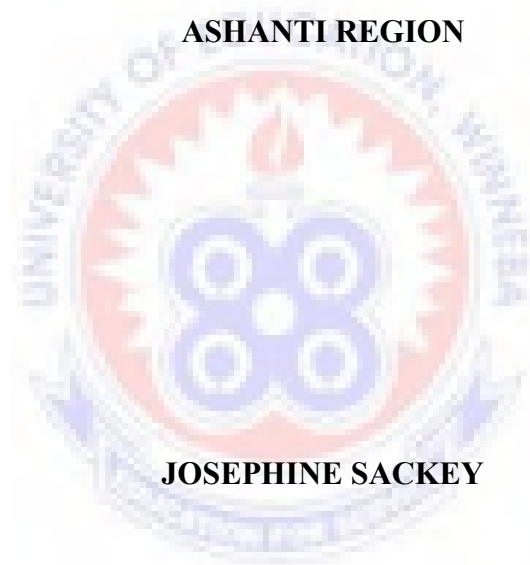


**UNIVERSITY OF EDUCATION, WINNEBA**  
**COLLEGE OF TECHNOLOGY EDUCATION, KUMASI**

**NUTRITIONAL STATUS OF THE UNDER-FIVE: A CASE STUDY OF CHILD  
WELFARE CLINICS' IN THE ASANTE AKIM NORTH DISTRICT OF  
ASHANTI REGION**



**JOSEPHINE SACKEY**

**AUGUST, 2016**



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**JOSEPHINE SACKY**

**(7141180005)**

**A Dissertation Submitted to the Department of HOSPITALITY AND TOURISM  
EDUCATION, Faculty of VOCATIONAL EDUCATION, School of research and  
Graduate Studies, University of Education, Winneba in Partial Fulfilment of the  
Requirements for the award of Master of Technology Education (Catering and  
Hospitality) Degree**

**AUGUST, 2016**

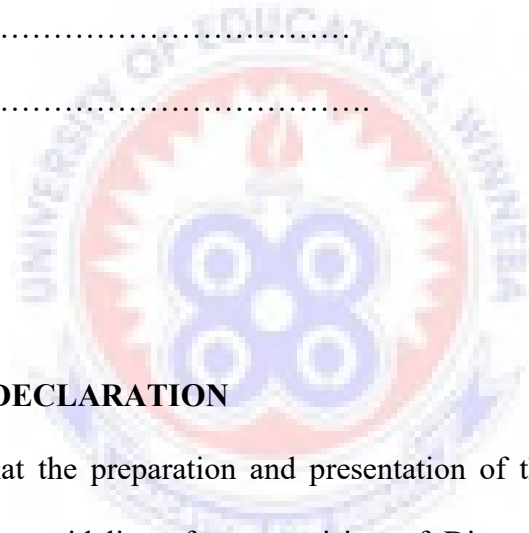
## DECLARATION

### STUDENT'S DECLARATION

I, **JOSEPHINE SACKY**, declare that this Dissertation, with the exception of quotation and reference contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE .....

DATE: .....



### SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: **DR. GILBERT OWIAH SAMPSON**

SIGNATURE: .....

DATE:.....

## **DEDICATION**

This piece is dedicated to my mum, siblings as well as nieces and nephews for their love and great concern.



## ACKNOWLEDGEMENT

Praise and glory be to the Almighty God whose outstretched arm has rested upon me and granted me grace without measure to be able to go through this programme successfully.

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## ABBREVIATIONS

CHWs	–	Community Health Workers.
CWC	–	Child Welfare Clinic.
DPs	–	Development Partners.
EBF	–	Exclusive Breastfeeding.
GDHS	–	Ghana Demographic Health Survey.
GHS	–	Ghana Health Service.
IFRCRCS	–	International Federation of Red Cross and Red Crescent Societies.
MDG	–	Millennium Development Goal.
MoH	–	Ministry of Health.
PHC	–	Population Housing Census.
SD	–	Standard Deviation.
SDGs	–	Sustainable Development Goals.
UN MDGs	–	United Nations Millennium Development Goals.
UNDP	–	United Nations Development Programme.
UNICEF	–	United Nations Children’s Fund.
WFP	–	World Food Programme.
WHO	–	World Health Organization.

## ABSTRACT

Malnutrition continues to be the single most important challenge to governments in achieving the SDG- 2 target by 2030. To this effect, the aim of the study was to assess the nutritional status of „under-five“ children in rural areas particularly in the Asante Akim North district. Quantitative and qualitative research design was used for the study. The population used was mothers with children under five years of age living within the study area who attended Child Welfare Clinics (CWCs) and health personnel in the various CWCs. Cluster sampling and simple random sampling techniques were used. Data was collected from 265 mothers with children under age five and 15 health personnel working at various CWCs. Data collections were done by the use of questionnaire and Child Health Record Booklet. Frequency counts, percentage analyses, and correlation analyses using SPSS to determine the prevalence of under five malnutrition and the factors influencing it. The study revealed that most of the mothers had knowledge on the nutritional requirements of their children concerning breastfeeding (99.6%) and complementary feeding (57%) respectively. However, they could not put into practice, the knowledge acquired on exclusive breastfeeding and complementary feeding regimes as recommended by the WHO and UNICEF. Results from the study show that health personnel did follow-ups on the mothers at home and during community durbars to ensure compliance with information given on breastfeeding, healthy eating and complementary feeding. The study was able to establish that health personnel received feedback on reports sent to the district health office and communicated the feedback to the nursing mothers. It can be concluded that majority of the nursing mothers of children under five years in the Asante Akin North District had knowledge on the nutritional requirements of their children through the education given them but failed to put them into practice. This has the potential of undermining the achievement of SDG 2.2 by the year 2030.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Background to the Study**

The Millennium Development Goals (MDGs) came from the Millennium Declaration, signed by 189 countries, including 147 heads of State and Government, in September 2000 (Ghana Statistical Service, 2013). The Millennium Development Goals (MDGs), had eight specific aims: To eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability, and develop global partnerships for development with 21 time bound targets and 60 indicators (Ghana Statistical Service, 2013). With the expiry of the MDGs, these countries want to build on the many successes of the past 15 years (2000 – 2015) and go further. Hence, the new set of goals, the Sustainable Development Goals (SDGs), which aims to end poverty and hunger by 2030. The official draft has 17 Sustainable Development Goals (SDGs) and 169 targets (ICSU & ISSC, 2015).

The under-five mortality rate (MDG 4) was and remains a major public health concern to governments and the international community in the new SDG 2 specifically SDG 2.2 which seeks to end all forms of malnutrition by 2030. This is because it captures more than 90% of global mortality among children under the age of 18 (United Nations, 2003). It is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five. The rationale of this indicator is the



fact that it measures child survival and reflects the social, economic and environmental conditions in which children (and others in society) live, including their health care and vulnerability to diseases (United Nations, 2003). In simple terms, the under-five mortality rate is used to identify vulnerable populations, especially where data on the incidences and prevalence of diseases are not readily available.

The target of the Millennium Development Goal 4 (MDG4) was to reduce by two thirds, between 1990 and 2015, the under-five mortality rate, more specifically to 40 per 1000 live births in 2015 (UN MDG, 2013). According to the UN MDG report in 2013, the mortality rate for children under five dropped by 41% - from 87 deaths per 1,000 live births in 1990 to 51 deaths per 1000 live births in 2011 worldwide. Results from the 2010 Population Housing Census (PHC), in combination with similar data collected from 2000 Population Housing Census (PHC) and Ghana Demographic Health Survey (GDHS) show a marked decline in under-five mortality in Ghana (Ghana Statistical Service, 2013). Under-five mortality declined from 167 per 1,000 live births in 2000 to 90 per 1,000 live births in 2010, about 46% decline. According to Ghana Statistical Service (2013), infant mortality rate stands at 59 deaths per 1,000 live births per the 2010 PHC results. This shows a decline in the last ten years from 90 deaths per 1,000 live births in 2000.

The government of Ghana, in close partnership with its Development Partners (DPs), has implemented a number of priority interventions to reduce by two-thirds mortality among both infants and children between 1990 and 2015. According to a Ministry of Health report 2006, the Ministry of Health (MoH) and the Ghana Health Service (GHS)

spearheaded the launch of “Imagine Ghana Free of Malnutrition”, a multi-sectoral strategy that addresses malnutrition as a developmental problem in the context of the Ghana Poverty Reduction Strategy and the second Five Year Program of Work. Specifically, the Ministry of Health (MoH) and Ghana Health Service (GHS), with the support of Development Partners (DPs), have expanded over the last several years core health and nutrition services (i.e. immunization, vitamin A supplementation, and deworming) that affect nutritional and health status of children, mainly through the rapid delivery approach (Ghana Statistical Service, 2013). These interventions have resulted in the reduction of under five mortality rate from 82 per 1000 live births in 2012 to 60 live births in 2014 (UNDP, 2015). It is quite obvious that the under-5 mortality has declined but remains short of the MDG4 target of 40 per 1000 live births in 2015.

However, according to the Ghana Statistical Service report (2013), the probability that a child would die before their first birthday is higher in rural areas than in urban areas (60 deaths per 1,000 live births compared with 55). The infant mortality rates of male and female in urban areas are 60 and 49 deaths per 1,000 live births, respectively. In rural areas, infant mortality rates for male and female are 65 and 53 deaths per 1,000 live births, respectively. Although the country has made a substantial progress towards achieving the MDG4 target of 40 per 1,000 live births in 2015, achieving the said target will be a big challenge in SDG 2. One of the major challenges is the low coverage of comprehensive health and nutrition services.

## **1.1 Problem Statement**

Although the government of Ghana has put in place a number of interventions to reduce under-five child mortality, these interventions are not yielding the desired results. Hence Ghana could not meet the MDG 2015 target of 26 per 1,000 live births. Malnutrition was the single most important challenge to achieving the MDG4 2015 target and continues to be the most important challenge to achieving specifically SDG 2.2 which seeks to end all forms of malnutrition by 2025. A Ghana Health Service report indicates that many programs or projects supported by development partners cover just a few communities in each district. Also there is inadequate national data to provide complete and reliable information on child health and nutrition. Close to 40 percent of all deaths that occur before the age of five are due directly and indirectly to under-nutrition, making it the single most important cause of child mortality. It has therefore, become necessary to gather enough data on health and nutrition of the under-five child in order to address the challenges raised. It is in the light of these challenges that it has become necessary to undertake this study.

## **1.2 Significance of the Study**

The study will help bring out some of the reasons for which the numerous government interventions put in place to reduce the under-five child mortality are not yielding the desired results particularly in the rural communities. It will also provide useful information on appropriate measures nursing mothers can put in place to improve the nutritional status of children under-five. Again, the study will reveal the short falls in the acquisition of data and recommend some ways of addressing this issue.

### **1.3 Main Objective**

The purpose of this study was to assess the nutritional status of „under-five“ children in rural areas particularly in the Asante Akim North district of the Ashanti region.

#### **1.3.1 Specific Objectives**

The specific objectives were to:

1. investigate the level of knowledge of mothers with children under-five on the nutritional requirements of the under-five child.
2. determine the level of compliance of nutritional information given to the mothers with children under-five.
3. evaluate the extent of follow-up visits by health professionals to the mothers with children under-five
4. determine the level of flow of information on the under-five child from the health facility to district and regional health directorates.

#### **1.4 Research Questions**

In the light of the specific objectives stated, the following research questions were considered:

1. What is the level of knowledge of nursing mothers on the nutritional requirements of the under-five child?
2. How do mothers with children under-five comply with the kind of nutritional information given by the health professionals?

3. Are follow-up visits conducted by the health professionals to mothers with children under-five?
4. How frequent is the flow of information on the under-five child from the health facility to district and regional health directorate offices.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

Good nutrition is important at all stages of life. Our bodies need enough of the right foods to give us energy to grow, learn, work and stay healthy. Children under the age of two have particular needs because their bodies are growing and changing quickly, even before birth (International Federation of Red Cross and Red Crescent Societies, 2013). Health and nutrition are closely linked; a person must be well nourished to be healthy, while poor health can affect nutritional status (International Federation of Red Cross and Red Crescent Societies, 2013).

Nutrition is an important part of child's growth and development. Especially the first two years of life are considered to be the window of opportunity where we can improve the well-being of a child (World Health Organization, 2007). Therefore, a child needs the right kind of nutrition in order to thrive and attain optimal development. The objective of Millennium Development Goal (MDG) 1 was to eradicate extreme poverty focusing on child nutrition as well as Millennium Development Goal (MDG) 4 which sought to reduce child mortality rate. For these objectives to be achieved, they should be supported by the standard practices of nutrition which is important in child survival, growth and development. According to the World Health Organization (2007), malnutrition is the gravest single threat to global public health.

## **2.1 Trends of Malnutrition in Ghana**

The 2014 Ghana Demographic and Health Survey (GDHS) reports that among Ghanaian children under age 5, 19% were stunted (short for their age), 5% were wasted (thin for their height), and 11% were underweight (thin for their age). About 3 percent of children were overweight (Ghana Statistical Service, 2015). According to the GDHS (2014) report, children in rural areas are more likely to be stunted (22%) than those in urban areas (15%).

The GDHS (2014) report noted that mother's educational level generally has an inverse relationship with children's stunting: The proportion of stunting declines drastically from 26 percent among children of mothers with no education to only 4 percent among children whose mothers have a secondary or higher education (Ghana Statistical Service, 2015). A similar inverse relationship is observed between household wealth and stunting levels. Children in the poorest households are almost three times as likely to be stunted as children in the wealthiest households (25% versus 9%) (Ghana Statistical Service, 2015). By residence, children residing in urban areas are slightly less likely to be wasted and underweight than children in rural areas (Ghana Statistical service, 2015). The GDHS (2014) report also noted that children born to mothers with little or no education are substantially more likely to be underweight than children of more educated women (Ghana Statistical Service, 2015).

The GDHS (2014) report has revealed that the proportion of stunted children has decreased steadily from 35 percent in 2003 to 19 percent in 2014. The proportion of wasted children has also decreased from 8 percent in 2003 and 9 percent in 2008, to 5

percent in 2014. The GDHS (2014) report again revealed that the proportion of underweight children has decreased from 18 percent in 2003 to 11 percent in 2014. Overweight among children fluctuated between 4-5 percent between 2003 and 2008, and is reported to be at 3 percent in 2014 (Ghana Statistical Service, 2015).

Almost all children in Ghana (98 percent) are breastfed at some point in their life. Fifty-two percent of children younger than 6 months were exclusively breastfed. The median duration of exclusive breastfeeding is about four months. Seventy-three percent of breastfed children had been given complementary foods by age 6-9 months.

## **2.2 Brief Concept of Malnutrition and Causes**

Malnutrition is a condition that results from lack of food, from not eating the right foods or from the inability to absorb the necessary nutrients from food (IFRC, 2013). It can also be described as under nutrition (sub-nutrition) and over nutrition (WHO, 2012). The World Food Programme (WFP) defines malnutrition as “a state in which the physical function of an individual is impaired to the point where he or she can no longer maintain adequate bodily performance process such as growth, pregnancy, lactation, physical work or resisting and recovering from disease” (World Food Programme, 2005). A malnourished person has difficulties growing, learning, doing physical work and resisting and recovering from diseases and injuries (IFRC, 2013). The World Health Organization (WHO) estimates that malnutrition accounts for 54 percent of child mortality worldwide (IFRC, 2013). Another estimate also by WHO states that childhood underweight is the cause for about 35% of all deaths of children under the age of five years worldwide



(IFRC, 2013). To meet all of the MGD goals 1 and 4 and that of SDG 2, the mother's knowledge and practice on infant and young child feeding which is recommended by the World Health Organization should be considered.

## **2.3 Causes of Malnutrition**

The causes of malnutrition are diverse, interlinked and complex. The International Federation of Red Cross and Red Crescent Societies (IFRC) (2013) have grouped malnutrition into immediate causes and underlying causes.

### **2.3.1 Immediate Causes**

- Inadequate diet: A person does not consume an adequate diet without eating the right variety (quality) and or amount (quantity) of food.
- Diseases: When a person is ill, appetite is reduced, which in turn affects the body's ability to use food, weakening it and reducing its resistance to further diseases. Parasite infections, in particular intestinal worm infections (helminthiasis), can also lead to malnutrition (IFRC, 2013). A leading cause of diarrhea and intestinal worm infections in children in developing countries is lack of sanitation and hygiene. Children with chronic diseases like HIV have a higher risk of malnutrition, since their bodies cannot absorb nutrients as well (IFRC, 2013). Diseases such as measles are a major cause of malnutrition in children; thus immunizations present a way to relieve the burden (IFRC, 2013). Diseases and injuries also increase the need for nutrients in order to recover.

### 2.3.2 Underlying Causes

- Food insecurity:

Food insecurity occurs when a family is unable to produce or buy enough food or a good variety of foods for its needs (IFRC, 2013). Even when there is enough food in the household, it may not be distributed equally, and priority may not be given to vulnerable members such as children or women.

- Inadequate mother and child care: Sometimes, mothers and children do not eat the right foods because of limited knowledge, local taboos or poor caring attitudes and practices.

- Inadequate healthcare and an unhealthy environment: Limited availability and use of basic health services, lack of hygiene in the living area, little or no sanitation and no safe drinking water create health risks and contribute to poor nutrition (International Federation of Red Cross and Red Crescent Societies, 2013). The World Health Organization estimated in 2008 that globally, half of all cases of undernutrition in children under five were caused by unsafe water, inadequate sanitation or insufficient hygiene (IFRC, 2013). This link is often due to repeated diarrhoea and intestinal worm infections as a result of inadequate sanitation (IFRC, 2013). However, the relative contribution of diarrhea to under nutrition and in turn stunting remains controversial (IFRC, 2013).

- Gender

A study in Bangladesh in 2009 reported that rates of malnutrition were higher in female children than male children (IFRC, 2013). Other studies show that, at the national level, differences between under nutrition prevalence rates between

young boys and girls are generally small (IFRC, 2013). Girls often have a lower nutritional status in South and Southeastern Asia compared to boys (IFRC, 2013). In other developing regions, the nutritional status of girls is slightly higher (IFRC, 2013).

## **2.4 Types of Malnutrition**

### **2.4.1 Acute Malnutrition (Wasting)**

An acutely malnourished person is very thin. Acute malnutrition is also known as “wasting” and can be severe or moderate. It is reversible with appropriate treatment. Wasted children are up to 20 times more likely than well-nourished children to die of common diseases like diarrhoea. Wasting is common in children between 6 and 24 months. It can be measured by comparing weight and height (weight-for-height) or mid-upper arm circumference (IFRC, 2013).

### **2.4.2 Chronic Malnutrition (Stunting)**

A chronically malnourished person is normally too short for his or her age but is not always thin. Chronic malnutrition is also known as “stunting”. Stunting is irreversible after the age of two years. Stunted children are most likely to suffer from impaired development and are more vulnerable to illness and disease. Stunting can be measured by comparing height and age (height-for-age) (IFRC, 2013).

### **2.4.3 Obesity (Overweight)**

An obese or overweight person is too heavy and fat for his or her height. Overweight is reversible with adequate diet and good health and caring practices, especially among growing children and adolescents (IFRC, 2013). Overweight children and adolescents are more likely to suffer from high blood pressure, diabetes and heart disease as adults. Many overweight adults suffer from these diseases. Overweight can be measured by comparing weight and height (weight-for-height) (IFRC, 2013).

### **2.4.4 Micronutrient Deficiencies**

Special nutrients called vitamins and minerals are needed by the body in very small amounts, so they are called “micronutrients”. Micronutrient deficiencies are not usually immediately noticeable but can have a big impact on growth, health and learning ability. Common micronutrient deficiencies include vitamin A, iron and iodine. Micronutrient deficiencies are usually treated on a preventive basis, where they are known to be common in an area.<sup>12</sup> (IFRC, 2013).

### **2.5 Effects of Malnutrition on the Child**

Poor nutrition has serious impacts on infants. In more than half of all child deaths from diarrhoea, malaria and pneumonia, malnutrition is an underlying cause. Children with severe acute malnutrition are very thin, but they often also have swollen hands and feet, making the internal problems more evident to health worker (IFRC, 2013). Children with severe malnutrition are very susceptible to infection (IFRC, 2013). Under nutrition in children causes direct structural damage to the brain and impairs infant motor

development and exploratory behavior (IFRC, 2013). Children who are undernourished before age two and gain weight quickly later in childhood and in adolescence are at high risk of chronic diseases related to nutrition (IFRC, 2013). Undernourished girls tend to grow into short adults and are more likely to have small children (IFRC, 2013). Children who are undernourished are more likely to be short in adulthood, have lower educational achievement and economic status, and give birth to smaller infants.

Even after recovering from severe malnutrition, children often remain stunted for the rest of their lives (IFRC, 2013).

## **2.6 Indicators of Malnutrition**

### **2.6.1 Critical forms of Malnutrition**

Two forms of acute malnutrition pose an immediate threat to a child's life and need to be acted upon rapidly: wasting (too skinny or thin) and nutritional oedema (too much fluids in body tissues), or a combination of both conditions (IFRC, 2013).

### **2.6.2 Wasting or Thinness (Marasmus)**

Wasting is due to inadequate diet (not enough variety but especially amount of foods) and or presence of diseases that reduces the capacity of the body to properly use foods. Wasting can appear as moderate and severe forms of acute malnutrition (IFRC, 2013).

Signs of wasting thinness (Marasmus)

- Growth failure
- Thin, old-looking face with sunken eyes and cheeks
- Prominent bones, e.g. ribs visible

- Skinny limbs
- Loose skin, especially around buttocks
- Usually has appetite
- Irritable moods (cries a lot)

Detection:

- In a child, comparing weight and height to a standard

### **2.6.3 Nutritional Oedema (Kwashiorkor)**

Nutritional oedema is due to inadequate diet (mostly not enough variety of foods) and or presence of diseases that reduce the capacity of the body to properly use the nutrients in foods (IFRC, 2013). Nutritional oedema is always regarded as a severe form of acute malnutrition.

Signs of nutritional oedema

- Bulging, swollen face
- Swollen belly
- Oedema (swelling), which starts with both feet and lower legs but can also expand to the entire body
- Skin changes (pale, peeling, with sores)
- Hair changes (brownish, scanty, straight)
- Loss of appetite
- Loss of interest in surroundings

Detection:

- only through checking with finger pressure
- cannot tell by just looking (International Federation of Red Cross and Red Crescent Societies, 2013).

There are three commonly used measures for detecting malnutrition in children:

- stunting (extremely low height for age),
- underweight (extremely low weight for age), and
- wasting (extremely low weight for height).

The percentage of children with a low height for age (stunting) reflects the cumulative effects of undernutrition and infections since and even before birth. This measure can therefore be interpreted as an indication of poor environmental conditions or long-term restriction of a child's growth potential. The percentage of children who have low weight for age (underweight) can reflect „wasting“ (i.e. low weight for height), indicating acute weight loss, „stunting“, or both.

Thus, 'underweight' is a composite indicator and may therefore be difficult to interpret (WHO, 2010).

## **2.7 The Consequences and Implications of Underweight, Stunting and Wasting**

### **2.7.1 Underweight**

As weight is easy to measure, this is the indicator for which most data have been collected in the past. Evidence has shown that the mortality risk of children who are even mildly underweight is increased, and severely underweight children are at even greater risk (WHO, 2010).

### **2.7.2 Stunting**

Children who suffer from growth retardation as a result of poor diets or recurrent infections tend to be at greater risk for illness and death. Stunting is the result of long-term nutritional deprivation and often results in delayed mental development, poor school performance and reduced intellectual capacity. This in turn affects economic productivity at national level. Women of short stature are at greater risk for obstetric complications because of a smaller pelvis. Small women are at greater risk of delivering an infant with low birth weight, contributing to the intergenerational cycle of malnutrition, as infants of low birth weight or retarded intrauterine growth tend to be smaller as adults (WHO, 2010).

### **2.7.3 Wasting**

Wasting in children is a symptom of acute under nutrition, usually as a consequence of insufficient food intake or a high incidence of infectious diseases, especially diarrhoea. Wasting in turn impairs the functioning of the immune system and can lead to increased severity and duration of and susceptibility to infectious diseases and an increased risk for death (WHO, 2010).

### **2.7.4 Overweight**

Childhood obesity is associated with a higher probability of obesity in adulthood, which can lead to a variety of disabilities and diseases, such as diabetes and cardiovascular diseases. The risks for most non-communicable diseases resulting from obesity depend partly on the age at onset and the duration of obesity. According to WHO (2010) obese children and adolescents are likely to suffer from both short-term and long-term health consequences, the most significant being:



- cardiovascular diseases, mainly heart disease and stroke;
- diabetes;
- musculoskeletal disorders, especially osteoarthritis; and
- cancers of the endometrium, breast and colon.

**Table 2.1: Cut-off values for public health significance**

<b>Indicator</b>	<b>Prevalence cut-off values for public health significance</b>
Underweight	< 10%: Low prevalence 10-19%: Medium prevalence 20-29%: High prevalence ≥ 30%: Very high prevalence
Stunting	< 20%: Low prevalence 20-29%: Medium prevalence 30-39%: High prevalence ≥ 40%: Very high prevalence
Wasting	< 5%: Acceptable 5-9%: Poor 10-14%: Serious ≥ 15%: Critical

**Source: WHO, 2010.**

## 2.8 Vitamin A Deficiency

Vitamin A deficiency results from inadequate dietary intake of vitamin A to satisfy physiological needs. It may be exacerbated by high rates of infection, especially diarrhoea and measles. It is common in developing countries but rarely seen in developed countries (WHO, 2010). Vitamin A deficiency is a public health problem in more than half of all countries, especially those in Africa and South-East Asia, most severely affecting young children and pregnant women in low-income countries (WHO, 2010).

Vitamin A deficiency can be defined clinically or sub-clinically. The stages of xerophthalmia clinical spectrum of ocular manifestations of vitamin A deficiency, from

the milder stages of night blindness and Bitot spots to the potentially blinding stages of corneal xerosis, ulceration and necrosis (keratomalacia) are regarded both as disorders and clinical indicators of vitamin A deficiency (WHO, 2010). Night blindness (in which it is difficult or impossible to see in relatively low light) is one of the clinical signs of vitamin A deficiency and is common during pregnancy in developing countries (WHO, 2010). Blood concentrations of retinol (the chemical name for vitamin A) in plasma or serum are used to assess subclinical vitamin A deficiency. A plasma or serum retinol concentration  $< 0.70 \mu\text{mol/l}$  indicates subclinical vitamin A deficiency in children and adults, and  $< 0.35 \mu\text{mol/l}$  indicates severe vitamin A deficiency (WHO, 2010).

Night blindness is one of the first signs of vitamin A deficiency. In its more severe forms, vitamin A deficiency contributes to blindness by making the cornea very dry and damaging the retina and cornea (WHO, 2010). An estimated 250, 000–500, 000 vitamin A-deficient children become blind every year, and half of them die within 12 months of losing their sight. Vitamin A deficiency also contributes to maternal mortality and other poor outcomes of pregnancy and lactation. Furthermore, it diminishes the ability to fight infections. Even mild, subclinical deficiency can be a problem, as it may increase children's risk for respiratory and diarrhoeal infections, decrease growth rates, slow bone development and decrease the likelihood of survival from serious illness (WHO, 2010).

## **2.9 Childhood Fever, Coughing and Diarrhoea**

Fever, coughing and dehydration from diarrhoea are important contributing causes of childhood morbidity and mortality in developing countries (WHO, 2003). Prompt medical attention when a child has the symptoms of these illnesses is, therefore, crucial in

reducing child deaths. In the 2014 GDHS report, fourteen percent of children under age 5 showed symptoms of had a fever, and 12 percent experienced diarrhea in the two weeks preceding the survey (Ghana Statistical Service, 2015).

## **2.10 The Level of Knowledge of Mothers on the Nutritional Requirements of the Under- Five Child**

Mothers' knowledge about nutritious meals for the children influences how the child is fed. The lack of knowledge on nutrition will result in the emergence of nutritional problems and will interfere with the growth and development of children (Carmen and Merry, 2014). Breastfeeding practices have a lot of implication for the nutritional status of the child. Early initiation of breastfeeding is important for both the mother and the child. Early suckling stimulates the release of prolactin, which helps in the production of milk, and oxytocin, which is responsible for the ejection of milk (WHO, 2012; Ghana Statistical Service, 2015). It also stimulates contraction of the uterus after childbirth and reduces postpartum blood loss. The first milk known as colostrum, produced in the first few days after delivery, is highly nutritious and contains antibodies that provide natural immunity to the infant. It is recommended that children be fed colostrum immediately after birth (within one hour) and that they continue to be exclusively breastfed even if the regular breast milk has not yet started to flow (WHO, 2012).

Knowledge of exclusive breastfeeding by mothers often leads to an improvement in complementary feeding practices (Lisa, 2000; Nyarko, 2008). In India, an interventional study where nutritional education was given to mothers to improve awareness about

infant feeding in the variety, quantity, quality and consistency of complementary feeding showed that, 80% initiate breast feeding after 3 days of birth, 54.3% absence of exclusive breastfeeding 86% delayed complementary feeding practices which were inadequate in quality, quantity, frequency and consistency (Sethi, Seth & Kashyap, 2003; Nyarko, 2008). In a similar study in south India, mothers were counseled about the choice of appropriate complementary foods and feeding frequency. The intervention group had improved feeding practices such as avoiding of feeding bottle and increased various type of complementary.

In a study conducted in Mekelle, Ethiopia, majority of mothers had knowledge that a child should be fed grains, roots and tubers (Amanuel, Gerez, Buruh, Hailemariam & Kalayou, 2013). The majority of the respondents were able to correctly identify dark green leaves (92%), yellow fruits (85%), yellow-colored vegetables (82%) and animal products like egg, fish and meat (82%) as good sources of vitamin A (Amanuel *et al.*, 2013).

In Ghana, more than half (56 percent) of children are breastfed within one hour of birth, while almost 9 in 10 (87 percent) are breastfed within one day of birth according to the 2014 GDHS report (Ghana Statistical Service, 2015). Fifty-two percent of children younger than 6 months were exclusively breastfed. The median duration of exclusive breastfeeding is about four months. Seventy-three percent of breastfed children had been given complementary foods by age 6-9 months. Women whose births were assisted by a traditional birth attendant are the most likely to have started breastfeeding early (62 percent) and those whose deliveries were not assisted by anyone are the least likely (34

percent). Fifty-two percent of children under age 6 months and 36 percent of those age 4-5 months are exclusively breastfed (Ghana Statistical Service, 2015). Ninety-five percent of all children are still breastfeeding at age 1, and 50 percent are still breastfeeding at age 2. Sixty-nine percent of children age 0-23 months are breastfed appropriately for their age (Ghana Statistical Service, 2015). This includes exclusive breastfeeding for children age 0-5 months and continued breastfeeding along with complementary foods for children age 6-23 months. More than 7 in 10 children under age 6 months (74 percent) are predominantly breastfed. This percentage includes children who are exclusively breastfed and those who receive breast milk and only plain water or non-milk liquids such as juice (Ghana Statistical Service, 2015). A study conducted by Nyarko in 2008 in the Bosomtwe District in the Ashanti region of Ghana showed that there was a significant ( $p=0.03$ ) relationship between early introduction of water and food before 6 months and the nutritional status of the child. According to Nyarko (2008), over 60% of the children malnourished were given water and food before 6 months, as against 43.9% of the children well nourished.

After six months, a child requires adequate complementary foods for normal growth as at this age breast milk alone is no longer sufficient to maintain the child's recommended daily allowances of nutritional requirements to enhance growth. Inadequate complementary feeding may lead to malnutrition and frequent illnesses, however, which in turn may lead to death. Complementary feeding is particularly important in sub-Saharan African countries, including Ghana where stunting is highly prevalent and

promotion of breastfeeding and appropriate complementary feeding could prevent growth faltering and deaths among children under age 5 (Ghana Statistical Service, 2015).

According to the GDHS (2014) report, 88 percent of breastfed children in Ghana aged 6-23 months received solid or semi- solid foods in addition to breast milk during the day or night. The common complementary foods provided include fortified baby foods (19 percent), foods made from grains (78 percent), fruits and vegetables rich in vitamin A (37 percent), other fruits and vegetables (18 percent), and food made from roots and tubers (26 percent) (Ghana Statistical Service, 2015). Children are also fed protein-rich foods such as legumes and nuts (12 percent); meat, fish, and poultry (48 percent); and eggs (18 percent). Only 4 percent are given other foods including cheese, yogurt, and other milk products. Liquids fed to children breastfeeding in this age group include other milk (13 percent) and other liquids (27 percent) (Ghana Statistical Service, 2015). The use of infant formula is minimal (5 percent). Among non-breastfeeding children age 6-23 months, almost everyone received solid or semi-solid foods the previous day. Ninety-four percent of non-breastfeeding children received foods made from grains; almost 8 in 10 (78 percent) were given meat, fish, poultry, or eggs; 40 percent ate fruits and vegetables other than those rich in vitamin A; 60 percent ate fruits and vegetables rich in vitamin A; and 38 percent consumed food made from roots and tubers(Ghana Statistical Service, 2015).

According to WHO recommendations, breastfed children age 6-23 months should receive animal-source foods and vitamin A-rich fruits and vegetables daily (WHO, 2010).

Because first foods almost always include a grain- or tuber-based staple, it is unlikely that young children who eat food from less than three groups will receive both an animal-source food and a vitamin A-rich fruit or vegetable. Therefore, three food groups are considered the minimum number appropriate for breastfed children ((WHO, 2010).). Breastfed infants aged 6-8 months should receive complementary foods two to three times a day, with one or two snacks; breastfed children age 9-23 months should receive meals three to four times a day, with one or two snacks. Non-breastfed children age 6-23 months should receive milk or milk products two or more times a day to ensure that their calcium needs are met. In addition, they need animal-source foods and vitamin A-rich fruits and vegetables. Four food groups are considered the minimum number appropriate for non-breastfed young children. Non-breastfed children age 12-23 months should be fed meals four to five times each day, with one or two snacks (WHO, 2005; WHO, 2008; and WHO, 2010).

### **2.11 The Level of Compliance of Nutritional Information Given to the Mothers with Children Under-Five**

Generally, compliance (or adherence) is defined as the extent to which a person's behaviour (in terms of taking medication or following a diet) coincides with medical or health advice (Schoetzau, Gehring, Franke, Grübl, Koletzko, Von Berg, Berdel, Reinhardt, Bauer, Wichmann, and the GINI Study Group, 2002). Mother's compliance to following a diet regime can be assessed by adherence to breastfeeding, healthy eating and complementary feeding recommendations (Schoetzau *et al.*, 2002). Additionally, mothers are expected to send their children to Child Welfare Clinics to receive vitamin A

supplement every six months till the 5<sup>th</sup> year (Source: Nutrition officer, Asante Akim North District). A study conducted by Schoetzau *et al.*, (2002) in Germany among nursing mothers, indicated that compliance to milk feeding recommendations was high (83.4%), and the lowest was (7.5%). The corresponding rates for adherence to solid food recommendations were as high as 60.0%, %, and the lowest was 22.9% (Schoetzau *et al.*, 2002). Schoetzau *et al.*, (2002) observed that the degree of dietary adherence was much higher with regard to milk nutrition (83.4%) than to solid food nutrition (60.0%). Schoetzau *et al.*, (2002) attributed this observation to firstly, the duration of solid food feeding recommendations related to the whole first year. It is supposed that compliance decreases with the duration of a dietary long term intervention programme. The study conducted by Schoetzau *et al.*, (2002) attributed discontinuation of dietary regime to change of residence, lack of time, too much stress and personal problems. The degree of compliance necessary to achieve the desired goal of malnutrition prevention is currently unknown in the Asante Akim North District.

## **2.12 Assess the Extent of Follow-Up Visits by Health Professionals to the Mothers with Children Under-Five**

According to WHO/UNICEF (2009), nearly 40% of all under-five child deaths occur in the first 28 days of life (the neonatal or newborn period). Most of these newborns are born in developing countries and most die at home. Up to two-thirds of these deaths can be prevented if mothers and newborns receive known, effective interventions (WHO/UNICEF, 2009). Studies have shown that home-based newborn care interventions can prevent 30–60% of newborn deaths in high mortality settings under controlled



conditions (3–7) (WHO/UNICEF, 2009). Therefore, WHO and UNICEF now recommend home visits in the baby’s first week of life to improve newborn survival.

Additionally the WHO (2013), recommends that all babies should be exclusively breastfed from birth until 6 months of age. Mothers should be counselled and provided support for exclusive breastfeeding at each postnatal contact. Home visits in the first week after birth are recommended for care of the mother and newborn (WHO, 2013). Although postnatal contacts also occur at clinic visits, the home visits can be made by midwives, other skilled providers or well-trained and supervised Community Health Workers (CHWs) (WHO, 2013). Follow-up with telephone contact or an office visit 48-72 hours after the neonate is discharged from the hospital is essential for the survival of the new born.

The core principle underlying maternal, newborn and child health programmes should be the “continuum of care”. This term has two meanings – a continuum in the lifecycle from adolescence and before pregnancy, pregnancy, and birth and during the newborn period and a continuum of care from the home and community, to the health centre and hospital and back again (WHO/UNICEF, 2009). Skilled care during pregnancy, childbirth and in the postnatal period prevents complications for mother and newborn, and allows their early detection and appropriate management (WHO/UNICEF, 2009). Studies conducted in Bangladesh, India and Pakistan have shown that home visits can reduce deaths of newborns in high-mortality, developing country settings by 30 to 61% (3–7). The visits have improved coverage of key newborn care practices such as early initiation of

breastfeeding, exclusive breastfeeding, skin-to-skin contact, delayed bathing and attention to hygiene, such as hand washing with soap and water, and clean umbilical cord care (WHO/UNICEF, 2009). This evidence complements the experience from developed country settings which has shown that postnatal home visits are effective in improving breastfeeding rates and parenting skills (WHO/UNICEF, 2009). No evidence-based recommendation has been established until now for the optimal timing and number of newborn care contacts (WHO/UNICEF, 2009). However, the first days of life are critical because most neonatal deaths occur in this period – 25–45% in the first 24 hours (9) and over 50% in the first 48 hours (WHO/UNICEF, 2009). All studies that support this statement included home visits on days 1 and 3 of life to ensure a postnatal contact and support for improved care (WHO/UNICEF, 2009). In high mortality settings and where access to facility based care is limited, WHO and UNICEF recommend at least two home visits for all home births: the first visit should occur within 24 hours from birth and the second visit on day 3. If possible, a third visit should be made before the end of the first week of life (day 7) (WHO/UNICEF, 2009).

Most studies on infant mortality have concentrated on the new born period. Much attention has not been paid to the period of growth to the age range 2-5 years, which is also a critical period of growth. There appears to be a gap in the “continuum of care” as defined by WHO/UNICEF. Little or no data is available on the effects of home or follow up visits by health professionals to infants between the ages of 2-5 years. This is the current status of the under-five child in Asante Akim North District of the Ashanti region. All available literature indicates that home visits or follow ups by skilled health personnel

are of immense benefits to the under-five child. These include promotion of birth registration and timely vaccination according to national schedules and if feasible, provide home treatment for local infections and some feeding problems (WHO/UNICEF, 2009).

### **2.13 Determine the Level of Flow of Information on the Under-Five Child from the Health Facility to District and Regional Health Directorates**

The Ghana Health Service produces weekly and quarterly bulletins on priority diseases and provides feedback to the regions Ghana health (Ghana Health service (GHS), 2010). This is done in collaboration with Program managers and Center for Health Information Management. Reliable and timely health information is vital for operational and strategic decision making that save lives and enhances health (Sultan, Challi & Waju, 2011). The importance of health information systems have increased for community oriented decision making rather than political and bureaucratic supervision (Sultan *et al.*, 2011). The major sources of data and health information are from routine reports from public health institutions and their registration books of facilities and administrative record of District Offices. Routine reports such as monthly, quarterly, annual reports, and weekly notification of diseases are important sources of feedback for the health personnel (Sultan *et al.*, 2011).

Data must be collected, processed and transformed, communicated, and used to inform decisions on resource allocations, policy formulation, staffing, service delivery, cost-recovery, supportive supervision, and other elements working toward improved health

outcomes (Sultan *et al.*, 2011). A study conducted in South West Ethiopia by Sultan *et al.*, (2011) revealed that 3(1.0%) of health personnel complained of lack of supportive supervisions and timely feedback. Sultan *et al.*, (2011) reports that in the case of District Health Offices, feedbacks was given orally in the visit and Zonal review meeting. The report by Sultan *et al.*, (2011) revealed that majority of the staffs felt that analysis and direct utilization of health data or information were left for higher levels and their duty were only collecting and passing the data to the next levels.

As a result of decentralization and health sector reform, services are integrated as one goes down the hierarchy of health structure from the national to the sub district. This has affected the supervision system, whereby one technical person down the line may supervise several technical areas of service delivery. The Ghana Health Service (2010) report cites poor quality of some of the clinical care data as one the challenges of the service.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter covers how the study was conducted on the subject under consideration. The chapter is sub-divided as follows:

- Research design
- Population
- Sampling and sampling procedures
- Data collection instruments and
- Procedure for data analysis

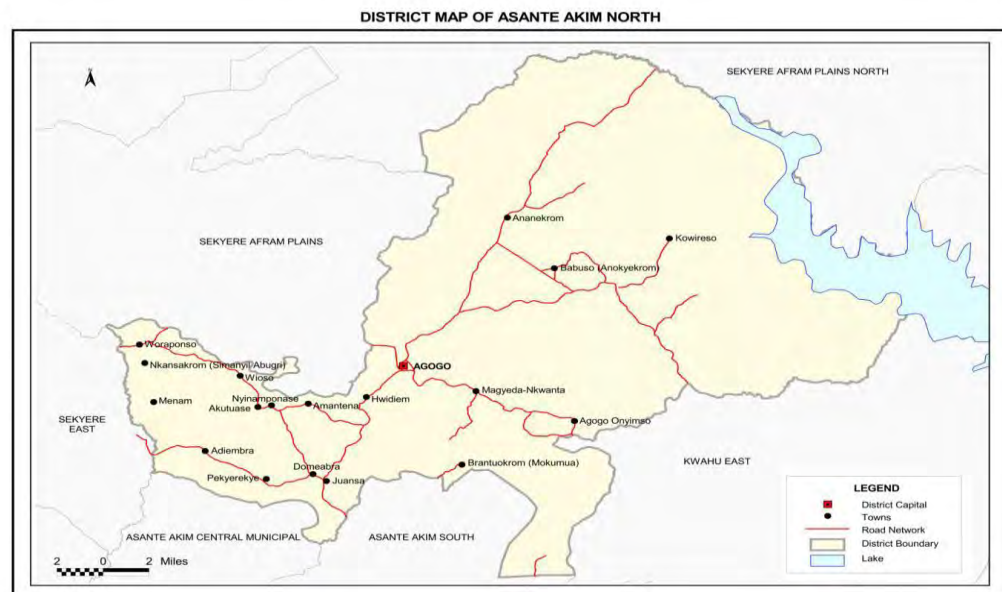
#### **3.1 Research Design**

The research was carried out using both quantitative and qualitative approaches. The quantitative approach was used to collate data with the use of structured questionnaire from respondents. The qualitative was employed to enable researcher gather important pieces of information which might not be obtained from the questionnaire through casual conversations during interaction with respondents and health personnel.

#### **3.2 Study Area**

The study was carried out in the Asante Akim North District of the Ashanti Region. Asante Akim North District is one of the newly created districts in Ghana. It was created in 2012 and was carved out of the Asante Akim North Municipality established by Legislative Instrument 2057 (Republic of Ghana, 2012). The District was inaugurated on

28<sup>th</sup> June, 2012 with Agogo as its capital. The District is located on the eastern part of Ashanti Region and lies between latitudes 6° 30" and 7° 30" North and longitudes 0° 15" and 0° 20" West. It is bounded to the north by Sekyere Kumawu District, Kwawu East in the east, Asante Akim South in the south and Sekyere East District in the West. The total land area is 1,126 square kilometres constituting 4.6 percent of the regions land area which is 24,389 kilometres. The total population of the District stood at 69,186 in 2010. The District has a more populous rural sector (53.5%) than the urban sector (46.5%). Below is a map of the study area.



**Fig 3.1: District Map of Asante Akim North,**

Source: Ghana Statistical Service, GIS

### 3.3 Population

The population used was mothers with children under five years of age living within the study area. Health personnel into public or community health also formed part of the population.

### 3.4 Sample and Sampling Technique

The District Health Directorate is sub-divided into four sub-districts and the Child Welfare Clinics are grouped into twenty two (22) outreach teams or zones, spread throughout in the four (4) sub- districts. However, three sub-districts were used for the study because the fourth one was not easily accessible to the researcher. From the cluster of outreach zones, simple random sampling technique was used to select ten (10) outreach teams. Two hundred and sixty five (265) mothers with children under five (5) and fifteen (15) health personnel were randomly sampled for the study.

The two hundred and sixty-five mothers with children under-five years were determined statistically using the population proportion sample determination formula ( $n = z^2 P (1-P) / d^2$ ). This was based on the assumption that the children under five with malnutrition was seventy-eight percent (78%) and an estimated difference between the actual proportion and the research value to be 0.05 at 95% confidence level. Thus using the formula:

$$n = \frac{z^2 p(1 - p)}{d^2}$$

where:

n = The estimated sample size

p = Sample proportion 78% (proportion assumed to answer the questionnaire)

d = The probability that the desired sample size will not be representation of the study (5%)

z = level of confidence that the chosen sample will be representation of the population (1.96)

$$n = \frac{1.96^2 \times 0.78(1 - 0.78)}{0.05^2}$$

$$n = \frac{1.96^2 \times 0.78(0.22)}{0.0025}$$

$$n = \frac{1.96^2 \times 0.1716}{0.0025}$$

$$n = \frac{3.84 \times 0.1716}{0.0025}$$

$$n = \frac{0.658944}{0.0025}$$

$$n = 265$$

Fifteen health personnel were selected from the three sub districts used for the study. Five were randomly selected from the CWCs visited during the period when data was gathered in each sub district.

### 3.5 Types and Sources of Data

Both primary and secondary data were used. The primary data was obtained using structure questionnaire through interviews to solicit for information from mothers whereas secondary data constituted information obtained from Child Health Records booklets of children under five (5) years of age who were sent to the Child Welfare Clinics (C.W.Cs) by their parents. This was done in order to ascertain whether the C.W.C health personnel take anthropometric data such as age, weight and height of children. Health personnel were given questionnaire with open- and close-ended questions to complete.



### **3.6 Instruments for Data Collection**

The instruments used to source for information were:

- Structured questionnaire and
- Structured interview.

These instruments were chosen because of variations in population samples involved in the study. Structured questionnaire and interviews were used to solicit for information from both mothers and health personnel. The interviews and questionnaires were administered by the researcher.

### **3.7 Data Analysis**

Data was analyzed using Statistical Package for Social Sciences version 16 and Microsoft Excel to generate frequencies, percentages, charts and graphs and interpretations given accordingly. The determination of the prevalence of malnutrition (weight-for-age, weight-for-height and height-for-age) according to gender and age categories was based on the Z-scores in the Child Health Records Booklet (Appendix C and Appendix D). A child was classified as underweight or severely underweight when that child's weight-for-age deviates by -2 or -3 Z score, respectively, from the standard population. Wasting and severely wasted status as malnutrition were determined when a child's weight-for-height score deviates from the reference population by -2 or -3 Z score respectively. In addition, height-for-age standard deviation of -2 or -3 Z score was used to classify the children as either stunted or severely stunted. Pearson Correlation Coefficient (Bivariate) was used to analyze weight-for-age status as a function of maternal factors in section A of the questionnaire.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.0 Anthropometric Characteristics of the Child**

This section presents the results of anthropometric characteristics of the child. The data gathered from the questionnaires were presented, analyzed and discussed to set the background for discussion of results in line with the objectives of the study and research questions. The results are presented as descriptive statistics including frequencies and percentages in tables and graphs. Observations and extracts of interviews are incorporated as evidence.

#### **4.1 Gender and Age of Children**

It can be observed from Table 1 that, the majority of the children were females (53%) with a lower male percentage of 47%. About 41% of the children were within the age of 13 – 24 months with few numbers of children (1.5%) between the ages of 49 – 60 months respectively (Table 4.1). The result indicates that the study was gender sensitive with more females than males at the Child Welfare Clinics. Majority of the children being between the ages of 13-24 months can be attributed to the fact most of them were still going through the immunization schedule.

**Table 4.1: Gender and Age Characteristics of Children**

Variable	Frequency	Percentage (%)
Sex of child:		
Male	125	47.2
Female	140	52.8
<b>Total</b>	<b>265</b>	<b>100</b>
Age of child:		
0-6 months	47	17.7
7-12 months	57	21.5
13-24 months	108	40.8
25-36 months	38	14.3
37-48 months	11	4.2
49-60 months	4	1.5
<b>Total</b>	<b>265</b>	<b>100</b>

#### 4.1.1 Gender Differences in Under Five Malnutrition Prevalence Rates

Results from Table 4.2a indicates that of the 32% underweight infants, 17.7% (47) were boys with 14.3% (38) being girls under five years of age. Only one male (0.4%) child was overweight. Therefore, underweight which is one of the key indicators of malnutrition is slightly on the high side among the under five children and that more boys are malnourished than girls, in the Asante-Akim North District. The results corroborate a study by Mensah (2014), which suggested that more boys (22.7%) were malnourished than girls (20.0%).

**Table 4.2a: Prevalence of Under Five Malnutrition according to Gender in the Asante-Akim North District**

Malnutrition status	Male		Female		Total	
	Freq.	%	Freq.	%	Freq.	%
Weight-for-age						
Normal	77	29.1	102	38.5	179	67.6
Underweight	47	17.7	38	14.3	85	32.0
Overweight	1	0.4	0	0.0	1	0.4

#### 4.1.2 Age Differences in Under Five Malnutrition Prevalence Rates

Data from Table 4.2b reveal that 0.0% (0), 6.8% (18), 15.5% (41), 6.4% (17), 3.0% (8), and 0.4% (1) underweight children were within 0-6, 7-12, 13-24, 25-36, 37-48 and 49-59 age categories respectively. The results indicate that malnutrition is predominant in children under five in the Asante- Akim North District. The study suggests that children within the age bracket of 7-12, 13-24 and 25-36 months were at risk of being malnourished (Table 4.2b).

**Table 4.2b: Prevalence of Under Five Malnutrition according to Age (month) in the Asante Akim North District**

Malnutrition Status	Age (Months)					
	0-6	7-12	13-24	25-36	37-48	49-59
Weight-for-age:*						
Normal						
Freq.	47	37	69	19	5	2
%	17.7	13.9	26	7.2	1.9	0.8
Underweight						
Freq.	0	18	41	17	8	1
%	0	6.8	15.5	6.4	3	0.4
Overweight						
Freq.	1	0	0	0	0	0
%	0.4	0	0	0	0	0

\*Normal, overweight and underweight were determined using the Z-scores in the Child Health Records Booklet.

#### 4.1.3 Weight-for-age

Weight-for-age is a composite index of weight-for-height and height-for-age and thus does not distinguish between acute malnutrition (wasting) and chronic malnutrition (stunting). Children can be underweight for their age because they are stunted, wasted, or

both. Weight-for-age is an overall indicator of a population's nutritional health (GSS, 2015).

The findings of the study revealed that malnutrition is slightly high with 32.0% of the children under five being underweight in the Asante-Akim North district. It came to light in Table 4.2a that more boys (17.7%) were underweight than the girls (14.3%). The findings corroborate the study by UNICEF in 2008 in Ghana as cited by Mensah (2014) which concludes that 18.3% of boys and 17.1% of girls under five children are malnourished in Ghana. Mahgoub *et al.*, (2006) also indicated that in Botswana, malnutrition is significantly ( $p > 0.01$ ) higher among boys than among girls. Furthermore, in Asante Akim North Municipality, the prevalence of underweight was 22.7% for boys as compared to 20.0% for girls (Mensah, 2014). It therefore appears that underweight is on the decline in the Asante-Akim North district.

The current study also revealed that, under five underweight increases as the children grow older. A report by Ghana Health Service in 2006 supports this finding. The report indicated an upward surge in malnutrition among children within 0-11, 12-23 and 24-59 months between the periods 2003-2006. Also, a study by Ray (2001) indicated that in rural India, the proportions of underweight (65.5%) and stunting (81.8%) were highest among children between 13-24 months than those less in age. A recent report by the GSS (2015), show that 11% of children are underweight with 2% being classified as severely underweight, this results however shows a decrease from the 2008 figures of 14% and 3%, respectively. The report indicates that the proportion of children who are

underweight is greater in rural areas (13%) than urban areas (9%). This may be explained by the fact that, most of the parents are poor and find it difficult to provide the child being weaned the necessary nutrients in the rural areas. According to WHO (2010) and UNICEF (2010) recommendations on complementary feeding, breastfed infants aged 6-9 months should receive complementary foods two to three times a day, with one or two snacks while breastfed children age 9-24 months should receive meals three to four times a day, with one or two snacks. Non-breastfed children age 6-23 months should receive milk or milk products two or more times a day to ensure that their calcium needs is met. In addition, they need animal-source foods and vitamin A-rich fruits and vegetables. Majority of the nursing mothers admitted that they could not follow the recommended complementary feeding regime for their children because they had to leave for farm/work early. Hence, do not get enough time to feed the child properly.

#### **4.1.4 Height-for-Age and Height-for-Weight**

Apart from the weight - for- age, two other major indicators for the assessment of nutrition status of under five children are: Height –for-age and height-for weight. Height-for-age is a measure of linear growth. A child who is below minus two standard deviations from the reference median for height-for-age is considered short for his or her age, or stunted, a condition reflecting the cumulative effect of chronic malnutrition (GSS, 2015). Weight-for-height describes current nutritional status. A child who is below minus two standard deviations from the reference median for weight-for-height is considered too thin for his or her height, or wasted, a condition reflecting acute or recent nutritional deficits (GSS, 2015). The study revealed a slightly higher proportion of male (20%) than female (17%) children being stunted. Again, stunting was greater among children in rural

areas (22%) than urban areas (15%). The Ghana Statistical Service (2015), reports that 19% of Ghanaian children are stunted (below -2 SD) and 5% are severely stunted (below -3 SD), a decrease from the figures of 28% and 10%, respectively, reported in the 2008 GDHS survey. Stunting increases with age, peaking at 28% among children age 24-35 months. According to the 2014 GDHS report, 5% of children are wasted and less than 1% are severely wasted, representing a decrease from the figures reported in 2008 (9% and 2%, respectively). The report shows that wasting is highest among children age 6-11 months (10-11 percent) (GSS, 2015). Therefore the height –for-age and height-for-weight are very important measurements of the nutritional status of a child.

As indicated in the introductory part of this study, there is inadequate national data to provide complete and reliable information on child health and nutrition. The study discovered that most of the health personnel at the CWC do not take height of the children. They only take the age and weight which is used to measure underweight and or overweight of the child. They claimed this was not often done due to inadequate personnel. It was however observed, that in one outreach center CWC personnel took the height and weight of some of the children. The personnel however did not record the data of the children’s height in the Child Health Records booklets. The current (2016) Child Health Records booklets of children under five (5) though has been revised, do not have any column or space for data on height of the child (Appendix C and D). Although weight-for-age is an overall indicator of a population’s nutritional health (GSS, 2015), the importance of Height-for-age (stunting) and Height-for-weight (wasting) cannot be overlooked. This deficit in data collection does not give a complete picture of the malnutrition status of the under-five child.

## 4.2 Background Information of Respondents (Nursing mothers)

Results from Table 4.3 show that about half (50.2%) of the mothers were within ages of 26-36 years with 39.6% between the ages of 15-25 years. Only 1 mother was below 15 years (Table 4.3). Results from the table indicate that majority (52.5%) of the study population attended or completed Junior High school (J.H.S) or middle school. About 21.9% had no formal education, 10.9% attended secondary school while only 8.7% attained tertiary education (Table 4.3). The majority of mothers (55.8%) were co-habiting while 38.95% were married (Table 4.3). Only 1 (0.4%) was divorced (Table 4.3). Majority of the mothers were Christians (87.5%) with 10.9% being Muslims (Table 4.3).

**Table 4.3: Demographic Characteristics of Respondents (Nursing mothers)**

Variable	Frequency	Percentage (%)
<b>Age of mother:</b>		
less than 15 years	1	0.4
15-25 years	105	39.6
26-35 years	133	50.2
36-45 years	26	9.8
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Highest level of education attained:</b>		
no formal education	58	21.9
primary education	16	6.0
J.H.S/Middle school	139	52.5
secondary education	29	10.9
Tertiary education	23	8.7
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Marital Status:</b>		
single	13	4.9
married	103	38.9
Divorced	1	0.4
co-habiting	148	55.8
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Religion:</b>		
Christian	232	87.5
Muslim	29	10.9
Traditional	1	0.4
Other	3	1.1
<b>Total</b>	<b>265</b>	<b>100.0</b>



**Table 4.3: Continued**

<b>Mother's occupation:</b>		
unemployed	53	20.0
apprentice	17	6.4
trader	50	18.9
farmer	90	34.0
self-employed	22	8.3
government worker	29	10.9
other	4	1.5
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Monthly income:</b>		
Does not earn any income	71	26.8
Less than GH¢50	30	11.3
GH¢50- GH¢300	123	46.4
GH¢301 - GH¢600	15	5.7
GH¢601 - GH¢800	15	5.7
Above GH¢800	11	4.2
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Number of children born to the mother:</b>		
1 -3	200	75.5
4-6	53	20.0
7-9	12	4.5
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Number of children less than five years:</b>		
1	175	66.0
2	84	31.7
3	6	2.3
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Number of people fed in the household:</b>		
2-5	124	46.8
6-9	114	43.0
10-13	26	9.8
14-17	1	0.4
<b>Total</b>	<b>265</b>	<b>100.0</b>

The main occupation of the mothers was farming (34%). Only a very small proportion (1.5%) of the study population had salaried employment (Table 4.3). Some worked in the rural banks and others in day care centres. About 20% were unemployed while 18.9% and 6.4% were traders and apprentices respectively (Table 4.3). About 26.8% of the respondents earned no income while 11.3% earned income less than GH¢50.00 a month (Table 4.3). About 46.4% of the mothers earned income within the range of GH¢50-

GH¢300 (Table 4.3). A large of the respondents (75.5%) had between 1 to 3 children (Table 4.3). Majority (66.0%) had only one child less five years of age with six mothers (2.3%) having three children who were less than five years of age (Table 4.3). Results from table 4.3 show that only one mother fed a household of between 14 to 17 members with less than half the population (46.8%) feeding between 2-5 people in a household.

#### 4.2.1 Maternal Factors Influencing Nutritional Status of Under Five Children in the Asante- Akim North District

Pearson Correlation Coefficient analysis was used to estimate weight-for-age status as a function of some maternal factors (maternal age, maternal education level, marital status, maternal occupation, monthly income, religion, number of children born to the mother, number of children under five years and number of people fed in the household).

**Table 4.4: Pearson Correlation Coefficient (Bivariate) analysis of weight –for-age status as a function of maternal factors**

<b>Variables</b>	<b>Pearson correlation coefficient (r)</b>	<b>Sig. (2-tailed)</b>	<b>Number (N)</b>
Age of mother	0.000	0.993	265
Level of education	0.230**	0.000	265
Marital status	0.122	0.048	265
Mother's occupation	0.260**	0.000	265
Monthly income	-0.193	0.002	265
Religion	-0.102	0.097	265
Number of born to the mother	-0.139*	0.023	265
Number of children less than 5 years	-0.184**	0.003	265
Number of people fed in the household	0.589**	0.000	265

\*\* Correlation is significant at the 0.01 level (2-tailed)

Results from Table 4.4 show that the odds of being underweight could be significantly determined by some maternal factors. For example, maternal level of education (Pearson correlation (r) = 0.230\*\*, sig. =0.000, maternal occupation (Pearson correlation (r) =

0.260\*\*) and number of people fed in the household (Pearson correlation ( $r$ ) = 0.589\*\*, sig. 0.000) were significant predictors of whether a child under five years would grow underweight (Table 4.4). There was a weak correlation between underweight and marital status (Table 4.4). However, maternal factors such as age, monthly income, religion, number of children born to the mother and number of children less than five years were not significant predictors of whether a child under five years would grow underweight (Table 4.4).

#### **4.2.2 Maternal Factors as Determinants of Weight-for-Age Status of Under Five Children**

The age of a mother at pregnancy or at child birth is also critical to determining the child's nutritional status (WHO, 2005; Mensah, 2014). However, the findings of this study showed that age, monthly income, religion, number of children born to the mother and number of children less than five years are factors that could not be used to determine weight-for-age status of the under five children in the Asante-Akim North District. The findings from the study revealed that maternal demographics such as education level, maternal occupation, number of people fed in the house could predict the weight-for-age status of children. Maternal education is supposed to have some effect on the health and child caring practices of the mother. Literate mothers adopt many improved behaviors related to maternal and child health care, feeding and eating practices which ultimately affect the nutritional status of children (Joshi *et al.*, 2014). A study conducted in Nepal among school - going children showed that, 58% of mothers of malnourished children did not have adequate knowledge regarding the diet requirements of the child and the

nutritional value of food items (Joshi *et al.*, 2014). The economy of the area (district) to a greater extent is agrarian. This accounted for a large percentage of respondents being farmers (Table 4.3). Since farming is seasonal and the kind of farming practiced is subsistence, income levels of respondents are low. This explains why 46.4% of respondents earning between GH¢50.00 and GH¢300.00 (Table 4.3). With such low incomes, some nutrient needs such as protein of high biological value for example fish and meat would be difficult to meet. According to the International Federation of Red Cross and Red Crescent Societies, (2013), one of the immediate causes of malnutrition is inadequate diet. Also, inadequate complementary feeding may lead to malnutrition and frequent illnesses, which in turn may lead to death (Ghana Statistical Service, 2015). The number of people in the house increases the pressure on available food resources. This results in providing inadequate foods and necessary nutrients for the children.

#### **4.3 Level of Knowledge of Mothers on the Nutritional Requirements of the Under Five Child**

##### **4.3.1 Knowledge Level of Nursing Mothers on Breastfeeding and Exclusive**

###### **Breastfeeding of Children Under Five Years in the Asante-Akim North District**

Nursing mothers' level of knowledge on breastfeeding and exclusive breastfeeding (EBF) was studied based on recommended infant feeding and care practices of the under five child. Majority (99.6%) of the mothers breastfed their children while only one person did not breastfeed the baby (Table 4.5). About 62.6% of the mothers were still breastfeeding at the time of the study (Table 4.5). A greater number (69.4%) breastfed their babies less than 30 minutes after delivery while 6% did not know the time they

initiated breastfeeding after delivery (Table 4.5). A large number (51.7%) gave water while 42.3% gave only breast milk to the baby in the first 6 months (Table 4.5). Others gave porridge (2.6%) and formula foods (3.4%) in the first 6 months respectively (Table 4.5).

**Table 4.5: Breastfeeding and Exclusive Breastfeeding**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Did you ever breastfeed this child?</b>		
Yes	264	99.6
No	1	0.4
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Is the child still breastfeeding?</b>		
Yes	166	62.6
No	99	37.4
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>When did you put the child to breast after birth?</b>		
Less than 30 minutes	184	69.4
1 hour	40	15.1
2 hours	12	4.5
3 hours	4	1.5
Above fours	9	3.4
None of the above	16	6.0
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Did you give any of the following to your child/children in the first six months?</b>		
Water	137	51.7
Only breast milk	112	42.3
Porridge	7	2.6
Other (e.g. formula foods)	9	3.4
<b>Total</b>	<b>265</b>	<b>100.0</b>

Majority of the mothers initiated breastfeeding early within 30 minutes after delivery (Table 4.5). Growing evidence points to the impact of early initiation of breastfeeding on neonatal mortality. Early initiation of breastfeeding is important for both the mother and the child. Early suckling stimulates the release of prolactin, which helps in the production

of milk, and oxytocin, which is responsible for the ejection of milk (WHO, 2012; Ghana Statistical Service, 2015). It also stimulates contraction of the uterus after childbirth and reduces postpartum blood loss. The first milk known as colostrum, produced in the first few days after delivery, is highly nutritious and contains antibodies that provide natural immunity to the infant. It is recommended that children be fed colostrum immediately after birth (within one hour) and that they continue to be exclusively breastfed even if the regular breast milk has not yet started to flow (WHO, 2012). Therefore, education on the importance of early initiation of breastfeeding for expectant mothers should be vigorously emphasized during pre-natal clinics and assisted to do so by the health personnel upon delivery of the baby.

Almost all mothers breastfed their babies in the study area (Table 4.5). However, only 42.3% practiced exclusive breastfeeding. The findings of the study supports the 2014 GDHS reports which indicated that 99% of children under age 6 months are being breastfed. However, only about half (52%) are exclusively breastfed, as recommended (GSS, 2015). Such attitudes defeat the objectives of exclusive breastfeeding which has far reaching benefits to the nutritional status of the infant. Some of the mothers claimed they gave water to their children because they thought the children would become dehydrated. Exclusive breast feeding has benefits for infants' intellectual, motor and emotional development (UNICEF, 2011). Many studies confirm that children who are breastfed do better on tests of cognitive and motor development, as well as academic outcomes, than children who are not breastfed, and infants who are fed breast milk tend to have higher Intelligent Quotient (IQ) scores (UNICEF, 2011). A recent study adds to the body of

literature concluding that children who are breastfed for more than six months have a lower risk of mental health problems as they enter their teenage years (Oddy *et. al.*, 2010). Other facets of exclusive breastfeeding are harder to quantify but greatly beneficial. These include the additional opportunities for bonding of mother and infant through more time together with skin-to-skin contact. Furthermore, exclusive breastfeeding has economic and social benefits. The 2010 version of Unicef's programme on Infant and Young Child Feeding Practices states that breastfeeding is the least expensive method of infant feeding (UNICEF, 2011). For many poor households, the high cost of breast-milk substitutes, feeding and sterilizing equipment and fuel represents a substantial drain on scarce household resources (UNICEF, 2011). Added to this are the costs of health care for the sick infant exposed to contaminants from mixed feeding or water in addition to breast milk. When mothers miss work to care for sick infants, employers and the economy are also affected (UNICEF, 2011). Moreover, as previously stated, breastfeeding is a basic human right, so effective EBF practices should become available to all, including vulnerable and marginalized populations (UNICEF, 2011). Breastfeeding can help bridge economic and social gaps.

#### **4.3.2 Knowledge Level of Nursing Mothers on Complementary Feeding Practices of Children Under Five Years in the Asante-Akim North District**

The knowledge of nursing mothers on recommended complementary feeding practices of the under five child was also studied. Data from Table 4.6 indicate that less than half (40.8%) of the number of the mothers initiated complementary feeding at 6 months while 32.1% initiated complementary feeding when the baby was less than 5 months.

Twenty-nine (10.9%) of the mothers had not yet introduced complementary feeding (Table 4.6). Results from Table 4.6 show that a greater number (47.2%) of the respondents continued to breastfeed their babies after introducing complementary foods for 13 – 18 months while 40.2% continued breastfeeding the babies up to 19 - 24 months (Table 4.6). Few mothers (0.4%) continued breastfeeding their babies for than less than 5 months (Table 4.6). Majority (77.0%) very often gave cereals and (54.3%) of the mothers very often add vegetables to the diet of the child (Table 4.6). Most of the mothers (51.7%) often introduce root and tubers into the diet of the child (Table 4.6). However, about 58.1% often do not give fruits to their children (Table 4.6). Concerning legumes/meat/fish/ egg/milk, 60.8% often gave one of the above listed foods to the child while 62.3% often included fats and oils in the diet of their children (Table 4.6). About 57.4%, 89.8% and 92.5% did not often give the legumes + cereals, fish + cereals and legumes + cereals + fish combinations to their children respectively (Table 4.6).

**Table 4.6: Introduction of Complementary Foods**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>At what age did start giving complementary foods to your child/children:</b>		
Not yet	29	10.9
Less than 5 months	85	32.1
At 5 months	16	6.0
6 months	108	40.8
Above 6 months	27	10.2
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How long do/did you continue to breastfeed the child after introducing complementary foods?</b>		
Less than 6 months	1	0.4
7-12 months	17	6.4
13-18 months	125	47.2
19-24 months	107	40.4
Above 24 months	15	5.7
<b>Total</b>	<b>265</b>	<b>100.0</b>



**Table 4.6: Continued**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>How often do you give root and tubers to your child?</b>		
Very often	3	1.1
Often	137	51.7
Not often	68	25.7
Not at all	57	21.5
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How often do you give fruits to your child?</b>		
Very often	2	0.8
Often	38	14.3
Not often	154	58.1
Not at all	71	26.8
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How often do you give legumes/meat/fish/eggs/milk to your child?</b>		
Very often	2	0.8
Often	161	60.8
Not often	61	23.0
Not at all	41	15.5
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How often do you give fats and oils to your child?</b>		
Very often	4	1.5
Often	165	62.3
Not often	45	17.0
Not at all	51	19.2
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How often do you give legumes + cereals to your child?</b>		
Very often	2	0.8
Often	98	37.0
Not often	13	4.9
Not at all	152	57.4
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>How often do you give fish + cereals to your child</b>		
Very often	5	
Often	14	1.9
Not often	8	5.3
Not at all	238	3.0
<b>Total</b>	<b>265</b>	<b>89.8</b>
		<b>100.0</b>
<b>How often do you give legumes + cereals + fish to your child</b>		
Very often	3	1.1
Often	15	5.7
Not often	2	0.8
Not at all	245	92.5
<b>Total</b>	<b>265</b>	<b>100.0</b>

### **4.3.3 Importance of Complementary Feeding to the Under Five Child**

The findings from the study revealed that 40.8% of the children had received timely complementary foods which support the 2014 GDHS report where 73% of children aged 6-8 months receive timely complementary foods (GSS, 2015). After six months, a child requires adequate complementary foods for normal growth as at this age breast milk alone is no longer sufficient to maintain the child's recommended daily allowances of nutritional requirements to enhance growth. Inadequate complementary feeding may lead to malnutrition and frequent illnesses, however, which in turn may lead to death (GSS, 2015).

Complementary feeding is particularly important in sub-Saharan African countries, including Ghana where stunting is highly prevalent and promotion of breastfeeding and appropriate complementary feeding could prevent growth faltering and deaths among children under age 5 (Ghana Statistical Service, 2015). Most of the mothers continued to breastfeed their children even after introducing complementary foods (Table 4.6). It is necessary to continue with breastfeeding after six months because during illness, especially diarrhoea or measles, it is common for a child to lose appetite and not use food effectively (IFRC, 2013). Several illnesses in a year can slow or interrupt a child's growth. Continuation of breastfeeding and complementary foods can help the child to fight illness, increase strength and reduce weight loss (IFRC, 2013).

The common complementary foods given to the children included cereals, root and tubers, legumes, fruits and vegetables, fish, egg or poultry and powdered milk. The findings supports the 2014 GDHS reports which indicated that common complementary

for children include foods from grains, root and tubers, fruits and vegetables, legumes, meat, fish, poultry and eggs (GSS, 2015). The study revealed that most of the respondents gave only corn dough porridge or bought millet porridge for their infants, only a handful added groundnut paste or powdered milk to the corn dough porridge. Some of mothers also often add root and tubers to the diet of the children.

Because first foods almost always include grain or tuber-based diet, it is unlikely that young children who eat from only these groups will receive both an animal-source food and a vitamin A –rich fruit or vegetable (WHO, 2010). However, the study showed some mothers added vegetables and fat and oils to the diet of the child (Table 4.6). Even though fruits such as banana, water melon and oranges were in season during the study period, a greater number of the mothers did not often add fruits to the diet of the children (Table 4.6). Since majority of the mothers were farmers, they preferred to get fruits directly from their farms rather than to buy from the market. The importance of fruits and vegetables cannot be overlooked in the diet of a child. Fruits and vegetables contain many vitamins and minerals that are good for the health of the child. These include vitamin A (beta-carotene), C and E, magnesium, zinc, phosphorus and folic acid (Australian Dietary Guidelines, 2013). Fruits and vegetables are also low in fat, salt and sugar. They are a good source of dietary fibre and help protect children from diseases.

Majority of the mothers found it difficult to give combinations of legumes + cereals, fish + cereals and legumes + cereals + fish to their children. These combinations of food together with fruits gives the under five child, a balanced diet. According to WHO recommendations, breastfed children age 6-23 months should receive animal-source

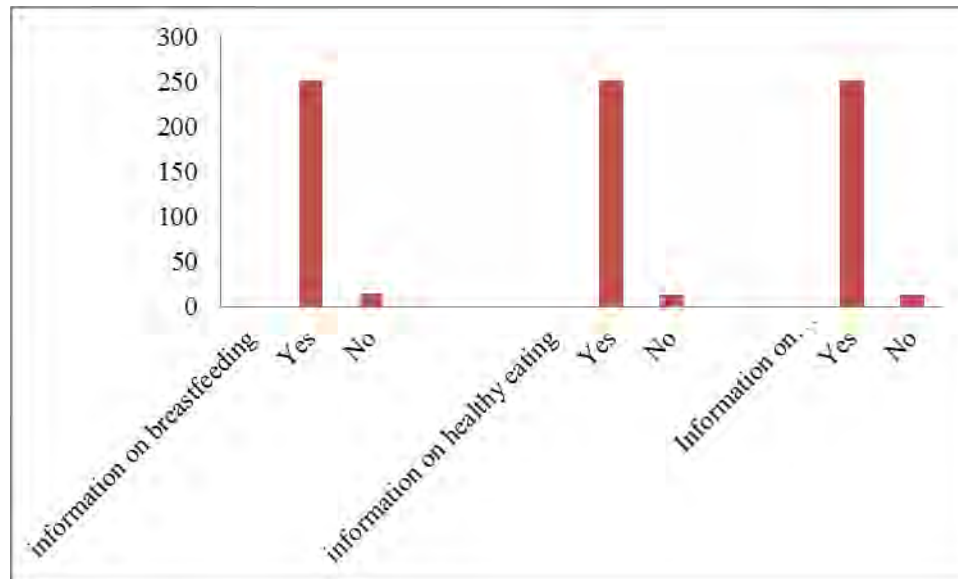
foods and vitamin A-rich fruits and vegetables daily to ensure optimum growth (WHO, 2010). The results show that children under five years in the Asante Akim North District did not eat a balanced diet. This is a poor complementary feeding practice which could have a negative impact on the feeding habits of the children; hence their ability to achieve standard growth. By eating well, the children will have the energy to play, concentrate better, learn, sleep better and build stronger teeth and bones (Australian Dietary Guidelines, 2013). Adoption of good complementary feeding practices for the under five child could help achieve the SDG -2.

#### **4.4 Level of Compliance of Nutritional Information Given To Mothers with Under Five Child**

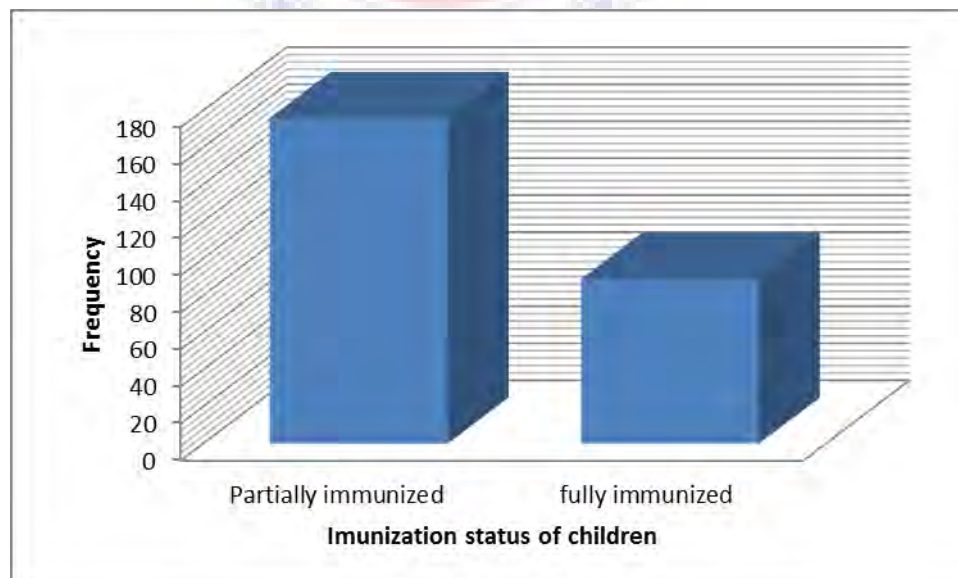
##### **4.4.1 Compliance of Nursing Mothers to Information/Education given Them on the Under Five Child in the Asante Akim North District**

Data was collected on the information/education given to nursing mothers on breastfeeding, healthy eating and complementary feeding and their ability to comply with the information or education. The immunization and vitamin A supplementation status of the under-five child was also studied. Results from figure 4.1 show that majority of the mothers received information on breastfeeding, healthy eating and complementary feeding when they attend the Child Welfare Clinic (C.W.C) while few mothers claimed they received no such information. Majority (60.8%) of the mothers were not able to comply with information given on breastfeeding, healthy eating and complementary feeding while 37% were able to comply with the information given them (Table 4.7). About 86.4% of the mothers send their children the child welfare clinic to receive vitamin

supplement on regular basis while 13.6% did not receive go on regular basis (Table 4.7). About half (51.3%) of the mothers indicated that their children had experienced diarrhea, fever or coughing two weeks before the study while 48.7% had no such experiences (Table 4.7).



**Figure 4.1: Information on Breastfeeding, Healthy Eating and Complementary Feeding.**



**Figure 4.2: Immunization status of child/children**

**Table 4.7: Compliance to Information/Education, Immunization and Vitamin A Supplementation Status of the Under Five Child**

Variable	Frequency	Percentage (%)
<b>Are you able to comply with the information/education given on breastfeeding, healthy eating and complementary feeding?</b>		
Yes	98	37.0
No	161	60.8
Partially	6	2.2
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Has your child received vitamin A supplement?</b>		
Yes	229	86.4
No	36	13.6
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Have you been receiving vitamin A supplement on regular basis</b>		
Yes	229	86.4
No	36	13.6
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Has your child experienced diarrhea, fever or cough on the last 2 weeks?</b>		
Yes		
No	136	51.3
<b>Total</b>	<b>129</b>	<b>48.7</b>
	<b>265</b>	<b>100.0</b>

#### **4.4.2 Compliance of Nursing Mothers to Information given Them on Breastfeeding and Complementary Feeding Practices**

Compliance can be explained as the extent to which a person's behaviour coincides with medical or health advice (Schoetzau, Gehring, Franke, Gröbl, Koletzko, Von Berg, Berdel, Reinhardt, Bauer, Wichmann, and the GINI Study Group, 2002). Mother's compliance to following a diet regime can be assessed by adherence to breastfeeding, healthy eating and complementary feeding recommendations (Schoetzau *et. al.*, 2002). Additionally, mothers are expected to send their children to Child Welfare Clinics to

receive vitamin A supplement every six months till the 5th year (Source: Nutrition officer, Asante Akim North District). A study conducted by Schoetzau *et al.*, (2002) in Germany among nursing mothers, indicated that compliance to milk feeding recommendations was high (83.4%), and the lowest was (7.5%). The corresponding rates for adherence to solid food recommendations were as high as 60.0%, and the lowest was 22.9% (Schoetzau *et al.*, 2002). Schoetzau *et al.*, (2002) observed that the degree of dietary adherence was much higher with regard to milk nutrition (83.4%) than to solid food nutrition (60.0%). This observation does not conform to the findings of this study. Although majority of the nursing mothers received information on breast feeding and complementary feeding, most of the mothers were not able to comply with the breastfeeding and complementary feeding recommendations (Table 4.7). The mothers cited pressure from family, friends and lack of time, as some of factors militated against their ability to comply with exclusive breastfeeding and complementary feeding regimes respectively. However, a greater number of the mothers were able to comply with the vitamin A supplementary regime (Table 4.7).

#### **4.4.3 Immunization and Vitamin A Supplementation Status of the Under Five Child in Asante Akim North District**

Immunization is pivotal to promoting child health, reducing childhood diseases and deaths. A larger number of the mothers had partially immunized their children as compared to full immunization (Figure 4.2). This can be attributed to fact that most of the children had not reached 18-23 months which was the termination period of all basic vaccinations. Those who were fully immunized were above the 23 months, the age by

which children should have received all basic vaccinations (GSS, 2015). A study conducted by Mensah (2014), revealed that a child under age five years with incomplete immunization is more likely to be wasted or stunted, but not underweight, than a child with a complete immunization.

The WHO recommendation to tie vitamin A supplementation to routine immunization accounted for more than two-thirds (86.4%) of the children under five years receiving vitamin A supplements on a regular basis to augment their vitamin A needs. Vitamin A supplement is given from six months of age till the child turns five years. Vitamin A deficiency affects about 190 million preschool age children, mostly in Africa and South-East Asia (WHO, 2011). In children, vitamin A is essential to support rapid growth and to help combat infections. Inadequate intake of vitamin A may lead to vitamin A deficiency which can cause visual impairment in the form of night blindness and may increase the risk of illness and death from childhood infections including measles and those causing diarrhea (WHO, 2011). The fourth Millennium Development Goal is to reduce by two thirds the mortality rate among children under five years of age by 2015 (WHO, 2011). Vitamin A supplementation is therefore an important component of the strategies required to reach this goal.

#### **4.4.4 Childhood Fever, Coughing and Diarrhoea**

Childhood fever, diarrhea and cough are important contributing causes of childhood morbidity and mortality in developing countries (WHO, 2003; GSS, 2015). A little above one half (51.3%) of the children had experienced fever, cough, diarrhea in the two weeks preceding the study; confirming the 2014 GDHS report, in which fourteen percent of



children under age 5 showed symptoms of having had a fever, and 12 percent experienced diarrhea in the two weeks preceding the survey (Ghana Statistical Service, 2015). When mothers were asked what they did to solve such problems, their responses were varied. Most of them resorted to buying from a chemical shop or continuing previous medication, some went to the herbalist and only a handful sent their children to the health facility for treatment. These are unacceptable medical practices. Prompt medical attention from a health facility when a child has the symptoms of these illnesses is, therefore, vital in reducing child deaths. It should be noted that the symptoms of these illness were based on a mother's perception of illnesses without validation by medical personnel.

#### **4.4.5 Nutritional Challenges of the Nursing Mothers**

A greater number (82.2%) of the respondents did not report their nutritional problems to the health personnel at the C.W.C. Only 12.8% reported their nutritional problems (Table 8). All the 34 (100%) mothers who reported their nutritional problems received feedback on their nutritional problems (Table 4.8). According to some of the mothers, sustaining the complementary feeding regime was a major challenge. Some claimed their children simply refused to eat. This, the mothers claim was due to the introduction of new food varieties into the diet of the child. Though some had problems, they did not see the need to report for the needed guidance or counseling. Others thought the children would adjust with time. Hence did not report to the health personnel at CWC.

**Table 4.8: Reporting nutritional Problems to Health Personnel at the Child Welfare Clinic**

Variable	Frequency	Percentage (%)
<b>Do you report your nutritional problems to the health personnel?</b>		
Yes	34	12.8
No	231	87.2
<b>Total</b>	<b>265</b>	<b>100.0</b>
<b>Do you receive any feedback from the health personnel on problems communicated?</b>		
Yes	31	11.7
No	234	88.3
<b>Total</b>	<b>265</b>	<b>100.0</b>

#### 4.5 Extent of Follow-Up Visits by Health Professionals

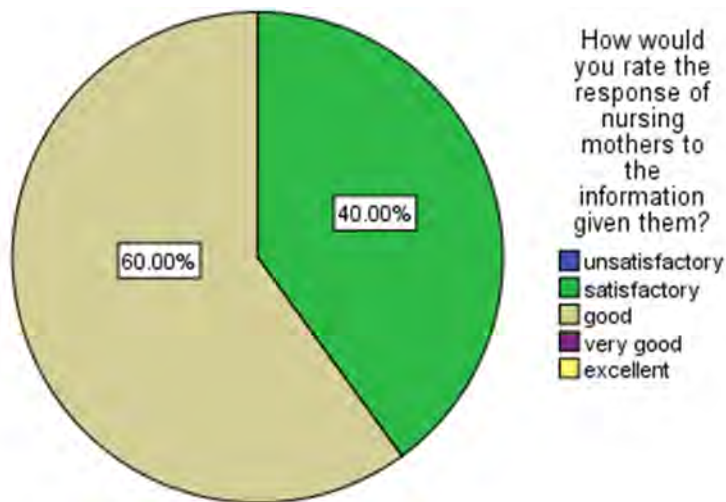
Data was collected and analyzed on data collected on mothers and the extent of follow-up visits by the health personnel to the nursing mothers at home and other places. Results from table 4.9 show that health personnel collected personal data of mothers and did follow-ups on the mothers at home and during community durbars to ensure compliance with information given on breastfeeding, healthy eating and complementary feeding.

**Table 4.9: Information on health personnel at Child Welfare Clinics (CWCs)**

Variable	Frequency	Percentage (%)
<b>Do you collect personal data of mothers?</b>		
Yes	15	100
No	0	0
<b>Total</b>	<b>15</b>	<b>100</b>
<b>Do you do follow ups on nursing mothers to ensure compliance to education/information given on education</b>		
Yes	15	100
No	0	0
<b>Total</b>	<b>15</b>	<b>100</b>

Majority of the health personnel claimed they visit the nursing mothers at home (Table 4.9). According to the health personnel, they have routine visits and specialized care. The routine visits involves following up on pregnant and nursing mothers and the aged. The specialized care involves visiting nursing mothers with specific problems on nutrition and other related public health issues (such as Tuberculosis patients and HIV patients). According to the WHO, home visits in the first week after birth are recommended for care of the mother and newborn (WHO, 2013). The home visits can be made by midwives, other skilled providers or well-trained and supervised Community Health Workers (CHWs) (WHO, 2013). Follow-up with telephone contact or an office visit 48-72 hours after the neonate is discharged from the hospital is essential for the survival of the new born (WHO, 2013). The core principle underlying maternal, newborn and child health programmes should be the “continuum of care”.

This term has two meanings – a continuum in the lifecycle from adolescence and before pregnancy, pregnancy, birth and during the newborn period and a continuum of care from the home and community, to the health centre and hospital and back again (WHO/UNICEF, 2009). Accessibility to some of the rural areas in the study area was a big challenge. The health personnel cited Ananekrom sub-district as one area where follow-ups was not regular due to the difficulty in getting access to the place. It therefore becomes difficult to carry out routine visits to such an area. This would create a gap in the “continuum of care” as defined by WHO/UNICEF. Children under five years in this sub-district would not be able to receive prompt interventions concerning child health care.



**Figure 4.3: A Pie Chart Showing the Rating of the Response of Nursing Mothers to information given them.**

Results from Figure 4.3 show that majority of the health personnel rate the response of nursing mothers to information given them on breastfeeding, healthy eating and complementary feeding as good (60%) while some health personnel rated it as satisfactory (40%). Although, health personnel working at the CWC rated the response of mothers to information given them on breastfeeding, healthy eating and complementary feeding as good and satisfactory (Figure 4.3), the rating contradicts the response of the nursing mothers as most of them did not practice exclusive breastfeeding, could not follow the complementary feeding regime and could not comply to information given them at the CWC. This could be attributed to the inability of the health personnel to have enough time to interact with the nursing mothers at the CWC and outside the CWCs.

#### 4.6 Level of Flow of Information from Health Professional to District Health

##### Directorate

Health personnel working at the CWC were asked questions relating to their work schedule. The level of flow of information between the health personnel and District Health Directorate is discussed under Table 4.10. Majority (93.3%) of the health personnel wrote monthly report which was forwarded to the office of the district health directorate (Table 4.10). All the health personnel indicated they receive feedback on report sent to the district health office and majority (86.4%) indicated that they communicate the feedback to the nursing mothers (Table 4.10).

**Table 4.10: Work schedule of Health Personnel at Child Welfare Clinics (CWC)**

Variable	Frequency	Percentage (%)
Report writing		
Yes	15	100
No	0	0
<b>Total</b>	<b>15</b>	<b>100</b>
How often do you write the report?		
Weekly	1	6.7
Monthly	14	93.3
Quarterly	0	0
Annually	0	0
<b>Total</b>	<b>15</b>	<b>100.0</b>
Do you get feedback from the office?		
Yes	15	100
No	0	0
<b>Total</b>	<b>15</b>	<b>100</b>
Is the response communicated to the nursing mothers?		
Yes	13	86.7
No	2	13.3
<b>Total</b>	<b>15</b>	<b>100.0</b>

The health personnel indicated that they write reports on duties they perform in the Child Welfare Clinics, on immunizations, nutritional status /weights, health education and counselling, home visits and school health services. According to Sultan *et al.*, (2011), the major sources of data and health information are from routine reports from public health institutions and their registration books of facilities and administrative record of District Offices. Routine reports such as monthly, quarterly, annual reports, and weekly notification of diseases are important sources of feedback for the health personnel. According to the health personnel, data collected enabled them to conveniently reach their clients outside of the C.W.Cs; do follow-up and ensure that their clients especially those with peculiar problems are doing well and going by education, guidance, counselling as well as medications prescribed to them. Sultan *et al.*, (2011), observed that data collected, processed and transformed, are communicated, and used to inform decisions on resource allocations, policy formulation, staffing, service delivery, supportive supervision, and other elements working toward improved health outcomes.

#### **4.7 Challenges Facing Health Personnel**

The health personnel stated the following as challenges they encountered in the discharge of their duties which are pertinent and require urgent attention. They include inadequate resources (transport and kit for the work), language barrier, and uncooperative attitude of some nursing mothers. Language barrier which was witnessed and experienced in some communities could be an impediment in attaining the goal of reducing the prevalence of malnutrition. The predominant language is Asante Twi but English is used by field personnel when the needed arises yet with much difficulty in most cases. In settler

communities such as Mankala and Oseikrom in one of the outreach zones in the Agogo sub-district, about one half of the clients encountered were from the northern part of the country who had settled there to farm. Some could hardly speak a word in Twi and had to be assisted by their neighbours who had settled for quite a while and could speak to Twi somehow to interpret what is being communicated. The probability to misinterpret and misinform is high; thus miscommunication could deprive clients of the needed information because they could not understand let alone comply. Such a challenge is likely to impede the implementation of interventions to reduce the prevalence of malnutrition in the Asante North District.



## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter discusses the summary, conclusions and offers recommendations that will encourage nursing mothers to improve the nutritional status the under five child in the Asante Akim North District. The findings of the study are summarized according to the objectives and research questions.

#### 5.1 Summary

The first objective was to investigate the level of knowledge of mothers with children under-five on the nutritional requirements of the under-five child. A greater number (69.4%) of the mothers initiated breastfeeding less than 30 minutes after delivery. A large number (51.7%) of the mothers gave water while 42.3% gave only breast milk to the baby in the first 6 months. Others gave porridge (2.6%) and formula foods (3.4%) in the first 6 months respectively. Giving water, porridge and formula foods other than breast milk alone to the child first for the first six months defeats the purpose of exclusive breastfeeding. Majority of the mothers introduced complementary feeding at 6 months. Most of the mothers continued to breastfeed their children after introducing complementary foods which can boost the child's immune system. This is a good complementary feeding practice. It can be concluded that most of the nursing mothers had knowledge on the nutritional requirements of the under five child but did not put the some of them into practice especially, exclusive breastfeeding.



The second objective was to determine the level of compliance of nutritional information given to the mothers with children under-five. The findings from the study revealed that majority of the nursing mothers received information on breast feeding and complementary feeding but were not able to comply with the breastfeeding and complementary feeding recommendations of WHO. The mothers cited pressure from family, friends and lack of time as some of the factors that affected their ability to comply with exclusive breastfeeding and complementary feeding regimes. However, a greater number of the mothers were able to comply with the immunization and vitamin A supplementary regimes. This can be attributed to the inability of most of the nursing to report their nutritional problems for the needed guidance or counselling.

The third objective was to evaluate the extent of follow-up visits by health professionals to mothers with children under-five. Results from the study show that health personnel collected personal data of mothers and did follow-ups on the mothers at home and during community durbars to ensure compliance with information given on breastfeeding, healthy eating and complementary feeding. However, accessibility to some of the rural areas in the study was a big challenge.

The fourth objective was to determine the level of flow of information on the under-five child from the health facility to district and regional health directorates. The findings of the study indicate that majority of the health personnel wrote monthly report which was forwarded to the office of the district health directorate. All the health personnel indicated they received feedback on report sent to the district health office and indicated that they communicate the feedback to the nursing mothers.

## 5.2 Conclusions

The study revealed that majority of the nursing mothers of children under five years had knowledge on the nutritional requirements of their children through the education given them. However, some of the children were underweight due to the poor application of the knowledge they received. This has the potential of the undermining the achievement of SDG-2.

Even though good exclusive breastfeeding and complementary feeding practices have enormous benefits for the under five child, most of the mothers were unable to comply with information/education given them because they could not put into practice the exclusive breastfeeding and complementary feeding regimes recommended by WHO and UNICEF. This has the potential of the undermining the achievement of SDG – 2.

Although health personnel do routine follow-ups on nursing mothers at home, accessibility to some of the communities in some sub-districts makes it difficult to carry out such duties to cover children particular those under five years of age.

Depending on the subject matter, reports are sent regularly on weekly and monthly basis by the health personnel to the office of the district health directorate for onward submission to the office of the regional and national health directorate. Feedback was obtained when reports are sent. Thus, there was a good link between the top hierarchy and field personnel which is needed in implementing health policies.

### **5.3 Recommendations**

It is recommended that mothers should exclusively breastfeed their children in order to protect them from some childhood diseases which promote malnutrition especially among under five children.

Again, it is recommended that parents with children under five years of age in the Asante-Akim North District are encouraged to provide well-nourished complementary foods for their children especially as the children grow and are being weaned of breast milk. The district health directorate should ensure that education sessions are done at specific times so that a greater percentage of mothers would be reached rather than waiting to gather a substantial number of mothers. This will prevent a situation where those who come early are left out of the education and encourage late comers to come on time.

It is also recommended that some topics of importance such as exclusive breastfeeding and recommended complementary feeding regimes should be discussed at community levels for all including men to have an understanding of the subjects so that they can assist one another, their wives, sisters and neighbours to practice it. Involving the community will help dispel myths socially associated with EBF and eating of certain foods for example eggs by children.

The Ministry of Health should do well to increase the staff strength of the various districts and provide the necessary logistics on time so that health personnel can cover

every aspect of their schedule such as taking height of children which was conspicuously missing at almost all the CWCs.

Again, if possible, Child Health Records booklets should be redesigned to make room for records on height for better assessment of anthropometric measurements such as height-for-age and height-for-weight.



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**APPENDIX A**  
**QUESTIONNAIRE**

**Mothers**

Dear Sir/Madam, I am a student of College of Technology, Kumasi, University of Education, Winneba, pursuing Catering and Hospitality. I am conducting a research on Nutritional status of under- five child as part of my academic work. Could you please spare me some few minutes of your time to answer the following questions. Your privacy is protected; no information that will identify you is required.

**SECTION A**

**DEMOGRAPHIC CHARACTERISTICS OF CHILD AND MOTHER**

1. Sex of the child

Male [    ]                      Female [    ]

2. Age of the child

a. 0 – 6 months                      [    ]

b. 7 – 12 months                      [    ]

c. 13 – 24 months                      [    ]

d. 25 – 36 months                      [    ]

e. 37 – 48 months                      [    ]

f. 49 – 59 months                      [    ]

3. Weight of the child (kg) .....

4. Height of the child (cm) .....

Instruction: Tick [] the box corresponding to your choice concerning each statement below:

5. Age of mother

- a. less than 15 years           [  ]
- b. 15 – 25                           [  ]
- c. 26 - 35                           [  ]
- d. 36 – 45                           [  ]
- e. 46 and above                   [  ]

6. What is your highest level of education attained?

- a. No formal education       [  ]
- b. Primary education           [  ]
- c. J. H. S/Middle School       [  ]
- d. Vocational Training         [  ]
- e. Secondary Education        [  ]
- f. Tertiary Education          [  ]

7. Marital Status

- a. Single                           [  ]
- b. Married                         [  ]
- c. Divorced                       [  ]
- d. Widowed                       [  ]
- e. Cohabiting                    [  ]

8. Religion

- a. Christian                       [  ]

b. Muslim [     ]

c. Traditional [     ]

d. Others (specify) .....

9. Mother`s occupation

a. unemployed [     ]

b. apprentice [     ]

c. trader [     ]

d. farmer [     ]

e. self-employed [     ]

f. gov`\*t worker [     ]

g. others (specify) .....

10. Mother`s monthly income

a. less than ¢50 [     ]

b. above ¢50 - ¢300 [     ]

c. above ¢300 - ¢600 [     ]

d. above ¢600 - ¢800 [     ]

e. above ¢800 [     ]

11. How many children do you have? .....

12. How many of them are less than five years? .....

13. How many people do you feed in your household?.....

**SECTION B**

LEVEL OF KNOWLEDGE OF MOTHERS ON NUTRITIONAL REQUIREMENTS  
OF THE UNDER FIVE CHILD.

14. Where did you deliver your child/children?

- a. health facility [     ] [     ]
- b. home [     ] [     ]
- c. Traditional Birth Attendant (TBA) [     ] [     ]
- d. others [     ] [     ]

15. Did you ever breastfeed this child/children?

- a. Yes [     ] b. No [     ]

16. Is the child still breastfeeding?

- a. Yes [     ] b. No [     ]

17. When did you put the child to breast after birth?

- a. less than 30 minutes [     ] [     ]
- b. one hour [     ] [     ]
- c. two hours [     ] [     ]
- d. three hours [     ] [     ]
- e. above four hours [     ] [     ]
- f. none of the above [     ] [     ]

18. Did you give any of the following to your child/children in the first 6 months?

- a. water [     ] [     ]
- b. tea [     ] [     ]
- b. herbs [     ] [     ]

d. only breast milk  [ ]

e. porridge  [ ]

f. others  [ ]

19. At what age did you start giving complementary foods to your child/children?

a. less than 5 months

b. 5 months

c. 6 months

d. above 6 months

20. How long do/did you continue to breastfeed the child after introducing complementary food?

a. 7 months – 12 months  [ ]

b. 13 months – 18 months  [ ]

c. 19 months – 24 months  [ ]

d. above 24 months  [ ]

21. How often do you give the under listed foods to your child? Tick [] as appropriate.

a. cereals (e. g.: corn, wheat, millet, oats)

very often,  often,  not often,  not at all

b. vegetables (e.g.: leafy vegetables, garden eggs, okro)

very often,  often,  not often,  not at all

c. fruits (e.g.: orange, mango, pawpaw, banana)

very often,  often,  not often,  not at all

d. roots and tubers (e.g.: yam, cassava, cocoyam, potato)

very often,  often,  not often,  not at all

e. legumes/meat, fish, egg

very often,  often,  not often,  not at all

f. fats and oils (e.g. margarine, palm oil, vegetable oil)

very often,  often,  not often,  not at all

g. legumes + cereals

very often,  often,  not often,  not at all

h. fish + cereals

very often,  often,  not often,  not at all

i. legumes + cereals + fish

very often,  often,  not often,  not at all

### **SECTION C**

#### **LEVEL OF COMPLIANCE OF NUTRITIONAL INFORMATION GIVEN TO MOTHERS.**

22. Why do you attend the Child Welfare Clinic? .....

23 (i). Have you received any education/information on the following?

a. Breastfeeding Yes  No

b. Healthy eating Yes  No

c. Complementary feeding Yes  No

24 (ii) If yes to Q24 (i), where? .....

25. Are you able to comply with the information or education given on breast feeding,

healthy eating and complementary feeding?

a. Yes  b. No

If no, why? .....  
.....  
.....  
.....

26. Has your child received vitamin A supplement?

a. Yes [     ]            b. No [     ]

If no, why? .....

27. Have you been receiving vitamin A supplement on regular basis? (i.e. every 6 months till the 5th year).

a. Yes [     ]            b. No [     ]

If no, why?

28. What is the immunization status of your child?

a. No routine immunization [     ]

b. Partially immunized [     ]

c. Fully immunized [     ]

29. Has your child experienced diarrhea, fever or cough in the last 2 weeks?

a. Yes [     ]            b. No [     ]

30. What do you do when your child has diarrhea, fever or cough?

.....  
.....  
.....

31. Do you report your nutritional problems to the health personnel?

a. Yes [     ] b. No [     ]

if no, why? .....

32. What kind of nutritional problems do you report on? (Hint: ask on food habits)

.....  
.....  
.....

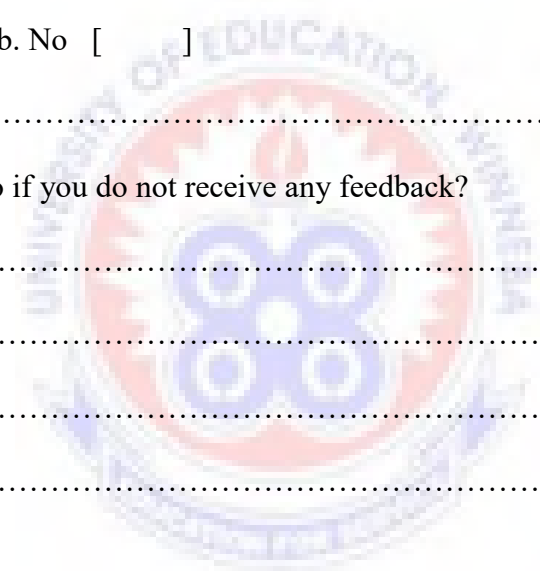
33. Do you receive any feedback from the health personnel on problems communicated?

a. Yes [     ] b. No [     ]

If no, why? .....

34. What do you do if you do not receive any feedback?

.....  
.....  
.....  
.....





**APPENDIX B**  
**QUESTIONNAIRE**

**Health Personnel**

**SECTION A**

**EXTENT OF FOLLOW-UP VISITS BY HEALTH PROFESSIONALS**

(Link between health personnel and mothers)

Please tick the correct response where applicable

1. Can you briefly describe your work schedule?

.....

2. How often are Child Welfare Clinics held?.....

.....

3. Do you collect personal data of mothers? a. Yes [ ] b. No [ ]

4. What Kind of data do you collect from mothers?

.....

5. What happens to the data collected?

.....

6. Do you do follow ups on nursing mothers to ensure compliance to education or

information given on nutrition? a. Yes [ ] b. No [ ]

If no, why? .....

.....

7. How else do you reach out to your clients apart from meeting them at the Child

Welfare Clinic? .....

8. What are some of challenges you face in the discharge of your duties?

.....

9. How would you rate the response of nursing mothers to information given them?

a. unsatisfactory [    ]

b. satisfactory [    ]

c. good [    ]

d. very good [    ]

e. excellent [    ]

**SECTION B**

**LEVEL OF FLOW OF INFORMATION FROM HEALTH PROFESSIONAL TO  
DISTRICT HEALTH DIRECTORATE**

10. Do you write reports?                      a. Yes [    ] b. No [    ]

11. If No, Why?

.....

12. If Yes, how often?

a. weekly

b. monthly

c. quarterly

d. annually

13. What normally goes into the report?

.....

.....

15. Do you get feedback from the office?

a. Yes [      ] b. No [      ]

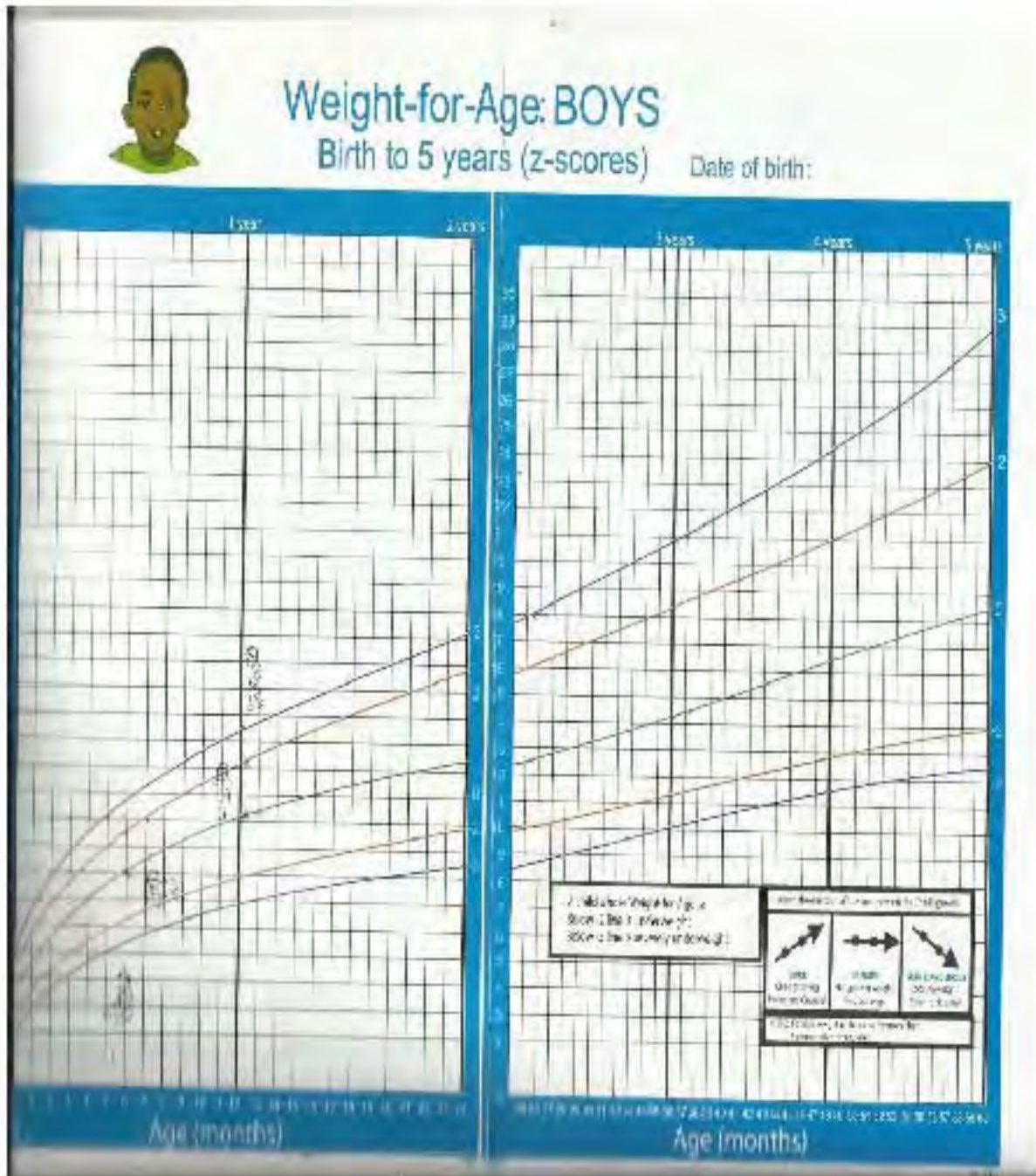
16. If yes, is the response communicated to the nursing mothers where necessary?

a. Yes [      ] b. No [      ]



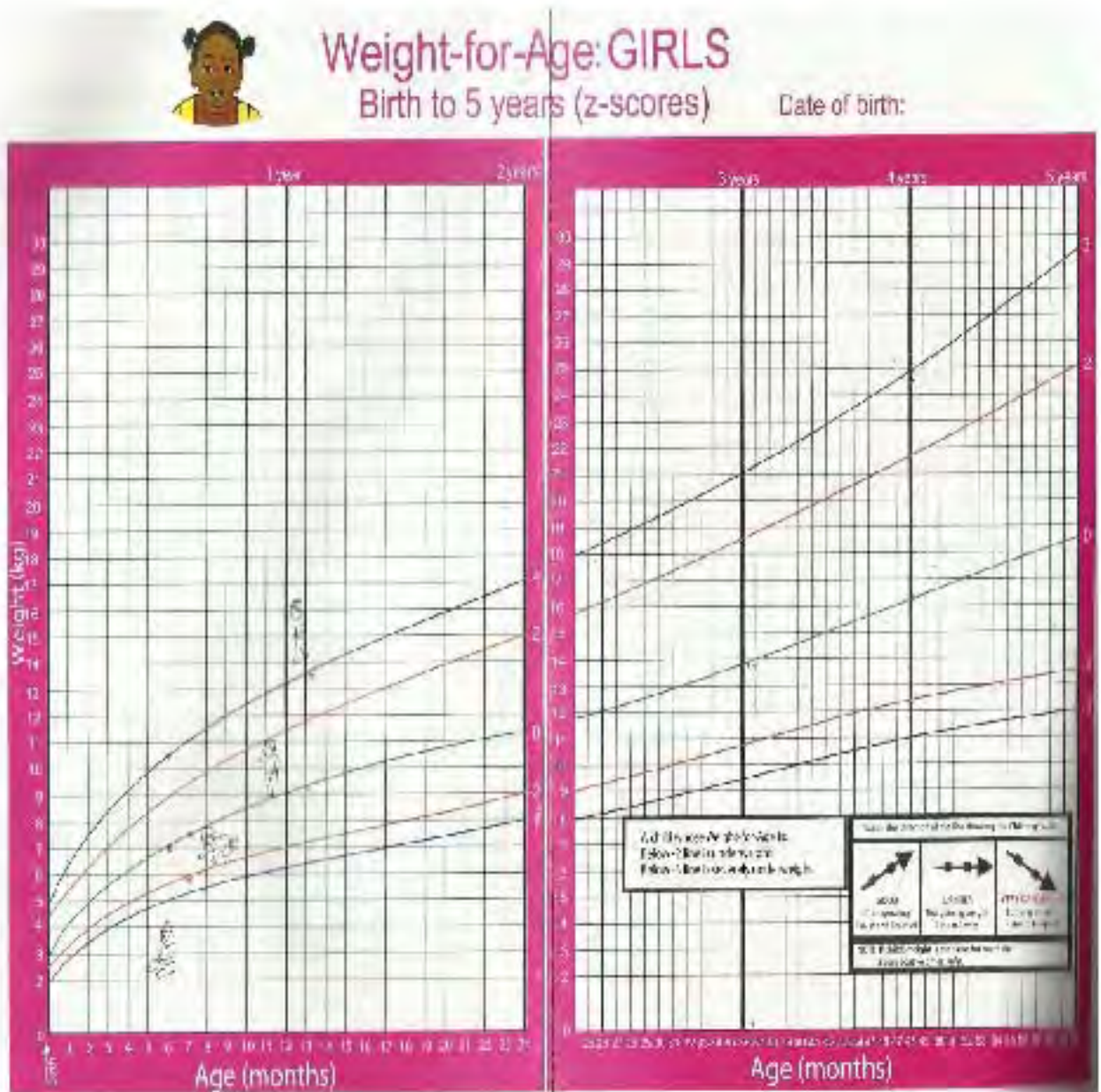
### APPENDIX C

#### Z- Score for boys



## APPENDIX D

### Z- Score for Girls



## APPENDIX E

### Feeding after six months (Complementary feeding)

#### Feed more as the baby grows



**Begin to feed at 6 months**

**Type of food:**

Soft porridge, well mashed food

**How often:**

2 to 3 times each day

**How much:**

2 to 3 tablespoons at each meal



**From 6 up to 9 months**

**Type of food:**

Mashed food

**How often:**

2 to 3 times each day and 1 to 2 snacks

**How much:**

2 to 3 tablespoons up to one-half (1/2) cup at each meal



**From 9 up to 12 months**

**Type of food:**

Finely chopped or mashed food and foods that baby can pick up with his or her fingers

**How often:**

3 to 4 times each day and 1 to 2 snacks

**How much:**

At least one-half (1/2) cup at each meal



**From 12 up to 24 months**

**Type of food:**

Family foods, chopped or mashed if necessary

**How often:**

3 to 4 times each day and 1 to 2 snacks

**How much:**

Three-quarters (3/4) up to 1 full cup at each meal

\* A snack is extra food between meals

\*\* A cup is 250 ml