

**Performance of the Community Based Growth Monitoring  
Programme in Matuga Division of Kwale District, Kenya**

by

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**DECLARATION**

Declaration by the student: I declare that this dissertation is my original work and to the best of my knowledge has not been presented for a degree in any other institution.

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## **DEDICATION**

This work is dedicated to three very special people. My parents Mr. and Mrs. Phillip Mulili for their moral support and encouragement throughout the course work and research and my late husband Mr. Boniface Kyalo for taking care of our son at a tender age when I was away.

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## LIST OF ACRONYMS

AED	Academy for Educational Development
ANP	Applied Nutrition Programme
CBGMP	Community based growth monitoring and promotion
CBNP	Community based nutrition project
CHWs	Community health workers
DANIDA	Danish International Development Agency
FAO	Food and Agriculture organization of the United Nations
GMP	Growth Monitoring and promotion
GOK	Government of Kenya
IGA	Income Generating Activity
KEPH	Kenya Essential Package of Health
NGOs	Non-Governmental Organizations
NHSSP	National Health Sector Strategic Plan
PANS	Participatory approach to nutrition security
UNICEF	United Nations Children Fund
WHO	World Health Organisation
MOH	Ministry of Health

## **ABSTRACT**

A community based growth monitoring programme is implemented by trained and motivated community health workers at the village or household level. The programme is supported and supervised by skilled personnel from relevant ministries and organisations. All equipment and supplies including portable weighing scales, pants, growth monitoring cards, a shelter, recording books, pens, tables and chairs are supposed to be in place for the success of the programme. In Kwale District, community based growth monitoring had been in operation for 3 years and no assessment of the performance had been done to guide the stakeholders on the areas that they were doing well and those that might have been needing improvement.

A household survey was conducted in Mazumalume and Mwachipanga communities of Kwale District Matuga Division. The objective of this study was to assess performance of the community based growth monitoring programme in Matuga Division of Kwale district. The subjects of the study included 154 mothers of children under 5 years old, 15 community health workers and programme committee members. Using semi structured questionnaires data were collected on the nutritional knowledge attitude and practices of the mothers, and community health workers. Anthropometric measurements were taken on all children aged 0–59 months old (N= 181) in the sampled households in the programme area. Observations were made on the activities in the centres to determine the competence of community health workers in weighing and positive communication with the mothers of children. Key informant interviews with the Participatory Approach to Nutrition Security team members were conducted; four focus group discussions were done with members of the Village Health Committees and representatives of the communities along with questionnaires administered to determine the attitude of the recipient

community towards the Growth Monitoring Program activities. The study took place in September to November 2002. Data was analysed using SPSS and EPI INFO.

Equipment and supplies were not sufficient as per UNICEF guidelines, as only one weighing scale was available for circulation in all the six weighing centres visited. The weighing pants were torn and old. Only two centers had chairs and benches and only two centres had a shelter where they weighed the children.

There was no statistically significant difference ( $p$ -value=0.463) in the nutritional knowledge between mothers with children in the program (40.9%) and those with eligible children not in the program (43.1%). Only 40.9% of the mothers utilizing the program reported having given complementary feeds to their children earlier than 4 months ( $n=109$ ) compared to 46.6% of the mothers not in the program and whose children were eligible ( $n=72$ ).

All the community health workers reported having been trained on growth monitoring. They were well skilled in weighing children; they read the scales at eye level and zeroed the scale with the weighing pants

Most (60.1%) of the households ( $n = 93$ ) were registered in the Growth Monitoring Program while 39.9% ( $n= 61$ ) had not registered in the programme mainly because they did not know that the programme existed (37.9%) or that the health facility was nearer (48.3%) among other reasons given (13.7%). A Global acute malnutrition of 3.6% ( $n=109$ ) among program utilizers compared to 7.2% ( $n=72$ ) children not in the program was statistically significant ( $p= 0.034$ ), hence nutritional status of children in the program was better than that of eligible children not in the program. Follow-up at all levels was not adequate with none of the centres reporting ever having been supervised by a Government of Kenya staff in the last one year preceding the assessment especially during growth monitoring sessions.

In conclusion, the Community-Based Growth Monitoring programme in Matuga was being implemented as per the international standards with few areas needing improvement namely, social mobilization, support supervision, availing more weighing scales for each weighing centre and stationery and feedback to the communities as well as Community Health Workers. Therefore, the government and relevant bodies should support such community based growth monitoring programmes.



## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background information**

About 164 million children worldwide are underweight with the most affected living in developing countries (UNICEF, 1998). It is enshrined in the United Nations Convention on the rights of the child that children should not be allowed to become malnourished (UNICEF, 1995). In September 2000, 189 countries adopted the Millennium Declaration that was translated into the Millennium Development Goals to be achieved by 2015. Out of the eight goals set out, goal number one is the eradication of extreme poverty and hunger whose indicator is the prevalence of underweight among children aged 0- 59 months. One way of measuring whether a child is underweight or not is through growth monitoring done at community or health facility level. Goal number four is aimed at reduction of infant and young child mortality by two thirds between 1990 and 2015. Achievement of these goals will depend on the resources available and on the political will of each country (WHO, 2010).

Malnutrition is not a simple problem with a single, simple solution. Multiple and interrelated determinants are involved in the causes of malnutrition and similarly intricate series of approaches are needed to deal with it. Inadequate dietary intake and disease are immediate causes of malnutrition in children below the age of five years while insufficient household food security, inadequate maternal childcare and insufficient health services and unhealthy environment are the underlying causes. These are in-turn influenced by formal and non-formal institutions, political and economic structure of a country (UNICEF, 1998).

The Kenya National Health Sector Strategic Plan NHSSP 2005-2010 recognized the importance of communities in health service delivery and hence 6 levels of health service delivery were developed in the Kenya Essential Package of Health (KEPH) as a strategy for its implementation. Level one was the community, villages, households and individuals whose main activities were Growth Monitoring and Promotion for children aged 0 – 59 months. Other levels include; Level 2 - dispensaries, Level 3 - Health Centres, Level 4 - District and Sub District Hospitals, Level 5 - Provincial General hospitals and Level 6 - National Referral Hospitals. Growth monitoring and promotion for children less than five years is key in all levels of care in the ministry of health as it is a very useful pointer to the health and nutritional status of the children (MOH, 2010).

The most appropriate avenue for detecting faltered growth and improving the situation is through growth monitoring and promotion and community-based growth monitoring is effective (UNICEF, 1998). The reason why weight for age is commonly used to assess the degree of mild to moderate malnutrition is that when food is inadequate, there is reduction in growth and weight gain (Ebrahim, 1991).

Community based growth monitoring is an intervention which addresses the problem of insufficient health services by bringing the services closer to the community (UNICEF, 1998). Growth monitoring was introduced in the 1960's and spread worldwide in the 1970's. In the 1980's growth monitoring fell out of favour as cost benefit analyses showed that compared with immunization and oral re-hydration growth monitoring could not be shown to improve the health of small children (UNICEF, 1995). The reasons for the failure were associated with the



complexity of creating a line graph and making decisions based on changes in its direction. Consequently another method of assessing children's growth was introduced in the 1980's- the use of the direct recording scale. This also brought the change from the clinic weighing to the growth monitoring in the community where mothers actively participate in the weighing of their young children, hence the community based growth monitoring (UNICEF, 1985).

Malnutrition in Kenya has been one of the major public health problems affecting children 0-59 months. Kenya as a country through the ministry of Culture and social services set up Family life training centres soon after independence in 1963, which were used for rehabilitation of malnourished children, training of their mothers in nutrition, childcare, family planning, home management and simple agriculture. Extension workers from the ministry of health and Agriculture as well as NGOs supported the training. Community participation was encouraged and supported through the outreach aspect in the program. In recognition of the importance of community involvement in any nutrition program, Family Life Training Program moved the nutrition interventions to happen within the home and community environment hence the community based Growth Monitoring. The Kenya Government in collaboration with Danish International Development Agency (DANIDA) worked closely with University of Nairobi, Applied Nutrition Program (ANP) to impact communities as from 1995 (ANP, 1999). The community based nutrition program (CBNP) in the ministry of Culture and Social Services was implementing community based growth monitoring activities in several Districts in the Country among them Kwale District, the subject of this study.

Kwale District is one of the Districts that have been having Family Life Training Centres, which were used to address nutrition issues in the District since independence. This used to be done by the rehabilitation of malnourished children at the centres but an evaluation showed that the intervention was not successful since there were many re- admissions of the malnourished children. It was with this that the community based nutrition programme was begun in 1995 in which there is the community based growth monitoring (ANP, 1999).

A motivated community health worker with sufficient supplies and maintenance of weighing scales and growth cards should conduct an ideal Community Based Growth Monitoring activity at the community and household level. Support supervision and follow up at all levels is an integral part of the programme for it to succeed (UNICEF, 1995).

## **1.2 Problem statement**

The performance of community based growth monitoring in Matuga division of Kwale district has not been assessed since the programme was started in 1997. The assessment of the implementation process of the programme should be done at least every two years or more frequently as is deemed necessary by the stakeholders. Community based growth monitoring approach has been used in Kenya since the late 1980's. The activities are in most districts in the Country and are carried out by non-medical volunteers who are trained in the procedure. In spite of the large number of community based growth monitoring units in many parts of the country, there have been few systematic attempts to document the performance of this essential and internationally accepted activity. It is therefore worthwhile assessing the performance in the implementation of this program particularly after being put into the hands of the community

where it is being carried out by non-professional health auxiliaries. This is especially important since the same activities are being implemented in all Community Based Nutrition Programs (CBNP) located in districts throughout the country hence the information gathered will be useful to other similar programmes.

### **1.3 Justification of the study**

There is evidence that Community based growth monitoring activities have been implemented for decades but few systematic documentation on the performance of the CBGMP programmes without the complementary feeding aspect has not been done. Such documentation is important because timely corrective action can be taken to avoid losses and improve efficiency. Assessment of the performance of activities in Kwale CBGMP was necessary to give information to the different stakeholders on the areas they were doing well and on actions they may need to take to improve the programme.

### **1.5 Objectives of the study**

#### **1.5.1 Main objective**

To assess the performance of Community Based Growth Monitoring and Promotion Programme (CBGMP) in Matuga Division of Kwale District.

#### **1.5.2 Sub-objectives**

1. To assess the nutritional knowledge, attitude and practices of mothers with children 0-59 months old in the programme and those not in the programme towards the CBGMP

2. To assess the nutritional knowledge, attitude and practices of community health workers towards the CBGMP
3. To assess the accuracy of the community health workers in weighing, recording and interpretation of data in the CBGMP
4. To assess the extent of follow up and support by the Participatory Approach to Nutrition Security (PANS) teams and Community Health Workers (CHWs) in the CBGMP.
5. To compare the nutritional status of children in the CBGMP and of those eligible but not in the programme.
6. To determine the quality and quantity of facilities, equipment and supplies in the CBGMP, in Kwale District

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter reviews existing literature on growth monitoring and promotion of children with the first part looking at the history of growth assessment and the impact and costs of GMP. The middle section describes the attributes of a successful CBGMP and experiences from other countries and regions on similar programmes are detailed. A brief of the Kwale Community Based Growth Monitoring programme has been discussed and the importance of assessment given then finally an indication in the gaps in knowledge described.

### **2.2 Why Monitor Growth**

Growth has been a very important indicator of how well the child is doing for a long time. Some methods used to monitor growth of children traditionally included, lifting the child to determine whether she/he was gaining or losing weight. A community in Kibwezi, a division of Makueni District in Kenya reported that a band worn by the child around the arms or hips indicated growth if it became tight and vice versa. Therefore, the idea of growth monitoring was not new to many communities and this is believed to be one of the reasons why many communities accepted community based growth monitoring (FAO, 1994).

Community based growth monitoring is a process that can be very useful to both the children below the age of five and the community at large if well implemented. This is mainly because growth of the children is assessed at the village level, which is more convenient for the care giver than the hospital (health facility) level. The community benefits because of the presence of

the community health workers who are trained on matters pertaining to health. Through this community based growth monitoring process the other primary health care activities are addressed, monitored and sustained (UNICEF, 1998).

Many community based growth monitoring activities are often initiated but, unfortunately, a number of operational ones also cease to be active almost at the same rate. The main problem with many of these activities is lack of proper follow-up and supervision from the health personnel (FAO, 1994). Another problem is the issue of sustaining the community health workers given that they are volunteers. Unless communities and governments can eventually find a way of remunerating their community health workers, they lose interest and stop carrying out the activities they are trained for (personal experience).

Growth monitoring and promotion can be defined as an operational strategy of enabling mothers to visualize growth or lack of growth and to receive specific, relevant and practical guidance in ways in which she, her family and the community can act to assure health and continued regular growth in her child. It implies a regular and sequential measurement of growth, recognizing it to be the result of overall health, nutrition, environment, psychosocial and development factors in the child (Hendratta and Rohde, 1988).

Growth monitoring and promotion (GMP) is based on a strategy aimed at behavioural change and adoption of improved self-help actions within the family and the community in order to promote optimal health. It is a strategy for making health and nutrition education more

individualized, more convincing, more effective and more action oriented (Hendratta and Rohde, 1988).

Growth monitoring can also be referred to as the periodic weighing of children and the plotting of each measurement on a growth chart or child health card. The information on the cards is meant to influence actions by the health worker making the measurements and the mother who brings the child to be measured (Latham, 1991).

In GMP programme, much of the action should consist of positive reinforcement rather than corrective action. As a diagnostic exercise, it should be as much to find out what mothers are doing right as to what is going wrong. It is used to detect growth faltering to find likely reasons for this and suggest to mothers realistic corrective actions that they might try. The child's own weight gain is the most important and not a comparison with other children. The child can be held back by illness or poor food or lack of attention from the mother, therefore several causal factors of poor growth and development need to be understood for effective action to be taken within the locally available resources. Growth promotion for child development should use cyclical problem solving approaches based on assessment, analysis and action (AED, 2002).

It is widely agreed that inadequate physical growth and poor development of children are prevalent and important problems. World health Organization estimates that malnutrition was associated with over half of all child deaths that occurred in developing countries in 1995, if a child is even mildly underweight, the mortality risk is increased (UNICEF, 1998). In this respect, all levels of society should support families in their responsibility to promote child growth. In most countries, especially in developing countries, the situation is worse for the poor and the

deprived than for the more affluent segments of the population and so special emphasis should be made of the poor even at the community level (Hendratta and Rohde, 1988).

Community based growth monitoring and promotion (CBGMP) is a strategic approach that takes the concept of GMP further than the individual and family level. It takes the periodic (monthly) weighing of a child and classification of the child's progress and uses it not only to make decisions regarding the child's care at home or the need for medical attention, but also to stimulate activities in the community, district, or program to improve the child's growth enabling environment. CBGP is a broader program concept than either GM or GMP because it seeks to address the multiple causal factors impacting on a child's growth and development. (Griffiths, and Del Rosso, 2007).

### **2.3 Impact and costs of growth monitoring and promotion**

Prevention of Malnutrition: The most cost-effective way to address the pressing public health challenge of malnutrition is to prevent it. That means ensuring that all of the children who are normal weight at birth continue within the normal range, and those who are low weight at birth are brought swiftly into a healthy growth range. The rationale for monitoring the growth of a child is based on the following assumptions: \_ Growth is a good proxy for overall child well-being and its measurement serves as a robust indicator. Growth is a dynamic process that is made visible by monitoring changes in anthropometric indices and reflects current, not past, events. Adequate nutritional (anthropometric) status is dependent on meeting standards for growth velocity and that growth is a proxy for well-being. (Griffiths, and Del Rosso, 2007).



Growth monitoring is the periodic weighing and the plotting of each measurement on a growth chart or a child health card. The information on the card is meant to influence actions by the health worker and the mother or guardian who brings the child to be measured.

Regular weight gain is the most important sign that a child is growing well. The child should be weighed at every contact with a health care provider at the minimum should be once per month. Each child should have a growth chart with a line that is showing how well the child is growing. If the line goes up gradually, the child is doing well. A line that stays flat or goes down indicates cause for concern (MOH, 2010).

Growth monitoring has been demonstrated to impact positively on the nutritional status of children in some Asian, African and Latin American programmes. It is an excellent tool for assessing the growth and development of a child and for early detection of health and nutrition problems in children. In Indonesia in 1990, project success was reported one year after the start of the project. A comparison of the mean weight of 523 children in the project area with 360 in the non-project area revealed a 0.5 to 1 kilogram difference (UNICEF, 1995). Stunting of children over 2 years in the project area was less than that of control village children. The study did not include all the cost factors but some aspects of the project have been replicated in other projects (UNICEF, 1995).

In India in 1985, grade 2 and 4 malnutrition rates (using Gomez classification) in control areas were 8.5% compared to 6.5% in GMP project areas with 3 to 8 years of operation (UNICEF 1995). In China planners were not convinced of the overall worth of growth monitoring and therefore the concept of GMP has remained a research activity. In Tanzania, declines in levels of malnutrition were shown in project areas in 1998 (UNICEF, 1998).

In south India, no difference in nutritional outcome could be specifically attributed to growth monitoring and promotion (George and Latham, 1992 as quoted in UNICEF, 1995). However, in the project, a broad based Primary Health care approach had been applied and the quality of nutrition education applied in households with and without growth, monitoring was the same (UNICEF, 1995).

Few studies have made a serious attempt to measure the impact of growth monitoring and less work is available of setting up, expanding and maintaining growth monitoring activities (UNICEF, 1995). Most growth monitoring activities evaluated have had a supplementary feeding component in the project, which has not been the case with the Kwale GPM project (ANP, 1999). The supply aspect of growth monitoring and promotion is not emphasized and yet its effect on the programmes is far reaching, that is if equipment and other supplies are not sufficient or if they are not in good working conditions, there is a negative impact on the quality of service provision. In the project under review, this was done by determining the quality and quantity of supplies and equipment.

## **2.4 Features associated with successful growth monitoring**

There are some basic principles and pre- requisites for community based growth monitoring but the modalities can vary from one setting to another. Table 1 details the attributes of a successful community based growth-monitoring programme.

**Table 1: Attributes of a successful CBGMP**

ATTRIBUTE	DESCRIPTION
Context	It should be part of the primary health care package done at home and community level. It should provide a monthly contact for promoting growth and nutrition among children 0- 59 months
Follow up	Children with faltering growth or nutrition issues should be visited at their homes by CHWs for relevant action like linkage to other support services.
Target age group	Growth and nutritional problems are critical among children up-to 5 years of age who are the main target group for CBGPM
Community Health worker (CHW)	She/he should belong to the Village. She /he needs to be highly motivated and articulate.
Training	Classroom and field training is essential.
Supervision	Quality supervision from the MOH staff and implementing partner should be evident. The frequency of the supervision and whether it is administrative, technical and supportive can measure this.
Community participation	An education and communication strategy targeted to a wide audience should be in place. The community should own the programme.
Health care support	An active involvement of the health personnel is recommended. Guidelines and Logistics of referral should be defined and understood by the CHWS.
Growth card	The mother should be the keeper of a suitably designed easily understood growth card. The growth card should be marked and have few messages that are relevant and simple
Communication	There should be effective communication channels between mothers and CHWs and between CHWs and top-level health care administrators.
Weighing scales	The weighing scales should be accurate and easy to transport. It should be easy to use by workers and mothers.
Logistics and supplies	There should be efficient supply, maintenance and replacement of weighing scales, growth cards and recording books.

Adopted from: UNICEF, 1995

## **2.5 Other activities related to growth monitoring and promotion**

Experience shows that it is possible to train auxiliary staff in the charting and interpretation of growth records (Ebrahim, 1991). These ideas are what saw community health workers being trained in Kenya to carry out growth monitoring and promotion activities among other activities.

In Bangladesh, the Bangladesh Integrated Nutrition Project adopted the community based approach to growth monitoring and promotion and community volunteers called community nutrition promoters who are the equivalent of the CHWs in Kwale District handled the activity. Other activities that they did included nutrition counselling, overseeing feeding of children with faltering growth and feeding malnourished women (Lindsay and Gillespie, 2001).

In Sri-Lanka in the Participatory Nutrition Improvement project, growth monitoring was carried out by informal teams i.e. Women group from the community who also included drama skits and role plays as part of their methods of passing nutrition information to the communities. The growth chart was the main instrument around which the education program was built. The implementers of the program were trying to put up a proper system of monitoring and evaluation which had been lacking in the program (Lindsay and Gillespie, 2001). In Vietnam a review of the National program of Protein Energy Malnutrition Control for Vietnamese Children recommended community based growth monitoring with an emphasis of growth promotion as an avenue to explore for success in reducing child under nutrition (Lindsay and Gillespie, 2001). The following technical elements for growth promotion were essential for designing new programs: Should be community based, aimed at universal coverage, monitoring individual weight, begun at birth, done monthly, child care takers should be involved in monitoring,

adequate growth (weight gain) rather than nutritional status to be the indicator of action. Other elements include; growth charts available to record individual children to make growth status visible to care takers, analysis of the causes to inadequate growth is required, negotiations with families on how to improve growth of their children and finally follow up (Bennet et al, 1987). The decision on a child's nutritional status and the required action to manage his health cannot be made based on a single weight measurement. It is important to study a series of weight measurements and observe the direction of movement of the weight curve over time (Morley, 1995).

## **2.6 Kwale community based nutrition programme**

At the onset of the struggle for Kenya's independence, a state of emergency was declared and people were detained leaving young children on their own. Two charitable organizations British Red Cross and Swedish Red Cross set up feeding centres for the children. When Kenya attained independence in 1963, many parents had died and children were already in the centres with grandmothers who used to pick food for the children from the preparation areas in the centers. The ministry of health took up the running of the centres until 1972 when UNICEF stepped in to supply food. At that time clients would be referred from dispensaries and hospitals and mothers would be trained on how to prepare a balanced diet. Children discharged from the centres often relapsed to malnutrition and hence a change of the approach from family life training centres to community based interventions was designed by the Government of Kenya in 1995 supported by (Danish International Development Agency) DANIDA (ANP,1995).

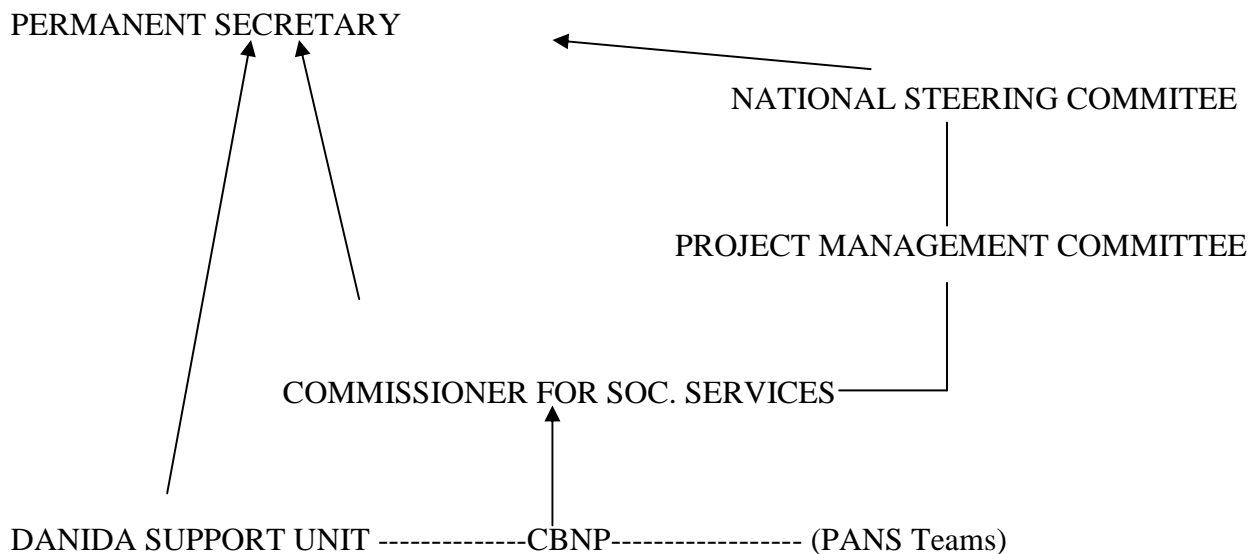
The Family life Training programme was initiated in 1974 and was financially assisted by the Danish government since 1980. When the community-based approach became the basis of the

project in 1997, and the name of the programme then changed to Community Based Nutrition Programme (CBNP) (ANP, 1995).

Community Based Nutrition Programme (CBNP) was a social development and poverty alleviation programme directly and indirectly supporting the reduction and prevention of malnutrition. The programme was placed in the office of the vice president and ministry of Home Affairs, Heritage and Sports and aimed at reducing poverty through the enhancement of social and human capital in thirteen districts by specifically targeting malnutrition experienced by the poorest population. The project called upon the resources of several sectors, which included agriculture, education, water, health, and other sectors. From these sectors district and divisional PANS (Participatory Approach to Nutrition Security) facilitation teams were formed. These teams were composed of District nutrition officer, District development officer, adult education officers, cultural officers, children's officers, education officers, agricultural officers, medical officer of health, and co-opted members as was required (ANP, 1995). Figure one shows the collaboration that existed between DANIDA and the Government of Kenya through the permanent secretary in the Ministry of Culture and Social Services. CBNP was a programme that was supported by DANIDA which was relying largely on staff from different stakeholders for implementation who were called the PANS team members. Majority of PANS team members were GOK staff. It is in CBNP that community based growth monitoring used to be implemented.

CBNP used to enter a community with a nutrition agenda that in turn contributed to the overall social development. The programme's development objective was to reduce poverty for women

and men and improve nutritional status for children through enhancement of social and human capital using participatory approaches. Immediate objectives included involving the district and divisional teams to support communities in addressing their social development including nutritional security using participatory and multi-sectoral approaches. The second objective was to enhance capacity of rural communities to plan and implement sustainable social development activities towards the improvement of nutrition security (ANP, 1995).



**Figure 1: How CBNP related to the Ministry of culture and social services and the other partners**

(Adopted from ANP, 1995)

## 2.8 Importance of Assessment

Assesment is as old as creation when God created the earth and looked back at the end of everyday and saw that it was good, ... God was pleased with what He saw (Bible, Genesis:1:11).

Man is created in the image of God and therefore looking back to assess what they have done is important to him too.

Project performance assessment helps the implementer of a programme know how he/she is getting on with the job. One may suggest ways of improving or accelerating progress. An evaluation may suggest that some actions produce good results and others do not. It may lead the worker to concentrate on the useful activities and modify or re-orient or even abandon the unproductive ones, thus speeding advancement towards the set objectives. It is also useful for the programme planners who may revise the programme operation (FAO, 2000). It helps the community know what has been achieved.

Unless people are shown and made to understand what is happening to them and the role they are playing in the change of an intervention, much of the value of a programme may be lost. It might also convince the implementers that some aspect about which they were sceptical is producing results. Evaluation is therefore a constructive process that can gain more support for the programme from the government, outside agencies and from the public. It can also encourage the worker and help him be more effective and efficient (FAO, 2000).

## **2.9 Gaps in knowledge**

Since the CBGMP was started in Kwale District in 1998, there has been no systematic follow up done on the implementation process of the activities. Most people who have evaluated growth monitoring activities have concentrated on the accuracy of the equipment, community participation and training received by the health worker without looking into the important aspect of positive communication with the mother on whether the child is growing well or



faltering. This was done by observing the implementation process of Community Based Growth Monitoring and promotion (CBGMP) activities in the centres.

The integrated child development services (Indonesia), The Tamilnadu integrated Nutrition Project (INDIA) and others that have been evaluated by different experts all had the aspect of supplementary feeding in them, it is with the above consideration that an evaluation of the process of community-based growth monitoring in Kwale District was carried out.

## **CHAPTER THREE: STUDY METHODOLOGY**

### **3.1 Geographical location**

Kwale District is one of the twenty two districts of the coast province. It is situated in the southern most part of Kenya along the Indian Ocean. The district is bordered by Taita Taveta District in the west, Kilifi District in the north and the republic of Tanzania in the south. The district covers a land area of 8,259 sq Km and 65 sq km of ocean line (District Nutrition Officer, Kwale).

The district has four topographical zones with an altitude ranging from 420 m above sea level in the Shimba hills and 842m on Kibashi hills bordering Taveta District.

The district was divided into four administrative divisions with the headquarters at Kwale town. The administrative divisions are Matuga, Kinango, Kubo and Msambweni. It is further divided into 24 locations and 69 sub-locations (District Nutrition Officer, Kwale).

#### **3.1.1 Ethnic composition and population**

The population of Kwale District was mainly composed of the Mijikenda group who were over 80%, of whom the Digo and Duruma were numerically more. Migration into the District has led to other ethnic groups including the Akamba (about 10%), Luo, Kikuyu, Luhya, Swahili and Non-Africans settling in the District (District Nutrition Officer, Kwale).

At the time of the study, the District had 500, 562 persons with a population density of 60 persons per sq km. according to the 1999 population census projections. The population distribution is uneven because of the undulating nature of the landscape, the forest reserves and

the effects of aridity further inland. Settlements were confined along the major road networks, the slopes of the hills and river valleys at the time of the study (District Nutrition Officer, Kwale).

### **3.1.2 Health facilities**

An estimated 26% of the total population had a health facility within 10 km, 62 % within 5 km and 88% within 20km. Community-based health care covers 15-20% of the Kwale population.

The District has 33 static health service points. This includes 1 District Hospital, 2 Sub-District hospitals, 5 Health Centres, 1 Sub- Health Centre and 24 Dispensaries. The average population per facility is approximately 12,000 persons (District Nutrition Officer, Kwale).

### **3.2 Study design**

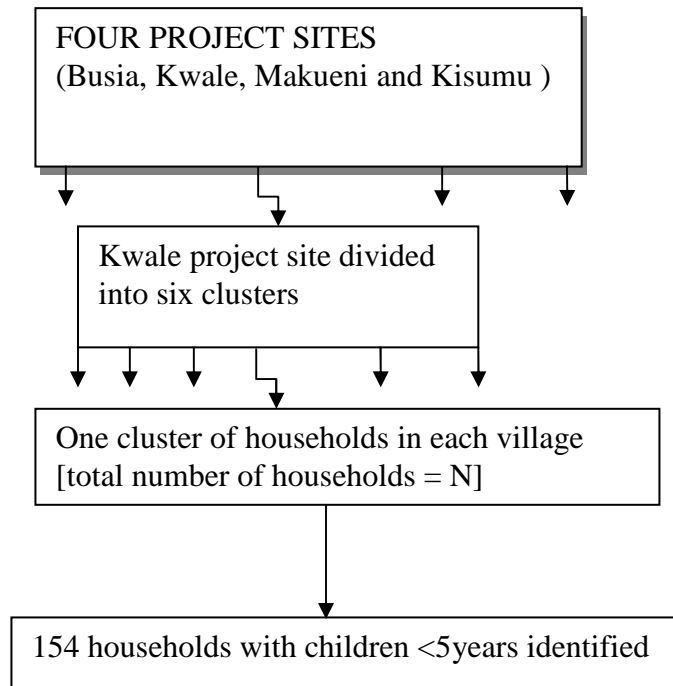
A cross-sectional study design with an analytical component was used. The nutritional status of children aged 0-59 months in and out of the programme and the practices of the children's mothers, committee members, PANS team members and CHWs were determined. Both quantitative and qualitative data collection methods were used.

### **3.3 Sampling procedure and sample size determination**

The community based growth-monitoring project in Kwale is in two divisions namely: Matuga and Kinango. Consultation with the District Social Development Officer helped to identify growth monitoring sites in Mazumalume in Matuga for the evaluation. These were selected because they had received support from DANIDA and Government of Kenya to go the community way in dealing with malnutrition.

The actual households to be visited per village was then calculated proportionately. Households with children 0-59 months old were targeted and then random sampling through EPI random

walk method within the villages was done to select the actual household (Figure 2). All children within a household were targeted in the study.



**Figure 2: Sampling schema of households with children aged 0-59 months**

The calculated sample size was 147 based on Fischer, (1991). Since the target population was less than 10,000 the calculated sample size was modified based on the formula below to arrive to a sample size of 141. An attrition of 10% was added to arrive at 155 households.

Fischer's Formula: 
$$n = \frac{z^2 \times p \times q}{d^2}$$

Where:

n= desired sample size

z= standard normal deviate corresponding to 95% confidence.

P= proportion of eligible children in the programme

d= degree of accuracy desired (7%)

Modified n` when the size of the population is less than 10,000;

Modified n`formula;  $n = n / (1 + n/N)$

Where

N=size of population =3600

n= calculated sample size by Fischer's formula

**Calculations:**

$$n = \frac{1.96^2 \times 0.75 \times 0.25}{0.07 \times 0.07} = 147$$

$$n = \frac{147}{1 + \frac{147}{3600}}$$

$$= \frac{147}{1.04083}$$

$$= 141$$

By adding an attrition of 10% the sample size =141+14

$$= 155$$

The investigator was able to cover 154 households and assess six growth monitoring centres. All the six growth monitoring centres assessed were in Mazumalume a sub location in Matuga division of Kwale District.

**3.4 Data collection**

All growth monitoring centres in the project area were visited and observations made on the process of growth monitoring, from when the mothers arrived to the time when they left the centres. The key issues that were being observed were; communication with the mother about the nutrition of her child from the time she arrives at the centre, accuracy in taking the weights of the children and recording of the same, whether the growth cards are plotted and whether the

mothers understood the meaning of the growth curves. The principal investigator did this in person. All questionnaires are attached in the appendices.

#### **3.4.1 Distance and time assessment**

Mothers were asked to estimate how long it took them to walk to the growth monitoring centres from their home. This was doubled to cover two ways. The time taken by the mother in the centre was added to that time. The total time was then taken to be the time spent by the mother on growth monitoring (Appendix B).

#### **3.4.2 Assessment of equipment, facilities and supplies at the centres**

Accuracy of the Salter scale was checked with a weighed measure of 2 kilogram and 4 kilogram. The other supplies were assessed by observation if present and their condition. This included the presence of a shelter to protect the participants from cold, rain and sunshine. The presence of clearly marked road to health cards was also checked and the presence of other items like record books pens benches and tables.

#### **3.4.3 Determination of mothers' knowledge attitude and practices**

Three focus group discussions were held with mothers whose children were in the programme and three with mothers whose children were not in the programme but were eligible. A questionnaire was administered on the mothers to determine their understanding of the process. Mothers were shown growth charts with a healthy child, a child with constant weight and another with reducing weight labelled A, B and C respectively and then they were told to mention any problem with each one of the children.

#### **3.4.4 Community health workers knowledge**

Observations were made on the weighing and recording to check for accuracy in reading and recording of the observed weight. The correct interpretation of the recorded data was checked for and whether the child progress was explained to the mother or not (Appendix F).

#### **3.4.5 PANS team members attitude towards the programme**

Key informant interviews were held with the PANS team members to determine the attitude of the members towards the growth monitoring activities and to determine attitude and attendance during supervision of the programme. The principal investigator did this. A questionnaire was also administered to CHWs for knowledge and attitude (Appendix E).

#### **3.4.6 Mothers' knowledge and application of nutritional advice**

Questionnaires were administered to mothers with children in the programme to determine the range of nutritional knowledge and its application (Appendix C). Some of the issues explored included when to start complementary feeding for children, the knowledge of what a balanced diet for a child is and the benefits of breastfeeding to both the mother and the child.

#### **3.4.7 Determination of nutritional status of children aged 0-59 months**

Anthropometric measurements were done on children in the programme and their nutritional status was then compared to eligible children who were not in the programme (Appendix A).

### **3.5 Recruitment and training of field assistants**

Four field assistants conversant with both English and the local language were recruited based on having successfully completed secondary school education and on their ability to understand and

translate the questionnaires from English to the local language. Another requirement was that they were well versed with the area. The recruited research assistants were then trained on the administration of the questionnaires for two days following the topics in Appendix A - F.

### **3.6 Pre-testing and correction of questionnaires**

Pre-testing of the questionnaires was carried out in 10 households outside the study area at a place called Vuga, in Kwale District where growth-monitoring activities were conducted by CHWs trained and supervised by the Ministry of Health. The investigator was on the ground during data collection to ensure quality of data collection.

### **3.7 Statistical data analysis**

Data was entered, cleaned and then analysed using SPSS (Statistical package for Social sciences) and EPI INFO. Chi square tests were done to determine differences between the users of the programme and non-users. A  $P < 0.05$  was considered statistically significant.



## CHAPTER FOUR: RESULTS

### 4.0 Introduction

This chapter presents the findings of the survey. The mothers' socio economic characteristics, the programme coverage, time expenditure and nutritional knowledge of the mothers presented in the first part of the chapter. The second part deals with the nutritional status of the children in the programme area and the CHWs nutritional knowledge and programme perspectives.

### 4.1 Mothers' demographic and socio economic characteristics

Table 2 shows the demographic and socio economic characteristic of mothers interviewed. Their ages ranged from 15 to 42 years. The programme coverage was 60.1% (n =93) with 17.4% of mothers in the programme and 13.8% of those not in the programme aged between 15 – 20 years while 66.3% of mothers in the programme and 63.8% of mothers not in the programme were aged between 21-30 years. More mothers 22.4% not in the programme were above 30 years of age.

**Table 2 Demographic and socio economic characteristics of mothers**

Characteristic	% mothers in programme (n = 86 )	% mothers not in programme (n=58 )	% All mothers (N=144 )	P-Value
<b>Age in Years</b>				
15 -20	17.4	13.8	16.0	0.377
21- 30	66.3	63.8	65.3	
31 – 40	14.0	22.4	17.4	
41 – 45	2.3	0.0	1.4	
<b>Religion</b>				
Muslims	50	72.4	56.1	0.007
Christians	50	27.6	41.1	
<b>Marital Status</b>				
Partner	93.2	93.1	92.2	0.985
No partner	6.8	6.9	6.8	

A majority of the interviewed mothers were Muslims comprising 56.1 % (N=144) out of whom 72.4% (n =58) were in the programme compared to 50% (n=86) not in the programme. Half of mothers in the programme were christians compared to 27.6% not in the programme.

Majority of the mothers 93.2% were married, 4.7% were single, while the others either were widowed or divorced (Table 2).

The most common occupation among mothers was farming (86.5 %). Other occupations included business (9%), artisans (2.7%) and salaried employment (2%). More than half (54.7 %) of the mothers had no schooling while others had primary level of education (39.9%). A small fraction (4.1 %) had secondary education and (1.4%) adult literacy education.

#### **4.2 Programme coverage**

Of the households visited, 60.1 % reported having been in the program while the remaining 39.9% had never registered at all. There were 48.1 % males and 59.9 % female children in the programme.

Figure 8 shows the distribution of study mothers not in the programme (n= 73) by reasons for not being registered in the programme. About half of the mothers ( 48.3% ) said that the health centre was nearer than the CBGMP centre, while more than one third were not aware of the existence of the programme. Of the mothers not in the programme (n=73), 40% said they never wanted to put their children in the programme while 60% intended to join the programme in the future. Reasons for not planning to join the programme included, health facility based centre nearer 45.8%, and another 3.4% had their children still waiting to complete their immunizations at the health facility while others (37.9%) thought that the programme was too unreliable.

Other reasons included child being sick, mothers not being able to raise the KSh.10 for the service and that the programme was unreliable. This was supported by the fact that one of the centres had ceased to operate by the time of the study.

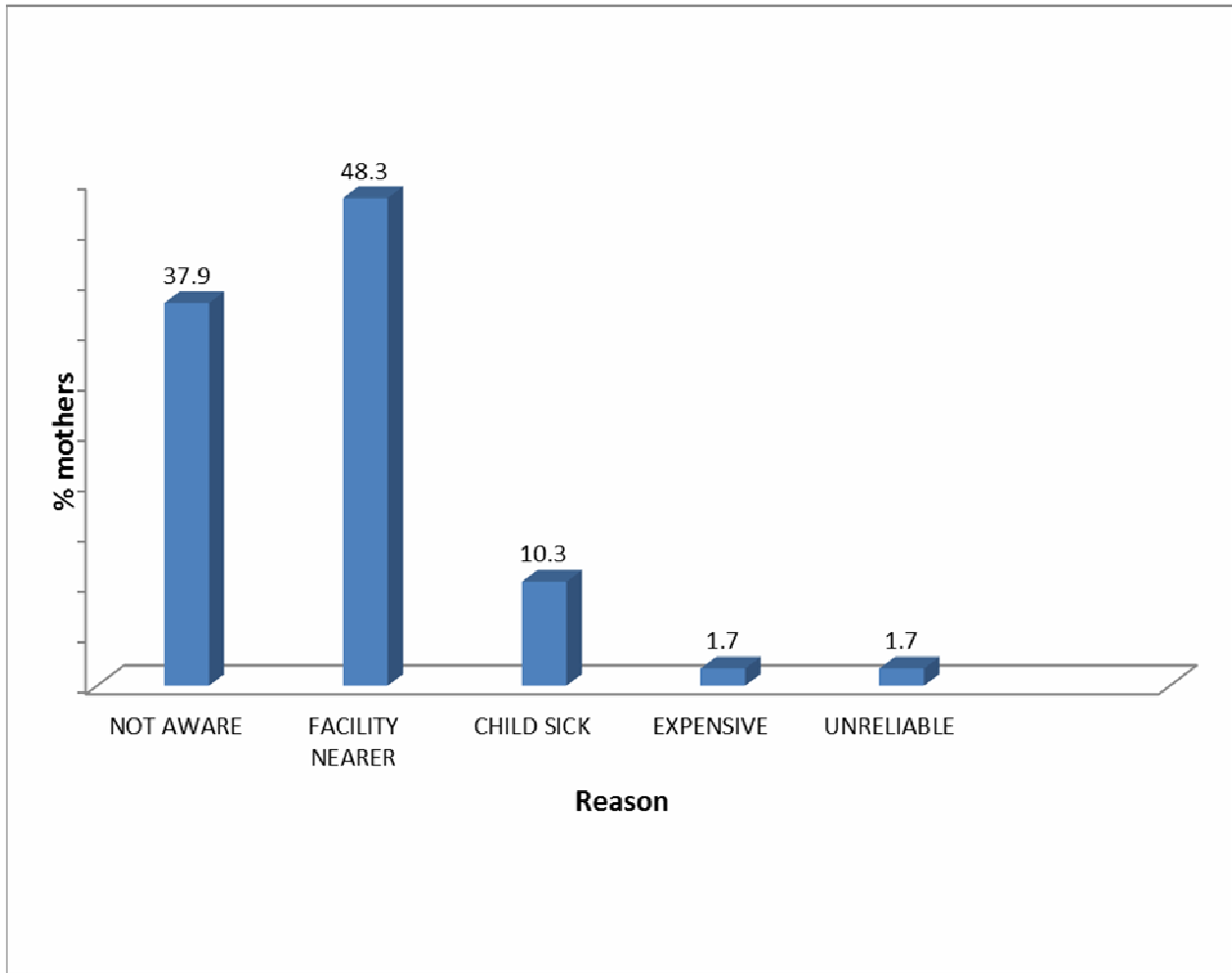


Figure 3: Reasons for not being in the programme

#### 4.3 Time expenditure by mothers on the programme

Table 3 shows that majority of the mothers spent between 5 to 30 minutes one way to the centre adding upto a range of 10 to 60 minutes to and from the centre, when that is doubled to cover both trips you find that time spent walking to and from the centre ranges between 10 to 60

minutes. Mothers then spend 5 to 30 minutes while waiting to be attended to at the centre. This means that mothers spend a total of between 15 to 90 minutes on the programme. At least most mothers spend less than 30 minutes in both walking to the centre and when getting the growth monitoring services. For most of the mothers (59.1%), waiting time was short (5- 15 minutes) while walking time for 25% of the mothers was 31 to 45 minutes.

**Table 3 Time spend by mothers on the growth monitoring programme**

Time taken in minutes	% of mothers (n= 109)	
	To walk to and from centre	Waiting to be served
5 to 15	17.2	59.1
16 to 30	15.9	10.2
31 to 45	25	6.8
46 to 60	1.1	1.1

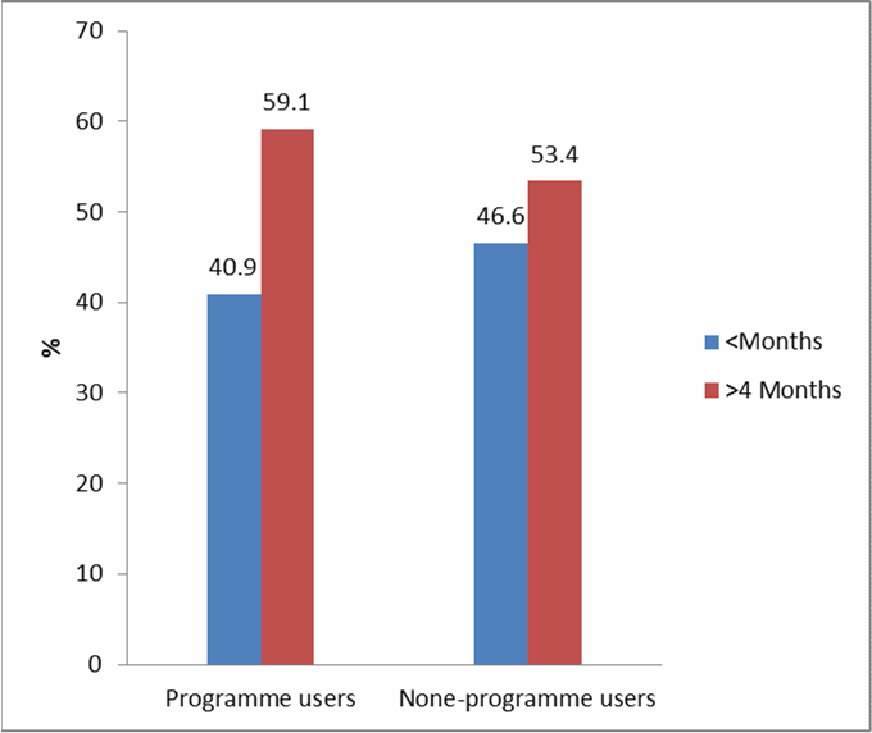
#### **4.4 Mother’s nutritional knowledge and application**

There was no difference in nutritional knowledge for mothers in the programme and those not in the programme. Table 4 shows that 40.9 % of the mothers in the programme were not able to correctly identify what was lacking in child’s meal shown to them for correction while 43.1 % of the mothers with children not in the programme could not tell correctly, what was lacking in the same meal. The difference was not statistically significant  $p = 0.463$ .

Response	In programme (n=93) %	Non-programme (n=61) %	P- value
Not able to correctly define a balanced diet	40.90	43.10	0.463
Able to correctly define a balanced diet	59.10	56.90	

**Table 4 Distribution of study mothers by their ability to define a balanced diet**

Figure 4 shows that (59.1 %) of mothers in the programme had given complementary foods to their children at the age of four months and above while 40.9 % mothers gave complementary foods to their children with ages less than 4 months . Comparable results of 53.4 % and 46.6% of the non- programme users were observed. At the time of the study, it was recommended that complementary feeding is initiated at 4 months old. That recommendation has since changed to 6 months as the recommended age for introduction to complementary foods for children.



**Figure 4: Distribution of mothers by age at which they gave complementary foods to their last child**

Table 5 shows that only a small proportion of the mothers (6.85%) correctly stated the benefits of breast-feeding to the mother. There was no significant difference between programme (6.8%) and non-programme mothers (6.9%) in knowledge on health benefits of breastfeeding to the mother (  $p= 0.722$ ). Mothers in the programme indicated that breast milk is best for a newly born baby because it is healthy for both the mother and the baby. Those who were not aware of the benefits of breastfeeding were 93.2 % of the mothers in the programme compared to 93.1 % of the ones not in the program.

**Table 5: Knowledge of benefits of breastfeeding among mothers in the programme and those not in the programme**

Benefits	Programme Users % n=93	Non-Programme users % n=61	All	p-value
Mothers' health	6.8	6.9	13.7	0.722
Babies' Health	13.6	6.9	20.5	
Don't know	79.6	86.2	34.3	

Table 6 indicates that of the mothers in the programme 1.1 % did not know what to do with a baby with diarrhoea at home compared to 5.2 % of the mothers not in the programme which was statistically significant ( $p=0.008$ ). Remedies administered by mothers for diarrhoea at home included; oral rehydration salts, herbs, medicine, milk, water and rice water.

**Table 6: Remedies for diarrhoea identified by the mothers**

Benefits	Programme users (n=93) %	Non programme (n=61) %	P value
ORS*	41.4	36.2	0.008
Herbs	24.1	34.5	
Medicine	17.2	10.3	
Milk	2.3	0	
Water	6.9	13.8	
Rice water	3.4	0	

\*Oral Rehydration Solution

In table 7, results indicate that majority of the mothers (94.3 %) were aware of the disease prevented by the last vaccination given to children with just a few who did not know. Almost all the mothers (97.7 %) knew the age at which the last vaccination is given. Only 5.6 % of the

mothers in the programme did not know the disease prevented by the last vaccination compared to 3.4 % of the mothers not in the programme.

**Table 7:** Disease prevented by last vaccination given to children

Illnesses	% Programme Users n=93	% Non-Programme user n=61
Measles	94.3	96.6
Malaria	1.1	1.7
Doesn't know	4.5	1.7

A majority of the mothers (79.5 % ) in the programme knew that the importance of weighing children was to know the growth and health of the child compared to 75.9 % of those not in the programme. Others, 32.5 % thought that just knowing the weight of the child was enough reason for weighing children while 3.4 % of the mothers in the programme and 6.9 % of those not in the programme had no idea why children's growth was monitored (Table 8). The difference was statically significant using the a chi square test done  $P = 0.046$ . A small proportion of mothers, (1.7%) said that growth monitoring was a requirement from the health personnel.

**Table 8: Importance of weighing children**

Mothers responses	%Programme users n =93	% non programme users n =61
Growth & health of child	79.5	75.9
Weight of child	17	15.5
Doesn't know	3.4	6.9
Doctors requirement	0	1.7

Most mothers (76.65%) identified correctly a healthy baby but for a baby with constant weight and faltering growth, they noticed that something was the matter but they did not know what exactly it was. They just said that the child was not growing well. About 30% of the mothers in



the programme did not know what was happening on the growth charts while 15.5% of the non-programme users could not tell what was happening (Table 9).

**Table 9: Mothers' ability to interpret growth chart**

Nutritional status of children	Programme users n=93		Non Programme users n=61	
	Correct %	Don't know %	Correct %	Don't know %
Healthy child	70.5	29.5	82.8	17.2
Constant weight	69.3	30.7	84.5	15.5
Reducing weight	69.3	30.8	84.5	15.5

All of the mothers were able to identify the possible causes of babies whose weights were either reducing or had constant weight for more than two months and they said that it was because of either sickness or inadequate diet. About a third of the mothers in the programme (31.9 %) identified sickness compared to 41.7 % of the mothers not in the programme while 38.9 % of the programme users identified diet inadequacy compared to 43.8 % of those mothers not in the programme. More (29.2 %) mothers in the programme did not know the causes of poor growth in a child compared to 14.6 % of the mothers not in the programme. Mothers not in the programme interpreted growth charts better than those in the programme. (Table 10).

**Table 10: Programme and non-programme users' knowledge on causes for poor growth**

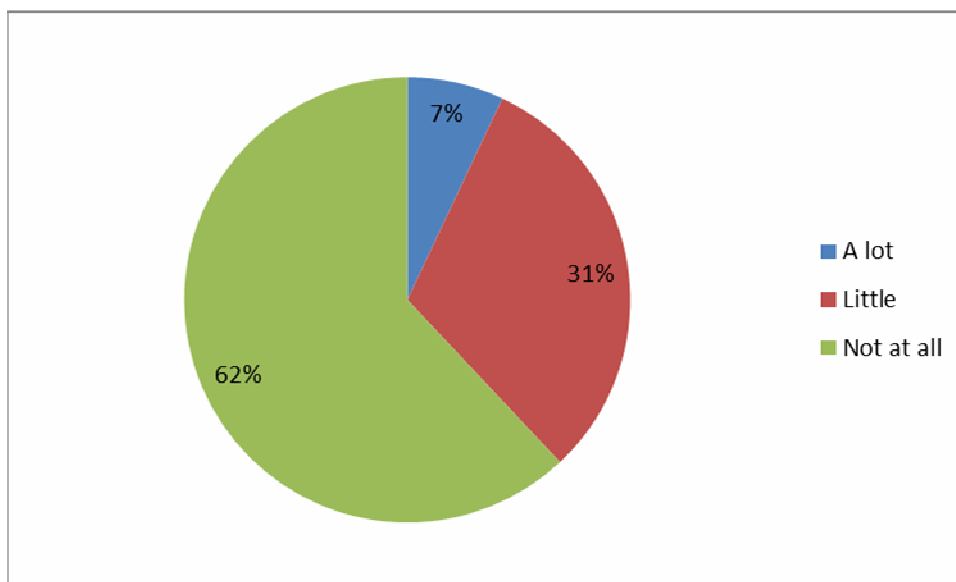
Identified cause	In programme	Non programme	p-value
	n=93	n=61	
	%	%	
Sickness	31.9	41.7	0.804
Inadequate Diet	38.9	43.8	
Don't know	29.2	14.6	

Of the mothers in the programme, 25% could not correctly identify the signs of kwashiorkor compared to 23.4% of the mothers not in the programme. However, this difference was not statistically significant (p =0.804).

#### 4.4 Mothers` programme perspectives

Figure 5 shows a rating of how much the programme interfered with the mothers' other duties. A few mothers (6.8%) said that it interfered quite a lot while 30.7 % said little and the remaining 62.5 % said that the programme did not interfere with their other duties at all.

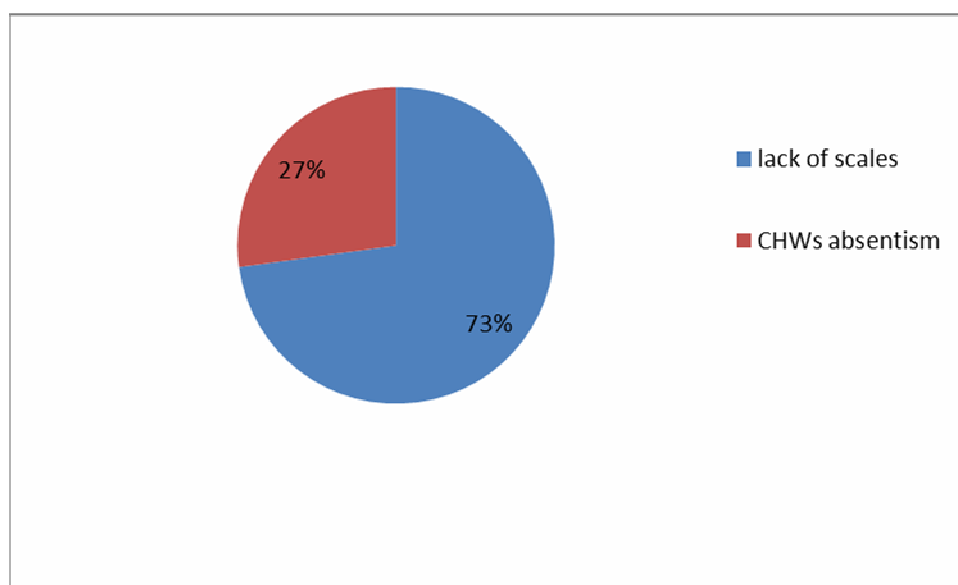
All the mothers rated the working relationship with the community health workers and other mothers as good. Only 28.4% of the mothers reported ever having been taught in the programme and they all rated the teachings as good. The teachings they had received included child's health, cleanliness, balanced diet and the importance of weighing children



**Figure 5: Distribution of mothers by how much the programme interfered with their other duties**

Of the mothers in the programme, 12.5 % admitted having had problems in the past, which included community health workers being absent, and lack of scales. More mothers 73 % identified lack of scales a more serious problem because there are at times they could miss

sessions when the salter scale was in another centre. The remaining 27% identified CHWs absenteeism as the problem they had experienced in the growth monitoring activities (Figure 6).



**Figure 6: Problems in the past within the programme**

A vast majority of the mothers (96.6 %) in the programme indicated that they had benefited from the programme but a few 3.4 % who did not think that there were any benefits to their children said it was because they were never advised even when their children never added weight or when they had a problem. Another reason for thinking that they never benefited from the CBGMP was that they were never rewarded even after having been faithful to the programme (Table 11).

Those who indicated that their children had benefited from the programme appreciated the teachings and the fact that they could tell when their child had a problem. All except one mother felt that the programme served a dire need (Table 11).

**Table 11: Distribution of programme mothers by whether and how they benefitted from the programme**

n= 93

<b>Benefited</b>	<b>%</b>	<b>How</b>	<b>%</b>
Yes	96.6	Child growing well	72.4
		Child Healthy	9.2
		Mother knows weight	13.8
No	3.4	No reward	2.3
		No advice	2.3
<b>Total</b>	<b>100</b>		<b>100</b>

#### **4.4.1 Ways in which the programme could be improved**

Mothers in the programme identified ways they thought the programme could have been improved. These included building of shelter for the programme (11.4%), providing furniture for the centres (19.3%), increasing number of scales (17.4%) and removing monthly fees (35.2%). A small number (1.1%) felt that the community health workers doing the job were too few and more needed to be trained. This was confirmed by the discussions during the focus group discussions.

#### **4.4.2 Nutritional status of children 6 - 59 months old**

Table 10 shows that there were more underweight children among the non programme mothers than there were among the mothers in the programme. The number of stunted children was also higher among children of non programme mothers than among mothers in the programme. The differences were statistically significant using a chi square test ( $p=0.034$ ).

**Table 12: Nutritional status of children**

Nutritional status	In Programme (% n = 109)	Non-Programme ( % n = 72)	P-value
GAM	3.60	7.20	0.034
GUM	24.60	37.50	0.045
GCM	61.90	69.70	0.677

(GAM) Global acute malnutrition (GUM) Global underweight malnutrition (GCM) Global chronic malnutrition

#### 4.5 Community health workers' socio-demographic characteristics

Table 13 indicates that all the CHWS interviewed were above 30 years of age and less than 55years. Their age range was 30-51 years old. More females than males were CHWs, the females comprising 66.7 % and the males 33.3% of the total 15 interviewed. Majority of them were Christians (66.7%) while Muslims comprised 33.3 %. Most of the CHWs were married with only 16.7% being either widowed or separated. All were farmers in the area.

A greater number of the CHWs had attained primary education (66.7 %). The remaining 16.7 % had gone through secondary school while some had no schooling at all but could read and write (16.6 %), having learned in adult education (Table 13).

All the community health workers had been in the programme for more than 2 years. The time ranged between 2-8years. Those who reported having been in the programme for more than 6 years (33.3%) were mainly from Jorori where there had been an ongoing programme by a Church organization before CBNP came in to support community based growth-monitoring activities.

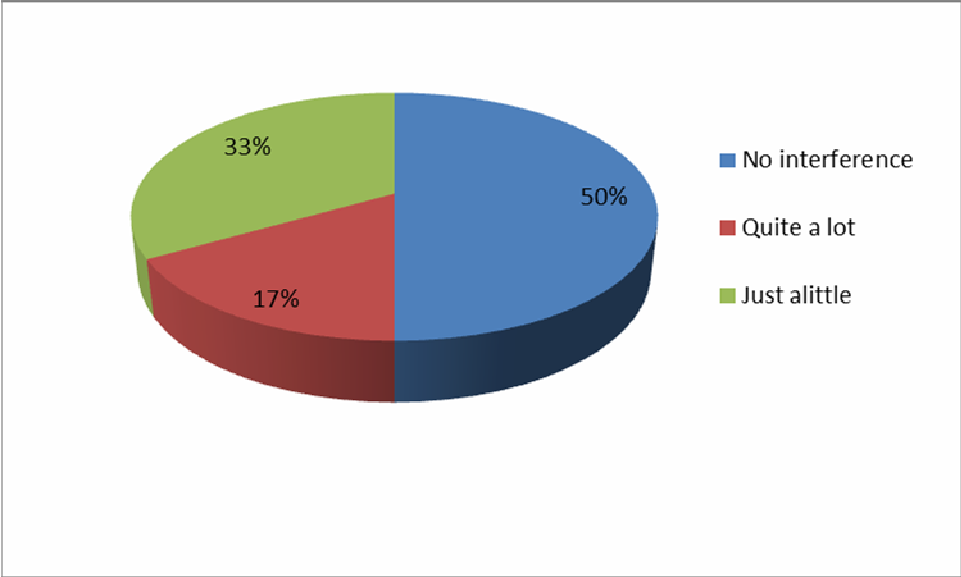
**Table13: Selected socio demographic characteristics of CHWs**

<b>CHARACTERISTIC</b>	<b>%CHWs (n=15)</b>
<b>Sex</b>	
Male	66.7
Females	33.5
<b>Religion</b>	
Christian	66.7
Muslim	33.3
<b>Marital status</b>	
Married	83.3
Widowed or separated	16.7
<b>Occupation</b>	
Farmers	100
<b>Education level</b>	
Primary level	66.7
Secondary level	16.7
Adult education	16.6

#### **4.6 Community health workers programme perspectives**

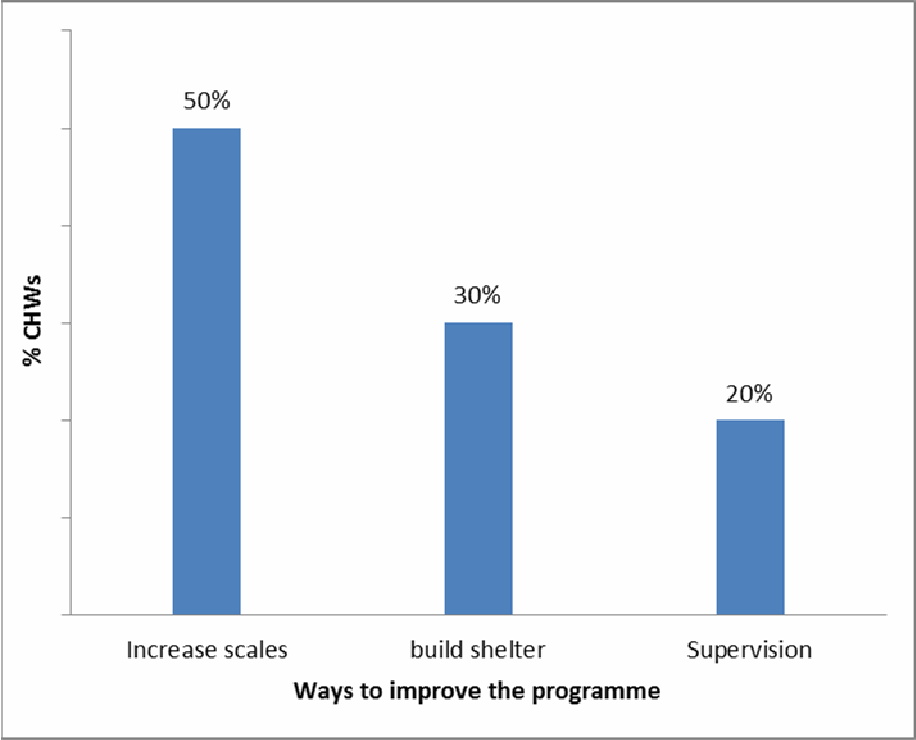
Majority of the CHWS (83.3%) reported having been trained on growth monitoring while 16.7% said that they had never been trained. All those who had been trained reported that they had been re- trained in phase two of the training of the community health workers. However, they reported that the training was done for a much shorter time than they were expecting.

Figure 7 shows that half of the CHWs felt that the programme did not interference with their other duties at all while 16.7% said that the programme interfered with their duties quite a lot and 33.3% felt that the disturbance was just little. All of them reported that the working relationship with the local administration was good and that the children were benefiting from the programme because problems could be identified early and necessary action taken.



**Figure 6: Programme interference with other activities of CHWs**

When asked how they thought that the programme could have been improved, the CHWs felt that their main problem was the limited number of scales, 50% of them said that the Salter scales should be increased. Others (30%) felt that building a shelter was their priority while the remaining 20% identified visits from the government staff (PANS team) as the way in which the growth monitoring activities could be improved (Figure 8).

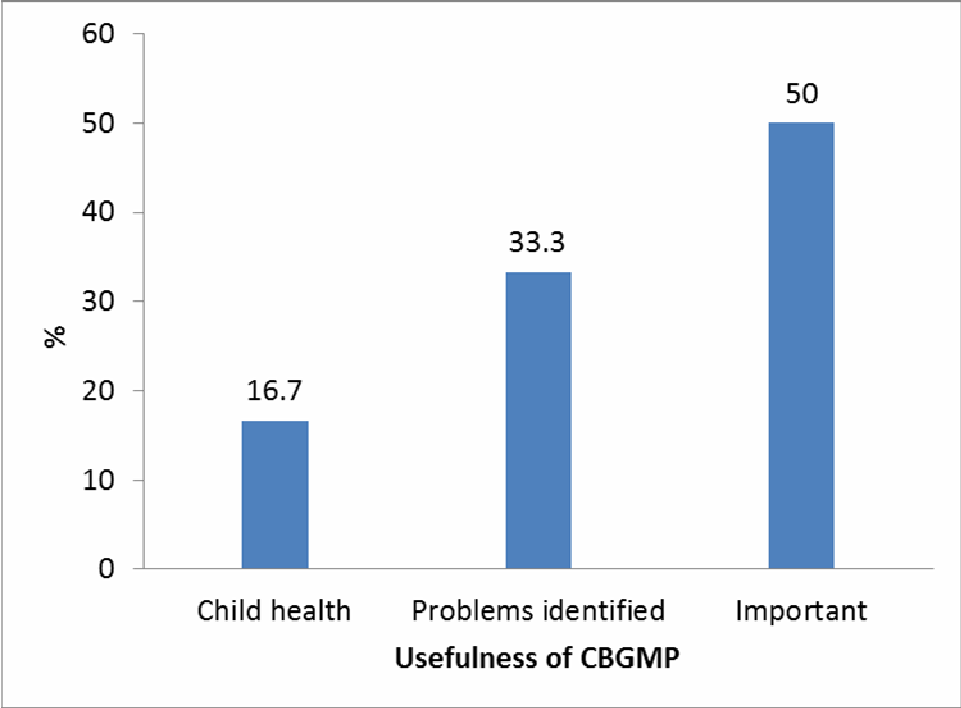


**Figure 7: Ideas suggested by CHWs on ways to improve the programme**

Of the CHWS interviewed, 66.6% reported having a good relationship with mothers in the programme while 33.4% reported having a poor relationship with the mothers. When asked why they thought that the relationship was poor, the CHWs said that some (15% ) of the mothers never recognized them as having sufficient skills to handle their babies health at the community level.

About the usefulness of CBGMP, the community health workers gave reasons ranging from the monitoring child’s health (16.7% ) to any problems in baby identified early (33.3%). The majority thought that the growth of the baby being monitored was important (50%) (Figure 9).





**Figure 8: Usefulness of the CBGMP in the area**

The time taken to and from centre by CHWS ranged between 10-60 minutes. Time taken while weighing the children for most of them was 60 minutes. The mean time taken was 26.6 minutes. This was because not all the mothers attended the session at the same time so CHWS had to wait for all of the mothers to attend the GM sessions. Those were done in the morning hours. The time taken to transport the Salter scale and to weigh the children was about 2 hours (120 minutes).

**4.7 Level of knowledge of community health workers**

All the community health workers were able to identify what was missing in a baby’s diet in a meal. Of the community health workers interviewed, 16.7% were aware of the benefits of breastfeeding to the mother and they gave several reasons ranging from the contraceptive effect

to relieving breast engorgement. Majority of the CHWs (83.3%) could not accurately identify correct benefits of breastfeeding to the mother (Table 15).

**Table 15: Level of nutrition knowledge of CHWs**

**n=15**

<b>Aspect</b>	<b>%Correct</b>	<b>%Incorrect</b>
Balanced diet	100	0
Benefits of breastfeeding	16.7	83.3
Demand Feeding	33.3	66.7
Kwashiorkor identification	100	0
Growth curve Interpretation	50	50

Table 15 indicates that 33.3% of the CHWS said that a 3-month-old baby should be breastfed on demand while 66.7% thought that breastfeeding a 3-month-old baby should be restrictive and timed. Half of the CHWS were unable to correctly interpret growth curves of children who were adding weight gradually but were just below the lower centile all could tell there was a problem with weights of children having constant growth for two months or whose weights were faltering. When asked what could have caused the problem their reasons varied from sickness, inadequate diet to missing care from mother.

All the CHWs were able to correctly identify a child with kwashiorkor from a photograph. They gave recommendations, which included continuing to breastfeed the baby and giving a balanced diet. Most CHWs (89.1%) were aware of the fact that to manage diarrhoea at home, mothers needed to give a lot of fluids to their children. These ranged from fruits, rice water, and porridge. One quarter of them also thought that use of ORS was of great value in the management of diarrhoea. All the CHWs were aware that children's growth should be monitored up to 5 years and that weight should be taken on a monthly basis.

#### **4.8 CHWs growth monitoring skills**

The investigator observed weighing and recording skills. The community health workers had up to date weighing skills. They were careful to hang the scale from a strong support but the pants were not strong enough. They also zeroed the scale with empty pants. Of all the centres visited, the children were lightly dressed before being put on the scale and children were left hanging freely so they took the accurate measurements. Children were held by the body while being put and removed from the scale. There were only 2 centres where the measurements were not being taken at eye level.

All the community health workers were able to read observed weights accurately and record correctly on the card the weights that were observed. Some challenges were observed which included the date of entry, which was only clearly indicated in 50% of the cards in centres. None of the cards observed had 100% attendance while the weights in most of the cards (89.5%) were never joined to make the mothers picture the growth pattern of their babies.

The CHWs did not communicate to the mothers about the growth or the weight of the child. Although the date of next visit was clearly indicated mothers had no communication about the growth of their children with the CHWs. This was also confirmed in a focus group discussion when mothers said that they had dropped from the CBGMP because even when their children were weighed they were never told anything about it.

#### **4.9 Equipment facilities and supplies**

Only one centre (Jorori) had about 25% of the required equipment facilities and supplies. A community based growth monitoring centre is supposed to be equipped with a potable Salter

scale, pants, record books, growth charts, registers, tally sheets, Information Education and Communication materials ( IEC ) materials furniture and a shelter. Most of the other centres did not have growth charts, registers tally sheets (only one had) visual aids, tables, chairs, shelter, record books and benches. Only one Salter scale was available for circulation in the 6 centres which were five kilometres apart. The pants were in a dilapidated state.

#### **4.10 Information on the centres**

In general all the centres that were operational had failed to operate only once in the preceding 12 months and the reasons given included absenteeism of CHWS of the centres due to sickness or travelling or other family commitments that were inevitable.

None of the centres had a record book for referrals and none reported ever having had meetings with the CHWS. All monthly reports had been sent to the District Culture and Social Services offices during the 12 months preceding the study. However, none of the centres had ever received feedback from the offices.

Communication was therefore weakening the programme further. Only one centre reported ever having been visited by a nutritionist for supervision in the 12 months preceding the evaluation. Follow up of the activities from the PANS team was almost completely missing. The CHWs did not follow up on mothers who missed sessions of growth monitoring to know why they were not attending the sessions as required. None of the centres had ever done an evaluation of the growth monitoring activities since the programme started.

## **CHAPTER 5: DISCUSSION**

### **5.0 Introduction**

Evaluation is important because it helps to determine the worth or value of on going programmes and increases the effectiveness of programme management and administration. It also identifies impacts attributable to a programme and provides information that permits comparisons allowing participants to redesign ongoing programmes or shape new programmes (ANP 1999).

### **5.1 The implementation process**

The lack of a joining line to the dots in all the child health cards observed at the growth monitoring centers could mean that the aspect was not included in the training of the community health workers or that the CHWs simply ignore it. Recording the child's weight with a dot on the Child's growth chart and joining up the dots after each monthly weighing gives a line, which enables the mother to visualize her Child's growth trend (UNICEF 1990). With such a high percentage of mothers in Kwale District having no schooling (54.7%) it would be of great importance to have the joining line if the card and the weights taken are to have any meaning to the mothers. Communication between the mothers and the CHWs about how the child is doing is also lacking. This was confirmed in the focus group discussions when mothers said that they were never told what to do when a child was reducing weight. UNICEF (UNICEF1995) points out that effective communication channels between mothers and monitors are among the conditions that make a good growth monitoring activity.

This communication should not only be there when there is a problem but should be present at all times such that even when the child is increasing weight normally, the mother is made aware of that situation. This makes her an active participant of the activity, which is necessary for growth monitoring activities. This situation compares with the Kwazulu Natal project where communication about the child growth was not done appropriately in some sites because care takers of the children were never available during the growth monitoring sessions that were happening in creches' (Farber *et al*, 2009)

### **5.3 Mothers' programme perspectives of CBGMP**

Findings indicate that Mothers in Kwale have a very positive outlook of the CBGMP activities and they feel that more should be put towards making growth-monitoring activities better. Some of the propositions given include integrating with Participatory Education Theatre (PET), supplementary feeding and more health education sessions during the growth monitoring sessions. It is clear that only a small proportion (28%) of the mothers have been taught in the programme. This can be associated with the low coverage since mothers do not have incentives to continue attending the growth monitoring sessions.

There are propositions from the focus group discussions that incentives could be in the form of cookery demonstrations (supported from the fee paid) and some food supplements be given to the very needy children who do not increase their weights even after several sessions with the correct counselling given. Cookery demonstrations from locally available foods are necessary especially at the complementary feeding period. Nutrition supplements and linkage to livelihood support as well as teachings on Income Generating Activities for needy mothers will work very well for Kwale mothers and their children if the programme is to be of help to the community.

Growth monitoring should be a means to an end, it should be analyzed and action taken should be based on the findings. Unless action is taken after monitoring growth then the whole exercise is in futility.

#### **5.4 Mothers' nutritional knowledge and utilization of advice received from the programme**

Although the difference in the mothers in the programme and those not in the programme is not statistically significant, the mothers in the programme could have gained more knowledge if education and individual counselling had been going on in the program. It is evident that the CHWs had no IEC materials for use to educate mothers on nutrition issues; in the project in Kwa Zulu Natal, nutrition education to the caregivers was lacking at several of the sites (Faber *et al*, 2009).

Support supervision from the PANS team is also minimal with only one visit reported in the proceeding year before the assessment. This makes the CHWs not confident on what information to give to the mothers. The issues taken into account and acted upon can improve the programme.

For knowledge to be useful to any person, it must be accompanied by some form of action which in turn gives tangible results and in the case of the specific program under review; then the results should be seen in improved nutritional status of the children under five years in that community. Although there is no baseline data on the nutritional status in the community before the programme, a comparison of the children in the programme and those not in the programme can provide some light on the programme performance terms of nutrition status.

The high scores on nutritional knowledge among mothers with children in and not in the programme in this study is an indication that a lot of capacity building has been done in as far as

nutrition education is concerned and this is expected to be reflected in the nutritional status of the children. However, the nutritional status of the children appears to be very poor (very high stunting and underweight levels). This could be due to poor follow up or poverty. Results from KDHS 2008-2009 indicate that in coast region stunting is high (39%) second nationally. Since the program has no supplementary feeding component, time might be required to allow mothers to begin, nutrition related Income Generating Activities (IGAs).

### **5.5 Time expenditure by mothers on the programme**

Time spent in community based growth monitoring should be less than the time spent for the same in the formal health centres where there is a heavy workload since mothers in most rural settings are overworked (FAO, 2000). This does not mean that all the necessary positive and educational communication should be neglected in the interest of time. Proper charting and joining of the line for the mother to be able to visualize the growth of her child is necessary. On average, majority of the mothers in kwale spend less than 30 minutes walking to the centre and another about 30 minutes waiting to be attended to. Such an important activity done within an hour is worth the time spend. This is of great significance as far as time saving for the caretaker since in the District, 88% of the population is 20 KMs away from any Health facility (FAO, 2000). Under normal circumstances, people do not try to walk 20 kilometres; it would therefore mean that either the children do not get a chance to be weighed or more money is spent to monitor the growth of the children.



## **5.6. Program attendance**

The importance of involving the health care system and all actors of the GMP in the planning stage is underscored by (UNICEF 1995). Some of the key actors of any GMP program are the community to be served by the program. In the case of the project under review, 37.8% of the mothers interviewed are not aware of the existence of such a program. This could mean that there was a problem either in the planning or in the intervention stage.

Although some mothers in Kwale indicated that the reason they were not in the programme was because of the Ksh 10 pay charged (1.7%), in the 1960s and 1970s, mothers from poor and medium class economic status in Western Nigeria were cost sharing by buying the cards that had been printed for community based growth monitoring (UNICEF, 1995). There is no literature indicating that specific cost sharing brought any problem in the program. However, in Tanzania, fees associated with weighing of children appeared to be a potential deterrent to effective GMP programming in poorer communities. The economic situation of a community should therefore be considered in determining whether to charge for the service and how much (AED 2002). The issue of poor attendance in Kwale can be associated with both the pay and the unreliability of the program partly supported by the fact that one of the centres had almost ceased to operate by the time of the evaluation.

The fact that 10.3% of the mothers were not in the programme because of their children being sick indicates that morbidity which can be checked by proper growth in children 0- 59 months is still a problem. In Kwale some mothers did not join the programme because it was unreliable since the CHWs were carrying out the programme on and off. The issue of supporting CHWs has been a thorny one especially with the current poverty levels of the Kenyan community. Coast

province has more than 60 % of her population living below poverty line (KDHS 2008-2009). This therefore can call for another form of contribution from mothers in the project under review who find the Ksh 10.00 too much.

### **5.7 Ways of improving the program**

The fact that mothers proposed ways they thought the program could be improved means that they are interested in the growth monitoring and promotion of their children. This therefore calls for the implementers to act on the issue of communication at all levels because as Morley (Morley,1999) puts it in his book “See How They Grow”, continual monitoring is essential to alert all levels of administration of any developing problems. The issue of the programme only having one Salter scale circulating in all the centres makes the CHWs take too long picking the scales and that takes time and makes some of the growth monitoring sessions be skipped all together. Supervision from the PANs team is minimal which makes CHWs and the communities not able to fully appreciate the importance of the CBGMP. Only one of the centers visited had a shelter for the programme. Two of them weighed under a tree while the other two weighed outside a shop. The centre that had a shelter was incorporated in a community pharmacy where weighing was done.

A shelter is important in a CBGMP for comfort of the mothers, children and the CHWs in case of rains, too much wind or sun. Mothers in the programme proposed the construction of a shelter as one of the ways of improving the programme, a partner on the ground or the community can support this.

## **5.8 Follow up**

Any activities that go on without proper supervision are bound to have problems which can include improper implementation and communities thinking that the activities are not important. UNICEF 1995 reiterates the importance of home visiting by CHWS and says that it should be part of their routine. He also goes ahead and says that community health workers should be properly and regularly supervised, fully recognized and supported by the health system. The fact that in this study only 2 of the 6 centres visited reported ever having been supervised in the 12 months preceding the evaluation is a pointer to the weakness of the programme in this area. The mothers in the focus group discussions noted this and recommended that CHWS should follow up cases where necessary to improve on the coverage and reduce those who drop out of the program.

## **5.9 Community health workers program perspectives**

Morley (1995) in his book “See How They Grow” states that the lower in the class structure of the society the CHW comes from, the better. In Kwale CHWs have been in the program for over six years 33% of them implying that the selection of the trainees was done correctly. The positive outlook and correct understanding of the usefulness of the program also supports this.

## **5.10 Training and updates**

While trainings and updates are important, support supervision from programme managers also play a critical role in the success of CBGM. In India, the evaluation of the Integrated Child Development services program found its impact on nutrition status to be limited because of inadequate training of workers especially in nutrition, growth monitoring and communication.

This failure was associated with a weak or complete lack of supportive supervision from the program managers (UNICEF1995).

In the program under review, at least more than half (83%) of the CHWs have been trained on growth monitoring and nutrition. While an observation by the principal investigator shows a high degree of accuracy in the weighing and plotting, not many of the CHWs can tell the advantages of breastfeeding to the mother (16.7%). In the Kwazulu Natal programme where 80% of the Community volunteers were knowledgeable about breast feeding accuracy in weighing of the children was a challenge.

### **5.11 Importance of CBGMP**

Among children, nutritional status is a sensitive indicator of health and well-being. In children, especially those below five years of age, malnutrition leads to poor physical and mental development and increases the risk of death due to the weak immunity (Lindsey, and Gillespie, 2001). There is a direct inter- relation between food intake and the growth of children.

In any form of malnutrition, recognition at an early stage is important so as to avoid its serious effects (Ebrahim, 1990). The fact that 33.3% of the CHWs were aware that the importance of growth monitoring is to identify any problems early shows that they understand the objectives of the program clearly and also the importance of growth monitoring and promotion very well. This compares to the south African situation where in Kwazulu Natal communities requested for more sites for growth monitoring at household level because they appreciated community based growth monitoring (Faber *Et al*, 2009).

## 5.12 Nutritional status

Figure 10 shows an ideal situation of a CBGMP. In Kwale, the nutritional status of children in growth monitoring programme compared to those children whose growth was never monitored had a significant difference statistically ( $P= 0.045$ ). It is clear from the observations that were made from the centres that a lot more can be achieved through the growth monitoring activities in Kwale. The indirect and direct results i.e. improved mental development and reduced infant and child mortality of a well-organised CBGMP can be the target.

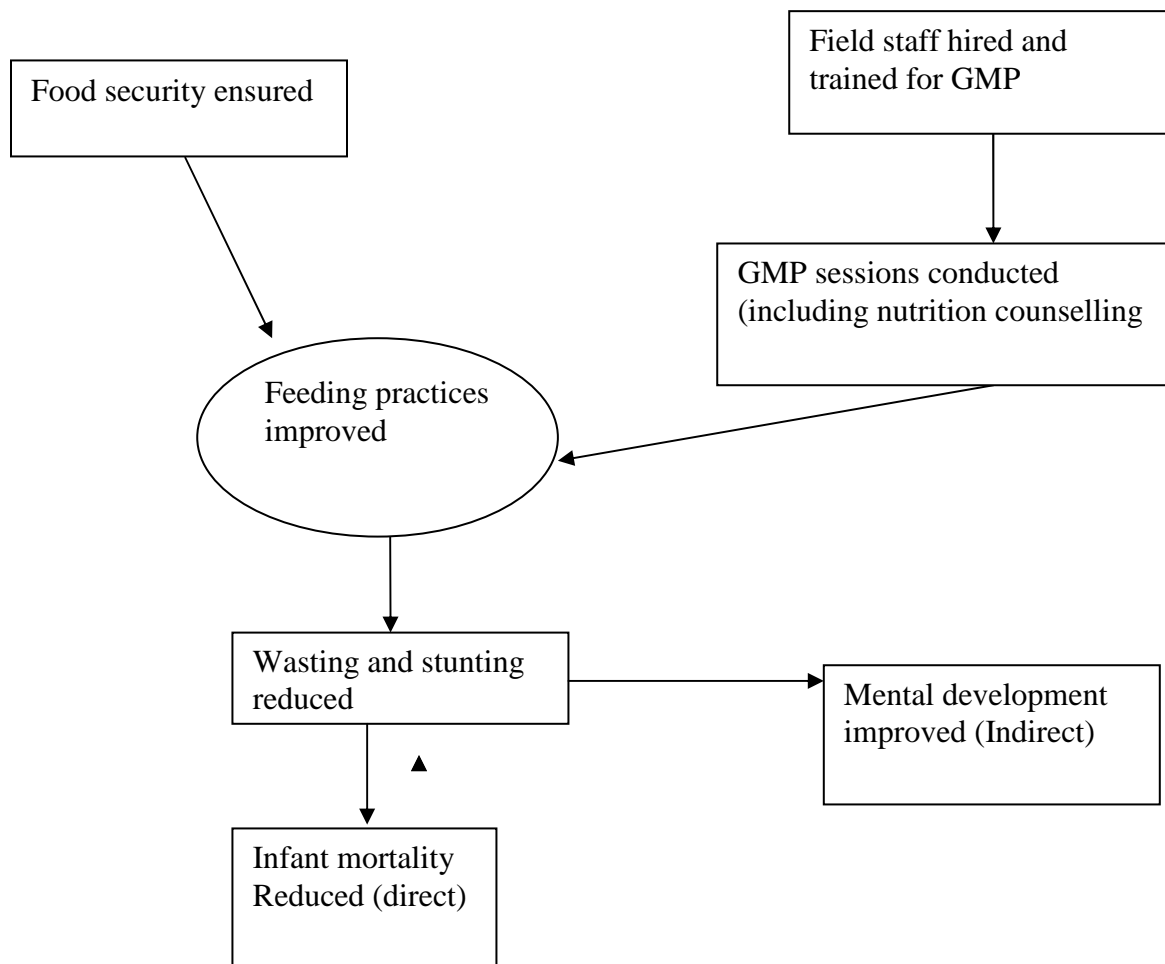


Figure 10 Growth monitoring and promotion programme with a food security component.

(Adopted from Applied Nutrition Programme July 1999)

### **5.13 Quality of facilities equipment and suppliers**

It is clear from the study findings that facilities equipment and supplies are not sufficiently catered for. To have successful community based growth monitoring activities there should be efficient supply, maintenance and replacement of weighing scales, growth cards, pants for weighing children, pens, IEC materials, shelter, record books and furniture (UNICEF 1995). Although growth monitoring activities have been going on in Kwale since 1998, logistics and supplies seem to be quite insufficient. There have been allocations to the Kwale community from CBNP and the community never allocated any of the monies to any growth monitoring equipment and supplies. Gerein and Ross's research in Zaire indicated that small amounts of resources were allocated to GMP (Gerein and Ross 1991 as quoted by Roger Pearson in UNICEF 1995). There is no marginal value to carrying out growth monitoring as part of growth promoting activities when one is not prepared to invest much in it (UNICEF 1995). The way people allocate the available resources is fuelled by information-both correct and incorrect.

It has become apparent that a nutrition programmes as CBGMP are usually a small part of larger more powerful decision making processes hence they are usually marginalized from important decision- making processes . This is often vulnerable to misinformation given larger decision making, due to lack of understanding of the causes of malnutrition and ultimately does not control resources for action- these resources are controlled by decision makers in the larger Triple-A cycle i.e., the Assessment Analysis and Action plan ( UNICEF, 1995).

It is no wonder that while in Kwale CHWs think that the provision of more Salter scales and other equipment and building shelter is of great importance, when committee members get funds they never allocate any to these needs.

## **CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS**

### **6.1 Conclusion**

From the study findings, the programme under review has some strengths and weaknesses. The strengths identified include; Mothers willingness to bring their children to the centres for growth monitoring hence early identification of any health and nutritional problems in children 0-59 months, CHWs accuracy in weighing of children and plotting of the child health cards. Mothers in the programme were knowledgeable and had good attitude and practices towards nutrition issues and so were the CHWs. The CHWs running the programme had been trained well and updates given to some of them hence they are motivated to implement the programme and make it even better. Mothers who reported ever having been taught in the programme identified balanced diet as one of the topics meaning that nutrition issues are covered in the trainings and updates of the CHWs and community members hence the programme had relevant information for both the CHWs and the mothers.

Some areas in the programme had weaknesses, which included; a complete lack of support supervision from the PANS team members, data suggests that the community-based growth monitoring activities were left in the hands of the community fully when they were not yet ready to handle the programme effectively. Only one weighing scale was available for the six CBGPM sites, the pants for weighing children were in a dilapidated state, lack of shelter benches and stationery ie record books registers for use during weighing sessions further made the programme weak. Only one centre had tally sheets, non had visual aids for teaching the mothers attending the activities. Tables, chairs and benches were either not available or borrowed from a school or churches nearby. None of the centres that were visited had a register for the children,

which means that follow-ups are usually not easy to carry out since there are no records. It was evident that there was need for support from PANS team members for the programme to be useful to the community and children 0-59 months. Quite a big percent of the mothers with eligible children 60.1% had their children registered in the programme and those who had not registered were willing to register but were hesitant because the programme was unreliable meaning that the CHWs did not show up for the activity on some of the days. From the assessment done, the Kwale CBGMP has some strengths and challenges that if addressed as per the recommendations can help improve the health and nutritional status of the children 0-59 months.

## **6.2 Recommendations**

Some mothers in the programme claimed ignorance of the existence of the community-based growth monitoring activities. There is therefore need for more advocacy and awareness creation. Use of existing structures in the community can be a factor in reaching out to more people. An example of structures that can be used is fathers as key people in support of the activities so that they can work towards the same goals as the mothers. Grandparents and other community members can be resourceful in supporting programmes that support the health of children. Another important source of social mobilization for a CBGMP is children in primary schools (older children ) who can play a very important role in making sure that this worthwhile activity is sustained .

The PANs team members need to help the community health workers and the community to appreciate the importance of keeping records for reference to improve on the performance of the growth monitoring activities Each centre also needs to have an extra growth chart for mothers



who might wish to join the programme. The PANS team members need to factor salter scales in their budget to increase the number so that every centre has at least one scale and sufficient pants that are safe to use on the children. The community using locally available materials can make the pants.

The PANS team members have not been effectively supervising the community-based growth monitoring activities and there has been no feedback to the community from the CBNP offices regarding the reports on growth monitoring activities. It can be good for the project if there is a two-way communication system both from the community and from the offices (either CBNP or the ministry of health). Only one centre (Jorori) reported ever having been visited by a nutritionist for supervision in the last one year preceding the evaluation. This is also seen in the in the community health workers when they do not follow up cases at homes. The CHWs may need retraining and updates so that they remember and catch up on current nutrition issues and as a motivation factor.

Internal monitoring and evaluation systems need to be put in place to keep checking how the activities are being carried out and to point any gaps as they carry out the programme.

## REFERENCES

- AED 2002. Successful Community Nutrition Programming; Lessons from Kenya, Tanzania and Uganda, Linkages, Makerere University, Uganda.
- ANP, (1995). A Report on the Baseline Survey Findings Dissemination Workshop, Nairobi, Kenya.
- ANP, (1999). Monitoring and Evaluation of Nutrition and Nutrition Related Programmes, Nairobi, Kenya.
- Bennet L, Bentely A, Spring D, (1987). An evaluation of the Agha Khan Health Services PHC project and Kisumu Municipality PHC services, Italy.
- Ebrahim G.J., 1991. Nutrition In Mother and Child health, Macmillan Press LTD, Hong Kong.
- Faber M, Schoeman S, Smuts CM, Adams V, Ford-Ngomane T, (2009). Evaluation of community-based growth monitoring in rural districts of the Eastern Cape and KwaZulu-Natal provinces of South Africa, South African Journal Clinical Nutrition 22(4):185-194
- FAO, (2000). Food Nutrition and Agriculture. Rome Italy.
- FAO, (1994). Food Nutrition and Agriculture. Rome Italy.
- Gerein, N.M. and D.A. Ross (1991). Is Growth Monitoring Worthwhile? An Evaluation of its Use in Three Child Health Programmes in Zaire, Social Science and Medicine, 32 (6)
- Griffiths M and Del Rosso J (2007). Growth Monitoring and the Promotion of Healthy Young Child Growth: Evidence of Effectiveness and Potential to Prevent Malnutrition. The Manoff Group.
- Griffiths M., (1981). Primary Health Care Issues, Manoff Group, Washington DC U.S.A.

Hendratta L and J. Rohdes, 1988. Ten Pitfalls of Growth Monitoring and Promoting, Indian Journal of paediatrics ( supplement), 64(5).

James A., (1991). Infant Feeding, The physiological Basis, Belgium.

Latham O.B.E., (1991). Human Nutrition in Tropical Africa, Cornell University, Ithacg, New York U.S.A.

Lindsay Allen and Stuart Gillespie, ( 2001). What Works ? A Review of the Efficacy and Effectiveness of Nutrition Interventions ,Asian Development Bank, Manilla ,Phillipines

Ministries of Health, (2010). Kenya national Infant and Young Child Feeding Guidelines in the Context of HIV, Nairobi.

Ministry of health, (2007). Community strategy Implementation Guidelines, Nairobi

Ministry of Health, 2007. Community strategy Implementation Guidelines, Nairobi

Morley D.(1995).See How They Grow. Macmillan. Newyork

Morley D., (1999). Community Involvement in Monitoring and Evaluation of their Childrens Progress. Macmillan. Newyork

Survey (KDHS 2008- 2009). Central Bureau of Statistics, Nairobi, Kenya.

The Child to Child trust and UNICEF, (1993). Children for Health, British library cataloguing publication data.

UNICEF, (1985). Growth Monitoring for Preschool Children, Oxford University Press Washington DC U.S.A.

UNICEF, (1986). Successful Growth monitoring, some lessons from India Regional office for South Central ,Asia , New Delhi, India.

UNICEF, (1989). Facts for Life, Macmillan,U.K.

UNICEF, (1990). Strategy for Improving Nutrition of Children and Women in Developing Countries, New York U.S.A.

UNICEF, (1995). Thematic Evaluation of UNICEF Support to Growth Monitoring, Oxford University Press New York, U.S.A .

UNICEF, (1998). UNICEF Annual Report. Oxford University Press New York, U.S.A

UNICEF, (2000). The state of the world's children, New York.

WHO, ( 2010). Millennium Development Goals, Kenya - Mundi

*www.indexmundi.com, Kenya cited 16<sup>th</sup> June 2010.*

## APPENDICES

### Appendix A: Household level questionnaire

Form number /\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ Centre name \_\_\_\_\_

Cluster Number \_\_\_\_\_ / \_\_\_\_\_ Centre number \_\_\_\_\_

Household number \_\_\_\_\_ Date \_\_\_\_\_ DD mth. Yr.

Name of household head \_\_\_\_\_

Name of mother \_\_\_\_\_

Name of first child \_\_\_\_\_ Sex \_\_\_\_\_ Male = 1  
Female = 2

Ever utilized \_\_\_\_\_ Yes = 1 Age (in months) \_\_\_\_\_  
CBGMP \_\_\_\_\_ No = 2

Date of: 1<sup>ST</sup> attend. \_\_\_\_\_ Last attend \_\_\_\_\_ Birth \_\_\_\_\_  
Mth— yr— mth— yr— mth— yr—

### ATTENDANCE BY YEAR

Year	No. of sessions attended	No. of sessions missed	No. of expected attendances	Attendance %
1				
2				
3				
4				





**Appendix B: Mothers questionnaire (programme unitlizer)**

Form number \_\_\_\_\_ Centre name \_\_\_\_\_

Cluster number \_\_\_\_\_ Centre number \_\_\_\_\_

House hold number \_\_\_\_\_ Date \_\_\_\_\_ DD \_\_\_\_\_ Mth \_\_\_\_\_ yr \_\_\_\_\_

Name of household head (HHH) \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Name of respondent \_\_\_\_\_

INFORMATION ON MOTHER AND HOUSEHOLD HEAD

	Sex	AGE (yrs)	RELIGION	MARITAL STATUS	RELATION TO (HHH)	OCCUPATION	ACADEMIC STATUS
mother	//// /						
(HHH)							

Codes:

Sex

- 1- male
- 2- Female

Religion

- 1- Christian
- 2- Muslim

occupation

- 1 - farmer
- 2 - businessman
- 3 – teacher
- 4 – office worker



- 3- Others
- 4- None
- 5- No response

- 5 - technician
- 6 – Forces/ police
- 7 – Others
- 8 – No response

9 – Do not know

Relationship with the household head

- 1 – Self
- 2 – wife
- 3 - daughter
- 4 – sister
- 5 – others
- 6- Husband

Marital status

- 1 - single
- 2 - married
- 3 – separated
- 4 – Divorced
- 5 – Widow /widower
- 6 – No response

Academic standard

- 1 – No schooling
- 2 – primary education
- 3 – Secondary education
- 4 – Above secondary education
- 5 – Adult literacy
- 6 – No response

1. (a) what class did you reach in school ? \_\_\_\_\_Yrs  
 (Convert to years)

(b) Can you read?  
 1 – yes \_\_\_\_\_  
 2 – No \_\_\_\_\_

(c) Can you write?  
 1 – yes \_\_\_\_\_  
 2 - No \_\_\_\_\_

3. How long does it take you to walk the distance from your house  
 to the Centre? \_\_\_\_\_Hrs    ~~Mins~~

4. How long did you take at the weighing centre during the last visit?  
Hrs\_\_\_\_\_ Mins\_\_\_\_\_

5. How long did you wait before being attended?  
Hrs\_\_\_\_\_ Mins\_\_\_\_\_

6. How does the program interfere with your other essential duties?  
 1 – much

2 – little \_\_\_\_\_  
3 – not at all \_\_\_\_\_

7. How would you rate your working relationship with:

(a) Committee members?(VDC)

1 – Good  
2 – Poor \_\_\_\_\_

(b) Other mothers in the program?

1 – Good      2 – Poor \_\_\_\_\_

8. (a) Have you ever been taught in this program?

1 – Yes  
2 – No \_\_\_\_\_

(b) (If yes), how would you rate the teaching?

1 -Good  
2 - Poor \_\_\_\_\_

(c) In what areas were you taught?

(1) \_\_\_\_\_  
(2) \_\_\_\_\_  
(3) \_\_\_\_\_

9. (a) Do you know of any problems that has affected this program in the past?

1 – Yes  
2 - No \_\_\_\_\_

(b) (If yes), what was the problem?

\_\_\_\_\_  
\_\_\_\_\_

(c) How fast was the problem solved?

1 – Immediately  
2 – Took time

3 – never solved \_\_\_\_\_

10. (a) Do you think , your child has benefited from this program?

1 – Yes

2 - No \_\_\_\_\_

(b) ( If yes how)

\_\_\_\_\_  
\_\_\_\_\_

(c) ( If No) why?

\_\_\_\_\_  
\_\_\_\_\_

11. (a) Do you think that this program serves a dire need?

1 – Yes

2 – No \_\_\_\_\_

(b) (If no), what other child program(s) do you think could have been introduced as an alternative?

(1) \_\_\_\_\_

(2) \_\_\_\_\_

12. How do you think the program could be improved?

(Circle the number corresponding to the response mentioned)

1 = build shelter

6 = provide medical treatment

2 = provide furniture

7 = Increase number of scales

3 = increase personnel

8 = Introduce vaccinations

4 = Remove monthly fees

9 = pay committee members

5 = introduce qualified nurses

Others

(Specify)

---

---

---

### MOTHERS NUTRITIONAL KNOWLEDGE AND PRACTICE RELATED TO CHILD GROWTH

13. After feeding a child on ugali sukuma wiki and meat or

Beans what else should you feed him/ her on, in the same meal to ensure that he/ she grows in a healthy way?

---

14. (a) At what age did you start weaning your first born child?

---

(b) At what age should a mother start weaning her child?

---

15. Why is breast milk best food for a newly born child?

(a)

---

(b)

---

16. How does a mother benefit from breast-feeding?

(a) \_\_\_\_\_

(b) \_\_\_\_\_

17. How many times in a day should a mother breast-feed?

(a) A three month old healthy baby?

\_\_\_\_\_

(b) A three month old sick baby?

\_\_\_\_\_

18. (a) Has your last born child ever suffered from diarrhoea?

1 – Yes

2 - No \_\_\_\_\_

(b) (If yes), what did you give him/ her in his/ her last diarrhoea) episode to control the disease?

(1) \_\_\_\_\_

(2) \_\_\_\_\_

(3) \_\_\_\_\_

19. What should a mother give to her child suffering from diarrhoea to control the disease?

(a) \_\_\_\_\_

(b) \_\_\_\_\_

21. (a) What disease does the last vaccination in children prevent?

\_\_\_\_\_

(b) At what age should it be given?

---

(c) Should a sick child be vaccinated?

---

22. (a) What is the importance of weighing children?

---

---

(b) How often should a child be weighed?

---

(c) Up to what age should a child be weighed?

---

23. Could you explain what is happening to the growth of:

(Mother to be shown the growth charts each at a time)

(a) Baby A?

---

(b) Baby B?

---

(c) Baby C?

---

24. What could be the possible causes of the growth trends in baby B and C?

(a)

---

(b)

---

25. (a) What disease is the child on the photograph suffering from?

---

(b)What food would you recommend for the child?

(1)

---

(2)

---

(3)

---

(4)

---

(5)

---

**Appendix C: Mothers questionnaire (Programme Utilizers)**

Form number \_\_\_\_\_ Centre name \_\_\_\_\_

Cluster number \_\_\_\_\_ Centre number \_\_\_\_\_

House hold number \_\_\_\_\_ Date DD Mth Year  
\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

Name of household head (HHH) \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Name of respondent \_\_\_\_\_

INFORMATION ON MOTHER AND HOUSEHOLD HEAD

	Sex	AGE (yrs)	RELIGION	MARITAL STATUS	RELATION TO (HHH)	OCCUPATION	ACADEMIC STATUS
mother	//// /						
(HHH)							

Codes:

Sex

1 – male 2 - Female

Religion

- 1 - Christian
- 2 - Muslim
- 3 - Others
- 4 - None
- 5 - No response

occupation

- 1 - farmer
- 2 – business
- 3 – teacher
- 4 – office worker
- 5 - technician
- 6 – Forces/ police



- 7 – Others
- 8 – No response
- 9 – Do not know

**Relationship with the household head**

- 1 – Self
- 2 – wife
- 3 – daughter
- 4 – sister
- 5 – others
- 6 – no response

**Marital status**

- 1 - single
- 2 - married
- 3 – separated
- 4 – Divorced
- 5 – Widow /widower
- 6 – No response

**Academic standard**

- 1 – No schooling
- 2 – primary education
- 3 – Secondary education
- 4 – Above secondary education
- 5 – Adult literacy
- 6 – No response

**INFORMATION ON PROGRAM NON –UTILISER**

NAME OF CHILD	SEX M = 1 F = 2	AGE (MTHS)

1. Why didn't you take your child in the community-based weighing program?  
(circle the number corresponding to the response mentioned)

1 = not aware of the programme, 2 = Facility-based centre nearer , 3 = child sick  
(needed medical attention at facility)

Others (specify) \_\_\_\_\_

2. (a)Do your intent to put him/ her in to the programme in future?

1 – yes, 2 - No \_\_\_\_\_

(b) (If yes ), When ? (specify month and year)

        mth    \_\_\_\_\_ year    \_\_\_\_\_

(c) (If no), why? \_\_\_\_\_  
\_\_\_\_\_

3. (a) Did your take him/ her to any facility based clinic for the purpose of weighing only (that is not for

treatment or vaccination between June 2001 and May 2002 (both months inclusive).

1 –Yes

2 – no \_\_\_\_\_

(c) If yes),

(1) where? \_\_\_\_\_

**Appendix D: Community Health Workers questionnaire**

Form number \_\_\_\_\_ Centre name \_\_\_\_\_

Cluster number \_\_\_\_\_ Centre number \_\_\_\_\_

Date day — mth — yr \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Name of respondent \_\_\_\_\_

**INFORMATION ON COMMITTEE MEMBERS**

SEX	AGE (yrs)	RELIGION	MARITAL STATUS	OCCUPATION	ACADEMIC STANDARD

Codes:

Sex

- 1 - male
- 2 - Female

Religion

- 1 - Christian
- 2 - Muslim
- 3 - Others
- 4 - None
- 5 - No response
- 9 – Do not know

occupation

- 1 - farmer
- 2 - businessman
- 3 – teacher
- 4 – office worker
- 5 - technician
- 6 – Forces/ police
- 7 – Others
- 8 – No response

Marital status

- 1 - single
- 2 - married
- 3 – separated
- 4 – Divorced
- 5 – Widow /widower
- 6 – No response

Academic standard

- 1 – No schooling
- 2 – primary education
- 3 – Secondary education

- 4 – Above secondary education
- 5 – Adult literacy
- 6 – No response

1. (a) What class did you reach in school?

(convert into years) yrs \_\_\_\_\_

(c) Can you read ?

- 1 –Yes
- 2 - No \_\_\_\_\_

(d) Can you write?

- 1 –Yes
- 2 – No \_\_\_\_\_

2. For how long have you been in the programme  
yrs \_\_\_\_\_

3. How long does it take you to walk to the weighing centre?  
Hrs mins \_\_\_\_\_

4. (a) Have you been trained in growth monitoring?  
1- yes  
2- No \_\_\_\_\_

(b) (If yes ), has it been helpful to your in carrying out the growth monitoring work?

- 1 –yes
- 2 – No \_\_\_\_\_

(d) (If trained ask), have you been retrained? \_\_\_\_\_

5. (a) How much do you feel the programme interferes with your other essential duties?

- 1 – much
- 2 – little
- 3 – not at all \_\_\_\_\_

6. how would you rate

(a) Your working relationship with the local administration? \_\_\_\_\_

(b) The co-operation between mothers and you as a community health worker?

- 1 – good
- 2 – poor \_\_\_\_\_

7. (a) do you think children benefit from this weighing program.

- 1 – Yes
- 2 - No \_\_\_\_\_

(b) (If yes ), how? \_\_\_\_\_  
\_\_\_\_\_

(c) (If no ), why? \_\_\_\_\_  
\_\_\_\_\_

8. (a) Do you think this programme serves a dire need?

- 1 – yes
- 2 - No \_\_\_\_\_

(b) (If no), What other child programme(s) do you think could have been introduced as an alternative?

(1) \_\_\_\_\_

(2) \_\_\_\_\_

9. (a) Are you satisfied with this programme?

1 - Yes

2 - No \_\_\_\_\_

(b) (If not ), why? \_\_\_\_\_

\_\_\_\_\_

10. How do you think this programme could be improved?

(circle the number corresponding to the response mentioned)

1 = build shelter

5 = provide medical treatment

2 = provide furniture

6 = increase number of scales

3 = increase personnel

7 = remove monthly fees

4 = introduce qualified nurses

8 = introduce vaccinations

9 = pay for Community Health Worker

Others (specify) \_\_\_\_\_

\_\_\_\_\_

### **COMMUNITY HEALTH WORKERS NUTRITIONAL KNOWLEDGE RELATED TO CHILD GROWTH**

11. After feeding a child on ugali sukuma wiki and meat or

Beans what else should you feed him/ her on, in the same meal to ensure that he/ she grows in a

healthy way? \_\_\_\_\_

12. (a) AT what age did you start weaning your last child?

\_\_\_\_\_

(b) At what age should a mother start weaning her child?

\_\_\_\_\_

13. Why is breast milk best food for a newly born child?

(a)

\_\_\_\_\_

(b)

\_\_\_\_\_

14. How does a mother benefit from breast-feeding?

(a)

\_\_\_\_\_

(b)

\_\_\_\_\_

15. How many times in a day should a mother breast-feed?

(a) A three month old healthy baby?

\_\_\_\_\_

(b) A three month old sick baby?

\_\_\_\_\_

16. What should a mother give to his/ her child suffering from diarrhoea to control the disease?

(a)

\_\_\_\_\_

(b)

\_\_\_\_\_

17. (a) What disease does the last vaccination in children prevent?

\_\_\_\_\_

(b) At what age should it be given?

---

(c) Should a sick child be vaccinated?

---

18. (a) What is the importance of weighing children?

---

(b) How often should a child be weighed?

---

(c) Up to what age should a child be weighed?

---

19. Could you explain what is happening to the growth of:  
(CHW to be shown the growth charts each at a time)

(a) Baby A?

---

(b) Baby B?

---

(c) Baby C?

---

20. What could be the likely causes of the growth trends in baby B and C?

(a)

---

(b)

---

21. (a) What disease is the child on the photograph suffering from?



(b)What food would you recommend for the child?

(1)

\_\_\_\_\_

(2)

\_\_\_\_\_

(3)

\_\_\_\_\_

(4)

\_\_\_\_\_

**WEIGHING, RECORDING AND INTERPRETATION OF THE COMMUNITY HEALTH WORKERS**

Form number \_\_\_\_\_ centre name \_\_\_\_\_

Centre number \_\_\_\_\_ Date— DD— mth— yr

Name of committee member \_\_\_\_\_

Name of child \_\_\_\_\_

Checked by \_\_\_\_\_

WEIGHING SKILLS

OBSERVATION/ CONDITION

Scale strongly hanged from a strong support	
Scale zeroed with empty pants	
Children undressed (lightly dressed)	
Child held by the body when being hanged on the scale	
String of weighing pant in front of child	
Child hanging freely	

Waited for needle to stop wobbling	
Scale read at eye level	
Scale directly in front of the reader	
Child held by the body when being removed from scale	

Codes: yes (correct) = 1

No (incorrect) = 2

### RECORDING AND INTERPRETATION SKILLS

Weight observed by a committee member		Weight observed investigator		difference		Weight recorded		Weight plotted correctly
kg	gm	kg	gm	kg	gm	Kg	g m	

Codes :

Weight plotted correctly

1 = yes

2 = No

### OBSERVED /CONDITION OF CHILD HEALTH CARDS

Date (month) of entry clearly indicated	
Following month clearly indicated	
Months not skipped	
Correct plotting of weight	
Correct joining of weight	
Correct interpretation of growth curve	
Correct advise based on the growth curve given (where applicable)	
Date for next attendance indicated	

Codes : Yes (correct) = 1 No (incorrect) = 2

**Appendix E: Quality and quantity of equipment, facilities and supplies**

Form number \_\_\_\_\_ centre name \_\_\_\_\_

Checked by \_\_\_\_\_ centre number \_\_\_\_\_

Date DD- mth \_\_\_\_ yr \_\_\_\_\_

**FREQUENCY OF CHECKING AND WORKING CONDITION OF SCALES**

Physical Condition Of scale 11	Position of Pointer before wt 12	Frequency of Checking/ repair Replacement 13		Accuracy 14						Consistency 15				
				Standard Weight		Scale Weight Reading		Difference In wt		Wt1		Wt2		Difference In wt
		chec k	Repair /replac e	k g	gm	k g	gm	k g	gm	k g	gm	k g	gm	

Codes:

Column 11

column 12

column 13

1 – good

1 – at zero

checking

repair/ replacement

2 – bad

2 – not at zero

1 – once a year

6 - repaired

2 – twice a year

7 - replaced

3 - quarterly

4 – once a month  
 5 – never checked

EQUIPMENT, FACILITIES AND SUPPLIES

Serial No.	Equipment/ Facility Supply	Availability	Number	Sufficiency	Frequency of use	Condition	Other comments
	16	17	18	19	20	21	
01	Salter scales						
02	Pants						
03	Growth charts						
04	Registers						
05	Tally sheets						
06	Pens						
07	Visual aids						
08	Tables						
09	Chairs						
10	Shelter						
11	Benches						
12	Soap						

codes

Column 17

- 1 – available
- 2 –not available

column 20

- 1 – on every weighing session
- 2 – on some weighing sessions
- 3 – never used

column 19

- 1 – sufficient
- 2 – not sufficient

column 21

- 1 - good
- 2 – bad

**Appendix F: Information on centre**

Centre name \_\_\_\_\_

Centre number \_\_\_\_\_ Date DD\_\_\_\_ mth\_\_\_\_ yr\_\_\_\_\_

Recorded by \_\_\_\_\_

1. when did the centre start operating?

Mth yr \_\_\_\_\_

2. (a)On how many sessions did this centre fail to operate in between July 2001 and August 2002?

\_\_\_\_\_

(b) (If any), why \_\_\_\_\_

\_\_\_\_\_

3. Does the centre have a record book for :

(a) Follow ups?

(b)Referrals to facility based clinics?

1 = yes

2 = No \_\_\_\_\_

4 How many children attending this centre between July 2001 and August 2002 were in need of the following types of extra care?

(a) Follow –up \_\_\_\_\_

(b) Referral to facility based clinics \_\_\_\_\_

5 How often do the community health workers of this centre hold meetings?

1 – once a month

2 – twice a year

3 – thrice a year

4 – not at all \_\_\_\_\_

Others (specify) \_\_\_\_\_

6 how many times did this centre

(a) Submit its monthly report to district culture and social services (CBNC)

Office between May 2001 and April 2002 \_\_\_\_\_

(b) Fail to submit its monthly reports to the district culture and social services between may 2001 and

April 2002 \_\_\_\_\_

7 (a) does the centre get any feedback from the district culture and social services office (CBNC) after sending its monthly reports.

1 – yes

2 – No

(b) (If so), how often?

1 = monthly

2 = half annually

3 = annually

4 = not at all

others (specify) \_\_\_\_\_

Was this centre visited by a nutritionist (supervisor) between may 2001 and April 2002 for the purpose of supervision?

1 – yes

2 - No \_\_\_\_\_

8 (a) Have you as community health workers ~~ever~~ carried out an e valuation of this programme in your area?

1-yes

2-No \_\_\_\_\_

(b) (If yes when ), when?

        mth\_\_\_\_ yr\_\_\_\_\_

(c) how did you carry out the evaluation? (that is what programme aspects did they look at)

(1) \_\_\_\_\_

(2) \_\_\_\_\_