

PAT June, 2010; 6 (1):23-35

ISSN: 0794-5213

Online copy available at

[www.patnsukjournal.net/currentissue](http://www.patnsukjournal.net/currentissue)

Publication of Nasarawa State University, Keffi



## Feeding Practices and Nutritional Status of Under- Five Children In Nasarawa State, Nigeria.

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Received 15<sup>th</sup> January, 2010, Accepted 29<sup>th</sup> May, 2010

### Abstract

The major causes of malnutrition in young children have been attributed to poor quality complementary foods and in appropriate feeding practices. A cross sectional survey was conducted among 800 infants (6-59months) and their mothers (14 - 60 years), to determine the nutritional status of infants and the feeding practices among mothers in Nasarawa State. The subjects were randomly selected from four Local Government area of the state. The information on the infant feeding practices of the mothers were collected using questionnaires by trained interviewers Anthropometrics measurements (weight and height\length) of the infants were taken. The result showed that the mean age ( $X \pm SD$ ) of the children was  $22.2 \pm 13.5$  months and overall prevalence of wasting (or low weight and height \length) was 18.5%,12.1% and 7.0% for mild, moderate and severe wasting respectively. Also, the result of infant feeding practices indicated that 88.3 % of the mothers were breastfeeding, while 11.7 % had stopped breastfeeding. More so, introduction of complementary foods reflected that 35 % of the mothers introduced complementary foods to their children between the ages of 1-3 months, 47 % introduced at 4-6 months, 15 % at 7-9 months and 3.0 % introduced at 10-12 months. It was observed that yam and vegetable pottage (22 %) was the commonest complementary food given by most mothers. The classification of nutritional status showed that 60.1 % of the children were stunted (HAZ) and 32 % were under weight (WAZ). Results of the present study indicated that there is need to pay more attention to the quality and the time of introduction of complementary foods that should be given to children in Nasarawa state, Nigeria

**Keywords:** Breastfeeding, Infant feeding, Stunting, Underweight, Children.

### Introduction

World Health Organization (WHO) has identified poor quality complementary foods with low nutrient density and inappropriate feeding practices as one of the major causes of malnutrition in young children (WHO 2003). The risk of nutritional deficiencies witnessed during the second half of infancy in many developing countries has been found to be as a result of either early or too late introduction of complementary foods which are equally insufficient in quality and quantity (Pelto et al, 2003, Water low 1986). More than 10 million children die each year; most children die from preventable causes and the majority of children who die are from poor countries (Black et al, 2003).

According to Lutter (2003), to achieve the millennium development Goals (MDG) for child survival and the prevention of malnutrition (MDG 3), adequate nutrition and health during the first several years of life is fundamental.

Among the most effective preventive actions for reducing mortality in children less than 5 years of age, promotion of exclusive breastfeeding (EBF) and improved complementary feeding (CF) has been ranked first and third respectively by the World Health Organization (WHO 2003). In Nigeria, the Food Consumption and Nutrition Survey (FCNS), 2004 revealed that four out of every 10 children are stunted or have low height for age. This refers to height\length deficient of linear growth that has failed to reach genetic potential as a result of poor diet and disease. One out of every four Nigerian children are under weight, their weight is too low for their age while 9% of the children are wasted (NDHS 2008).

From the above it can be deduced that a silent emergency already exists in Nigeria with its large population (officially 140 million) and extremely poor nutritional indices (stunting 41%, underweight 23%) (NDHS,2008). A comprehensive study on the risk factors such as infant feeding practices is therefore vital to identify the current practices which can be supported to improve childhood survival.

The main aim of this study was to assess the infant feeding practices and nutritional status of children in Nasarawa State of North Central Nigeria.

### **Methods and Materials**

This study was conducted in Nasarawa state, North Central Nigeria, between January and April; using four (4) randomly selected Local Government Areas (LGA). In each LGA, data was taken from four communities spread within two wards using the Multiple Indicator Cluster Surveys (MICs) zones (UNICEF, 2001).

The survey design was cross-sectional, utilizing both quantitative and qualitative data collection techniques. House listing was done to ensure systematic sampling and adequate coverage of the community. Eight hundred children (0-12 months) and their mothers (800) permanently residing at the randomly selected communities were targeted, fifty children per community, 100 per ward and 200 per LGA were selected (Pope and Mays 1995, Lemeshow and Robinson 1985). Mothers with children more than 6months but less than 60 months were eligible in a mother /child pair while in the absence of the biological mother, the person considered as the child's primary care taker (Father, Aunt, and Grandmother) was eligible.

A qualitative approach was chosen to obtain information on feeding practices (Pope and Mays 1995). Preparation for field data collection includes training of local data interviewers, and Instruments that were used in this study included pre tested questionnaires, semi – structured interviews and key informant interview. Information

on Demographic, socio-economic status and nutrition related practices were obtained from caregivers. Anthropometric measurements were performed on children and mothers, in agreement with the WHO recommendations (WHO, 1995; Gibson, 1993; 2005). Weights were measured using UNICEF digital scale (UNISCALE<sup>R</sup>) which has an accuracy of 0.01kg, while recumbent length (for children less than 24 months) or height (for children 24-59 months) was measured with a locally made wooden length board, recorded to the nearest 0.1cm with both clothes and shoes off. Data were entered into Statistical Package of Social Sciences SPSS worksheet and analysis done using the SPSS version 12.0 software. Frequencies and cross tabulations were generated to reflect the demographic characteristics of the population.. To determine whether the children in the sample were stunted, underweight or wasted, children's heights and weights were compared with median height-for-age, weight-for-height and weight-for-age of the National Centre for Health Statistics Reference Population (WHO, 1995)

## **Results**

A total of 800 mothers aged between 14 and 60 years were studied with the mean age 28.1 (SD +\_7.2) years. The children were aged between 6 and 59 months with the mean age f 22.2 (SD +\_13.5) months.

Thirty-nine percent of the mothers had no form of education while 16%, 21%, 9% and 15% of them had primary, secondary, tertiary or adult literacy respectively. Table 1 shows the demographic characteristics of the household and mothers. The majority of the households (53%) have a household size between 6-10 people, while 27% had a house size greater than 11 people. Sixty four (8.1%) of the mothers were unemployed (i.e. full time housewife) while 232 (29.2%), 192 (24.2%) and 272 (34.3%) were civil servants, trader, artisan or farmers respectively. The influence of the education and occupation of the mothers are shown in Table 2.

Table 3, shows the infant feeding practices, it was observed that 88.3% of the mothers were breastfeeding. majority (72%) of the newly born children are initiated into breastfeeding after an hour, various reasons were adduced to this but the dominant among them are mother's health, child's refusal to suck and tradition / culture (Table 4). As regards, to the consumption or feeding of colostrums, although majority (84.2%) of the mothers acknowledged giving colostrums to their children (Table 3). However, about 16% do not give. The reasons stated for this by mothers was that, tradition/culture donor permit and perceived harmful nature of colostrums to children. Table 3 also reveals other drinks which mother gave their children after delivery apart from breast milk are water, pap/kunu, herbs and animal milk. Of the 94 (11.7%) mothers that

had weaned their children majority (51%) stopped breastfeeding between 13-15 months while only few (12%) breast fed for above 20 months.

Table 5 represents the nature of complementary foods introduced y mothers while figure 1 depicts age of introduction of solid foods and it was found that majority (47%) introduced solids foods between 4-6 months. It was also observed that yam pottage and green vegetables was the commonest complementary foods given by majority (22%) by mothers, others include pap and kose (bean cake) or moinmoin 16%, mashed yam and red palm oil (13%), pap and groundnut paste, kunu, fura da nono (yoghurt) constituted 12% respectively (Table 3).

**Table 1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS.**

<b>Characteristics</b>	<b>Frequency (N)</b>	<b>Proportion (%)</b>
<b>Mother age (years)</b>		
10-19	56	7.0
20 – 29	409	51.1
30 – 39	283	35.4
40 – 49	38	4.8
50-59	13	1.6
>60	1	0/1
<b>Total</b>	<b>800</b>	<b>100</b>
<b>Marital Status of Mother</b>		
Married	656	82
Divorced	56	7
Widow	88	11
<b>Total</b>	<b>800</b>	<b>100</b>
<b>Household Size</b>		
1 - 5	160	20
6 – 10	427	53
11 – 15	80	10
16 – 20	47	6
>21	86	11
<b>Total</b>	<b>800</b>	<b>100</b>
<b>Education Status of mother</b>		
None	312	39
Primary	128	16
Secondary	168	21
Tertiary	72	9
Adult literacy	120	15
<b>Total</b>	<b>800</b>	<b>100</b>
<b>Occupation of mothers</b>		
Full time Housewife	64	8.1
Civil servant	232	29.3
Trading	192	24.2
Artisan	16	4

Farming	276	34.4
<b>Total</b>	<b>800</b>	<b>100</b>

Table 2: Pair T- test for the influence of mother’s education and occupation on their breastfeeding habit

S/N	Variables	mean	Sample size	Std dev.	Std Error	correlation		Pair – sample Tests			
						correlation	Sig	mean	t-value	df	Sig.
Pair 1	Mother’s education	2.72	800	1.85	0.19	0.055	0.601**	1.61	8.36	799	0.000**
	Breastfeeding	1.12	800	0.32	0.03						
Pair 2	Mother’s occupation	3.27	800	1.41	0.15	-0.118	0.260*	2.15	14.00	799	0.000**
	Breastfeeding	1.12	800	0.32	0.03						

Note: P ≤ 0.05, \*\* = significant at 1% level of probability, \* = significant at 5% level of probability.

**Table 3: Infant Feeding Practices of Respondents**

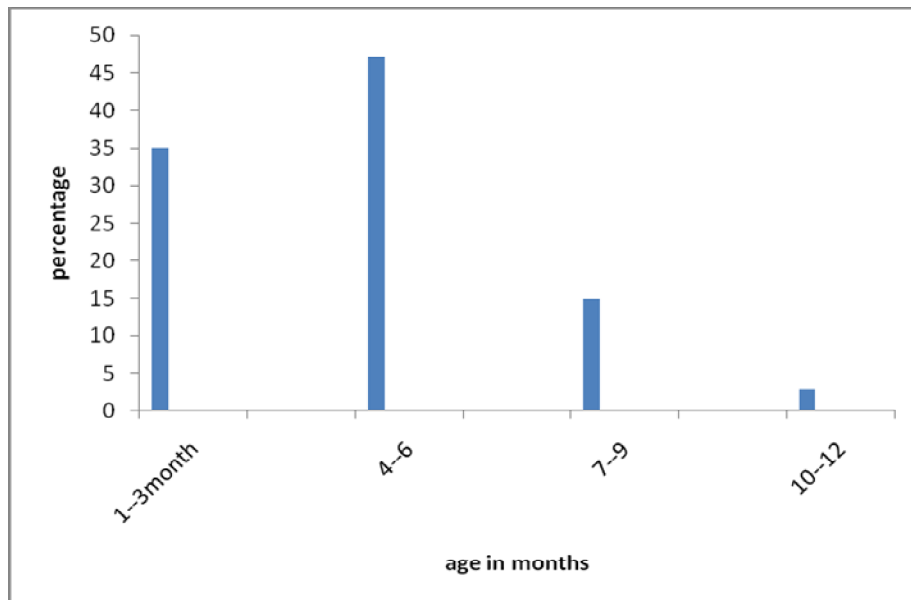
Characteristics	Frequency (N)	Proportion (%)
<b>breastfeeding)</b>		
<b>YES</b>	706	<b>88.3</b>
<b>NO</b>	94	<b>11.7</b>
<b>Total</b>	800	<b>100.0</b>
<b>Breastfeeding initiation</b>		
<b>Within an hour</b>	224	<b>28.0</b>
<b>After an hour</b>	576	<b>72.0</b>
<b>Total</b>	800	<b>100.0</b>
<b>Colostrum consumption</b>		
<b>YES</b>	674	<b>84.2</b>
<b>NO</b>	126	<b>15.8</b>
<b>Total</b>	800	<b>100.0</b>
<b>Reasons for not given colostrums</b>		
<b>Tradition/culture</b>	28	<b>22.2</b>
<b>Harmful</b>	44	<b>34.9</b>
<b>Family/ Peer influence</b>	13	<b>10.3</b>
<b>Ignorance</b>	32	<b>25.4</b>
<b>Religious</b>	3	<b>2.4</b>
<b>Mother/ Child health</b>	6	<b>4.8</b>
<b>Total</b>	126	<b>100.0</b>
<b>Drinks given after delivery apart from breast milk</b>		
<b>Water</b>	111	<b>19.2</b>
<b>Pap/Kunu</b>	284	<b>49.3</b>
<b>Herbs</b>	63	<b>11.0</b>
<b>Animal milk</b>	118	<b>20.5</b>
<b>Total</b>	576	<b>100.0</b>
<b>Breastfeeding stoppage (months)</b>		
<b>6 – 12</b>	12	<b>12.8</b>
<b>13 – 15</b>	48	<b>51.0</b>
<b>16 – 20</b>	23	<b>24.5</b>
<b>&gt; 20</b>	11	<b>11.7</b>
<b>Total</b>	<b>94</b>	<b>100.0</b>

**Table 4: Reasons for Breastfeeding Initiation**

<b>Characteristics</b>	<b>Frequency (N)</b>	<b>Proportion (%)</b>
Initiation within an hour		
Child cries	38	17
Health workers advice	76	34
Health benefits	76	34
Peer/ family influence	29	13
No reason	5	2
<b>Total</b>	<b>224</b>	<b>100</b>
Initiation after an hour		
Child refusal to suck	144	25
Tradition /culture	242	42
Mothers health	115	20
Health workers advice	17	3
Peer /family influence	46	8
No reason	12	2
<b>Total</b>	<b>576</b>	<b>100</b>

**TABLE 5: TYPES OF COMPLEMENTARY FOODS INTRODUCED BY MOTHERS FOODS**

<b>Foods</b>	<b>Frequency (N)</b>	<b>Proportion (%)</b>
Pap only	48	6
Pap + G/nut paste	96	12
Pap + Kose/ Moinmoin	128	16
Mashed yam + Red palm oil	104	13
Yam pottage + Green vegetables	176	22
Kunu	96	12
Fura da nono	96	12
Tuwo	24	3
Pap + Tuwo	16	2
Kunu + Pottage	8	1
Pap + Kose + Kunu	8	1
<b>Total</b>	<b>800</b>	<b>100</b>



**Figure 1: Age at Introduction of Other Foods**

Four hundred and eighty-five (60.6%) children were delivered at various health facilities such as hospitals/clinics while the remaining children (39.4%) were delivered at places other than formal health facilities (home). A high proportion (41.4%) of the respondents reported an estimated walking distance of less than 10 minutes from the nearest health facility while 42.4% reported a distance of between 10 and 30 minutes. Type of water and latrine used is a good indicator in the measurement of the quality of household health environments. In this study the most common source of water available to the respondents is well water (39.2%) which is usually exposed and unprotected and 46.4% had to travel about 10-30minutes to access safe water while 37.1% of respondents travel less than 10minutes to access safe water. Also a high proportion of the respondents (36%), used bush as their main toilets, followed by designated area (26%) and pit latrine (23%) respectively, while only 9% was found using water system as toilet.

**Table 6: Hygienic and Care Seeking Characteristic of Mothers**

Characteristics	Frequency (N)	Proportion (%)
<i>Source of drinking water (%)</i>		
Piped Water	164	20.6
Well water	314	39.2
Borehole	168	21.6
Spring	72	9.3
River/stream	72	9.3
<b>Total</b>	<b>800</b>	<b>100.0</b>
<i>Distance from water collection point (%)</i>		
> 10 minutes	297	37.1
10 – 30	371	46.4
31 – 60	99	12.4
> 60	33	4.1
<b>Total</b>	<b>800</b>	<b>100.0</b>
<i>Type of Toilet</i>		
Pit latrine	184	23.0
VIP latrine	288	6.0
Designated area	208	26.0
Bush	48	36.0
Water system	72	9.0
<b>Total</b>	<b>800</b>	<b>100.0</b>
<i>Place of delivery</i>		
Hospital \Clinics	485	60.6
Home \Others	315	39.4
<b>Total</b>	<b>800</b>	<b>100.0</b>
<i>Distance from health centre (%)</i>		
< 10 minutes	331	41.4
10 – 30	341	42.6
31 – 60	120	15.0
> 60	8	1.0
<b>Total</b>	<b>800</b>	<b>100.0</b>

Figure 2 shows the nutritional status of children using the nutritional indicators of stunting, underweight and wasting. The most prevalent under nutrition in the study areas was stunting, with more than half (60.1%) severely stunted. This figure is higher than the 41% and 25.4% reported for National and State average respectively by NDHS 2008. Stunting or low height for age which refers to shortness reflects the cumulative effect of chronic malnutrition.

The overall prevalence of wasting (or low weight for height) obtained was 18.5%, 12.1% and 7% for mild, moderate and severe wasting respectively. The value obtained for severe wasting (7%) was lower than the national average and but higher than the state average of 14% and 3.2% respectively reported by Nigerian Demographic and



Health survey (NDHS) 2008 and also higher (12.5% ) than that of the state (5.6%) in terms of moderate wasting.

Underweight is an overall indicator of a population’s nutritional health. 23% of Nigerian children are reported to be under weight; with 1 out of every 10 of these children been severely underweight (NDHS 2008), this study also revealed a high proportion of 32% severe underweight of under five children studied. The result is higher than the 5.7% and 23% obtained for the state and national average respectively by the NDHS 2008 (Fig2).

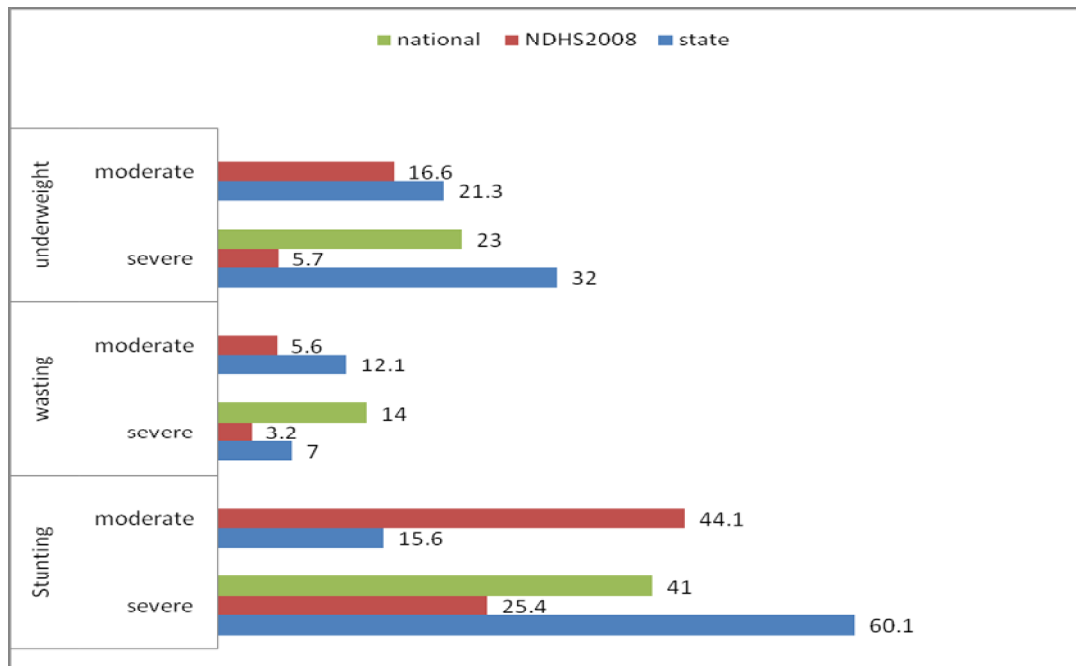


Figure 2: Observed Nutritional status of children in Nasarawa state compared with NDHS 2008 and National Average

**Discussion**

Pair T -test statistics was used to investigate the influence of both the mother’s education and mother’s occupation on the mother’s breastfeeding habits. The results showed that the average mother’s education for the 800 respondents was 2.72 (SSCE) while that of their breastfeeding was 1.12 (yes). The result of the correlation analysis (0.601\*\*) showed that the mother’s education had a positive and highly significant

influence (of the mother's Education) on the breastfeeding habit of the mother and the result was corroborated by the pair T –Test value of ( $p= 0.000^{**}$ ) between the mother education and their breastfeeding habit. This indicated that the mother's Education has a significant influence on their breastfeeding habit. This finding is in conformity with the findings of Matthew and co-workers which established that, a more educated mother\caregiver raises a better quality child than a less educated mother (Matthew et al, 2009). Also a similar result was obtained by Bhan et al (2004), among Kashmiri Pandits and Dogras families in Pakistan which reveals that children that were breast fed on schedule were found more among the educated and the employed. In respect of the mother's occupation, the result showed that the average mother's occupation for the 800 respondent was 3.27 (trading\ business) while that of their breastfeeding habit was 1.12 (yes). The result of the correlation analysis ( $r=0.260$ ) showed that the mother's occupation has negative correlation with breastfeeding habits of the mothers .This means that the more occupied a mothers is, the less time she has for breast feeding of the child. The result was corroborated by the pair T test value of ( $p= 0.000^{**}$ ) between the mother's occupation and their breastfeeding habit. This indicated that the mother's occupation had a significant influence on their breastfeeding habit meaning that the types of occupation engaged in by the mothers had significant influence on their child feeding habits. This result is in conformity with (Matthew et al, 2009), who established a significant influence of the mother's occupation on their breastfeeding habit in their work among selected women in the North West, Nigeria.

Early introduction of complementary foods especially before the first six months of life have been discouraged by the World Health Organization and UNICEF (WHO/UNICEF 1998). Introducing these foods too early have been found to reduce the amount of breast milk the child is taking in and not only introduces the child to pathogens and subsequent diarrheal diseases but in most developing countries the foods are not really tailored to meet the needs of the infants (Kikafunda 2003). Results from this study reveals a poor infant feeding practices among the mothers with over two – third (35%) introducing the child to complementary foods between the age of 1 and 3 months and another 47% (nearly half) of the mothers given foods between the ages of 4 and 6 months. It can therefore be inferred that about 82% of mothers had introduced solid foods before the recommended age of 6 months, which according to Omotola and Akinyele (1985),the quantity the infant obtained from such diet would be little because of the physiological immaturity of the child and also the small size of the bowel. There is therefore a need for extension services in form of community outreach programs to educate mothers and caretakers of children on matters pertaining to nutrition (Latham, 1979). Poor education of the mothers can result in lack of knowledge about proper nutrition (Kikanfunda, et al 1998). This study did not attempt to estimate dietary

intakes, it is therefore impossible to make inferences about the adequacy of the complementary foods, the child was introduced to but with the fact that high prevalence of the nutritional indicators - stunting, wasting and underweight (Figure 2) discovered, there is good reason to suspect that the complementary foods are inadequate both in terms of quality and quantity and therefore does not meet the requirements of the infants. Both (Caufield et al 2004 and Pelletier et al 2003) reported a similar effect as a result of inadequate and unbalanced meals.

From the data, it is clear that access to health facility is still low in the area under study, with about 39.4% (4 out of every 10 children) of the children were delivered at places other than formal health facilities without the help of a skilled attendant. This is further compounded by the distance from these health facilities where available. 16.2% of the mothers reported that it would take them more than 30 minutes to get to the nearest health facility. Neonatal mortality has been reported to be highest among children not born in health facility (Oindo et al; 2009). Therefore, children have a higher degree of survival in their early days, when delivered in health facilities with the help of a skilled attendant (Stephens 1984). Infections due to contaminated foods and feeding utensils may be attributed to inadequate facilities in the household and the poor hygiene practices in the preparation of foods (Mathew et al 2009). This combine with inadequate dietary intake would result in vicious malnutrition cycle. With low access to safe water, poor sanitary and hygienic practices by most mothers/caregivers that participated in this study, the high prevalence of under nutrition among the children is not a surprise. According to the WHO, a prevalence of 5 – 9% wasting among children under the age of five years is considered poor (WHO 1995). Since preschool children are highly vulnerable to malnutrition, with wasting levels normally elevating in excess of 5% during severe shortages (WHO 1995), the present results suggest the children are living in appalling conditions that expose them to a possible multiplicity of the risks of malnutrition (Caufield et al 2004, Pelletier 2003). Although study on dietary intake of the children was not carried out, one may deduced that the high rate of stunting recorded generally is as a result of long duration of insufficient of food intake and also the same for the high rate of underweight which is usually as a result of insufficient intake of food to meet the daily energy and nutrients needs of children . Also the high prevalence of wasting (WHZ – 3SD) recorded is a good reason to suspect frequent intake of inadequate and unbalanced meals, which may weaken the immune system at long run making the children more susceptible to infections and other childhood diseases such as measles which when combined with poor living and hygienic conditions is likely to worsen the vicious cycle of malnutrition (deOnis et al 2000, Pelletier et al 1995).

## Conclusion

High levels of malnutrition in the present study underline the great need for nutritional intervention. Timely introduction of appropriate complementary feeding is a key factor in child growth. The results of this work indicated that mothers introduced the children to complementary food too early in life which may adduce to be a major contributory factor for the high incidences of undernutrition observed in this study. Therefore, the most urgent priority is to ensure access to, improve the quality and proper timing of complementary foods which should be given to the children as from six months old.

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