A STUDY OF THE IMPLEMENTATION OF A FACILITY-BASED GROWTH MONITORING PROGRAMME: THE NAIROBI CITY COUNCIL

A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in Applied Human Nutrition, Department of Food Technology and Nutrition, Faculty of Agriculture, University of Nairobi.

By

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University of Nairobi, August 1999
DECLARATION

I, Caroline N. Mackenzie, hereby declare that this is my original work and has not been presented for a degree in any other university.

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DEDICATION

To my parents Margaret and Mackenzie Mutiso: for their love, guidance and prayers.
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<td>African Medical Research Foundation</td>
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<td>CBS</td>
<td>Central Bureau of Statistics</td>
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<td>CHANIS</td>
<td>Child Health and Nutritional Information System</td>
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<td>DBase</td>
<td>Database</td>
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<td>DFH</td>
<td>Division of Family Health</td>
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<td>EPI</td>
<td>Expanded Programme on Immunisation</td>
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<td>FAO</td>
<td>Food and Agriculture Organisation</td>
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<td>GM</td>
<td>Growth Monitoring</td>
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<td>Kenyatta National Hospital</td>
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<td>Ksh</td>
<td>Kenya Shillings</td>
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<td>MCH</td>
<td>Maternal and Child Health</td>
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<td>Ministry of Health</td>
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<td>Primary Health Care</td>
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DEFINITIONS

Assessment - this is the action of assessing. To assess is to decide or fix the value of something. It is also to evaluate or estimate the quality of something. In this study, an assessment was carried out of the implementation of the GM programme.

"At-risk" child - those children whose line of growth is below the third centile of reference population and whose growth is faltering.

Community-Based GM - this is growth monitoring that takes place at the village level whereby a centre such as a social hall is identified and mothers take their children for GM there. These centres are run by Village Volunteers such as Community Health Workers. These people do not have any formal health training and do not have a regular salary.

Criteria - this is a standard by which something is judged. For this study, a number of criteria were developed and used as a standard to assess the implementation of the GM programme.

Employed - for this study, this included all the people who were engaged in some form of gainful employment, business or were self employed.

Facility-Based GM - this is growth monitoring that takes place in established health institutions. The personnel in these institutions have under-gone basic health training and have a regular salary. Most of them are nurses by profession.

Growth faltering - when a child is not gaining weight consistently in accordance with the reference lines.
Indicator - this is something that points or gives information. In this study, there were a number of criteria used to assess the overall implementation of the GM programme. Each criteria had specific indicators that were used to assess whether that criteria had been correctly done.

Kwashiorkor - a form of severe protein-energy malnutrition, most usually occurring in early childhood, usually between the ages of one to three years. It is characterised by oedema and growth failure and is caused by a diet consisting of bulky staple foods which are very low in protein.

Malnourished child - for this study, a child considered to be malnourished was one with either of the forms of protein-energy malnutrition (kwashiorkor or marasmus). This was diagnosed basically through observation of the child or through weighing.

Marasmus - a form of protein-energy malnutrition, usually occurring in the first three years of life. It is different from kwashiorkor in that the children are usually thin and wasted and have no oedema. It is caused by starvation, due to a diet lacking both in protein and calories.

Normal weight children - those children whose weight for age is above the third centile of reference population.

Under weight children - those children whose weight for age is below the third centile of reference population.
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ABSTRACT

This study was conducted to assess the implementation of the growth monitoring programme in the City Council health facilities. This was to determine whether the physical and structural components necessary to implement the programme were in place. Nine out of 38 health facilities were randomly selected for inclusion into the study. This selection ensured that a facility was selected from each of the selected divisions, and that the three main types of health facilities were represented. From these nine facilities, the attitudes of nine health administrators towards the programme were determined as well as the knowledge and technical abilities of eighteen health workers in carrying out the programme. This was done using questionnaires that had been previously pre-tested.

Using questionnaires, existing records and through observation, an assessment was done on the adequacy of supplies in the facilities and the accuracy and condition of weighing scales was determined. In addition, three hundred and eighty four programme users (the mothers) were randomly selected and interviewed on their attitudes towards the programme. Suggestions were also drawn on how they thought the programme could be improved.

The findings indicate that the availability of physical and structural components necessary to implement the programme efficiently were inadequate. This was quoted as the biggest constraint by those who implemented the programme. Out of the nine facilities, eight of them had a shortage of the child health cards and four of them did not have follow-up
registers, tally sheets and reference booklets. The health workers did not take correct weights of the children because they did not adjust the scale to zero for every child. During counselling, some of the health workers did not brief the mothers on their babies' weight progress.

Despite these shortcomings, it was surprising that most of the mothers (78%) were satisfied with the programme and the employed mothers created time to take their children for growth monitoring. There was a significant difference between the mothers who were satisfied with the programme as compared to those who were not, in that the satisfied mothers: had received nutrition education from the facility \( p < 0.05 \), reported a good rapport with the health workers \( p < 0.05 \), did not feel that the programme interfered with their daily activities \( p < 0.05 \), and gave suggestions as to how the programme could be improved \( p < 0.05 \). Most mothers suggested that for improvement of the programme, the health workers should give them nutrition/health education every morning prior to the growth monitoring sessions.

The study led to the conclusion that the implementation of the growth monitoring programme in Nairobi's health facilities is inadequate. It is therefore recommended that the Government and other Donor Agencies interested in the effective implementation of the programme should supply the programme with the minimum supplies and resources needed to implement it. For sustainability, it is recommended that the health administrators should charge the mothers a small fee for each GM session attended. so
that the money generated can be used to maintain the machines and to photocopy the child health cards when they run out of stock.
CHAPTER ONE: INTRODUCTION

1.1 Background of Growth Monitoring and Promotion (GMP)

Growth monitoring goes as far back as the 1950s when a joint FAO/WHO technical group advocated for growth monitoring and recommended the use of simple, standardized forms for recording graphically the weights of individual infants and pre-school children (Pearson, 1995). This programme aims at promoting adequate growth of a child. It does so by making visual the growth of a child or lack of it as a step in assessing the child’s situation. The health worker or mother can then obtain an understanding of why the child is in the situation it is in, and therefore undertake appropriate measures to either sustain positive development or correct in good time unacceptable deviations. It is based on regular measuring of the child’s weight and how it changes and is followed by appropriate action - usually nutrition advice and counselling.

In Kenya, monitoring of children’s growth has always been in existence since the late 1960s. However, GMP gained emphasis in 1985 when the Ministry of Health (MOH), with the assistance of UNICEF, set up a number of GMP centres in nine districts on a pilot basis. According to the officer-in-charge of the Growth Monitoring Programme at the MOH, the objectives of this programme were:

i) To train health workers on growth monitoring of children.

ii) To identify children at risk of malnutrition and to make them accessible for nutrition intervention in a timely way.

iii) To weigh children below the age of 36 months regularly according to the
following scheme: 0-12 months—once every month, 13-36 months—once every two months

iv) To supply the health facilities with the supplies and resources necessary to implement the programme

1.2 Background of GMP in Nairobi’s health facilities

The GMP programme in Nairobi is implemented under the supervision of the Nairobi Nutrition Project (NNP). This is a City Council project that was started with World Bank support in the 1980s. During its initial implementation, personnel from local health centres and clinics participated in a nutrition survey. The results of the survey were used to formulate a 3-year nutrition project (UNICEF, 1994). The overall objective of the project was to improve the health and nutritional status of underfive children in slum areas of Nairobi.

During the time that the project was being initiated coincided with the time that GM was becoming popular in the country. A baseline survey was conducted in 1991 and the recommendation made with regard to GM was "to empower healthcare providers and communities to detect growth faltering early enough to enable timely intervention by improving facility-based growth monitoring". Consequently, the project undertook training of health workers in GM activities (with the collaboration of the MOH). UNICEF provided the weighing scales and pants, and a vehicle for transport. The health workers were trained on the following:
1.3 Statement of the problem

Growth monitoring (GM) as one of the ways of curbing the widespread problem of malnutrition has been strongly advocated for and supported by UNICEF and other worldwide health organisations (Ghosh, 1993). The prerequisites for growth monitoring are trained workers who are able to understand and discuss the child’s nutritional needs, have sufficient time for interaction with the mother and reliable equipment in the health facilities.

Although growth monitoring is simple in concept, and is a relatively low-cost technology for helping to reduce malnutrition, it is seldomly done well. It takes good organisation, adequate resources, an appropriate existing infrastructure, careful training and proper supervision of workers for an effective GM system to be in place. In some geographic situations, it may involve overcoming cultural barriers (Latham, 1992).
Gopalan and Chalterjee (1985), in a review of GMP in Asia, noted that the operational problems of collecting reliable growth data under field conditions, and its use by the health workers to improve the nutritional status of the children was not easy. They noted that weighing and charting was a difficult technology than was previously envisaged and that health workers had problems using this technology to produce reliable and accurate results.

The weighing sessions are often performed as a ritual and as an end in themselves (Ghosh, 1993). Most of the time mothers are kept waiting for hours, and when finally their turn comes, they are quickly hustled to the weighing machines and their children are weighed. Sometimes the curves on the cards are not drawn, and if they are, the advice given is hurriedly done, rarely in private. Gerein (1988) underlined the significance of accuracy in reading of weight, plotting the age and weight on the growth card and interpreting of the child’s growth trend. Also, it would be a waste of time and effort to take measurements no matter how accurate, without action since growth monitoring in itself is not an intervention (Yee and Zerfas, 1987). To achieve the purpose of GMP, the most important action is giving the mothers the right nutritional advice geared towards improving the child’s growth in a culturally acceptable, appropriate and credible form (Golpaldas, 1988).
1.4 Justification of the research problem

It is against this background that it was seen necessary to carry out an assessment of the programme in the city's health facilities. Since the NNP has, with the collaboration of the MOH and UNICEF, strengthened the programme through training of health workers and provision of equipment, little is known about its current situation. Such an assessment is important because it can identify factors that require management action or improvements in staff performance (Heiby, 1991). It also provides planners with the information on which to base their judgement on the operational performance of existing programmes (Ettyang, 1992)

No studies on GMP have been carried out in the urban setting; but studies carried out in the rural areas of Kenya by Gacoki (1993) and Ettyang (1988) showed that GMP was not being effectively implemented. It was therefore deemed necessary to carry out the assessment in Nairobi (being the headquarters of the MOH) as a representative of the urban setting.
A conceptual framework for the assessment of the GM programme in the health facilities was developed for the purpose of this study as shown in Figure 1. The framework was adapted from Kielmann (1992).

Fig.1: Conceptual framework for the assessment of the GM programme in the health facilities

The model assumes the following:

1) That there is an established need and that the programme is set up on the assumption that early detection of growth faltering will permit timely corrective action.
ii) That the implementation of a GM programme will require an *infrastructure* consisting minimally of:

a) Adequate personnel with the knowledge and technical ability to carry out all the functions of GM, that is, weighing the children, filling the growth charts, making correct interpretations of their growth and giving appropriate nutritional advice.

b) Availability of growth monitoring supplies and resources such as accurate scales, growth charts, tally sheets and reference booklets.

iii) That immediate *action* takes place for those children identified to be malnourished or "at-risk" according to a set procedure.

(iv) That the *implementors and users* of the programme are *satisfied* with the services and thus the implementation of the programme is satisfactory.

1.6 **Expected Benefits**

The study will establish the strengths and weaknesses in the implementation of the NCC growth monitoring programme. The findings will be used to formulate suggestions on the necessary adjustments in the planning and implementation of GMP programmes in order to realize their objectives and aims. Hence this kind of information will be beneficial to implementors, funders and nutrition field workers who work in government MCH clinics. NGOs and other bodies interested in effective implementation of the growth monitoring programme.
1.7 Study purpose and objectives

1.7.1 Purpose of the study

The purpose of the study was to assess the implementation of a facility-based growth monitoring programme in selected City Council health facilities.

1.7.2 Objectives of the study

i) To determine the attitudes of the health administrators towards the programme.

ii) To assess the knowledge and technical abilities of the health workers in growth monitoring activities.

iii) To determine the accuracy and condition of weighing machines.

iv) To determine the adequacy of growth monitoring supplies.

v) To assess the attitudes of the users of the growth monitoring programme towards it.
2.1 Growth Monitoring and its promotion

The term "growth monitoring" (GM) refers to the periodic weighing of children and the plotting of each measurement on a "growth chart" or child health card. Taylor (1988) emphasised that faltering of child growth is the single best indicator of child health and development. The measurements used to determine a child's growth are weight, length or height, arm circumference and skinfold thickness. These measurements are then used to determine the development or nutritional status of children (Latham, 1979). These measurements, if periodic, are what is termed as growth monitoring. The term monitoring literally means "to keep watch over" or "to check systematically" (Latham, 1991).

Growth monitoring also stands for the first letter of UNICEF's famous and widely propagated strategy for improving child health and survival "GOBI". The other interventions making up this strategy being oral rehydration, breast-feeding and immunisation. The rationale for having GM included was provided by the results of several observations and controlled pilot studies: mainly David Morley's work on the use of the Ilesha weight card in Nigeria in 1968. Other studies and demonstrations on the effectiveness of GM include the Narangwal group in Punjab (Taylor et al. 1978) and the Tamil Nadu Integrated Nutrition project (Shekar and Latham, 1992).
Recording of a child’s weight on a growth chart in itself serves no useful purpose unless it is accompanied by some action (Latham, 1984). This realisation led to the use of the term "growth monitoring and promotion" (Hendrata, 1987). This is important because promotion of good growth is the main objective of regular weighing.

Hendrata (1987) defined GMP as

"an operational strategy of enabling mothers to visualise growth or lack of growth and to receive specific, relevant and practical guidelines in ways in which she, her family and community can act to assure health and continued regular growth in her child. GMP implies a regular and sequential measurement of growth in a child, recognising it to be the result of the overall health, nutrition, environment, psychological and developmental factors of a child. 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. In short, GMP is a community strategy for making health and nutrition education more individualised, more convincing and more effective".

2.1.1 GMP and Primary Health-Care (PHC)

According to Latham (1992), GMP should be closely integrated into PHC activities. The Tamil Nadu Integrated Nutrition project in India has been heralded as one of the few successful, large-scale development projects which relied heavily on GMP as the integrating strategy for providing a range of services including short-term selective
supplementary feeding, oral rehydration therapy, immunisation, nutrition counselling and prophylaxis against vitamin A deficiency (Shekar and Latham, 1992). GMP should, therefore, be conducted not as an isolated nutritional activity but as an all-encompassing PHC service (Hendrata and Rohde, 1988). GMP should be used as an entry-point for PHC (Genece and Rohde, 1988). It can either be part of PHC or encompass PHC activities.

Hendrata (1987) stated that "GMP can help to shift the focus from professionals to parents. from clinics to homes. from dependence to empowerment, and in so doing it can help build a genuine PHC system". GMP can serve as an activity that at frequent intervals brings the child into contact with the health services.

2.1.2 Major functions of growth monitoring and promotion

GMP has six major functions (UNICEF, 1991). These are that:

a) GMP is a preventive and promotive strategy that aims to prevent malnutrition. detect children with intrinsic debilitating disease early enough and to promote healthy growth.

b) GMP provides effective communication between health workers. community members and parents in order to achieve adequate growth through home-based action.
c) GMP is a strategy that deals with the total environment of the child, that is, about its health, its feeding, its care and support and its psychological development.

d) GMP facilitates the full participation of the mother in the recognition of growth faltering and identification of actions to correct it.

e) GMP is an entry point to comprehensive health care.

f) GMP is an entry point to parents participation in discussing health issues of the child. It is a mechanism for creating awareness, providing education and motivation among the parents.

2.2 The Growth Chart (Child Health Card)

A growth chart is an essential tool for effective GMP. It is a graph on which periodical child’s weights are plotted against his/her ages. It is designed to make visible the dynamic process of growth and facilitate understanding and meaningful action by the mother and health workers. Once a child is born, he/she should be provided with a growth chart. Currently, about 300 different charts are being used in over 80 countries. Debate exists about which kind of growth chart to use. These are usually based on “reference standards”, and unless acceptable national standards exist, it is recommended by WHO that the National Centre for Health Statistics (NCHS) standards be used (Stephenson et al., 1983).
The use of growth charts was pioneered by Morley (1968) with the Ilesha weight card in 1959. The original objectives of the growth charts was to motivate the health care worker, who would in turn encourage the mother to provide better child-care to avoid faltering of growth. The regular monitoring of weight also enabled the worker to screen for children at risk of malnutrition. Morley stressed the use of the chart to promote growth and not to cure malnutrition. He advocated that the mother, rather than the clinic, holds possession of the chart; and stressed that the health worker and the mother should be more interested in the growth velocity than on the child's position on the chart. The term "road to health" became widely accepted (Morley, 1973).

In Kenya, the weight-for-age indicator is used to assess growth. This indicator is seen to be the most reliable, sensitive, and easily obtainable indicator of ill health, risks of infection and impairment of immune mechanism in young children (Rao, 1986). It is also a good basic indicator, combining acute and chronic malnutrition, and is recommended for use in GM by the WHO (DFH/MOH, 1986). Height on the other hand, is more difficult to measure, especially for infants who are not able to stand erect. Although height for age is a good indicator of past nutrition problems, it changes too slowly to detect any signs of malnutrition. Also, children can never decrease in height and therefore a deterioration in the health of a child cannot easily be detected by recording the height alone over time.
2.3 Previous study findings

The use of GMP has become controversial in recent years (Anon., 1985; Taylor, 1988). Questions have been raised about the feasibility of GMP in illiterate communities (Gopaldas et al., 1990) and the ability of village health workers to assess the causes of growth faltering (Nabarro and Chinnock, 1988). The only point on which both sceptics (Gerein, 1988) and advocates (Rohde, 1990) of GMP agree on is that the effectiveness of GMP has not yet been demonstrated. The few evaluations of GMP effectiveness have been unconvincing or inconclusive for the following reasons:-

- a) poor participation of mothers
- b) lack of controls or inadequate controls
- c) lack of measurement of chart comprehension
- d) lack of evidence of a dose-response relationship.

A study done over a period of four years in sixteen villages in Southern India however proved the above notion wrong. The study showed that, with proper implementation, GMP can, and does work. The study went on to show that GMP, in the context of a Primary Health Care system, increased the mothers' understanding of the growth chart, and this was translated into better child health-care. Improvements in the nutritional status were relatively consistent, physiologically plausible and seemed to follow the intensity of interventions.
Results of these studies therefore showed that GMP was responsible for the observed improvements and helped improve health and nutritional status when implemented in the context of a functioning PHC system with curative and preventive services (George et al. 1992).

In Kenya, a study done in Embu district to evaluate the implementation of a community-based GMP programme found that there was need to improve the implementation process of GMP so as to make it more effective. Suitable programme implementation had been hindered by lack of personnel training and poor supervision, combined with shortages of funds to pay for the necessary stationery, transport, and committee meetings. Committee members were found to be inept at most GMP activities and put only minimal effort into follow-up and referral activities (Gacoki. 1993).

A review of published data on evaluations done on GMP programmes shows that seldom is it being done well. Often, the health workers do not appear to have the time for nutrition education and other interventions that are essential for the promotion of good growth and development. Often, they lack training, motivation and supervision. The Primary Health Care component is frequently weak or almost non-existent. It is therefore not surprising that many people wonder whether GMP is a component worth supporting (Latham.1992).
However, GM is one of the several ways of attempting to achieve healthy growth and has been a good strategy that is essential for the proper growth and development of the child: if effected efficiently, it has been shown to protect and promote nutrition, health and well-being for the world’s children (Grant, 1987). GM is being widely practised with the blessing and financial assistance of UNICEF and other agencies. The numbers of children included in GM programmes has greatly increased over the years (Latham, 1992). UNICEF as an advocate claims many successes of GM in developing countries around the world (Grant, 1987). The success or failure of GM depends on how the information and the chart are used. The weighing and plotting have to result in action if there is to be any benefit.

2.4 Geographical location and Population Characteristics

Nairobi, wherein the study areas are located, is the capital city of Kenya and is also one of the eight provinces in Kenya. It stands at 1680 metres above sea level and covers an area of 684 square kilometres. It is situated on latitude one degree south of the equator and longitude 36.5 degrees east of the Greenwich Meridian (CBS, 1986).

CBS (1996b) gives the projections of Nairobi in 1997 as two million. This comprises of people who are heterogeneous both in tribe and culture. The main ethnic groups are Kikuyu, Luo, Luhya and Kamba.
Nairobi has remained the key urban centre with migration to the city increasing yearly. With a national population growth rate of 3.8%, Nairobi's population has grown at an annual rate of 9%. This rapid rate of population growth has created serious employment and housing problems and has strained access to social services for the urban poor including basic services such as health-care and education (UNICEF, 1994). The government has been faced with diverse challenges particularly with regard to provision of these basic services (CBS, 1996c). Inflation has been a major problem for the urban population. Between 1986 and 1991, food prices in Nairobi increased by 70%. Structural adjustment measures reduced public spending for social services and poverty alleviation programmes. Cost sharing through user-fees also further reduced access to social services for the poor. Average earnings declined by 5.8% in 1990 and 8.3% in 1991.

Nationally, income distributions became more skewed than ever. Between 1984 and 1991, the proportion of households in the lowest income group increased from 13.2% to 22.1%. Recent figures show that in Nairobi, 74% of the households can be classified as poor. Between 1990 and 1994, employment generation remained low (UNICEF, 1994). The urban population estimated to have no access to safe water is 39%. A survey conducted in low-income areas of Nairobi showed that portable water was often purchased from informal traders at high prices (average monthly expenditure ranged from Kshs 50 to 100, approximately 15% of median income), or was obtained from communal water points (43% of the population). Other sources of water such as bore-holes and streams were found to have significant levels of *Escherichia coli* contamination.
Sewerage systems were lacking, communal latrines were overflowing or poorly maintained, and 8-23% of households did not have access to toilet facilities. Also, a lot of stagnant and dirty water in many places provided good breeding ground for mosquitoes (UNICEF, 1994). The infant mortality rate for Nairobi was estimated in 1990 at 68 per 1000 live births. Life expectancy at birth is 59.7 years.

CBS (1996a) quotes the stunting rates of Nairobi as 30.2% and wasting as 5.5%. Attendance of GM in Nairobi is high (97.3%) and so is immunisation (96.5%).
CHAPTER THREE: STUDY METHODS

3.1 Study design

This was a cross-sectional study that set to carry out an assessment of the implementation of the growth monitoring programme in Nairobi. This was to determine whether the physical and structural components necessary to implement the growth monitoring programme were in place. The assessment of the programme was carried using several assessment criteria which were used as standards to judge the programme. The sampling units were the health facilities that were carrying out a growth monitoring programme in Nairobi.

3.2 Study Population/Sampling Procedure

The study population comprised of the health administrators. These were the people charged with the responsibility of running the health facilities. Also included in the study population were the health workers who carried out growth monitoring in the facilities, and the mothers using the programme. Out of the eight divisions in Nairobi, seven divisions were randomly chosen for inclusion into the study. The names of the divisions selected were Kasarani, Embakasi, Kamukunji, Starehe, Makadara, Langata and Dagoretti (see map in Appendix B).

Selection of the health facilities was based on division and type. There were three types of health facilities, namely:
Type 1: health facility without maternity (offering treatment & MCH services)
Type 2: health facility with maternity (offering treatment and MCH services)
Type 3: health facility without maternity but offering MCH services only.

Since different types of facilities were found in the various divisions, to ensure representation by division and type, selection of the health facilities was done as follows:

1. Five divisions had the same type of health facility. Therefore from these divisions, one facility was randomly selected as follows:
   - Embakasi - Type 1
   - Langata - Type 1
   - Dagoretti - Type 1
   - Starehe - Type 2
   - Kamukunji - Type 3

   Hence total number of facilities selected from this group was = 5.

2. Two divisions had different types of health facilities. therefore one type each was randomly selected as follows:
   - Makadara - Type 1 & 2
   - Kasarani - Type 1 & 3

   Hence total number selected from this group was = 4.

Thus in total, nine health facilities out of 38 were included into the study. Out of these facilities, five did not have maternities (type 1), two had maternities (type 2) and two offered MCH/FP services only (type 3).
Each of the nine health facilities had one health administrator. Each one of them was included into the study.

All the health workers who were actively involved in GM in each health facility were included into the study. These were two from each health facility: one weighed the children, while the other counselled the mothers. Therefore a total of 18 health workers \((2 \times 9)\) were included into the study.

### 3.2.1 Sample size determination of the mothers

Fischer's formula for the calculation of sample sizes in cross sectional studies was used to calculate the number of mothers to be interviewed. The probability \((p)\) was taken to be the proportion of mothers who were satisfied with the programme, that is, 50%. For studies whereby \(p\) is not known, a \(p\) of 50% maximises the expected variance and indicates a sample size that is large enough (Fischer et al., 1991). A sample of 384 mothers was established using the following formula:

\[
n = \frac{z^2pq}{d^2}
\]

whereby

- \(n\) = the desired sample size
- \(z\) = the standard normal deviate, usually set at 1.96 which corresponds to a 95% confidence interval
- \(p\) = the proportion of mothers who are satisfied with the programme. This was taken to be 50% (0.5).
- \(q\) = 1.0 minus \(p\) = 0.5
d = degree of accuracy, usually set at 0.05.

Therefore, \( n = 1.96^2 \times 0.5 \times 0.5 / 0.05^2 = 384. \)

This figure (384) was then distributed proportionately among the different facilities depending on the number of mothers who came to the facility each month. Before carrying out the definitive study, the researcher visited all the facilities and recorded the number of children who attended the GM sessions for the last 3 months. The total number derived was divided by 3 months to get an average. This average was used to represent the number of children who attended each facility per month. It was then assumed that each child represented a mother and these totals were used to represent the number of mothers who came to the facilities every month.

The sample size of mothers to interview in each facility was then calculated using the formula for proportionate sampling:

\[ n_i = n/N \times N_i \]

where:

- \( n_i \) = the required number of mothers per health facility
- \( n \) = the calculated sample size of mothers (384)
- \( N \) = the total number of mothers in all facilities (9384)
- \( N_i \) = the total number of mothers in each facility

For example, in Kariobangi, the total number of mothers who attended the facilities in a month was 2413. Therefore to calculate the number of mothers to interview here, the above formula was substituted. That is, \( n_i = 384/9384 \times 2413 = 99. \) The same was done
for all the other facilities. This sampling procedure for the mothers from the different facilities is shown in Figure 2.
Figure 2: Schematic presentation showing the sampling procedure of mothers.
3.2.2 Sampling of individual mothers in each facility

The individual selection of mothers for inclusion into the study in each facility was done using systematic random sampling. In each facility, a number between one and 10 was randomly selected by writing them on small pieces of paper, folding them and swirling them in a can. One piece of paper was then picked at random by one of the field assistants. The number on the paper picked was used to identify the first mother as they entered the facility. Thereafter, every 24th mother was identified and interviewed. This sampling interval (24) had been calculated using the following formula: \( \frac{N}{n} = K_{th} \) whereby \( N = 9384 \) and \( n = 384 \). After substitution: \( \frac{9384}{384} = 24 \).

3.3 Data collection tools

Quantitative data was collected using structured questionnaires, secondary data sources from vital records, service statistics, existing records and reports from the facilities, while qualitative data was collected through participant observation of operations, analysis of written reports and structured questionnaires.

3.4 Training of field assistants

After obtaining the necessary research permits, two field assistants who were conversant in both English and Kiswahili were recruited so as to assist in the data collection. One of the field assistants was recruited on the basis that she was involved in growth monitoring in a similar health facility as the ones to be assessed in the study. This was necessary to facilitate assessment of GM activities since she had already been involved
The second field assistant was recruited on the basis of having successfully completed higher secondary education and was able to translate the mothers’ questionnaire from English to Kiswahili. For two days, the field assistants were updated on the objectives of the study and trained on techniques of questionnaire administration. They were also trained on methods of selecting the study sample, the researcher’s expectations of their work, and other interpersonal skills such as how to introduce self to the interviewees and how to ask questions so as to be understood. After this, the field assistants and the researcher went through the questionnaires so as to be familiar with them and be able to understand the questions correctly, as the researcher meant them.

3.5 Pilot site and pre-testing

After training the field assistants, they worked in close supervision with the researcher during the pilot phase (pre-testing), which was carried out at Kangemi health centre. This health facility was purposively chosen on the basis that it carried out GM, that it was not among the sampled health facilities, and that it had similar characteristics as the facilities that were to be included in the study (that is, it was a City Council facility that carried out GM). A total of 10 mothers were interviewed on their attitudes towards the programme, two health workers were assessed on their knowledge and technical skills in GM. One health administrator was interviewed on her role in GM activities in the facility and her attitudes towards the programme.
Each pre-test interview was followed by a debriefing of the respondent in which the researcher sought the respondents understanding of questions that were likely to be misunderstood. Thereafter, the researcher made the necessary corrections on the questionnaire and rephrased unclear questions. Further standardization of the field assistants was done after corrections on the questionnaire were made.

3.6 The Definitive Study

3.6.1 Assessment of the GM activities that the health administrators (H/A) are involved in and their attitudes towards the programme

All the H/A were interviewed on their demographic characteristics such as sex, age, religion, marital status, occupation, number of years they had worked and number of years of schooling they had. In addition, they were interviewed on whether they had received any training on GM from the NNP and the GM activities they were involved in.

They were asked whether they wrote any reports relating to GM and nutrition activities, and in cases where the reports were available, they were assessed by the researcher and assigned scores out of five. The indicators used for assessing the reports books are presented in Table 1a.
Table 1a: Indicators for assessment of the report books in the facilities

Correct procedures to be carried out

1. Total underweights recorded
2. Total normal weights recorded
3. Interventions given
4. Follow-up done
5. Referrals done

1 is a score (if activity is mentioned)
0 is a no-score (if activity is not mentioned)

The following grading system was then used to grade all the scores this study:

- all scores below -1SD* of the mean = Very poor
- all scores between -1SD and 0 = Poor
- all scores between 0 and +1SD = Fair
- all scores above +1SD of the mean = Good

(*SD is Standard Deviation)

The cut-off points of the grading system were decided upon based on the general performance of the facilities. Most of the scores on the various criteria attained in the facilities were distributed around the mean, and therefore this grading system was considered fair. A similar system was used by Waihenya (1994) in grading mothers after assessment of their knowledge in nutrition.

The H/A were asked whether they received data on GM from the health staff, what type of data they were, how often they were received and what they did with them. They were also asked to describe the procedures that the health workers used to deal with various
forms of growth faltering. On their attitudes towards the programme, they were asked what they thought about the present system of GM in the city’s facilities and to give reasons for their answers. A set of criteria useful for an effective running of a GM system was presented to them and they were required to say whether these criteria were satisfactory in their own facilities. Suggested solutions were sought for the criteria that were considered not satisfactory. Finally, their comments on the design of the present child health cards was sought.

3.6.2 Assessment of knowledge of the health workers (H/Ws) in GM activities.

All the H/Ws were interviewed on their demographic characteristics such as sex, age, religion, marital status, occupation, the number of years they had worked and number of years of schooling they had. They were asked whether they had heard of the term "growth monitoring" and their knowledge of the activities involved in GM were scored out of six. The indicators used for scoring their knowledge of GM activities are found in Table 1b. The total scores attained were then graded using the system outlined in Section 3.6.1.
Table 1b: Indicators for assessment of health workers' knowledge on activities involved in growth monitoring

<table>
<thead>
<tr>
<th>Correct activity mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Weighing children</td>
</tr>
<tr>
<td>2. Plotting weight on growth chart</td>
</tr>
<tr>
<td>3. Interpretation/counselling</td>
</tr>
<tr>
<td>4. Health education</td>
</tr>
<tr>
<td>5. Compilation of GM statistics</td>
</tr>
<tr>
<td>6. Others (Specify)</td>
</tr>
</tbody>
</table>

1 is a score (activity mentioned)  
0 is a no-score (activity not mentioned)

The H/Ws were also asked whether they had received any training from the NNP on GM, which year they had completed their professional training and how long they had worked in the facility. They were asked what GM activities they were involved in and their comments on the design of the present-day child health cards was sought. They were then provided with a set of four growth charts depicting different patterns of growth and were asked what action they would take if they were to come across such growth charts in their day-to-day GM duties. The first growth chart had a growth line that had the child’s weight below the third centile for girls, although the shape of the curve was similar to the reference line. The second growth chart had a growth line whereby the child’s weight was decreasing. The third growth chart had a growth line whereby the child’s weight was static and the fourth growth chart had a growth line whereby the child was gaining weight properly. They were also presented with pictures of a child with kwashiorkor and another with marasmus and asked what action they would take if presented with children suffering from either diseases.
The growth charts and pictures are in Appendices C to H.

All the health workers' questionnaires were then assessed on the criteria that the health workers either knew how to interpret the growth charts correctly, or not. If a health worker gave correct answers for all the growth charts, then that health worker was considered knowledgeable in the interpretation of the growth charts. If a health worker interpreted one of the growth charts wrongly, then that health worker was considered not knowledgeable in its interpretation. It is important that a health worker knows how to interpret all shapes and positions of the growth curve on the growth chart because in the day-to-day implementation of the GM programme, it may pose a great danger to the life of a child if his/her growth chart is interpreted wrongly.

3.6.3 Assessment of the technical abilities of the health workers (weighing children, filling the child health cards, giving nutritional advice and follow-up)

3.6.3.1 Weighing skills

Seven indicators (Table 1c) were used to assess whether the H/Ws weighed the children as recommended by UNICEF (1985).
Table 1c: Indicators for assessment of the health workers' skills in weighing

Correct weighing procedure

1. Scale correctly lying from a strong support
2. Scale at zero before placing child
3. Child undressed
4. Child held by body when placing on scale
5. Waited for needle to stop wobbling
6. Scale read at eye-level
7. Person reading weight the same one recording

1 is a score (Yes)
2 is a no-score (No)

The major errors observed during this weighing procedures were also noted. The researcher did this by randomly selecting five children from each facility who had already been weighed, weighed them again and checked whether the weight measure she obtained was the same as the one that had been recorded on the child's health card. This procedure was used to verify whether the two weight measurements were in agreement. Recordings of weight measurement on the child health cards found to have a difference of more than 100g were considered to be unacceptably different from the researcher's.

For the seven indicators, the total score obtainable was 7*5=35. In each facility, the scores attained by the various H/Ws were converted into percentages by dividing each score by 35 and multiplying by 100. These percentages were then presented as a bar graph and graded according to the system in section 3.6.1.
3.6.3.2 Filling the child health cards

Five child health cards in each facility were randomly selected from the mothers who had already been attended to and thirteen indicators were used to assess them, as shown in Table 1d.

**Table 1d: Indicators for assessment of the filling of the child health cards**

<table>
<thead>
<tr>
<th>Correct filling procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Date of entry clearly indicated</td>
</tr>
<tr>
<td>2. Name recorded</td>
</tr>
<tr>
<td>3. Date of birth recorded</td>
</tr>
<tr>
<td>4. Birth weight recorded</td>
</tr>
<tr>
<td>5. Place of birth recorded</td>
</tr>
<tr>
<td>6. EPI vaccine recorded</td>
</tr>
<tr>
<td>7. Risk factors recorded</td>
</tr>
<tr>
<td>8. Diseases recorded</td>
</tr>
<tr>
<td>9. Correct plotting of weight</td>
</tr>
<tr>
<td>10. Correct joining of weight</td>
</tr>
<tr>
<td>11. Correct interpretation of the growth curve</td>
</tr>
<tr>
<td>12. Correct advice given based on the growth curve</td>
</tr>
<tr>
<td>13. Date of next attendance indicated</td>
</tr>
</tbody>
</table>

1 is a score (Yes)  0 is a no-score (No)

For the 13 categories, the total scores obtainable were $13 \times 5 = 65$. The scores attained in each facility were converted into percentages by dividing each score by 65 and multiplying by 100. The percentage scores obtained in each facility were presented as a bar graph and graded according to the system on Section 3.6.1.
3.6.3.3 Giving of nutritional advice (counselling)

Five mothers were randomly selected in each health facility, and through participant observation, assessment was made on the way nutrition counselling was delivered to them. The indicators used for the assessment are in Table 1e.

Table 1e: Indicators for assessment of the health workers’ counselling skills

<table>
<thead>
<tr>
<th>Correct counselling procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. H/W asked the age of the child</td>
</tr>
<tr>
<td>2. H/W counselled on the basis of the growth curve</td>
</tr>
<tr>
<td>3. H/W commented on the child’s weight</td>
</tr>
<tr>
<td>4. H/W gave relevant comments depending on the nutritional status of the child</td>
</tr>
<tr>
<td>5. H/W gave mother a chance to ask questions</td>
</tr>
<tr>
<td>6. H/W thanked/congratulated the mother</td>
</tr>
</tbody>
</table>

1 is a score (Yes)
0 is a no-score (No)

To obtain a maximum score of 30, the health worker had to obtain a score in all the six categories for the five mothers. The scores were then converted into percentages by dividing each score by 30 and multiplying it by 100. The percentage scores were then presented as a bar graph and graded according to the system on Section 3.6.1.

The researcher was also required to write down the total time taken to counsel each mother. After all the five mothers had been counselled, the average time that the H/Ws spent on each mother in the various facilities was calculated.
3.6.3.4. **Assessment of the follow-up registers**

The follow-up registers were assessed in each facility with a view to determining whether follow-up of malnourished children was being carried out by the health workers. This was done by use of nine indicators as shown in Table 1f.

**Table 1f: Indicators for the assessment of the follow-up registers**

<table>
<thead>
<tr>
<th>Observation made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Condition of register</td>
</tr>
<tr>
<td>2. Summation per month done</td>
</tr>
<tr>
<td>3. At-risk children mentioned</td>
</tr>
<tr>
<td>4. Note book for additional information kept</td>
</tr>
<tr>
<td>5. Used to show areas most hit by malnutrition</td>
</tr>
<tr>
<td>6. Used to identify nutrition problems</td>
</tr>
<tr>
<td>7. Used to identify medical problems</td>
</tr>
<tr>
<td>8. Used to plan for home visits</td>
</tr>
<tr>
<td>9. Record of home visits made</td>
</tr>
</tbody>
</table>

Indicator One: 1 is a score (good)
0 is a no-score (torn/dirty)

Rest: 1 is a score (Yes)
0 is a no-score (No)

The total score obtainable was therefore nine and the scores obtained were presented in a table and graded according to the system in Section 3.6.1.

3.6.4 **Accuracy and condition of the weighing machines**

The accuracy of the weighing machines was assessed by placing a series of standard weights on the machines and taking the reading.
The scales were then classified according to their degree of error, as follows:

- \( <100\text{g error} \) - accurate = 1
- \( >100\text{g error} \) - inaccurate = 0

The condition of the scales was also assessed using the four indicators in Table 1g.

**Table 1g: Indicators for assessment of the condition of the scales**

<table>
<thead>
<tr>
<th>Observation made</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical condition of scale</td>
</tr>
<tr>
<td>2. Position of pointer before weighing</td>
</tr>
<tr>
<td>3. Frequency of checking</td>
</tr>
<tr>
<td>4. Frequency of repair/replacement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator One:</th>
<th>1 is a score (good)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 is a no-score (not good)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator Two:</th>
<th>1 is a score,(at zero)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 is a no-score (not at zero)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator Three:</th>
<th>1 is a score (regularly)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 is a no-score (never)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator Four:</th>
<th>1 is a score (regularly)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 is a no-score (never)</td>
</tr>
</tbody>
</table>

The maximum score obtainable was four and a scale was considered in good condition if it scored a total of four out of four.
3.6.5 Adequacy of growth monitoring supplies

The H/A were interviewed on the adequacy of the GM supplies in their facilities. The indicators used for assessment are shown in Table 1h.

Table 1h: Indicators for assessment of adequacy of GM supplies

<table>
<thead>
<tr>
<th>Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Availability</td>
</tr>
<tr>
<td>2. Sufficiency</td>
</tr>
<tr>
<td>3. Frequency of use</td>
</tr>
<tr>
<td>4. Condition</td>
</tr>
</tbody>
</table>

Indicator One: 1 is a score (available)
0 is a no-score (not available)

Indicator Two: 1 is a score (sufficient)
0 is a no-score (not sufficient)

Indicator Three: 1 is a score (used regularly)
0 is a no-score (Never used)

Indicator Four: 1 is a score (Good)
0 is a no-score (Torn/dirty)

Eight growth monitoring supplies were assessed using four indicators and thus the maximum score obtainable was 32. The various scores attained in the different facilities were converted into percent by dividing them by 32 and multiplying by 100. These percentages were presented in a bar graph and graded according to the system in Section 3.6.1.

Finally, in order to determine the general performance of the facilities in the assessment, scores of seven assessment criteria were added together and the facilities graded. These criteria and the maximum scores possible for each are in Table 1i.
3.6.6 The users of the programme (the mothers)

Mothers were interviewed on their demographic characteristics such as age, religion, marital status, relationship with the household head, occupation and educational status. They were asked questions on the amount of time they spent coming to the facility, waiting and being attended to, and thus the total amount of time they spent at the facility on each weighing session. On a scale of one to five, the mothers were also asked to rate their rapport with the health workers. Their attitudes towards the programme were sought by inquiring from them whether they thought the programme had benefitted their children, their general attitudes towards the programme, whether they were satisfied with the services and their suggestions as to how they thought the programme could be improved.
3.7 Data quality and control

For data quality and control, observations were made on what the health workers said they did, to ascertain that they actually did it. This was done by observing how they carried out each GM procedure from the weighing, plotting of weights onto the growth charts, to counselling of each individual mother. For difficult or sensitive questions, the interviewer probed to ensure that the answers given were meaningful, clear and complete. All the filled questionnaires were checked for completeness at the end of every working day before proceeding to the other respondents. Further, once the data were collected and entered into the computer, frequencies and cross-tabulations were done to check for errors that may have occurred during data entry and to check for consistency of response between the questions.

3.8 Methods of Data Analysis

Data entry was done using the DBASE programme (Version 4), and analysis was carried out using SPSS Version 4.2 (1992). Descriptive analysis was produced as frequencies, means, cross tabulations, tables and figures. These were produced in SPSS and Harvard Graphics Version 3.0 (1994). The chi-square test was carried out between certain variables to establish whether there were any associations between them.
CHAPTER FOUR: RESULTS

Introduction

There were various criteria used to assess the implementation of the GM programme in the health facilities. The different facilities scored differently in these criteria. Therefore for each criteria, each facility was scored and graded according to the system outlined in Section 3.6.1 of the Study Methods. The general performance of all the nine facilities in the study were determined (as explained in Section 3.6.5). Table 2 shows the results.

Table 2: Total scores attained by the various facilities on seven assessment criteria

<table>
<thead>
<tr>
<th>Facility</th>
<th>Total score</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Karen</td>
<td>121</td>
<td>67</td>
</tr>
<tr>
<td>2. Makadara</td>
<td>121</td>
<td>67</td>
</tr>
<tr>
<td>3. Lunga Lunga</td>
<td>111</td>
<td>61</td>
</tr>
<tr>
<td>4. Huruma</td>
<td>110</td>
<td>61</td>
</tr>
<tr>
<td>5. Kariokor</td>
<td>109</td>
<td>60</td>
</tr>
<tr>
<td>6. Waithaka</td>
<td>106</td>
<td>58</td>
</tr>
<tr>
<td>7. Kariobangi</td>
<td>101</td>
<td>56</td>
</tr>
<tr>
<td>8. Embakasi</td>
<td>90</td>
<td>50</td>
</tr>
<tr>
<td>9. East Leigh</td>
<td>78</td>
<td>43</td>
</tr>
</tbody>
</table>

Mean = 105
SD = 14

The facilities were then graded according to the grading system on Section 3.6.1 of the Study Methods as follows:

Good: Karen and Makadara

Fair: Lunga Lunga, Huruma, Kariokor and Waithaka

Poor: Kariobangi

Very poor: Embakasi and East Leigh
4.1. Demographic characteristics of the study population

Table 3 presents the demographic characteristics of the study population (the health administrators (H/A), the health workers (H/Ws) and the mothers).

Table 3: Demographic characteristics of the study population

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>H/A (N = 9)</th>
<th>H/Ws (N = 18)</th>
<th>Mothers (N = 384)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1. Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Male</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>- Female</td>
<td>9</td>
<td>100</td>
<td>16</td>
</tr>
<tr>
<td>2. Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- &lt;25 years</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>- &gt;25 years</td>
<td>9</td>
<td>100</td>
<td>17</td>
</tr>
<tr>
<td>3. Religion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Christian</td>
<td>8</td>
<td>89</td>
<td>18</td>
</tr>
<tr>
<td>- Muslim</td>
<td>1</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>- Others</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>4. Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Married</td>
<td>7</td>
<td>78</td>
<td>18</td>
</tr>
<tr>
<td>- Single</td>
<td>1</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>- Others</td>
<td>1</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>5. Occupation (health staff)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Nursing</td>
<td>9</td>
<td>100</td>
<td>14</td>
</tr>
<tr>
<td>- Clinic assistants</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Occupation (mothers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Employed/business</td>
<td>-</td>
<td>-</td>
<td>119</td>
</tr>
<tr>
<td>- No employment/no business</td>
<td>-</td>
<td>-</td>
<td>265</td>
</tr>
<tr>
<td>6. Academic status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No schooling</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>- Primary school</td>
<td>3</td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>- Secondary school</td>
<td>6</td>
<td>66</td>
<td>13</td>
</tr>
<tr>
<td>- Above secondary</td>
<td>-</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>- Adult literacy</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
In total, 27 health personnel were interviewed. Most of them were females (93%), above 25 years of age (96%), were mainly Christians (96%) and were married (93%). In addition, most of them (85%) were professional nurses by occupation while 70% of them had had secondary school education.

More than two-thirds of the mothers (69%) were 25 years old and below, most were Christians (96%) and were married (86%). In addition, more than two-thirds of them (69%) were neither employed nor in any form of business, while more than half of them (56%) had had primary school education.

4.2 Attitudes of the Health Administrators towards the programme

Seven H/A felt that the growth monitoring programme was not satisfactory while the other two felt otherwise. Out of the 10 reasons given for the apparent dissatisfaction with the programme, seven were related to "lack of supplies and resources" while the other three were related to "lack of follow-up of malnutrition cases". Table 4 shows the distribution of the H/A by their responses on whether they thought some GM components were satisfactory or not.
Table 4: Distribution of the health administrators by some GM components: whether satisfactory or not (N=9)

<table>
<thead>
<tr>
<th>GM aspect</th>
<th>Satisfactory</th>
<th>Not satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Community motivation</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>2. Integration with PHC activities</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>3. Data collection</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>4. Coverage of target population</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>5. Staff motivation</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6. Staff training</td>
<td>4</td>
<td>5*</td>
</tr>
<tr>
<td>7. Equipment and supplies</td>
<td>3</td>
<td>6*</td>
</tr>
</tbody>
</table>

Marked with an asterisk (*) are the GM components that were thought to be unsatisfactory by more than half of the H/A. These are:

(i) Equipment and supplies and

(ii) Staff training.
Table 5 presents the solutions they proposed on these components they considered unsatisfactory.

Table 5: Solutions proposed by the health administrators for unsatisfactory components (N=9)

<table>
<thead>
<tr>
<th>GM aspect</th>
<th>Solutions</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Equipment and supplies</td>
<td>- Ensure supplies availability depending on the number of people in each facility</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>- Provide more equipment and supplies</td>
<td>2</td>
</tr>
<tr>
<td>2. Staff training</td>
<td>- Give more refresher courses to staff</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>- Give more seminars</td>
<td>4</td>
</tr>
</tbody>
</table>

On being asked to comment on the design of the present child health cards, eight of the H/A said it was good. One of them felt that the design could be improved. The improvements she suggested were:

(i) to include the milestones of the life of a young child so that the health worker and the mother can easily see the developmental stages of a child and

(ii) to have the hepatitis B vaccine included as a compulsory vaccine.

4.3 GM activities that the health administrators are involved in

The longest serving health administrator (one) had been in that position for 15 years while the shortest time served was 2 months (one). Five of the H/A had received training on GMP from the Nairobi Nutrition Project. Of these, four of them had received the training only once.
one had received the training twice. All them (9) were involved in growth monitoring activities in the various facilities. Eight of the H/A carried out weighing of the children and other activities such as counselling, training and equipment ordering while one carried out counselling, nutrition statistics and supervision of activities in the facilities.

Eight health administrators received GM data from their staff. Of these, six of them received the data monthly while two received them daily. Seven H/A then sent the data to the Department of Public Health divisional headquarters while one kept the data in the facility for purposes of record keeping. Table 6 shows the scores attained in each facility (maximum score=5) on assessment of the nutrition activities mentioned in the report books. Eastleigh health centre was not scored because they did not have report books.

Table 6: Scores attained on assessment of the report books by facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kariobangi</td>
<td>5</td>
</tr>
<tr>
<td>2. Embakasi</td>
<td>3</td>
</tr>
<tr>
<td>3. Makadara</td>
<td>3</td>
</tr>
<tr>
<td>4. Huruma</td>
<td>3</td>
</tr>
<tr>
<td>5. Lunga Lunga</td>
<td>2</td>
</tr>
<tr>
<td>6. Waithaka</td>
<td>2</td>
</tr>
<tr>
<td>7. Karen</td>
<td>2</td>
</tr>
<tr>
<td>8. Kariokor</td>
<td>2</td>
</tr>
<tr>
<td>9. Eastleigh</td>
<td></td>
</tr>
</tbody>
</table>

Mean = 3 and SD = 1
These facilities were then graded as follows:

- Good: Kariobangi
- Fair: Embakasi, Makadara and Huruma
- Poor: Lunga Lunga, Waithaka, Karen and Kariokor
- Very poor: Eastleigh

The H/A were asked about the procedures the health staff used in dealing with cases of growth faltering. They gave various responses whose distribution is shown on Table 7.

**Table 7: Distribution of the health administrators by procedures used by health staff in dealing with cases of growth faltering**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>H/A (N=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>1. Give nutrition education</td>
<td>5</td>
</tr>
<tr>
<td>2. Refer for supplement feeds</td>
<td>3</td>
</tr>
<tr>
<td>3. Do home-visiting</td>
<td>2</td>
</tr>
<tr>
<td>4. Refer to hospitals</td>
<td>2</td>
</tr>
</tbody>
</table>

4.4 Knowledge of the health workers (H/Ws) on activities involved in GM

The health workers interviewed were the ones involved with the day-to-day implementation of the GM system in the various facilities. Over half of them (11) had not received training from the NNP on growth monitoring. All the H/Ws had heard of the term "growth monitoring". They were asked to state the activities involved in GM.

Table 8 shows the distribution of the scores and grades they attained.
Table 8: Distribution of the health workers by the scores attained on assessment of their knowledge of activities involved in GM.

<table>
<thead>
<tr>
<th>Scores (out of 6)</th>
<th>Health Workers (N=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Good (&gt;5.2)</td>
<td>3</td>
</tr>
<tr>
<td>Fair (5.1 to 3.5)</td>
<td>6</td>
</tr>
<tr>
<td>Poor (3.4 to 1.8)</td>
<td>7</td>
</tr>
<tr>
<td>Very Poor (&lt;1.7)</td>
<td>2</td>
</tr>
</tbody>
</table>

Mean=3.5
SD =1.7

The health workers were assessed on their knowledge of how to use the curve on the growth charts as a base for advice (as shown from Appendices C to H). 14 made the correct interpretations on the different growth-lines provided. Four of them failed to interpret the growth chart that had a growth-curve "below the line" (Appendix C) correctly.

They reasoned that since the growth-line was steady and followed the shape of the reference line, the child was growing well and therefore did not give any recommendations for the child's improvement.
However, all of them gave the correct suggestions on what they would do if they encountered a child with either kwashiokor or marasmus.

Some of the procedural activities that the health workers performed as part of the GM programme included identification of malnourished children. Most of them identified a child with protein-energy malnutrition (PEM) through weighing (13), while 5 did so through observation. Seventeen health workers identified the causes of the PEM through questioning the mother and taking a background history of the child, while one H/W did so through visiting the children at their homes. Over half of the health workers (12) reported that they carried out follow-up of malnourished and "at-risk" children through visiting them at their homes. Six of them did so through giving the mothers frequent return dates.

Though home-visiting was the method most used to follow-up malnutrition cases, 15 of the H/Ws encountered constraints that prevented them from carrying out effective home-visiting. Most of them (14) identified lack of transport as the biggest constraint to following up cases at their homes. The other constraints identified were mobility of families (8) and shortage of staff (5). Most of the health workers (11) referred malnutrition and "at-risk" cases to Kenyatta National Hospital (KNH). Seven of them referred them to the clinical officer for treatment while four health workers referred malnourished and "at-risk" children to nearby NGOs that provided supplementary food to them.
4.5 The technical abilities of the health workers in growth monitoring

4.5.1 Weighing skills

On assessment of the health workers' weighing skills, out of a possible score of 35, the mean score was 30.1 with a SD of 4.6. On converting these scores into percentage, Figure 3 shows their distribution. These facilities were graded as follows:

Good: Huruma and Makadara

Fair: Kariokor and Lunga Lunga

Poor: Waithaka and Embakasi

Very poor: Kariobangi, Eastleigh and Karen
Figure 3: Scores attained in the various health facilities on health workers' weighing skills
After assessing 45 children (5 children per facility) using the criteria outlined in Table 1c (Section 3.6.3), 43% of the children were placed on the scale before the pointer had been adjusted to zero. All the children had been undressed before being placed on the weighing scales. Table 9 shows the distribution of the children who were weighed against the assessment criteria that was not correctly done.

Table 9: Distribution of children weighed by assessment criteria not correctly done

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>% of children weighed (N=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Weight measurements not in agreement with interviewer’s</td>
<td>56*</td>
</tr>
<tr>
<td>2. Scale was not read at eye-level</td>
<td>36</td>
</tr>
<tr>
<td>3. Recording of weight measurements not correct</td>
<td>18</td>
</tr>
<tr>
<td>4. Did not wait for needle to stop wobbling</td>
<td>9</td>
</tr>
<tr>
<td>5. Person weighing not the same one recording</td>
<td>7</td>
</tr>
</tbody>
</table>

More the 50% of the weights taken by the health workers were different form those taken by the researcher (marked with an asterisk). This was because, after weighing each child, most of the health workers did not adjust the scale back to zero for the next child being weighed.

4.5.2 Filling the child health cards

After assessing the filled child health cards, out of a possible score of 65, the mean score was 44.2 with a SD of 2.7. Figure 4 shows the distribution of the scores after conversion into percentage. These facilities were graded as follows:
Good: Karen and Makadara

Fair: Lunga Lunga, East leigh and Kariokor

Poor: Waithaka

Very poor: Kariobangi, Embakasi and Huruma

Figure 4: Scores attained in the various health facilities on the filling of the child health cards
After assessing 45 cards (5 cards per facility) using the criteria outlined in Table 1d (Section 3.6.3), Table 10 shows the distribution of the criteria that were not correctly done. In all the cards, the date of birth and the date for the next attendance to the facility had been clearly indicated. The risk factors had not been indicated in 98% of the cards.

Table 10: Distribution of the child health cards by assessment criteria not correctly done

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>% of cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Incorrect advice given</td>
<td>82*</td>
</tr>
<tr>
<td>2. Incorrect interpretation of growth curve</td>
<td>64*</td>
</tr>
<tr>
<td>3. Incorrect joining of curve</td>
<td>44</td>
</tr>
<tr>
<td>4. Birth weight not recorded</td>
<td>39</td>
</tr>
<tr>
<td>5. Incorrect plotting of weight</td>
<td>11</td>
</tr>
</tbody>
</table>

The criteria marked with an asterisk are the ones that had not been correctly done in over 50% of the cards that were assessed.

4.5.3 Giving of nutritional advice (counselling)

East Leigh health centre did not offer counselling sessions to the mothers who brought their children for growth monitoring. As a result, this facility did not have a score in this skill. Out of a possible score of 30, the mean score was 17.8 with a SD of 8.3.
Figure 5 shows the distribution of the scores after conversion into percentage. These facilities were graded as follows:

Good: Karen

Fair: Kariobangi, Lunga Lunga, Waithaka and Makadara

Poor: Embakasi, Huruma and Kariokor

Very poor: Eastleigh
The researcher carried out an observation of the health workers as they counselled the mothers.

Table 11 shows the distribution of mothers observed by the counselling criteria not correctly done.

Table 11: Distribution of mothers observed by counselling criteria not correctly done

<table>
<thead>
<tr>
<th>Counselling criteria</th>
<th>% of mothers (N=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mothers not thanked/congratulated</td>
<td>85*</td>
</tr>
<tr>
<td>2. H/W does not comment on the child’s weight</td>
<td>35</td>
</tr>
<tr>
<td>3. Mother not given a chance to ask questions</td>
<td>28</td>
</tr>
<tr>
<td>4. H/W does not comment on the diet</td>
<td>23</td>
</tr>
<tr>
<td>5. H/W does not look at the child’s card</td>
<td>8</td>
</tr>
</tbody>
</table>

The greatest weakness in this criteria was that most of the mothers were not congratulated on the baby’s progress (marked with an asterisk). The average time taken to counsel the mothers was 3.5 minutes per mother. This was below the recommended time of 5-15 minutes.

4.5.4 The follow-up registers

Although more than half (12) of the H/Ws reported that they carried out follow-up of malnourished children to their homes, this was not quite the case on assessment of the follow-up registers because these registers were present in only five of the facilities. After assessing the follow-up registers, out of a possible score of 9, the mean score was 2.4 with a SD of 2.4. Table 12 shows the distribution of the scores attained in the various facilities. These facilities
were graded as follows:

Good: Kariobangi, Waithaka and Makadara

Fair: Karen and Kariokor

Poor: Embakasi, Lunga Lunga, East leigh and Huruma (did not have follow-up registers)

Table 12: Scores attained on assessment of the follow-up registers by facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kariobangi</td>
<td>5</td>
</tr>
<tr>
<td>2. Waithaka</td>
<td>5</td>
</tr>
<tr>
<td>3. Makadara</td>
<td>5</td>
</tr>
<tr>
<td>4. Karen</td>
<td>4</td>
</tr>
<tr>
<td>5. Kariokor</td>
<td>3</td>
</tr>
<tr>
<td>6. Embakasi</td>
<td>0</td>
</tr>
<tr>
<td>7. Lunga Lunga</td>
<td>0</td>
</tr>
<tr>
<td>8. East leigh</td>
<td>0</td>
</tr>
<tr>
<td>9. Huruma</td>
<td>0</td>
</tr>
</tbody>
</table>

Mean = 2.4
SD = 2.4

In these five facilities, the condition of the registers was good (they were neither torn nor dirty).

4.6 Accuracy and condition of the weighing machines

In each facility, there were two weighing machines. One was a basin scale (used for weighing babies) and the other was a platform scale (used for weighing older children able to stand, and adults). After assessment of their accuracy in weight measurements, Table 13 shows the scores the various facilities attained.
Table 13: Scores attained on assessment of the accuracy of the weighing scales by facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>Score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basin</td>
<td>Platform</td>
</tr>
<tr>
<td>1. Kariobangi</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2. Embakasi</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3. Lunga Lunga</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Waithaka</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5. Karen</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>6. Makadara</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. East leigh</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8. Huruma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9. Kariokor</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Thereafter, the scales were graded according to the system in Section 3.6.4 as follows:

44% of scales - accurate (1)

56% of scales - inaccurate (0)

The pointer was not at zero in two of the basin scales and these had to be adjusted all the time before placing the child on the weighing machine. In Kariobangi health centre, the basin scale was faulty and could not be adjusted to zero at all. As a result, the weights were taken when the pointer was not at zero.

All the platform scales and four of the basin scales were in good condition. that is, they were not rusted, defaced, damaged or have any parts which were missing. In addition, according to the health administrators, the scales were never checked to ascertain that they were still reading the correct weights.
Adequacy of growth monitoring supplies

In all the facilities, there was a shortage of GM supplies at the time of the study. The H/A (5) reported that when they were faced with a shortage, they requested for more supplies (especially the child health cards). Three of them reported that they improvised by using other types of cards, papers or by photocopying the child health cards and one reported that she asked the mothers to buy books. On assessment of the adequacy of the GM supplies in the facilities, out of a possible score of 32, the mean score was 5.6 with a SD of 3.2. Figure 6 shows their distribution after converting the scores into percentage. These facilities were graded as follows:

Good: Karen and Kariokor

Fair: Lunga Lunga and Makadara

Poor: Kariobangi, Embakasi, East Leigh and Huruma

Very poor: Waithaka
Figure 6: Scores attained on assessment of the adequacy of GM supplies in the health facilities
Table 14 shows the distribution of the facilities by the supplies that were available, sufficient and in good condition. None of the facilities had the reference booklet that gives guidelines on how to give nutrition counselling called “improving young child feeding”.

Table 14: Distribution of facilities by GM supplies that were available, sufficient and in good condition (N=9).

<table>
<thead>
<tr>
<th>GM supplies</th>
<th>Available</th>
<th>Sufficient</th>
<th>Good condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tally sheets</td>
<td>5</td>
<td>1*</td>
<td>4</td>
</tr>
<tr>
<td>2. Visual aids</td>
<td>4*</td>
<td>1*</td>
<td>4</td>
</tr>
<tr>
<td>3. CHANIS forms</td>
<td>3*</td>
<td>0*</td>
<td>5</td>
</tr>
<tr>
<td>4. CHANIS-A guide for health workers</td>
<td>2*</td>
<td>0*</td>
<td>2</td>
</tr>
<tr>
<td>5. How to use the child health card booklet</td>
<td>2*</td>
<td>0*</td>
<td>2</td>
</tr>
<tr>
<td>6. Follow-up booklets</td>
<td>1*</td>
<td>0*</td>
<td>1</td>
</tr>
</tbody>
</table>

The tally sheets were the only supplies available in more than half of the facilities. The rest of the supplies were available in only less than half of the facilities (marked with an asterisk). Hence, the adequacy of GM supplies was poor because most of the supplies were not available, and in cases where they were available, they were not sufficient.
4.8 The users of the programme (the mothers)

4.8.1 Age

The ages of the mothers ranged from 15 to 46 years, with an average of 24 years, SD of 4.8 and a mode of 20. More than two-thirds of the mothers were 25 years old and below (67%), while 33% were 25 years and above. The youngest child was six months while the oldest one was 43 months. The average child's age was 10.8 months, the mode was 9 and the SD was 5.9. About three-quarters (73%) of the children who attended the facility were between the ages of 6-11 months. 22% were in the 12-23 months age-group while only 5% were more than 24 months old. The difference between the number of times the younger children had been to the facilities as compared to the older ones was significant (chi-square=100, df=2, p<0.05), showing that attendance to the facility decreased with age.

4.8.2 Mothers' occupation

For the purpose of this study, mothers who were in any form of gainful employment or who were in business (self-employed) were considered to be employed while those who did not have any form of employment or business were considered not employed. The mothers' occupation did not influence the number of times they attended the facility. The difference between the frequency the employed mothers attended the facility as compared to the un-employed mothers was not significant (chi-square=1.1, df=1, p>0.05). However, more of the employed mothers (69%) felt that the programme interfered with their daily activities as compared to the un-employed mothers. The differences were significant (chi-square=6.6, df=1, p<0.05).
4.8.3 Mothers attitudes towards the programme

4.8.3.1 Programme interference with mothers' daily activities

More than three-quarters of the mothers (77%) felt that the programme did not interfere with their daily activities in any way, while 23% felt otherwise (most of them were employed mothers). Table 15 shows the distribution of the mothers who felt that the programme interfered with their daily activities by the reasons they gave.

Table 15: Distribution of mothers who felt the programme interfered with their daily activities by the reasons given.

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Mothers (N=86)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>1. Have to postpone household chores</td>
<td>53</td>
</tr>
<tr>
<td>2. Have to close business</td>
<td>17</td>
</tr>
<tr>
<td>3. Have to abscond classes/work</td>
<td>10</td>
</tr>
<tr>
<td>4. Have to go to work late</td>
<td>3</td>
</tr>
<tr>
<td>5. Feel uncomfortable having to ask for</td>
<td>3</td>
</tr>
<tr>
<td>permission regularly</td>
<td></td>
</tr>
</tbody>
</table>

More than two-thirds of the mothers aged 25 years and less (71%) reported that the GM programme did not interfere with their daily activities. More younger mothers felt the programme did not interfere with their daily activities compared to the older ones. The difference was significant (chi-square=6.3, df=1, p<0.05).
4.8.3.2 Mothers’ rapport with the health workers

A majority of the mothers (80%) reported that they had a good rapport with the health workers, 15% had a fair rapport and 5% had a poor one. More of the younger mothers (less than 25 years) reported a good rapport with the health workers compared to the older ones (more than 25 years). The differences were significant (chi-square = 8.6, df = 2, p < 0.05).

4.8.3.3 Mothers’ perception of the programme’s benefit to their children

More than two-thirds of the mothers (67%) reported that their general feelings towards the programme were good, 28% felt it needed to improve, 5% felt it was fair and less than 1% felt it was bad. They offered various opinions as to how they thought the programme had benefitted their children with. Most of them felt that the GM programme had contributed to their children being healthy and growing well. Table 16 shows the various ways the programme had benefitted the children (as reported by the mothers).
Table 16: Distribution of the various ways the programme had benefitted the children

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number (N=411)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1. Baby growing well and is healthy</td>
<td>114</td>
</tr>
<tr>
<td>2. Knows whether baby was gaining weight or not</td>
<td>104</td>
</tr>
<tr>
<td>3. Able to know baby’s progress</td>
<td>94</td>
</tr>
<tr>
<td>4. Advised on child feeding</td>
<td>41</td>
</tr>
<tr>
<td>5. Baby fully immunised</td>
<td>32</td>
</tr>
<tr>
<td>6. Baby treated when sick</td>
<td>22</td>
</tr>
<tr>
<td>7. Given advice when baby is sick</td>
<td>4</td>
</tr>
</tbody>
</table>

4.8.3.4 Mothers' satisfaction with the programme

Over two-thirds of the mothers were satisfied with the programme (72%). Of these, 57% had received nutrition education from the health workers while 43% had not. Most of the mothers who had received nutrition education were satisfied with the programme compared to those who have not received any. The differences were significant (chi-square = 12.7, df = 1, p < 0.05).

Table 17 shows the distribution of mothers’ satisfaction/dissatisfaction with the programme by the provision of nutrition education.
Mothers' satisfaction/dissatisfaction with the programme by provision of nutrition education

<table>
<thead>
<tr>
<th>Nutrition education</th>
<th>Mothers (N=384)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Satisfied (n=278)</td>
<td>Not satisfied (n=106)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n    %</td>
<td>n    %</td>
<td></td>
</tr>
<tr>
<td>Given</td>
<td>159  41%</td>
<td>69  31%</td>
<td></td>
</tr>
<tr>
<td>Not given</td>
<td>119  10%</td>
<td>37  17%</td>
<td></td>
</tr>
</tbody>
</table>

($x^2 = 12.7, df=1, p < 0.05$)

Mothers' satisfaction with the programme was also associated with a good rapport with the health workers. Among the mothers who were satisfied with the programme, 84% reported a good rapport with the health workers. More of the mothers who were satisfied with the programme also reported a good rapport with the health workers compared to those who reported a poor one. The differences were significant ($\text{chi-square} = 13.2, df=2, p < 0.05$).

Mothers' satisfaction with the programme was also related to whether they felt the programme interfered with their daily activities. Among the mothers who were satisfied with the programme, 82% reported that the programme did not interfere with their daily activities. More of the mothers who were satisfied with the programme also reported that the programme did not interfere with their daily activities compared to those who felt that the programme interfered with their daily activities. The differences were significant ($\text{chi-square} = 10.6, df=1, p < 0.05$).
4.8.3.5 Mothers' suggestions for improvement of the programme

Over two-thirds (69%) of the mothers gave various suggestions for improvement of the programme. In all, 370 suggestions were given. These suggestions were grouped and presented in Table 18.

Table 18: List of suggestions given by the mothers for improvement of the programme

<table>
<thead>
<tr>
<th>Suggestions</th>
<th>Number (N = 370)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increase the services that improve the programme(*)</td>
<td>140 38</td>
</tr>
<tr>
<td>2. H/Ws should improve their interpersonal skills with mothers</td>
<td>112 30</td>
</tr>
<tr>
<td>3. Make supplies available</td>
<td>72 20</td>
</tr>
<tr>
<td>4. Improve the health facilities</td>
<td>23 6</td>
</tr>
<tr>
<td>5. Increase the hours for clinic attendance</td>
<td>23 6</td>
</tr>
</tbody>
</table>

The suggestion (*) with the highest frequency, that is, to increase the services that improve the programme included:

(i) to have nutrition and health education

(ii) to have provision of supplementary food rations to take home

(iii) to weigh all the children even the sick ones

(iv) to give return dates after two weeks and not one month

(v) to stop charging for the services provided.
More of the mothers who gave suggestions for improvement of the programme (63%) were also satisfied with it compared to those who did not give any suggestions (37%). The differences were significant (chi-square = 37.6, df = 1, p < 0.05).
CHAPTER FIVE: DISCUSSION

5.1 The Health Administrators (H/A)

The H/A observed that the most dissatisfactory aspect in growth monitoring in their various facilities was lack of equipment and supplies. The child health cards which are a prerequisite for any GM programme, were totally lacking in eight of the facilities. Some of the health workers improvised the child health cards with books or pieces of paper. However, this did not help much because one cannot monitor a child’s growth without a growth chart. In the worst of conditions, the best way to improvise the child health cards is by photocopying them because then one is able to monitor the progress of a child’s growth.

In addition, most of the GM supplies were either not available or insufficient in the facilities. This means that essentially the GM programme was inadequate due to the lack of supplies. Taylor (1988) made similar observations when he pointed out that GM programmes have had problems with scales, growth charts and other GM supplies. He also noted that GM programmes with an adequately functioning GMP component were rare due to lack of resources.

5.2 The Health Workers (H/Ws)

More than half of the H/Ws had not received training on GM and yet, training of H/Ws is very important as it can be one of the factors leading to the failure of GM services. Badnote and Welch (1990) had similar experiences in Togo when they pointed out that some of the factors that led to the failure of government-run GMP services was inadequate staff training.
It was encouraging to note that most of the H/Ws made the correct interpretations on the growth charts. However, four of them contended that the growth chart showing a growth-curve that was "below the line" had good growth. These H/Ws reasoned that though the growth curve was below the third centile for girls, it was steady and followed the shape of that reference line. Gacoki (1993) made similar conclusions when he pointed out that such a growth curve which was below the reference was allowable if it was steady and followed the pattern of growth of that reference line. However, any child, even if born underweight, usually has a period of "catch-up growth" whereby his/her weight shoots up rapidly and, if the child is growing steadily, eventually goes above that reference line (Kogi-Makau, 1998). Therefore, it is important that the H/Ws educate mothers with such babies on frequency of feeding their children with energy-rich foods, so that the child's weight "catches-up" with the reference line and remains above it. This is the only way that the health worker and the mother can be sure that the child is growing well and maintains the recommended weight for his/her age. The MOH (Kenya) policy on classification of children who are below this line as malnourished is good because it serves as a warning to the H/Ws to take special care of these children and advise their mothers accordingly.

5.2.1 The health workers' weighing skills

There was a significant discrepancy between the weight recorded by the researcher and that recorded by the H/Ws carrying out the weighing. This was basically because in some of the scales ("detecto" ones), the H/Ws did not adjust the pointer to zero. Though these scales are cumbersome and adjusting them to zero for each child takes some time, where present, the
health workers should have been patient and should have been adjusting them to zero for each child, and hence record accurate weights. Although Gopalan (1992) argues that it is not necessary to perform weighing of children with mathematical precision, in my view, it is important and especially adjusting the scale back to zero for each individual child because precise weighing of children enables the H/Ws to identify any nutritional inadequacies early enough to allow for corrective interventions to take place. Most of these nutritional inadequacies can only be discovered through accurate weighing and charting.

5.2.2 Filling the child health cards

Most of the cards assessed did not have any interpretations of the growth line written on them. This was because according to the health workers, they did not have enough time to write on the card the advice that each mother had been given. They attributed this lack of time to the large numbers of mothers they had to handle during each session. However, in my view, it is important for the H/Ws to take time in writing down the interpretations of the curve and the advice given on each card because this way, follow-up of the child’s progress is made possible. In addition, another H/W at a different place and time can easily see the nutritional progress of the child and therefore make correct interpretations of his/her nutritional status.

5.2.3 Nutrition Counselling

It is amazing to note that at Eastleigh health centre, the health workers merely weighed the children and did not offer the mothers nutrition counselling. Such an exercise serves no useful purpose because the mothers leave the facility without knowing the weight progress of their
children. Also, the mothers who were counselled in the other health facilities were not thanked or congratulated on the baby's progress. Lack of positive reinforcement may make a mother drop-out of the programme simply because she is not handled well. Most of the H/Ws had a poor rapport with the mothers. It is important that a H/W learns how to listen and to elicit information from the mother and how to provide positive feedback and encouragement as well as appropriate advice. Some of these skills can be imparted during in service training and refresher courses. The H/Ws spend an average of 3.5 minutes in counselling each mother. Although this is less than the recommended time of 5-15 minutes (Latham, 1992), increasing the time spent in counselling would mean that the mothers have to wait for longer periods before being attended to, and therefore would end up spending a lot of time in the facility. This problem can be rectified if the staff in the facilities were increased so that they can be able to counsel each mother exhaustively.

5.3 The follow-up registers

Four of the facilities did not have follow-up registers. Yet the facilities that had them did not use them to show summation per month, to identify nutrition problems and a note book for additional information was not kept. This shows that follow-up of malnutrition cases to their homes was not done adequately. This lack of information on follow-up cases makes the GM system wanting because even if malnutrition cases are identified, there seems to be no intervention done. This lack of follow-up is the weakest link in the GM programme as pointed out by Latham (1984). He also contends that GM alone serves no purpose unless accompanied by some intervention, usually follow-up of malnutrition and "at-risk" cases.
5.4 Accuracy of scales

Out of a total of 18 scales, more than half (10) were inaccurate. This means that more than half of the readings of the babies' weights were inaccurate which led to inaccurate interpretations of their progress. These machines were inaccurate because they were never serviced, and some of them are very old. Eight of the H/A contended that the machines were never checked to ascertain whether they were reading the accurate weights. They were only repaired once they broke down. This can be rectified if the health administrators could supervise the GM sessions and ensure that the weighing scales are recalibrated and their accuracy verified on a regular basis (Burns and Rohde, 1988).

5.5 The mothers

The number of children brought to the facilities declined with age. The majority were in the 6-11 months age-group. Therefore, it seems like facility attendance is highest in the first year of a child's life when mothers take their children for immunisation. Despite continued insistence that GM should be a regular exercise until the child is three years old, this practice has been difficult to implement and it seems like immunisation is the main exercise that motivates mothers to take their children to the facilities. As a result, community-based GM had been emphasised over the years because these centres are in the communities and GM can be done quickly and regularly by the community health workers. Also, the mothers do not have to go all the way to the health facilities just for the purpose of weighing a child (according to the head of the Nairobi Nutrition Project).
More than two-thirds (71%) of the mothers were not told anything once the child was weighed. This was because there was a different person doing the counselling from the one weighing. However, not telling the mother anything after weighing her child is quite impersonal. In my view, the H/W weighing the child should at least make a brief comment on the baby’s weight, or congratulate her if the weight is good, and then refer the mother for counselling. This way, there is a humane touch to the whole procedure. It is also important because it ensures that the mother is included in the process of GM and is involved in the discussion of her child’s weight results (UNICEF, 1985).

The reason most mothers gave for the programme’s benefit to their children was that the baby was healthy and was growing well. This was attributed to bringing their children to the facilities for regular GM. However, despite the programme’s apparent failure, it is surprising that more than two-thirds of the mothers were satisfied with the programme. Those who were satisfied:

(i) had received nutrition education. This means that provision of nutrition education positively affected the way the mothers felt about the programme.

(ii) had a good rapport with the H/Ws. This also positively affected the way the mothers felt about the programme. Therefore, if the H/Ws have a good rapport with the mothers by being patient and kind to them, it can positively affect the way the mothers view the programme.

(iii) felt the programme did not interfere with their activities. This means that those mothers who knew how to create time to bring their children for GM also have a good attitude towards the programme.
(iv) gave suggestions for the improvement of the programme. Those mothers who were interested in the programme and wanted to see it improved also have a good attitude towards it.

The mothers attending the facilities highly appreciated health/nutrition education. This was the most frequently given suggestion as to how the programme could be improved. Therefore, if this service can be improved so that it is given everyday before the weighing sessions in a friendly and humane manner and allow the mothers to ask questions, it can have a positive impact on the utilisation of the service by the mothers.
6.1 Conclusions

From the assessment of the overall performance of the nine facilities in this study, two health facilities (Karen and Makadara) were graded as "good", four were graded as "fair" (Lunga Lunga, Waithaka, Huruma and Kariokor), one was "poor" (Kariobangi) and two were graded as "very poor" (Embakasi and Eastleigh). However, the facilities graded as "good" had some growth monitoring components lacking, such as tally sheets, CHANIS forms, follow-up booklets and visual aids. Therefore, this study concludes that the implementation of the growth monitoring programme in Nairobi’s health facilities was inadequate.

The health administrators were dissatisfied with the programme because it lacked supplies and resources to implement and sustain it. The health workers had a fair knowledge of the activities involved in growth monitoring. However, a majority of them did not know how to interpret the growth chart with a growth curve which was "below the line" correctly. They were not accurate while weighing the children because they did not always adjust the scale back to zero for each child. They knew how to plot the weights on the growth chart correctly. However, they did not write down the advice they gave the mothers on the cards. On provision of nutritional advice, the health workers did not give positive reinforcement to the mothers in that the mothers were not thanked or congratulated on the baby’s weight progress. Contrary to what the health workers reported, follow-up of malnourished children was not done as evidenced by the lack of follow-up registers in most of the facilities. In cases where they were present, they did not reflect any
information on follow-up cases.

More than half of the weighing machines did not record accurate weights. All the facilities had a shortage of supplies for growth monitoring. However, the mothers who were the users of the programme were satisfied with it although there was a high turn-over rate after a child completed immunisation.

6.2 Recommendations

i) To improve the morale of the health administrators, the Government and donor agencies should support the programme with the minimum supplies required to implement the programme effectively. Each health facility should at least have one functioning weighing machine. The child health cards should be provided for. In situations where the machines break down or the child health cards run out, then the H/A should have some money at hand to repair them and to photocopy the cards for the mothers. However, in view of declining Government and donor support, the H/A should consider introducing a minimum fee (Kshs. 20) to be charged to the mothers on each weighing session. Since the mothers were very motivated and satisfied with the programme, this would not be too much to ask for - and it would go a long way in helping to sustain the programme financially.

ii) For sustainability of the programme, the mothers and the community at large should be involved in it as much as possible. Due to the small number of health workers (two per
facility) who have to deal with the large number of mothers, the NCC should increase the number of mothers working in each facility. This would help to reduce their workload. Consequently, they would be able to take their time during weighing and therefore do it well, and they would also spent enough time with each mother during counselling. This way, the H/Ws would be motivated and satisfied with the programme. This notwithstanding, the Community Health Workers can be encouraged to be assisting in the weighing and charting, so that the health personnel can concentrate on counselling. The mothers can also be taught how to weigh and indicate the weight on the card, so that the health personnel can then plot it on the growth chart and give the relevant advice.

iii) The health workers should be given frequent training sessions so that they can be imparted with the technical knowhow on the correct procedures that should be followed in weighing children, filling the growth charts, nutrition counselling and follow-up. These training sessions should stress on the importance of good communication skills when the health workers are relating to the mothers, so that they are motivated to bring their children for growth monitoring (especially if they have to pay for it). The training sessions should also create awareness to the health workers on the importance of following-up the malnourished and "at-risk" children to their homes so that each child can recieve individualised advice depending on the situation at their homes.
Final Note

The study objective was to carry out an assessment of a GM programme. However, there were no readily available criteria that the researcher could use to come up with an assessment criteria. Therefore she had to create her own criteria for assessment. These criteria can be used in other similar studies. The grading system that was developed is also useful and it can be used for grading scores in assessment of other nutrition programmes. Finally, since the implementation of the GM programme has been on-going in Kenya for over 10 years now, it would be advisable in future to carry out a well-controlled longitudinal study to assess its impact on the health and nutrition of children.
REFERENCES


Ettyang, G.A (1988): The evaluation of a nutritional surveillance, growth monitoring and promotion programme: An overview of the coverage and quality of the services provided in Vihiga Division of Kakamega District (MSc. Thesis University of Nairobi): pp 1-2, 17, 30-33


Canada, International Development Research Centre (IDRC), 1993 Feb. pp 119-126


APPENDIX A1: Health Administrators’ questionnaire.

Assessment of child growth monitoring:

Form number : __________
Centre name : __________
Centre number : __________
Type of health facility : __________
Date : __________
Name of interviewer : __________
Name of respondent : __________
Occupation : __________
Job Title : __________

Codes:
Sex
1 = male
2 = female

Religion
1 = Christian
2 = Muslim
3 = Others

Marital status
1 = Single
2 = Married
3 = Separated
4 = Divorced
5 = Widowed

Qualification
1 = KRN/KRM
2 = EN/EM/HV
3 = EN/EM/HV/FP
4 = KRN/KRM/KEPI/FP
5 = KRN/KRM/Psychiatry
Knowledge and understanding of growth monitoring as it relates to present roles and responsibilities:

* For answers requiring a yes or a no, write 1 for Yes and 2 for No.

1. For how long have you been in charge of this health facility? (months)

2. Give me the numbers of health staff in your health facility and their numbers.

<table>
<thead>
<tr>
<th>Cadre</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a) KCO</td>
<td></td>
</tr>
<tr>
<td>2b) EN/EM/EPHNs</td>
<td></td>
</tr>
<tr>
<td>2c) EN/EM/HV/FP</td>
<td></td>
</tr>
<tr>
<td>2d) ECNs</td>
<td></td>
</tr>
<tr>
<td>2e) EN/EM</td>
<td></td>
</tr>
<tr>
<td>2f) EN</td>
<td></td>
</tr>
<tr>
<td>2g) EM</td>
<td></td>
</tr>
<tr>
<td>2h) KRN</td>
<td></td>
</tr>
<tr>
<td>2i) ECN/FP</td>
<td></td>
</tr>
<tr>
<td>2j) CBDs</td>
<td></td>
</tr>
<tr>
<td>2k) EM/FP</td>
<td></td>
</tr>
</tbody>
</table>

3a. Have you received any training from the Nairobi Nutrition Project on GMP?
   Yes/No [ ]

3b. If yes, how many times? [ ]

3c. How long ago was the training done? [ ]

4. Do you write any kinds of reports on growth monitoring activities?
   Yes/No [ ]
   (If yes), please let me have a look at the latest report.

4a) Date written ...............
4b) Type of report  

4c) Nutritional activities mentioned (Yes/No)
   
   i) Number of normal weights
   
   ii) Number of underweights
   
   iii) Interventions given to underweights
   
   iv) Follow-up activities
   
   v) Referral activities

5. Are you involved in growth monitoring activities?
   Yes/No

   (If yes) What activities are you involved in? (Tick the relevant answer)
   
   a) Training
   
   b) Equipment (scales) ordering/distribution
   
   c) Equipment (cards) ordering/distribution
   
   d) Nutrition related statistics
   
   e) Technical field supervision
   
   f) Others (specify)

6. Do you receive any data on growth monitoring activities?
   Yes/No

   (If yes)
   
   a) Who supplies you with the data?

   b) What type of data is it?
      Raw (unsummarised) data = 1
      Summarised data = 2

   c) How often do you receive the data?
      Daily = 1
      Weekly = 2
      Monthly = 3
      Quarterly = 4
d) What do you do with the data?
   - Send it to the MOH as part of CHANIS = 1
   - Record keeping in the health centre = 2
   - Others (specify) [ ]

7. What procedures are recommended for the clinic staff to follow in dealing with various types of growth faltering?
   - Refer to hospital = 1
   - Home visits = 2
   - Nutrition education/counselling = 3
   - Nutrition demonstrations = 4
   - Others (specify) [ ]

9. Do you think the present system of growth monitoring in the city’s health centres is satisfactory?
   - Yes/No [ ]

   a) Give reasons for your answer

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

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

   ...................................................................................................................
b) Tell me whether the following criteria are satisfactory or not satisfactory as far as your health facility is concerned.

*Satisfactory = 1
Not satisfactory = 2

<table>
<thead>
<tr>
<th>Criteria</th>
<th>*</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverage of target population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequacy of staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport for staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration with other PHC activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. What comments do you have on the design of the present child health cards?
   Good = 1
   Not good = 2
   Can be improved = 3
   Others (specify) [ ]

10a. Give me the numbers of weighing scales available in your health facility
   i) Infant scale [ ]
   ii) Salter scale [ ]
   iii) Bathroom scale [ ]
   iv) Adult metric scale [ ]
   v) Others (specify) [ ]

10b. How many weighing bags do you have? [ ]

11a. What is the present stock of the child health cards? [ ]

11b. How do you get your supplies?
   MOH = 1
   City hall = 2
   Others (specify) = 3 [ ]

11c. Do you experience any problems of shortages?
   Yes/No [ ]

(If yes)
   i) When did you last face shortages? [ ]

   ii) What did you do about them?
      Requisition for more = 1
      Ask mothers to buy books = 2
      Others (specify) = 3 [ ]
**ADEQUACY OF SUPPLIES FOR GROWTH MONITORING:**

Tell me the number of GM supplies you have in the health facility, and whether they are available, sufficient, their frequency of use and their condition.

<table>
<thead>
<tr>
<th>Equipment and supplies</th>
<th>Available</th>
<th>No</th>
<th>Sufficient</th>
<th>Frequency of use</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Growth charts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANIS forms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up booklets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tally sheets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How to use the child health card booklet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving young child feeding chart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANIS. A guide for health workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Column 17  Column 19  Column 20

1- Available  1-sufficient  1-on every weighing
2-Not available  2-not sufficient  2-on some weighing sessions
3-never used

Column 21

1-Good
2-Torn
3-Dirty
4-Not applicable

Total Scores: [ ]
### Model, Frequency of Checking and Working Condition of Scales:

<table>
<thead>
<tr>
<th>Model of scale (specify)</th>
<th>Physical condition of scale</th>
<th>Position of pointer before weighing</th>
<th>Freq. of checking</th>
<th>Freq. of repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
</tbody>
</table>

Col. 23
1-Rusted
2-Defaced
3-Parts missing
4-None of the above (good)

Col. 24
1-At zero
2-Not at zero

Col. 25
1-Once a year
2-Twice a year
3-Quarterly
4-Once a month
5-Never checked

Col. 26
1-Repaired
2-Replaced
3-None of the above

Scores:
- Col. 23: 4-score
- Col. 24: 1-score
- Col. 25: 4-score
- Col. 26: 3-score

(For each model, total number of scores is 4)

Total scores: [ ]
APPENDIX A2: Health Workers’ questionnaire.

Evaluation of child growth monitoring and promotion:

Form number: ..................................................
Centre name: ..................................................
Centre number: ..............................................
Type of health facility: ......................................
Date: ................................................................
Name of interviewer: ........................................
Name of respondent: ........................................

Demographic data:

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
<th>Religion</th>
<th>Marital Status</th>
<th>Qualification</th>
<th>No. of years of schooling</th>
</tr>
</thead>
</table>

Codes:

Sex:  
1 = male
2 = female

Religion:  
1 = Christian
2 = Muslim
3 = Others

Marital status:  
1 = Single
2 = Married
3 = Separated
4 = Divorced
5 = Widowed

Qualification:  
1 = RN
2 = ECN
3 = EN/EM/PH
4 = EM/PH
5 = CBD
6 = A-I-C
7 = EN
8 = EN/EM
9 = SCA
Knowledge and understanding of growth monitoring as it relates to present roles and responsibilities: (For answers requiring a yes or a no, write 1 for yes and 2 for no)

1. Which year did you complete your professional training?

2. Which college were you trained in? .........................

3. For how long have you worked in this facility? (months)

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

4. Have you heard of the term “growth-monitoring”?  
   Yes/No
   (If yes) What activities are involved in growth monitoring?
   Weighing children = 1
   Plotting on the card = 2
   Interpretation/counselling = 3
   Health education = 4
   Compiling monthly statistics = 5
   Others (specify) = 6
   i) ................
   ii) ..............
   iii) ..............

5. What activities are you undertake in growth monitoring?  
   a) Weighing the children
   b) Plotting on the card
   c) Interpretation/counselling
   d) Health education
   e) Compiling monthly data
   f) Others (specify) ..............................................

6. Have you received any training in growth monitoring from the NNP?  
   Yes/No
   (If yes)
Growth monitoring decision making process on identification, nutrition education, follow-up and referral activities:

7. How do you identify a malnourished child?
   - Weighing =1
   - Plotting weights on the growth cards =2
   - By observation =3
   - Others (specify) =4

8. How do you identify the causes of the malnutrition in the children?
   - Questioning the mother=1
   - Home visits =2
   - Others (specify) =3

9a). How often (in a month) do you have group discussions with mothers on nutrition education and growth monitoring?

9b). What teaching aids do you use for teaching health education?
   - Flipcharts =1
   - Posters =2
   - Blackboard and chalk=3
   - Others (specify) =4

10. Do you ever carry out individual person-to-person counselling on nutrition education?
    - Yes/No

10a. (If yes) How do you identify the mothers who need this type of counselling?
    - After observing trend of weight on the card =1
    - Through casual observation of the children =2
    - Others (specify) =3
11a. Give me a brief description of how you carry out the following:

11a.i) Follow-up activities

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

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

11a.ii) Referral activities

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

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

11b) Do you have any constraints to home visiting?

Yes/No [ ]

(If yes) What are the constraints?
1- Lack of transport
2- Lack of funds
3- Lack of time
4- Shortage of staff [ ]
5- Others (specify) ..............................................

...............................................................
12. As shown from the growth charts that I shall show you, what action do you carry out for the following criteria?

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) A child whose weight point is below the growth line?</td>
<td></td>
</tr>
<tr>
<td>b) A child whose weight is decreasing?</td>
<td></td>
</tr>
<tr>
<td>c) A child whose weight is remaining the same (static)?</td>
<td></td>
</tr>
<tr>
<td>d) A child whose weight is increasing?</td>
<td></td>
</tr>
<tr>
<td>e) A child who is suffering from kwashiorkor?</td>
<td></td>
</tr>
<tr>
<td>f) A child who is suffering from marasmus?</td>
<td></td>
</tr>
</tbody>
</table>

13. What comment do you have on the design of the present-day child health cards?

Good = 1  
Not good = 2  
Can be improved = 3  

If 3, state how it can be improved.

........................................
........................................
14. Give me the following information from your records.

a). During the last month, how many malnourished children have you referred to the Village Health Workers for follow-up visits? [   ]

b). During the last month, how many malnourished children have had follow-up visits from your staff? [   ]

c). During the last month, how many malnourished children have you referred to hospital doctors? [   ]
APPENDIX A3: Technical abilities of the health workers in growth monitoring

Form number: ______________________
Centre name: ______________________
Centre number: _____________________
Type of health facility: ______________
Date: ______________________________
Name of interviewer: ________________
Name of respondent: _________________

1. a) **Weighing Skills:** (Randomly choose 5 children from the health worker carrying out the weighing and observe the task of weighing each child).

Table 1: Type of Scale

<table>
<thead>
<tr>
<th>No</th>
<th>Observation (1 = Yes, 0 = No)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scale correctly lying from a strong support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Scale at zero before placing child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Child undressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Child held by the body when being put on the scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Waited for needle to stop wobbling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Scale read at eye level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Person reading the weight the same one recording</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Col. 3

1-no clothing
2-has all clothing
3-has pants only

List the major errors observed:

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

Total scores: [  ]

1b) Health worker's accuracy of weight measurement: (Randomly choose five children who
1b) Health worker’s accuracy of weight measurement: (Randomly choose five children who have already been weighed and verify the accuracy of the weight measurements already recorded).

Table 2:

<table>
<thead>
<tr>
<th>Child age</th>
<th>Weight plotted on the card</th>
<th>Interviewer’s weight record</th>
<th>Weight measurements in agreement?</th>
<th>Recording of weight measurements correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
</tbody>
</table>

Col. 19
- 1-same weight record (within 100gms)
- 2-Card weight has +/- 100gms difference
- 3-Card weight has more than +/- 100gms difference

Col. 20
- 1-Yes
- 2-No

1c. Assessment of accuracy of the scales in reading weights.

i) Scale Type:..........................

<table>
<thead>
<tr>
<th>Load</th>
<th>Indication</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Score: [ ]
### Scale type: 

<table>
<thead>
<tr>
<th>Load</th>
<th>Indicator</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load value 1</td>
<td>Indicator 1</td>
<td>Error 1</td>
</tr>
<tr>
<td>Load value 2</td>
<td>Indicator 2</td>
<td>Error 2</td>
</tr>
<tr>
<td>Load value 3</td>
<td>Indicator 3</td>
<td>Error 3</td>
</tr>
<tr>
<td>Load value 4</td>
<td>Indicator 4</td>
<td>Error 4</td>
</tr>
</tbody>
</table>

**Score:** [ ]

Score: 1: accurate (<100g error)  
0: inaccurate (>100g error)
1.d) Checklist of the child health cards:
To be carried out by the interviewer: Randomly select 5 cards from the mothers and assess the following:
Yes = 1/ No = 0

Table 3:

<table>
<thead>
<tr>
<th>Observations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date (month) clearly indicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of birth recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth weight recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPI vaccine recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk factors recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diseases recorded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct plotting of weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct joining of weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct interpretation of growth curve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct advice based on the growth curve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date for next attendance indicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scoring:
1-score
0-no score

Total scores: [ ]
**OBSERVATION OF THE HEALTH WORKER CARRYING OUT THE COUNSELLING:**

i. **Nutrition counselling:** (Randomly choose 5 children from the health worker carrying out the counselling and observe the task of counselling each child).

   a). Table 4:

<table>
<thead>
<tr>
<th>Start time</th>
<th>Age of child</th>
<th>H/W looks at cards</th>
<th>N.S of the child</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Col. 2 Col. 3 Col. 4
   1-A:sked 1-Yes 1-NW/G 4-UW/G
   0-Not asked 0-No 2-NW/L 5-UW/L
   3-NW/S 6-UW/S

   b). Table 5:

<table>
<thead>
<tr>
<th>Nutrition reason for counselling</th>
<th>Comments on child's weight</th>
<th>Comments made by health worker on foods for child</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Col. 5 Col. 6 Col. 7
   1-Child sick 1-Yes 1-No comment
   2-Child not gaining weight 0-No 2-Give high energy foods
   3-Childloosing weight 3-Prepare easy to digest foods
   4-Child having good weight gain 4-Prepare mixed diets
   5-Exclusive breastfeeding 5-Exclusive breastfeeding
   6-Others(specify)...........
c) Table 6: (1-Yes and 0-No)

<table>
<thead>
<tr>
<th>No</th>
<th>gives client a chance to ask questions</th>
<th>Thanks/Congratulates mother</th>
<th>Finish time-F</th>
<th>Total time F-S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

d) Comment on the general rapport between the health worker and the mother.
1 = Health worker kind, friendly and patient
2 = Health worker aggressive and scolds mother
3 = Health worker carries out a monologue
4 = Mother is involved in the discussion

**Scoring:**

Col.2: 1-score
0-no score

Col.3: 1-score
0-no score

Col.6: 1-score
0-no score

Col.7: 1-no score
Score rest depending on age and nutrition reason for counselling.

Col.13&14: 1-score
0-no score
**Follow-up registers:** Ask for the follow-up registers in each health centre and observe the following:

a) Table 8:

<table>
<thead>
<tr>
<th>No</th>
<th>Condition of register</th>
<th>Summation per month</th>
<th>At risk children</th>
<th>Note book for additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Col. 21
1-Good
0-Torn/Dirty

Col. 22 & 23
1-Clearly shown
0-Not shown

Col. 24
1-Is kept
0-Is not kept

b) The follow-up register has been used to:

Table 9:

<table>
<thead>
<tr>
<th>Show areas most hit by malnutrition</th>
<th>Identify medical problems</th>
<th>Identify nutrition problems</th>
<th>Plan home visits</th>
<th>Record of home visits made</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
</tr>
</tbody>
</table>

Col. 25-29
1-Yes
0-No

c) Follow-up figures for children "at risk"

Table 10:

<table>
<thead>
<tr>
<th>Month</th>
<th>Year</th>
<th>Children needing follow-up</th>
<th>Total-recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

d) Child attendance at the health facility for the previous month

Table 11:

<table>
<thead>
<tr>
<th>New</th>
<th>Re-attendance</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scoring for table 8 & 9:**
Col. 21 - 29
1-score and 0 - no score
Total Score: [ ]
3. General observation of the environment:

Observe the general environmental cleanliness and atmosphere in the health facility using the following criteria and then score them accordingly.

Table 12:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floors</td>
<td></td>
</tr>
<tr>
<td>Flow of patients</td>
<td></td>
</tr>
<tr>
<td>Number of benches</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
</tr>
<tr>
<td>General cleanliness</td>
<td></td>
</tr>
<tr>
<td>General attitude of staff to mothers</td>
<td></td>
</tr>
</tbody>
</table>

Scoring:

1. Floors: Clean-1, Dirty-0
2. Flow of patients: Good-1, Not good-0
3. Number of benches: Adequate-1, Not adequate-0
4. Lighting: Good-1, Not good-0
5. General cleanliness: Good-1, Not good-0
6. General attitude: Good-1, Not good-0
APPENDIX A4: Mothers’ Questionnaire.

Assessment of child growth monitoring:

<table>
<thead>
<tr>
<th>Form number:</th>
<th>Centre name:</th>
<th>Centre number:</th>
<th>Facility type:</th>
<th>Date:</th>
<th>Name of interviewer:</th>
<th>Name of respondent:</th>
</tr>
</thead>
</table>

Demographic data on mother

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Religion</th>
<th>Marital Status</th>
<th>Occupation</th>
<th>Academic Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Codes:
- Religion: 1 = Christian, 2 = Muslim, 3 = Others
- Marital status: 1 = Single, 2 = Married, 3 = Separated, 4 = Divorced, 5 = Widowed
- Occupation: 1 = Housewife, 2 = Self-employed, 3 = Casual worker, 4 = Artisan, 5 = Office worker, 6 = Driver, 7 = Business, 8 = Civil servant, 9 = No employment, 10 = Farmer
- Academic status: 1 = no schooling, 2 = Primary education, 3 = Secondary education, 4 = Above sec education, 5 = Adult literacy
ATTITUDES OF THE MOTHERS TOWARDS THE PROGRAMME:

1. Do you have a child healthcard for your child?
   Yes/No [ ]

   a) If yes, do you have it with you?
      Yes/No [ ]

   b) How old is your child? (months) - confirm by looking at the card [ ]

2. Is this your first visit to this facility? Yes/No [ ]

   2a. (If no) How many times have you been to this facility?...........

3. Where do you stay? .........................................................

   3b. For how long have you been staying there? (months).............

4. What was the purpose of your coming to the facility today?
   To bring the child for growth monitoring = 1
   To bring the child for immunisation = 2
   To bring the child for treatment = 3
   Others (specify) = 4
   ................................................................. [ ]

5. After the child was weighed and his weight plotted on the card, what did the health staff do?
   .................................................................
   .................................................................

6. How much time do you take from your house to come to the health centre for growth monitoring? (in minutes)
   < 15 = 1
   16 - 30 = 2
   31 - 45 = 3
   46 - 60 = 4
   61 - 90 = 5
   > 90 = 6
   ................................................................. [ ]

7. How much time did you take at the health centre during your last visit? (in minutes)
   < 15 = 1
   16 - 30 = 2
   31 - 45 = 3
   46 - 60 = 4

- 106 -
61 - 90 = 5
> 90 = 6

8. Today, how long did you wait before being attended?
< 15 = 1
16 - 30 = 2
31 - 45 = 3
46 - 60 = 4
61 - 90 = 5
> 90 mins = 6

9. Does the programme interfere with your daily activities in any way?

9a. (If yes) How does it do so?

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

10. On a scale of one to five, how would you rate your working relationship with the health workers?
Very poor = 1
Poor = 2
Fair = 3
Good = 4
Very good = 5

10a. Have you ever been given any nutrition education in this health facility?
Yes = 1
No = 2

10b. (If yes) How would you rate the teaching?
Very poor = 1
Poor = 2
Fair = 3
Good = 4
Very good = 5

10c. In what areas were you taught?

i) ..................................................

ii) ..................................................

iii) ..................................................
10d. Which areas did you enjoy most?

i) ....................................................

ii) ..................................................

11a. Do you think your child has benefited from this programme?
Yes/No [   ]

11b. (If yes) How? ..........................................................

11c. (If no) What other child programmes can be introduced as an alternative?

12. What are your general feelings towards the programme?
Programme is good =1
Is fair =2
Is bad =3
Needs to improve =4 [   ]

13. Are you satisfied with the programme? Yes/No [   ]

14. How do you think the programme can be improved?

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

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

........................................................................
APPENDIX B: Map of Nairobi showing the chosen divisions and health facilities

Legend:
A: Kariobangi
B: Huruma
C: Embakasi
D: Kariokor
E: Eastleigh
F: Makadara
G: Lunga Lunga
H: Karen
I: Waithaka
Appendix C: A growth chart with a growth curve which is below the third centile for girls.
Appendix D: A growth chart with a growth curve which is decreasing
Appendix E: A growth chart with a growth curve which is static
Appendix F: A growth chart with a growth curve which is increasing
Appendix G: A picture of a child with kwashiokor
Appendix H: A picture of a child with marasmus