



Assessment of nutritional status and feeding practices of children aged 0-24 months in Ikwuano local government Area Abia State, Nigeria

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Abstract

Introduction: Nutrition plays an important role in the health and development of children. Adequate nutrition during the first two years of life is important to ensure optimal growth.

Objective: This study was carried out to assess the nutritional status and infant feeding practices of children aged 0 – 24 months in Ikwuano Local Government Area of Abia State.

Methods: 283 children were randomly selected from households, churches and health Centers in Ikwuano Local Government Area. A validated questionnaire was used to obtain information on child's data, socio-economic characteristics of parents, infant feeding practices of mothers and 24 hours dietary recall. Anthropometric measurements of the children were taken and compared with WHO reference standard. Data obtained were subjected to statistical analysis using statistical package for social sciences version 17.

Results: the results showed that majority (51.6%) of the children studied were females while 48.4% were males. About 28.2% of the children were within the range of 1 – 3 months while 11% were within the range of 22 – 24 months. The result on feeding practices showed that majority (71.1%) of the mothers gave their children breast milk only, after birth while 13.1% gave breast milk and water. About 29.3% mothers exclusively breastfed their infants for 6 months. About 39.8% introduced complementary foods after 6 months. An evaluation of anthropometry showed that 5.3% of the children were wasted, 11.4% were underweight while 33.4% were stunted.

Conclusion: Poor feeding practices affected the nutritional status of children especially stunting.

Keywords: nutritional status, children 0-24 months, assessment, feeding practices, Abia State, Nigeria

Introduction

The first two years of life is the most critical for an infant, particularly from a nutritional stand point (Sibeko, 2001) [18]. Nutrition plays an important role in the health and development of an individual. Adequate nutrition during the first two years of life is very important to ensure optimal, physical and mental development (Santika *et al.*, 2009) [17]. Poor and inadequate nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development and reduced productivity (Ruel *et al.*, 2002) [16]. Nutritional status is the state of health of an individual as it is affected by the intake and utilization of nutrients; it depends on the quality and quantity of nutrients consumed and the body's ability to utilize these nutrients to meet its metabolic needs. A person is said to have a good nutritional status if he shows no evidence of malnutrition, whether open or latent (Onimawo, 2001) [11]. Children between the ages of 6 – 24 months are nutritionally vulnerable, thus their nutritional status is generally accepted as an indicator of the nutritional status of a community (Davidson *et al.*, 1995) [4]. In developing countries, malnutrition usually makes its greatest impact on children 0 – 24 months. They account for nearly 50% of total deaths, and careful examination has shown that malnutrition is the major underlying factor (Whitehead and Rowland, 2002) [20]. Malnutrition arises from a complex of nutritional, social and biological deprivation and is manifested in various forms such as stunting (Short stature), underweight, muscle wasting, growth retardation, diminished subcutaneous fat

and ill health with high mortality rate (Onimawo *et al.*, 2006) [12]. Appropriate feeding practices during the first months of life are thus conditioned by the infant's nutritional needs and degree of functional maturity, particularly as regards the types of food, mechanism of excretion and defenses against infection (Pelto *et al.*, 2003) [14]. The ideal feeding practices of infant feeding involves giving the baby breast milk as soon as possible after delivery and continuing exclusive breast feeding for the first six months of life (WHO, 2001). Optimal breastfeeding practice is a critical factor in child survival and development (Onyesili, 2000). World Health Organization recommends that infants be exclusively breastfed for the first six months of life, thereafter nutritional adequate and safe complementary foods are introduced while breastfeeding continues for at least two years (WHO, 2003). Globally an estimated 1.3 million lives are lost each year due to inadequate exclusive breastfeeding and another 600 thousand from lack of continuation of breastfeeding with proper complementary feeding (WHO, 2006). Studies have shown that inappropriate breastfeeding practices are associated with severe malnutrition in children (Onayade *et al.*, 2004). Inadequate knowledge of appropriate foods and feeding practices is often a greater determinant of malnutrition than lack of foods. The Profile analysis showed that 21% of infants' deaths are attributed to poor breast feeding practices in Nigeria (PROFILE, 2001) [15]. This is to say that if no action is taken to protect, promote and support breast feeding; over one million Nigerian children will die

in the next ten years (Aminu and Agle, 2003) [1]. Unnecessary introduction of water and other fluids before six months reduces intake of breast milk and energy absorption. Studies have shown that complementary foods introduced before 6 months of age confer no advantage on growth development (Cohen *et al.*, 1994; Dewey, 2003) [3,5]. In view of this, the research work was carried out to assess the nutritional status and infant feeding practices of children aged 0 – 24 months in Ikwuano Local Government Area of Abia State

Materials and Methods

Area of study

The study was carried out in Ikwuano local government area of Abia State, Nigeria. The headquarter of Ikwuano is Isiala Oboro. Ikwuano local government has an area of 281km² and a population of 137, 993 People. Ikwuano lies between latitude 5.5N and longitude 7.5E. Ikwuano local government has fifty-seven villages and seventeen communities. The occupations of the people are trading and small scale farming. The major crops grown are yam, cassava, cocoyam, maize, melon and a variety of vegetables.

Sample population

The sample population consists of children aged 0-24 months from four communities in Ikwuano local government area.

Study design

The study is a cross sectional survey of children aged 0-24 months in Ikwuano local government area of Abia State.

Sample size and sample size calculation

The sample size was determined using the equation below

$$N = \frac{Z^2 \times P (100-P)}{X^2}$$

Where

N = Number of samples

Z = Confidence interval =1.96

P = Percentage of prevalence of underweight children by Nigeria Demographic Health Survey 2008 (23%)

X = Estimated precision = 5

$$N = \frac{2^2 \times 23 (100-23)}{5^2}$$

$$\frac{4 \times 23 (77)}{25} = \frac{7084}{25}$$

$$N = 283.36 \cong 283$$

Sampling Technique

Four villages were randomly selected from Ikwuano local government. The villages selected includes; Amawom, Amoaba, Umuarigha and Umudike. Most of the children were randomly selected from Amawom and Amoaba due to the health centers which were functioning and well equipped. The remaining children were randomly selected from Umuarigha and Umudike. A total of 283 children were selected for this study.

Preliminary visit and informed consent

Prior to data collection, a preliminary visit was made to the two health centers in Amawom and Amoeba to seek their permission to conduct the study. Churches were visited in Umuarigha and Umudike to also seek permission. The mothers of the children in the community were enlightened on the purpose of the study. They were provided with informed consent forms which they signed.

Data Collection

Questionnaire Administration

Data were collected by the use of well-structured and validated questionnaires which were distributed to the mothers to fill for their children. Information on socioeconomic /demographic variables, Infant and child care practices, health and 24 hour dietary recall were collected.

Anthropometry

Height /length

Height of each child was measured twice and an average taken for this purpose. A wooden constructed height measurement tool which constituted of a non –stretchable tailors measuring tape attached to it with nails was used. The height was taken with each subject standing erect on bare foot for children who could stand erect. For infants who could not stand erect, recumbent length was measured since standing was impossible. Reading was taken to the nearest 0.1cm.

Weight

Subjects were weighed using bathroom scale which was adjusted such that the pointer was at the 0kg mark. The subjects’ weights were taken with minimal clothing with no shoes and arms at the side. The measurement was taken to the nearest 0.1kg (Gordon, 2002) [6].

Data analysis

Data analysis was done by the use of descriptive statistics; frequency, percentage and means. Information gathered from the questionnaires were coded and entered into the computer using SPSS (statistical package for social sciences) version 17.0. Information from anthropometric measurements were compared using WHO Anthro plus Version 3.2

Results

Table 1 shows the characteristics of the children studied and their parents. Majority (51.6%) of the children were female while 48.4% were male. About 28.2% of the children were within the age range of 1-3 months, 16.2% and 15.9% were within the age range of 7-9 months. Only 5% of the children were within and 16- 18 months respectively. The table also show that majority (63.3%) of the mothers were within the age range of 25-34 years, while 18.3% were within the age of 15-24 years. About 88.7% of the mothers were married, while (7.8%) and (2.8%) were single and widowed respectively. About 29.3% of the mothers had only one child, 25.8% had 2 children while 8.1% had up to 5 children.

The result in the table 2 shows the socio-economic characteristics of the parents of the children studied. Information on educational qualification of the parents revealed that 49.9% of the fathers and 57.6% mothers attained secondary level of education. About 39.9% of the

fathers and 33.9% of the mothers attained tertiary education. Majority (59.4%) of the fathers were business men, 38.2% of the mothers were traders while 27.2% mothers and 20.8% fathers were civil servants. Only 5.7% of fathers and 2.1% mothers were farmers.

Table 1: Characteristics of the children studied and their parents

Variables	Frequency	Percentage
Sex		
Male	137	48.4
Female	146	51.6
Total	283	100
Age of children		
1 – 3	80	28.2
4 – 6	45	15.9
7 – 9	46	16.2
10 – 12	23	8.1
13 – 15	28	9.9
16 – 18	14	5
19 – 21	16	5.7
22 – 24	31	11
Total	283	100
Age of mothers		
15 – 24 years	52	18.3
25 – 34 years	179	63.3
35 – 44 years	37	13.1
45 and above	15	5.3
Total	283	100
Marital status		
Married	251	88.7
Single	22	7.8
Divorced	2	0.7
Widow	8	2.8
Total	283	100
Number of children in the households		
1	83	29.3
2	73	25.8
3	68	24.1
4	23	8.1
5	25	8.8
6	6	2.1
7	2	0.7
8	3	1.1
Total	283	100

Table 2: Socio – economic characteristics of the parents of children studied

Variable	Mothers		Fathers	
	No	%	No	%
Educational Qualification				
No formal education			23	8.1
Primary education	16	6.4	3	1.1
Secondary education	163	57.6	141	49.8
Tertiary	96	33.9	113	39.9
Others	6	2.1	3	1.1
Total	283	100	283	100
Occupation of parents				
Employed	48	17	14	4.9
Farmer	6	2.1	16	5.7
Trader /Business	108	38.2	168	59.4
Civil servant	77	27.2	59	20.8
Others	44	15.5	26	9.2
Total	283	100	283	100

Table 3 shows family income and amount spent on food by respondent family. The information on the monthly income

of parents showed that 11.3% of the parents earned below ₦10,000, 30% and 29.7% earned ₦10,000-29,000 and

₦30,000-51,000 respectively. A few of the respondents' parents (15.2%) earned above ₦70,000. The result also showed that majority (66.4%) spent ₦10,000 and above on food per week, while 15.2% spent below ₦5,000 on food per week.

Table 3: Family income and amount spent on food by respondent family

Variable	Frequency	Percent %
Family monthly income		
Below ₦10,000	32	11.3
₦10,000 – ₦29,000	85	30
₦30,000 – ₦50,000	84	29.7
₦51,000 – ₦70,000	39	13.8
Above ₦70,000	43	15.2
Total	283	100
Amount spent on food every week		
Below ₦5,000	43	15.2
₦5,000	26	9.2
₦7,000	26	9.2
₦10,000 and above	188	66.4
Total	283	100

Table 4 shows the infant feeding practices of the respondents. Majority (71.1%) of the mothers gave their children breast milk immediately after birth, about 13.1%

gave breast milk and water while 8.8% gave glucose + water after birth. About 29.3% of the mothers exclusively breastfed their infants for 6 months, 9.9% breastfed for 3 months while 12.4% exclusively breastfed for 2 months. About 61.8% of the mothers used infant formula while 38.2% did not use. About 25.7% of the mothers introduced the infant formula within the first month, 22.3% introduced the infant formula within 4 – 6 months while majority (42.9%) introduced the infant formula within 2 – 3 months. Majority (81.3%) of the mothers still breastfed after 6 months while 18.8% did not. About 35.8% of mothers introduced complementary food within 1–3 months while 39.8% introduced complementary food after 6 months. Most of the mothers (31.76%) gave their children pap and milk as complementary food while 11.4% gave commercial infant formula to their children. Majority (76%) of the mothers did not enrich their infant complementary food with sugar and oil. Mothers (48.4%) were not aware that sugar and oil were used to increase the energy density, palatability and in addition increase the energy content of the pap. Few (16%) of the mothers did not give their children fruits while majority (84.1%) gave fruits to their children. However, 59.3% gave only oranges to their children while 6.4% gave paw – paw. About 52.3% of the mothers fed their children with animal protein occasionally while 28.3% gave animal protein frequently.

Table 4: Infant Feeding Practices

Variables	Frequency	Percentage
First thing given to the baby after birth		
Water	18	6.4
Glucose + water	25	8.8
Breast milk	203	71.7
Breast milk + water	37	13.7
Total	Total	Total
Reason for not exclusively breastfeeding		
Breast milk is not enough	57	43.8
There was no time for it	35	26.9
Family and friends do not allow me	21	16.2
Other, please specify	17	13.1
Total	130	100
Length of time the baby was exclusively breast fed		
1 month	103	36.4
2 months	35	12.4
3 months	28	9.9
4 months	22	7.8
5 months	9	3.2
6 months	83	29.3
Less than 1 month	3	1.1
Total	283	100
No. of mothers that use infant formula		
Yes	175	61.8
No	108	38.2
Total	283	100
If yes, at what age was it introduced		
Within the first month	45	25.7
2- 3 months	75	42.9
4 – 6 months	39	22.3
Other	16	9.1
Total	175	100
Children that are still breastfeeding after 6 months		
Yes	230	81.3
No	53	18.8
Total	283	100
Fruits given to child		
Orange	41	14.5

Paw – paw	18	6.4
Banana	11	3.9
Others	168	59.3
None	45	15.9
Total	283	100
Giving family food to child		
Yes	244	86.2
No	39	13.8
Total	283	100
Age of introduction of complementary feeding		
1-3 months	88	35.8
4-6 months	60	24.4
Above 6 months	98	39.8
Total	246	100
Type of complementary food used		
Pap	23	9.3
Pap/milk	78	31.7
Pap mixed with crayfish	15	6.1
Pap mixed with groundnut paste	40	16.3
Commercial infant formula	28	11.4
Commercial complementary food	16	6.5
Combination of the above	36	14.6
Others	10	4.1
Total	246	100
Enrichment of complementary foods with sugar and oil		
Yes	68	24
No	215	76
Total	283	100
Reasons for not addition of sugar and oil		
Not aware that oil and is used to enrich baby's food	104	48.4
Don't want the baby to take sugary things	11	5.1
Sugar makes the baby to pas watery stool	86	40.4
Sugar gives the baby worm	8	3.7
The baby will not like the taste of oil in the food	6	2.8
Total	283	100

Table 5 shows the Responses from 24 hours dietary recall. Majority (67.1%) of the infants took breast milk before breakfast. About 4.6% of them took pap and milk, while 0.7% and 1.1% of them took tea and bread and cereals respectively before breakfast. About 22.6% of mothers gave pap and milk as breakfast, 40.6% gave breast milk only as breakfast. Very few mothers gave fruits (1.8%) and cereals (2.1%) as breakfast to their infants. About 20.1% mothers gave tea and bread to their children before lunch, 41% gave breast milk because many of the mothers were exclusively breastfeeding. About 41.3% mothers gave breast milk as lunch, 13.4% gave breast milk + water, and 10.6% gave tea

and bread. Only a few mothers (0.7%) gave garri and soup to their children for lunch. The result also revealed that 41.3% mothers gave breast milk before dinner, 9.2% gave tea and bread while 18.4% gave pap and milk. About 43.1% mothers gave breast milk as dinner while 17.3% mothers gave pap and milk as dinner to their children. About a quarter (44.5%) of the mothers reported giving their infants' breast milk after dinner. About 4.6% gave fruits while 19.8% gave breast milk and water after dinner. Most of the mothers (50.9%) repeated breast milk as their baby's breakfast, few mothers (11%) gave tea and bread to their children while 11.3% gave pap and milk as breakfast.

Table 5: Responses from 24 hours dietary recall

Variables	Frequency	Percentage
Before breakfast		
Breast milk	190	67.1
Breast milk and water	70	24.1
Pap	4	1.4
Pap and milk	13	4.6
Tea and bread	2	7
Fruits	1	4
Cereals	3	1.1
Total	283	283
Breakfast		
Breast milk	115	40.6
Breast milk and water	37	13.1
Pap	11	3.9
Pap and milk	64	22.6
Tea and bread	38	9.9

Fruits	5	1.8
Pastries	3	1.1
Cereals	6	2.1
Meat	1	0.4
Legume	1	0.4
Tubers	2	0.7
Total	283	100
Before lunch		
Breast milk	116	41.0
Breast milk and water	10	3.5
Pap	21	7.4
Pap and milk	41	14.5
Tea and bread	57	20.1
Fruit	22	7.8
Pastries	3	1.1
Cereals	8	2.8
Tubers	2	7
Garri and soup	3	1.1
Total	283	100
Lunch		
Breast milk	117	41.3
Breast milk and water	38	13.4
Pap	2	7
Pap and milk	50	17.7
Tea and bread	30	10.6
Fruits	25	8.8
Pastries	2	7
Cereals	15	5.3
Tubers	2	7
Garri and soup	2	7
Total	283	100
Before dinner		
Breast milk	117	41.3
Breast milk and water	60	21.2
Pap	1	4
Pap and milk	52	18.4
Tea and bread	26	9.3
Fruits	13	4.6
Pastries	2	0.7
Cereals	10	3.5
Tubers	1	0.4
Garri and soup	1	0.4
Total	283	100
Dinner		
Breast milk	122	43.1
Breast milk and water	66	23.3
Pap	6	2.1
Pap and water	49	17.3
Tea and bread	23	8.1
Fruits	2	0.7
Pastries	6	2.1
Cereals	6	2.1
Legumes	2	0.7
Garri and soup	1	0.4
Total	283	100
After dinner, before bedtime		
Breast milk	126	44.5
Breast milk and water	56	19.8
Pap	4	1.4
Pap and milk	38	13.4
Tea and bread	27	9.5
Fruits	13	4.6
Pastries	1	0.4
Cereals	3	1.1
Meat	1	0.4
Garri and soup	14	4.9
Total	283	100
Breakfast Breast milk	144	50.9

Breast milk and water	61	21.6
Pap	6	2.1
Pap and milk	32	11.3
Tea and bread	31	11.0
Pastries	2	0.7
Cereals	6	2.1
Garri and soup	1	0.4
Total	283	100

Table 6 represents the nutritional status of the children with regards to the various growth indicators weight – for – height, height – for – age and weight – for - height Z score. About 5.3% of the children were wasted, 2.9% males and 2.5% females were wasted. According to weight – for – age

Z score, 11.4% children were underweight. About 6.3% males and 5% females were underweight. The table also revealed that 33.4% of the children were stunted. About 19.2% males and 14.2% females were stunted.

Table 6: Assessment of nutritional status of the subjects

Growth indicators	Male		Female		Total	
	Frequency	%	Frequency	%	No	%
Weight -for- height						
severely wasted	5	1.8	2	0.7	7	2.5
wasted	3	1.1	5	1.8	8	2.8
normal	100	35.5	110	39.0	210	74.5
risk of overweight	30	10.6	28	9.9	58	20.5
Total	138	48.6	145	51.4	283	100
Height- for- age						
severely stunted	23	8.2	22	7.8	45	16.0
stunted	31	11.0	18	6.4	49	17.4
normal	79	28.0	101	35.8	180	63.8
very tall	5	1.7	3	1.1	8	2.8
Total	138	48.6	145	51.4	283	100
Weight -for- age						
severely underweight	5	1.8	3	1.1	8	2.8
underweight	13	4.5	11	3.9	14	4.9
normal	114	40.4	128	45.4	242	85.8
above normal	6	2.1	3	1.1	9	3.2
Total	138	48.6	145	51.4	283	100
BMI for age						
severely wasted	3	1.1	4	1.4	7	2.5
wasted	7	2.5	3	1.1	10	3.5
normal	106	37.6	110	39.0	216	76.6
risk of overweight	22	7.4	28	9.9	49	17.6
Total	138	48.6	145	51.4	283	100

Discussion

About 88.7% of the mothers were married, while (7.8%) and (2.8%) were single and widowed respectively. This is good because Morrison and Cherlin (1995) [7] had already documented the importance of stable unions on child health, nutrition and development. About 39.9% fathers and 33.9% mothers attained tertiary education. This implies that the area of study is dominated by educated parents who have potentials for adequate nutrition for their children. The area under study was dominated by male business men and female traders. Majority (71.1%) of the mothers gave their children breast milk immediately after birth, about 13.1% gave breast milk and water while 8.8% gave glucose + water after birth. Early initiation of breastfeeding is important for both the mother and the child. Early suckling stimulates the release of prolactin, which helps in the production of milk, and oxytocin, which is responsible for the ejection of milk. About 29.3% mothers exclusively breastfed their infants for 6 months. This survey is higher than the report of Nigeria Demographic and Health Survey (2013) [9] where Seventeen percent of children less than age 6 months were exclusively breastfed. UNICEF and WHO recommend that children be

exclusively breastfed (no other liquid, solid food, or plain water) during the first six months of life (WHO/UNICEF, 2001) [25]. About 22.3% infants were introduced with infant formula within 4 – 6 months while 42.9% were introduced with infant formula within 2 – 3 months. Early introduction of infant formula does not provide nutritional benefits. Introducing breast milk substitutes to infants before age 6 months can displace exclusive breastfeeding. Substitutes such as formula and other kinds of milk are often inadequate in nutrients and calories (SCN, 2003). Majority (81.3%) of the mothers still breastfed after 6 months while 18.8% did not. This agrees with WHO, (2003) recommendation that infants be exclusively breastfed for the first 6 months of life, after which breastfeeding continues until the age of two years and beyond. About 35.8% of mothers introduced complementary food within 1 – 3 months while 39.8% mothers introduced complementary food after 6 months. This supports Moursi *et al.*, (2009) [8] report that appropriate complementary foods can be readily consumed and digested by young children from 6 months onwards and provides nutrients, energy, protein, fat, vitamins and minerals to help meet the growing child’s needs in addition to breast milk.

Most of the mothers gave their children (31.76%) pap and milk as complementary food. About 11.4% gave commercial infant formula to their children. After six months, a child requires adequate complementary foods for normal growth. Lack of appropriate complementary feeding may lead to undernutrition and frequent illness, which in turn may lead to death. Majority (76%) of the mothers did not enrich their infant complementary food with sugar and oil. This could be because the mothers (48.4%) were not aware that sugar and oil were used to increase the energy density, palatability of pap. Few (16%) mothers did not give their children fruits while majority (84.1%) gave fruits to their children. This is in line with WHO (2000) and Bruce *et al.*, (1995) [2] which stated that fruits are rich sources of vitamins A, C and other micronutrients essential for growth and development. From 24 hours dietary recall, Majority (40.6%) of the infants took breast milk every day and this is so because most mothers were still breastfeeding, and had not introduced complementary foods like cereals, pap, garri and soup to the children. The study also reveals that 5.3% of the children were wasted, 11.4% were underweight and 33.4% were stunted. The prevalence of wasting and underweight observed from this study is lower than the report of the NDHS (2013) were 18% and 29% children under age 5 were wasted and underweight respectively. The prevalence of stunting is similar to the thirty-seven percent reported by NDHS (2013).

Conclusion

Adequate nutrition during the first two years of life is very important to ensure optimal, physical and mental development. Feeding practices play a critical role in child development. It was observed that the prevalence of stunting among the children was high; the major problem of children in the study area was chronic malnutrition. Stunting which may result from past growth failure is associated with long term factors like chronic insufficient protein energy intake, inappropriate feeding practices and frequent infections. The inability of most mothers to practice exclusive breastfeeding for the first six months, early introduction of complementary foods and poor complementary food quality and quantity may have affected the nutritional status of the children. Poor feeding practices can adversely impact the health and nutritional status of children, which in turn has direct consequences for their mental and physical development.

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