SCHOOL OF PUBLIC HEALTH

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ASSESSMENT OF THE QUALITY OF GROWTH MONITORING AND PROMOTION FOR CHILDREN UNDER FIVE YEARS AT CHPS COMPOUNDS IN THE WASSA AMENFI EAST DISTRICT OF THE WESTERN REGION

BY

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DECLARATION

I, Asigri Joseph declare that this dissertation is the result of my own research that I have conducted towards the award of the Master of Public Health Degree in the School of Public Health, University of Ghana, under the supervision of Dr. Reuben Esena. All references cited have been duly acknowledged.

Signed…….. Date……

Asigri Joseph

(Student)

Signed…….. Date……

Dr. Reuben Esena

(Supervisor)

DEDICATION

I dedicate this work to my wife and daughter who missed so much during my one-year period of study away from home.

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I am most grateful to the Almighty God for granting me good health, strength and endurance from the inception to the end of this programme.

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ABSTRACT

Background: Growth Monitoring and Promotion (GMP) is a preventive programme that targets the reduction of malnutrition in children in the early periods of their lives. GMP targets the caregiver and family decisions for positive child growth outcomes and has a great potential to contribute to improving child survival if well implemented. For a GMP programme to achieve its intended objective, the following conditions need to be met; proper implementation of GMP activities by skilled health workers, adequate nutrition education and counseling for care givers, and care giver understanding of information given by health care providers. Underweight rate among children under five years in the Wassa Amenfi East District remains high despite numerous logistical and technical supports by the Western Regional and the Wassa Amenfi East District Health Directorates to health facilities in the area of growth monitoring and promotion.

Objective: This study assessed the quality of the growth monitoring and promotion programme administered by Community Health Nurses at Community-based Health Planning and Services (CHPS) compounds in the Wassa Amenfi East District and caregivers' satisfaction and perception of quality of the services they received under the programme.

Methodology: The study was a cross sectional survey and involved both quantitative and qualitative data collection methods. A structured questionnaire was used to collect data on caregiver-child characteristics, caregiver child feeding practices, and caregivers' perception of quality of GMP. The weights of children were measured to determine their weight-for-age status. Key Informant Interviews were employed to assess the knowledge of Community Health Nurses (CHNs) on GMP and infant and young child feeding counseling and to collect data on institutional factors that affected the quality of GMP.

An observation checklist developed based on the Ghana Health Service (GHS) guidelines on GMP was also used to assess the procedure of Growth Monitoring and Promotion at CHPS compounds. Multistage random sampling was used to select 8 CHPS compounds from the 8 sub-districts of the Wassa Amenfi East District. Proportionate sampling was used to determine the sample size for each CHPS compound. A total of 312 caregivers and 15 CHNs were recruited for the study. Data from caregivers were collected through exit interviews using systematic random sampling.

Results: Frequent shortage of child health record booklets, insufficient CHNs at CHPS compounds, inadequate space and benches for caregivers and lack of refresher training for staff were identified by a majority of CHNs to be the major institutional factors that affected their ability to render quality GMP services. Community Health Nurses at CHPS compounds had poor knowledge in GMP procedure as well as infant and young child feeding counseling. GMP procedures observed in most CHPS compounds did not conform to the GHS standards, as a result, the service was rated poor in terms of quality. Nutrition counseling offered to caregivers was significantly associated with their child feeding practices as well as the nutritional status (weight-for-age) of their children ($p<0.05$) even though CHNs had poor knowledge in infant and young child feeding counseling.

Conclusion: In order to improve the quality of GMP at CHPS compounds as well as improve the nutritional status of children in the Wassa Amenfi East District, there is the need for the District Health Directorate (DHD) to schedule GMP clinic days for facilities such that CHNs from other facilities and technical officers from the district health directorate can participate to support the few CHNs to provide the gamut of GMP services to caregivers

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LIST OF ABREVIATIONS AND ACRONYMS

CHN	Community Health Nurse
CHW	Community-based Health Worker
CHPS	Community-based Health Planning and Services
CWC	Child Welfare Clinic
DDHS	District Director of Health Service
GHS	Ghana Health Service
GM	Growth Monitoring
GMP	Growth Monitoring and Promotion
HAZ	Height-for-Age-Z score
IYCF	Infant and Young Child Feeding
JHS	Junior High School
LI	Legislative Instrument
LQAS	Lot Quality Assurance Sampling
PI	Principal Investigator
SES	Socio-Economic Status
UNICEF	United Nations Children's Fund
UN	United Nations

WHO	World Health Organization
WAZ	Weight-for-Age Z score
WHZ	Weight-for-Height Z score

CHAPTER ONE

INTRODUCTION

1.1 Background

Globally, malnutrition in children under five accounted for 45% of deaths among children in that age group. Malnutrition exposes children under five years to a higher risk of death from common childhood illness such as diarrhea, pneumonia, and malaria (WHO, 2016).

In developed countries, the prevalence of underweight in children was estimated to decline from 1.6% to 0.9% between 1990 and 2015. In developing countries on the other hand, the prevalence of underweight was estimated to have declined from 30.2% to 19.3% between the same periods. In Africa however, the prevalence of underweight was forecasted to rise from 24% to 26% between 1990 and 2015 (De Onis, Blössner, et al., 2004).

In Ghana, malnutrition is estimated to account for one third of deaths among children under five years (Unicef, 2016).

There are preventive and rehabilitation programmes that target the reduction of malnutrition in children with much evidence of success in the early periods of a child's life (De Onis, Wijnhoven, & Onyango, 2004; Shrimpton et al., 2001). Growth Monitoring and Promotion (GMP) is one of such programmes aimed at reducing malnutrition in children under five years (Gyampoh, 2012). Almost all developing countries have been implementing GMP for the past 4 decades. GMP programmes have been defined by the WHO as nutritional interventions that measure and charts the weight of children and the use of a children's anthropometric measurements to offer counseling and nutrition

education to care givers to motivate actions to improve growth (Charlton, Kawana, & Hendricks, 2009). GMP in Ghana is carried out at child welfare clinics (CWC), where it is combined with immunizations and other maternal and child health services (Gyampoh, 2012).

GMP targets the care giver and family decisions for positive child growth outcomes and has a great potential to contribute to improving child survival if well implemented (Griffiths & Rosso, 2008). For a GMP programme to achieve its intended objective, the following conditions need to be met; proper implementation of GMP activities by skilled health workers, adequate nutrition education and counseling for care givers, and care giver understanding of information given by health care providers (Griffiths & Rosso, 2008).

The nutritional status of children has a great impact on their overall health and development. Therefore, it is necessary to assess the nutritional status of children as well as other characteristics related to malnutrition periodically to monitor malnutrition in order to provide timely and appropriate measures that can curtail malnutrition (Hien & Kam, 2008).

The objective of this study is therefore to assess the quality of GMP services offered to care givers and their children less than five years in the Wassa Amenfi East District.

1.2 Problem Statement

Malnutrition in children, measured by underweight in children, is a vital indicator for assessing population nutritional health and health status. In 2015, 92 million (15%) of

children under five years in developing countries were underweight (low weight-for-age per the WHO child growth standards). Underweight in children under five years is more prevalent (27%) in the UN region of Southern Asia. West Africa follows with a prevalence of 20% (WHO, 2016).

Globally, underweight in children under five years declined from 25% in 1990 to 14% in 2015. Africa experienced the smallest relative decrease in underweight among children under five, with a prevalence of 16% in 2015, a reduction from 23% in 1990. Asia recorded a reduction from 32% to 17% within the same time interval while Latin America and the Caribbean recorded a reduction from 8% to 3% (WHO, 2016).

In Ghana, underweight rate among children under five years stands at 11% (GDHS, 2014).

According to the Western Regional Health Directorate (2015), underweight rate among children under five years stands at 9.3%, which is above the regional target of less than 5%.

The Wassa Amenfi East District Health Directorate (2015) also reported a rising trend in underweight prevalence among children under five years. The district recorded an underweight prevalence rate of 7.4% in 2015 which was a significant rise compared to 2014 which recorded a prevalence of 6%.

The mid-year report of the Wassa Amenfi East District Health Directorate (2016) also indicated an underweight prevalence of 11%.

The western regional Health Directorate has provided a lot of technical support to districts in the region in the area of growth monitoring and promotion. A series of training programmes have been conducted to improve the skills of Community Health Nurses regarding nutritional status assessment and counseling. The objective of these trainings is to achieve an underweight rate of less than 5% in all districts and the region at large.

The underweight rate among children under five years in the Wassa Amenfi East District and all other districts in the Western Region still remains higher than the Regional target despite all the numerous efforts by the region to reverse the situation.

Although there are research works available on GMP conducted in other regions of Ghana, no research has been conducted on the quality of growth monitoring and promotion. This study therefore sought to assess the quality of GMP services provided to children less than five years in the Wassa Amenfi East District. Furthermore, the study sought to find out why the underweight rate in the Wassa Amenfi East District is high despite the numerous technical and logistical supports provided by both the Regional and District Health directorates to achieve a much better result. The study is focusing on CHPS compounds in the sub-districts since they offer about 90% of GMP services to children under five years.

1.3 Justification

No assessment of the quality of nutritional care for care givers and their children under five years at growth monitoring and promotion clinics in the Wassa Amenfi East district

has been undertaken. The results of this study show aspects of growth monitoring and promotion services that require policy initiatives to bring about improvement in the service at CHPS compounds and other health facilities in the district and region at large.

This study will also serve as a baseline for future assessment of the state of care at GMP clinics in the Wassa Amenfi East District and the Western region at large.

1.4 Objectives

1.4.1 General Objective

The general objective of the study is to assess the quality of GMP services provided to children less than five years by Community Health Nurses at CHPS compounds in the Wassa Amenfi East District.

1.4.2 Specific Objectives

1. To identify institutional factors that affect the quality of GMP at CHPS compounds.
2. To assess the process of GMP services at CHPS compounds
3. To assess the nutritional interventions care givers of children under five receive during GMP at CHPS compounds
4. To determine the relationship between nutrition counselling received by care givers and their knowledge on infant and young child feeding and the nutritional status of their children (weight-for-age)

5. To assess care givers' perception of the quality of GMP services at CHPS compounds

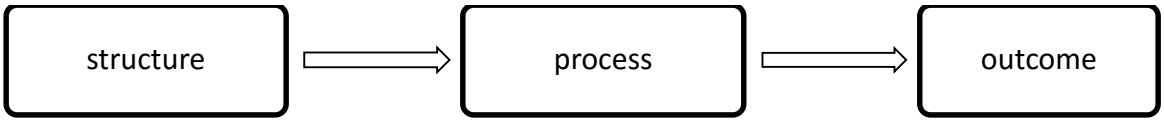
1.5 Research Questions

1. Are there institutional factors that affect the quality of GMP services at CHPS compounds?
2. Do community Health Nurses observe the GHS recommended GMP procedure?
3. What nutrition services do care givers of children under five receive at CHPS compounds?
4. Is there a relationship between nutrition counseling received by caregivers and the weight-for-age status of their children?
5. What is the quality of GMP services at CHPS compounds from caregivers' perspective?

1.6 Conceptual Frame Work

Quality is defined by Donabedian as a 'property' or characteristic of medical care. This characteristic can range from one end of the spectrum to other and can manifest itself through various elements or "attributes (Donabedian, 1988).

The conceptual framework found appropriate for this study is the Donabedian framework of Quality of care (fig. 1). This framework assumes that healthcare quality should be assessed based on three components: Structure, Process and Outcomes and that each component has a direct influence on the next one (Hanae Ibn El Haj, 2013).



STRUCTURE	PROCESS	OUTCOME
CHPS compound	Accurate weighing and charting on growth chart	Improvement in nutritional status of children (weight-for-age)
Resources • Child health record booklets • GMP guidelines • Weighing scales	Feedback to care givers	Improvement in care givers' knowledge on infant and young child feeding
Human resource • CHNs	Nutrition counseling	Care giver satisfaction on GMP service
Technical competence	Follow up on children with growth faltering	
	Staff interpersonal relations	

Figure 1.1 Conceptual framework

Source: Adopted from Donabedian (1988)

As shown in Figure 1.1 above, the "Structure" component covers the relatively static characteristics which include the staff who offer the care, the availability of resources and the general setting where the care is provided (Hanae Ibn El Haj, 2013).

The "Process" component of the model refers to all the activities taking place during the care process. This component covers the technical competence of staff in delivering care, the timeliness, accuracy, diagnosis and the appropriateness of care given to clients. It also concerns with staff interpersonal relations with their clients (Hanae Ibn El Haj, 2013).

Quality of care can be assessed in relation to outcome measures, which indicates whether the objectives of care were realized. Quality of care, apart from the health status indicators, covers other indicators related to the cost of care and patient satisfaction (Hanae Ibn El Haj, 2013).

Health status Indicators are divided into two;

1. Indicators of intermediate outcomes which cover the activity and quality of the processes followed in the care process. Intermediate outcomes include; the rate of operating site infection, immunization rate, percentage of unplanned readmission and the failure rate.
2. Indicators of final outcomes which refer to the ultimate effect of the provision of care in terms of health. Final outcomes include quality of life, disability, death, complications (Hanae Ibn El Haj, 2013).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section deals with the literature review which aims at deriving a conceptual understanding from previous studies on the subject matter. The review is done from a broader geographical perspective to a narrower situation and addresses the pertinent issues from the global perspective, the perspective of the African continent and the Ghanaian situation. It includes; growth monitoring, process of growth monitoring, growth monitoring and promotion as a strategy against child malnutrition, the use of growth charts in GMP, the use of child growth patterns for targeted action, and influence of GMP on care practices and child growth.

2.2 Growth Monitoring

Growth Monitoring (GM) is defined as the process of following the growth rate of a child in relation to a standard by periodic, frequent anthropometric measurements in order to assess growth adequacy and detect early faltering. GM is not a one-time anthropometric measurement of a child to assess nutritional status without assessing growth trend over time (Ashworth et al., 2008).

GMP of optimal nutrition are essential components of health care for all children. Monitoring a child's growth helps to confirm a child's healthy growth and development, or identify early a potential nutritional or health problem (Akanbi & Anyarsor, 2014).

It is a regular and sequential measurement of growth, recognizing it to be the result of overall health, nutrition, environment, psychosocial and developmental factors in the child and it is based on a strategy aimed at behavioral change and adoption on improved self-help action within the family and the community to promote optimal health (Griffiths & Rosso, 2008).

GM is a screening tool to diagnose nutritional, chronic systemic and endocrine disease at an early stage. It has been identified that GM has the potential to impact significantly on mortality of children even in the absence of nutritional supplementation or education. GM is widely endorsed and strongly supported by health professionals, and is a standard component of community infant and young child services throughout the world (Khadilkar et al., 2007).

GMP is a prevention activity that utilizes GM which is the measuring and interpreting growth, to facilitate communication and interaction with caregiver and to generate adequate action to promote child growth through the following; 1) Increased caregiver's awareness about child growth 2) Improved caring practices and 3) Increased demand for other services, as needed (Unicef, 2007).

2.3 Process of Growth Monitoring and Promotion

The GMP process comprises three stages: 1) measuring and interpreting growth adequacy, 2) analysis of the reasons for adequate or inadequate growth, and 3) counseling; which is in relation to the triple-A approach: Assessment, Analysis, and Action (UNICEF, 2007). The counseling process must include the active engagement of

the caregiver in problem-solving about the child's growth. These conditions can best be met in the community setting, and have the best opportunity for producing results on a public health level if they reach all children 0-24 months in a defined catchment area. GMP sessions should be linked to other health services in the community and be designed to have an effective system in place to refer children to health services when needed. The GMP process may also be possible in a clinic setting (UNICEF, 2007).

2.4 Expected outcomes of Growth Monitoring and Promotion

Growth monitoring and Promotion is carried out to achieve the following outcomes(UNICEF, 2007);

1. Heightened awareness of the importance of caregiver practices for adequate growth and the link between adequate growth and child health
2. Increased knowledge and skills and subsequent improved child feeding and health care practices by caregivers
3. Increased coverage of particular health services, if they are offered along with GMP.

2.5 Growth Monitoring and Promotion (GMP) As a Strategy against Child Malnutrition

GMP is a strategy against poor child growth which makes use of the contact between health workers and caregivers to prevent or reverse growth faltering (Ashworth et al., 2008; Griffiths & Rosso, 2008; Panpanich & Garner, 1999). The programme relates information collected from the frequent anthropometric assessment of child growth to growth promotion activities (Griffiths & Rosso, 2008). By this, early detection and referral of poor growth for appropriate medical or nutrition intervention is achieved (Ashworth et al., 2008; Griffiths & Rosso, 2008).

The main focus of GMP is to affect family-level decisions and individual child nutritional outcomes (Griffiths & Rosso, 2008). For health workers, GMP provides an opportunity to assess child health status and offer counseling on feeding and health whereas for caregivers, they acquire knowledge about the growth of their children and how to make improvements on it (Charlton et al., 2009). In spite of these, there are varied opinions on the effectiveness of GMP in achieving its objectives. Several studies assessing one or more of the programme's objectives have raised a case for and against the proposed benefits of the programme against child malnutrition.

2.6 The use of Growth charts in GMP

In the process of GMP, children are weighed, their weights correctly plotted on a growth chart, and their growth patterns interpreted to caregivers. Growth charts provide a graphic representation of a child's growth using anthropometric indices (Ashworth et al., 2008;

De Onis, Blössner, et al., 2004). The interpretation of a child's growth pattern informs the health worker about options and future actions to be discussed with the caregiver (Ashworth et al., 2008).

The interpretation of a child's growth during GMP focuses on the velocity of growth and not on nutritional status and it is therefore important that the weights of children be charted properly for easy identification of growth patterns (Gyampoh, 2012). Although weights have been reported to be more accurately recorded and charted in some studies (Charlton et al., 2009), a common problem noticed is that dots plotted on the growth chart which represents the child's monthly weights are often left unconnected. Valadez et al., (1996) attributes this to the concentration of health workers on the child's nutritional status rather than the trend of growth. Ashworth et al., (2008) also associates poor weighing, data recording and charting practices with faulty or inadequate equipment, inadequately trained and insufficient staff.

2.7 The Use of Child Growth Patterns for Targeted Action

Positive outcomes in GMP are only achieved when relevant targeted actions to the individual child are taken (Griffiths & Rosso, 2008). According to Latham (1993), GMP should involve a discussion between the health worker and caregiver resulting to enforcing positive practices and correcting negative ones. However, interpretations of child growth patterns are faulty and most often little or nothing is done in terms of effective follow-up (Gyampoh, 2012).

A study by Charlton et al. (2009) in the Lusaka district of Zambia observed that trained health workers were knowledgeable about GMP but demonstrated poor assessment for illness, individualized counseling and referral. As little as 3.3% of mothers received specific nutrition counseling on feeding practices relevant to their child's situation. Similar findings were made by Gerein & Ross (1991) in three child health programmes in Congo DR, where one third of children experiencing growth faltering did not receive counseling from health workers. Nutrition counseling was standardized and non-specific and only another one third of such children were investigated for previous illness. Poor counseling and referral were also observed in Costa Rica (Valadez et al., 1996).

The effectiveness and efficiency of GMP programmes is not realized when caregivers receive non-specific, non-individualized counseling which does not take into account their specific conditions such as livelihoods and health seeking behaviour (Ashworth et al., 2008; Griffiths & Rosso, 2008). The poor performance exhibited by health workers has been attributed to lack of required knowledge and skills, heavy demand relative to personnel, lack of incentives and motivation and inadequate supervision (Ashworth et al., 2008; Charlton et al., 2009; Pelto et al., 2004; Roberfroid et al., 2005)

2.8 Influence of GMP on Care Practices and Child Growth

GMP has the ability to improve caregiver feeding knowledge and ultimately practices if it is well implemented. In an assessment of clinic-based growth monitoring in eight clinics in Lesotho, Ruel, Habicht, & Olson (1992) observed that caregivers who attended regularly had a significantly higher knowledge of the appropriate time of introduction of

animal source foods ($p<0.05$). This finding was much evident among mothers with primary education and those with children less than six months old. The researchers, however, attributed this association to group nutrition education given at the clinics as individualized counseling was not observed. A similar observation was made by Gerein & Ross (1991) in Congo DR when they identified that despite the suboptimal quality of health education at GMP sessions, the ability of caregivers to answer nutrition knowledge tests correctly was strongly associated to attendance even after controlling for education. Feeding practices however, were not influenced in a similar way. Caregivers in this study also received group nutrition counseling similar to what was observed by Ruel et al. (1992).

While GMP has been defended by proponents in its ability to improve child nutritional status, opponents have doubts in its ability to effect such changes. Longitudinal studies on improvements in nutritional status of children participating in GMP have shown differing results. A 3-month prospective study in Zambia by Charlton et al. (2009), identified a significantly lower decrease in Weight-for-Age Z-score (WAZ) in children from health facilities trained in GMP in contrast to their counterparts from untrained health facilities ($p<0.05$) and trained community posts ($p<0.001$). However, Weight-for-Age Z-score (WAZ), Height-for-Age Z-score (HAZ) and Weight-for-Height Z-score (WHZ) of children in these three facilities on the whole, deteriorated over the duration of the study. The inability of trained facilities to show significant difference was attributed to caregivers in untrained health facilities having a higher SES.

Conversely, Qazi et al. (2003) and George et al. (1993) found improvements in growth patterns in children participating in GMP. Qazi et al. (2003) in prospective observation

and intervention study in Pakistan, found an overall improvement in the weight of infants followed up over a mean 15-month period even in poor families. This study however, had no controls, a limitation which was not found in a study by George et al. (1993). At the end of the four year intervention trial, the mean WAZ indicated improvements in weight among children 3 to 23 months in GMP villages ($p<0.05$) (George et al., 1993). Stunting was also observed to have declined in children in the GMP villages. Improvements in growth however, was not the same for older children who showed relatively less improvement as wasting and stunting already existed before commencing the study. In contrast, younger children in the control group who received other health services other than GMP, did not show any improvement in nutritional status over the entire period.

Ashworth et al. (2008) in a systematic review of GMP pointed out that GMP is most often implemented together with other Primary Health Services such as immunizations and supplementation, and thus it is difficult to establish whether observed changes in a child's growth are primarily due to the programme. George et al. (1993) however, emphasizes that the improved growth outcomes observed in their study was attributable to GMP as the other interventions did not run at the same time with the GMP intervention.

2.9 Quality of Growth Monitoring and Promotion at Primary Health Care Facilities

The use of lot quality assurance sampling (LQAS) during routine household visits by Valadez et al., (1996) to assess the technical quality of Costa Rican community-based health workers (CHW) in measuring and recording weights of children, interpreting their

growth trend, and providing nutrition education to mothers came out with 3 findings as follows; (1) CHWs adequately weighed children, calculated ages of children in completed months, identified children requiring nutritional services, and appropriately used the growth chart, (2) CHWs needed to improve their referral, education, and documentation skills and (3) Lack of system support to regularly provide growth cards, supplementary feeding for identified malnourished children, and other essential materials which may have discouraged some CHWs resulting in them not applying their skills.

The assessment of GMP at Primary Health Care facilities in the Mount Frere health district in Eastern Cape by Mccoy et al., (1999) observed that only a few caregivers were individually greeted by care providers. There was no calibration of weighing scales, a minority of caregivers were given feedback about the weight and growth of their child, and only a few caregivers could report whether their child had grown or faltered (Mccoy et al., 1999). A majority of weights were, however, accurately plotted on the growth chart of children.

The knowledge and performance of community health workers in an evaluation of GMP in Guatemala by Hurtado et al., (2008) were found to be very deficient. Regarding their weighing technique, community health workers hang the Salter scale at an appropriate height and read the weight when the child was still, but very few nurses calibrated the scale before weighing or undressed the child as much as possible, two steps that are critical for the quality of the data. The performance of community health workers' registration and classification of weight was found to be very poor. Counseling was also found to be very weak. The weight information of children was not used by community health workers to classify their growth status. CHWs also did not explain to mothers the

situation of their children and also did not provide counseling and recommendations to them as to what to do (Hurtado et al., 2008).

2.10 Caregivers perception of quality of growth monitoring and promotion

Satisfaction of beneficiaries of a health service is considered a valid and reliable indicator of quality of healthcare (Ashley & Strasser, 1997). A qualitative study by Coulibaly et al., (2002) to assess mothers' perception of quality of growth monitoring and promotion programmes in Cote d'Ivoire found that mothers' criteria for judging programme quality was very consistent with the quality norms they had set to assess the programmes. Caregivers' judgment on the programme was very close to the results of the investigators' own assessment of the same programme. Mothers in their study expressed a high level of overall satisfaction with the GMP programme, in spite of their numerous criticisms. The findings of Coulibaly et al., (2002) further suggested that listening to mothers' needs and wants was critical, not only for better programme quality, but also for better attendance. Mothers in the study complained about the high fees charged by service providers and suggested that GMP services should be more accessible (both geographically and financially). Mothers also expected the GMP officers to be interactive, compassionate, reassuring, and to help them develop better child health and nutrition practices. Shortcomings were identified in the technical procedures and were attributed to interpersonal relations and partly personnel inadequacies in terms of nutrition knowledge, persuasive communication, and caring (Coulibaly, Delisle, et al., 2002).

2.11 challenges to Growth Monitoring and Promotion

A qualitative study to assess the practices and challenges of GMP by Bilal et al., (2014) identified challenges in relation to the level of practical skills of the health workers who provided such service. Some Community Health Workers were reported to have insufficient skills to take the child's weight and record it on the growth chart accurately. The ability to use the growth monitoring information appropriately to counsel mothers was also deficient (Bilal et al., 2014).

A gap between referral, follow-up, and supervision of GMP activities was also identified to be related to a shortage of resources. The lack of a well-organized checklists for regular supervision (supportive as well as refresher training) was mentioned by health workers to be setback to GMP due to the shortage of transportation and budget (Bilal et al., 2014). Health workers also reported the inadequacy of budget for the supply and maintenance of equipment on a regular basis, leading to a shortage of stationery materials, such as pens and referral papers for the malnourished children. High client loads on health workers was also identified by health workers as additional challenges to the successful implementation of GMP. Kitenge & Govender (2013) in assessing the monitoring of growth chart of children by nurses at the primary health care level in Makhado in the Limpopo province found that majority of the PHC professional nurses (more than 50%) expressed the opinion that the challenges faced in monitoring the growth chart of children were staff shortages, lack of equipment, work overload and unequal distribution of professional nurses on duty per shift.

2.12 Conclusion

Even though GMP is considered to be a prerequisite for good child health, several studies have shown that there is a mismatch between the purpose and the practice of GMP. The high rate of malnutrition in many developing countries seems to confirm this observation.

A couple of studies have explored the issues behind this apparent lack of effectiveness of GMP in health facilities both in Ghana and other parts of the world. The effectiveness and efficiency of a GMP programme is not realized when caregivers receive non-specific, non-individualized counseling. The poor performance exhibited by health workers in carrying out GMP have been attributed to lack of required knowledge and skills, heavy demand relative to personnel and lack of incentives. Qualitative studies have been conducted to assess the perception of care givers and health workers on GMP. Little quantitative research, however, has been conducted to assess care givers perception of the quality of GMP. There is also little literature available showing the quality of GMP at the grass root level such as the CHPS compound. It is also important that issues about GMP raised in previous studies be investigated in different contexts since the practice of GMP and underlying causes can differ hugely between geographical areas. This will enable researchers from different geographical areas to learn from the successes and failures in other geographical areas.

The essence of this study is therefore to assess the quality of GMP at CHPS compounds from the perspective of standard procedures and the care giver's perception in the Wassa Amenfi East District of the Western Region of Ghana.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section describes the procedures and methods that were employed in the collection of data. It specifically describes the study design, the study setting and research instruments. Additionally, it describes the population and its characteristics, the sample size and sampling technique as well as the steps that were adopted in the administration of the research instruments. It also covers the procedure that was adopted in the analysis of data and how results are presented.

3.2 Study Design

The study was a cross sectional survey and involved a onetime collection of quantitative and qualitative data from caregivers of children under five years and Community Health Nurses providing GMP services at CHPS compounds respectively. Data were collected from 312 caregivers and 15 CHNs.

3.3 Study Area

The study was conducted in the Wassa Amenfi East District in the Western Region.

The Wassa Amenfi East District is one of the twenty-two (22) districts in the Western Region and was created in 2004 (Date of Gazette notification on 27th February, 2004 and entered into force on 25th June 2004) under Legislative Instrument (LI) 1788 of Local

Government Act, 1993 (Act462), it was inaugurated on 27th August 2004. It lies between Latitudes 5°, 301 N and 6°, 151 N, Longitudes 1°, 451 W and 2°, 111W. It is situated in the eastern part of the region and shares borders with: Upper Denkyira West in the north-eastern part, Upper Denkyira East to the east, Twifo-AtiMokwa to the south-eastern part (all in the Central region), Wassa Amenfi Central on the west, and Prestea-Huni Valley in the south (in the Western region). The district has Wassa Akropong as its administrative capital and it is 180 km away from the regional capital, Sekondi-Takoradi and 136 km from Kumasi by road.

It has an estimated total land of 1,558 square kilometres; representing 7.5% of the size of the region. The projected population for 2016 is 94,024 with males dominating by 51.4% (Source – 2010 Population and Housing Census, Ghana Statistical Service) using an annual growth rate of 2%.

The district is mainly Wassa/Akans, who form about 77.5% of the population. Other minority groups such as Mole-Dagbani (7%), Ga-Dangme (4.8%), Ewe (6%) and others do exist.

The district is predominantly rural, with only eight percent (8%) of the population living in urban areas, very low per capita income, indicating a low level of standard of living in the district.

3.3.1 Ethnicity

Wassa is the dominant ethnic group in the district. However, there are other minor ethnic groups such as Nzemas, Sefwis, Asantes, and Akyems. The presence of other ethnic

groups is explained by the presence of migrants who seek employment in the agricultural and mining sectors of the economy of the district. The Wassas are culturally homogeneous with respect to lineage, inheritance and succession. The practice of inheritance is observed by the matrilineal system of kinship and descent.

3.3.2 Economic Activities

Agriculture and mining are the major economic activities in the district. The District produces a lot of cocoa and is one of the major producers of cocoa in the country.

The large deposit of gold in the district has giving rise to the influx of large number of migrants, both nationals and expatriates (mainly Chinese and Indians) in the district.

3.3.3 Health Administrative Sub-Districts and Health Facilities

For health administrative purposes, the district has been zoned into eight (8) sub-districts namely: Afransie, Akropong, Bawdie, Dawurampong, Mampong, Nananko, Oppon Valley and Saa.

The district has fifty-one (51) health facilities which are evenly distributed. These facilities comprise a District Hospital, four (4) Health Centres, three Private Clinics, a Maternity Home, an Infirmary at Amenfiman Senior High School (Amenss) and forty-one (41) CHPS compounds.

The administrative sub-districts and the health facilities are presented in Figure 3.1 and Figure 3.2 respectively:

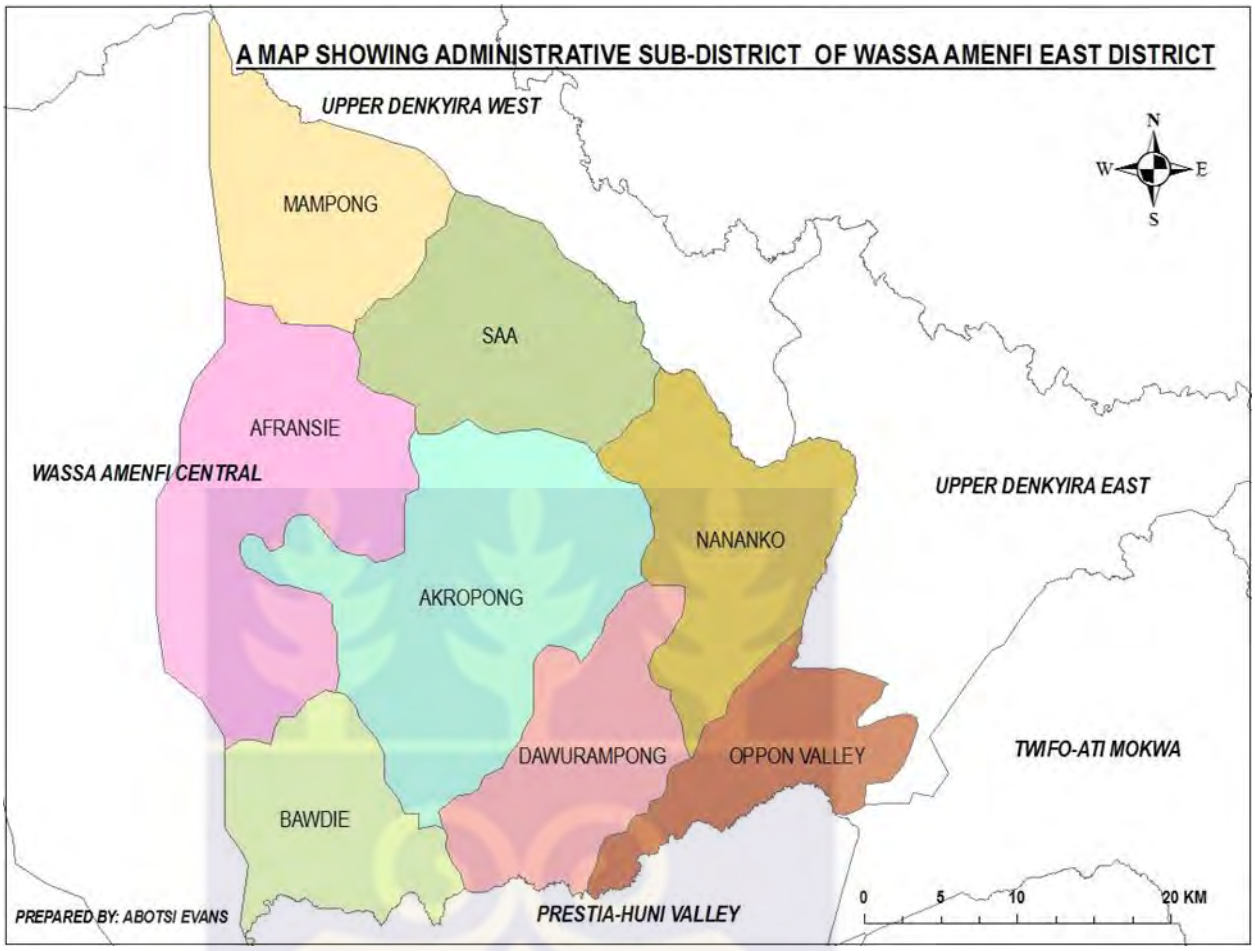


Figure 3.1 Map of Wassa Amenfi East District showing administrative sub-districts

Source: Wassa Amenfi East District Health Service Report (2015)

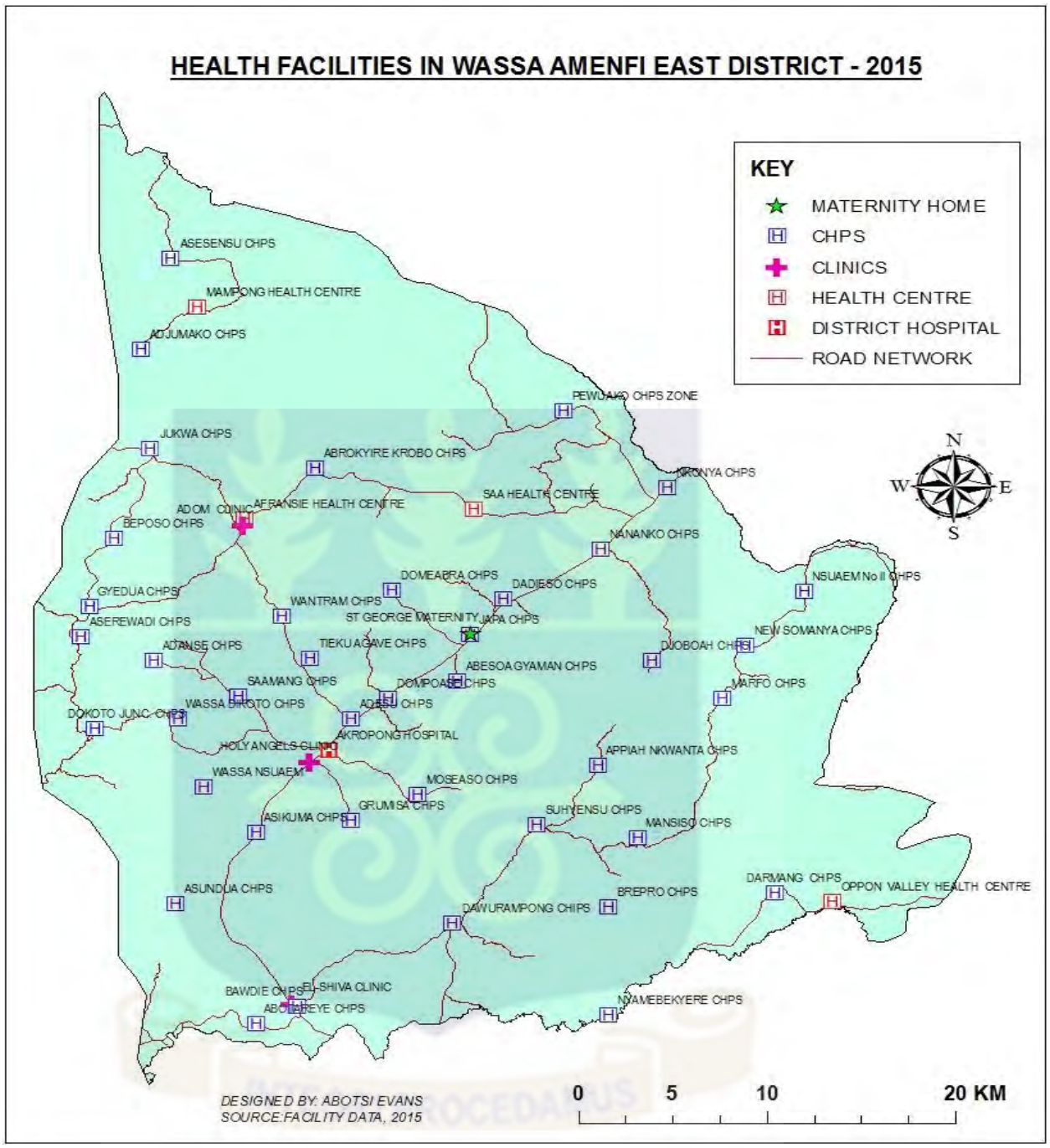


Figure 3.2: Map of Wassa Amenfi East District Showing Health facilities

Source: Wassa Amenfi East District Health Service report (2015)

3.3.4 Population Distribution

Table 3.1 Population distribution by sub-districts

Sub-district	Total population	Population of children under 5years
Afransie	16,445	3,289
Akropong	21,143	4,229
Bawdie	11,182	2,236
Dawurampong	12,592	2,518
Mampong	4,913	983
Nananko	10,337	2,067
Oppon Valley	8,766	1,753
Saa	8,645	1,729
District Population	94,027	18,805

Source: Wassa Amenfi East District Health Service report (2015)

3.3.5 Top Ten Cause of Morbidity

Table 3.2 Top ten causes of morbidity

Disease	**Total cases**	**Percentage (%)**	**Rank**
Malaria	39644	28.5	1st
Upper Respiratory Tract Infection	19548	14.1	2nd
Diarrhoea	9919	7.1	3rd
Anaemia	9489	6.8	4th
Rheumatism and other joint pains	7071	5.1	5th
Intestinal worms	6968	5.0	6th
Skin diseases	4843	3.5	7th
Acute Urinary Tract Infection	1287	0.9	8th
Acute eye infection	940	0.7	9th
Hypertension	783	0.6	10th

Source: Wassa Amenfi East District Health Service report (2015)

3.4 Study Variables

3.4.1 Dependent variables

Quality of Growth Monitoring and Promotion

3.4.2 Independent variables

1. Availability of logistics for GMP at CHPS compounds
2. Adequate human resource at CHPS compounds
3. Staff knowledge on infant and young child feeding counseling
4. Accurate weighing and charting of children's weight
5. Feedback on child's nutritional status to care givers
6. Nutrition counseling to care givers
7. Follow up on children with poor growth
8. Staff interpersonal relations
9. Age of care giver
10. Occupation of care giver
11. Level of education of care giver

3.5 Study Population

The study population was care givers and their children under five years who attended Child Welfare Clinic at CHPS compounds and Community Health Nurses at CHPS compounds.

3.6 Sample Size

Using the formula by Cochran below, the sample size for care givers of children under five years for the study was calculated to be 312. This sample size includes a 10% non-response.

Cochran sample size formula $n = z^2pq/e^2$, where,

n= estimated sample size

p= estimated proportion of an attribute of interest present in the population; underweight in children under five in the Wassa Amenfi East District was used – 7.4% (District Health Directorate, 2015).

q= 1-p (1-0.74) = 0.26

e = margin of error 5% (0.05) for this study

Z = critical value of alpha <0.05 (1.96)

Proportionate sampling was applied to determine the sample size of selected sub-districts as well as the selected CHPS compounds.

The sample sizes of selected sub-districts and CHPS compounds were calculated using the formulae below;

$$\text{sample size per subdistrict (S)} = \frac{\text{No. of children under 5 in subdistrict}}{\text{Total No. of children under 5 in the selected 4 subdistricts}} * 312$$

$$\text{sample size per CHPS compound (C)} = \frac{\text{No.of children under 5 visiting CHPS compound}}{\text{Total No.of children under 5 served by the 2 CHPS compounds}} * (S)$$

3.7 Sampling Method

3.7.1 Sampling of Caregivers

Four sub-districts were randomly selected from a list of 8 sub-districts through the lottery method. Two (2) CHPS compounds were also randomly selected from the list of all CHPS compounds in each selected sub-district; the names of all CHPS compounds in the selected sub-districts were written on pieces of papers, folded and mixed up on a table, 2 were randomly selected from each sub-district's list of facilities.

Study participants in the selected CHPS compounds were selected through systematic random sampling. A sampling interval was obtained by dividing the estimated number of children under five years served by a CHPS compound by the sample size for that CHPS compound. A number was then randomly selected from the sampling interval which served as the starting point for the sampling. Subsequent participants were selected systematically using the sampling interval calculated until the required number of participants was gotten. Participants who declined participation were replaced with the next available participant for interview.

3.7.2 Sampling of Community Health Nurses

All community Health Nurses in the selected CHPS compounds who agreed to participate in the study were interviewed after informed consent was obtained.

The sub-districts, CHPS compounds, number of caregivers as well as CHNs sampled for the study is as shown in Table 3.3.

Table 3.3 Sub-districts, CHPS compounds, No. of caregivers and No. of CHNs sampled

Sub-district	CHPS compound	No. of Caregivers	No. of CHNs
Bawdie	Bawdie CHPS	37	2
	Asikuma CHPS	22	2
Akropong	Abesewa Gyaman	45	2
	Japa CHPS	67	2
Nananko	Nananko CHPS	28	2
	Nkonya CHPS	27	2
Afransie	Jukwa-Heman CHPS	54	2
	Wantram CHPS	32	1
Total		**312**	**15**

3.8 Inclusion and Exclusion criteria

Caregivers with children under five years and who were directly involved in the care of such children at home were included in the study. Care givers with children less than five years but who were not directly involved in the care of such children at home were not recruited into the study.

3.9 Data Collection Instruments

A structured questionnaire was used to collect data from care givers and their children under five years. An observation checklist adopted from Gyampoh (2012) which was developed based on the GHS guidelines on GMP was used to assess the implementation of recommended GMP procedure by Community Health Nurses.

Information on the institutional factors affecting GMP and the knowledge of CHNs on GMP were collected from community Health Nurses through Key Informant Interviews with the aid of an interview guide.

3.10 Quality Control

A two-day training was conducted from 20th – 21st April, 2017 for Research Assistants on how to administer the questionnaires as well as how to measure the weight of children using the Seca digital weighing scale. Questions on the questionnaire were translated from English to Twi to ensure uniformity among Research Assistants, and also to facilitate easy collection of data from respondents. Caregivers were interviewed at a location outside the CHPS compounds' premises in the absence of service providers to avoid a situation of they providing only favorable responses for fear of victimization by the service providers.

3.11 Pre-testing

Study tools were pre-tested on the 2nd of May, 2017 in CHPS compounds and among care givers excluded from the study. This allowed for the clarification and modification of questions on the questionnaire to better facilitate the data collection process in the final study population.

3.12 Data Collection

Data collection was done from 5th – 19th May, 2017. Data were collected from care givers who attended child welfare clinics by Research Assistants through one-on-one exit interviews. Community health nurses were also interviewed by the Principal Investigator through one-on-one interviews. A checklist was used to assess the process of growth monitoring and promotion sessions in the selected CHPS compounds.

3.12.1 Data collection for care givers

Socio-demographic data collected for caregivers included the age of the caregiver and child, sex of the caregiver, religion, marital status, level of education, occupation, number of children less than five years with care giver, occupation of caregiver's partner and ethnicity of caregiver. The following data were also collected from caregivers using the questionnaire: caregiver waiting time at facility, possession of weighing card by caregiver, accurate documentation on weighing card of children, caregiver perception of staff attitude, cost incurred by caregivers, weight-for-age status of child recorded by CHN, feedback from nurse to care giver on child's nutritional status, nutritional counseling for caregiver, caregiver infant feeding practices and care giver perception of quality of growth monitoring.

Children were weighed by Research Assistants with a Seca digital weighing scale with a tarring function and their WAZ estimated and recorded for subsequent comparison with the WAZ recorded in their growth chart by the CHN.

Mothers were weighed alone on the Seca scale without their sandals and with their feet slightly apart, the scale was tarred to zero whilst the mother was still on it and their baby handed to them in minimal clothing. The weight of the children alone was registered on the scale and that was recorded and used to estimate the WAZ of the children based on the location of their weight on their weight-for-age chart.

3.12.2 Data collection with checklist

The observation checklist (appendix 4), adopted from Gyampoh (2012) which was developed based on guidelines on GMP by the GHS as indicated in the Child Health Record booklet was used by the Principal Investigator to assess the following; accuracy of growth monitoring equipment, accuracy of documentation by CHNs, feedback on children's nutritional status to care givers by nurses, evidence of counseling and content of counseling given to care givers by CHNs.

One checklist was administered for each CHPS compound by the PI after observing 5 GMP procedures conducted by CHNs at all selected CHPS compounds.

Scores were assigned based on the performance and non-performance of recommended procedures by CHNs in the GMP process. A score of 1 was assigned if a recommended procedure was performed and 0 if it was not performed. The overall score for each CHPS compound was computed and a percentage struck based on an overall score of 20. A grading scale adopted from Rashmi & Vijaykumar (2010) was used to grade the quality of GMP observed at CHPS compounds' based on their scores as follows;

≥70% = Very good, 50% – 69% = Good, and <50% = Poor

3.12.3 Data collection for CHNs

Community Health Nurses were interviewed by the PI with the aid of an interview guide (appendix 5) to assess the knowledge of CHNs on GMP as well as assess their perceptions on institutional factors that affected the quality of GMP in their respective facilities.

3.13 Data entry

Data collected were verified by the principal investigator and coded for entry into a computer by a data entry clerk with the aid of a Microsoft Excel data base.

3.14 Data processing/Analysis

Data analysis was done using version 14.1 of the Stata statistical software.

Data analysis was preceded by data cleaning where incomplete and missing data values were erased from the data base.

Descriptive statistics including means, standard deviation, frequencies, percentages and cross tabulations were used to show the distribution of participants according to variables of interest

Institutional factors affecting the quality of growth monitoring and promotion were analyzed and outlined as presented by respondents.

Overall quality of GMP at CHPS compounds was analyzed and presented in proportions according to the various quality categorizations based on individual CHPS compounds'

scores on the GMP procedure observed by CHNs relative to the standard procedure. Caregiver perception of the Quality of GMP was analyzed and presented in proportions based on an ordinal scale.

A Chi square test was used to assess the association between previous nutrition counseling received by care givers and their knowledge on infant and young child feeding as well as the weight-for-age status of their children.

3.15 Ethical Consideration

Ethical clearance and approval for the study was sought from the Ghana Health Service Ethical Review Committee (GHS-ERC:66/02/17). The letter of approval (appendix 6) was sent to the Wassa Amenfi East District Health Directorate of the GHS for endorsement by the DDHS and copies sent to the selected CHPS compounds. The study was carried out after permission was obtained from the administrative heads of the selected CHPS compounds. Informed consent was obtained from participating caregivers and health workers.

Privacy and confidentiality was maintained throughout the study and data collected were stored and managed to ensure that neither the Community Health Nurses nor the care givers were identifiable in the study tools.

A consent form containing information about the study was given to respondents to read and consent by either appending their signature or a thumbprint if they so agreed to participate in the study. The consent form was read and explained to respondents who could not read in the presence of a witness who consented together with the respondent.

Participants had the option to decline from responding to any question and could opt out of the study at any point without intimidation.

The participants were made aware that there were no direct benefits to them by their participation in the study however information obtained from the study was to be used to improve the quality of GMP and other nutrition programs. They were also made aware that there were not at any risk by participating in this study and that, they had the right not to participate in the study if they chose to do so. The study was self-sponsored and there is no conflict of interest whatsoever.

CHAPTER FOUR

RESULTS

4.1 Background characteristics of caregivers

Almost all (98.4%) of the caregivers included in the study were females with a mean age of 26.5 (Table 4.1). Almost ten per cent (9.6%) of caregivers were single mothers while 84.9% and 5.5% were married and cohabiting respectively. About 17% of the caregivers had no education, with a majority (47.8%) being JHS graduates and as little as 2.2% were tertiary/post-secondary graduates. About 29% of caregivers were unemployed, 2.9% were gainfully employed, with 68.6% being self-employed who mostly were engaged in petty trading.

Table 4.1 Background characteristics of caregivers (N= 312)

Characteristics	n (%)
Age (mean ± SD)	26.5 ± 5.3
Sex	
Male	5 (1.6)
Female	307 (98.4)
Marital status	
Married	265 (84.9)
Single	30 (9.6)
Cohabiting	17 (5.5)
Religion	
Christian	277 (88.8)
Moslem	31 (9.9)
Traditionalist	4 (1.3)

Characteristics	n (%)
Level of education	
No education	53 (16.9)
Primary	69 (22.1)
JHS	149 (47.8)
SHS	34 (10.9)
Tertiary/post-secondary	7 (2.2)
Employment status	
Unemployed	89 (28.5)
Self employed	214 (68.6)
Employed	9 (2.9)
Ethnicity	
Akan (Wassa)	203 (65.1)
Northerner	85 (27.2)
Ewe	22 (7.1)
Ga	1 (0.3)
Nzema	1 (0.3)
Number of children under five years	
1	207 (66.4)
2	90 (28.9)
>2	15 (4.8)

Source: Field survey, 2017

4.2 Background characteristics of children under five years

About twenty-seven percent (26.6%) of participating children were less than 6 months, 62.5% were between the ages of 6 and 23 months with 10.9% between 24 and 59 months as shown in Table 4.2.

Underweight (low weight-for-age) among participating children was 8.6%. This prevalence was not significantly different from the 7.4% prevalence reported by the Wassa Amenfi East District Health Directorate (2015) [p=0.3975, 95%CI (0.0553 – 0.1177)]

Table 4.2 Background characteristics of children under five years (N=312)

Characteristic	n (%)
Age in completed months (mean ± SD)	10.0 ± 6.0
Age category	
< 6 months	83 (26.6)
6 – 23 months	195 (62.5)
24 – 59 months	34 (10.9)
Sex	
Boy	141 (45.2)
Girl	171 (54.8)
Nutritional status (weight-for-age)	
Normal weight	285 (91.4)
Underweight	27 (8.6)

Source: Field survey, 2017

4.3 Background Characteristics of Community Health Nurses

Majority (86.7%) of Community Health Nurses who participated in the study were females (Table 4.3). About thirteen per cent (13.3%) were newly deployed and had less than a year of experience as a CHNs. All others had practice with experiences ranging from 1 year to more than 4 years as shown in Table 4.3 below.

Table 4.3 Background characteristics of Community Health Nurses (N=15)

Characteristic	n (%)
Age (mean ± SD)	28.7 ± 2.9
Sex	
Male	2 (13.3)
Female	13 (86.7)
Number of years of practice	
<1 year	2 (13.3)
1 – 2 years	1 (6.7)
2 – 3 years	3 (20.0)
3 – 4 years	5 (33.3)
>4 years	4 (26.7)

Source: Field survey, 2017

4.4 Growth monitoring and promotion logistics for caregivers

About twenty-two per cent (22.1%) of caregivers had no child health record booklet for GMP. About sixty-five per cent (64.7%) reported inadequate space and seats for caregivers during GMP at CHPS compounds. About 56.1% also indicated inadequate number of CHNs. Forty-seven per cent (47%) of caregivers reported an average waiting

time of 1-3 hours at CHPS compounds during GMP, while 41.4% and 11.2% reported a waiting time of less than 1 hour and more than 3 hours respectively as shown in Table 4.4.

Table 4.4 Availability of GMP logistics to caregivers at CHPS compounds (N=312)

Indicator	n (%)
Possession of child health record booklet	
Yes	243 (77.9)
No	69 (22.1)
Space and seats for caregivers during GMP	
Adequate	110 (35.26)
Inadequate	202 (64.7)
Adequacy of CHNs at CHPS compound	
Adequate	137 (43.9)
Inadequate	175 (56.1)
Average waiting time during GMP	
<1 hour	129 (41.4)
1 – 3 hours	148 (47.4)
>3 hours	35 (11.2)

Source: Field survey, 2017

4.5 Data recording and documentation in child health records booklet

About 4.9% of caregivers who had child health records booklets had either a boy's growth chart assigned to their girl child or vice versa (Table 4.5). Plotting of children's weight was incorrect in the growth charts of 2.5% of participating children. Connection

of weight plots on a growth chart into a curve which shows a child's growth trend was not done for about 36% of children as illustrated in Table 4.5.

Table 4.5 Documentation in child health records booklets by CHNs (N=243)

Indicator	n (%)
Sex-specific growth chart for children	
Yes	231 (95.1)
No	12 (4.9)
Plotting of child's weight on growth chart	
Correct	237 (97.5)
Incorrect	6 (2.5)
Growth curve of child indicated on chart	
Yes	156 (64.2)
No	87 (35.8)

Source: Field survey, 2017

4.6 Nutrition services received by caregivers

Table 4.6 below indicates that about 33% of caregivers were not informed about the welfare of their children after weighing. About thirty- five per cent (34.9%) of caregivers had never received any form of nutrition education for 3 consecutive GMP sessions. Sixty-five per cent (65%) of caregivers who reported benefiting from nutrition education indicated they were educated through one-on-one counseling (Table 4.6).

Table 4.6 Nutrition services received by caregivers (N=312)

Indicator	n (%)
Feedback on child's weight after weighing for at least 3 times	
Yes	210 (67.3)
No	102 (32.7)
Nutrition education for at least 3 times (N=312)	
Yes	203 (65.1)
No	109 (34.9)
Type of nutrition education (N= 203)	
One-on-one counselling	132 (65.0)
Group education	71 (35.0)

Source: Field survey, 2017

4.7 Feeding recommendation received from CHN

About eighteen per cent (18.4%) of caregivers of children less than 6 months who received nutrition education indicated they were advised by nurses at CHPS compounds to feed their children with breast milk and family foods (Table 4.7). Close to eight per cent (7.6%) of mothers with children 6-23 months old reported they were advised to feed only breast milk while 9.1% of mothers with children between 24-59 months were advised to feed their children with infant formula.

Table 4.7 Feeding recommendations received by caregivers during nutrition education (N=203)

	Age category of child		
	<6 months (N=49)	**6 – 23 months (N=132)**	**24 – 59 months (N=22)**
Feeding recommendation	**n (%)**	**n (%)**	**n (%)**
Breast milk only	40 (81.6)	10 (7.6)	0 (0.0)
Infant formula	0 (0.0)	0 (0.0)	2 (9.1)
Breast milk & family foods	9 (18.4)	122 (92.4)	20 (90.9)

Source: Field survey, 2017

4.8 Caregiver child feeding practices

About 76% of caregivers of children less than 6 months old observed the recommended infant and young child feeding practice of breast milk only for the first 6 months of life (Table 4.8). Majority (90.8%) of caregivers of children in the 6-23 months' age bracket observed the recommended feeding practice.

Table 4.8 Caregiver child feeding practices (N=312)

	Age category of child		
Feeding practice	**<6 months (N=83) n (%)**	**6 – 23 months (N=195) n (%)**	**24 – 59 months (N=34) n (%)**
Breast milk only	63 (75.9)	10 (5.1)	0 (0.0)
Infant formula only	3 (3.6)	1 (0.5)	0 (0.0)
Infant formula & family foods	1 (1.2)	2 (1.0)	0 (0.0)
Breast milk & family foods	11 (13.3)	177 (90.8)	12 (35.3)
Family foods only	0 (0.0)	1 (0.5)	22 (64.7)
breast milk & infant formula	5 (6.0)	4 (2.1)	0 (0.0)

4.9 Caregivers knowledge on infant and young child feeding

Out of the 312 caregivers interviewed, 88% had good knowledge on infant and young child feeding while about 12% had poor knowledge (Figure 4.1). Caregivers' knowledge was assessed and classified based on their child feeding practices vis-à-vis the Ghana Health Service infant and young child feeding recommendations.

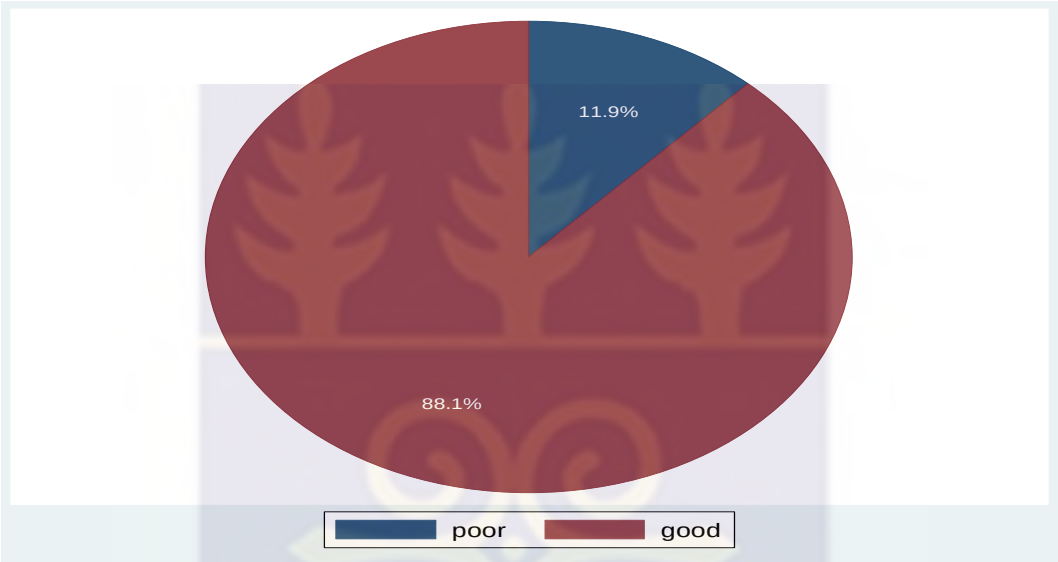


Figure 4.1 Caregivers knowledge on infant and young child feeding (N=312)

Source: Field survey, 2017

4.10 Caregiver perception of Quality of GMP at CHPS compounds

Majority (66.7%) of the 312 caregivers who participated in the study rated GMP services at CHPS compounds as good (Figure 4.2). Almont thirty per cent (29.8%), 2.9% and 0.6% rated it as very good, poor and very poor respectively as shown in Figure 4.2 below.

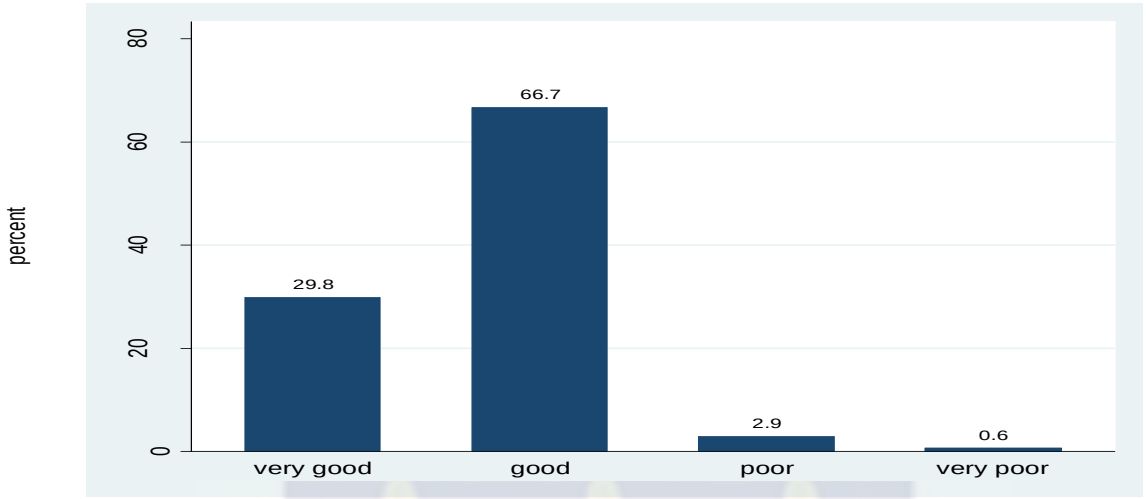


Figure 4.2 Caregivers perception of Quality of GMP at CHPS compounds (N=312)

Source: Field survey, 2017

4.11 Caregiver perception of staff attitude

About 68% of caregivers reported good staff attitude at CHPS compounds (Figure 4.3). About 29% reported very good attitude and a minority 2.6% reported poor staff attitude.

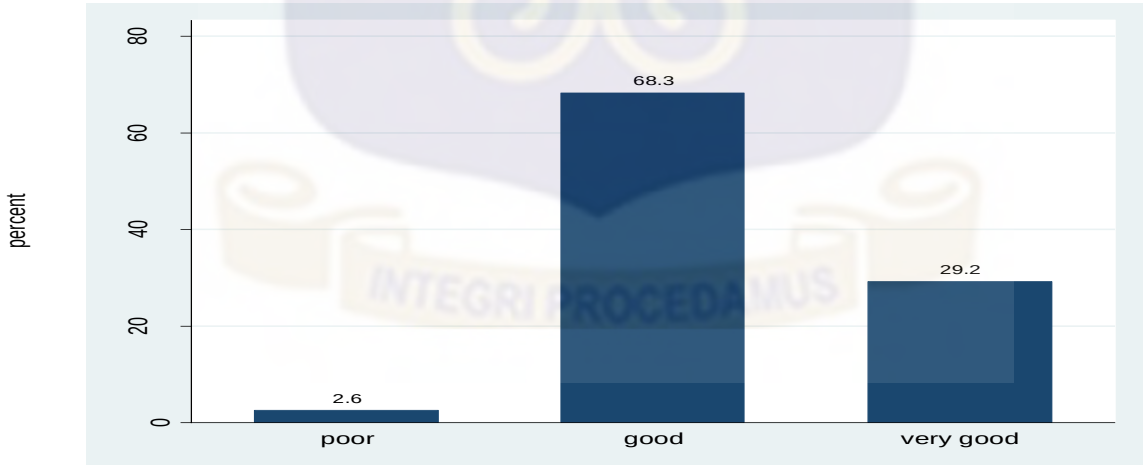


Figure 4.3 Caregivers perception of staff attitude at CHPS compounds (N=312)

Source: Field survey, 2017

4.12 Caregivers satisfaction with GMP services at CHPS compounds

Majority of caregivers (about 96%) expressed satisfaction with GMP services they received from CHPS compounds with about 4% expressing dissatisfaction with the service (Figure 4.4)

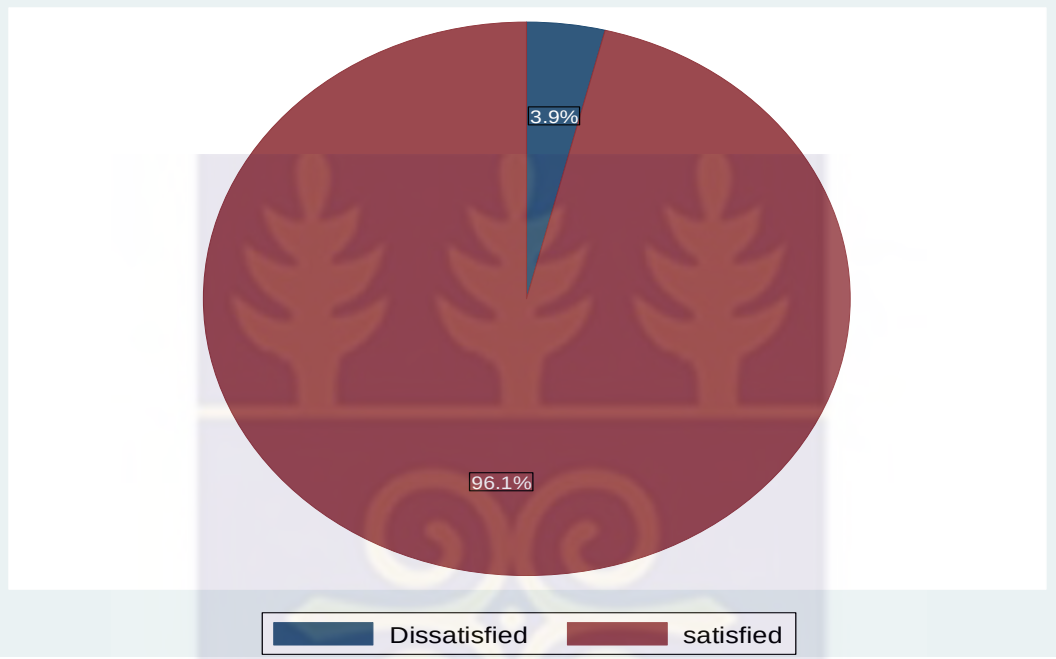


Figure 4.4 Caregivers satisfaction with GMP services at CHPS compounds (N=312)

Source: Field survey, 2017

4.12.1 Reasons for caregiver dissatisfaction with GMP services

Reasons mentioned by some caregivers who expressed dissatisfaction with GMP services are as follows; Inadequate space and seats for caregivers during GMP, long waiting time, inadequate shade at facility for caregivers, dirty environment of facility, rude nature of some of CHNs, high fees charged by CHNs for child health records booklet, and poor ventilation at facility during GMP

4.13 Relationship between nutrition counseling, type of nutrition counseling and caregivers' knowledge on infant feeding

Results in Table 4.9 indicates a significant relationship between nutrition education received by caregivers and their knowledge on infant and young child feeding ($p<0.05$). The type of nutrition education given to caregivers was not significantly related to their knowledge on infant and young child feeding.

Table 4.9 relationship between nutrition counseling, type of nutrition counseling and caregivers' knowledge on infant feeding (N=312)

	Caregivers' knowledge on Infant & young child feeding				
Covariate	**n**	**Good n (%)**	**Poor n (%)**	**Chi square**	**p-value**
Nutrition education received*					
Yes	203	186(91.6)	17 (8.4)	6.7500	0.009#
No	109	89 (81.7)	20 (18.3)		
Type of nutrition counseling					
Individual counseling	132	120 (90.9)	12 (9.1)	0.2525	0.615
Group education	71	66 (93.0)	5 (7.0)		

*Caregivers receiving nutrition education for 3 consecutive GMP sessions

Significant at $p<0.05$

Source: Field survey, 2017

4.14 Relationship between feedback on child's weight, nutrition education, type of nutrition education and the weight-for-age of children

Nutrition education to caregivers was significantly related to the nutritional status (weight-for-age) of children ($p<0.05$) as shown in Table 4.10 below. The type of nutrition education and providing feedback to caregivers on their children's weight were not significantly related to the weight-for-age status of their children.

Table 4.10 relationship between feedback on child's weight, nutrition education, type of nutrition education and weight-for-age status of children (N=312)

		Weight-for-age status			
Covariates	**n**	**Normal n (%)**	**underweight n (%)**	**Chi square**	**p-value**
Feedback on child's weight[#]					
Yes	210	195 (92.9)	15 (7.1)	1.8552	0.173
No	102	90 (88.2)	12 (11.8)		
Nutrition education from CHN*					
Yes	203	192 (94.6)	11 (5.4)	7.6932	0.006□
No	109	93 (85.3)	16 (14.7)		
Type of nutrition counseling					
Individualized counselling	132	125 (94.7)	7 (5.3)	0.2511	0.616
Group education	71	66 (93.0)	5 (7.0)		

[#] Caregivers informed about child's weight for 3 consecutive GMP sessions at CHPS compound

* Caregivers receiving nutrition education for 3 consecutive GMP sessions

□ Significant at $p<0.05$

Source: Field survey, 2017

4.15 GMP procedures observed by CHNs at CHPS compounds

Table 4.11 below indicates the proportions of CHPS compounds that observed the recommended GMP procedure during growth monitoring and promotion.

Table 4.11 GMP procedures observed by CHNs at CHPS compounds (N=8)

Procedure	n (%)
Hanging of scale at eye level	
Yes	7 (87.5)
No	1 (12.5)
Zero adjustment of weighing scale	
Yes	0 (0.0)
No	8 (100.0)
Weight recorded to the nearest 0.1kg	
Yes	7 (87.5)
No	1 (12.5)
Growth trend indicated on chart	
Yes	3 (37.5)
No	5 (62.2)
Age of children calculated in completed months	
Yes	2 (25.0)
No	6 (75.0)
Feedback to caregiver on child's weight	
Yes	5 (62.5)
No	3 (37.5)
Enquiries about child feeding practice	
Yes	4 (50.0)
No	4 (50.0)

Procedure	n (%)
Individualized counseling for caregivers	
Yes	2 (25.0)
No	6 (75.0)

Source: Field survey, 2017

4.16 CHNs knowledge on Infant and Young Child Feeding (IYCF) counseling and growth monitoring & promotion procedure

Out of 15 Community Health Nurses interviewed by the Principal Investigator, only 1 (6.7%) demonstrated adequate knowledge on the GHS recommended infant and young child feeding counseling steps (Table 4.12). 3 CHNs (20%) also demonstrated poor knowledge on the standard GMP procedure while 66.7% and 13.3% demonstrated fair and good knowledge on GMP procedure respectively.

Table 4.12 CHNs knowledge on IYCF counseling and GMP procedure (N=15)

Indicator	n (%)
Adequate knowledge on IYCF counseling steps	
Yes	1 (6.7%)
No	14 (93.3)
Knowledge on standard GMP procedure	
Good	2 (13.3)
Fair	10 (66.7)
Poor	3 (20.0)

Source: Field survey, 2017

4.17 Quality of GMP Services at CHPS compounds

Figure 4.5 below shows results on the overall rating of Quality of GMP services observed at CHPS compounds based on scores allotted to CHPS compounds for their observation of standard GMP procedure and vice versa. A grading scale adopted from Rashmi & Vijaykumar (2010) was used to rate the quality of the service at each CHPS compound as shown in Figure 4.5. The service was rated Very Good in only 1 (12.5%) of participating CHPS compounds, Good in 2 (25%), and Poor in 5 (62.5%) of participating CHPS compounds.

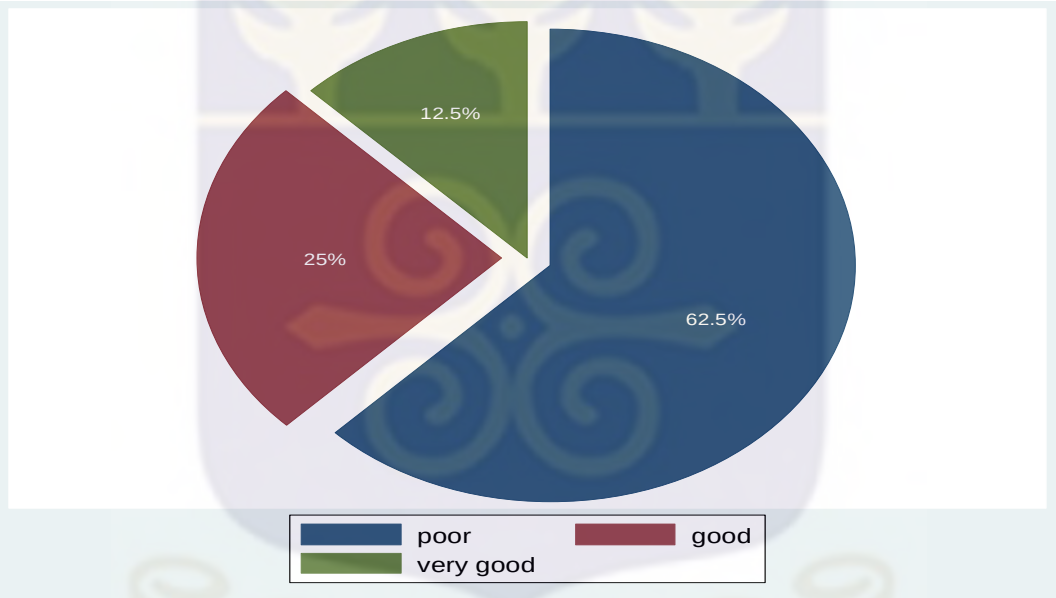


Figure 4.5 Quality of GMP services at CHPS compounds (N=8)

Score	*Quality rating*
<50%	- Poor
50% - 69%	- Good
≥75%	- Very Good

Source: Adopted from Rashmi & Vijaykumar (2010)

4.18 Institutional factors affecting the Quality of GMP at CHPS compounds

All 15 Community Health Nurses who participated in the study mentioned inadequate Community Health Nurses as the most important factor that affected the quality of the services they provided. Inaccurate weighing scales were identified by 4 out of 15 CHNs as a factor that hampered the accuracy of weights measured. All 15 CHNs also mentioned frequent shortage of child health record booklets and inadequate benches for mothers to sit on. 11 CHNs mentioned the lack of refresher trainings for staff as another factor which affected the quality of GMP and other health care services at CHPS compounds. 3 out of 15 CHNs lamented about inadequate space at CHPS compounds to accommodate caregivers during GMP sessions as a result, caregivers are usually not patient to go through some of the procedures of GMP, especially counseling.

CHAPTER FIVE

DISCUSSIONS

The objectives of this study were to identify institutional factors that affect the quality of growth monitoring and promotion at CHPS compounds, to assess the quality of growth monitoring and promotion services at CHPS compounds, to assess the nutritional interventions care givers of children under five receive during Growth monitoring and promotion at CHPS compounds, to determine the relationship between nutrition counseling received by care givers and their knowledge on infant and young child feeding and the nutritional status of their children (weight-for-age) and to assess care givers' perception of the quality of growth monitoring and promotion services at CHPS compounds in the Wassa Amenfi East District of the Western region of Ghana.

Almost all (98.4%) of the caregivers included in the study were females with a mean age of 26.5 years. 9.6% of caregivers were single mothers while 84.9% and 5.5% were married and cohabiting respectively. About 17% of the caregivers had no education, with a majority (47.8%) being JHS graduates and as little as 2.2% were tertiary/post-secondary graduates. About 29% of caregivers were unemployed, 2.9% were gainfully employed, with 68.6% being self-employed who mostly were engaged in petty trading.

About twenty-seven per cent (26.6%) of participating children were less than 6 months, 62.5% were between the ages of 6 and 23 months with 10.9% between 24 and 59 months.

Majority (86.7%) of Community Health Nurses who participated in the study were females. 13.3% were newly deployed and had less than a year of experience as CHNs. All others had practiced with experiences ranging from 1 year to more than 4 years.

5.1 Underweight among children under five years

Underweight (low weight-for-age) among participating children was 8.6%. This prevalence was not found to be significantly different from the 7.4% reported by the Wassa Amenfi East District Health Directorate (2015) [p=0.3975, 95%CI (0.0553 – 0.1177)]. The 8.6% underweight prevalence was also not significantly different from the 9.3% and 11% underweight prevalence reported by the Western Regional Health Directorate (2015) and the GDHS (2014) respectively.

5.2 Institutional factors affecting the quality of growth monitoring and promotion

Community Health Nurses in this study identified inadequate staff as the most inhibiting factor to the quality of GMP services. Inadequate staff according to the CHNs resulted in their inability to offer all the needed services to caregivers and their children. They also attributed long waiting time for caregivers during GMP sessions to their inadequate numbers. Fifty-six per cent (56%) of caregivers also perceived the number of CHNs at CHPS compounds to be inadequate, which buttresses the Community Health Nurses' assertion of inadequacy of staff. Frequent shortage of the child health records booklet (weighing card) was also mentioned by all CHNs as a challenge that made documentation of GMP services to children problematic. The shortage of child health records booklets as reported by the CHNs is confirmed by 22% of children who did not have the child health record booklet. Inadequate benches for caregivers during GMP was mentioned by CHNs as yet another factor that affected their efforts to get caregivers wait to receive other GMP services such as counseling. Supporting this claim is the 64.7% of caregivers who indicated that there was inadequate space and seats at the CHPS compounds they visited

for GMP services. A few CHNs mentioned inaccurate weighing scales as a factor which contributes to weights that are not a true reflection of the actual weights of children weighed. Lack of refresher trainings for staff were also reported by CHNs as a set back to the quality of the GMP services they provided. Lack of refresher training for staff deprives them of up to date skills and competencies in carrying out their routine responsibilities.

These findings are similar to findings by Bilal et al., (2014) who in a qualitative study to assess practices and challenges of GMP found that some Community Health Workers did not have sufficient skills to measure and record accurately the weight of children on the growth chart. The lack of refresher training for staff found in this study is also similar to findings by Bilal et al., (2014) who found that the lack of a well-organized checklist for regular supportive supervision and refresher training for health workers was a set-back to GMP. Lack of a checklist and regular supervision by management was however, not reported by CHNs in this study to be a set-back to GMP. The frequent shortage of child health records booklet and inaccurate weighing scales found in this study is not very different from the findings of Bilal et al., (2014) who found health workers reporting inadequate budget for the supply and maintenance of equipment on a regular basis which led to the shortage of stationery materials such as pens and referral papers. The lack of child health records booklets for children in health facilities compels health workers to use improvised cards for such children. These improvised cards are unable to contain all the vital information of the children as standard child health record booklet would do, as a result, vital information about the children such as their weight-for-age status and growth trends are usually not monitored and also not reported on by health workers in

their routine health data. Health workers in this study however, did not attribute the frequent shortage of child health record booklets to inadequate budget. They mentioned the booklets were supplied free of charge from the national level but could not offer reasons for the erratic supply. Findings from this study are also consistent with findings by Kitenge & Govender (2013) who found staff shortages, lack of equipment, work overload and unequal distribution of professional nurses on duty per shift as factors that affected the ability of primary health care staff to monitor the growth chart of children. Results of this study are also consistent with findings made by Ashworth et al., (2008) who found that poor weighing, data recording and charting practices were associated with inadequate equipment, inadequately trained and insufficient staff.

5.3 Quality of GMP at CHPS compounds

This study found that 4.9% of caregivers who had child health records booklets for their children had either a boy's growth chart assigned to their girl child or vice versa. This is inconsistent with the GHS recommendation on GMP which assigns growth charts that are specific to the sex of children. Boys and girls have different growth patterns and the growth charts have been designed taking into account that differential. Therefore, plotting a boy's weight onto a girl's growth chart and vice versa could present a weight-for-age status that is not a true representation of a child's status. In the process of GMP, children are weighed, their weights correctly plotted on a growth chart, and their growth patterns interpreted to caregivers (Ashworth et al., 2008). Plotting of children's weight in this study was incorrect in the growth charts of 2.5% of participating children. Connection of weight plots on a growth chart into a curve which shows a child's growth trend was not

done for about 36% of children. These findings are similar to findings by Mccoy et al., (1999). The findings are also similar to the findings of Charlton et al., (2009) who observed in their study that weight of children were accurately plotted but were not connected to show children's growth trend. The use of incorrect growth chart for children by Community Health Nurses could be a contributing factor to the high number of children being classified as underweight.

In this study, 33% of caregivers were not informed about the welfare of their children after weighing. About thirty-five per cent (34.9%) had not received any form of nutrition education for 3 consecutive GMP sessions. 65% of caregivers who reported benefiting from nutrition education indicated they were educated through one-on-one counseling. Health workers not informing caregivers about the growth of their children is a deviation from recommendations by UNICEF (2007) and the Ghana Health Service that recommends a 3-stage process of GMP: measuring and interpreting growth adequacy; analysis of the reasons for adequate or inadequate growth; and counseling which must include the active engagement of the caregiver in problem-solving about the child's growth. Nutrition counseling is recommended by the GHS for all caregivers during GMP whether their children are growing well or not. 34.9% of caregivers in this study reported never receiving any form of counseling, which is an indication of sub-optimal performance in the area of nutrition counseling at GMP clinics at CHPS compounds. Sub-optimal nutrition counseling by CHNs in this study is similar to findings by Hurtado et al., (2008) who in their study observed that counseling by community health workers at growth monitoring clinics was very weak. One-on-one counseling giving to caregivers in this study is consistent with the standard recommendations by the GHS; however, this

form of counseling was done for 65% of caregivers in this study. The effectiveness and efficiency of a GMP program is not realized when caregivers receive non-specific, non-individualized counseling.

The qualitative assessment of Community Health Nurses' knowledge on the GHS guidelines and recommendations on infant and young child feeding counseling and GMP procedure in this study reveals that only 1 CHN (6.7%) demonstrated adequate knowledge on the GHS recommended infant and young child feeding counseling steps. Three (3) CHNs (20%) also demonstrated poor knowledge on the standard GMP procedure while 66.7% and 13.3% demonstrated fair and good knowledge on GMP procedure respectively. Growth monitoring and Promotion according to UNICEF (2007) is carried out to achieve the following outcomes;

1. Heighten awareness of the importance of caregiver practices for adequate growth and the link between adequate growth and child health
2. Increase the knowledge and skills and subsequently improve child feeding and health care practices by caregivers
3. Increased coverage of particular health services, if they are offered along with GMP.

Achieving these objectives of GMP requires that service providers are able to accurately monitor the progress of children as well as possess infant and young child feeding counseling skills to be able to negotiate with caregivers to adopt appropriate infant and young child feeding practices (WHO, 2013).

About eighteen per cent (18.4%) of caregivers of children less than 6 months in this study who received nutrition education indicated they were advised by nurses at CHPS compounds to feed their children with breast milk and family foods. About seven per cent (7.6%) of mothers with children 6-23 months old reported they were advised to feed only breast milk while 9.1% of mothers with children between 24-59 months were advised to feed their children with infant formula. These findings suggest that some CHNs at CHPS compounds are not aware or are deliberately not complying with the GHS infant and young child feeding recommendations. The GHS policy on infant and young child feeding recommends that children below the age of 6 months are fed with only breast milk while children upon attaining 6 months be introduced to family foods whilst they continue to breastfeed until they are 24 months at which age they could be weaned off breast milk. The policy frowns at feeding children below 6 months with artificial formula except in special situations where it is recommended. This finding confirms the findings by Ashworth et al., (2008) that poor performance by health workers in the areas of GMP are partly as a result of lack of required knowledge and skills.

About 76% of caregivers of children less than 6 months old in this study observed the recommended infant and young child feeding practice of breast milk only for the first 6 months of life. Majority (90.8%) of caregivers of children in the 6-23 months' age bracket also observed the recommended feeding practice of complementary feeding with family foods and continued breastfeeding. These findings are indications that GMP at CHPS compounds is close to achieving one of its objectives of improving the knowledge of caregivers on appropriate child feeding practices, at least for caregivers with children between 6 and 23 months. However, same cannot be said for caregivers with children

below 6 months old as 24% of such caregivers are not practicing the recommended feeding practices. About 88% of the 312 caregivers who participated in this study had good knowledge on infant and young child feeding with a minority 12% exhibiting poor knowledge. Majority of caregivers who had poor knowledge were those with children below 6 months old.

Based on the observation of GMP procedure and services and the assessment of CHNs knowledge on GMP at CHPS compounds in this study, a grading scale adopted from Rashmi & Vijaykumar (2010) was used to grade the quality of the service at each CHPS compound as Very Good, Good and Poor. Growth Monitoring and Promotion was rated Very Good in only 1 (12.5%) of participating CHPS compounds, Good in 2 (25%), and Poor in 5 (62.5%) of participating CHPS compounds. The findings of poor quality of GMP in this study is similar to findings made by Mccoy et al., (1999) who observed that weighing scales were not calibrated with a smaller minority of caregivers given feedback about the growth of their children. The poor quality of GMP services in a majority of CHPS compounds in this study could be due to the poor knowledge and skill on the part of CHNs.

5.4 Relationship between nutrition counseling and caregivers' knowledge on child feeding practices

This study found a significant relationship between nutrition counseling received by caregivers on 3 consecutive GMP sessions and their knowledge on infant and young child feeding ($p<0.05$). The type of nutrition education given to caregivers was however, not

significantly related to their knowledge on infant and young child feeding even though majority of caregivers reported receiving individualized counseling. Nutrition education to caregivers was also found to be significantly related to the nutritional status (weight-for-age) of their children ($p<0.05$). Providing feedback on a child's weight to caregivers after weighing alone was not found to be significantly associated with the weight-for-age status of their children. No significant relationship was also found between the type of nutrition education given to caregivers and the nutritional status of their children despite more caregivers receiving individualized counseling. The findings in this study are similar to findings made by Ruel & Habicht (1992) who observed that caregivers who attended GMP regularly and benefitted from nutrition education had a significantly higher knowledge on the appropriate time for the introduction of complementary foods, they however, attributed the association to group nutrition education given to caregivers since they did not observe individualized counseling. These findings suggest that nutrition counseling for all caregivers during every GMP session could improve their knowledge on infant and young child feeding practices as well as the nutritional status of their children which are the expected outcomes of growth monitoring and promotion (UNICEF, 2007). Even though feedback about children's weight to caregivers after weighing and the type of counseling are not found to be significantly related to caregivers' knowledge and feeding practices in this study, specific and individualized counseling have been reported by Ashworth (2008); Griffiths & Rosso (2008) to be contributing factors to the effectiveness of growth monitoring and promotion. Providing feedback and offering individualized counseling to caregivers ensures their active

engagement and interest in addressing problems related to the growth of their children (UNICEF, 2007).

5.5 Caregivers' perception of quality of GMP

Majority of caregivers (66.7%) of the 312 caregivers who participated in this study rated the quality of GMP at CHPS compounds as Good, an appreciable 29.8% rated it as Very Good, 2.9% of caregivers found the service to be Poor with a minority 0.6% rating it as Very Poor. even though majority of caregivers rate the quality to be good, the norm-based assessment by the PI showed otherwise. Quality was poor in 63% of the CHPS compounds assessed. Caregivers in this study did not have a good understanding of the GMP process as well as the technical competence of CHNs and therefore, their assessment and perception of quality was based on only staff attitude and not the technical component of the service. About 29% of caregivers perceived attitude of CHNs at CHPS compounds to be Very Good, 68% rated it Good and 2.6% of caregivers rated it Poor. The findings of this study is inconsistent with findings made by Coulibaly et al., (2002) in an assessment of caregivers perception of quality of GMP. In their study, caregivers attributed poor quality to personnel inadequacies in relation to nutrition knowledge, persuasive communication and caring.

Majority (96%) of caregivers expressed satisfaction with GMP services they received from CHPS compounds with a minority 4% expressing dissatisfaction with the service. All caregivers who expressed satisfaction with the service did so based on staff attitude and interpersonal relations. The minority of caregivers who expressed dissatisfaction

with the service mentioned at least one of the following as reasons for their dissatisfaction; Inadequate space and seats for caregivers during GMP, long waiting time during GMP, inadequate shade at facility for caregivers, dirty environment of facility, rude nature of some CHNs, exorbitant fees charged by CHNs for child health records booklet, and poor ventilation at facility during GMP. These findings suggest that caregivers either do not understand the technicalities of GMP or are not concerned about it.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

From the study, Community Health Nurses at CHPS compounds had poor knowledge in GMP procedure as well as infant and young child feeding counseling. GMP procedures observed in most CHPS compounds did not conform to the GHS standards; as a result, the service was rated poor in terms of quality. Majority of caregivers however, rated the service as good and expressed satisfaction with it. Caregivers' satisfaction with the service however, was largely based on their perception of staff attitude and staff interpersonal relations rather than staff technical knowledge and competence. Most caregivers found the attitude of staff to be good. A few caregivers expressed dissatisfaction with the service citing either one or more of the following reasons; Inadequate space and seats for caregivers during GMP, long waiting time during GMP, dirty environment of facility, rude nature of some CHNs, and exorbitant fees charged by CHNs for child health records booklet and other child health services such as immunization.

Frequent shortage of child health record booklets, insufficient CHNs at CHPS compounds, inadequate space and benches for caregivers and lack of refresher training for staff were identified by a majority of CHNs to be the major institutional factors that affected their ability to render quality GMP services. A few CHNs also mentioned inaccurate weighing scales as a factor that affected the reliability of weight measurements and GMP data.

Nutrition counseling to caregivers was significantly associated with their child feeding practices as well as well as the nutritional status (weight-for-age) of their children.

6.2 Recommendations

Based on results from the study, the following recommendations are hereby made;

6.2.1 Recommendations to the Ghana Health Service Head Quarters

1. The printing of child health records booklets should be decentralized to the various regions and the pricing standardized to make them available and financially accessible to caregivers.
2. Routine monitoring and evaluation of the GMP programme should be conducted to improve on its quality.

6.2.2 Recommendations to the Wassa Amenfi East District Health Directorate

1. Technical officers from the directorate and CHNs from other facilities should be deployed to CHPs compounds on their GMP clinic days to support the few CHNs to provide the full gamut of GMP services to caregivers.
2. The nutrition unit of the district health directorate should embark on a routine supportive and coaching visit to health facilities to enhance the knowledge and skills of CHNs.
3. Annual refresher training on infant and young child feeding counseling should be organized for all Community Health Nurses.

4. The accuracy of weighing scales at health facilities should be routinely assessed and standardized.
5. Caregivers should be sensitized on the services to expect from health facilities during GMP to empower them to demand for quality services.

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APPENDICES

Appendix 1: Caregiver consent form

Caregiver Consent Form

Title of Study: Assessment of the quality of Growth Monitoring and Promotion for children under five in CHPS compounds in the Wassa Amenfi East District.

Principal Investigator: Joseph Asigri

Address: Department of Health Policy, Planning & Management

School of Public Health

University of Ghana

P.O. Box LG 13, Legon

Accra-Ghana

Instruction to participant

You are being selected to take part in the study titled above and this form contains information explaining the study. Please take your time to read and understand what is expected of you if you decide to participate. You will be required to sign or thumbprint the form if you agree to participate in this study. You are at liberty to ask questions at any point in time about anything you do not understand.

General Information about the study

The objective of this study is to assess the quality of Growth Monitoring and Promotion (weighing) services offered to children less than five years in CHPS compounds in the Wassa Amenfi East District. The study will involve interviews with health workers and caregivers.

If you agree to participate in the study, you will be asked some questions about the services you receive whenever you visit the child welfare clinic. In addition, your child will be weighed. This will last about forty-five minutes. You are free to leave out any questions that you are not comfortable with.

Possible Risks

You and your child are not at any risk by participating in this study.

Possible Benefits

You and your child will not benefit directly from your participation, however, the information obtained through this study will benefit the health service and society by providing possible ways of improving child health services in the district.

Confidentiality

Your personal identity and that of your child will be protected and you will not be required to indicate your name, your child's name or any personal information on the questionnaire. Your questionnaire will have a unique serial number instead of your name. Only researchers on this study will have access to the documents connecting your name

to the serial number. This may be referred to only if we need to contact you and this will be destroyed after completion of the study. All questionnaires and documents will be kept locked up safely. The results of this study will not include your name or that of your child.

Compensation

There will be no compensation or incentive for you for participating in the study.

Voluntary Participation and Right to Quit the Research

Being part of this study is not compulsory and you and your child are at liberty to leave the study any time you so wish without any cost to you.

Contact for additional information

For more information and concerns about this research please contact:

Joseph Asigri, School of Public Health, University of Ghana, 0242158132

Dr. Reuben Esena	Hannah Frimpong	Nana Abena Kwaa
School of Public Health	GHS-ERC Administrator	Assistant GHS-ERC Administrator
University of Ghana.	Office: +233 302681109	Mobile: 0244712919
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Telephone: 0543012970	Email:	
Email: rkesena@ug.edu.gh	Hannah.Frimpong@ghsmail.org	

VOLUNTEER AGREEMENT

Participant Statement and signature

I understand the purpose of this study and I am well informed about the potential risks and benefits involved. I also understand my role and that of my child in this research. I know my involvement in this study is purely voluntary and I have the freedom to quit at any point in time without any costs to me or my child. I understand that the privacy and anonymity of my child and I will be ensured throughout the study. I have been granted an opportunity to ask questions about the research with answers provided to my satisfaction. I freely consent for my child and me to be part of this study.

Participant name and signature/thumbprint Date

…… ……

A witness should sign here if participant cannot read:

The benefits, risks and procedures of this study was read to the volunteer in my presence. Answers were provided to all questions raised by the volunteer who voluntarily agreed to participate.

Name and signature/thumbprint of participant Date

…… ……

Researcher Statement

I certify that the objective, procedure, benefits and the potential risks associated with the participation in this study have been thoroughly explained to the above-named individual. The participant has had all questions adequately answered and has voluntarily consented to participate.

Name and signature of Research Assistant obtaining consent Date

…….. ……..

Appendix 2: Health worker consent form

Health Worker Consent Form

Title of Study: Assessment of the quality of Growth Monitoring and Promotion for children under five in CHPS compounds in the Wassa Amenfi East District.

Principal Investigator: Joseph Asigri

Address: Department of Health Policy, Planning & Management

School of Public Health

University Of Ghana

P.O. Box LG 13, Legon

Accra-Ghana

Instruction to participant

You are being invited to take part in the study titled above and this form contains information explaining the study. Please take your time to read and understand what is expected of you if you decide to participate. You will be asked to sign the form or thumbprint if you agree to take part. You are at liberty to ask questions at any point in time about anything you do not understand.

General Information about the study

The objective of this study is to assess the quality of Growth Monitoring and Promotion (weighing) services offered to children under five years in CHPS compounds in the Wassa Amenfi East District. The study involves interviews with health workers and caregivers.

If you agree to participate in the study, you will be asked some questions about the services you offer to care givers and their children during child welfare clinic. This will last about twenty minutes. You are free to leave out any questions that you do not wish to answer or that make you uncomfortable.

Possible Risks and Discomforts

Your participation in this study does not in any way put you at risk anything.

Possible Benefits

There are no direct benefits to you personally however; the information obtained through this study will benefit the health service and society by providing possible ways of improving child health services in the district.

Confidentiality

Your personal identity will be protected and your name will not be required for this interview. The results of this study will also not include your name or the name of your facility.

Compensation

There will be no compensation for you for your participation in the study.

Voluntary Participation and Right to Leave the Research

Being part of this study is not compulsory and you are free to leave the study any time you wish to do so without any cost to you.

Contact for additional information

For more information and concerns about this research please contact:

Dr. Reuben Esena	Hannah Frimpong	Nana Abena Kwaa
School of Public Health	GHS-ERC Administrator	Assistant GHS-ERC
University Of Ghana.	Office: +233 302681109	Administrator
P.O. Box LG 13, Legon	Mobile: 233(0)243235225	Mobile: 0244712919
Accra-Ghana	0507041223	Email:
Telephone: 0543012970	Email:	nanatuesdaykad@yahoo.com
Email: rkesena@ug.edu.gh	Hannah.Frimpong@ghsmail.org	

VOLUNTEER AGREEMENT

Participant Statement and signature

I understand the purpose of this study and I am aware of the risks and benefits involved. I also understand my role in this study. I know my participation is voluntary and I have the freedom to leave it at any time without any costs to me or my child. I understand that my privacy and anonymity will be ensured throughout the study. I have been given an

opportunity to have any questions about the research answered to my satisfaction. I freely consent to be part of this study.

Participant name and signature/thumbprint Date

……... …….

Telephone number……

Researcher Statement

I certify that the objective, procedure, benefits and the potential risks associated with the participation in this study have been thoroughly explained to the above-named individual. The participant has had all questions adequately answered and has voluntarily consented to participate.

Name and signature of Research Assistant obtaining consent Date

…… ……..

Appendix 3: Questionnaire

QUESTIONNAIRE ON THE ASSESSMENT OF GROWTH MONITORING AND PROMOTION AT CHPS COMPOUNDS IN THE WASSA AMENFI EAST DISTRICT

Introduction

This an academic research which seeks to assess the quality of Growth Monitoring and Promotion (weighing) services offered to children under five years in CHPS compounds in the Wassa Amenfi East District. The information obtained through this study will benefit the health service and society by providing possible ways of improving child health services in the district. Your participation is voluntary and the information you provide would strictly be confidential.

Date of interview | | | | | | | | Serial No | | | | | |

Sub-district | | | | | | | | CHPS Compound | | | | | |

Background Characteristics

NO.	QUESTION	CODING CATEGORIES
1	Age of care giver (completed years)	| | |
2	Sex of care giver	1. Male ☐ 2. Female ☐

3	Religion	1. Christian ☐ 2. Moslem ☐ 3. Traditionalist ☐ 4. Other……
4	Marital status	1. Married ☐ 2. Single ☐ 3. Co-habiting ☐
5	Occupation of care giver	0. Unemployed ☐ 1. Self-employed ☐ 2. Employed ☐
6	Level of education	0. No education ☐ 1. Primary ☐ 2. JHS ☐ 3. SHS ☐

		4. Tertiary ☐
7	Occupation of partner	0. Unemployed ☐ 1. Self-employed ☐ 2. Employed ☐
8	Ethnicity	1. Akan ☐ 2. Northerner ☐ 3. Ewe ☐ 4. Ga ☐ 5. Other……..
	Age of child	1. Less than 6 months ☐ 2. 6 – 59 months ☐
9	Number of children less than 5 years	0. 1 ☐ 1. 2 ☐ 2. More than 2 ☐

Structure

10	Is there sufficient space for care givers at the facility during weighing?	1. Yes ☐ 0. No ☐
11	On the average, how long do you normally spend at the clinic when you go for weighing?	0. < 1 hour ☐ 1. 1 – 3 hours ☐ 2. > 3 hours ☐
12	Do you think the number of Community Health Nurses in the facility is sufficient for effective growth monitoring and promotion?	1. Yes ☐ 0. No ☐
13	Do you have a weighing card for your child? (verify)	1. Yes ☐ 0. No ☐
14	Do you think the facility has enough resources for growth monitoring and promotion?	1. Yes ☐ 0. No ☐

Process

15	Is the child's growth chart sex-specific? (observe chart used for the child)	1. Yes ☐ 0. No ☐
16	Is the child's weight properly plotted on the growth chart for all weighing sessions? (observe from growth chart)	1. Yes ☐ 0. No ☐
17	Are successive plots on the growth chart connected with lines to show growth trend? (observe growth chart)	1. Yes ☐ 0. No ☐
18	Weight-for-age of child today (check from growth chart)	1. Normal (> -2 Z-score) ☐ 0. underweight (< -2 Z-score) ☐
19	Did the nurse tell you anything about the weight of your child after weighing him/her?	1. Yes ☐ 0. No ☐
20	If Yes, What did the nurse tell you?	1. Child was growing well ☐ 2. Child was not growing well ☐

		3. Forgotten ☐
21	Weight-for-age of child in the month prior to today's weighing session (observe from growth chart)	1. Normal (> -2Z-score) ☐ 0. Underweight (< -2 Z-score) ☐ 2. NA ☐
22	Did the nurse tell you anything about the weight of your child after weighing him/her?	1. Yes ☐ 0. No ☐
23	If Yes, What did the nurse tell you?	1. Child was growing well ☐ 2. Child was not growing well ☐ 3. Forgotten ☐
24	Weight-for-age of child 2 months prior to today's weighing session (observe from growth chart)	1. Normal ☐ 0. Underweight ☐ 2. NA ☐

25	Did the nurse tell you anything about the weight of your child?	1. Yes ☐ 0. No ☐
26	If Yes, what did the nurse tell you?	1. Child was growing well ☐ 2. Child was not growing well ☐ 3. Forgotten ☐
27	Did the nurse ask you about how you were feeding your child?	1. Yes ☐ 0. No ☐
28	Did the nurse talk to you about how to feed your child?	1. Yes ☐ 0. No ☐
29	How did he/she talk to you?	1. Individually ☐ 2. In a group ☐
30	Did the nurse tell you the type of food to give to your child?	1. Yes ☐ 0. No ☐

31	What type of food did the nurse tell you to feed your child with	1. Breast milk only ☐ 2. Artificial milk only ☐ 3. Breast milk and family foods ☐
32	How would you rate the general attitude of the staff at the facility?	0. Poor ☐ 1. Good ☐ 2. Very good ☐
33	If poor to the above why?	1. Staff shouts at people ☐ 2. Staff easily gets annoyed ☐ 3. Staff do not give the necessary information ☐ 4. Other…… .
34	What do you think about the cost involved in weighing your child?	0. Free ☐ 1. Moderate ☐

		2. Very expensive ☐

Outcome

35	Current weight-for-age status of child	0. Underweight (< -2 Z-score) ☐ 1. Normal (≥ -2 Z-score) ☐
36a	What food do you give your child at home	1. Breastmilk only ☐ 2. Artificial formula only ☐ 3. Artificial formula & family foods ☐ 4. Breastmilk & family foods

		☐ 5. Family food only ☐
36b	Why do you give your child the food indicated in Q36a?	1. It is the best food for my baby ☐ 2. Nurse advised me to give ☐
37	How would you rate the overall quality of growth monitoring and promotion at the facility?	1. Very good ☐ 2. good ☐ 3. poor ☐ 4. very poor ☐
38	Would you continue to visit the facility for services if there is an alternative?	1. Yes ☐ 0. No ☐
39	What are the things that make you satisfied? (please list)	

40	What dissatisfies you most? (please list)	
41	Do you have any suggestion to improve the quality of growth monitoring and promotion services in the facility? (please list suggestions)	

END OF INTERVIEW, THANK YOU FOR YOUR CO-OPERATION AND TIME

Appendix 4: Observation checklist

OBSERVATION CHECKLIST

A. Recording and charting on growth chart

B. (Please refer to child's growth chart and record details of the growth curve as indicated below)

Procedure	**Yes = 1**	**No = 0**

1. Weighing scale hang at eye level	☐	☐
2. Zero adjustment of weighing scale	☐	☐
3. Weight recorded on appropriate chart for sex of child	☐	☐
4. Weight recorded to nearest 0.1kg	☐	☐
5. Weight charted properly (dots connected)	☐	☐
6. Age recorded accurately (in completed months relative to date of birth)	☐	☐

C. Growth promotion action taken by health worker

(Please indicate the particular action taken by the health worker after weighing and charting the child's weight by indicating 1 for yes and 0 for no)

Action	**Yes = 1**	**No = 0**

1. Health worker tells caregiver weight of child after weighing	☐	☐
2. Health worker explains growth pattern of child using growth chart	☐	☐
3. Health worker enquires about previous illness	☐	☐
4. Health worker enquires about feeding	☐	☐
5. Health worker praises caregiver	☐	☐
6. Health worker scolds care giver	☐	☐
7. Health worker counsel caregiver (record details in notes section)	☐	☐
8. Health worker refers child for further nutritional care if growth faltering	☐	☐

D. Nutrition counseling giving to care giver

(Please indicate yes=1 in the relevant section if a particular counsel is given and no=0 if it is not)

Is counseling for care givers done one on one? 1. Yes ☐0. No☐

(I) Counseling for mothers with infants 0-5 months old	**Yes = 1**	**No = 0**
1. Encourages exclusive breastfeeding	☐	☐
2. Explains the importance of breastfeeding	☐	☐
3. Teaches breastfeeding technique	☐	☐
4. Advices feeding on demand	☐	☐
5. Educates on expressing breast milk	☐	☐
6. Teaches breastfeeding technique	☐	☐
7. Counsels and encourages good hygiene practices	☐	☐
(II) Counselling for mothers with children 6-23 months old	**Yes = 1**	**No = 0**
1. Encourages complementary feeding	☐	☐
2. Counselling on the amount of food to give to child	☐	☐

3. Counselling on the frequency of feeding	☐	☐
4. Counsels mother to generally feed a variety of family foods	☐	☐
5. Counsels caregiver on how to modify family foods to consistency that a child can tolerate	☐	☐
6. Counsels and encourages hygiene practices	☐	☐

Appendix 5: Interview guide for Community Health Nurses

1. How do you carry out GMP in this facility?

   Expected response

   a. Hanging of weighing scales at eye level

   b. Zero adjustment of weighing scale

   c. Weighing and charting of child's weight in growth chart

   d. Feedback on child's weight to care giver

   e. Referral for counseling or appointment for counseling if growth faltering

2. How do you find conducting GMP in this facility?

3. What logistics do you have available for conducting GMP?

   GMP logistics

   a. Salter weighing scales

   b. IYCF counseling guidelines

   c. Child Health Record booklets

   d. MUAC tape

4. What do you make of the number of Community Health Nurses and the quality of GMP service they provide?

5. What actions do you take when a child's growth curve is stagnant or faltering?

   Recommended actions

   a. Assessment for illness

   b. Assessment of feeding practices using IYCF counseling guidelines

      i. Age of child

      ii. Frequency of feeding

iii. Amount of food per feed

iv. Texture of food for food relative to child's age

v. Variety of foods for child

vi. Responsive feeding by mother

vii. Hygienic care practices observed at home

6. What are the factors that affect the quality of GMP services you provide?

7. What do you think can be done to improve on the quality of GMP in this facility?

Appendix 6: Ethical clearance approval letter

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: ghserc@gmail.com

MyRef. GHS/RDD/ERC/Admin/App 1474
Your Ref. No.

Asigri Joseph
University of Ghana
School of Public Health
Legon, Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 66/02/17**
Project Title	Assessment of the Quality of Growth Monitoring and Promotion for Children Under Five Years at CHPS Compounds in the Wassa Amenfi East District of the Western Region
Approval Date	10th May, 2017
Expiry Date	9th May, 2018
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra