FACTORS ASSOCIATED WITH THE CONTINUATION OF GROWTH MONITORING AMONG CHILDREN 10 TO 59 MONTHS OLD IN NYAMIRA COUNTY, KENYA

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OCTOBER, 2015
DECLARATION

"This thesis is my original work and has not been presented for a Degree in any other University."

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I dedicate this work to my husband Patrick and sons; Gideon, Abel and Daniel, who have supported me throughout the study.
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DEFINITION OF TERMS

**Growth Monitoring (GM):** refers to the process of following the growth rate of a child (0-59 months old) in comparison to a standard by periodic, frequent anthropometric measurements in order to assess growth adequacy and identify faltering early (Garner et al., 2000).

**Growth Monitoring and Promotion:** is a prevention activity comprised of GM linked with promotion (usually counselling) that increases awareness about child (0-59 months old) growth; improves caring practices; increases demand for other services, as needed; and serves as the core activity in an integrated child health and nutrition program, when appropriate (WHO, 1986).

OPERATIONAL DEFINITION OF TERMS

**Continued Growth Monitoring (GM):** in this study referred to the practice of taking children for growth monitoring after immunization schedule was completed.

**Continued GM Coverage** was determined based on the proportion of children 10 to 59 months of age who were taken to the health facility purposely for growth monitoring after immunization. The denominator for this indicator was all children 10-59 months of age.

**Availability of Health Services:** referred to the physical presence of the delivery of the services (GM) which encompasses health infrastructures, personnel and service utilization (GM)

**Accessibility to Health Services:** referred to financial and physical ability with which respondents were able to obtain health services (GM and other services). Physical availability was determined by the distance (5 kilometres return journey from mothers’ home to the health facility as per the Kenya Ministry of Health guidelines).
Maternal Knowledge: referred to mothers information about continued growth monitoring based on the questions they were asked in the interviews during the study.

Maternal Practices: referred to the respondents’ habits (what they did regularly) in terms of taking their children or not taking them for growth monitoring.
ABBREVIATIONS AND ACRONYMS

DHMT  District Health Management Team
GM    Growth Monitoring
GMP   Growth Monitoring and Promotions
GOK   Government of Kenya
HH    Household
KDHS  Kenya Demographic and Health Survey
MOPHS Ministry of Public Health and Sanitation
UNICEF United Nations Children’s Fund
VCT   Voluntary Counselling and Testing
WHO   World Health Organization
ABSTRACT

Growth monitoring and promotion (GMP) is a preventive activity that uses growth monitoring, in measuring and interpreting growth. It facilitates communication and interaction with the caregiver to generate adequate action to promote child growth. GMP is meant for children 0 to 59 months of age, but available data indicates that for the majority it stops when immunization is completed at 9 months. Scientific data demonstrates that if growth monitoring (GM) is done appropriately, it can significantly improve the nutritional status of children. The factors influencing growth monitoring and promotion after 9 months in children have not been fully investigated. Improvement in the growth monitoring can only be successfully undertaken if the reasons why mothers do not continue after 9 months are investigated, so that appropriate actions are taken. The purpose of the study was to determine the factors influencing the continuation of growth monitoring among children 10-59 months old in Nyamira County. The study targeted mothers with children between 0 months to 59 months of age. The sample size was 409 mothers selected by simple random sampling procedure from 10 villages in two divisions of the County. The data was collected through a researcher-administered questionnaire during an interview in the respondents’ homes. Descriptive statistics (frequencies and percentages, means, and standard deviations) was used to describe the study population and the mothers’ growth monitoring practices. T-test was used to compare means for continuous variables (age of children, age of respondents) of those who continued and those who discontinued GM after immunization schedule was completed. Chi-square test was used to test for associations between categorical variables such as demographics and maternal knowledge on GM and the practice of continued GM. A p-value of <0.05 was used as the criterion for statistical significance. The study findings revealed that 80.9% of the respondents were knowledgeable about continued GM. The coverage for continued GM was 53.3% and 93.2% of the respondents had health facilities available within a 5 kilometre return journey. There were significant positive relationships between the practice of continued GM and maternal knowledge in terms of; the importance of taking children for GM regularly, importance of continued GM and understanding of the information displayed on the child health card (chi-square test; p<0.001). The findings also revealed that availability of health facilities within 5 km return journey influenced the practice of continued GM (chi-square test, p<0.001). Mothers of higher socio status and those with higher education levels were more likely to continue with GM. Similarly mothers who knew the health benefits of GM and understood information displayed on the child health card were more likely to practice continued GM. The study results will be disseminated to the community where the study was conducted to help them improve the practice of growth monitoring. Based on the findings of the study, the researcher recommends that health care professionals particularly those working in health facilities should strengthen health and nutrition education to mothers on the benefits of continued GM.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Growth monitoring (GM) is the process of following the growth rate of a child (0-59 months) in comparison to a standard by periodic anthropometric measurements in order to assess growth adequacy and identify faltering at early stages (UNICEF, 2008). Growth Monitoring Promotion (GMP) is a preventive activity that uses GM that is measuring and interpreting growth, to facilitate communication and interaction with caregiver and to generate adequate action to promote child growth (UNICEF, 2008).

GMP targets early detection of growth retardation in children, high risk of malnutrition/mortality, and provides health or nutrition education with the aim to improve nutrition status of the children. Though acute signs of malnutrition are easily noted by health workers, it is often too late, and always more expensive, to help the severely malnourished child (Ashworth et al., 2008; Ministry of Health (MOH)/UNICEF, 2004). GMP alerts both the health care worker and the mother early enough that the child's health is deteriorating and enables the family to correct the problem while the solution is still within its means (MOH, 2007).

GM is an activity with major nutritional significance and forms the basis of comprehensive child health care (Ettyang et al., 1993). It can greatly strengthen preventive health programs because growth is the best general index of the health and well-being of the whole community/nation, (birth weight is of particular significance in determining the nutritional status of the community). Low birth weight is a good indicator of subsequent illness and death in children (African
Medical and Research Foundation (AMREF, 2004). There is evidence that if appropriately done, GMP can significantly improve the nutrition status of children below five years (UNICEF and MOH, 2004).

GM should start at birth and continue until the child is 59 months of age (WHO, 2006). It is carried out at the health facility and/or community levels (Ministry of Public Health and Sanitation (MOH, 2004). The GM index for many years has been weight for age. Recent scientific evidence has shown that growth monitoring of children can be done using the height for age (stunting) from birth to 2 years because this is the fastest period of growth and development in all aspects (Ministry of Medical Services {MOMS}, 2010). Scientific evidence demonstrates that most malnutrition occurs at the age of 18 to 24 months and any intervention after 2 years does not reverse the negative changes that have occurred (Bisimwa, 2009).

Globally, GM is one of the best methods for assessing the health of the baby and essential for new baby care (UNICEF {http://www.articlesbase.com/babies-articles/baby-health-and-growth-monitoring-1865402.html#ixzz17YI9gZp9 Accessed 13th April. 2013}). In a survey carried out in 202 countries in Africa, Asia, Europe and Latin America and Caribbean, 154 of 178 Ministries of Health (88%) reported that they monitor child growth (De Onis et al., 2004). GMP programmes have been intensively promoted to improve children’s health in developing countries (Roberfroid et al., 2005). Starting from early 1980s, GM was promoted as one of the key components of community nutrition programmes. Since then, in areas where GMP was implemented as part of a package of nutrition and health programs, positive impacts on child growth outcomes have been reported (Ashworth et al., 2008; Hossain et al., 2005, Sall & Sylla, 2005). Effective programs with GMP as an
important programme component in Indonesia, Thailand, India, Tanzania and the Dominican Republic have shown that when GM is designed and implemented to use growth data for decision-making and action, and when the response is tailored to an individual child, it can positively impact on health and nutrition (UNICEF, 2008).

In view of the importance attached to the health, growth and development of children for instance in Ghana (Adu-Gyamfi & Adjeri, 2013), child welfare clinics have been set up throughout the country to provide the needed services to children. These clinics are usually sited in health care facilities in both urban and rural areas and are manned by trained health staff. Children under five years are accessed at Child Welfare Clinics (CWC) for various child welfare and health services. Among the child health activities at CWC are growth monitoring, immunization against childhood killer diseases, vitamin A supplementation, treatment of minor ailments, referral of complicated illnesses, health talks and counselling of mother and care takers on health issues. The clinic for under-fives also combines preventive, treatment, health surveillance and education into a system of comprehensive health care. (Centre for Community Child Health, 2008; MOH, 2007).

GMP was officially launched in Kenya, through the Ministry of Health (MoH) in 1985, with the support of UNICEF, at a time when increasing attention was being given to the importance of promotion of healthy growth as a strategy to prevent malnutrition (UNICEF/MOH, 2004). Prior to this, GM of children was taking place in some of the health facilities in the country. According to MOH, (2004), high coverage of GM (above 50% nationally) was biased towards children less than one year of age. Attendance of children to the maternal and child health clinic (MCH) is
infrequent after 12 months, reflecting that attendance matches the immunization pattern (Mapatano et al., 1997).

Davis, (2011) found that distance between the residence of a mother and the child welfare clinic is a determining factor in child welfare clinic (CWC) attendance. These findings are in agreement with the findings by Nwaniku et al., (2002) who found that in Kenya mothers living less than five kilometres to a health care facility utilise CWC services more than those who live beyond five kilometres of the facility. Similarly, Feikin et al., (2009) found in their research in Kenya that the rate at which young children access health services decrease by distance from the health facility. An earlier modelling to determine the factors that influence attendance to CWC by Gething et al., (2004) also found that utilization of health care facilities decreased by distance.

1.2 Problem statement and justification

Child GMP is an international initiative advocated for and supported by UNICEF and by other development agencies (Nabarro & Chinnock, 1988). In most developing countries GM is promoted as part of primary health care in providing healthy growth as a strategy to prevent malnutrition (Hendrata, 1988). Studies have shown that GMP activities have the potential to achieve improved breastfeeding and complementary feeding practices (Ainsworth, 2008; Sall and Sylla, 2005). These feeding practices are two of the main child survival interventions, which if done appropriately, would significantly contribute to the achievement of Millennium Development Goal (MDG) 4 by reducing child mortality. These would also contribute to the reduction of malnutrition level in the country which is currently at: stunting 35.3%; wasting
6.7% and underweight at 16.1% (Kenya Demographic Health Survey /Kenya National Bureau of statistics {KNBS} and ICF macro, 2010).

The GM concept lays much emphasis on child growth and development in the age bracket of 0-59 months but the available data indicates that only a small proportion of the children visit the health facilities, especially after completion of immunization at the age of 9 months (MOH, 2004; 2003). In Kenya, participation in GM for children older than 12 months is less than 40% nationally, less than 25% in Nyanza Province and less than 35% in Nyamira County, the site of the proposed study (Ministry of public health and sanitation (MOH, 2004; 2003). There is limited information on factors influencing GMP continuation after completion of immunization. Improvement on GM can only be successfully undertaken if the reasons why mothers do not continue after completion of immunization are determined, so that appropriate actions are taken.

1.3 Purpose of the Study

The purpose of the study was to determine the factors influencing the continuation of growth monitoring among children 10 to 59 months of age in Nyamira County, Kenya.

1.4 Objectives of the study

1. To determine the demographic and socio-economic characteristics of the mothers with children 10-59 months of age in Nyamira County.

2. To determine the coverage of continued growth monitoring among children 10-59 months of age in Nyamira County.

3. To assess maternal knowledge on continued GM among mothers with children 10-59 months of age in Nyamira County.
4. To establish the availability of health facilities/services to mothers with children 10-59 months old in Nyamira County.

5. To determine the relationship between demographic and socio-economic characteristics and the practice of continued GM for mothers of children 10-59 months of age in Nyamira County.

6. To determine the relationship between maternal knowledge and the practice of continued GM among mothers with children 10-59 months of age in Nyamira County.

7. To establish the relationship between availability of health facilities/services and the practice of continued GM among children 10-59 months of age in Nyamira County.

1.5 Hypotheses

H01: There is no significant relationship between maternal demographic characteristics and the practice of continued GMP for children 10-59 months old.

H02: There is no significant relationship between socio-economic status and the practice of continued GMP for children 10-59 months old.

H03: There is no significant relationship between maternal knowledge towards GM and the practice of continued GM for children 10-59 months old.

H04: There is no significant relationship between the availability of health facilities/services and the practice of continued GM for children 10-59 months old.
1.6 Significance of the Study

The study has generated information that may be useful to the Ministry of Health and other organizations working in the child survival programmes to design interventions to improve the activities of GM. It is planned that the study findings will be communicated to the community and may influence them to continue taking their children for GM even after completing immunization schedules. The study has also contributed to the body of knowledge on GM.

1.7 Limitations

There is a range of factors that may influence the practice of continued GM over time and with the age of the child. This information was not captured in this study because it was cross-sectional in nature.

1.8 Delimitations

The study was carried out in Nyamira division, an urban centre and Nyamaiya division a rural area, within the Nyamira County. The results can only be generalized to areas with similar characteristics.
1.9 Conceptual framework

Maternal knowledge on GM and practices towards GM

Maternal socio- demographic and economic characteristics

Availability and accessibility to GM and health services

Continued Growth monitoring promotion (GM)

Figure 1.1: Factors influencing continuation of GM

Source: Modified/Adapted from Ashworth (2008)

The conceptual framework was adapted from Ashworth (2008) and modified by the researcher. The framework shows factors which are likely to influence continued GM: maternal knowledge, perceptions and practices on GMP; availability and accessibility to GMP and health services (health facilities, nutrition counselling, treatment of childhood illnesses, family planning and immunization services) and the distance from home to the health facility; the socio- demographic and economic characteristics of the mothers (age, education level, number of children below five years, occupation, marital status, household income and workload). The study used this conceptual framework to identify factors associated with continued GM among children from 10 to 59 months of age in Nyamira County.
CHAPTER TWO: LITERATURE REVIEW

2.1 Overview of growth monitoring

Normal growth is a sign of good health in infants and children. Healthy children receiving adequate nutrition and living in an emotionally supportive environment follow a steady growth pattern which can be monitored, in part, by measuring and plotting their weight at regular intervals and comparing it to their height centile (Child Growth Foundation, 2009).

GMP serve to promote child growth through measuring and interpreting growth, to facilitate communication and interaction with caregiver and to generate adequate action to promote child growth through: Increased caregiver’s awareness about child growth improved caring practices and increased demand for other services, as needed (UNICEF, 2007).

Health worker mother

- Early detection of GM faltering counseling
- Maternal knowledge
- Motivation to change practices
- Remedial actions
- Increased contact with health services
- Utilization of health services (ORS, Vit. A, immunization and referral)

Figure 2.1: Potential effectiveness of GMP

Source: UNICEF 2007

Child growth is internationally recognized as an important public health indicator for monitoring nutritional status and health in populations. There is strong evidence that
impaired growth is associated with delayed mental development, poor school performance, and reduced intellectual capacity (WHO, 2003).

Measurement of a child’s height and weight is the key method of identifying disorders of growth (British Society for Paediatrics and Endocrinology, 2009). The routine monitoring of height and weight for growth assists in the diagnosis of problems which might either be missed or become apparent later in life when treatment may be less successful (British Society for Paediatrics and Endocrinology, 2009). Weighing a child provides the opportunity for health workers to observe the child’s general health and be alert to potential risks or concerns. For example, a diagnosis of failure to thrive or increased weight gain in hospital may indicate parental neglect at home and such concerns will need to be explored further (UNICEF, 2007).

Growth monitoring promotion is an initiative, in which improvements in the survival of children are attained through the widespread promotion, distribution and utilisation of selected health maintaining technologies by family members. Health workers, community institutions and welfare services help the family by providing encouragement, support and assistance. GM has been identified as one of the key technologies, not only because it helps to promote the satisfactory nutrition of children, but also because it provides an opportunity for uniting other low-cost child health interventions for example; oral rehydration solutions (ORS) and vitamin A supplementation (Ashworth et al., 2008).

Growth Monitoring of children is done to help mothers know the status of nutrition and health of their children. Many malnourished children look normal, both to their parents and to bystanders, until their size is compared with that of an expected child.
of the same age and sex (UNICEF, 2007). Growth is dynamic and therefore inadequate growth is reversible in the first two years (1000 days window of opportunity) of life. Growth is a proxy for well-being and velocity of growth is key to monitoring growth (UNICEF, 2007).

The WHO defines GMP as nutrition interventions that not only measure and chart weight of children, but use this information on physical growth to counsel parents in order to motivate actions that improve growth (WHO, 1999). These actions include; increased caregiver’s awareness about child growth, improved caring practices, and increased demand for other services, as needed. According to UNICEF (2007), growth monitoring and promotion is usually carried out in health facilities or in the communities. The purpose is to help parents keep their young children healthy and well nourished. The major advantages of growth monitoring are that it helps families and community workers to identify children with growth failure early when it is easy to help them.

The main anticipated benefits of GMP in developing countries include; reductions in under-nutrition, morbidity and mortality among young children (Ashworth et al., 2008). The secondary benefits of GMP are: early intervention when growth faltering is more easily remedied; improved knowledge about the effect of diet and illness on growth; families motivated and enabled to take effective action; nutrition and health counselling tailored to individual needs; opportunity to assess remedial actions; greater self-reliance and self-esteem; greater utilization of preventive health-care services; fewer referrals for curative care; cost savings; and communities mobilized to address underlying socio-economic causes of poor health (Ashworth et al., 2008).
2.2 The coverage of growth monitoring

According to Ruel et al., (1992) in a study done in Lesotho, the mothers’ attendance to the clinics was related to growth monitoring. There was evidence from large programmes in Tanzania (Iringa), India (Tamil Nadu Integrated Nutrition Project), Madagascar and Senegal that children whose mothers attended GMP clinics and received nutrition and health education had a better survival (low risk of morbidity and mortality) than children who did not (Sall and Sylla, 2005). Studies from a large-scale programme in Brazil indicated that participation in growth monitoring conferred a significant benefit on nutritional status independent of immunization and socio-economic status (Faber et al., 1998; Hossain et al., 2005; Save the Children UK 2003).

In South Africa, where growth monitoring was part of the Integrated Nutrition Programme, 64% of infants had at least five weighings in the first year (Faber et al., 2003). Several studies showed that GM attendance become irregular when the vaccination schedule was completed (Mapatano et al., 1997; Msefula, 1993; Ndao, 1992; Rasheed et al., 1996; Suelan and Briones, 1992). A similar finding was revealed by a study conducted in Kenya on the usefulness of facility level growth monitoring data (Ministry of Health {MOH} & UNICEF, 2003; 2004). In contrast, the findings of a community-based program in South Africa reported a high regularity of mothers to the weighing sessions even in the absence of provision of other health services (Faber et al., 1998). In Congo, it was shown that regularity of attendance at GM sessions was associated with the distance between the health facility and the home (Ndao, 1992).
A study conducted in Kenya by Smith (2006) on nutrition surveillance systems using Child health and nutrition information system (CHANIS) on clinic attendance, showed that growth monitoring data was collected at multiple clinics and hospitals throughout the country. The study revealed that, CHANIS was in operation in all 71 districts, with approximately 40% of districts regularly reporting using CHANIS. A study by Ettyang (1988) in Kakamega district estimated coverage for growth monitoring at 32%. Reports from the MORPHS (2003; 2004), showed that participation in GM for children older than 12 months was less than 30 % nationally, less than 25% in Nyanza Province and less than 25% in Nyamira County.

2.3 Factors associated with the practice of continued growth monitoring

2.3.1 Socio-demographic and economic characteristics of the mothers and growth monitoring

A review of the available literature revealed that there was very little information or studies that have been carried out on socio-demographic and economic characteristics of the mothers and the practice of GM services. The studies show that, the comprehension of growth chart features improves with the literacy level of the mother (Musaiger & Abdulkhalek, 2001) in Tanzania; (Senanayake et al., 1997) in Ghana and (McAuliffe et al., 1993) in South Africa. A search through the available literature did not indicate any information on maternal socio-demographic and economic and continued GM in Africa and Kenya.

2.3.2 Maternal knowledge and practice of growth monitoring

There is paucity of information on maternal knowledge and practice on growth monitoring as a whole and continued GM in particular. The few studies available only address the relationship between the implementation of a GMP programme and
subsequent changes in caring practices and knowledge among mothers. In Lesotho, Ruel et al., (1992) found minimal improvements in maternal nutritional knowledge and some indices of modified practices (prolonged duration of breast-feeding) in mothers attending a clinic-based GMP. Group nutrition education, was considered responsible for the positive association between maternal knowledge and the GM clinic attendance. The findings of another study which was confirmed by a crossover trial done in the same country (Lesotho) showed that the use of growth charts in GM clinics only marginally improved maternal learning of nutrition education (Ruel and Habicht, 1992). The same findings were also demonstrated in a similar study that was done in Bangladesh (Hossain et al., 2005; Save the Children UK, 2003).

A study on the perceptions of growth monitoring and promotion among 19 District Medical Officers from 17 countries in South America, Africa and Asia revealed a very restrictive interpretation of the concept of growth monitoring and a disregard for involving caregivers in decision making (Roberfroid et al., 2005). Health workers were reasonably good at weighing and charting, but lacked nutrition knowledge and communication skills, with the result that advice, if given, comprised of brief, standardized directives. Constant repetition of the same message, such as ‘feed the child more greens’ understandably exasperated some mothers (Ashworth et al., 2008). Good nutrition counseling is paramount for growth promotion and is often done badly (Alderman et al., 2006).

In Kenya, according to the study done by UNICEF and MOH (2004), showed that the majority of children above one year visit the health facilities for weighing when they are sick, hence not reached for continued GM. This was attributed to a number of factors for example, the mothers were not aware of the importance of continued
growth monitoring, and they did not see the need of walking for long distances to have children who are well weighed. In addition, the facilities were not friendly to parents who brought their children for growth monitoring only, since they were expected to queue together with those who were ill, hence the fear of cross infection (Ettyang et al., 1993).

The attitude of health workers was a challenge for mothers with malnourished children as they feared being told ‘off’ in the presence of other parents (Ettyang et al., 1993) in Vihiga, Kenya. There was little or no feedback given to the caregivers on how the children were growing, as growth chart was used to collect data and tallied for the health systems (Kapil et al., 1991; Roberfroid et al., 2005; WHO, 1999). Community-based growth monitoring in a few communities face the major challenge of sustainability of the community volunteers to carry on this important activity (UNICEF, 2004).

2.4 Availability and accessibility of health services and growth monitoring services

There is limited literature on availability and accessibility of health services and continued GM. The only available information showed that there was evidence that growth monitoring can improve the accessibility of other health services, and young children with improved health service accessibility, have better nutritional status and/or survival (Victoria et al., 2004; 2003). Greater maternal awareness of child health problems and increased frequency of contact with health staff as a result of engaging in growth monitoring can be expected to increase the utilization of preventive and curative primary health services, although this may not be true if, for example, utilization involves user fees, or families lack of confidence in the health
system (Victoria et al., 2004; 2003). In Bangladesh for example, participants in the growth monitoring programme had higher rates of immunization, utilization of oral rehydration solutions (ORS) and vitamin A supplementation than non-participants (Karim et al., 1994).

In Casamance, rural Senegal, growth monitoring promotion sessions within a highly available, smoothly functioning health system were regarded as an important incentive for mothers to bring their young children to the dispensaries (Pinchinat et al., 2004). The GM sessions were used to detect and treat illnesses, deliver nutrition and health education messages, and distribute chloroquine. Further findings in the Senegal study revealed that, average coverage of growth monitoring was 90% for children aged 3–24 months, and average attendance at the monthly sessions was 71% (Pinchinat et al., 2004). The same findings showed that over a 30-year period of growth monitoring there was a substantial decline in under-5 mortality (from 312 to 127 per 1000) and a reported decrease in severe malnutrition, although there was no change in mean weight-for-age. These data are suggestive of a benefit of growth monitoring in terms of improved accessibility of health services, but comparative data from dispensaries with no growth monitoring would be needed for a robust conclusion (Ashworth et al., 2008).

In growth-monitoring clinics in Lusaka, Zambia, the mean contact time was 30 seconds while in three child health programme in rural Zaire, 64% of mothers attending growth-monitoring sessions received less than 2 minutes consultation time, and 43% received no advice at all (Ashworth et al., 2008). It was generally accepted that young children with improved health service accessibility had better nutritional status and survival (Bhandari et al., 2005; 2004; 2003). There is no study in Kenya
that has been done on availability and accessibility of health services and continued growth monitoring, but from the UNICEF and MOH (2004) findings, there is indication that mothers would not walk long distances to go for GMP especially if the child is not sick or has completed immunization.

2.5 Summary of the literature review

Growth monitoring has the potential to improve child survival. GM attendance are mainly pegged on immunization schedule and therefore not appropriately conducted because most children over 1 year of age do not attend GM. Maternal knowledge on the importance of GM and positive attitudes towards it has been demonstrated to positively impact GM attendance. There are no findings from the few studies that are available that have demonstrated a relationship between socio-demographic and economic characteristics of the mothers and continued growth monitoring. Some literature however has indicated that there is a relationship between availability of health facilities, services and continued growth monitoring. The major reasons for discontinuation of GM after immunization have not been fully investigated in Kenya. The aim of this study therefore, was to investigate why children discontinue GM after completing immunization, in Nyamira County.
CHAPTER THREE: METHODOLOGY

3.1 Research design
This was a community based cross-sectional analytical study to determine and identify factors associated with the continuation of GM among children 0 to 59 months. The study design was appropriate for this study since it looked at the portion of the population at a single point in time and the sample composition reflected the true picture of the population. The study design was equally good for testing hypotheses of this study (Thisted, 2006). Quantitative approach was used in data collection.

3.2 Study variables
The dependent variable was continuation of GM for children 10 to 59 months old as determined by a proportion of children 10-59 months who were taken to the facility purposely for GM after completing immunization schedule. The lower cut-off was pegged at 10 months instead of 9 months to give a grace period of one month in case of a child who went for immunization and did not receive the vaccine for reasons such as the unavailability of vaccine, the child was unwell or the mother delayed to go for GM. The independent variables were: demographic (age, education level age of children and socio-economic characteristics (occupation and household income) of the mothers. In addition, maternal knowledge towards GM (importance of GM, importance of continued GM and importance of understanding and interpreting information and child health card as well as availability (physical presence and delivery of health services which included infrastructure and personnel) and accessibility (distance from respondent’s home to the health facility {within 5 km return journey} to health services were independent variables.
3.3 Location of the study

The study was carried out in Nyamira and Nyamaiya divisions which are the only two administrative divisions of Nyamira County. The two divisions were purposely selected because they were the only divisions in the county. Nyamira division is situated in the urban part of the county and Nyamaiya division is located in the rural part of the county. The County had a projected population of 163,186 for the year 2010 and agriculture is the main economic activity in the County (Ministry of Planning {MoP}, 2010). The county consisted of a total of twenty nine health facilities and the attendance for GM among children 0-59 months of age according to the District Health Information System report was 30.5% (DHIS, 2013).

3.4 Target population

The study targeted mothers with children 0 to 59 months of age residing in Nyamaiya and Nyamira divisions of Nyamira County.

3.4.1 Inclusion criteria

Only Mothers with children 0 to 59 months old and willing to participate in the study were recruited into the study. The mothers and their children should also have been residents of Nyamira County for at least 6 months before the study.

3.4.2 Exclusion criteria

Mothers with children 0 to 59 months of age suffering from chronic illnesses and those on treatment such as TB, HIV which did not allow them to follow the normal GM schedules were not included in the study. The health condition of the children was verified using the health cards.
3.5 Sample size determination

The sample size was 409 mother-child pairs (children 0 – 59 months of age) as calculated using the formula by Cochran (Israel, 1992);

\[ \text{no} = \frac{Z^2pq}{\epsilon^2} \]

Where;

no = the desired sample size

\( Z \) = the standard normal deviate at 95% confidence level (1.96)

\( p \) = the estimated proportion of an attribute that is present in the population (0.40), the prevalence of continued GM for children 12-59 months nationally (MOH, 2003; 2004).

\( q = 1-p \)

\( \epsilon \) = desired level of precision (0.05)

\[ \text{no} = \frac{(1.96)^2(0.40)(0.60)}{(0.05)^2} = 369 \] the estimated sample size

369 children plus 11% (40 children) to cater for non-response. Therefore the total sample size was 409 children.
3.6 Sampling techniques

Nyamira County was purposively selected. Nyamira comprises 2 divisions, Nyamira an urban division and Nyamaiya a rural division. Proportionate sampling was employed to select 3 sub-locations from Nyamira division and 2 from Nyamaiya division using random table numbers. Two villages were sampled from each of the 3 sub-locations in Nyamira division giving a total 6 villages. Similarly, 2 villages were randomly selected from each of the 2 sub-locations in Nyamaiya division, making a total of 4 villages. All the households with children 0 to 59 months old of the selected villages were enumerated through a census with the assistance of the village
elders. Finally, 41 children were selected by simple random from each of the 6 villages in Nyamira division making a total of 246 children and another 41 children from each of the 4 villages in Nyamaiya division giving a total of 164 children. A total of 409 children were selected for the study (Figure 3.1).

3.7 Recruitment and training of research assistants

The researcher recruited four research assistants to participate in data collection. The selection criteria for the research assistants were a minimum of Kenya Certificate of Secondary Education (KCSE) with a good command of English, Swahili (the Kenya National Language) and Kisii the language spoken by the residents in the study area. A two-day training of the research assistants was conducted by the researcher. The purpose of the training was to explain; the objectives of the study, study methodology, the questions and how to administer them, the role and responsibility of the research assistants in the study and research ethics.

The training involved going through the questions one by one for the research assistants to understand the meaning and how to accurately record the responses. They were also trained on interviewing skills. The methods used for training included lectures, brain storming, demonstrations and role plays.

3.8 Research instruments

3.8.1 Questionnaire

A researcher-administered questionnaire (Appendix: B) was used to collect data from mothers with children 0 to 59 months of age. The questionnaire with both closed and open ended questions was used to collect information on:

- Demographic and socio economic characteristics (education level of the mother, occupation, household income as a proxy indicator for socio-
economic status, the number of children less than 5 years of age in the household, GM practice and maternal workload).

- Maternal knowledge on GM (importance of taking children for GM, importance of continued GM after immunization schedules and awareness of information displayed on child health card).
- Availability and accessibility of health services (growth monitoring, immunization, nutrition counselling).

3.9 Pre-testing of research instruments

The pre-testing of the questionnaires was done among participants with children 0 to 59 months in Ekerenyo division that had similar characteristics to the study divisions. 10% of the respondents with similar characteristics as the study population were interviewed. Pre-testing of the data collection tools was done to establish the accuracy of the questions and to determine the length of interviews. During the pre-testing an effort was made to check for consistency in the interpretation of questions and to identify ambiguous items. This facilitated modifications on the questionnaire by correcting mistakes and eliminating ambiguous questions to ensure clarity before the actual study.

3.9.1 Validity

The validation of the data collection instruments was done to ensure the degree to which the instruments collected the data measured what they purported to measure. Questionnaires were reviewed by a panel of experts from the department of Food, Nutrition and Dietetics at Kenyatta University to verify the validity of questions. To ensure validity the questions were phrased and the responding options developed
appropriately. The questionnaire was also pretested prior to data collection to ascertain content and face validity.

3.9.2 Reliability

Test-retest reliability of the research instrument was established during pretesting. Pretesting was done on two occasions but on the same respondents, on Monday and Friday. The structured questionnaire was pre-tested on 20 mothers with children aged 0-59 months of age. Test re-test reliability was established by examining the consistency of pre-test responses and reliability co-efficient calculated. The reliability co-efficient was 0.89 and therefore the questionnaire was considered reliable.

3.10 Data collection techniques

The Researcher assisted by the research assistants administered the questionnaires to the mothers in a face-to-face interview during a one-time household visit over a 22 day-period in the two divisions, Nyamaiya and Nyamira. The mothers were interviewed in their houses after getting informed consent from them.

3.11 Data analysis and presentation

Data was checked, cleaned, coded, entered and analysed using Statistical Package for Social Sciences (SPSS) version 14.0. Descriptive statistics; frequencies and percentages, means and standard deviation was used to: describe maternal socio-economic characteristics; maternal knowledge, and practice towards GMP; and availability and accessibility of GMP services. T-test was used to compare means for continuous variables (age of respondents, age of children) for those children who continued and those who did not-continue with growth monitoring. Chi-square was used to test for associations between categorical variables (education levels, maternal
knowledge and availability and accessibility of health services) for those who continued with GMP and those who did not, for example; demographics and maternal knowledge on GMP. A p-value < 0.05 was used as the criterion for statistical significance.

### 3.12 Logistical and ethical considerations

Clearance was sought from the Graduate School of Kenyatta University and a Research Permit obtained from the National Commission for Science, Technology and Innovation (NACOSTI). Ethical clearance was granted by Kenyatta National Hospital/University of Nairobi (UoN) Ethical Clearance Committee. Informed consent (written or thumb print) was obtained from the participants before recruitment into the study. The study objectives, methodology, benefits, and rights were clearly outlined to the participants before obtaining informed consent from them to participate in the study. Respondents were assured of confidentiality, for example by not writing their names on the questionnaires and assured that the findings were to be used only for the purpose of research.
CHAPTER FOUR: RESULTS

4.1 Introduction

A cross sectional analytical study (Thisted, 2006) design was adopted to assess factors influencing the continuation of GM among children 0 to 59 months in Nyamira and Nyamaiya divisions of Nyamira County. Four hundred and nine (409) mothers were interviewed using a structured researcher-administered questionnaire. In this chapter, the findings are presented in order of the study objectives. The results cover demographic and economic characteristics of the households from which children 0 to 59 months were drawn; maternal knowledge and practices on continued GM; and availability and accessibility of continued GM services. The findings on the relationships between continued GM and socio-demographic and socio-economic characteristics of the households, maternal knowledge, availability and accessibility of GM services have also been presented.

4.2 Demographic and socio-economic characteristics of the mothers and their children

4.2.1 Age of the children

Almost one third (32.3%) of the children in the study were aged between 12 to 23 months, 20% were aged 24 to 35 months, 16.6% were aged 6 to 11 months, 12% were aged 36 to 47 months while 10.8% were aged 0 to 5 months (Figure 4.1).
4.2.2 Sex of the children

Slightly more a half (53.3%) of the children in the study were female while 46.7% were male (Figure 4.2).

4.2.3 Demographic characteristics of the mothers

The findings presented on socio-demographic characteristics of the mothers include: age in years, education level, and marital status.
The most of the respondents in the study were young with 33% aged between 21 to 24 years and 34% aged 25 to 29 years. Only a small proportion of the respondents (5.4%) were aged below 20 years and 9.3% above 35 years. The mean age of the respondents was $27.7 \pm 5.3$ with a minimum age of 16 years, and maximum age of 42 years. Majority (83.1%) of the respondents were married whereas 11.0% were single and 5.9% were divorced, separated or widowed. About two thirds (63.1%) of the respondents had attained secondary school education level with only 9% having gone up to college/university. Those who had completed primary school were 26.2% and only 1% had not attended school (Table 4.1).

Table 4.1: Demographic characteristics of the mothers

<table>
<thead>
<tr>
<th>Respondents age in years</th>
<th>(N=409)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>22</td>
<td>5.4</td>
</tr>
<tr>
<td>21 – 24</td>
<td>135</td>
<td>33.0</td>
</tr>
<tr>
<td>25 – 29</td>
<td>139</td>
<td>34.0</td>
</tr>
<tr>
<td>30-34</td>
<td>75</td>
<td>18.3</td>
</tr>
<tr>
<td>&gt;35</td>
<td>38</td>
<td>9.3</td>
</tr>
<tr>
<td>Mean (SD) Age 27.7 ± 5.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital status</th>
<th>(N=409)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>45</td>
<td>11.0</td>
</tr>
<tr>
<td>Married</td>
<td>340</td>
<td>83.1</td>
</tr>
<tr>
<td>Divorced / Separated / widowed</td>
<td>24</td>
<td>5.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>(N=409)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal schooling</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Primary level</td>
<td>107</td>
<td>26.2</td>
</tr>
<tr>
<td>Secondary level</td>
<td>258</td>
<td>63.1</td>
</tr>
<tr>
<td>College/university</td>
<td>37</td>
<td>9.0</td>
</tr>
<tr>
<td>Adult education</td>
<td>3</td>
<td>0.7</td>
</tr>
</tbody>
</table>

4.2.4 Socio-economic characteristics of the mothers

The socio-economic characteristics of the respondents was determined based on proxy indicators; Occupation status, main source of income, the respondents type of housing, sources of lighting, cooking fuel, ownership of household items, types of subsistence and cash crops grown.
Slightly over a half (54.8%) of the respondents were self-employed while about a third (34.0%) were unemployed. About two-fifths (43.2%) of the respondents’ husbands were self-employed while only 1.8% were unemployed. Regarding the source of income, about two-fifths (41.6%) made their income from self-employment with only 9.5% from salaried jobs whereas 36.4% depended wholly on their husbands (Table 4.2).

Table 4.2: Socio-economic characteristics of the mothers

<table>
<thead>
<tr>
<th>Respondents’ occupation</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casual worker</td>
<td>23</td>
<td>5.6</td>
</tr>
<tr>
<td>Unemployed</td>
<td>139</td>
<td>34.0</td>
</tr>
<tr>
<td>Formal employment</td>
<td>14</td>
<td>3.4</td>
</tr>
<tr>
<td>Self-employment</td>
<td>224</td>
<td>54.8</td>
</tr>
<tr>
<td>Farmer</td>
<td>7</td>
<td>1.7</td>
</tr>
<tr>
<td>Student</td>
<td>2</td>
<td>0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondents husbands’ occupation</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casual worker</td>
<td>110</td>
<td>32.4</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6</td>
<td>1.8</td>
</tr>
<tr>
<td>Formal employment</td>
<td>64</td>
<td>18.8</td>
</tr>
<tr>
<td>Self-employment</td>
<td>147</td>
<td>43.2</td>
</tr>
<tr>
<td>Farmer</td>
<td>13</td>
<td>3.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondents main source of income</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaried job</td>
<td>39</td>
<td>9.5</td>
</tr>
<tr>
<td>Husband</td>
<td>149</td>
<td>36.4</td>
</tr>
<tr>
<td>Self-employment</td>
<td>170</td>
<td>41.6</td>
</tr>
<tr>
<td>Parent</td>
<td>23</td>
<td>5.6</td>
</tr>
<tr>
<td>Casual worker</td>
<td>15</td>
<td>3.7</td>
</tr>
<tr>
<td>Farmer</td>
<td>13</td>
<td>3.2</td>
</tr>
</tbody>
</table>

4.2.4.1 Type of housing

The majority (86.8%) of the respondents lived in their own houses with almost a half (49.1%) of them living in houses with three rooms while below 5.1% lived in one roomed houses. The minimum number of rooms was one while the maximum was ten with the range of nine. The mean number of rooms was 3.1 ± 1.1. About two-fifths (42.6%) of the respondents who lived in rented houses and 13.2% of them paid house rent between Kenya Shillings (Kshs) 1000 to 2000, 27.8% paid less than Kshs
1000. The minimum rent paid was Kshs 350 and the maximum Kshs 8,000. The mean amount of rent paid was Kshs 1925.9 ± 1638.2. About two-thirds of the houses (65.3%) had walls made of mud and wooden poles and only 9.5% of the houses had walls made from cement/stones/blocks. Majority (93.6%) of the respondents lived in houses with iron sheets roofs while only 4.9% were living in grass thatched houses. About two-thirds (68%) of the respondents had houses with earthen floors (Table 4.3).

Table 4.3: Type of housing

<table>
<thead>
<tr>
<th>Living conditions</th>
<th>(N=409)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Living in own house</td>
<td>355</td>
</tr>
<tr>
<td>Rooms in the houses</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>201</td>
</tr>
<tr>
<td>4</td>
<td>76</td>
</tr>
<tr>
<td>&gt;5</td>
<td>36</td>
</tr>
</tbody>
</table>

Mean (SD) ± 3.1 ± 1.1

<table>
<thead>
<tr>
<th>House rent (Kshs)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1000</td>
<td>15</td>
<td>27.8</td>
</tr>
<tr>
<td>1100-2000</td>
<td>23</td>
<td>42.6</td>
</tr>
<tr>
<td>&gt;2100</td>
<td>16</td>
<td>29.6</td>
</tr>
</tbody>
</table>

Mean (SD) ± 1925.9 ± 1638.2

<table>
<thead>
<tr>
<th>Type of roofing</th>
<th>(N=409)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron sheets</td>
<td>383</td>
</tr>
<tr>
<td>Tiles</td>
<td>6</td>
</tr>
<tr>
<td>Grass</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of walls:</th>
<th>(N=409)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron sheets</td>
<td>7</td>
</tr>
<tr>
<td>Mud and wooden poles</td>
<td>267</td>
</tr>
<tr>
<td>Cement /stones blocks</td>
<td>39</td>
</tr>
<tr>
<td>Burnt bricks</td>
<td>58</td>
</tr>
<tr>
<td>Mud and cement</td>
<td>34</td>
</tr>
<tr>
<td>Timber</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of floor:</th>
<th>(N=409)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthen</td>
<td>278</td>
</tr>
<tr>
<td>Cement</td>
<td>124</td>
</tr>
<tr>
<td>Wooden</td>
<td>1</td>
</tr>
<tr>
<td>Tiles</td>
<td>6</td>
</tr>
</tbody>
</table>

1 US $ = KShs (Kenya Shillings) 89 at the time of the study (May 2012) Source: CBK, 2012
4.2.4.2 Main source of lighting and cooking fuel

The majority (86.6\%) of the mothers stated that they used paraffin as the main source of lighting while 21\% used electricity. The usage of other sources like candle, solar and gas were below 10\% (Figure 4.3).

![Figure 4.3: Main source of lighting](image)

The majority of the mothers (86.8\%) used firewood as the main source of fuel for cooking while only 3.4\% and 7.1\% used charcoal and gas respectively. Only 1\% of the households used electricity for fuel 1\% (Figure 4.4).
Figure 4.4: Main source of fuel

4.2.4.3 Ownership of household items and livestock

Majority (89.2%), of the respondents owned radios, while about three quarters owned land (79.5%), cell phones (75.3%) and chicken (72.9%). Slightly more a half (54.0%) of the respondents owned cows while 37.7% of the respondents owned sofa sets. Slightly less than one-third (29.6%) of the respondents owned television sets and only 19.8% owned goats (Figure 4.5).
Figure 4.5: Ownership of household items and domestic animals

4.2.4.4 Growing of crops

Slightly above half (57%) of the respondents’ indicated that they grew subsistence crops while 43% of the respondents grew cash crops (Figure 4.6).
4.2.4.5 Types of subsistence crops grown

Majority (97.4%) of the respondents grew maize while 89.9% grew beans. About two thirds (64.9%) and 54.2% of the respondents grew solunum nigrum “managu” and bananas respectively (Figure 4.7).
Figure 4.7: Subsistence crops grown

4.2.4.6 Cash crops grown

Majority of the respondents (89.3%) grew tea, 25.2% coffee and 26.0% bananas. Other crops (sugarcane, pyrethrum, fodder crops, pineapples, and sunflower) were grown by relatively small percentages of the respondents (Figure 4.8).
4.3 Coverage of continued growth monitoring

Maternal practices on continued growth monitoring were established for mothers of children 10-59 months of age. The rationale for this was that children below 10 months of age are likely to be taken for clinics for immunization and therefore the practice of continued GM is better established for children who have completed immunization which is ideally at 9 months. A grace period of one month was allowed to take care of those children who may have delayed for one reason or another including illness.

Slightly above a half (53.3%) of the respondents reported they were still continuing with GMP and 46.7% were not (Table 4.4). Among those who continued, majority (86.7%) indicated they continued with GM in order to monitor the growth of the children. The other reasons of continuing with GM included; health workers advice that the practice should continue (50.5%), abiding with the health policy (29.4%) and for nutrition advice (15.6%) (Table 4.4).
Among those who did not practice continued GM 39.8% stopped when children were below the age of 10 months, 48.2% stopped between 10 to 23 months, and 10.5% between 24 to 35 months and only 1.5% stopped between 36 to 59 months. The minimum age at which GM was stopped was 9 months and the maximum age was 59 months which is the right age for completion of GM, with a mean of $13.4 \pm 6.4$. The reasons given for stopping GMP were; 74.9% of the respondents had completed immunization, 49.7% were fatigued/tired of taking the children, 29.3% indicated their children were growing well and 1% said they did not know they were supposed to continue (Table 4.4).

Table 4.4: Coverage on continued growth monitoring

<table>
<thead>
<tr>
<th>Maternal coverage on continued GM</th>
<th>(N=409)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued GM (from 10 months to 59 months)</td>
<td>218</td>
</tr>
</tbody>
</table>

**Reasons for continued GM: (N=413)**
- To monitor the growth of the child: 189 (86.7)
- For nutrition advice: 34 (15.6)
- Abiding with health policy for children to continue with GM for 5 years: 64 (29.4)
- Health workers advice for children to be taken for GM: 110 (50.5)
- For vitamin A supplementation: 7 (3.2)
- For immunization: 9 (4.1)

**Age at which GM stopped: (N=191)**
- < 10 months: 76 (39.8)
- 10-23: 92 (48.2)
- 24-35: 20 (10.5)
- 36-47: 2 (1.0)
- 48-59: 1 (0.5)

Mean $\pm 13.4 \pm 6.4$

**Reasons for stopping GM: (N=343)**
- Child had completed immunization: 143 (74.9)
- The child was growing well: 56 (29.3)
- The child does not get sick: 22 (11.5)
- Fatigue by the caretaker/mother: 95 (49.7)
- The distance to the health facility is too long: 7 (3.7)
- Children began going to school: 17 (8.9)
- The mother became pregnant: 1 (0.5)
- Did not know the need to continue with GMP: 2 (1.0)

* Multiple responses therefore more than 100%
4.4 Maternal knowledge on continued growth monitoring

Maternal knowledge include; importance of growth monitoring, importance of continued growth monitoring after immunization schedule and the importance of the information displayed on the child health card.

4.4.1 Maternal knowledge on importance of growth monitoring

Majority (92.7%) of the respondents’ reported that it was important to take the children for GM. Among these, 90% indicated the main reason of taking their children for GM was to ‘monitor their growth’, 62.6% was ‘to monitor the child’s health’ and 17.9% indicated ‘to take corrective measures in case of growth faltering’ and 0.3% indicated ‘it was the government policy’.

Among those respondents (7.3%) who said taking children for growth monitoring was not important, 66.6% reported that weighing is only important for children below one year; 20% indicated they ‘did not have time to go to the health facilities’ and 10% reported that weighing does not help children grow (Table 4.5).

Table 4.5: Maternal knowledge and on the importance of growth monitoring

<table>
<thead>
<tr>
<th>Reasons for taking children for GM</th>
<th>(N=409)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighing of children is important</td>
<td>379</td>
<td>92.7</td>
</tr>
<tr>
<td>Reasons for taking children for GM: (N=649) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the child’s growth to be monitored</td>
<td>341</td>
<td>90.0</td>
</tr>
<tr>
<td>To take corrective measures in case of growth faltering</td>
<td>68</td>
<td>17.9</td>
</tr>
<tr>
<td>To monitor the child’s health</td>
<td>238</td>
<td>62.6</td>
</tr>
<tr>
<td>It is a policy requirement by the government</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Reasons why GM is not important: (N=31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighing does not help children to grow</td>
<td>3</td>
<td>10.0</td>
</tr>
<tr>
<td>Weighing is only important for children &lt;1 year</td>
<td>20</td>
<td>66.6</td>
</tr>
<tr>
<td>No time to go to the health facilities</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>It is expensive</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Do not know</td>
<td>1</td>
<td>3.3</td>
</tr>
</tbody>
</table>

* Multiple responses therefore more than 100%
4.4.2 Maternal knowledge on importance of continued growth monitoring after completion of immunization schedule

Majority (80.9%) of the respondents said that it was important to continue taking the children for GM after the immunization schedule, where as 10.3% thought it was not important while 8.8% indicated that they did not know whether it was important or not. The majority (89.4%) of the respondents indicated that the main reason of continuing with GM after immunization was to monitor the growth of the children while 45.9% said because health workers advice parents to continue with GMP up to 5 years; and 14.2% reported that it was important to continue receiving health and nutrition advice. The respondents who stated that it was not important to continue with GM gave the following reasons: ‘it was tedious to carry the children to the clinic every month (52.4%); children grow well without continuous weighing (21.4%) and health facilities are far (16.13%) (Table 4.6).
4.4.3 Maternal knowledge on the importance of the information displayed on the child health card

Slightly above two-thirds (67.7%) of the respondents indicated that they had knowledge and understood the information displayed on the child health card. Half (54.2%) of the respondents said they learnt the importance and how to interpret the information on the child health card by reading on their own and 37.9% learnt from the health workers. About three-quarters (76%) indicated that it was important to know and understand the information on the child health card where as 22.7% said they did not know that it was important to know and understand the information displayed on the child health card. About three quarters (74.1%) reported that they understood the information on the child health card was useful while 24.7% indicated that they did not know that the information was useful. Regarding the reasons for the usefulness, 76.9% reported that the information on the card shows how the child should grow while 21.5% reported that the information is useful for the mother to understand the importance of GM (Table 4.7).
Table 4.7: Maternal knowledge on the information displayed on the child health card

<table>
<thead>
<tr>
<th>Knowledge and understanding of the information on the child health card</th>
<th>(N=409)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understood the information displayed on the maternal child health booklet:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>277</td>
<td>67.7</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>132</td>
<td>32.3</td>
<td></td>
</tr>
<tr>
<td><strong>Information on the card is important:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>311</td>
<td>76.0</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Does not know</td>
<td>93</td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td><strong>Who taught you how to interpret the information on the card: (N=277)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health worker</td>
<td>105</td>
<td>37.9</td>
<td></td>
</tr>
<tr>
<td>Fellow mother</td>
<td>22</td>
<td>7.9</td>
<td></td>
</tr>
<tr>
<td>Read on my own</td>
<td>150</td>
<td>54.2</td>
<td></td>
</tr>
<tr>
<td><strong>Information on the child health card is useful: (N=411)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>303</td>
<td>74.1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>101</td>
<td>24.7</td>
<td></td>
</tr>
<tr>
<td><strong>Usefulness of the information on the child health card: (N=303)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicates how the child should grow</td>
<td>233</td>
<td>76.9</td>
<td></td>
</tr>
<tr>
<td>For mother to understand the importance of GMP</td>
<td>65</td>
<td>21.5</td>
<td></td>
</tr>
<tr>
<td>Provides ideas on how to take care of the child</td>
<td>4</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>It gives the date for the next visit</td>
<td>10</td>
<td>3.3</td>
<td></td>
</tr>
</tbody>
</table>

4.5 Availability of health facilities/services and growth monitoring services

4.5.1 Availability of health facilities

The findings showed (majority) 93.2% of the respondents’ distance from their residence to the facilities was less than 5 km (return journey) and only a small portion of 6.8% indicated the distance was above 5 km (return journey) (Figure 4.9).
Figure 4.9: Availability of health facilities for growth monitoring services

4.5.2 Health services provided in addition to growth monitoring at the health facilities

Majority (92.9%) of the respondents accessed immunization services while 83.9% accessed treatment of diseases. Over three quarter (78%) of the respondents’ accessed Vitamin A supplementation and 68.2% family planning services. Slightly above a quarter (35.2%) accessed nutrition counselling and education and only 10% accessed Voluntary Counselling and Testing services (VCT) (Figure 4.10).
4.6 Factors associated with continued growth monitoring

4.6.1 Demographic and socio-economic characteristics of the respondents and their children

4.6.1.1 Child demographic characteristics and the practice of continued growth monitoring

The association between divisions in which children 10-59 months resided; sex and age were assessed to determine their influence on continued GM. The results showed there was a significant association between division of residence and continued GM (chi-square test; p<0.001) while there was no significant associations between the sex of the child and continued GM (chi-square test, p=0.591). The findings indicated that children residing in Nyamira division were more likely to have continued GM
(chi-square test; p<0.001) than the children who lived in Nyamaiya division.

Children below 24 months were also more likely to continue with GM than the children above 36 months (t-test; p=0.001) than older children (Table 4.8).

Table 4.8: Relationship between child demographic characteristics and continued GM

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>Continued GM for children 10-59 months</th>
<th>Chi-square χ²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divisions of child residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nyamira</td>
<td>51.9</td>
<td>17.736</td>
<td>0.001*</td>
</tr>
<tr>
<td>Nyamaiya</td>
<td>28.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of the child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>38.7</td>
<td>0.290</td>
<td>0.591</td>
</tr>
<tr>
<td>Female</td>
<td>41.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>t-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>29.82</td>
<td>12.82</td>
<td>0.001*</td>
</tr>
<tr>
<td>sd</td>
<td>21.88</td>
<td>12.49</td>
<td></td>
</tr>
</tbody>
</table>

*p-value significant <0.05

4.6.1.2 Maternal demographic characteristics and the practice of continued growth monitoring

The association between maternal socio-demographic characteristics and the practice of continued GM tested were; age, marital status and education level of the respondents. The respondents with college levels of education were likely to take their children for continued GM than those who had primary level of education (chi-square test; p<0.001). There was no association between continued GM and maternal marital status and age (chi-square test; p=0.401) and (t-test; p=0.489) respectively (Table 4.9).
Table 4.9: Relationship between maternal demographic characteristics and continued GM

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Continued GM for children 10-59 months</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=317 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status of the respondents:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>42.0</td>
<td></td>
<td>0.401</td>
</tr>
<tr>
<td>Single</td>
<td>32.4</td>
<td>1.825</td>
<td>0.401</td>
</tr>
<tr>
<td>Widowed/separated/divorced</td>
<td>31.6</td>
<td></td>
<td>0.401</td>
</tr>
<tr>
<td>Educational status of the respondents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/never schooled/adult education</td>
<td>29.2</td>
<td>16.662</td>
<td>0.001*</td>
</tr>
<tr>
<td>Secondary level</td>
<td>40.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College level</td>
<td>71.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of the respondents:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 34 years</td>
<td>27.34</td>
<td>4.83</td>
<td>0.489</td>
</tr>
<tr>
<td>&gt; 35 years</td>
<td>26.93</td>
<td>5.62</td>
<td></td>
</tr>
</tbody>
</table>

* p-value significant <0.05

4.6.1.3 Maternal socio-economic characteristics and the practice of continued growth monitoring

The association between the GM and the following variables: Respondent’s main source of income, respondents living in own houses or not, number of rooms in the houses, occupation and the amount of house rent paid, were assessed. The findings showed that the variable that was significantly associated with continued GM was the number of rooms in the house. Those residents who lived in bigger houses were more likely to continue with GM than those who lived in smaller houses (t-test; p=0.003). The mothers who were in formal employment were also more likely to continue with GM for their children than those who were casual workers (chi-square; p=0.001). Similarly, the mothers paying house rent less than kshs 2000 were more likely to continue taking their children for GM (t-test; p=0.033) (Table 4.10). The
rest of the variables on socio-economic status were not significantly related with continued GM.

Table 4.10: Relationship between maternal socio-economic characteristics and continued growth monitoring

<table>
<thead>
<tr>
<th>Socio-economic characteristics</th>
<th>Continued GM for children 10-59 months</th>
<th>Chi-square $\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=317 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Main source of income:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaried job</td>
<td>54.5</td>
<td>4.997</td>
<td>0.416</td>
</tr>
<tr>
<td>Husband</td>
<td>38.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employment</td>
<td>41.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>27.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casual worker</td>
<td>28.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>38.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Living in own houses:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38.5</td>
<td>2.897</td>
<td>0.089</td>
</tr>
<tr>
<td>No</td>
<td>52.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation of the respondents’ husbands:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casual worker</td>
<td>24.1</td>
<td>17.292</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>50.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal employment</td>
<td>58.3</td>
<td>0.002*</td>
<td></td>
</tr>
<tr>
<td>Self employment</td>
<td>45.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmer</td>
<td>53.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation of the respondents:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casual worker</td>
<td>43.5</td>
<td>21.621</td>
<td>0.001*</td>
</tr>
<tr>
<td>Unemployed/student</td>
<td>44.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal employment</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employment/farming</td>
<td>38.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>32.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No. of rooms:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 3 rooms</td>
<td>3.4</td>
<td>0.003*</td>
<td></td>
</tr>
<tr>
<td>&lt; 2 rooms</td>
<td>1.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>House rent:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 2000 kshs</td>
<td>2.388</td>
<td>0.033*</td>
<td></td>
</tr>
<tr>
<td>&gt; 2100 kshs</td>
<td>1.343</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p-value significant <0.05

The association between types of materials for the walls of the house, type of roofing material, type of floor material, main source of lighting and main source of cooking and continued GMP was determined and the following findings were reported. There
was a significant association between houses with walls made of cement/stone/blocks/burnt bricks and houses with floor materials made of cement/wooden/tiles and continued GM (chi-square; p=0.001) while the rest were not significant. The findings showed that the respondents who were living in permanent houses were more likely to continue taking their children for continued GM. Similarly, there was a significant relationship between the main source of lighting and the main source of cooking fuel and continued GM. The respondents who used paraffin and electricity as main source of lighting; and firewood and gas as the main source of fuel for cooking were more likely to continue with GM (chi-square; p<0.001). The rest of the variables were not significantly related to the practice of continued GM (Table 4.11).

The study findings showed that among the household items owned by the respondents, there was a significant association between radio, television, video, telephone and car and continued GM (chi-square; p=0.001). Based on the proxy indicators of the socio-economic indicators presented, the findings revealed that the respondents who had higher (owned land, lived in bigger vehicles) socio-economic status were more likely to continue taking their children for GM. The rest of the indicators; growing of cash and subsistence crops were insignificantly related to the practice of continued GM. The growing of cash crops and subsistence crops was not significantly related to the practice of continued GM (Table 4.11).
Table 4.11: Relationship between maternal socio-economic characteristics and the practice of continued growth monitoring Cont’

<table>
<thead>
<tr>
<th>Socio-economic characteristics</th>
<th>Continued GM for children 10-59 months N=317</th>
<th>Chi-square $\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of wall material for the house</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron sheets/timber</td>
<td>33.3</td>
<td>27.447</td>
<td></td>
</tr>
<tr>
<td>Mud and wood poles</td>
<td>32.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cement/stones blocks</td>
<td>66.7</td>
<td></td>
<td>0.001*</td>
</tr>
<tr>
<td>Bunt bricks</td>
<td>63.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mud and cement</td>
<td>26.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of floor material for house:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthen</td>
<td>32.4</td>
<td>16.530</td>
<td></td>
</tr>
<tr>
<td>Cement/wooden/tiles</td>
<td>56.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main source of lighting:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin</td>
<td>34.8</td>
<td>23.416</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>62.9</td>
<td>18.856</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>45.5</td>
<td>.253</td>
<td></td>
</tr>
<tr>
<td>Candle</td>
<td>52.9</td>
<td>1.178</td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>0.0</td>
<td>.679</td>
<td></td>
</tr>
<tr>
<td>Main source of cooking fuel:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firewood</td>
<td>36.0</td>
<td>15.055</td>
<td></td>
</tr>
<tr>
<td>Charcoal</td>
<td>41.6</td>
<td>.089</td>
<td></td>
</tr>
<tr>
<td>Kerosene</td>
<td>63.6</td>
<td>2.560</td>
<td></td>
</tr>
<tr>
<td>Gas:</td>
<td>83.3</td>
<td>19.901</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>75.0</td>
<td>2.017</td>
<td></td>
</tr>
<tr>
<td>Ownership of household items:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td>44.0</td>
<td>14.978</td>
<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td>43.8</td>
<td>.080</td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>56.5</td>
<td>14.031</td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td>70.2</td>
<td>20.402</td>
<td></td>
</tr>
<tr>
<td>Sofa Set</td>
<td>49.2</td>
<td>6.969</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>46.0</td>
<td>11.745</td>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
<td>42.1</td>
<td>.086</td>
<td></td>
</tr>
<tr>
<td>Car</td>
<td>91.7</td>
<td>13.628</td>
<td></td>
</tr>
<tr>
<td>Oxen</td>
<td>50.0</td>
<td>.077</td>
<td></td>
</tr>
<tr>
<td>Donkey</td>
<td>20.0</td>
<td>.876</td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>39.2</td>
<td>0.732</td>
<td></td>
</tr>
<tr>
<td>Growing of food crops</td>
<td>39.0</td>
<td>1.578</td>
<td></td>
</tr>
<tr>
<td>Growing of cash crops</td>
<td>39.9</td>
<td>.060</td>
<td></td>
</tr>
</tbody>
</table>

* p-value significant <0.05

4.6.2 Maternal knowledge and continued growth monitoring

The association was done between maternal knowledge on; importance of taking children for GM, importance of taking children for GM after immunization
schedules, information displayed on the child health card and continued GM. The results showed that maternal knowledge was positively associated with continued growth monitoring. The study findings revealed that the mothers who had knowledge on the importance of taking children for GM, importance of taking children for GM after immunization and information displayed on the child health card were more likely to continue with continued GM (chi-square; p=0.000) (Table 4.12).

Table 4.12: Relationship between maternal knowledge and the practice of continued growth monitoring

<table>
<thead>
<tr>
<th>Maternal knowledge</th>
<th>Continued GM for children 10-59 months N=317</th>
<th>Chi-square $\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important to take the child for weighing:</td>
<td>56.5%</td>
<td>12.456</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td>It is important to take child for continued GM:</td>
<td>61.3%</td>
<td>14.927</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td>Understands the info on the child health card:</td>
<td>60.3%</td>
<td>20.217</td>
<td>&lt;0.001**</td>
</tr>
</tbody>
</table>

** p-value significant <0.001

4.7 Association between availability of health facilities/services and the practice of continued growth monitoring

The study findings showed availability of health facilities (distance from respondents home to the facility 5 km; return journey) was significantly associated with continued GM (chi-square; p=0.001). Equally the respondents who received nutrition advice (chi-square; p=0.000) and vitamin A supplementation (chi-square; p=0.001) alongside GM services were more likely to participate in continued GM (Table 4.13).
Table 4.13: Relationship between availability of health facilities/services and the practice of continued growth monitoring

<table>
<thead>
<tr>
<th>Availability and accessibility of health services</th>
<th>Continued GM for children 10-59 months N=317</th>
<th>Chi-square $\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from respondents home to the facility 5 km; return journey</td>
<td>46.2</td>
<td>10.111</td>
<td>&lt; 0.001*</td>
</tr>
</tbody>
</table>

**Health services provided in addition to GM:**

<table>
<thead>
<tr>
<th>Service</th>
<th>%</th>
<th>Chi-square $\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition advice</td>
<td>61.3</td>
<td>14.000</td>
<td>&lt;0.001**</td>
</tr>
<tr>
<td>Immunization</td>
<td>41.3</td>
<td>1.356</td>
<td>0.254</td>
</tr>
<tr>
<td>Treatment of diseases</td>
<td>41.5</td>
<td>0.808</td>
<td>0.693</td>
</tr>
<tr>
<td>Vitamin A supp.</td>
<td>47.3</td>
<td>11.203</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Deworming</td>
<td>28.6</td>
<td>0.415</td>
<td>0.520</td>
</tr>
<tr>
<td>Distr. of mosquito nets</td>
<td>100</td>
<td>1.481</td>
<td>0.224</td>
</tr>
</tbody>
</table>

* p-value significant <0.05    ** p-value significant <0.001
CHAPTER FIVE: DISCUSSION

5.1. Introduction

The first 5 years of life are crucial for ensuring adequate nutrition, growth and development of the child. GM allows mothers and parents to be well informed and empowered to monitor the growth and development of their children. It also allows health workers through a cost-effective tool, to assess and monitor the growth and nutritional status of children, support exclusive breastfeeding in the first 6 months, appropriate complementary feeding practices and continued breastfeeding for 2 years or more (Behague, 1993; Dixon, 1993; WHO, 2003).

A search through the available literature showed that no studies that have been done on continued GM, hence scarcity of current data to compare the findings of this study with. Most of the studies have focused on effectiveness of growth monitoring (Ashworth et al., 2008) and in Kenya, usefulness of facility level growth monitoring data (MOH and UNICEF, 2003; 2004).

Health facility data in Kenya show that GMP is not done per schedule or consistently until the child is 59 months in line with the WHO recommendations (MOH and UNICEF 2004). The majority of mothers stop when immunization is completed, usually at 9 months. Factors influencing the practice of continued GM have not been fully investigated. To improve continued GM, it is important that the factors influencing the practice are known so that appropriate interventions are put into place.
5.2 Demographic and socio-economic characteristics of the children and respondents

Overall, most of the children in the study were aged between 12 and 35 months and the mean age was 21.8 (±14.7). The proportion of girls to boys was similar. The respondents in the study were young; between the ages of 21 and 29 years. Most of the respondents were married. This is a positive finding as marriage has the potential of enhancing attendance of continued GM since husbands when provided with health education have been shown to assist and encourage their wives to take their children for child welfare services at the health facilities. This was the finding in a study conducted in Kenya by Kwambai et al., (2013) which found that marriage was positively related to ante-natal care attendance. The same study established that men were interested and some even forced their wives to attend ante-natal care clinics.

The major source of income for most households in the study population was self-employment. Overall, the socio economic status of the respondents was low; the respondents lived in semi-permanent and own residential houses. The participants in the study used paraffin and firewood as a source of lighting and fuel for cooking respectively and also owned radios, land, cell phones, domestic animals and growing of subsistence crops (maize, beans, vegetables and bananas) and cash crops (sugarcane, pyrethrum, fodder crops, pineapples, and sunflower). This could be evidence that characteristics of proxy indicators for socio economic are necessary for mothers to continue taking their children for growth monitoring.

5.3 Coverage for the practice of continued growth monitoring

The discussion on the practice of continued GM is challenged by the limited literature on the subject. The study revealed low coverage of continued GM (slightly
over half of the mothers continued with this practice). This is contrary to World Health Organization (WHO, 2006) and Kenyan MOH (2004), guidelines that every child should continue and complete the GM at the age of 59 months in order to get the maximum benefit to ensure the child’s survival. The findings of this study implies that most of the children who access the vital health services which are provided at the GM such as Vitamin A supplementation and counselling on appropriate infant feeding practices are more likely to practice continued GM.

The finding agrees with that of a study by Ettyang (1993) in Kakamega district on GM that estimated the coverage for growth monitoring at 32%. Nonetheless, reports from the MORPHS (2003; 2004), showed lower national coverage (30%) for GMP for children older than 12 months. The national data was however collected from health facilities whereas this study was community-based and therefore the findings may not be directly comparable.

For the respondents who continued with GM the main reasons for doing so were; in order to monitor the growth of their children and a relatively large proportion had been advised by health workers to do so. This is an indication that the health workers are encouraging mothers to continue with the practice of GM as they are expected to do.

The respondents who did not practice continued GM, majority stopped at 9 months because their children had completed immunization. These findings are in agreement with the findings of a study in Ghana by Ghassemi, (1986) which revealed that most of the mothers who attended growth monitoring irregularly considered immunization more important for their child's health than growth monitoring. This belief affected the practice of continued GMP because the mothers in Ghana, similar to the findings
in this study did not attend the clinic when no immunization was scheduled. This is unfortunate because immunization and growth monitoring are critical in promoting the survival and development of children. Immunization plays a major role in increasing survival rates, and growth monitoring is a reliable means of periodically assessing children's physical development and nutrition status (Ghassemi, 1986).

A study conducted by Mapatano et al., (1997) on the attendance of children to the maternal and child clinic (MCH) in South Africa found that attendance was infrequent after 12 months, reflecting that attendance was pegged to immunization.

5.4 Maternal knowledge on the practice of continued growth monitoring

Majority of the respondents were knowledgeable on the importance of weighing of children and continued growth monitoring after immunization and the reason was to monitor the growth of children. The respondents who were not knowledgeable on the importance of continued GM after immunization, thought growth monitoring was only important for children below one year. This shows a gap on maternal education on importance of continued growth monitoring for children above 10 months old. The health workers ought to continually advice the mothers of children below 59 months on importance of GM after completion of immunizations.

The respondents were knowledgeable and understood the importance and usefulness of the information displayed on the child health card. However, majority of the respondents learnt by reading the information on their own and only a few of the respondents learnt from the health workers indicating a gap in terms of the practice of health workers as they are expected to do this. According to the study done by Owusu and Lartey (1992) on the interpretation of growth charts by mothers attending welfare clinics in Ghana, the correlation analysis indicated that a mother's attendance
significantly associated with her ability to interpret growth charts. Therefore health workers should be more engaged in educating mothers on the importance of continued GM as this may encourage them to attend GM.

5.5 Availability of health facilities for growth monitoring

The study findings showed that majority of the respondents lived within the radius of 5 km from the health facilities (return journey). This is in line with the government policy of establishing health services within the reach of the population (Parliamentary Debates, 2004). According to Gopaldas et al., (1990), GM should be conducted as near as possible to people's homes to offer convenience to parents. The study also revealed that the nearly all of the respondents who accessed other health services for example nutrition advice/counselling, immunization, treatment of diseases and vitamin A supplementation alongside GM practiced continued GM. In support of these findings Faber et al., (1998), also indicates that one study in South Africa reported a high regularity of mothers to the weighing clinics in the absence of provision of other health services.

5.6 Factors influencing the practice of continued growth monitoring

5.6.1 Demographic characteristics of the children and the mothers and socio-economic characteristics of the household

The study revealed that younger children were more likely to continue with growth monitoring than older ones. Most of the children stopped going for GM between 12 to 23 months which coincides with the time of completion of immunization schedule (from birth up to 9 months). These findings are in line with several studies, for instance, in Kenya, the Ministry of Health reports shows that GM attendance which is above 50% nationally is biased towards children less than one year of age (MOH,
According to this study, “as long as children were growing well” the mothers found it not necessary to continue taking children for growth monitoring after 10 months of age because it was tedious since most of them were working on their farms as shown by majority of mothers who were practicing subsistence and cash crop farming.

According to the findings of this study, the respondents’ division of residence influenced continued growth monitoring. The respondents who were residing in Nyamira division which is in an urban part of the Nyamira County were more likely to continue taking their children for GM than the respondents who were residing in Nyamaiya division which is located in rural part of the county. These findings may be attributed to better road network and means of transport, contributing to easy access of the health facilities.

The findings showed the respondents of higher level of education were more likely to practice continued growth monitoring. This finding demonstrates that formal education of caregivers positively relates to continued attendance for children aged between 10 and 59 months. It confirms the findings of Asirifi (2009) that low level of formal education negatively influences health care delivery in Ghana. This is not surprising as education improves awareness and the higher the level of education of the mother; the more she is likely to appreciate the need to continuously monitor her children’s growth. The mother with higher level of education is likely to understand better the consequences of growth faltering of her children. Such knowledge also makes the mother active in making decisions regarding the diet; feeding and child health practices needed to achieve normal growth (Fagbule et al., 1990).
The study further indicated that the mothers and their husbands who were in formal employment were more likely to practice continued growth monitoring. Although people in formal employment are expected to have less time to attend clinics, this finding contradicts the study findings in Ghana (Adu-Gyamfi & Adjeri, 2013) which revealed that the occupation and other business activities of caregivers was found to be a major reason for the default rate of CWC attendance among children 24 to 59 months. The findings from Ghana are in agreement with the findings in MICS, 2008 which reported that mothers’ involvement in businesses and other works are contributory factors to low CWC attendance in many parts of Africa and Ghana in particular (Adu-Gyamfi & Adjeri, 2013).

Mothers from higher socio-economic status were more likely to practice continued GM based on the proxy indicators. Respondents who lived in houses with three or more rooms were more likely to practice continued GM. Similarly, the respondents who lived in houses whose walls were made of cement/blocks/burnt bricks, floors made of cement/wooden/tiles and roofing made of iron sheets and those who paid higher house rent practiced continued growth monitoring.

The respondents who used electricity and paraffin as the main source of lighting; and firewood and gas as the main source of cooking fuel were more likely to practice continued growth monitoring. The owners of household items like radios, televisions, DVDs or videos, telephones and cars were more likely to continue taking their children for continued growth monitoring. This is an indication that high socio-economic status is critical for continued growth monitoring. For instance, with improved socio-economic status the respondents may be better able to afford transport charges to the clinics and therefore probably more likely to access the
health services. Additionally, respondents of higher education level are likely to better understand the importance of these services to the health of their children and thus would seek the services more frequently.

Therefore the researcher rejected the hypothesis that the socio-economic and demographic characteristics does not influence continued GM, though GM should be practiced for all children below 5 years regardless of socio-economic status. The measure of growth is a measure of overall well-being and the detection of poor growth is an objective, albeit non-specific, indicator of a problem with the child and/or the environment in which the child is being raised (Griffiths and Del Rosso, 2007).

5.6.2 Maternal knowledge and the practice of continued growth monitoring

The maternal knowledge among the respondents was good as evidenced by the respondents who were knowledgeable on importance of taking children for GM, importance of taking children for growth monitoring promotion after immunization schedule and those who understood the usefulness of the information displayed on the child health card were more likely to practice continued GM. This is a demonstration that sensitization of respondents on the importance of continued growth monitoring for children above 10 months of age and understanding the information on the child health book is necessary for continued GM. Thus the researcher rejected the hypothesis that maternal knowledge does not influence continued GM and therefore, the health workers should educate mothers on the usefulness of the information on the cards.
5.6.3 Availability of health facilities and services

The study showed that the respondents who lived within the radius of 5 kilometres return journey from the health facilities (Parliamentary debates, 2001) were likely to practice continued growth monitoring, indicating that availability and accessibility positively influence the practice of continued growth. The findings concur with those of a study conducted in Congo which showed that regular attendance in GM sessions was associated with the distance between the health facility and the respondents home (Ndao, 1992), however, according to Ashworth et al., (2008) comparative data from facilities with no GMP services would be needed for a concrete conclusion.

Long distances to the health facilities may be a hindrance to the mothers to continue with growth monitoring especially if the children are looking well because of the competing roles. The findings concur with those of a study done in Ghana (Adu-Gyamfi and Adjeri, 2013) in which distance was mentioned as a barrier to CWC attendance thereby confirming the finding by Gething et al., (2004), that utilization of health care facilities is affected by distance. This is also in line with the findings by Feikin, et al, (2009) that the rate at which young children access health services decreases by distance; and Nwaniku et al., (2002) who found in Kenya that mothers living less than five kilometres to a health care facility utilise CWC services than those who live beyond five kilometres of the a facility. This also suggests that in the study area, physical distance to a child welfare clinic influences attendance of GM. Hence the researcher rejected the hypothesis that availability of health facilities/services does not influence continued GM.

According to the study, the respondents who received other health services/health messages or health talks alongside the GM services; nutrition counselling/ education
and vitamin A supplementation were more likely to continue with GMP than those who did not receive those services. The study findings are in agreement the findings of Hurtado et al., (2008), which showed that growth monitoring is a key intervention to deliver counseling and other health messages to mothers through counseling, group talks, demonstrations and follow-up home visits. In Bangladesh for instance, participants in GMP programme had higher rates of Vitamin A supplementation (Karim et al., 1994).
CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction
This was a community based cross-sectional analytical study whose purpose was to determine factors influencing continued growth monitoring among children 0 to 59 months of age. The study was done in two divisions (Nyamira and Nyamaiya) of Nyamira County representing both “urban” and “rural” settings respectively.

6.2 Summary of the study findings
- Most of the children in the study were 12 to 35 months old with the proportion of girls to boys being similar. The respondents in the study were young women, married with mainly secondary school level of education. The respondents were mainly of low socio-economic status with the main sources of income small scale farming and self-employment.
- Overall, the coverage for continued GM was low with the lowest coverage among children 12 to 24 months.
- Majority of the respondents were knowledgeable on importance of continued GMP after immunization schedule and they equally knew and understood the importance of the information displayed on the child health card.
- The health facilities were accessible (within 5 km) for the majority of the respondents.

The factors related to the practice of continued growth monitoring
- The Childs’ age was significantly associated with the practice of continued GM while the age of the respondents, marital status did not have association with practice of continued GM. The respondents’; level of education and husbands’ occupation were associated with the practice of continued GM.
Similarly respondents’ type of houses, source of lighting and cooking and types of owned household items was associated with the practice of continued GM. Equally the use of electricity and paraffin as main source of lighting; and firewood and gas as main source of cooking fuel respectively among the respondents was associated with the practice of continued GM.

- Respondents knowledge on the importance of taking children for GM regularly and understanding of the importance of the information displayed on the child health card were positively associated with the practice of continued GM
- The availability of health facilities within the radius of 5 km return journey was associated with the practice of continued GM.

6.3 Conclusions

Based on the findings of this study the following conclusions are made:

- The coverage for continued GM was low in Nyamira County with the urban area (Nyamira division) having a higher coverage than the rural Nyamiya division. This is probably because of better accessibility to the health facilities in the urban compared to the rural.
- Maternal knowledge in terms of the health benefits of GM was high despite the fact that they found it tedious to continue with growth monitoring after the child completed immunization, especially if the child was well and in their opinion was growing well.
- The availability of health services was not a major challenge for most of the respondents in this study. Health facilities were available (within a radius of 5 km return journey) to most of the respondents. The challenge was the accessibility in terms of transport costs for some of the mothers.
• The factors influencing the practice of continued growth monitoring among children 10 to 59 months were:

  • Maternal demographic and socio-economic status were critical factors influencing the practice of continued GM. Mothers of higher socio-economic status (based on proxy indicators) were more likely to continue with GM probably because they could afford transportation costs to the health facilities or were of higher education level and may be better understood the need for this practice Therefore the researcher rejected the hypothesis that the socio-economic and demographic characteristics does not influence continued GM.

  • Knowledge is considered a pre-requisite of desirable health practice. In this study, maternal knowledge on GM positively influenced the practice of continued GM. As would be expected, mothers who knew the health benefits of continued GM and also understood the information displayed on the Child Health Cards were more likely to practice continued GM. Hence the hypothesis that maternal knowledge does not influence continued GM was rejected.

  • Accessibility of health facilities/services was critical for continued GM in this study population. The hypothesis that availability of health facilities/services does not influence continued GM was therefore rejected.
6.4 Recommendations

6.4.1 Recommendation for practice

There is need for health care professionals to strengthen health and nutrition education to mothers on the benefits of continued GM for instance by helping mothers to understand and interpret the information on the child health cards.

6.4.2 Recommendations for further Research

1. Similar studies should be conducted in other Counties to investigate the factors influencing the practice of continued GM as they may be context specific.

2. There is need for qualitative study to give more in-depth understanding why continued GM is not practiced after 10 months.

3. A study on the GM to investigate health workers role in the promotion of GM after 10 months.

4. There is need to conduct a longitudinal study to establish the whole range of factors that influence continued GM practices since this study was cross-sectional in nature and the factors influencing continued GM may vary over time and with the age of the child.
REFFERENCES


Growth monitoring; 


Parliamentary debates, 2004


UNICEF Kenya country office (2004). *A study on the usefulness of facility level growth monitoring data*


APPENDICES

Appendix A: Letter of introduction

My names are Jane Ilusa Nyabuti. I am an MSc Student at Kenyatta University and carrying out a research on “Factors influencing the continuation of growth monitoring promotion among children aged 0 to 59 months in Nyamira County”. I am kindly asking for permission to collect information on the above topic. The questionnaire will take approximately 40 to 50 minutes and all information given will be treated with great confidentiality. The findings of the study will be communicated back to the community to improve the practices of growth monitoring and promotion. Thank you for your cooperation.
Appendix B: Questionnaire

FACTORS ASSOCIATED WITH THE GROWTH MONITORING CONTINUATION AMONG CHILDREN 10 TO 59 MONTHS OLD IN NYAMIRA COUNTY

ADMINISTRATIVE DETAILS

Questionnaires ID NO____________ Village name______________ Division _________
Name of the interviewer__________________       No. of Respondent______________
Date of interview____________Time started ______________Time finished____________
Questionnaire checked by_______________________________________

SECTION A: CHILD’S DETAILS

A3. Sex: 1 Male [ ] 2-Female [ ]
A4. Date of birth__________________ A5. Age of child in Months__________________

SECTION 1: DEMOGRAPHIC CHARACTERISTICS OF THE HOUSEHOLDS

INSTRUCTIONS: Ask the respondents the question and draw a line across the box for the response in the appropriate box / space in the table.

1.1. What is the age of the respondent (mother/primary caregiver in completed years ______

1.2. What is your marital status?

[ ] 2. Divorced [ ] 4. Separated

1.3. What is your Level of education?

[ ] 1. Never went to school [ ] 3. Secondary level
[ ] 2. Primary level [ ] 4. College level
[ ] 5. Adult education only

1.4. What is your occupation?

[ ] 1. Casual worker [ ] 4. Self employment
[ ] 2. Unemployed [ ] 5. Housewife
[ ] 3. Formal employment
[ ] 6. Others (specify_______________________)

1.5. What is your husband’s occupation?

[ ] 1. Casual worker [ ] 3. Formal employment
[ ] 2. Unemployed [ ] 4. Self employment
[ ] 5. Others (specify_______________________)
SECTION 2: SOCIO-ECONOMIC CHARACTERISTICS OF THE HOUSEHOLDS

2.1. What is your main source of income?

☐ 1. Salaried job
☐ 2. Husband
☐ 3. Self employment
☐ 4. Others (specify ____________________________)

2.2. Do you live in your own house?

☐ 1. Yes
☐ 2. No

2.3. How many rooms are in the house? __________

2.4. If rented, how much do you pay per month? Ksh_____________

2.5. EVALUATION OF THE TYPE OF LIVING CONDITIONS:

2.5.1. What type of wall is your house made of?

☐ 1. Iron sheets
☐ 2. Mud and wooden poles
☐ 3. Cement / stones bricks
☐ 4. Burnt brick
☐ 5. Mud and cement
☐ 6. Timber
☐ 7. Other (specify____________________________________)

2.5.2. What is the roof of your house made of?

☐ 1. Iron sheets
☐ 2. Tiles
☐ 3. Grass
☐ 4. OTHER (specify___________)

2.5.3. What is the floor of your house made of?

☐ 1. Earthen
☐ 2. Cement
☐ 3. Other (specify____________________________________)

2.6. What is your main source of lighting? (Put across against the appropriate response)

<table>
<thead>
<tr>
<th>No</th>
<th>Types of lighting</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6.1</td>
<td>Paraffin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6.2</td>
<td>Electricity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6.3</td>
<td>Candle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6.4</td>
<td>Solar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6.5</td>
<td>Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6.6</td>
<td>Other (specify__________________________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.7. What is your main source of cooking fuel?

<table>
<thead>
<tr>
<th>No</th>
<th>Source of fuel</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.7.1</td>
<td>Firewood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7.2</td>
<td>Charcoal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7.3</td>
<td>Kerosene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7.4</td>
<td>Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7.5</td>
<td>Electricity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7.6</td>
<td>Other (specify__________________________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.8. Do you possess the following items?

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>1. Yes</th>
<th>2. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8.1</td>
<td>Radio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.2</td>
<td>Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.3</td>
<td>Television</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.4</td>
<td>Video/vcd/dvd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.5</td>
<td>Sofa set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.6</td>
<td>Phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.7</td>
<td>Motorcycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.8</td>
<td>Car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.9</td>
<td>Oxen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.10</td>
<td>Donkey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.11</td>
<td>Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.12</td>
<td>Cows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.13</td>
<td>Goats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.14</td>
<td>Sheep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.15</td>
<td>Chicken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8.16</td>
<td>Others (specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.9. Do you grow food crops?

1. Yes, (refer to question 2.10)
2. No

2.10. If yes, what types of food crops do you grow?

<table>
<thead>
<tr>
<th>No</th>
<th>Food crop</th>
<th>1. Yes</th>
<th>2. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.10.1</td>
<td>Maize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.2</td>
<td>Millet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.3</td>
<td>Sorghum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.4</td>
<td>Wheat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.5</td>
<td>Banana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.6</td>
<td>Cassava</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.7</td>
<td>Sweet potatoes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.8</td>
<td>Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.9</td>
<td>Cowpeas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.10</td>
<td>Kales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.11</td>
<td>Cabbage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.12</td>
<td>Managu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.13</td>
<td>saga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10.14</td>
<td>Terere</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.11. Do you grow cash crops?

1. Yes, (refer to question 2.12)
2. No

2.12. If yes, which types of cash crops?

<table>
<thead>
<tr>
<th>No</th>
<th>Cash crop</th>
<th>1. Yes</th>
<th>2. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.12.1</td>
<td>Coffee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.2</td>
<td>Tea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.3</td>
<td>Sugarcane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.4</td>
<td>Sunflower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.5</td>
<td>Pyrethrum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.6</td>
<td>Banana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.7</td>
<td>Pineapples</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.12.8</td>
<td>Others (Specify______________________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 3: MATERNAL KNOWLEDGE AND ATTITUDES TOWARDS GM

3.1. Is it important for your baby to be taken for weighing regularly?

☐ 1. Yes, (refer to question 3.2)
☐ 2. No, (refer to question 3.3)

3.2. If yes, why?

☐ 1. To monitor growth of the child
☐ 2. To take corrective measures in case of growth falter
☐ 3. To monitor the child health
☐ 4. To determine if the child is sick or not
☐ 5. Other (specify______________________________________________________)

3.3. If NO, why?

☐ 1. weighing does not help children to grow
☐ 2. weighing is only good for children below one year
☐ 3. others (specify______________________________________________________)

3.4. Is it important for you to continue taking your child for GM clinics even after Immunization schedules?

☐ 1. Yes, (refer to question 3.5)
☐ 2. No, (refer to question 3.6)
☐ 3. Does not know

3.5. If yes, why?

☐ 1. To continue monitoring the growth of the child
☐ 2. To continue getting nutrition/health advice from health workers
☐ 3. It is the policy of the of the government for children to continue Gm until 5 years
☐ 4. The health workers advice children continue for GM
☐ 5. Other (specify______________________________________________________)

3.6. If No, why not?

☐ 1. The child is growing well without weighing
☐ 2. It is tedious going to the clinic every months
☐ 3. The healthy facility is far
☐ 4. The child does not fall sick frequently
3.7. Do you know what information is displayed on the child health card?
   - Yes, (refer to question 3.8)
   - No, (skip question 3.8)

3.8. If yes, who taught you?
   - Taught by the health worker
   - Taught by a fellow mother
   - She read it on her own
   - Others (specify ____________________________)

3.9. Do you think it is important to know the information displayed on the child health card?
   - Yes
   - No
   - Does not know if the information is important

3.10. Is this information useful?
   - Yes, (Refer to question 3.11)
   - No, (skip question 3.11)
   - Does not know if the information is useful

3.11. In which way is this information useful?
   - It indicates how the child is growing
   - It gives direction on how the child should grow
   - It makes the mother or care taker understand the important of GM
   - Helps on how to take care of the child
   - Others (specify ____________________________)

3.12. What are the benefits of GMP?
   - Health workers give nutritional counselling/education
   - To monitor the growth of children
   - To take corrective measures in case of growth falter
   - To prevent diseases
   - Others (specify ____________________________)

SECTION 4: AVAILABILITY, ACCESSIBILITY AND UTILIZATION OF HEALTH SERVICES
4.1. Are there health facilities available around your home?

- [ ] 1. Yes
- [ ] 2. No

4.2. How far is the facility from your home? _______________ km.

4.3. For what services do you usually take your children to the health facility?

- [ ] 1. Weighing, (refer to question 4.3)
- [ ] 2. Nutrition advice
- [ ] 3. Immunization
- [ ] 4. Treatment of diseases
- [ ] 5. Vitamin A supplementation
- [ ] 6. Others (specify ____________________________)

4.4. Where do you take your child for GMP?

- [ ] 1. GOK facility
- [ ] 2. Private facility
- [ ] 3. Mission facility
- [ ] 4. Others (Specify____________________________________)

4.5. What factors influence or determine where (health facility) you take your children for GMP?

<table>
<thead>
<tr>
<th>No</th>
<th>Reason for going to the facility</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.1</td>
<td>It is the nearest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5.2</td>
<td>It is the one offering growth monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5.3</td>
<td>It is the only one available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5.4</td>
<td>The health workers are available and committed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5.5</td>
<td>Others (specify __________________________________________________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.6. What means do you use to get to the facility?

<table>
<thead>
<tr>
<th>No</th>
<th>Means of transport</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6.1</td>
<td>Public vehicle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6.2</td>
<td>Taxi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6.3</td>
<td>Motorbike</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6.4</td>
<td>Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6.5</td>
<td>Walking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6.6</td>
<td>Others (specify_______________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.7. What types of services are offered at the health facility?

<table>
<thead>
<tr>
<th>No</th>
<th>Services</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7.1</td>
<td>Weighing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.2</td>
<td>Nutrition counselling/education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.3</td>
<td>Immunization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.4</td>
<td>Treatment of diseases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.5</td>
<td>Family planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.6</td>
<td>Food supplementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.7</td>
<td>Vitamin A supplementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.7.8</td>
<td>Others (specify__________________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.8. Are the weighing services offered full time (Monday to Friday and 8 am to 5 pm)?

- [ ] 1. Yes
2. No

4.9. How long do you take to go through the whole process of GM ____________ minutes

4.10. How do you rate the services offered in the facility

☐ 1. Good, (refer to question 4.11)
☐ 2. Poor, (refer to question 4.12)

4.11. If the answer is good, why

☐ 1. serving time less than 30 minutes,
☐ 2. services are always available
☐ 3. Others (specify ________________________________)

4.12. If the answer is poor, why

☐ 1. Time taken is more than 1 hour,
☐ 2. services are irregular,
☐ 3. Some services are not available
☐ 4. others (specify ________________________________)

4.13. How do you rate the staffs’ performance?

☐ 1. Committed, (refer to question 4.14)
☐ 2. Not committed, (refer to question 4.15)

4.14. If the answer is committed, why

☐ 1. staffs always available to offer services
☐ 2. Staffs are very friendly
☐ 3. Others (specify ________________________________)

4.15. If the answer is not committed, why

☐ 1. sometimes staffs are not available
☐ 2. Staffs are not very friendly
☐ 3. Others (specify ________________________________)

SECTION 5: FACTORS ASSOCIATED WITH CONTINUED GM FOR CHILDREN 10 TO 59 MONTHS OLD

5.1. Do you still take your child for growth monitoring “weighing”?
1. Yes, (refer to question 5.2)
2. No

5.2. If yes, why?
1. It helps to monitor the growth of the child
2. During GM, nutrition advice is given
3. It is the government policy to children for GM up to 5 years
4. The health workers advice to take children for GM
5. Others (specify _________________________________)

5.3. At what age did you stop taking the child for GM? (For those children who stopped GMP)
_____________________________ Months

5.4. Why did you stop at the above age?
1. The child had completed immunization
2. The child was growing well
3. The child does not get sick
4. Was tired
5. Others (specify _________________________________)

5.5. Do you face any challenges when you take your child for weighing?
1. Yes, ( refer to question 5.6)
2. No

5.6. If yes, What Challenges do you face in taking your child for weighing? (Probe for all the challenges)

<table>
<thead>
<tr>
<th>No</th>
<th>Challenges</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.6.1</td>
<td>The healthy facility is far</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6.2</td>
<td>It takes long to be served</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6.3</td>
<td>Healthy workers are not always available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6.4</td>
<td>Inadequate time to take the child for GMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6.5</td>
<td>Others (specify _______________________________)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Map of the Study Area

NYAMIRA COUNTY
Appendix D: Research Permit

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Jane Ilusa Nyabuti
of (Address) Kenyatta University
P.O. Box 43844, Nairobi
has been permitted to conduct research in

Nyamira Location
Nyangoma District
Province

on the topic: Factors influencing the continuation of growth monitoring promotion among children aged 12-59 months in Nyamira County, Kenya

for a period ending 31st December 2012.

Research Permit No. NCST/RCD/12A/012/25
Date of issue 2nd March 2012
Fee received KSH.1,000

Applicant's Signature

Secretary

National Council for Science & Technology
Appendix E: Ethics and Research Committee Approval

Jane Ilusa Nyabuli
H60/20887/2010
Dept. of Foods, Nutrition and Dietetics
Kenyatta University

Dear Jane

RESEARCH PROPOSAL: FACTORS INFLUENCING THE CONTINUATION OF GROWTH MONITORING PROMOTION AMONG CHILDREN AGED 0 TO 59 MONTHS IN NYAMIRA COUNTY, KENYA (P301/05/2012)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and approved your above revised proposal. The approval periods are 1st February 2013 to 31st January 2014.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.

b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.

c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.

d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.

e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (Attach a comprehensive progress report to support the renewal)

f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.

g) Submission of an executive summary report within 90 days upon completion of the study

This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website www.uonbi.ac.ke/activities/KNH/UoN

"Protect to Discover"
Appendix F: Approval of Research Proposal

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School
TO: Jane Illusa Nyabuti
C/o Department of Foods, Nutrition and Dietetics

DATE: 17th December, 2011
REF: H60/20587/2010

This is to inform you that the Graduate School Board at its meeting of 5th December 2011 approved your research proposal for M.Sc degree.

JOHN M. ODONGI
FOR: DEAN, GRADUATE SCHOOL

cc. Chairman, Department of Foods, Nutrition and Dietetics
Supervisors:

1. Dr. Sophie Ochola
   C/o Department of Foods, Nutrition and Dietetics
   Kenyatta University.

2. Dr. Elizabeth Kuria
   C/o Department of Foods, Nutrition and Dietetics
   Kenyatta University.
Internal Memo

FROM: Dean, Graduate School  DATE: 17th December, 2011

TO: Jane Ilusa Nyabuti  REF: H60/20587/2010
C/o Department of Foods, Nutrition and Dietetics

REF: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the Graduate School Board at its meeting of 5th December 2011 approved your research proposal for M.Sc degree.

JOHN M. ODONGI
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Department of Foods, Nutrition and Dietetics

Supervisors:

1. Dr. Sophie Ochola
   C/o Department of Foods, Nutrition and Dietetics
   Kenyatta University.

2. Dr. Elizabeth Kuria
   C/o Department of Foods, Nutrition and Dietetics
   Kenyatta University.

JM0775wh
Appendix G: Research Authorization

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

NCST/RCD/12A/012/25

Jane Ilusa Nyabuti
Kenyatta University
P.O.Box 43844
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Factors influencing the continuation of growth monitoring promotion among children aged 12 to 59 months in Nyamira County, Kenya,” I am pleased to inform you that you have been authorized to undertake research in Nyamira District for a period ending 31st December 2012.

You are advised to report to the District Commissioner, the District Education Officer and the Medical Officer of Health, Nyamira District before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The District Commissioner
The District Education Officer
Medical Officer of Health
Nyamira District.