Ministry of Health

Lusaka Urban District Rapid Nutrition Assessment Report

December 2008

Summary

This report is based on a rapid assessment conducted in December, 2008 to ascertain the levels of malnutrition in Lusaka urban. It was a cross-sectional descriptive survey that was aimed at establishing factors that have led to an increase in under five year old malnutrition admission rates at the University Teaching Hospital. The study was undertaken following reports that during the period of August-October, 2008, the case load of severe malnutrition admissions to the University Teaching Hospital (Ward A07) had gone beyond seasonal trend with an average of 15 admissions daily making. This situation had resulted in overcrowding of the ward leading to children sharing beds (cots); on average 2-3 children shared a cot. In addition, the mortality rates among these admitted children were reported to be as high as 40-50 percent.

A desk assessment into this situation revealed that the majority of the admitted children were referred from Kamwala, Kanyama, Matero Reference, and Chawama Health Centers. Based on this, the National Food and Nutrition Commission and partners conducted this rapid assessment to ascertain the nutrition situation in these source areas of Lusaka urban as well as the factors that had led to this high increase in admissions.

Subjects and methods: Only households with children aged (0-59) months were included in the sample. The lists of Neighborhood Health Committee Zones which were the primary sources of the children were randomly selected in each of the targeted residential areas (Chawama, Kanyama, and Matero referral, George, Chazanga, Chipata and Kamwala). Based on the assumption that acute malnutrition (wasting) is the primary nutritional outcome of interest, a sample size of 640 children 0 to 59 months of age was calculated. Semi structured household questionnaires were administered in each of the targeted residential areas to collect the data from mothers/ caretaker of children at household level. Both qualitative and quantitative data was collected. Data was entered in Epi info version 6.4 and analysis was performed using Anthro, 2005 and SPSS version 12.

Results and Discussion: 1.2 percent children were severely malnourished (Weight-for-height), 24.1 were severely stunted (Height-for-age) and 9.5 percent were severely underweight (Weight-for-age). Although these children were not in hospital, the risks associative with severe malnutrition are immense.

Variations in the Prevalence's of wasting, stunting and underweight across the eight residential assessment areas were noticeable. ANOVA revealed that the place of residence of a child had significant ($P<0.05$) effects on anthropometric measurements and indices. This means that living in a particular residential area determined the nutritional status of a child. Chipata and Kamwala residential areas had prevalence's of stunting above 2.3 percent among the male children. At the same time, moderate malnutrition was also highest in the same areas among female children. A higher proportion of these children came from homes where parents had higher levels of education and in formal employment. Severe form of malnutrition, were found in homes where the head of household was in formal employment. It is not immediately clear why this is so, but more in-depth sociological and anthropological studies need to be done. However, the prevalence's found in this study except for Height-for-age were within the WHO acceptable levels.

Conclusion: The data presented in this study confirms that among children aged between 6 and 59 months, there is no critical severe wasting present and that stunting and underweight are the main problems of concern. The higher admissions of severe malnutrition in the University Teaching Hospital A07 ward would be attributed to other factors including system failure in the management of malnutrition both from primary health care clinics to tertiary level.

Recommendations:

Community Level

- There is a great need to strengthen the referral system in the management of malnutrition from community to all levels of management
- There is need to put in place motivation policy for the cadre conducting active case finding

- There is a need to strengthen the management of medically uncomplicated SAM at community level through OTPs
- Intensify community / social mobilization – to create early demand for management of SAM
- Social Mobilization to target preventative service delivery system.

Healthy Facility Level

- There is a great need to strengthen the referral system in the management of malnutrition from community to all levels of management
- Build capacity in management of SAM and avoid loss of life by
- Un-choking UTH, by having SAM stabilization centers
- There is a need to make available necessary supplies to manage SAM at all levels
- There is need to train more personnel in the management of SAM at all levels
- Improve overall (PMTCT, CBGMP, IYCF, CIMCI) programming

Policy Level

- Advocacy at higher decision making levels to improve resource allocation to enhance implementation of policy
- Strengthen coordinating efforts in the management of malnutrition.
- Need to look out for long term and sustainable strategies in preventing and managing moderate and severe malnutrition
- Focus should be on innovations that will strengthen the health care system.

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Abbreviations

CBGMP	Community Based Growth Monitoring Promotion
CIMCI	Community Integrated Management of Childhood Illnesses
CTC	Community Therapeutic Care
HAZ	Height for Age Z-score
HDDS	Household Dietary Diversity Score
KAP	Knowledge Attitude and Practices
LUDHMT	Lusaka Urban District Health Management Team
NFNC	National Food and Nutrition Commission
NHC	Neighborhood Health Committee
OTP	Out Patient Therapeutic Programme
PMTCT	Prevention of Mother to Child Transmission
PPS	Probability Proportionate to Size
SAM	Severe Acute Malnutrition
UTH	University Teaching Hospital
UNICEF	United Nations Children's Fund
VAC	Vulnerability Assessment Committee
WAZ	Weight for Age Z-score
WHO	World Health Organisation
WHZ	Weight for Height Z-score
ZDHS	Zambia Demographic Health Survey

Chapter 1

Introduction

The nutrition status of children has got a large bearing on the levels of malnutrition on the population of a country, especially African countries where child malnutrition is most prominent. Zambia has not been speared from high levels of malnutrition with wasting, (Weight-for-height) levels standing at 5Percent (ZHDS: 2001/02).

The University Teaching Hospital (UTH), malnutrition ward (A07) was the only in-service delivery point for the management of Severe Acute Malnutrition (SAM) in Lusaka, until in the recent past. The WHO guidelines were being applied and implemented to treat in-patients admitted to the unit. However, since 2005, the unit started to also serve as a stabilization centre, for all the 25 Out-patient Treatment centers of Lusaka following the introduction of Community Therapeutic Care (CTC) services in the city.

Over the last two years, the trend of admission in both rainy and off rainy seasons has shown a gradual increase. In the last three months (August-October, 2008) the case load at (A07) had gone beyond the seasonal trend with an average of 15 admissions daily making a total of over 120 children in the ward at any one point in time. This situation has resulted in overcrowding of the ward leading to children sharing beds (cots). There was another dimension that was noticed in the admission; children under one year including those less than six month were also being admitted to the unit. The mortality rates among the children admitted to the UTH malnutrition ward was also high at between 30-50Percent.

A number of factors could lead to this high rate of malnutrition cases. Studies into the number of factors leading to high admission rates in other countries have suggested that cultural factors and social behavior such as inadequate infant and young child feeding practices and also the high cost of food prices due to low productivity in a country (UNICEF, 2005), including communicable diseases are a major determinant of malnutrition.

In Zambia, and to be specific Lusaka urban, very few studies have been done in the area of malnutrition (weight-for-height and height-for-age). Even though the government and cooperating partners have put up measures in place to reduce the numbers of malnutrition cases (such as, supplementary food, OTP stabilizers and by providing Ready-to-Use-feed to children who are malnourished) malnutrition admissions have still been rising creating a huge concern among stake holders that are dealing with nutrition in the country and to be specific Lusaka district.

The National Food and Nutrition Commission with support from cooperating partners was mandated to conduct a rapid assess in order to establish the factors that have led to high malnutrition admissions at the UTH. A rapid desk assessment of the admission pattern both at UTH and out patient level indicated majority of the children to have come from Kamwala, Kanyama, Matero Reference, and Chawama Health Centres. These are sites characterized with low socio-economic status and usually highly exposed to slight changes in any form of economic instability. Further at the time of the assessment, there was a cholera outbreak in more or less the same localities indicating that there was a possible problem of the water and sanitation in this area. However, to do this effectively, a rapid assessment to ascertain the levels of malnutrition and its causes in Lusaka urban became necessary.

1.1 General Objective

The general objective of this assessment is to ascertain the current level of malnutrition in Lusaka urban and ascertain some factors that have led to high admission rates at the University Teaching Hospital among children aged between 0-59 months.

1.2 Specific Objectives

To find out the prevalence of acute under nutrition among children 6-59 months of age in residential areas that has contributed greatly to UTH malnutrition admissions in Lusaka urban:

a. To assess the current nutritional status among under five children in Lusaka urban
b. To assess the existing household food security patterns
c. To asses' service provision of PMTCT and IYCF In selected health centre.

d. To find out access to safe drinking water by households in the selected compounds

e. To assess the use household sanitary facilities.

Chapter 2

Subjects and Methods

2.1 Study Design

The assessment was conducted using a cross-sectional study design. This was also a very useful design for gathering information on aspects of people's knowledge, altitudes, and practices

2.2 Study Areas

The target areas for the nutrition assessment was the compounds that were reported to have had referred a high number of malnourished children to UTH – and these were Kamwala, Kanyama, Matero Reference, Chawama, George, Chazanga, Chipata and Mandevu Urban health centers.

2.3 Target Population and sample size

For the purpose of this assessment only households with children aged (0-59) months were included. Information collected included health, food consumption patterns and anthropometry. In households where there was more than one child that fell in this age category, all were included. Based on the assumption that acute malnutrition (wasting) was the primary nutritional outcome of interest; a sample size of 640 children aged 6 to 59 months was calculated using

Assessment tools

Household questionnaires were administered in each selected zones ranging from 27- 41 (See Tables 1 and 2)

Table 1: Assumptions and estimated sample size for selected nutritional outcomes, Zambia Nutritional Surveillance, June 2008.

Target group and indicator	**Estimated prevalence**	**Design effect**	**Desired Precision**	**Sample size**	**10Percent non-response rate**	**Households children/HH**
Children 6 – 59 Months						
Acute malnutrition (<-2 SD)	5Percent	2	± 2.5Percent	581	640	640

Table 2: Calculation of sample size for clusters using Probability Proportional to Size (PPS).

Health Facility	Population (0-59) Months	Proportion (Percent)	Number of Households to be interviewed	No of Catchment Zones	No of Questionnaires in each compound
Matero Ref	15,959	12	80	4	20
Chawama	17,602	14	88	4	22
Kamwala	14,612	11	73	5	15
Kanyama	20,985	16	105	3	35
Chipata	21,116	16	105	2	53
George	19,811	15	99	3	33
Mandevu	14,596	11	73	3	24
Chazanga	3,559	3	18	4	4
Total	**128,242**		**640**		
Sample	**640**				

2.4 Sampling of Zones and households

The list of NHC zones was obtained from health centres. The required number of zones in each health centre catchment area was randomly selected using random table numbers. All households were listed in each of the randomly selected NHC zones. The households that did not have children between the ages of 0 – 59 months were removed from the list. The required numbers of households, with children, in each of the selected zone were randomly sampled.

2.5 Data Collection Tools

2.5.1 Quantitative Data

The study used both a structured and semi-structured questionnaires. A structured questionnaire was used to collect information from mothers / caretaker of children at household level. While the other questionnaire was used to collect information from service providers.

2.5.2 Qualitative Data

A self administered questionnaire was used to collect information from health workers at the participating health centres. This questionnaire focused on issues related to Infant and Young Child Feeding (IYCF) and Prevention of Mother to Child Transmission (PMTCT).

2.6 Data Entry and Analysis

The collected data was centrally entered using Epi-info 6.0, Version 6.0. The cleaning and analysis of the data was done using SPSS version 12. The child anthropometry data was analyzed using WHO Anthro, 2005.

2.7 Data validation, reliability and quality control issues

The present assessment collected qualitative and quantitative data. It used a representative sample representing all residential areas that were significantly contributing to malnutrition admissions to the UTH. The sample consisted of 793 children's' weights and heights. From this 7.3 percent records were excluded from analysis as they were considered to have values that are biologically implausible based on scatter plots. Therefore, 735 with anthropometric records remained in the assessment.

From these weights, heights and including age, Z scores (Weight for height, Height for age and weight for age). The obtained Weight-for-Height (WHZ), Weight-for-Age (WAZ), Height-for-Age (HAZ) were then plotted by age group and by visual inspection outliers were observed. To verify whether these observed plots really contained outliers NCHS/WHO fixed exclusion range criteria was used as follows:

Z-score Height for Age : < -5.0 and > + 3.0

Z-score Weight for Age: < -5.0 and > + 5.0

Z-score Weight for Height: < -4.0 and > + 5.0

Z-scores outside these limits were therefore excluded from further analysis. 1.9 records of Z scores were excluded.

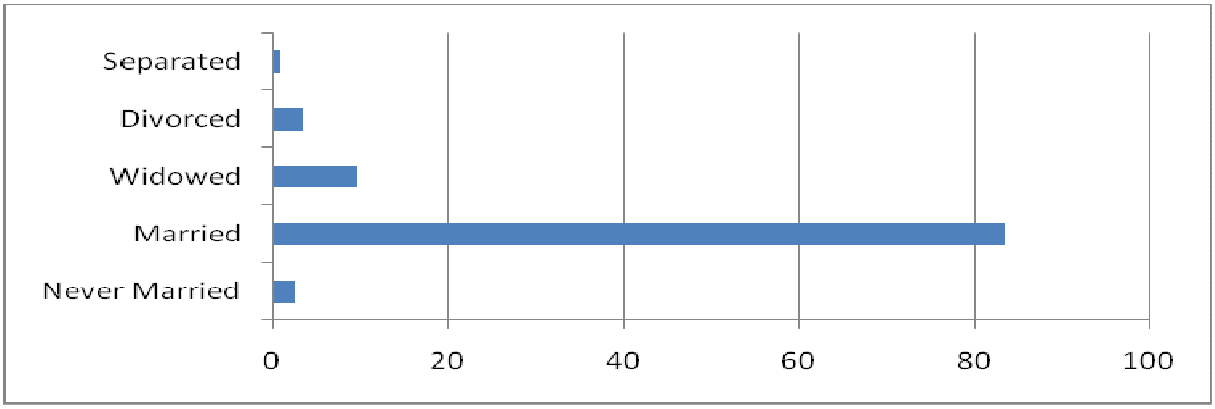
Chapter 3

Results

3. 0. Demographic Information

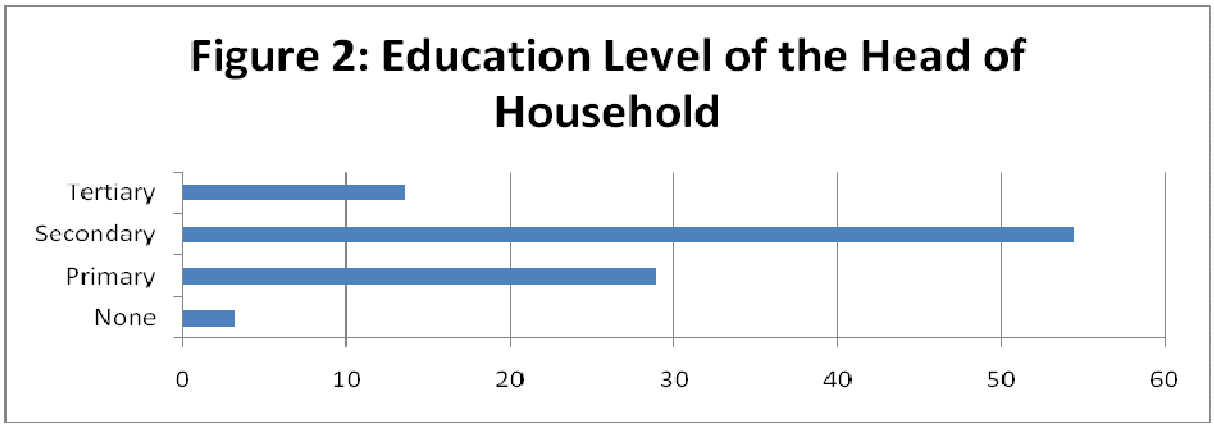
The average household size in the sampled population of was 5.7. Most of the household heads were males 82.6 percent. The proportion of households that were headed by females was 17.4 percent. About 80 percent of the head of households were married and 10 percent of them were widowed (Figure 1).

Figure 1: Marital Status of the head of Household



The rapid assessment revealed that about 54 percent of the head of households had attained secondary school education level, 13.6 percent had tertiary education. While 30 percent had attained primary school education (Figure 2). More than half (52 percent) of the head of households were employed in the informal sector, while 36.8 percent were formally employed and about 10 percent were not employed.

Figure 2: Education level of Head of Household



3.1 Nutritional status of children

The mean heights, weights, WHZ, HAZ, and WAZ were calculated for each age and gender group and over the whole population. Analysis of variance tests were performed within each age and gender group to determine if there were significant interactions or effects on the main variables of interest. The interaction effects were investigated for place of residence, gender, age and a combination of these effects. Depending on the outcome of the test, the Least Significant Tests (LSD) was also performed to check which of the areas of residence or age groups differ in effects on the variable of interest. T-tests were also performed to determine if there were significant differences between the two gender groups for different effects on different variables in each age group. Chi Square tests were performed to determine existence of differences in the proportions of boys and girls who are malnourished. Within each gender group, chi square tests were also performed to determine any differences in the proportions that are malnourished across the age groups.

3.1.1 Heights and weights of children

The mean heights of children increased from 75 cm in boys and 76 cm in girls in the age group 6 to 11 months to 93 cm in boys and 94 cm in girls in the age group 48 to 60 months (See Table 1). As expected, age had a significant effect on the heights of children ($F=50.905$, $P=0.00$). No across gender effects were seen. However, a comparative analysis of the differences in heights in the age groups using the Least Significant Differences (LSD) method within the gender categories showed significant differences in the heights in all age groups ($P<0.05$).

Mean weights increased from 10 kg in both boys and girls in the first age group to 15 kg in boys and 14 Kg in girls in the age group 48 to 60 months (See Table 1). As expected, age had a significant effect on the weights of the children (F=55.186, P=0.00). Each age group was also significantly different from each other in the weights (P<0.05).

Table 1: Nutritional status of children

Age group (Months)	Boys		Girls	
	Height (cm)	**Weight (kg)**	**Height (cm)**	**Weight (kg)**
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
6 -11	74.8 (14.2)	9.9 (3.0)	76.0 (13.6)	9.7 (3.1)
12-23	75.8 (9.8)	10.2 (2.4)	77.5 (8.3)	10.2(2.3)
24-35	83.1 (8.9)	12.0 (2.3)	83.1 (10.0)	12.2 (2.7)
36-47	84.7 (11.4)	12.9 (2.8)	88.2 (8.0)	13.3(2.3)
48-60	93.4 (10.3)	14.8 (2.9)	93.5 (11.6)	14.3 (3.6)
All	**82.5 (12.5)**	**11.9 (3.2)**	**83.9 (12.0)**	**12.1 (3.2)**

3.1.2 Children's mean Weight for Height Z-scores

The mean Weight-for-Height Z scores among boys increased from 0.7 at age group 6 to 11 months to 1.0 at age group 36 to 47 months. A decrease in Z scores was seen to 0.5 by age group 48 to 60 months (See Table 2). Amongst the girls, the mean weight for height Z scores increase from 0.4 at age group 6 to 11 months to 1.2 by age group 48 to 60 (See Table 4). The place of residence of a child had significant effects on the weight for height of children (F=2.147, P=0.04). These effects were however, the same for Chawama, Chazanga, Chipata, George, Kamwala, Mandevu and Matero (P>0.05). Kanyama was statistically different from these other areas (P=0.03). The mean values by place of residence are indicated in Table 5.

Table 2: Children's mean Weight for Height Z-scores

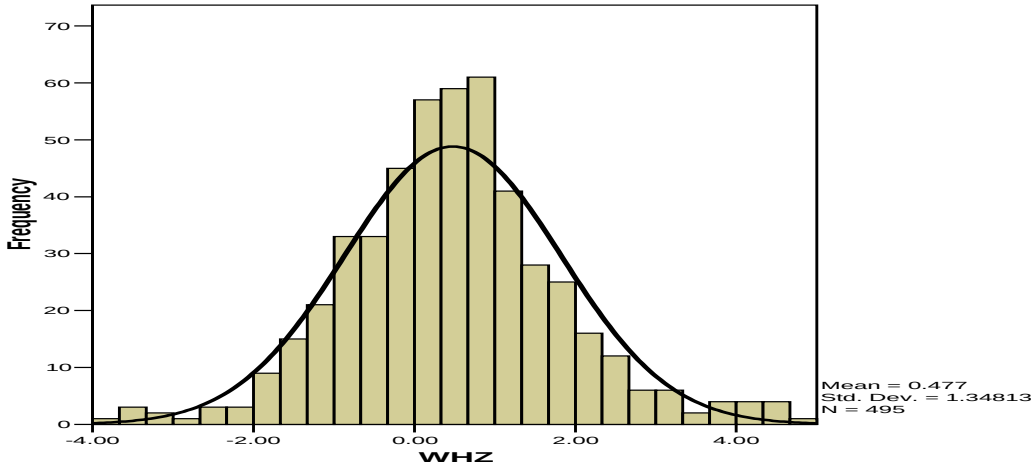
Age group (Months)	Boys		Girls	
	Mean (SD)	**n**	**Mean (SD)**	**n**
6 -11	0.7 (1.6)	30	0.4 (1.7)	32
12-23	0.8 (2.2)	68	0.5 (1.7)	58
24-35	0.7 (1.8)	47	0.5 (1.3)	67
36-47	1.0 (2.3)	47	0.5 (1.3)	52
48-60	0.5 (1.6)	47	1.2 (2.2)	56
All	**0.7 (1.9)**	**240**	**0.6 (1.7)**	**265**

The overall frequency distribution of the weight for height Z scores of children in this assessment revealed that nutritional status of children based on the weight for height Z scores followed a normal distribution (mean=0.5, SD=1.3, n=495), when compared with the reference population (See figure 3).

Table 3: Children's mean Weight for Height Z-scores

Age group (Months)	Mean Weight-for-Height		Mean Height-for- Age	
	Boys	**Girls**	**Boys**	**Girls**
Chawama	0.7	0.3	-2.0	-2.1
Chazanga	0.5	0.0	-2.3	-2.2
Chipata	0.5	0.9	-2.2	-1.8
George	0.1	0.7	-1.1	-2.2
Kamwala	0.6	1.0	-2.0	-1.0
Kanyama	0.1	0.0	2.0	-1.0
Mandevu	0.8	0.3	-1.3	-0.7
Matero	0.2	0.1	-	-

Figure 3: Frequency distribution of Weight for height mean values of children aged 6 - 59 months old



3.1.3 Children's mean height for age Z scores

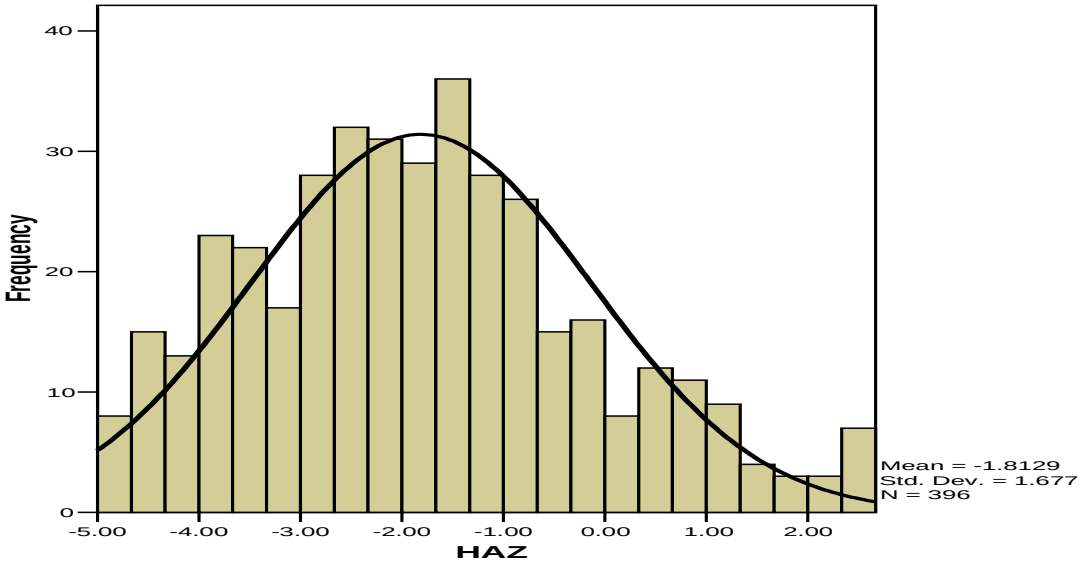
Mean Height-for-Age z-scores (HAZ), ware similar in all the age groups of the male gender category (See Table 6). In girls the mean HAZ increased from -1.8 to -1.4 although it decreased to -1.5 in the age group 48 to 60 (See Table 4).

The place of residence had a significant effect on the mean Height-for-Age of children (F=2.87, P=0.01). Across gender effects were however similar in all the age groups except

Table 4: Children's mean Height for age Z-scores

Age group (Months)	Boys		Girls	
	Mean (SD)	**n**	**Mean (SD)**	**n**
6 -11	-2.0 (1.8)	22	-1.8 (1.6)	23
12-23	-1.8 (1.8)	57	-1.8 (1.5)	46
24-35	-1.9 (1.5)	38	-1.8 (1.8)	51
36-47	-2.0 (1.8)	35	-1.4 (1.6)	39
48-60	-2.0 (1.6)	37	-1.5 (1.6)	42
All	**-1.9 (1.7)**	**189**	**-1.6 (1.6)**	**201**

Figure 4: Frequency distribution of Height-for age mean values of children aged 6 - 59 months old



3.1.4 Children's mean Weight for age Z-scores

The mean weight-for-age Z scores increased with the increasing age in boys, while the increase of WAZ in girls is not uniform (See Table 5). In boys, the Z scores increased from -1.1 in the 6 to 11 months age group to -0.5 in the 48 to 60 months age group. In girls, the increase is from -0.8 to -0.1

The place of residence of children has significant effects on the WAZ of children (F=25.558, P=0.000). The LSD however shows that except for Chawama and Chazanga which do not show significant differences (P>0.05) the other areas; Matero, Chipata, George, Kamwala, Kanyama and Mandevu are significantly different from each other (P<0.05).

Table 5: Children's mean Weight for age Z-scores

Age group (Months)	Boys		Girls	
	Mean (SD)	**n**	**Mean (SD)**	**n**
6 -11	-1.1 (2.4)	31	-0.5 (3.2)	35
12-23	-0.8 (1.7)	70	-0.2 (2.3)	59
24-35	-1.0 (2.1)	46	-0.8 (2.5)	69
36-47	-0.9 (1.8)	46	-0.1 (2.0)	49
48-60	-0.5 (2.7)	51	-0.4 (2.3)	54
All	**-0.8 (2.1)**	**244**	**-0.4 (2.4)**	**266**

3.1.5 Prevalence of malnutrition

The assessment shows that overall, 1.2 percent children in Lusaka were severely malnourished (Weight-for-height), 24.1 percent were severely stunted and 9.5 percent were severely underweight (See Table 6)

Table 6: Prevalence of malnutrition in Lusaka urban

	Prevalence		
Index	**Severe**	**Moderate**	**Normal**
Weight-for-height	1.2 (6)	1.4 (7)	97.4 (486)
Height-for-age	24.1 (98)	22.4 (91)	53.4 (217)
Weight-for-age	9.5 (47)	11.5 (57)	78.9 (390)

3.1.6 Prevalence of malnutrition by place of residence

ANOVA shows that the area of residence of a child in Lusaka urban has significant effects in determining the WHZ (F=2.147, P=0.04), HAZ (F=2.878, P=0.01) and WAZ (F=25.558, P=0.00) of children. When the results are presented by area of residence, the results show that more male children than female children were wasted, stunted and underweight (See Table 7). Kanyama and Kamwala compounds have the highest prevalence's of children with severe

wasting. For stunting Kamwala has the highest prevalence. Chazanga had more underweight children (See Table 9).

Table 7: Prevalence of malnutrition by residential area

Place of residence	Prevalence by indicator Type								
	WHZ			**HAZ**			**WAZ**		
	Sever	**Mode**	**Normal**	**Sever**	**Mode**	**Normal**	**Sever**	**Mode**	**Normal**
Chawama									
Male	1.6 (1)	1.6 (1)	96.9 (62)	29.6 (16)	16.7 (9)	53.7 (29)	14.5 (9)	6.5 (4)	79.0 (14)
Female	2.0 (1)	0.0	98.0 (48)	24.4 (11)	26.7 (12)	48.9 (22)	16.0 (8)	16.0 (8)	68.0 (34)
Chazanga									
Male	0.0	0.0	100.0 (15)	30.0 (3)	30.0 (3)	40.0 (4)	22.2 (4)	22.2 (4)	55.6 (10)
Female	0.0	6.7 (1)	93.3 (14)	30.8 (4)	15.4 (2)	53.8 (7)	7.1 (1)	28.6 (4)	64.3 (9)
Chipata									
Male	2.3 (1)	2.3 (1)	95.3 (41)	29.7 (11)	29.7 (11)	40.5 (15)	7.0 (3)	9.3 (4)	83.7 (36)
Female	0.0	0.0	100.0 (51)	26.2 (11)	16.7 (7)	57.1 (24)	5.5 (3)	12.7 (7)	81.8 (45)
George	0.0	3.1 (1)	96.9 (31)	21.9 (7)	15.6 (5)	62.5 (20)	2.9 (1)	11.4 (4)	85.7 (30)
Male									
Female	0.0	0.0	100.0 (45)	25.0 (10)	27.5 (11)	47.5 (19)	8.9 (4)	11.1 (5)	80.0 (36)
Kamwala	4.2 (1)	0.0	95.8 (28)	35.0 (7)	30.0 (6)	35.0 (7)	11.5 (3)	15.4 (4)	73.1 (19)
Male									
Female	0.0	0.0	100.0 (21)	5.6 (1)	38.9 (7)	55.6 (10)	4.5 (1)	13.6 (3)	81.8 (18)
Kanyama	5.9 (2)	0.0	94.1 (32)	25.8 (8)	16.1 (5)	58.1 (18)	8.1 (3)	5.4 (2)	86.5 (32)
Male									
Female	0.0	8.1 (3)	91.9 (34)	13.8 (4)	20.7 (6)	65.5 (19)	10.8 (4)	8.1 (3)	81.1 (30)
Mandevu	0.0	0.0	100.0 (12)	25.0 (2)	0.0	75.0 (6)	8.3 (1)	5.4 (2)	86.5 (32)
Male									
Female	0.0	0.0	100.0 (32)	5.0 (1)	25.0 (5)	70.0 (14)	0.0	17.9 (5)	82.1 (23)
Matero	0.0	0.0	100.0 (8)	0.0	0.0	100.0 (1)	0.0	0.0	100.0 (2)
Male									
Female	0.0	0.0	100.0 (10)	-	-	-	-	-	-
†**Lusaka urban**	**2.2 (5)**	**1.3 (3)**	**96.6 (224)**	**28.0 (54)**	**20.2 (39)**	**51.8 (100)**	**10.2 (24)**	**9.4 (22)**	**80.4 (189)**
Male									
Female	**0.4 (1)**	**1.5 (4)**	**98.1 (255)**	**20.3 (42)**	**24.2 (50)**	**55.6 (115)**	**8.3 (21)**	**13.9 (35)**	**77.8 (196)**

*Sever=Severe; Mode=Moderate; Norm= Normal.

†Matero not included

3.1.7 Wasting by age group

The proportions of children aged 6 months to 59 months being classified as malnourished using the 2005 WHO reference population of Anthro 2005 show that more boys than girls were severely malnourished in nearly all age groups (See Table 8). More girls were moderately malnourished.

Table 8: Nutritional status* of children

Age group (Months)	Severe % (n)		Moderate % (n)		Normal % (n)	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
6 -11	3.3 (1)	0.0	0.0	9.4(3)	96.7 (29)	90.6 (29)
12-23	1.5 (1)	1.8 (1)	3.0 (2)	0.0	95.5(63)	98.2 (55)
24-35	2.2 (1)	0.0	0.0	1.5 (1)	97.8 (44)	98.5 (67)
36-47	0.0	0.0	2.2 (1)	0.0	97.8 (44)	100 (52)
48-60	4.3 (2)	0.0	0.0	0.0	4.3 (2)	100 (52)
Lusaka Urban	**2.2 (5)**	**0.4 (1)**	**1.3 (3)**	**1.5 (4)**	**96.6 (224)**	**98.1 (255)**

**Using weight-for-height Z scores*

3.1.8 Stunting by age group

Chi square tests have shown that during this study, both male and female children aged 6 – 11 months more stunted than the other age groups (Table 9).

Table 9: Nutritional status* of children

Age group (Months)	Severe % (n)		Moderate % (n)		Normal % (n)	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
6 -11	36.4 (8)	26.1 (6)	9.1 (2)	13.0 (3)	54.4 (12)	60.9 (14)
12-23	23.7 (14)	20.0 (10)	20.3 (12)	26.0 (13)	55.9 (33)	54.0 (27)
24-35	20.5 (8)	23.1 (12)	20.5 (8)	28.8 (15)	59.0 (23)	48.1 (25)
36-47	37.1 (13)	15.0 (6)	14.3 (5)	20.0 (8)	48.6 (17)	65.0 (26)
48-60	28.9 (11)	19.0 (8)	31.6 (12)	26.2 (11)	39.5 (15)	54.8 (23)
Lusaka Urban	**28.0 (58)**	**20.3 (42)**	**20.2 (39)**	**24.2 (50)**	**51.8 (100)**	**55.6 (115)**

**Using Height-for-age Z scores*

3.1.9 Underweight by age group

More children in the age groups 6 – 11 months and 12 – 23 months were severely underweight when compared with other age groups in both male and female gender groups (See Table 10).

Table 10: Nutritional Status* of Children

Age group (Months)	Severe % (n)		Moderate % (n)		Normal % (n)	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
6 -11	30.0 (9)	18.8 (6)	3.3 (1)	18.8 (6)	66.7 (20)	62.5 (20)
12-23	30.0 (2)	5.3 (3)	11.9 (8)	7.0 (4)	85.1 (57)	87.7 (50)
24-35	11.4 (5)	12.3 (8)	4.5 (2)	18.5 (12)	84.1 (37)	69.2 (45)
36-47	10.9 (5)	2.1 (1)	8.7 (4)	14.6 (7)	80.4 (37)	83.3 (40)
48-60	6.3 (3)	6.0 (3)	14.6 (7)	12.0 (6)	79.2 (38)	82.0 (41)
Lusaka Urban	**10.2 (24)**	**8.3 (21)**	**9.4 (22)**	**13.9 (35)**	**80.4 (189)**	**77.8 (196)**

**Using Weight -for-age Z scores*

3.1.10 Malnutrition by level of education of head of household

The results show that wasting was lowest in households with heads of households who had no formal education. Households with heads with tertiary education had the highest levels of severely wasted children (See Table 11).

Table 11: Wasting by level of education of household head

Level of education	Severe % (n)	Moderate % (n)	Normal % (n)
None	0	0	100 (14)
Primary	0.8 (1)	1.6 (2)	97.7 (126)
Secondary	1.0 (2)	1.9 (4)	97.1 (203)
Tertiary	3.3 (2)	0	96.7 (58)

With regard to stunting, the results show that heads of households with primary level education had the highest levels of severe stunting (See Table 12). Moderate stunting was highest among heads of households with tertiary level education.

Table 12: Stunting by level of education of household head

Level of education	Severe	Moderate	Normal
	% (n)	% (n)	% (n)
None	16.7 (2)	8.3 (1)	75.0 (9)
Primary	29.4 (32)	23.9 (26)	46.8 (51)
Secondary	24.5 (45)	23.9 (44)	51.6 (95)
Tertiary	20.0 (10)	28.0 (14)	52.0 (26)

Table 15 shows that heads of households with no formal education had the highest proportions of children with severe underweight (See Table 13).

Table 13: Underweight by level of education of household head

Level of education	Severe	Moderate	Normal
	% (n)	% (n)	% (n)
None	12.2 (2)	12.5 (2)	75.0 (12)
Primary	11.7 (15)	12.5 (16)	75.8 (97)
Secondary	8.6 (19)	13.2 (29)	78.2 (172)
Tertiary	14.5 (9)	8.1 (5)	77.4 (48)

3.1.11 Nutrition status by occupation of parents

This study revealed that more children in households with parents in formal employment were severely wasted when compared with those in informal employment.

Table 14: Wasting by occupation of parents

Occupation	Severe % (n)	Moderate % (n)	Normal % (n)
Formal employment	2.7 (4)	1.4 (2)	95.9 (141)
Informal employment	0.5 (1)	1.4 (3)	98.2 (216
None	0	2.1 (1)	97.3

The Table below shows that more children in households of informally employed heads of households had higher prevalence of stunting compared to those in formally and none employed (See Table 15).

Table 15: Stunting by occupation of parents

Occupation	Severe % (n)	Moderate % (n)	Normal % (n)
Formal employment	24.3 (33)	25.7 (35)	50.0 (68)
Informal employment	26.0 (47)	24.9 (45)	49.2 (89)
None	22.5 (9)	15.0 (6)	62.5 (25)

More children with parents in informal employment were also underweight compared to those in formally and none employed (See Table 16).

Table 16: Underweight by occupation of parents

Occupation	Severe % (n)	Moderate % (n)	Normal % (n)
Formal employment	10.8 (17)	14.0 (22)	75.2 (118)
Informal employment	11.2 (25)	12.5 (28)	76.3 (171)
None	6.4(3)	4.3 (2)	89.4 (42)

3.2 Household and Child Dietary Diversity Score

Dietary diversity

Household Dietary Diversity Score (HDDS) has been developed in light of the need to build consensus on household food access impact indicators.

Household dietary diversity, *the number of different food groups consumed over a given reference period,* is an attractive proxy indicator for the following reasons; A more diversified diet is an important outcome in and of itself. It is documented that a more diversified diet is associated with a number of improved outcomes in areas such as birth weight, child anthropometric status, and improved hemoglobin concentrations. It is also known that a more diversified diet is highly correlated with such factors as caloric and protein adequacy, percentage of protein from animal sources (high quality protein), and household income. Even in very poor households, increased food expenditure resulting from additional income is associated with increased quantity and quality of the diet.

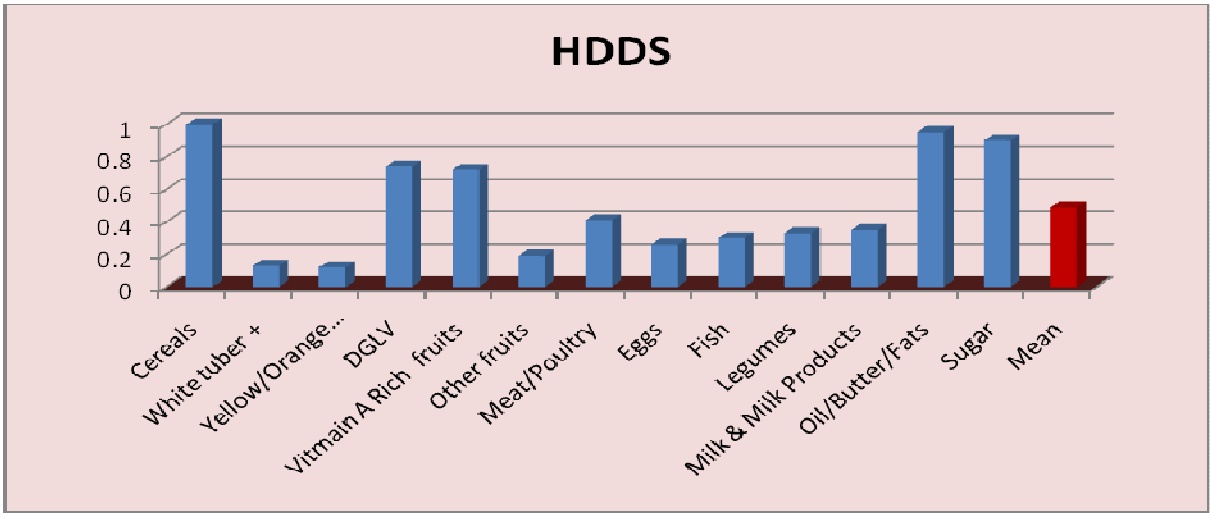
To better reflect a quality diet, the number of different food groups consumed is calculated, rather than the number of different foods consumed. Knowing that households consume, for example, an average of four different food groups implies that their diets offer some diversity in both macro- and micronutrients. This is a more meaningful indicator than knowing that households consume four different foods, which might all be cereals.

Information on household food consumption was collected using the previous 24-hours as a reference period (24-hour recall). Longer reference periods result in less accurate information due to imperfect recall.

3.2.1 Mean Household Diet Diversity

The mean Household Diet Diversity Score (HDDS) was 0.49 (Figure 5). This means that most of the households consumed about 6 out of the 13 food groups. The commonest food groups that were reported to be consumed were cereals, Oil/butter/fats, Sugar, Green leaf vegetables and vitamin A rich fruits and vegetables.

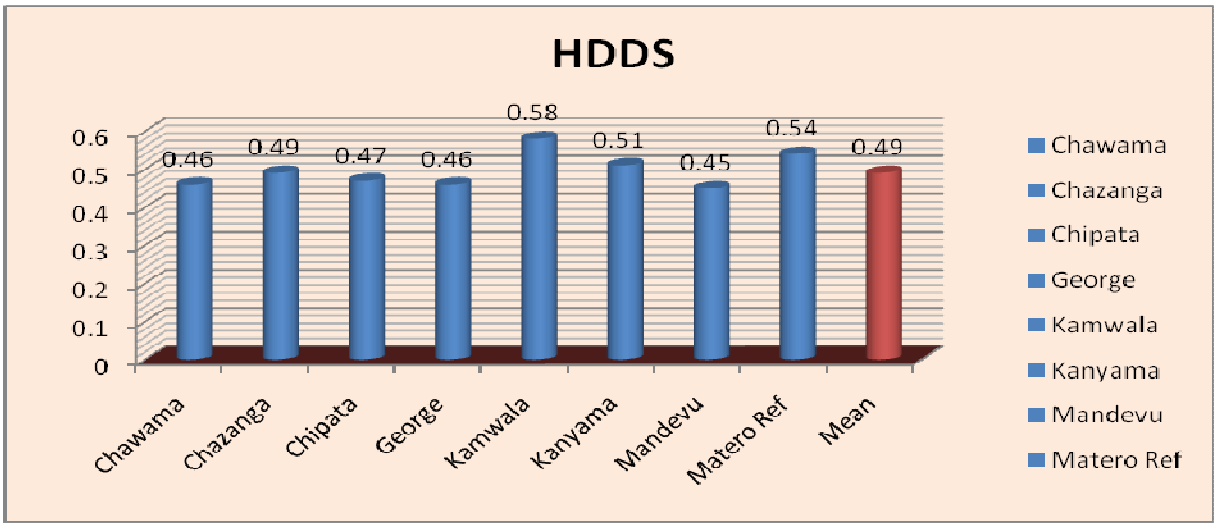
Figure 5: Mean household diversity score



3.2.2. Household diet diversity score (HDDS) by residential area

The HDDS was higher in Kamwala (0.58) and Matero Reference at (0.54). Chawama (0.46), George (0.46) and Mandevu (0.45) had the lowest HDDS.

Figure 6: Household Diet Diversity Score by Residential Area

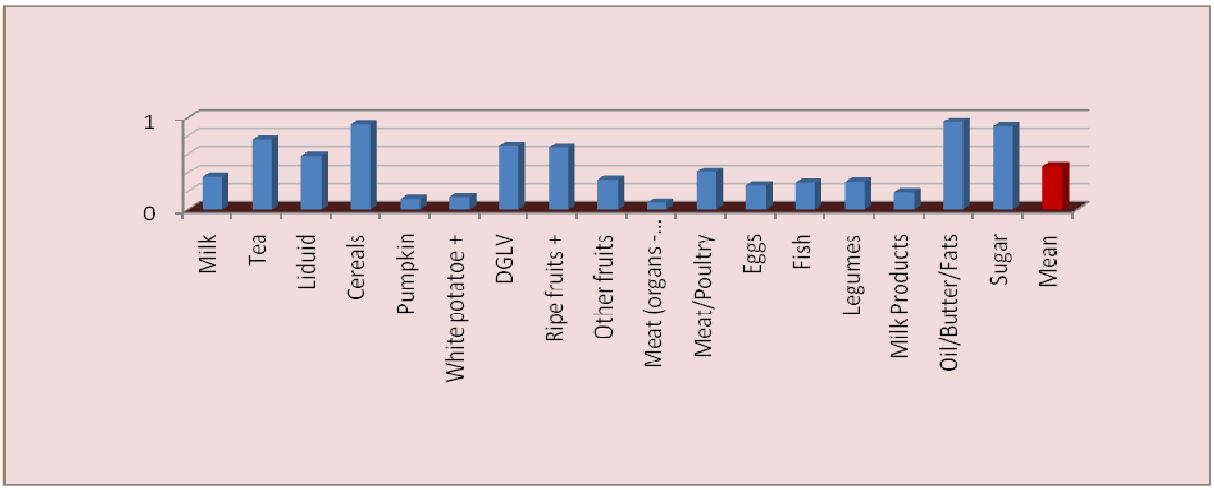


3.2.3 Mean children diet diversity score

3.2.4 Mean Child Diet Diversity

Mean child individual diet diversity score was 0.47. The food groups that were reported to be commonly consuming by children were cereals, Oil/butter/fats, sugar, tea/coffees, ripe fruits and dark-leaf vegetables.

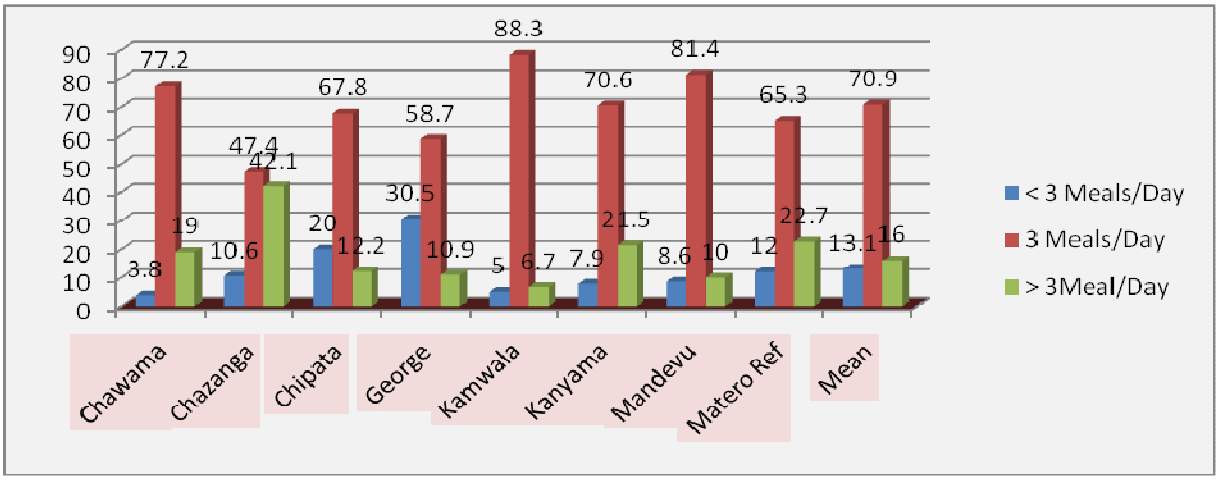
Figure 7: Children Diet Diversity score



3.2.5 Number of Meal children Ate in a day

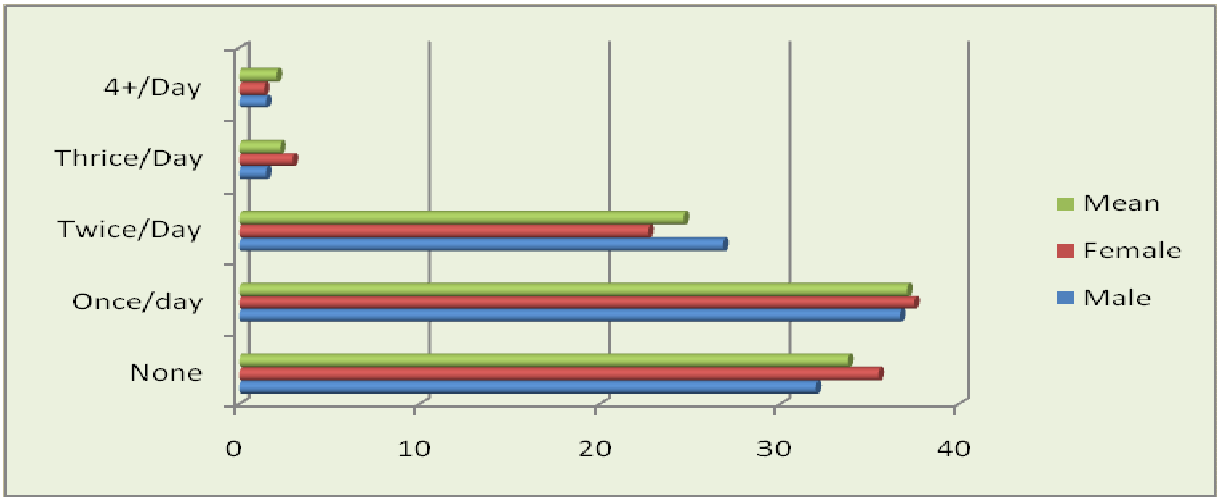
At least 71 percent of all the study sites indicated that children had three meals in a day while 16 Percent reported more than 3 meals in a day and 13 percent indicated less than 3 meals in a day. About 30 percent of households from George showed children had less than 3 meals in day followed by Chipata (20 percent) and Matero Reference (12 percent). On the contrary, 42 Percent of households in Chazanga reported children had more than three meals in day.

Figure 8: Children's Number of Meals per day



Children rarely have snacks with 25 percent reporting no snacks given and 37.8 Percent one snack per day. 28.7 Percent given snacks twice in day.

Figure 9: Number of Snacks children ate in the past 24 hours



3.2.6 Amount of food consumed in the past month

With regards to amount of food consumed is the previous month (November), 45.1 percent indicated no change in amounts. However, about 27 percent of households indicated an increase in amounts consumed while about 21 percent stated a reduction in amounts consumed.

3.3 Water, Sanitation and Hygiene

Water and Sanitation

This section deals with data pertaining to two objectives dealing with water and sanitation namely "To determine access to safe drinking water by households in the selected townships and "To assess the use household sanitary facilities."

The results of the rapid assessment reviewed that, 182 (30.4 percent) households were receiving their water from private taps while another 405 (67.7 percent) households were drawing their water from public taps. Only 11 households, 8 (1.3 percent) and 2 (0.3 percent) were drawing from bore holes and unprotected wells respectively while only 1 (0.2 percent) household was using a protected well.

Table 17: Source and access of drinking water

Water Source	Percent	(n)
Private tap	30.4	(182)
Public tap	67.7	(405)
Bore hole	1.3	(8)
Unprotected well	0.3	(2)
Protected well	0.2	(1)
Total	**100**	**598**

The survey reviewed that Matero reference had the highest number (97.3 percent) of households that were using private taps while there were no households that were using private taps in George compound. The results are summarized in the table below.

Table18: source of water by residence

	Private tap	Public tap	Bole hole	Un protected well	Protected	Private tap
Chawama	29.6	70.4	0.0	0.0	0.0	100
Chazanga	15.0	35.0	35.0	10.0	5.0	100
Chipata	3.3	95.7	1.1	0.0	0.0	100
George	0.0	100.0	0.0	0.0	0.0	100
Kamwala	57.1	42.9	0.0	0.0	0.0	100
Kanyama	15.5	84.5	0.0	0.0	0.0	100
Mandevu	38.0	62.0	0.0	0.0	0.0	100
Matero Reference	97.3	2.7	0.0	0.0	0.0	100
Total	**30.4**	**67.7**	**1.3**	**0.3**	**0.2**	**100**
P- Value						**< 0.00**

3.3.1 Method of treating drinking water

The results of this survey revealed that 53.4 percent of the households were treating their drinking water while 11.3 percent of the households were treating their water only sometimes. A total of 211 (35.3 percent) households indicated that they did not treat their water in anyway. The table below summarizes these findings.

Table 19: Treatment of water by households

	Frequency	Percent
Yes	319	53.4
No	211	35.3
Sometimes	67	11.3
Total	**597**	**100**

The survey further revealed that 83.8 percent of the households were using chlorine as a water treatment method while 11.5 percent and 4.7 percent households used boiling and other methods of water treatment respectively.

Table 20: Method used in the treatment of water

	Frequency	Percent
Chlorine	341	83.8
Boiling	47	11.5
Other specify	19	4.7
Total	**407**	**100**

3.3.2 Type of sanitary facility

The results of the survey reviewed that 18.1 percent of the households were using flush toilets while the majority of households (80.2 Percent) were using their own traditional pit latrine. This summarized in the tables below.

Table 21: Type of sanitary facility used

	Frequency	Percent
Flush toilet	108	18.1
Pit latrine/Traditional latrine	479.0	80.2
Ventilated improved pit-latrine	7	1.2
Other	3	0.5
Total	**597**	**100**

3.3.3 Method of refuse disposal

The results of the survey reviewed that 36.0 percent and 41.5 percent of the households indicated that they used rubbish pits and the bin as a method of disposal respectively. The survey also reviewed that 13.4 Percent of the households indicated that they used the open ground/ field for refuse disposal. Only 9.2 percent of the households reported using other methods. These findings are summarized in the table below.

Table 22: Type of refuse disposal

	Frequency	Percent
Rubbish pit	215	36.0
Bin	248	41.5
Open field	80	13.4
Other	55	9.2
Total	598	100

3.3.4 Source of drinking water by education level

The source of drinking water results indicated that household heads with higher education at secondary and tertiary levels mainly drew their water from private taps. The results further revealed that 67.9 percent of households with heads having attained tertiary level education drew water from private taps. However, majority of household heads with primary or no education drew water from the public taps (Table 23).

Table 23: source of drinking water by education

	None		Primary		Secondary		Tertiary	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Private tap	3	15.8	26	15.1	98	30.2	55	67.9
Public tap	16	84.2	139	80.8	223	68.8	25	30.9
Bole hole	0	0	4	2.3	3	0.9	1	1.2
Unprotected well	0	0	2	1.2	0	0	0	0
Protected well	0	0	1	0.6	0	0	0	0

3.3.5 Treatment of water by education level

Table 24 reveals that household heads with higher education level (secondary and tertiary education) treated their drinking water.

Figure 24: treatment of water by educational level

	None		Primary		Secondary		Tertiary	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Yes	9	47.4	83	48.3	168	52.2	57	70.4
No	4	21.1	65	37.8	121	37.6	21	25.9
Sometimes	6	31.6	24	14.0	33	10.2	3	3.7

3.3.6 Method of water treatment by education level

Table 25 shows that most households treated their drinking water using chlorine regardless of the education level of the household head.

Figure 25: Method of water treatment by education

	None		Primary		Secondary		Tertiary	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Chlorine	13	86.7	99	90.0	178	82.0	49	80.3
Boiling	2	13.3	7	6.4	27	12.4	11	18.0
Other	0	0.0	4	3.6	12	5.5	1	1.6

3.3.7. Sanitary facilities by education level

The type of sanitary facilities results indicated that most household with heads with tertiary education used flush toilets while households with no, primary and secondary education used pit latrines. The results are summarized in the table below.

Figure 26: type of sanitary facility by education level of household

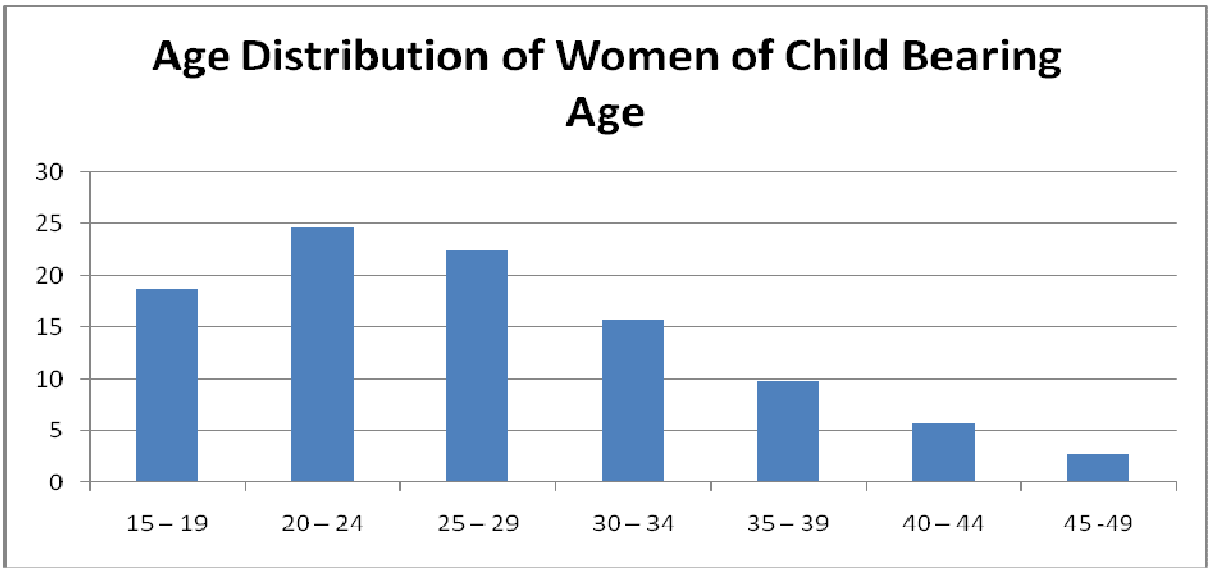
	None		Primary		Secondary		Tertiary	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Flush toilet	2	11.1	12	7.0	50	15.4	44	54.3
Pit latrine	16	88.9	155	90.1	269	83.0	37	45.7
VIP	0	0.0	3	1.7	4	1.2	0	0.0
Other	0	0.0	2	1.2	1	0.3	0	0.0

3.4 Maternal Health and Nutrition

3.4.1 Material Nutrition

On average there were 1.4 women of child bearing age in each household. The average age of women in the sampled population was 26.8 years. There was a high proportion of younger women of child bearing age in the sample (15-34 Years), (figure 10).

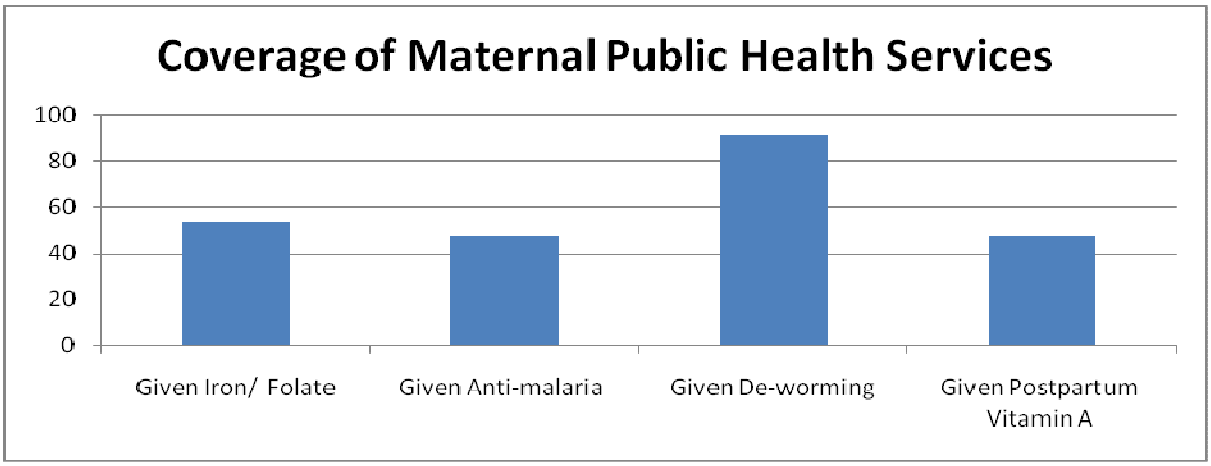
Figure 10: Age distribution of women of child bearing age



Ten percent of women of child bearing age reported to be pregnant during the assessment. Among those pregnant, 53 percent reported to have been given Iron and Folate Supplements. Half (50 percent) of the women who were pregnant also reported to have been given a dose of anti-malarial prophylaxis while 5.5 percent of women who were pregnant reported to have been given de-worming tablets.

The survey showed that iron and folic supplementation coverage was higher (73.2 percent) among older women (40 – 49 years) than the younger ones. Less than half (48 percent) of women received postpartum Vitamin A Supplementation within eight (8) weeks of their most recent delivery while 47 percent of pregnant women were given prophylaxis anti-malaria.

Figure 11: Coverage of maternal public health services



3.5 Infant and Young Child Feeding

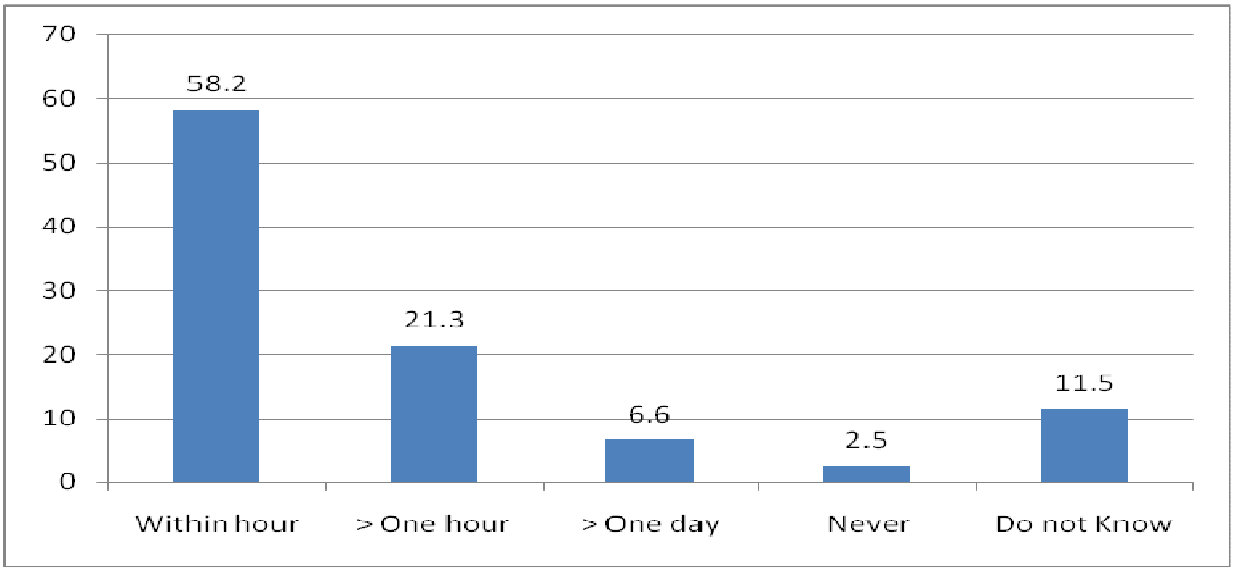
Appropriate feeding practices are critical for the survival, growth, development, health and nutrition of infants and children. They are also of importance to the well-being of mothers. Feeding practices are one of the underlying causes of children's nutritional status, which in turn influence the risk of illness and ultimately death. Breastfeeding benefits depend on several key factors, including the initiation of breastfeeding, the length of time a child is breastfed, and the frequency and intensity of breastfeeding.

3.5.1 Initiation of Breastfeeding

It has been well documented that breastfeeding is sufficient and beneficial for infant nutrition in the first six months of life. Early initiation of breastfeeding (breastfeeding within one hour) facilitates the newborn's innate sucking reflex, which helps to stimulate breast milk production and provides all of the nutritional requirements of a young infant (Righard and Alade, 1990). It has been established that high concentration of antibodies in colostrum protects the child from infection before the child's immune system has matured. Early initiation also encourages the bond between mother and baby and helps to maintain the baby's body temperature. Early initiation of breastfeeding also helps the uterus to retract, hence reducing postpartum blood loss of the mother.

The rapid nutrition assessment survey revealed that about 58 percent of children in the sampled population were initiated to breastfeeding within one hour compared to 21 percent who were introduced to the breast after an hour, but within a day (Figure 12). These finding are comparable to the finding of the ZDHS 2001-2 where about 51 percent of infants were put on to the breast within one hour after birth and 90 percent started breastfeeding within the first day.

Figure 12: Initiation of Breastfeeding

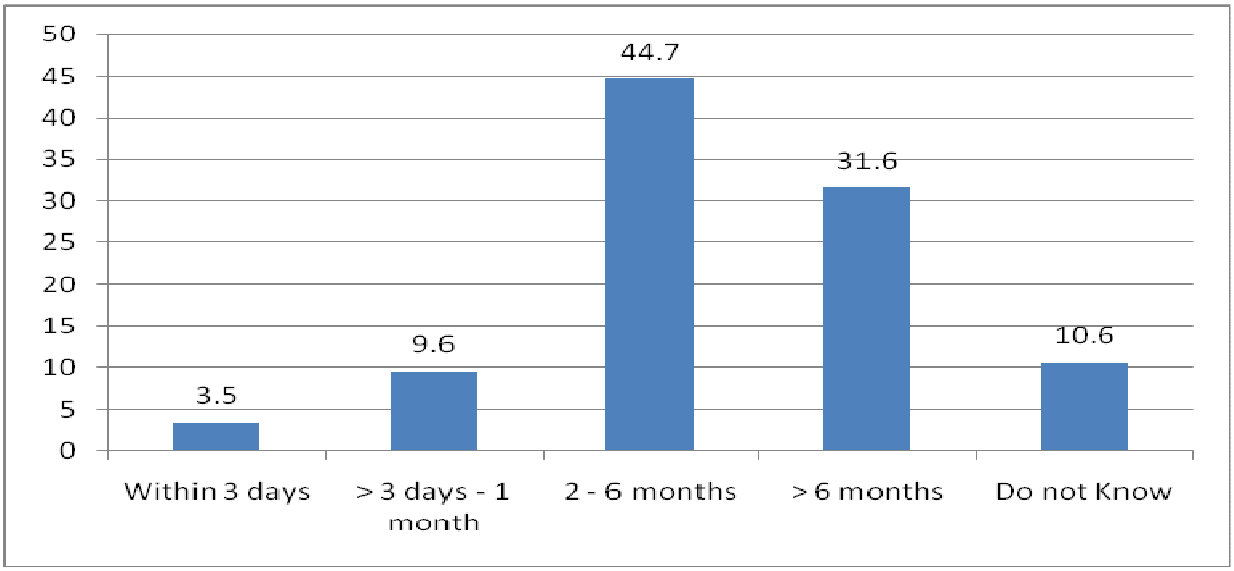


3.5.2 Exclusive Breastfeeding

Exclusive breastfeeding, for the first 6 months, has been recommended as an important infant and child survival, growth, development. It is also documented that exclusive breastfeeding is important to the well-being of mothers.

The rapid assessment showed that about 32 percent of children reported to have been exclusively breastfed (Figure 36). The rapid assessment also observed that about 13 percent of children were given food and or liquid, other than breast milk with a month. This finding is lower than the 2002 ZDHS, where the rate of exclusive breastfeeding was slightly higher at 41 percent.

Figure13: Introduction of other Foods and Liquids

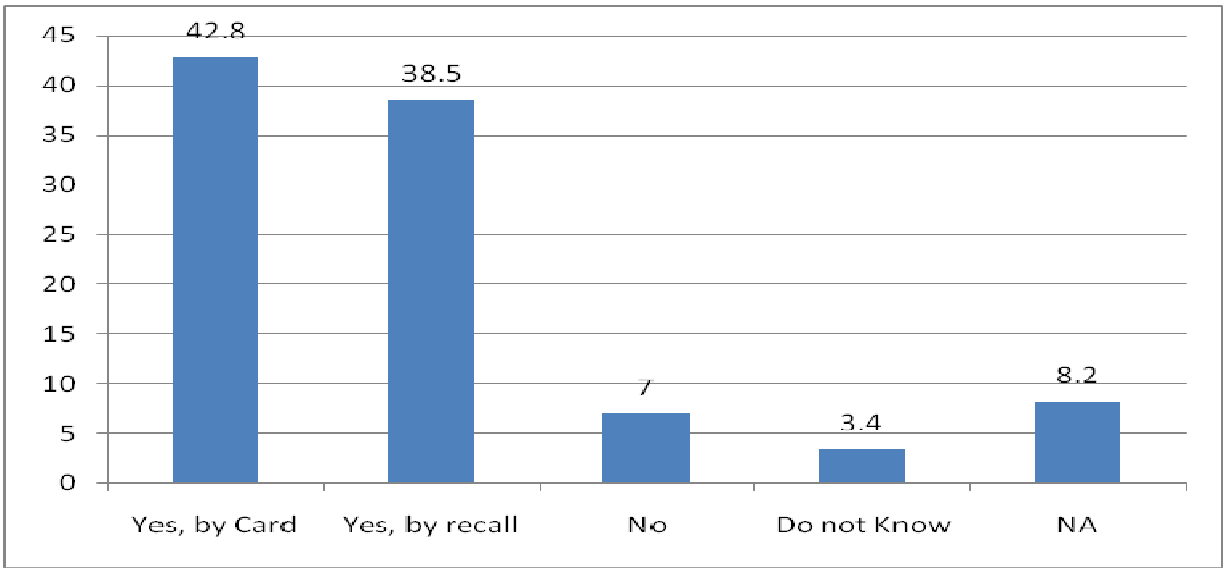


3.5.3 Measles Immunization Coverage

The Government of Zambia has adopted the World Health Organization (WHO) guidelines for vaccinating children. According to these guidelines, to be considered fully protected, the child must have received three doses of polio, and DPT – HepB – Hib and a dose of BCG and Measles. These vaccines are given to children at a specific time when they attain a specific age. It is recommended that children receive the complete schedule of vaccinations before 12 months of age.

The rapid assessment survey collected information on measles immunization coverage for all children born in the five years before the survey. The survey revealed that about 82 percent of children received measles vaccination (Figure 14). About 7 percent reported not to have been given the measles vaccination while about 3 percent did not know.

Figure 14: Measles Vaccination



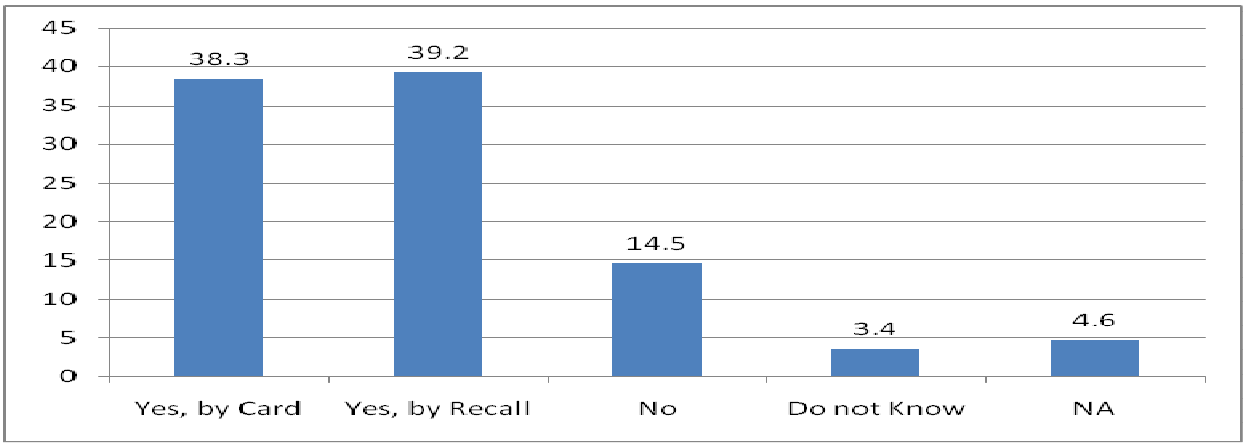
3.5.4 Vitamin A Supplementation and De-worming Coverage

Vitamin A capsule and de-worming tablets are being given out routinely and through Child Health weeks to children between 6 – 59 months and 12 – 59 months respectively. Questions on vitamin A supplementation and de-worming were asked to understand the coverage of these child health services.

3.5.5 Vitamin A Supplementation

There is evidence that high (above 80 percent) vitamin A supplementation coverage could reduce childhood mortality to about 23 percent in a vitamin A deficiency population. The survey revealed that about 78 percent of children 6 – 59 months received vitamin A capsule in the last 6 months (Figure 15). About 14 percent reported not to have been given VAC, while about 3 Percent did not know and 5 percent were not yet eligible.

Figure 15: Vitamin A coverage among Children

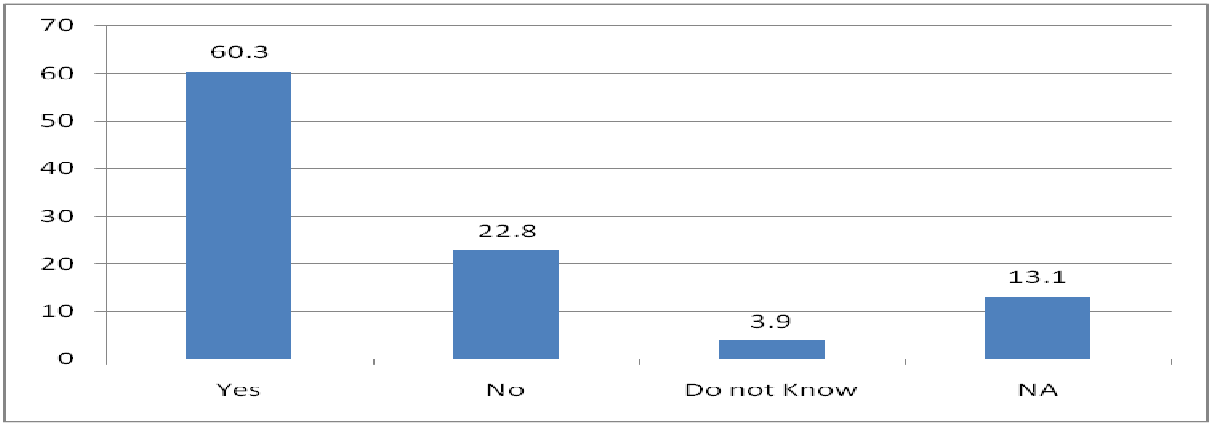


3.5.6 De-worming Coverage

Young children are vulnerable to iron deficiency Anemia. It is known that during childhood, anemia is a risk factor for childhood morbidity and mortality. Because anemia is so prevalent in Zambia, de-worming children aged 12 to 59 months as a prevention method is recommended.

The coverage for de-worming among children 12 – 59 months, in the rapid nutrition assessment, was about 60 percent. This finding was lower compared to the national nutrition surveillance system of 87 percent in July 2008.

Figure 16: De-worming coverage among Children



3.5.7 Supplementary and Therapeutic Feeding Program Coverage

Therapeutic feeding program has been widely implemented in Lusaka urban, through the Community Therapeutic Care (CTC) program conducted by Lusaka Urban District Health Management Team in collaboration with VALID International. The CTC program, however, does not have the component of supplementary feeding.

The survey observed that the coverage for both supplementary and therapeutic feeding program in survey site was very low. In the two feeding programs, about 1 Percent of the children were reported to be benefiting.

3.6 Infant and Young Child Feeding Practices in the Context of HIV

As part of the emergency nutrition Assessment in Lusaka Urban, self administered questionnaires were given to health workers to fill out for the following objectives:

a. Assess the proportion of staff trained in Infant and Young Child Feeding from 2007
b. Assess whether some staff are aware of the revised Infant and Young Child Feeding recommendations through orientation or other means
c. Assess whether staff are convinced of offering the revised Infant and Young Child Feeding recommendations for a mother who is HIV positive

In each of seven selected centres ; Kamwala, Kanyama, Chawama, Matero Reference, George, Chazanga, Chipata Health centres, Five questionnaires were distributed to be filled in by Sister in Charge, Clinical Officer, Nutritionist, MCH Coordinator and PMTCT coordinators were available.

In total 35 questionnaires were expected back. However only 31 questionnaires were returned in that some centers do not have nutritionists or that some of the health workers were not at the station during the period when the interviews were done.

To analyze the questionnaires, a matrix was created where all the responses were entered, first by Health centre level. After entering all the responses according to the variables in the questionnaire, summaries were created for each of the centers. The summaries of the responses from each of the centres were then compared across the other centres to get an overall impression on the variables.

3.6.1 Categories of Staff Interviewed

A total of 31 health workers were interviewed. Of the 31, 11 indicated that they were nurses without specifying, six indicated that they were registered nurses or midwives, six were clinical officers, while six others indicated that they were Enrolled nurses or midwives. 15 of the interviewed staff had served at the centres between 11 months to 5 years. 11 had served between 5 and 10 years, while the remaining five health workers had served for more than 10 years at the particular centres.

3.6.2 Orientation and Training

Most of the health workers had gone through one or more trainings which had Infant and Young Child Feeding component. About 12 had attended Integrated Infant and Young Child Feeding Counseling course while 17 had attended PMTCT training, while 13 had been trained in IMCI. 21 of them had been Orientated through the new clinic card.

3.6.3 Recommendations for mothers who are HIV negative or of unknown status

Regarding recommendations for mothers who are HIV negative or of unknown status, many (18) of the health workers indicated that the child should be on exclusive breastfeeding. However, of these only eight stated that child should commence complementary feeding after six months with continued breastfeeding for two years or more.

Nine health workers either said they were not sure or said nothing about this recommendation. A few (3) gave answers that were not correct.

3.6.4 Main recommendations for infant feeding 0- 6 months when the mother is HIV positive

Almost all (28) of the health workers mentioned EBF as a recommendation for HIV positive mothers. However, of the 28, 15 stated that after EBF, child should be on exclusive replacement feeding using infant formula when AFASS is met. Only a few stated that the child should be on exclusive replacement if meets AFASS.

If a breastfed infant is tested with PCR and the results are positive there were a lot of variations in the responses given as recommended feeding options. Majority (15) of the health workers said child should be on EBF for six months but most of these did not state what happens to the child after this period. Some (2) said child should be on replacement feeding after that, others stated that the child should be introduced to complementary feeding after that, some did mention that the child should be put on replacement feeds if they meet AFASS. Others (2) still indicated

that an infant who is PCR tested positive should either be on EBF or Exclusive replacement feeding if AFASS is met.

If a breastfed infant is tested with PCR and the results are negative, a good number (8) indicated that EBF for 6 months, then introduce complementary foods and continue to breastfeed up to 2 years or more. However, another good number (8) of health workers gave unclear or wrong answers not in conformity with the recommendations. Some indicated that child should go on replacement feeding as soon as possible, while a few (3) still indicated that that mum should stop breastfeeding. 2 others indicated that the child can be exclusively breastfed then assess AFFASS.

While awaiting results, the majority of health workers stated that the child should continue breastfeeding. Six health workers either did not say anything or stated that they did not know, with three suggesting that the child should be on exclusive Breastfeeding. With regard to their opinion on offering exclusive breastfeeding as an option to an HIV positive mother whose baby is negative and does not meet AFASS criteria

Many health workers said EBF could continue. They did not however state for how long the child could breastfeed. Four people did not provide an opinion, on this. Four others indicated that child should be breastfeed till six months. Two indicated that child should be exclusively breastfed for six months then stop and replace, another indicated that child's blood should be checked at nine months without stating whether or not child should Breastfeed in the meantime. Another stated that mother should continue to breastfeed but also continue reviews at ART clinic.

On recommendations for feeding an HIV exposed infant after exclusive breastfeeding for the first 6 months, different responses were given. About 8 health workers stated that the child should be introduced to other foods such as thick porridge, mashed foods. These did not however indicate whether the child should continue to breastfeed. A further 6 stated that the child should be given complementary foods but continue breastfeeding. Nine suggested that child should be put on replacement feeding. Of these nine three indicated that a child should first be assessed for

AFASS. Four suggested that after six months, heat treat expressed milk and provide complementary foods, while four others did not provide responses to this.

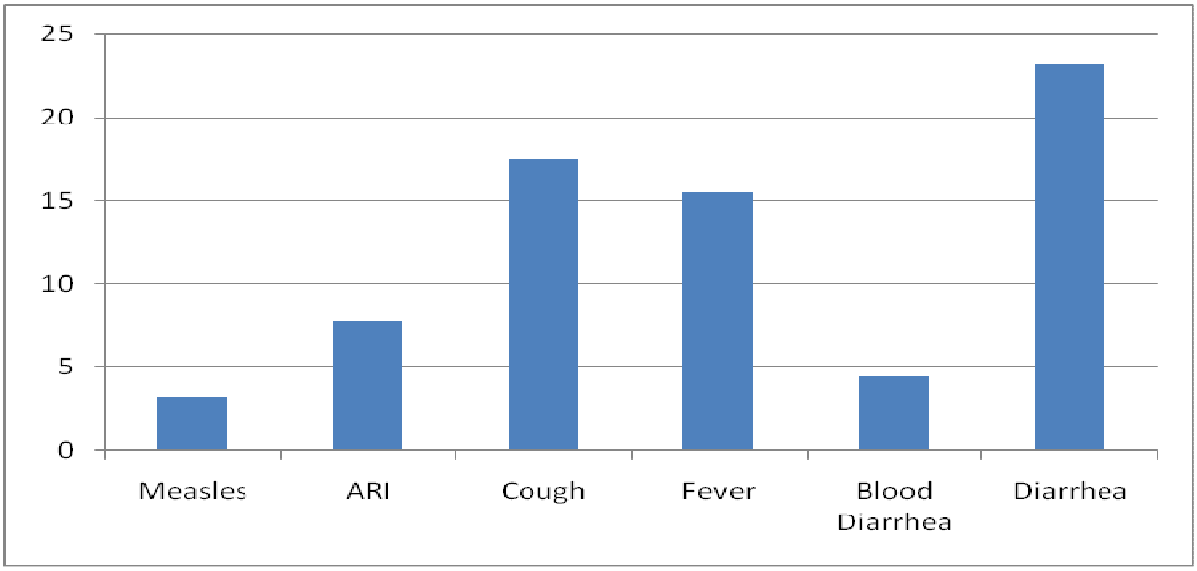
On whether or not health workers discuss infant feeding options for HIV positive mothers during group education in the MCH clinic, about half of them indicated that they did, while the other half indicated that they do not. However, with regard to IYCF counseling for HIV positive women most of the health workers indicated that this is done on one on one basis. About five said they do group counseling while a few (3) did not provide answers.

With regard to giving demonstrations after a mother makes a decision on the infant feeding choice, about half stated that this is done sometimes, 10 indicated that they always do, while 6 either said they never do that or did not provide responses.

3.7 Child's Disease Pattern

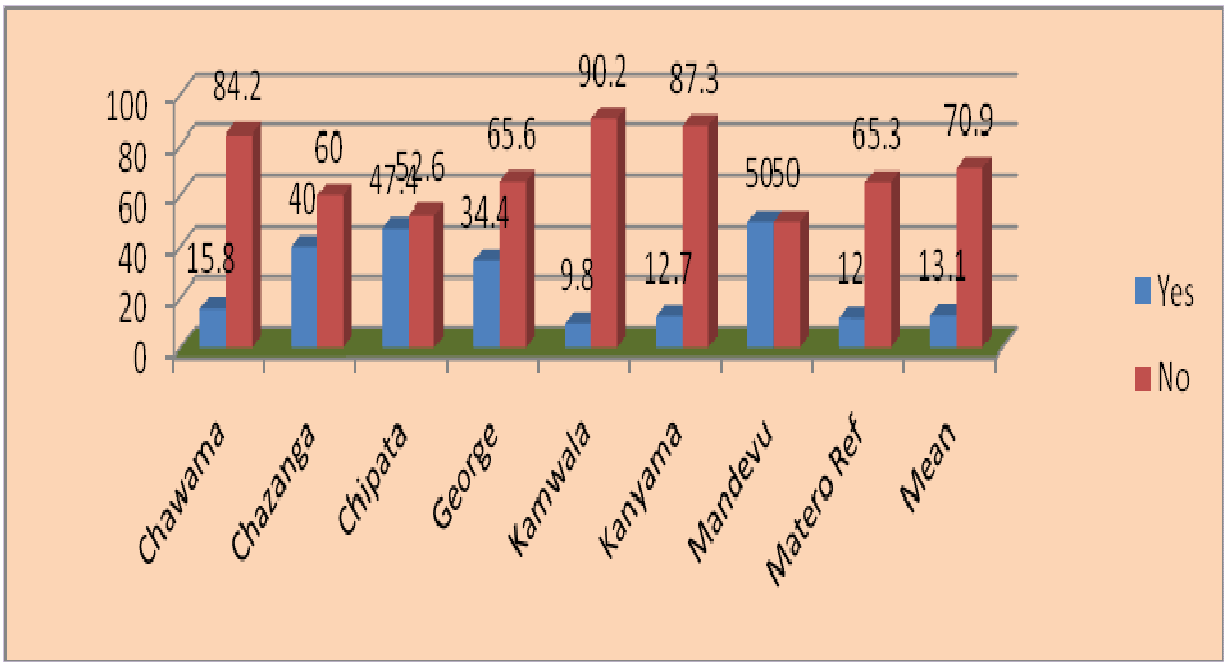
There were about 37 percent of children who were reported to have been sick in the two weeks before the interview. The commonest childhood illnesses among the children in the sampled population were diarrhea 23.2 percent, cough 17.5 percent, and fever 15.5 percent (Figure 17).

Figure 17: Incidence of common Childhood Illnesses



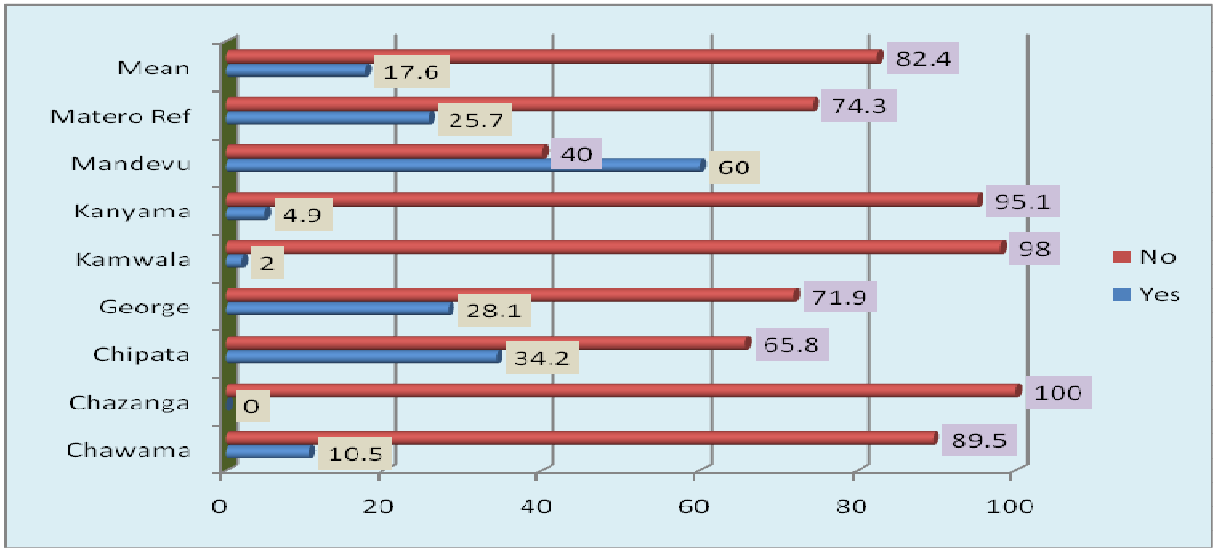
Mandevu (50 percent), Chipata (47.4 percent), Chazanga (40 percent), and George (34.4 Percent) reported more diarrhea cases compared to other sites (Figure 18). Kamwala health centre catchment area reported low case of diarrhea.

Figure 18: Diarrhea by Residential Area



Cough was the second common childhood illness prevalent in the zones that were visited. Mandevu reported more cases of coughs (60 percent) in comparison to other sites. The lowest site that reported cases of cough was in Kamwala (2 percent).

Figure 19: Cough by Residential Area



3.8 Mortality

There were 11 deaths reported in a population of 3888. The crude mortality in this population was 2.8^{10x7} / 10000 population. Mortality among children was very rare in the sampled population. There were only 2 deaths that were recorded out of 970 children. This could be translated to 2.1^{10x7} / 10000 live births.

Chapter 4

Discussion

Epidemiological studies have found strong associations between food intake, disease and nutritional status in children *(1-3)*. Poor nutritional status has also been associated with morbidity and mortality in children aged 6 months- 59 months (4). Recently, the University Teaching Hospital recorded an upsurge in the levels of severely malnourished children admitted to ward AO7. A high number of these severely malnourished cases were referrals from primary clinics in Lusaka urban. About 30 Percent – 50 Percent of these admitted cases ended up dying before discharge.

The present rapid assessment was therefore undertaken to assess the prevalence of malnutrition measured as weight-for-height, Height-for-age and weight for age in residential areas which were sources for UTH AO7 admissions. The framework of analysis in this study followed the UNICEF conceptual framework on causes of malnutrition.

Severe malnutrition has a high mortality rate among hospitalized children (5). In this study, 1.2 percent children were severely malnourished (Weight-for-height), 24.1 were severely stunted (Height-for-age) and 9.5 percent were severely underweight (Weight-for-age) (See Table 8). Although these severely malnourished children were not in hospital, the risks associative with severe malnutrition are still immense.

Variations in the Prevalence's of wasting, stunting and underweight across the eight residential assessment areas were noticeable (Table 9). ANOVA revealed that the place of residence of a child had significant ($P<0.05$) effects on anthropometric measurements and indices. This means that living in a particular residential area determined the nutritional status of a child. Chipata and Kamwala residential areas had prevalence's of stunting above 2.3 percent among the male children. At the same time, moderate malnutrition was also highest in the same areas among female children. A higher proportion of these children came from homes where parents had higher levels of education and in formal employment. Severe form of malnutrition, were found in

homes where the head of household was in formal employment. It is not immediately clear why this is so, but more in-depth sociological and anthropological studies need to be done. This finding is similar to what others have already established (6). According to a study by Nnyepi (2007), Nutritional status was determined by living in a particular residential area. Gobotswang K (1998) also found that the type of residence was a major determinant of the nutritional status of children mainly because of certain characteristics. This include access to safe food, markets, clean water supply and medical services. In this study, variations were seen in the levels of malnutrition in different residential areas. This was also seen when nutritional status was presented by level of education of household head. Although many studies (**7**), have established that the level of education of a caretaker could have positive effects on the child nutritional status, this study revealed otherwise (Tables 13, 14 and 15). A higher proportion of children who were malnourished were in homes were parents had higher levels of education. It was not immediately clear why this was so; however this finding agreed well the type of employment of the household head. A higher proportion of children in homes were the household head was in formal employment had severe forms of wasting, stunting and underweight than if the household head was in informal employment (Tables 16, 17 and 18). It is not apparently clear why this is so, but more in-depth sociological and anthropological studies need to be done. However, the prevalence's found in this study except for Height-for-age were with in the WHO acceptable levels.

The mean Household Diet Diversity Score (HDDS) was 0.49 (Figure 5) and for children 0.47. This means that most of the households consumed about 6 out of the 13 food groups. The fact that less than half of the food groups are consumed implies that generally diets are poor and not sufficiently diverse to provide good nutrition. Evidence shows that Children who have a DDS value less than 6 will most probably have weight-for-age and weight-for-height Z-scores less than zero and should be regarded as being at risk of under nutrition. This measure can also be useful as an indicator to assess improvement in diets over time. A DDS of less than or equal to 7 may result in weight-for-age and/or weight-for-height Z-sore of less than zero, while a DDS of less than 3 is associated with height-for-age Z-score of a less than zero(10).

As can be seen the commonest food groups consumed were cereals, Oil/butter/fats, sugar, Green leaf vegetables and vitamin A rich fruits and vegetables. Similarly food groups that were reported to be commonly consuming by children were cereals, Oil/butter/fats, sugar, tea/coffees, ripe fruits and dark-leaf vegetables. Food groups that provide much needed protein such as legumes, milk and milk products, and meats are inadequately consumed a factor which could be linked to limited food access due to high food prices that are prevailing on the market as evidenced from the JCTR November 2008 report that the basic needs basket for Lusaka province increased from K1, 870, 650 in February to K1, 914, 450 in November (11).

In terms variations to study areas, Kamwala, Matero Reference and Kanyama reported higher HDD (between 0. 51and 0.58) compared to Chazanga (0.49), Chipata (0.47), Chawama and George (0.46), and Mandevu the least at 0.45.

Although 71 Percent of households indicated that children had three meals in a day, young children received nothing or less snacks in a day with 25 Percent indicating no snacks given, 37.8 Percent gave one snack per day and only about 29 Percent provided snacks twice in day. A look at the less diversity in diets and less snacks provided to children may have implications on medium to long term food deprivation resulting in high levels of underweight and stunting in Lusaka. George showed children had less than 3 meals in day followed by Chipata (20 Percent). Research evidence states that, if children eat more low fat dairy products and vegetables as snacks this will increase the intake of mostly fruits by 87 Percent and reduce the daily consumption of saturated fat therefore, reducing the chances of children having cancer by 20 Percent (12).

The study also indicated that most of the children suffered from diarrhea the previous two weeks before the survey. This has a bearing on the nutrition status of the children in the study population in that evidence shows that diarrhea leads to loss of losses of fluid, electrolytes and zinc. This may lead to micronutrient deficiencies including zinc deficiency that can induce immunodeficiency in otherwise healthy children, increasing susceptibility to diarrhea and other infections. This can lead to a vicious cycle of repeated infections, reduced immunity, and deteriorating nutritional status.

The study shows that most of the health service providers have attended various trainings on PMTCT, IYCF and IMCI. However, people where trained at different times and the packages where not up-dated and integrated hence those trained long time ago had old information. in addition, all the staff trained along time ago are not supposed to be trained again they always pick new people who are expected to orient other staff at the health facility. This has been hampered by in adequate funding to health facilities hence most service providers don't have up to date information. Some resist change even if they are trained due to attitudes and beliefs on what they believe as individuals hence giving different conflicting messages to the clients or the public at large. For instance, some practitioners' advice mothers who are positive and expecting to stop breastfeeding the child at 6 months of age. This has contributed to less emphasis on the new recommendations.

Evidence also suggest that if the quality of the information on Infant and Young Child Feeding in the context of HIV is inconsistent, there is a more likelihood that most of the children will not be breastfeed exclusively and if the mothers are HIV positive then these children are more likely to suffer from malnutrition. However, this is not possible because most of the counselors had never been trained to advise mothers on infant and young child feeding in the context of HIV. Recent Investigations indicate that when the mother is HIV-infected, *replacement feeding from birth does not improve HIV-survival compared to breastfeeding, even in a better-off African country such as Botswana*. Another study from South Africa indicates that *if breastfeeding is exclusive there is a significant difference in cumulative mortality at three months* 6 Percent in exclusive breastfeeding vs. 15 Percent in replacement feeding

With regard to infant and young child feeding, it's argued that the success of PMTCT depends on their ability to help mothers make informed decisions and then to implement them. In particular, if, in congruence with the new WHO guidance, mothers are to be assisted in deciding when to stop breastfeeding sometime between six and 24 months rather than being told to do so

at exactly six months of age, then infant feeding counselors will need to be trained in doing postnatal assessment of whether replacement feeding is AFASS at various points postpartum beginning at six months. Unlike AFASS evaluation done prenatally, this postnatal AFASS assessment can also take the mother's health status into account (Lucy Thairu: April 27, 2007).

Chapter 5

Conclusions and recommendations

The data presented in this study confirms that among children aged between 6 and 59 months, there is no critical severe wasting present and that stunting and underweight are the main problems of concern. The higher admissions of severe malnutrition in the University Teaching Hospital A07 ward would be attributed to other factors including system failure in the management of malnutrition both from primary health care clinics to tertiary level.

With regard to the household having low household diet diversity score can be attributed to the ever increasing cost of basic food prices in the district which also affect the children diet in households. Therefore, people are not having adequate diets which they are supposed to be having hence putting them at risk of malnutrition.

It also confirms that despite health practitioners been trained in the three packages (IYCF, PMTCT and IMCI) they provide different information to clients this due to the fact that some have been trained in old packages which doesn't include new information. In addition, there has been in adequate funds to scale up trainings to all the health practitioners resulting in continuous delivery of inconsistent information. There should also be improved collaboration among PMTCT site partners in order to pull resources together to scale up training.

Recommendations

Community Level

- There is a great need to strengthen the referral system in the management of malnutrition from community to all levels of management
- There is need to put in place motivation policy for the cadre conducting active case finding
- There is a need to strengthen the management of medically uncomplicated SAM at community level through OTPs
- Intensify community / social mobilization – to create early demand for management of SAM
- Social Mobilization to target preventative service delivery system.

Healthy Facility Level

- There is a great need to strengthen the referral system in the management of malnutrition from community to all levels of management
- Build capacity in management of SAM and avoid loss of life by
- Un-choking UTH, by having SAM stabilization centers
- There is a need to make available necessary supplies to manage SAM at all levels
- There is need to train more personnel in the management of SAM at all levels
- Improve overall (PMTCT, CBGMP, IYCF, CIMCI) programming

Policy Level

- Advocacy at higher decision making levels to improve resource allocation to enhance implementation of policy
- Strengthen coordinating efforts in the management of malnutrition.
- Need to look out for long term and sustainable strategies in preventing and managing moderate and severe malnutrition
- Focus should be on innovations that will strengthen the health care system.

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MISSION STATEMENT:

To provide leadership on food and nutrition matters in order to achieve an optimal nutritional status of the people of Zambia and contribute to the attainment of a healthy and productive nation.

VISION:

To achieve optimal food and nutrition status for the Zambian population

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