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Feeding Practices and Nutritional Status of HIV- Infected Under-Five Children

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1. Abstract

1.1. Background: Nutrition of under-five children is very critical because brain development is laid during this period.

1.2. Objective: To assess the feeding practices and its effect on the nutritional status of HIV-infected under- five children in Southeast Nigeria.

1.3. Methods: A cross- sectional descriptive study of 370 confirmed HIV positive children less than five years who were on highly active antiretroviral therapy (HAART) were enrolled. Their caregivers were interviewed. A structured questionnaire was used to collect data by consecutive enrollment, anthropometric measurement was also taken, Data was analyzed using SPSS (Statistical Package for Social Science) version 21 (Chicago Illinois).

1.4. Results: A total of 370 children comprising 208 (56.2%) males and 162 (43.8%) females were studied giving a male: female ratio of 1.3:1. Most of them (67.8%) were resident in urban areas, and (77.0%) of them were of low socio-economic class. The mean age of the children was 44.5+12.9 months, while that of the male and female children were 43.9 +13.1 months and 45.2+12.6 months respectively. Among those who were breastfed about 48.6% of them were exclusively breastfed and the mean duration of exclusive breastfeeding was 4.6+1.9 months. Those who were wasted or underweight were more likely to have initiated feeding on family diet earlier than 6 months. Particularly, wasting was found to be significantly associated with early commencement of family diet, there was significant association between frequency of feeding with family diet and underweight and stunting. Children who were fed not more than thrice daily were more likely to be underweight ($X2=5.18$, $p=0.02$) or stunted ($X2=8.23$, $p=0.02$). Age of introduction of complementary feeding was found to be a significant predictor of wasting among the children.

1.5. Conclusion: Exclusive breastfeeding, timely introduction of complementary and family diet and frequency of feeding greater than three times per day have been shown to have positive effects on the nutritional status of HIV children on HAART. Nutrition education should be encouraged among mothers and caregivers of these children living with HIV.

2. Introduction

Protein Energy Malnutrition has a complex etiology and it is cumulative in its presentation. It is a nutritional problem that results from varying proportions of protein and calorie deficiency in infants and young children [1]. It is a global public health issue, affecting children from African, Asia, Latin American and Caribbean regions. Its effects is not limited to physical and intellectual performance but also causes considerable ill health and contributes greatly to child morbidity and mortality in Nigeria. It has been identified by World Health Organization (WHO) as the most lethal form of malnutrition causing annual death of at least 10.8million in under-five children in developing countries [3]. It was estimated by WHO that 47 million children under five years of age are wasted, 14.3 million are severely wasted while 144 million are stunted with 45% under five death attributed to malnutrition [4].

The nutritional status of infants and children under five years of age is a serious concern, since the early months of their lives are critical for future growth and development.

It is estimated that Nigeria has the second highest rate of stunting in children worldwide with a national prevalence rate of 32% of children under five [5]. Among newborn in Nigeria, low birth weight affects about 5-6 million children every year [6]. In the following months of their life, the nutritional status of these children deteriorates further because of suboptimal feeding practices and a relative decline in energy provision [7]. Food habits, and in more specific context, infant feeding practices are continuously affected by factors such as the availability of food, economic well-being and changes in social values precipitated by external influences and education [8]. This is particularly, the case in the countries where poverty is not the problem of a few but of the majority of the population.

HIV and malnutrition form a deadly union with each one aggravating the other. Malnutrition increases susceptibility to infection by causing immune dysfunction in diverse ways. Reduced immunity can amplify HIV replication and accelerate progression of HIV disease to AIDS. Malnutrition increases the risk of death on initiation of highly active antiretroviral therapy (HAART), and untreated HIV puts individual at risk of malnutrition. HIV/malnutrition is more serious in under five children. Untreated or advanced HIV/AIDS is also associated with a depressed immune status that makes patients susceptible to opportunistic infections that suppress appetite, increase catabolism of muscles and drive patients towards malnutrition [9].

Though some gains have been made in reducing childhood malnutrition, the goal of this study is to determine the feeding pattern of these children and its effects on the nutritional status of the HIV-infected under-five children on HAART.

3. Methods

3.1. The Study Site

This study was a cross-sectional descriptive study conducted in the pediatric HIV clinic of Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Anambra State, Nigeria. NAUTH is tertiary health institution in Anambra State, South East Nigeria. The hospital maintains a Pediatric HIV Clinic which runs daily from 8am to 4pm and is run by three consultant Pediatricians, three senior Registrars, three medical officers, five nurses, an adherent counselor and a dietician.

3.2. Study Design

This was a cross-sectional descriptive hospital based study.

3.3. Study Participants and Recruitment

Three hundred and seventy confirmed HIV positive children aged less than five years, who were on HAART and whose parents /caregivers gave consent were recruited consecutively as they present to the clinic for the study. Moribund patients and patients with other known chronic illnesses were not included in the study. HIV patients not adherent with their medications were also excluded.

3.4. Ethical Approval and Consent

Ethical approval for the study was obtained from the Ethics committee of Nnamdi Azikiwe University Teaching Hospital, Nnewi, South East Nigeria (NAUTH/CS/VOL.3). Informed written consent was obtained from parents/caregivers before enrolling the selected subjects into the study. The caregivers were educated on overall nature and possible benefits of the study and the role the result of the study may play in improving the management of the patients. Participation was voluntary and no penalty was borne by those who declined inclusion. Subjects who met the inclusion criteria were recruited consecutively as they presented to the clinic until the sample size was attained.

3.5. Data Collection

Data were collected on the sociodemographic profiles and feeding practices of the participants using an interviewer administered questionnaires. Weights and heights of the participants were also measured.

The height of children aged more than two years were measured standing, with their two legs together and in full extension with the heels, buttocks, shoulder blade and occiput in firm contact with the measuring rule and readings recorded to the nearest 0.5cm using a audiometer. (Health scale model RGZ-120). They were weighed with minimal clothing with their shoes and caps removed using Health scale model RGZ – 120. Each day, the weighing scale was validated using a standard weight of 20kg. The reading was recorded to the nearest 0.1kg.

For children less than two years, recumbent length was measured using an infantometer placed on a firm surface with an assistant, usually the mother. The knees were held down and the head held firmly against the headboard. The measurement was taken to the nearest 0.1cm. They were weighed completely naked using a 20kg infant Health Scale model RGZ – 120 to the nearest 0.1kg with the mother keeping close watch over the baby. The measurements were read at eye level (in a squatting position) to avoid error of parallax. The weighing scale was cross-checked for zero adjustment before another baby was weighed.

Social class was determined using the socioeconomic indices of the parents as described by Oyedeji [10].

The exact day HAART was commenced were obtained from their medical Records which are being updated from time to time by the Pediatric Infectious diseases unit.

Furthermore, the percentile scores for height-for-age, weight-for-height, and weight-for-age were computed using the World Health Organization Anthro Software for calculating Pediatric anthropometry and compared with that of reference population from WHO-NCHS as a measure of the children's nutritional status.

4. Data Analysis

Data was analyzed using SPSS (Statistical Package for Social Science) version 21 (Chicago Illinois). Frequency distributions of categorical variables were represented in tables and charts. Mean and standard deviation of continuous variables – age, duration of breastfeeding including exclusive breastfeeding, age of introduction of complementary feeding and family diet, weight, height. Test for statistical significance was carried out using appropriate statistical test – the student t-test for quantitative variables and Chi-square test for qualitative (categorical) variables and p-value of $p< 0.05$ was considered statistically significant. Multivariate logistic regression was used to determine the predictors of wasting, underweight and stunting.

5. Results

A total of 370 children comprising 208 (56.2%) males and 162 (43.8%) females were studied giving a male: female ratio of 1.3:1. Most of them (67.8%) were resident in urban areas, and (77.0%) of them were of low socio-economic class. Children who were aged greater than 48 months were about (46.2%), while few of them (9.2%) were aged 24 months or less. The females were slightly older than the male children but there was no significant difference in the age distribution of the children. The mean age of the children was 44.5+12.9 months, while that of the male and female children were 43.9 +13.1 months and 45.2+12.6 months respectively (Table 1).

Most of them (85.7%) were breastfed. The average duration of breastfeeding was 7.7+4.9 months. Among those who were breastfed about 48.6% of them were exclusively breastfed and the mean duration of exclusive breastfeeding was 4.6+1.9 months as shown in (Table 2).

Majority commenced cereals at between 4 and 6 months (66.8%) with the mean age of commencement of cereals to be 4.3+1.8 months. Many of them (47.5%) were introduced to family diet at 6 months and beyond with an average age of introduction of family diet being 7.3+2 months. A significant proportion of the female children (82.8%) were introduced to family diet at 6 months and beyond than the boys (67.3%) ($X2 = 12.73$, $p = 0.01$). Frequency of feeding with family diet was not more than three times daily for majority (56.2%) of them, while (67.6%) of them were served their own portion of food (Table 3).

The commonest type of cereal received by the children was pap fortified with infant formula (65.1%), followed by pap and soya and pap, sugar and infant formula as shown by (Figure 1).

All the children had snacks and the type of snacks most frequently eaten were biscuits, bean products and fruits (65.7%) as shown in (Figure 2).

A slightly higher proportion of those who were not breastfed or did not know their breastfeeding status were either more wasted or underweight compared to those who were breastfed. However, the difference was not statistically significant. Among those who were breastfed, severe wasting (80.0%), underweight (57.9%) and severe underweight were commoner among those who were not exclusively breastfed while stunting/severe stunting was commoner among those who were exclusively breastfed. Only stunting was found to be significantly associated with exclusive breast feeding (Table 4).

Initiation of cereal at 3 months and below was associated with wasting ($X2=22.32$, $p<0.001$) and underweight ($X2=21.68$, $p<0.001$). Stunting was commoner among those who initiated cereal later than 3 months, however this association was not found to be statistically significant as shown in (Table 5).

Those who were wasted or underweight were more likely to have initiated feeding on family diet earlier than 6 months. Particularly, wasting was found to be significantly associated with early commencement of family diet ($X2=8.94$, $p=0,03$). On the other hand, late commencement of family diet was found to be significantly associated with stunting ($X2=8.41$, $p=0.04$) as shown in (Table 6).

There was no significant relationship between frequency of feeding with family diet and wasting. However, there was significant association between frequency of feeding with family diet and underweight and stunting. Children who were fed not more than thrice daily were more likely to be underweight ($X2=5.18$, $p=0.02$) or stunted ($X2=8.23$, $p=0.02$). (Table 7).

Age of introduction of complementary feeding was found to be significant predictor of wasting among the children. Those that started complementary feeding at <3 months were two and half times at risk of being wasted compared to those who commenced complementary feeding after 3 months. Significant predictors of underweight in the children were duration of breastfeeding and age of introduction of complementary feeding, shorter duration of breastfeeding O.R = 1.51 (1.03-2.23), and initiation of complementary feeding <3 months O.R = 4.90 (2.25 – 15.45). Exclusive breastfeeding was found to be significant predictors of stunting and being exclusively breastfed O.R = 2.48 (1.32-4.66) increases the odds of being stunted as shown in (Table 8).

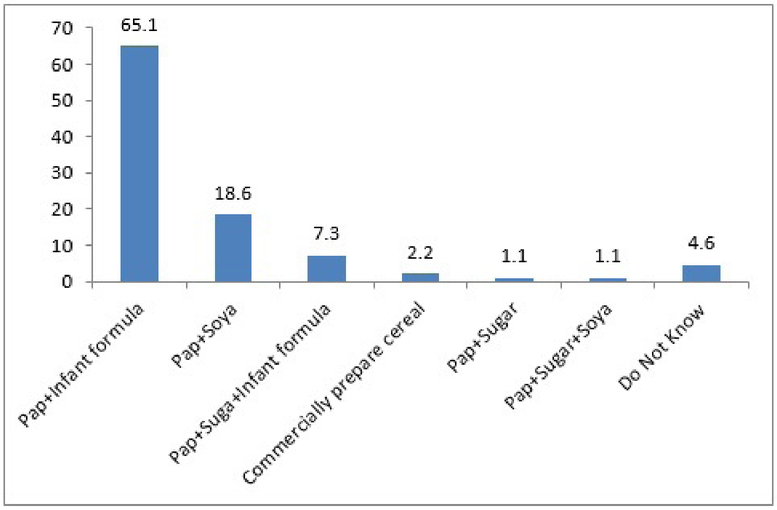

Figure 1: Types of Cereals given to the Children.

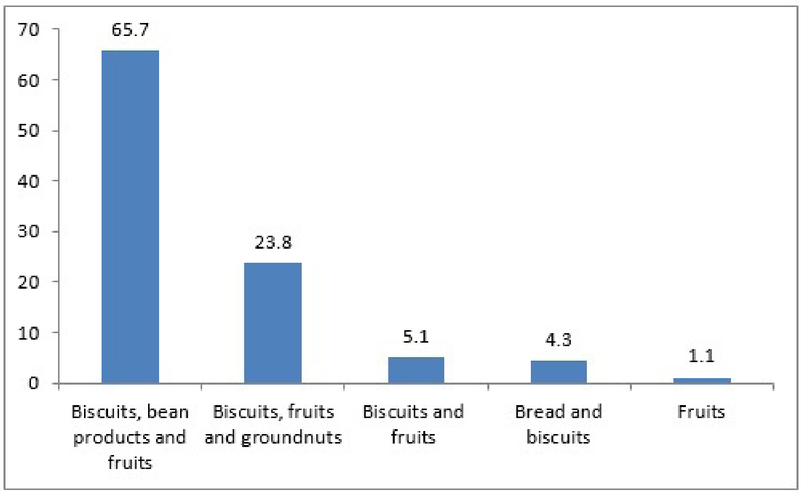

Figure 2: Snack Consumption Pattern among the Children.

Table 1: Socio-demographic Characteristics of the Children by Sex

Characteristic	Male	Female	Total	X^2	P-value
	n=208(%)	n=162(%)	n=370(%)		
Age (in months)					
≤24	23 (11.1)	11 (6.8)	34 (9.2)		
25-36	49 (23.6)	37 (22.9)	86 (23.2)	4.86	0.18
37-48	37 (17.8)	42 (25.9)	79 (21.4)		
≥48	**99 (47.5)**	72 (44.4)	171 (46.2)		
Mean±SD	**43.9±13.1**	**45.2±12.6**	**44.5±12.9**		
Place of Residence					
Urban	140 (67.3)	111 (68.5)	251 (67.8)		
Rural	68 (32.7)	51 (31.5)	119 (32.2)	0.06	0.81
Social Class					
Low	157 (75.5)	128 (79.0)	285 (77.0)		
Middle	38 (18.3)	24 (14.8)	62 (16.8)	3.26	0.35
High	13 (6.2)	10 (6.2)	23 (6.2)		

SD-Standard deviation, X^2=Chi squared test, p-value (value of precision), P-value<0.05 is statistically significant.

Table 2: Pattern of Feeding Practices among the Children by Sex

Feeding Practice	**Male n=208(%)**	**Female n=162(%)**	**Total n=370(%)**	**X^2**	**P-value**
Child Breastfed					
Yes	178 (85.6)	139 (85.8)	317 (85.7)	0.01	0.92
No	26 (12.5)	23 (14.2)	49 (13.2)	df=1	
DNK	4 (1.9)	0 (0.0)	4 (1.1)		
Duration of Breastfeeding (in months)	**n=178 (%)**	**n=139 (%)**	**n=317 (%)**		
<6	13 (7.3)	22 (15.8)	35 (11.1)		
7-9	46 (25.8)	53 (38.1)	99 (31.2)		
12-Oct	53 (29.8)	37 (26.6)	90 (28.4)	20.18	<0.001
>12	28 (15.8)	17 (12.3)	45 (14.2)		
DNK	38 (21.3)	10 (7.2)	48 (15.1)		
Mean+SD	**7.7+5.2**	**7.7+4.6**	**7.7+4.9**		
Exclusive Breastfed	**n=178 (%)**	**n=139 (%)**	**n=317 (%)**		
Yes	89 (50.0)	65 (46.8)	154 (48.6)		
No	74 (41.6)	66 (47.5)	140 (44.2)	1.55	0.46
DNK	15 (8.4)	8 (5.8)	23 (7.2)		
Duration of EBF (in months)	**n=89 (%)**	**n=65(%)_**	**n=154 (%)**		
<2	5 (5.6)	5 (7.7)	10 (6.4)		
3	13 (14.6)	14 (21.5)	27 (17.5)		
4	9 (10.1)	5 (7.7)	14 (9.1)		
5	4 (4.5)	7 (10.8)	11 (7.1)		
6	56 (62.9	33 (50.8)	89 (57.8)		
DNK	2 (3.3)	1 (1.5)	3 (1.9)		
Mean+SD	**4.5±2.1**	**4.6 ±1.7**	**4.6±1.9**		

DNK = do not know, EBF – exclusive breastfeeding, SD = standard deviation, df = degree of freedom, $p<-0.05$ is significant

Table 3: Pattern of Feeding Practice among the Children by Sex

Complementary Feeding Practice	**Male n=208(%)**	**Female n=162(%)**	**Total n=370(%)**	**X^2**	**P-value**
Age of Introduction of Careals (In months)	**n=208(%)**	**n=162 (%)**	**n=370 (%)**		
<3	45 (21.6)	42 (25.9)	87 (23.5)		
6-Apr	131 (63.0)	116 (71.7)	247 (66.8)	18.42	<0.001
>7	5 (2.4)	2 (1.2)	7 (1.9)		
DNK	27 (13.0)	2 (1.2)	29 (7.8)		
Mean+SD	**4.1±2.0**	**4.5±1.5**	**4.3±1.8**		
Age of Introduction of Family Diet (in months)	**n=208(%)**	**n=162(%)**	**n=370 (%)**		
<5	30 (14.4)	26 (16.0)	56 (15.1)		
8-Jun	114 (54.8)	102 (63.0)	216 (58.4)		
>8	43 (20.7)	32 (19.8)	75 (20.3)	12.73	0.01
DNK	21 (10.1)	2 (1.2)	23 (6.2)		
Mean+SD	**7.4±2.7**	**7.1±1.9**	**7.3±2.4**		
Frequency of Feeding with Family Diet					
>3	116 (55.8)	92 (56.9)	208 (56.2)		
4+	89.42.7)	69 (42.%)	158 (42.7)	0.01	0.92
DNK	3 (1.5)	1 (0.6)	4 (1.1)		
Child served his/her Portion of Food	**n= 208 (%)**	**n=162 (%)**	**n=370 (%)**		
Yes	138 (66.3)	112 (69.1)	250 (67.6)	1.04	0.6
No	70 (33.7)	50 (30.9)	120 (32.4)		

NDK = do not know, X^2 = Chi=squared test, p-value (value of precision), $p<0.05$ is significant.

Table 4: Relationship between Breast Feeding Practice and Nutritional Status

	Breastfed		**X^2**	**P-value**
	Yes n=317 (%)	**No/DNK n=53(%)**		
Wasting				
Normal	275 (85.7)	46 (14.3)		
Wasting	32 (84.2)	6 (15.8)	0.3	0.85
Severe Wasting	10 (90.9)	1 (9.1)		
Underweight				
Normal	269 (86.2)	43 (13.8)		
Underweight	38 (80.9)	9 (19.1)	0.6	0.75
Severe	10 (90.9)	1 (9.1)		
Underweight				

Stunting				
Normal	226 (84.6)	41 (15.4)		
Stunting	33 (86.8)	5 (13.2)	2.8	0.6
Severe Stunting	58 (89.2)	7 (10.8)		
	Exclusively Breastfed			
	Yes n=154 (%)	**No n=163 (%)**		
Wasting				
Normal	136 (49.5)	139 (50.5)		
Wasting	16 (50.0)	16 (50.0)	0.4	0.53
Severe Wasting	2 (20.0)	8 (80.0)		
Underweight				
Normal	134 (49.8)	135 (50.2)		
Underweight	16 (42.1)	22 (57.9)	1.1	0.58
Severe Underweight	4 (40.0)	6 (60.0)		
Stunting				
Normal	98 (43.4)	128 (56.6)		
Stunting	21 (63.6)	12 (36.4)	8.7	0.01
Severe Stunting	35 (60.3)	23 (39.7)		

DNK=Do not know, (X^2)=Chi squared test, p-value (value of precision), $p<0.05$ is statistically significant.

Table 5: Relationship between timing of initiation of Cereal and Nutritional Status

Nutritional Status	**Timing of Initiation of Cereal**			**X^2**	**P-value**
	≤3 months n=87 (%)	**>3 months n=254 (%)**	**DNK n=29 (%)**		
Wasting					
Normal	69 (21.5)	229 (71.0)	24 (7.5)		
Wasting	17 (44.7)	17 (44.7)	4 (10.6)	22.3	<0.001
Severe Wasting	1 (9.1)	9 (81.8)	1 (9.1)	df=2	
Underweight					
Normal	60 (19.2)	224 (71.8)	28 (9.0)		
Underweight	19 (40.4)	27 (57.4)	1 (2.2)	21.7	<0.001
Severe Underweight	8 (72.7)	3 (27.3)	0 (0.0)		
Stunting					
Normal	66 (24.7)	176 (65.9)	25 (9.4)		
Stunting	5 (13.2)	31 (81.5)	2 (5.3)	4.48	0.11
Severe Stunting	16 (24.6)	47 (71.3)	2 (3.1)		

DNK= Do not know, df = degree of freedom, (X2) = Chi squared test, p-value (value of precision), $p<0.005$ is statistically significant.

Table 6: Relationship between Timing of initiation of Family Diet and Nutritional Status

Nutritional Status Wasting	**Timing of Initiation of Family Diet**				**X^2**	**P-value**
	≤5 months n=56 (%)	**6-8 months n=216 (%)**	**>8 months n=75 (%)**	**DNK n=23(%)**		
Normal	43 (13.4)	187 (58.3)	71 (22.1)	20 (6.2)		
Wasting	10 (26.3)	23 (60.5)	3 (7.9)	2 (5.3)	8.94	0.03
Severe Wasting	3 (27.3)	6 (54.5)	1 (9.1)	1.(9.1)	df=3	
Underweight						
Normal	41 (13.1)	180 (57.7)	69 (22.1)	22 (7.1)		
Underweight	11 (23.4)	31 (66.0)	4 (8.5)	1 (2.1)	10.79	0.65
Severe Underweight	4 (36.4)	5 (45.4)	2 (18.2)	0 (0.0)	df=2	
Stunting						
Normal	44 (16.5)	144 (53.9)	59 (22.1)	20 (7.5)		
Stunting	4 (10.5)	29 (76.3)	4 (10.5)	1 (2.7)	8.41	0.04
Severe Stunting	8 (12.3)	43 (66.1)	12 (18.5)	2 (3.1)	df=3	

DNK= Do not know, df= degree of freedom , (X^2) = Chi squared test, p-value (value of precision), $p<0.05$ is statistically significant.

Table 7: Relationship between Frequency of feeding with Family Diet and Nutritional Status

Nutritional Status Wasting	Frequency of Family Diet day		Intake/per	X^2	P-value
	≤3 n=208 (%)	>3 n=158 (%)	DNK n=4 (%)		
Normal	179 (55.8)	138 (43.1)	4 (1.1)		
Wasting	23 (60.5)	15 (39.5)	0 (0.0)	0.33	0.85
Severe	6 (54.5)	5 (45.5)	0 (0.0)	df=2	
Wasting					
Underweight					
Normal	167 (53.5)	141 (45.2)	4 (1.6)		
Underweight	31 (66.0)	16 (34.0)	0 (0.0)	5.18	0.02
Severe	10 (90.9)	1 (9.1)	0 (0.0)	df=1	
Underweight					
Stunting					
Normal	138 (51.6)	125 (46.8)	4 (1.6)		
Stunting	43 (66.2)	22 (33.3)	0 (0.0)	8.23	0.02
Severe	27 (71.1)	11 (28.9)	0 (0.0)	df=2	
Stunting					

DNK = Do not know, df = degree of freedom, (X2)=Chi-squared test, p-value (value of precision), p<0.05 is statistically significant

Table 8: Predictors of Wasting, Underweight and Stunting among the 370 children on HAART

Predictor	Wasting	Underweight	Stunting
	O.R (95%CI)	O.R (95%CI)	O.R 95%CI
Breastfed	0.28 (0.06-1.40)	0.49 (0.10-2.74)	0.61(0.18-2.10)
Exclusively Breastfed	0.97 (0.48-1.93)	1.08 (0.51-2.27)	2.48 1.32-4.66
Duration of Breast Feeding	0.89 (0.61-1.31)	1.51 (1.03-2.23)	1.27 (0.93-1.72)
Age at introduction of Complementary feeding	2.49 (1.20-5.19)	5.90 (2.25-15.45)	1.15 (0.89-1.48)
Age at introduction of family diet	1.85(0.97-3.54)	1.81(0.92-3.57)	0.95 (0.57-1.59)

6. Discussion

One notable finding in this study is that breastfeeding appeared to be of little benefit. The reason may probably be explained by the fact that beyond the breastfeeding period, the nutritional status of children is a complex interaction between interrelated factors which include environmental, economic, education, cultural, food security, inappropriate quantity and quality of complementary feeding. Severe wasting, underweight and severe underweight were shown to be more in children who were not exclusively breastfed, though not significant. However, stunting was commoner among the exclusively breastfed children (OR=2.48, CI= 1.32-4.66) Unlike this present study, Anigilage and Olutola [11] in Markudi, Benue State, Nigeria, reported that exclusive breast feeding (EBF) was found to be protective against stunting compared to formula feeding. A study by Dishaet al [12] in Ethiopia documented that EBF was found to be negatively associated with stunting at a statistically significant level. To reduce malnutrition and the risk of death in malnourished HIV children, the WHO recommendation for infant and young child feeding which is to initiate breastfeeding within the first hour of birth, EBF for six months and continuing breastfeeding till one year and beyond in HIV patients should be encouraged. This study also showed that the time of introduction of complementary foods affected the nutritional status of these children. About 23.5% of children in this study commenced complementary feeding at three months or below. The reasons for this are not far-fetched. Some of the mothers chose not to breastfed because of fear of transmission of HIV to their babies. Secondly, death of an HIV-positive mother could have led to introduction of complementary foods earlier than the recommended. Ignorance of the mother is another factor which might have contributed to this. Multivariate logistic regression showed that those children who commenced complementary foods on or before 3 months of age were found to be significantly more underweight and wasted, (OR=2 49, CI= 1.20 – 5.19) and OR= 5.9, CI= 2.25 – 15.45). Late commencement of family diet was also shown in this study to be significantly associated with stunting (X2= 8.41, p=0.04). This finding is expected because research has shown that introducing complementary foods too early leads to displacement of breastmilk and increased risks of infections and diarrhea which further contribute to malnutrition [13-15] Other studies in Nigeria have supported this finding that too early or late introduction of complementary foods may lead to malnutrition especially stunting [16, 17]. Another study in Ethiopia also supported the finding that too early or late introduction of complementary foods may lead to malnutrition [18].

WHO recommends that children living with HIV should be fed five or more times per day as to meet their high energy and nutrient demand. In this study, about 56.5% of the children were fed for three times or less and they were found to be significantly more underweight (X2= 5.18, p=0.02) and stunted (X2= 8.23, P=0.02). Feeding frequency is therefore not optimal in more than half of the study population. This may probably be as a result of ignorance of the WHO recommendation on the feeding frequency required for these children or because the parents/caregiver could not afford to feed the child up to five times due to poverty. Similar study done among HIV children by Sunguya et al [19] in Tanzania also documented a feeding frequency of three times a day. They also noted that reduced feeding frequency was associated with stunting and underweight. It is therefore imperative for nutrition education to be an integral part of care for HIV – infected children and their caregivers.

7. Limitation

There may have been recall bias as the informants were asked to recall the breastfeeding pattern of their children and time of introduction of complementary feeding.

8. Conclusion

Exclusive breastfeeding, timely introduction of complementary and family diet and frequency of feeding greater than three times per day have been shown to have positive effects on the nutritional status of HIV children on HAART. Therefore, nutrition education should be encouraged among mothers and caregivers of these children living with HIV.

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