proportional to size (PPS) was used to get number of households per village based on population of each village (Table 2.1).

**Table 2.1: Number of subjects per village**

Village	Number of households	Number of subjects
Marenga	238	39
Kang'ora	142	23
Machagucho	120	20
Gichagi	230	38
Rift valley	250	41
Central	259	42
Waruku	117	19
NITD	134	22
Sodom	255	42
Watiti	293	48

The study utilized Community Owned Resource Persons (CORPs) in identifying households with infants aged 0-6 months. A sample of 334 infants was randomly drawn from the households within the ten villages. A semi-structured questionnaire was administered to biological mothers of these infants to gather information on background characteristics, exclusive breastfeeding rate and morbidity pattern. Anthropometric measurements of weight and recumbent length of infants were taken based on guidelines by Bruce (2001). Data were processed and analysed using SPSS version 17.0. A Chi-square test was used to relate exclusive breastfeeding with nutrition status, growth and morbidity pattern at significance level of 0.05.

Approval to carry out the study was obtained from the Kenyatta National Hospital/University of Nairobi (KNH/UoN) Ethics and Research committee. Permission to collect data was also obtained from the District Commissioner Westlands District and from the District Medical Officer of Health (DMOH) in charge of all the public health facilities in the District and facility in charge of Kangemi health centre. Written consent to participate in the study was sought from the mothers before administering questionnaires.

### 3.0 Results

#### 3.1 Characteristics of study infants

Data regarding infants were obtained from mothers and review of the child's health card. As shown in Table 3.1, over a half (52.7%) of infants were girls while (47.3%) were boys. The mean age ( $\pm$  SD) of index infants was  $3\pm 1.8$  months. Nearly a third (32.5%) of the infants were aged 3-4 months, 30.7% were aged 1-2 months, 26.8% were aged 5-6 months and 9.3% less than one month old. Most of the infants (74.1%) were either first or second borns.

**Table 3.1: Characteristics of study infants**

Characteristic	Frequency	Percent (%)
Sex of child		
Male	157	47.3
Female	175	52.7
Birth order		
1 <sup>st</sup> born	121	36.6
2 <sup>nd</sup> born	124	37.5
3 <sup>rd</sup> born and above	86	26
Age of child		
< 1 month	33	9.9
1-2 months	102	30.7
3-4 months	108	32.5
5-6 months	89	26.8

#### 3.2 Child feeding

The study findings showed that overall, almost a half of infants (45.5%) were exclusively breastfed at the time of the study. As indicated in Table 3.2, almost all (99.1%) of infants were breastfed in the previous 24 hours prior to the study. In addition, close to a half (44.2%) of infants were given plain water, over a third (35.4%) porridge, 9.4% sugar water, 4.4% fresh animal milk and 2.7% tinned/powdered milk. The remaining proportion (15.2%) was given salt plus sugar water and gripe water.

**Table 3.2: Child feeding based on 24-hour recall**

Food/liquid consumed	Frequency	Percent (%)
Plain water	80	24.2
Sugar/glucose water	17	5.2
Fresh animal milk	8	2.4
Tinned/powdered milk	5	1.5
Cow's milk	6	1.8
Porridge	64	19.4
Breast milk	327	99.1
Other	50	15.2

### 3.3 Growth monitoring

Table 3.3 shows that nearly all the infants in the study (94%) were taken to the clinic for growth monitoring regularly. Of those infants whose growth was monitored for the previous three months, majority (73.1%) had good weight gain while a low proportion (0.6%) had lost weight. About one quarter (26.3%) of the infants had no change in weight.

**Table 3.3: Growth monitoring of study infants**

Variable	Frequency	Percent (%)
Child taken to clinic		
Always	302	94.1
Sometimes	13	4
Never	6	1.9
Growth pattern		
Good weight gain	239	73.1
Weight loss	2	0.6
No change	86	26.3

The study findings showed that almost two-thirds (63.8%) of infants who were exclusively breastfed had good weight gain and only 1 (0.6%) was found to have lost weight. Among those not exclusively breastfed, more than two-thirds (80.9%) had good weight gain and only 1 (0.6%) had lost weight.

**Table 3.4: Growth pattern and exclusive breast feeding**

Growth pattern	EBF	Not EBF	Statistical test
	Number (%)	No (%)	
Good weight gain	95 (63.8)	144 (80.9)	$\chi^2=12.221$ , 2df, $p=0.002$
Weight loss	1 (0.6)	1 (0.6)	
Other	53 (35.6)	33 (18.5)	

\*EBF- exclusive breastfeeding

A chi-square analysis showed that the pattern of growth was significantly associated with exclusive breastfeeding ( $\chi^2=12.221$ , 2df,  $p=0.002$ ).

### 3.4 Nutritional status of infants

The nutritional status of infants was assessed using the indicators of weight-for-height/length, height-for-age and weight-for-age. The weight-for-height/length index measures body mass in relation to body height or length and describes current nutritional status. Infants whose z-scores were less than -2 SD were considered wasted and those with less than -3 SD severely wasted. The height-for-age index is an indicator of linear growth retardation and cumulative growth deficits. Infants who had height-for-age z-score below -2 SD were considered stunted and those with -3 SD severely stunted. Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. Infants with weight-for-age z-score below -2 SD were classified as underweight while those with less than -3 SD were considered severely underweight.

Table 3.5 presents the nutritional status of infants as measured by weight-for-length (wasting), Length-for-age (stunting) and weight-for-age (underweight). The study findings indicated that 3.1% of infants were wasted while 3.4% were severely wasted. Findings showed that 8.7% of infants were stunted and 3.3% severely stunted. Further, it was found that 4.8% of infants were underweight while 1.2% severely underweight.

**Table 3.5: Nutritional status of infants**

<b>Nutritional status indicator:</b>	<b>Normal Number (%)</b>	<b>&lt;-2SD Number (%)</b>	<b>&lt;-3SD Number (%)</b>
Weight-for-length	306 (93.6)	10 (3.1)	11 (3.4)
Length-for-age	292 (88.0)	31 (8.7)	11 (3.3)
Weight-for-age	312 (93.9)	15 (4.8)	4 (1.2)

Table 3.6 shows the relationship between exclusive breastfeeding and nutritional indicators namely; weight-for-length, height-for-age and weight-for-age.

**Table 3.6: Nutritional status and exclusive breast feeding**

<b>Variable</b>	<b>EBF (n=151) Number (%)</b>	<b>Not EBF (n=181) Number (%)</b>	<b>Statistical test</b>
Weight-for-length			
<-3 SD	3 (2)	8 (4.4)	$\chi^2=1.520$ , 2df, $p=0.468$
<-2 SD	5 (3.4)	5 (2.8)	
$\geq$ -2 SD	139 (94.6)	167 (92.8)	
Length-for-age			
<-3 SD	9 (6)	2 (1.1)	$\chi^2=6.131$ , 2df, $p=0.047$
<-2 SD	13 (8.6)	18 (9.9)	
$\geq$ -2 SD	129 (85.4)	161 (89)	
Weight-for-age			
<-3 SD	2 (1.3)	2 (1.1)	$\chi^2=0.220$ , 2df, $p=0.896$
<-2 SD	6 (4)	9 (5)	
$\geq$ -2 SD	143 (94.7)	170 (93.9)	

\*EBF- exclusive breastfeeding

Analysis using chi-square test showed no association between exclusive breastfeeding with wasting (Weight-for-length) and underweight (Weight-for-age). However, stunting (Length-for-age) was significantly associated with exclusive breastfeeding ( $\chi^2=6.131$ , 2df,  $p=0.047$ ).

### 3.5 Child morbidity status

Assessment of morbidity status focused on diarrhoea and acute respiratory infection 2 weeks prior to the study (Table 3.7). Findings showed that 22.1% of infants studied had diarrhoea 2 weeks prior to the study. Of these, majority (25%) had diarrhoea for 2 days, 22% for 3 days and 15% for a week (7 days) within the two weeks prior to the study. Further, 1.2% of infants had blood in their stool. Slightly over a third (36%) of the infants had experienced difficulty in breathing 2 weeks prior to the study. The difficulty in breathing had been experienced by 17%, 21% and 20% for 2 days, 3 days and one week respectively. Among those who experienced difficulty in breathing, mothers attributed the difficulty to blocked nose (55.3%), coughing (23%) and noisy breathing (14.5%).

**Table 3.7: Reported morbidity status two weeks prior to study**

<b>Condition</b>	<b>Yes No (%)</b>	<b>NO No (%)</b>	<b>Total</b>
Diarrhoea	73 (22.1)	258 (77.9)	331
Blood in stool	4 (1.2)	326 (98.8)	330
Difficulty in breathing	119 (36)	212 (64)	331

For infants reported to have had difficulty breathing, nearly a half (45.6%) received medication. Of these, slightly over a half (50.6%) were taken to clinic/hospital, less than a half (42.9%) received drugs bought from the chemist and 1.3% got the medicine from traditional healers. For those infants who received medication, more than a half (59.4%) were given prescribed medicines and 28.5% non-prescribed medicines. A low proportion of infants (6.7%) were given rehydration salts (ORS). Only a small proportion of infants (2.4%) had been admitted to a hospital in the previous 3 months.

## 4.0 Discussion

Infant and young child feeding (IYCF) practices play an important role in reducing early childhood morbidity, mortality as well as improving early childhood growth and development. Findings showed that the pattern of growth as assessed by growth monitoring was significantly ( $p=0.002$ ) associated with exclusive breastfeeding. This implies that the pattern of growth can be influenced by breastfeeding practices. Similarly, Muchina (2007) found that 88% of children had good growth (positive slope) and this was significantly ( $p<0.05$ ) associated with breastfeeding practices. Further, Onayade, Muchina and Waithaka argue that inappropriate breastfeeding practices are associated with severe malnutrition and growth faltering in the under five children (Onayade, 2004; Muchina and Waithaka, 2010). The study findings indicated no association between exclusive breastfeeding with wasting and underweight. On the contrary, Mugo (2008) found an association between underweight and poor infant feeding practices in a study done in Narok District, Kenya, among infants aged 0-6 months. In

another study conducted in Ethiopia, Shibeshi (2004) found that underweight (57.1%) and wasting (11.4%) were associated with early introduction of foods below 3 months.

Exclusive breastfeeding protects very young infants from diarrhoeal diseases in two ways: first, breast milk contains both immune (specific) and immune (nonspecific) antimicrobial factors; second, exclusive breastfeeding eliminates the intake of potentially contaminated food and water. When exclusive breastfeeding is continued during diarrhoea illness, it also diminishes the adverse impact on nutritional status (WHO, 2011). However, study findings showed no relationship between exclusive breastfeeding and diarrhoea for those infants who had experienced diarrhoea in the previous two weeks prior to the study. This is in contrast with findings by Mhrshahi *et al.* (2007) in Bangladesh. According to Mhrshahi *et al.*, the prevalence of diarrhoea and acute respiratory infection in 0-3 months old infants was 14.3% and 31.2% respectively and both illnesses were significantly associated with lack of exclusive breastfeeding. The study findings showed that children, aged 0-3 months, who were exclusively breastfed, were less likely to have suffered from diarrhoea or an acute respiratory infection than infants who were not exclusively breastfed (Mhrshahi *et al.*, 2007).

## 5.0 Conclusion

Optimal infant feeding practices are the unparalleled ways of enhancing the health and survival of infants and young children, with exclusive breastfeeding meeting the nutritional needs of infants in the first six months of life. From the study findings, exclusive breastfeeding practice was not related with wasting, underweight and morbidity pattern in the study area. A relationship was found between exclusive breastfeeding with growth and stunting among the study infants.

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