Infant Growth Monitoring as a Panacea to Meeting Nutrition Challenges in Rural Area: a Case Study in Igbere Bende Local Government Area of Abia State

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Abstract

The study determined the growth pattern of infants (0-6month) of age. Some of the identifiable factors that influenced nutritional status of infants in the rural area were also considered in the study. A prospective cohort study was carried out in the five health centres in the study area. The period of the study was from May 2014 to October 2014. A total of one hundred and seventy-five (175) mothers and infants were recruited for the study and infants growth were monitored for a period of 6 months. Information obtained from questionnaire included education, occupation, income level, and infant feeding practices of the mothers. Anthropometric measurement (weight, length and head circumference) was carried out on the infants and monitored at each visit for the study period and also anthropometric indicators and growth velocity of the infants were determined and compared to World Health Organization (WHO) child growth standard. Data collected were analyzed using descriptive statistics, t-test and regression analysis. The result revealed that less than half (40.6%) of the mothers had secondary school uncompleted compared to 29.1% of their husbands while 49.1% of their husbands completed secondary school compared to 33.7% of the mothers. The mothers studied were mostly farmers, petty traders and low income earners. The study also revealed low (2.3%) exclusive breastfeeding practices and majority (78.3%) of the mothers initiated breastfeeding 30minutes within child birth for the index child. The low socioeconomic characteristics of the mothers significantly influenced ($P<0.05$) nutritional status of the infants. Therefore, nutrition education campaign on proper infant feeding practices (exclusive breastfeeding for the first 6months of life) should be community-based in order to tackle nutrition challenges and/or malnutrition (undernutrition) in the rural areas thereby improve maternal and infant health.

Keywords: *Nutritional status, Exclusive breast feeding, Growth velocity, Child growth standard.*

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Background to the Study

The provision of adequate nutrition during infancy and early childhood is a basic requirement for the development and promotion of optimum growth, health and behavior of the child. Adequate nutrition is defined as the intake and utilization of enough energy and nutrients to maintain well-being, health and productivity of an individual, in this case, the child. The World Health Organization (WHO) defines growth monitoring and promotion (GMP) as a nutrition intervention that measures and charts the weight of children and uses this information to counsel parents so that they take actions to improve child growth (Garner *et al.*, 2000). The growth chart is, thus, an educational tool that helps both health workers and mothers to visualize child growth. Growth monitoring is the regular measurement of a child's size in order to document growth. The child's size measurements must then be plotted on a growth chart. This is extremely important as it can detect early changes in a child's growth. Both growing too slowly or too fast may indicate a nutritional or other health problem. Therefore, growth monitoring is an essential part of primary health care in children.

Growth assessment is the single most useful tool for defining health and nutritional status at both the individual and population level. This is because disturbances in health and nutrition, regardless of their etiology, almost always affect growth. Growth monitoring strives to improve nutrition, reduce the risk of inadequate nutrition, educate mothers, and produce early detection and referral for conditions manifested by growth disorders. At the population health level, cross-sectional surveys of anthropometric data help define health and the nutritional status for purposes of program planning, implementation and evaluation. Growth monitoring is also used in all settings to assess the response to intervention (Garner *et al.*, 2000). In 2006, the World Health Organization (WHO), in conjunction with the United Nations Children's Fund and others, released new international growth charts depicting the growth of children from birth to age five years, who had been raised in six different countries (Brazil, Ghana, India, Norway, Oman and USA) according to recommended nutritional and health practices, including exclusive breastfeeding for the first six months of life. (The WHO Growth Study was initiated in 1997, before WHO's policy on the optimal duration of exclusive breastfeeding was changed in 2001 from 'four to six months') (Garner *et al.*, 2000). The optimal growth displayed in the WHO growth charts for infants and preschool children represents the prescribed 'Gold' standard for children's growth; hence, these charts are considered to be growth standards. In 2007, the WHO also released charts for monitoring the growth of older children and adolescents that had been updated and improved to address the growing epidemic of childhood obesity (PCH, 2010).

Objectives of the Study

The specific objectives of the study were to determine:
1. The socioeconomic characteristics of the mothers
2. The breastfeeding practices of the mothers
3. The prevalence of wasting and stunting amongst the infants.

Research Question

a.   How can growth monitoring of infants help improve nutritional status of rural children?

Statement of Problem

Malnutrition is recognized as a global problem, which, beside weakening the immune system and worsening of illnesses, is the underlying cause of half the deaths of children less than five years of age. Of these deaths, 20% are associated with severe and 80% with mild and moderate forms of malnutrition. Well over two-thirds of malnutrition-related deaths occur in the first year of life and are often associated with inappropriate feeding practices and invariably poor growth and development (NDHS, 2003). There has been no research documenting feeding patterns used by working mothers beyond breast versus formula feeding. Research on effect of working mothers, maternal age, maternal education on infant feeding behavior are needed, especially during the second half of infants' first year when new foods are introduced and infant feeding becomes increasingly more complex (Adeyinka *et al.*, 2008; UNICEF, 2011). Infant and child growth are affected by birth order, the sex of the child and length of birth interval. Women with short birth interval, have insufficient time to restore their nutritional reserves, a situation, which is thought to adversely affect foetal growth. Inadequate food intake and acute or chronic episode of illness and infection also affect infant growth pattern especially in rural areas where poor rural women have limited access to food and medical care. Therefore, this study was aimed at investigating infant growth monitoring a panacea to meeting nutrition challenges in rural area in Igbere Bende Local Government Area of Abia State.

Methodology

A longitudinal study was carried out in Igbere Bende Local Government Area (BLGA) of Abia State. Prior to the commencement of the study, consent letter was obtained from the chairman BLGA, village heads, health officers subjects themselves.

Study Population: The study was carried out among mothers with infant 0-6months and infants 0-6month. The mothers socioeconomic characteristics were assessed, while infants weight, length, and head circumference were taken once per visit per month. There are five health centres in the study area, which include, Igbere Primary Health Centre (IPHC), Umuosi Health Centre (UHC), Okafia Health Centre (OHC), Amaukwu Health Centre (AHC) and Amaiyi Health Centre (AMHC).

According to Nigeria Demographic and Health Survey (NDHS) (2013), seventeen percent (17%) of mothers in Nigeria exclusively breastfed their children for 6 months. This percentage was used for the sample size calculation of the present study. Thus, sample size was;

Sample size = $t^2 \times p\,(100 - p)/d^2$ (WHO, 2003).

t   = level of probability that the true percentage or prevalence is within the chosen value of 'd'

p   = estimate of percentage of exclusive breastfeeding mothers in Nigeria

d   = level of precision required for the results ($\pm \times$ percent)

Thus, t = 1.96, p = 17, d = 5

$$\frac{1.98^2 \times 17\,(100 - 17)}{5^2}$$

$$\frac{3.8416 \times 17\,(100 - 17)}{25}$$

$$\frac{65.3072 \times 83}{25} = \frac{5420.4976}{25} = 216.8$$

Therefore, sample size for the study was two hundred and seventeen (217). Ten percent (10%) was added to make up for drop out. However, ten percent of two hundred and seventeen will be: $217 \times 0.1 = 21.7$. Therefore, $217 + 21.7 = 238.7 = 239$.

Sampling Procedure
The names of the health centres in Igbere were collected from the Local Government Area head quarter and the health centres were visited to study mothers with infants 0-6 months of age. The sample size (239) was the basis for the study, but the total population of mothers with infants 0-6 months of age was obtained from the primary health centres, and used for the study. The total population of the mothers was thus, one hundred and seventy-five (175) (that is 73.2% response rate). This figure (175) was used for the study. The mothers with infants 0-6 months of age were recruited at random from each of the five health centres, which gave 35 mothers from each of the health centres. Their residential addresses were collected so as to follow them up in the course of the study. The purpose of the study was explained to the mothers with infants within the study age group of 0-6 months and their consents were obtained. The feeding practices and socioeconomic characteristics of mothers and growth pattern of the infants were evaluated. However, the infants' weight and length were measured once a month for six months considering the study age group (0-6 months of age).

Data Collection Method
Questionnaire Administration: A structured questionnaire was submitted for validation to six lecturers in the Department of Human Nutrition and Dietetics, Michael Okpara University of Agriculture, Umudike. The questionnaire was then pretested in another village that was not selected for the main study but was administered on mothers with children in the same age group. Data was collected on the socioeconomic characteristics of the mothers, using structured questionnaire for analysis.

Anthropometric Measurement: A Salter (London) infant weighing scale (checked for zero adjustment before each measurement) was used to measure the weight with infant placed in the weighing scale without clothes or nappy (baby pampers). A wooden length board with a solid headboard and a moveable footboard was used to measure with subject lying with back on the board and reading was taken to the nearest centimeters (0.1cm). The MUAC tape (sharker's strip) was used to measure the MUAC. Measurement was taken on the right arm at the midpoint of the arm and reading taken to nearest millimeters (mm). A flexible, non-stretchable measuring tape was used to measure head circumference of infants. The tape was positioned just above the eyebrows (supraorbital ridges), above the ears and around the back of the head (occiput). Average of 3 readings was taken and

measurements read to the nearest mm. Each measurement was recorded three consecutive times and the mean recorded to the nearest 0.05 kg (weight) and 0.1 cm (length, MUAC, and head circumference) at every visit (once a month) for six months.

The weight velocity of the infants was obtained by a change in initial weight and present weight over a time period (at one month interval) and while the length velocity was obtained by a change in initial length and present length over a time period (at two months intervals, according to WHO (2006) to enable comparison). The data were segregated by sex.

Data and Statistical Analysis: The weight and length of the infants were measured once at every visit monthly throughout the study period, which were analyzed and compared with WHO growth standards. The WHO growth standard indicators include, low height/length for age (stunting), low weight for age (underweight), low weight for height/length (wasting) and low body mass index for age (wasting) at z-score below -2SD. The data collected were analyzed using Statistical Package for Service Solution (SPSS) version 20. Descriptive statistics were used to analyze the categorical and continuous variables of the socioeconomic characteristics of the mothers. The growth pattern of the infants using anthropometry was compared with the WHO (2006) growth standard using t-test.

Results and Discussion: Table 1 shows the educational status of mothers and their husbands which was grouped into primary school uncompleted (PSU), primary school completed (PSC), secondary education uncompleted (SSU), secondary school completed (SSC) and tertiary school (TS). It was observed that 40.6% mothers did not complete secondary school, 33.7% completed secondary school, 16.0% completed primary school, 8.0% completed tertiary school and 1.7% of the mothers did not complete primary school. This could be as a result of the study location where rural women engaged mostly in farming and petty trading to help provide for their families, and also educated ones migrate to urban areas for white collar jobs leaving the less educated ones in the rural areas. This could in turn lead to high dropout of school, as revealed in this study where more of the mothers did not complete secondary school education. Individual poverty and the stresses that accompany poverty, work to erode overall education and health among women, with serious consequences on infant growth pattern, regardless of birth order (Alam, 2000). It could also be due to women involvement in home making because from olden days women have been saddled with many family responsibilities and are traditionally assigned many roles including custody of children, maintenance of the home, feeding of family and preservation of family health. Although it is often viewed that a woman working in the home benefits her family, it puts a strain on the whole community as education is one of the keys to success and being able to prosper. Less than half (49.1%) of the husbands completed their secondary education, while 29.1% dropped out of secondary education. Very few (9.7%) and 9.1% completed primary and tertiary education respectively. It was observed that, more husbands completed secondary (49.1%) and tertiary (9.1%) education than the mothers, (33.7% and 8.0% respectively). The percentage (40.6%) of mothers that dropped out of secondary education is higher compared to the husbands (29.1%). This is also true in a study carried out by Nigeria Demographic and Health Survey (NDHS, 2013) where the percentage of men in Abia State that completed secondary and tertiary education (89.6% and 91.7%)

were high compared to their women counterparts (83.4% and 89.7%). This gender disparity (in terms of educational level) could be due to more value culturally placed on male children than female children among Igbos of South Eastern Nigeria. Consequently, male children get preferentially educated than female children. There are various cultural and socioeconomic issues that prevent women from having adequate access to education. Opaluwah (2007) reported that Nigerian women's access to formal education is still being constrained due to their unfair workload within the household division of labour. Consequently, the realization of the MDG 3's gender equality and women empowerment target is being impeded harshly.

Some (30.9%) of the mothers were farmers, 28.6% were petty traders, 17.7% house wives, 13.1% civil servants, and 9.7% were into either tailoring or plaiting of hair. It was also revealed that half (50.3%) of the mothers did not know their income level. This could be due to the fact that some (30.9%) of the mothers were farmers, or in other occupation that did not yield a lot of money, consequently, they used up whatever comes into their hands for their immediate needs. Four percent (4%) of the mothers said they either made **N** 20,000 - **N** 25,500 or **N** 32,000.00 and above, 3.4% of the mothers made **N** 26,000 – **N** 31,500.00 monthly and while 29.7% made less than **N** 19,500.

Table 1: Socioeconomic characteristics of mothers and their husbands.

Parameters	Mother Frequency	Percentage	Husband Frequency	Percentage
Educational status				
Primary school uncompleted	3	1.7	1	0.6
Primary school completed	28	16.0	17	9.7
Secondary school uncompleted	71	40.6	51	29.1
Secondary school completed	59	33.7	86	49.1
Tertiary school	14	8.0	16	9.1
Not applicable	-	-	4	2.3
Total	175	100.0	175	100.0
Employment status				
Farmer	54	30.9	27	15.4
House wife	31	17.7	-	-
Self employed	-	-	85	48.6
Civil servant	23	13.1	34	19.4
Petty trader	50	28.6	15	8.6
Others (tailoring, plaiting of hair)	17	9.7	-	-
Not applicable	-	-	14	8.0
Total	175	100.0	175	100.0
Income level (₦)				
<19,500	52	29.7	13	7.4
20,000-25,500	7	4.0	13	7.4
26,000-31,500	6	3.4	7	4.0
32,000 and above	7	4.0	8	4.6
Others (I don't know)	88	50.3	117	66.9
Not applicable	15	8.6	17	9.7
Total	175	100.0	175	100.0

Breastfeeding Practices of the Mothers

Table 2 shows that majority (78.3%) of the mothers initiated breastfeeding within 30 minutes of child birth, 12% initiated it 2-3hours after birth, 9.1% initiated breastfeeding 2-3days after birth and very few (0.6%) initiated breastfeeding after one week of child's birth. Looking at their practice on breastfeeding initiation for previous babies, most (66.9%) initiated breastfeeding within 30 minutes of child birth, 5.1% initiated it 2-3hours after birth, 6.3% initiated breastfeeding 2-3days after birth, while 21.7% did not respond. For previous baby 2, 41.1% initiated breastfeeding within 30 minutes of child birth, very few (1.7%) initiated breastfeeding 2-3hours, 2-3days (2.9%) after birth, and 54.3% did not respond due to number of children at the time of the study. The result of this study is encouraging in terms of breastfeeding initiation. It was reported in an earlier study that, 32% of women initiated breastfeeding within one hour after birth while in south east, 58% initiated breastfeeding within one hour after birth (NDHS, 2003). The result showed that a good number of mothers initiated breastfeeding within 30 minutes of child birth. Furthermore, their practice on breastfeeding initiation was improving as revealed in the study where for previous babies 2 and 1 (41.1% and 66.9% respectively) initiated breastfeeding within 30 minutes of child birth. Thus, the mothers were consistent on breastfeeding initiation and also improving in their consistency. This could be due to health/nutrition education given to pregnant women during antenatal clinics. It has been reported that women who delivered in a health facility and those assisted at delivery by health professionals are more likely to initiate breastfeeding early (Lehman *et al.*, 2006). Furthermore, initiation of breastfeeding at birth is crucial for the health of both child and mother. Suckling at the breast within 30 minutes of child birth aids the expulsion of the placenta and reduces the risk of postpartum haemorrhage in the mother, helps maintain the body temperature of the baby, and encourages bonding between the mother and child, which further enhance their physical and psychological well-being (Lehman *et al.*, 2006).

Table 2: Breast feeding Initiation and exclusive Breastfeeding Duration

Parameters	Current baby		Previous baby1		Previous baby2	
	F	P	F	P	F	P
Breastfeeding Initiation						
Within 30minutes of child birth	137	78.3	117	66.9	72	41.1
2-3hrs afterbirth (AB)	21	12.0	9	5.1	3	1.7
2-3days AB	16	9.1	11	6.3	5	2.9
1week AB	1	0.6				
Not applicable			38	21.7	95	54.3
Total	175	100.0	175	100.0	175	100.0
Exclusive Breastfeeding Duration						
0-2months	17	9.7	18	10.3	11	6.3
3-4months	6	3.4	17	9.7	14	8.0
5-6months	4	2.3	23	13.1	17	9.7
6months and above	3	1.7	15	8.6	11	6.3
Not applicable	145	82.9	102	58.3	122	69.7
Total	175	100.0	175	100.0	175	100.0

F = frequency, P = percentage.

Table 2 reveals that 9.7% of the mothers exclusively breastfed their infants 0-2months, 3.4% 3-4months, 2.3% 5-6months, and only 1.7% 6months and above. Majority (82.9%) of the mothers did not give breast milk only for up to 6 months. For previous babies 1 and 2, 10.3% and 6.3% respectively fed breast milk only for 0-2 months, 9.7% and 8.0% for 3-4months, 13.1% and 9.7% for 5-6months, 8.6% and 6.3% for 6months and above, while 58.3% and 69.7% did not respond, it was discovered that majority of the mothers studied were practicing predominant breastfeeding, which is defined as giving a child breast milk with water and other liquids other than vitamins and minerals. Practice of exclusive breastfeeding was very low especially in the present study for index child (2.3% and 1.7%) as shown in the result. The result revealed that exclusive breastfeeding practices were not stable. The mother's practices varied from one pregnancy to the other. This could be due to not having a full knowledge of exclusive breastfeeding, preceding birth interval, family influence and/or cultural practices that do not encourage exclusive breastfeeding. This is in line with a study carried out by Okolie (2012), who reported that knowledge on exclusive breastfeeding is deficient in the south eastern Nigeria. The mothers have no full knowledge of how exclusive breastfeeding should be. In Nigeria 50% of infants do not breastfed for even a month (NDHS, 2013). This shows that exclusive breastfeeding practice in Nigeria is still low (17%) (NDHS, 2013).This present study revealed that there were more adolescent and young mothers which may have been the reason why the exclusive breastfeeding pattern was low. Volpe and Bear (2000) had earlier opined that multiple studies addressing the factors associated with infant feeding practices have identified adolescent and young mothers as one group that is unlikely to breastfeed exclusively. They wean them after a few months of breastfeeding without a positive impact to promote and support exclusive breastfeeding (Adeyinka *et al.*, 2008).

Maternal employment may also possibly shape infant feeding. Nearly twice as many mothers of infants are engaged in the labour force such as farming today compared to 30 years ago (Fein and Roe, 2008). Marital status has influence on infant feeding. The result showed that majority (82.9%) of the married women did not practice exclusive breastfeeding. This could be based on the assumption that married women are not free to make their own decisions on feeding their infants either to breastfeed or bottle-feed them. Exclusive breastfeeding is accepted as the norm particularly in Nigeria, unfortunately, most mothers and mothers-in-law do not yet accept that infants should not be given water as they argue that the child will die of thirst. They also influence how infants should be fed, for example, by giving infants water and/or drop of soup while eating. This suggest that breastfeeding campaigns should not always be directed to mothers alone but to the entire households in order to maximize the importance of breastfeeding for adequate health of infants and mothers. But in all cultures a number of factors affect infant feeding (Matusiak, 2005).

Measure of Weight for Length and Length for Age of the Infants
Table 3 reveals cross tabulation of sex by weight-for-length status of the infants that were followed within the six months study period. In the first month of life, 28.6% of male infants were severely wasted. This increased to 57.3% in the second month and 73.2% in the 3rd month. Increase in severe wasting continued to 86.3% in month 4 and at 5th and 6th months, 93.0% and 96.3% respectively were severely wasted. Some (26.4%) of female infants were severely wasted at one month. As with their male counterparts, this increased to 42.0% at

month 2, 72.7% at month 3, and 85.7% at month 4. At 5th and 6th months, 84.3% and 89.7% respectively, were in severely wasted category. Few (17.9%) of male infants were wasted in the first month. This increased to 24.4% in the second month and reduced to 15.9% at month 3 and 3.7% at month 4. Very few (9.9%) of the female infants were wasted in the first month of life. This increased to 23.9% in the second month, 14.8% in the 3rd month and 10.3% in the 4th month. While in the 5th and 6th months, 13.7% and 10.3% respectively were severely wasted. Less than half (46.4%) of the male infants were normal weight-for-length in the first month of life. In the second and third months, 17.1% and 11% respectively were normal weight for height. More than half (54.9%) of the female infants were normal weight-for-length in the first month of life. In the second month, 34.1% were normal weight-for-length while 12.5% were normal weight for height at 3rd month.

The result of this study was not far from what was obtained from Nigeria Demographic and Health Survey (NDHS) (2013), where severe wasting was on the increase from 11%, 14%, and 18%, 2003, 2008, and 2013 respectively. The implication of this is that energy needs of the infants continued being deficient in the first 6 months of life as none had normal weight-for-length after the first 5 months of life. This suggested that the level of infant feeding practices of the mothers were inadequate due to energy deficiency among the children. Thus, the extent of wasting has worsened, indicating a more recent nutritional and/or energy deficiency among children in the country (NDHS, 2013). However, most of the mothers did not do exclusive breastfeeding and there was introduction of complementary foods before six months which may also not contain enough nutrients for the infant to maintain normal weight that would have averted the level of wasting found out in this study. It has been reported earlier that exclusive breastfeeding for the first 6months of life improves the growth, health and survival status of infants and is one of the most natural and best forms of preventive medicine that contains all the required nutrients for infants in right quantity and quality (WHO, 2001; WHO, 2003).

Table 3: Cross Tabulation of sex by weight-for-height of Male and Female Infants that were followed.

Weight-for-length	Severely wasted	Wasted	Normal	Possible risk of overweight	Overweight	Obese	Total
Month1							
Male	24(28.6%)	15(17.9%)	39(46.4%)	4(4.8%)	0(0.0%)	2(2.4%)	84(100.0%)
Female	24(26.4%)	9(9.9%)	50(54.9%)	4(4.4%)	4(4.4%)	0(0.0%)	91(100.0%)
Total	48(27.4%)	24(13.7)	89(50.9%)	8(4.6%)	4(2.3%)	2(1.1%)	175(100.0%)
Month2							
Male	47(57.3%)	20(24.4%)	14(17.1%)	1(1.2%)			82(100.0%)
Female	37(42.0%)	21(23.9%)	30(34.1%)	0(0.0%)			88(100.0%)
Total	84(49.4%)	41(24.1%)	44(25.9%)	1(0.68%)			170(100.0%)
Month3							
Male	60(73.2%)	13(15.9%)	9(11.0%)				82(100.0%)
Female	64(72.7%)	13(14.8%)	11(12.5%)				88(100.0%)
Total	124(72.9%)	26(15.3%)	20(11.8%)				170(100.0%)
Month4							
Male	63(86.3%)	1(3.7%)	7(9.6%)				73(100.0%)
Female	66(85.7%)	3(10.3%)	3(3.9%)				77(100.0%)
Total	129(86.0%)	4(7.1%)	10(6.7%)				150(100.0%)
Month5							
Male	53(93.0%)	2(3.5%)	2(3.5%)				57(100.0%)
Female	43(84.3%)	7(13.7%)	1(2.0%)				51(100.0%)
Total	96(88.9%)	9(8.3%)	3(2.8%)				108(100.0%)
Month6							
Male	26(96.3%)	1(3.7%)					27(100.0%)
Female	26(89.7%)	3(10.3%)					29(100.0%)
Total	52(92.9%)	4(7.1%)					56(100.0%)

Table 4 shows length-for-age status of the infants. None of the male infants was severely stunted throughout the six months study period. Only (1.1%) of the females was severely stunted in the first month. Very few (4.8%) of the males were stunted in the first month. Majority (95.2%) of male infants were of normal length-for-age in the first month of life, while 98.9% of the females were of normal length-for-age at first and second months. At month 2 to month 6, all (100%) the males were of normal length-for-age. However, from the third month to the sixth month all (100%) the females were of normal length-for-age. According to NDHS (2013), stunting in Nigeria declined from 41% in 2008 to 37% in 2013 and out of this statistics, 21% were severely stunted. Severe stunting in the present study could be due to smaller birth length and catch-up growth which could have occurred in the few severely stunted and stunted infants. The rate of stunting reported in the study could also have been as a result of prenatal and postnatal malnutrition. It has been reported that nutrition before, during and after pregnancy play major role on the nutritional status of the infants (WHO, 2003). Thus, chronic undernutrition was at the barest minimum on the infants throughout the study.

Table 4: Cross tabulation of Sex by length-for-age of Male and Female Infants that were followed

Length-for-age	Severely stunted	Stunted	Normal	Total
Month1				
Male	0(0.0%)	4(4.8%)	80(95.2%)	84(100.0%)
Female	1(1.1%)	0(0.0%)	90(98.9%)	91(100.0%)
Total	1(0.6%)	4(2.3%)	170(97.1%)	175(100.0%)
Month2				
Male		0(0.0%)	82(100.0%)	82(100.0%)
Female		1(1.1%)	87(98.9%)	88(100.0%)
Total		1(0.6%)	169(99.4%)	170(100.0%)
Month3				
Male			82(100.0%)	82(100.0%)
Female			88(100.0%)	88(100.0%)
Total			170(100.0%)	170(100.0%)
Month4				
Male			73(100.0%)	73(100.0%)
Female			77(100.0%)	77(100.0%)
Total			150(100.0%)	150(100.0%)
Month5				
Male			57(100.0%)	57(100.0%)
Female			51(100.0%)	51(100.0%)
Total			108(100.0%)	108(100.0%)
Month6				
Male			27(100.0%)	27(100.0%)
Female			29(100.0%)	29(100.0%)
Total			56(100.0%)	56(100.0%)

Conclusion

The importance of adequate infant feeding cannot be overemphasized. A good knowledge of infant and young feeding practices plays a vital role in the health of mother and child. Most of the mothers initiated breastfeeding within 30minutes of child birth and this had a positive influence on the length-for-age of the infants. Farming was the major occupation of the mothers in the study area as there was high level of dropouts from secondary education amongst the mothers. Thus, their socioeconomic characteristics were low (in terms of education, occupation and income), which significantly influence the anthropometric indices of the infants and these contributed to the level of wasting found out in this study. Finally, the feeding practices of the mothers were not appropriate and/or adequate enough to improve the weight and length velocities of the infants.

Recommendations

1. Proper infant feeding practices should be encouraged in order to reduce child morbidity and mortality.
2. Nutrition education should be carried out quarterly in the rural areas in order to promote proper and adequate infant feeding practices.

3.   Exclusive breastfeeding and timely introduction of complementary food campaign should be directed both to the mothers and entire households in order to reduce negative influence towards proper infant feeding practices.
4.   Government, policy makers, health and nutrition experts should plan, review, monitor, and evaluate programmes towards a successful infant and young child feeding practices.

References

Adeyinka, T., Ajibola, F., Oyesoji, A., & Adedeji, T. (2008). A hospital-based assessment of breastfeeding behavior and practices among nursing mothers in Nigeria and Ghana. *Pakistan Journal of Nutrition*. 7(1): 165-171.

Alam, N (2000). Teenage motherhood and infant mortality in Bangladesh: Maternal age dependent effect of parity one. *Journal of Biological and Social Science*, 8: 229-36.

Fein, S.B., & Roe, B. (2008). The effect of work status on initiation and duration of breastfeeding. *American Journal of Public Health*. 88: 1042-1046.

Garner, P., Panpanich, R. & Logan, S. (2000). *Is routine growth monitoring effective? A systematic review of trials.* Archives of Disease in Childhood, 82:197-201.

Lehnam, P.E., Hollenbeak, C. & Maisels, M (2006). *Preventable newborns read m i s s i o n s since passage of the Newborns and Mothers' Health Protection Act.* Paediatrics. 118(6): 2349-2358.

Matusiak, M.M. (2005). A cultural perspective of the feeding habits. *Internet Journal of Nutrition and Wellness:* (2) 1.

Nigerian Demographic and Health Survey (NDHS) (2003). *National Population Commission.* ORC Macro. Maryland, USA: Calverton, 151-154.

Nigeria Demographic and Health Survey (NDHS) (2008). *National Population Commission Federal Republic of Nigeria Abuja, Nigeria.* MEASURE DHS, ICF Macro. Maryland, USA: Calverton,

NDHS. (2013). *Nutrition of children and women.* Abuja, Nigeria, and Rock Ville, Maryland, USA: NPC and ICF international.

Okolie, U. (2012). Problems encountered by breastfeeding mothers in their practice of exclusive breastfeeding in Tertiary Hospitals in Enugu State, South-East Nigeria. *International Journal of Nutrition and Metabolism,* 4(8): 107-113.

Opaluwah, A.B. (2007). *Nigerian women and challenge of MDGs.* Daily independent, March 12, p35.

Paediatrics Child Health (PCH). (2010). *Promoting optimal monitoring of child growth in Canada: Using the new World Health Organization growth charts.* Paediatrics Child Health. 15(2): 77-79.

UNICEF (2011). *The innocent declaration on the protection, promotion and support of breastfeeding.* htt://www.unicef.org/nutrition/index_24807.intml. 24th August.

Volpe, E.M. & Bear, M. (2000). Enhancing breastfeeding initiation in adolescent mothers through the Breastfeeding Educated and Supported Teen (BEST) Club. *Journal of Human Lactation,* 22: 16-26.

WHO (2001). *Infant and young child nutrition: Global strategy for infant and young child feeding.* http://apps.who.int/gb/archive/pdf_files/WHA55/ea5515.pdf 5th July 2002.

WHO (2003). *The Global Strategy for Infant and Young Child Feeding.* WHO Geneva.

WHO (2006). *World Health Organization Child Growth Standards based on length/height, weight and age in the WHO Multicentre Growth Reference Study.* Acta. Paediatrics. 450: 76-85