

**ADHERENCE TO WELL CHILD CLINIC AND THE  
CONTRIBUTING FACTORS AMONG INFANTS AT THE MOI  
TEACHING AND REFERRAL HOSPITAL, ELDORET, KENYA**

**A Thesis submitted in partial fulfillment of requirements of the Masters  
of Medicine in Child Health and Paediatrics at Moi University, School of  
Medicine.**

By

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**SM/PGCHP/07/2010**

**DECLARATION**

**Student`s Declaration**

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.....

Signature

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**Supervisors declaration**

This thesis has been submitted with our approval as university supervisors.

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**Dedication**

I dedicate this research to all the mothers, children and staff at the MTRH Well Child (baby) clinic.

**Adherence to Well Child Care and the contributing factors among infants at the Moi Teaching and Referral hospital, Eldoret, Kenya.**

**ABSTRACT**

**Background:** Well child care services are offered free or at a subsidized cost in Kenya yet the country has performed poorly in child health indicators. Adherence to well child clinics in the developed world (US) average 61.4 percent. Kenyan studies on immunization show high vaccine dropout rates but the overall clinic adherence has not been studied.

**Objective:** To determine the level of adherence to scheduled well child care (WCC) visits and to investigate the factors contributing to good or poor adherence.

**Research design and methodology:** This was a prospective cohort study conducted at the Well child clinic of the Moi Teaching and Referral Hospital, Eldoret, Kenya on Infants and their mothers attending the clinic during February 2012 to May 2013. Subjects were enrolled during their first visit and followed up for 12 months. Mothers who demonstrated poor attendance at the end of the study were phoned to establish the reasons for dropping out and those with good attendance interviewed at their twelfth visit. A structured questionnaire was used to collect data. Factors associated with poor and good adherence to well child care were analyzed using Logistic regression model and Odds ratios and P values derived. Factors that influenced the length of seeking well child care and pattern of drop out from care were analyzed using survival analysis methods (Cox proportional hazards model and Kaplan-Meier estimates where by hazard ratios and p values were derived. Kaplan-Meier plots estimated survivor function and its 95% confidence interval.

**Results:** 154 mother infant pairs were studied with 78(50.6%) of infants being female and the median age of mothers being 27 years. Only 75(48.7%) knew the required duration of well child care. Majority, 132 (88.3%) of the mothers were knowledgeable on what services are offered in WCC. Only 5(3.3%) of the infants attended all while 12(7.8%) attended more than 75% of the scheduled visits in the first year. Median survival time was the fourth visit. All the factors studied were not statistically significant in affecting adherence. Majority 8(66.7%) of mothers with good attendance cited their awareness of the required duration of care as the reason. Among the respondents with poor attendance, most dropped from care because they had finished immunization 43(33.6%).

**Conclusions and Recommendation:** Adherence to well child care among infants at MTRH is very low and majority of infants drop out on the fourth visit. Most respondents did not know the duration of WCC care. All factors studied were not statistically significant in affecting adherence. This study recommends parents to be sensitized on the stipulated duration of WCC and further studies to be done to investigate adherence to WCC in various Kenyan settings.

## TABLE OF CONTENTS

	PAGE
DECLARATION-----	i
DEDICATION-----	ii
ABSTRACT-----	iii
TABLE OF CONTENTS-----	iv
LIST OF TABLES-----	vii
LIST OF FIGURES-----	viii
ACKNOWLEDGEMENTS-----	ix
ACRONYMS-----	x
DEFINITIONS-----	xi
CHAPTER 1: INTRODUCTION-----	1
1:1 PROBLEM STATEMENT-----	5
1:2 JUSTIFICATION-----	5
CHAPTER 2: LITERATURE REVIEW-----	7
CHAPTER 3: RESEARCH QUESTIONS AND OBJECTIVES	
3:1 RESEARCH QUESTION-----	12
3:2 OBJECTIVES-----	12
3:2 CHAPTER 4:0 METHODOLOGY	
4:1 STUDY DESIGN-----	13
4:2 STUDY SITE-----	13
4:3 STUDY POPULATION-----	13

4:4 SAMPLING TECHNIQUE-----	14
4:5 SAMPLE SIZE-----	14
4:6 STUDY METHODS-----	17
4:7 DATA ANALYSIS-----	19
4:8 LIMITATIONS-----	20
4:9 ETHICAL CONSIDERATIONS-----	20
CHAPTER 5: RESULTS	
5:1 SOCIO DEMOGRAPHICS-----	22
5: 1:1 CHILDS PARTICULARS-----	22
5:1:2 MOTHERS PARTICULARS-----	23
5:2 MOTHERS KNOWLEDGE-----	25
5: 3 CLINIC ATTENDANCE AND ADHERENCE-----	25
5:4 DROP OUT TIMES-----	26
5:5 FACTORS CONTRIBUTING TO GOOD OR POOR ATTENDANCE--	30
5:6 REASONS FOR GOOD OR POOR ATTENDANCE-----	32
5:7 FACTORS INFLUENCING LENGTH OF SEEKING CARE-----	33
CHAPTER 6: DISCUSSION	
SOCIO DEMOGRAPHICS-----	38
ADHERENCE-----	38
DROP OUT PATTERN-----	38
FACTORS AFFECTING ADHERENCE-----	39

**CHAPTER 7: CONCLUSION & RECOMMENDATIONS**

<b>7:1 CONCLUSIONS-----</b>	<b>41</b>
<b>7:2 RECOMMENDATIONS-----</b>	<b>41</b>
<b>APPENDIX 1: REFERENCES-----</b>	<b>42</b>
<b>APPENDIX 2: CONSENT FORM-----</b>	<b>45</b>
<b>APPENDIX 3: QUESTIONNAIRE-----</b>	<b>47</b>
<b>APPENDIX 4: COPIES OF IREC APPROVAL-----</b>	<b>53</b>

**LIST OF TABLES**

Table 1: Sociodemographic characteristics of study population	pg 28-29
Table 2: Bivariate analyses of factors that contribute to good or poor clinic attendance	pg31-32
Table 3: Mothers reasons for good and poor attendance	pg 33
Table 4: Bivariate analyses of factors that influence the length of seeking care	pg 36-37



**LIST OF FIGURES**

Figure 1: Childs birth order	pg 23
Figure 2: Mothers education level	pg 24
Figure 3: Mothers occupation	pg 24
Figure 4: Mothers knowledge on duration of WCC	pg 25
Figure 5: Attendance to well child care	pg 26
Figure 6: Number and percentage of drop outs per visit	pg 27
Figure 7: Kaplan Meir estimated survival function for length of seeking care	pg 35

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**ACRONYMS/LIST OF ABBREVIATIONS**

MTRH	Moi Teaching and Referral Hospital
WCC	Well Child Clinic
HIV	Human Immunodeficiency Virus
BCG	Baccille Calmete Guerin
USA	United States of America
DPT3	Diphtheria, pertusiss, Tetanus vaccine, 3 <sup>rd</sup> dose
KDHS	Kenya Demographic and Health Survey
ANC	Antenatal Care
PNC	Postnatal Care
WHO	World Health Organization
Kgs	Kilograms
FP	Family planning
OPV	Oral Polio Vaccine
PASS	Power analysis sample size software
MOH	Ministry of Health
IQR	Interquantile range
OR	Odds Ratio
HR	Hazard Ratio

## **OPERATIONAL DEFINITIONS**

**Adherence:-** The extent to which a mother and her child follows the scheduled clinic visits.

**Good attendance:-** A child who attends more than 75% of the scheduled visits.

**Poor attendance:-** A child who attends less than 75% of the scheduled visits( ie misses > two visits out of the total twelve visits).

**Non adherence:-** A child who does not attend any other visit after enrolment.

**Transfer out:-** A child who changes place of services from MTRH to another recognized well child clinic.

**Drop out:** A child who misses more than two consecutive clinic visits.

## **CHAPTER 1: INTRODUCTION**

Well child clinics form the basics of well child health provision in health care systems. Well child care is important in reducing the incidence of avoidable illness and disease. World Health Organization (WHO) estimates that 10.6 million children under five years of age die each year of which 4.6 million die in the African region. Every minute 8 children under five years of age die in Sub-Saharan Africa. Two thirds of these deaths are due to preventable causes comprising acute respiratory infections, pneumonia, diarrheal diseases, measles, Human immunodeficiency virus (HIV) and neonatal conditions<sup>1</sup>. Well child care is provided through a series of organized scheduled visits for children during early childhood. It is in these clinics that preventive health services are offered and mothers continually taught on healthy practices. Regular check-ups on well children are important in picking early childhood illnesses and conditions e.g. Malnutrition, anemia, cancers and intervene early enough before they reach a severe stage. Services rendered include; vaccinations, developmental assessment, growth monitoring, vitamin supplementation, prevention of mother to child transmission of HIV, education on child care /weaning practices/nutrition and consultations.

Adherence means to `stick to or hold fast, to be devoted, to follow closely or exactly (World English Dictionary). The medical dictionary defines adherence as the extent to which the patient continues the agreed upon mode of treatment under limited supervision when faced with conflicting demands. It is distinguishable from compliance in that compliance describes the degree to which a patient correctly follows medical advice. Both the patient and the health-care provider affect compliance, and a positive physician-patient relationship is the most important factor in improving compliance. Until recently, the term

"non-compliance", which was sometimes regarded as meaning that not following the directions for treatment was due to irrational behavior or willful ignoring of instructions was used. Health care providers more commonly use the terms "adherence" to or "concordance" with a regimen rather than "compliance", because these terms are thought to more accurately reflect the diverse reasons for patients not following treatment directions in part or in full. Concordance is used to refer specifically to patient adherence to a treatment regimen that is designed collaboratively by the patient and physician, to differentiate it from adherence to a physician only prescribed treatment regimen. Adherence is the preferred term for the World Health Organization, The American Pharmacists Association, and the United States National Institutes of Health Adherence Research Network. Non-compliance is a major obstacle to the effective delivery of health care.

Globally much emphasis has been put on maternal and child care leading to a huge increase in access and affordability of these services. The Government of Kenya has for many years subsidized costs on maternal and child health services with well child care being offered free of charge in government health facilities and at minimal cost in other health facilities (private, mission and parastatals). Many resources have been put in place to ensure continued access to well child care. Public sensitization towards the same has been enormous.

While there has been a high enrollment in childhood vaccination services (BCG coverage of 95.6% from Kenya demographic and health survey 2008/2009), not all children who start well child care adhere to the end as required (P1-P3 drop out of 10%, KDHS08/09)<sup>2</sup>.

Drop out has also been noted between pentavalent1/pentavalent3 and between pentavalent3/measles vaccinations. These children miss some of their immunizations, their six months vitamin A dose, and considering that most of them are never brought after the measles vaccination they continue to miss on subsequent vitamin A doses. Weaning which is recommended at 6months of age is also done at a time when these children have already started to drop out of clinic thus their mothers do not receive education on best weaning and infant feeding practices given in the clinics. In recognition of the gap the Ministry of Health in Kenya introduced a programme called Mother-Child health and Nutrition weeks concept, in Kiswahili `malezi bora' in 2007 which dedicates two weeks bi-annually in May and November. It was aimed at reversing a worsening trend in the maternal and child health indicators. The Malezi bora goal is to reduce infant and maternal mortality rates by increasing utilization and improvement in the delivery of routine services in among other groups, children. The Ministry of Health demonstrated an increase in the number of children and mothers seeking care at health facilities. Despite this having boosted utilization of child health services during the exercise, it doesn't reach to all children and to those who come for the services continuation is not done until the next `malezi bora' period. Improving compliance to well child clinic visits up to 5 years of age would be a sure way of improving quality of child health services and avoiding preventable illnesses.

The Kenyan situation;-

According to the Kenya Demographic and Health Survey (KDHS) of 2008/2009, infant mortality rate (IMR) stands at 52 per 1000 live births, while the under five mortality is 74 per 1000 live births<sup>2</sup>. WHO states the Infant Mortality rate for Kenya at 60 per 1000 live births in the 2011 report<sup>3</sup>.

The immunization dropout rate between pentavalent1 and pentavalent3 was 6 percent, 10 percent for DPT-HepB-Hib (Pentavalent) and measles and 9 percent for polio vaccines<sup>2</sup>.

The well child clinic schedule starts immediately after birth with examination of the newborn infant, early initiation of breastfeeding, administration of vitamin K and tetracycline eye ointment. Baccille Calmete Guerin (BCG) and oral polio (OPV) birth dose vaccines are given at birth. If missed at birth BCG can be given at first contact and birth OPV within first 2 weeks of age. Babies who need more care for example prevention of Mother to child transmission of HIV services are initiated into the care immediately after birth. The second clinic visit is scheduled at 6weeks of age when the child receives pentavalent 1, OPV1, pneumococcal and as from 2014 rotavirus vaccines. Growth monitoring is initiated and HIV exposed children on prophylaxis are tested for infection. The remaining visits are scheduled every four weeks during the first year of life. During the third visit, infants receive pentavalent 2, pneumococcal 2 and oral polio (OPV2) vaccines. In the fourth visit, pentavalent 3, pneumococcal 3, OPV 3 are administered. Health education to mothers concerning childrens' health, general physical examination of the well child and growth monitoring are conducted at each visit. These services are thus provided in the fifth and sixth visits. In the seventh visit, first dose of vitamin A is given at six months of age. Growth monitoring, health education, general examination, nutritional advice/ counseling are offered in the eighth and ninth visits. In addition, measles vaccine and yellow fever in some districts are given. Growth monitoring, examination and health education services are continued during the eleventh and twelfth months. Second dose of vitamin A is given in the twelfth visit as well.



### **1:1 PROBLEM STATEMENT**

Despite good access to well child care services children who enroll in WCC clinics drop out before completion as shown by high vaccine drop out rates. These services are affordable and much public sensitization on the same has been done. Thus a lot of resources have been spent to avail these services. Kenya`s Infant Mortality Rate and under 5 mortality rate remain high, 52 and 74 per 1000 live births respectively, and two thirds of childhood deaths are from preventable illnesses. Kenya`s performance on child health indicators as per WHO 2011 report remain poor.

### **1:2 JUSTIFICATION**

High morbidity and mortality in children under five years of age still remains a challenge to Kenya and is a threat to achievement of Millennium Development Goal 4. WHO estimates that two thirds of deaths in children under five years of age are due to preventable causes. Well child care if provided optimally to these children will go a long way in reducing unnecessary morbidity and mortality. A lot of resources have been directed towards provision of well child care making these services cheap and accessible to a majority of the population. Despite all these efforts a huge proportion of children each year drop out of care before completion of five years missing some preventive health services and thus remain predisposed to many of these illness. Optimal utilization of well child services has been demonstrated to reduce avoidable hospitalizations <sup>7</sup> while incomplete well child care has been associated with increased illnesses<sup>6</sup>. Thus strategies to improve utilization of preventive well child care services would go a long way in reducing

childhood morbidity and mortality. To address the problem of non completion of care it is vital to determine the level of adherence to WCC and reasons as to why children drop out of care so as to come up with effective preventive strategies. Past studies have concentrated on immunizations and determined immunization dropout rates while no studies have assessed dropout in other services offered in well child clinics in Africa. Reasons for dropping out of immunizations as established in studies are diverse and vary among regions. This study sought to establish the level of adherence to well child care within the first year of life and the reasons for poor or good adherence from mothers within MTRH catchment population thus forms a basis for planning intervention in order to curb the problem.

## CHAPTER 2: LITERATURE REVIEW

Children represent the future and their healthy growth and development ought to be a prime concern of all societies (WHO)<sup>1</sup>. Kenya continues to perform poorly in most child health indicators as follows:

1. 16.4% of children under five years of age are underweight and 35.2% are stunted.
2. Vitamin A supplementation among children aged 6 – 59 months is at 30.3%.
3. Only 32% of infants are exclusively breastfed for the first six months of life.
4. 39% of children under five years of age sleep under a mosquito net.
5. 74% of children under one year of age have been immunized against measles. The global target is 80% coverage.<sup>3</sup>

Optimal Utilization of well child clinics has been a perennial global problem. Adherence to scheduled clinic visits further decreases once a child completes immunization. A study on adherence to American Academy of Pediatrics well child care guidelines on managed care found out that adherence was low despite complete financial coverage by insurance systems. Only 46% of privately insured and 35% of publicly funded children received all recommended visits<sup>4</sup>. In a systematic review of 58 articles on childhood preventive care published between 1993 to 2003 in the USA by Chung et al, estimates of children who attend all recommended visits ranged widely (from 37% to 81%).<sup>5</sup> A look into Compliance With Well Child Visit Recommendations using evidence from the medical expenditure panel survey, 2000-2002 found an average compliance ratio of 61.4%. with large differences in compliance existing among children. High compliance rates were observed

among infants (83.2%), children with special health care needs (86.6%) and children with college educated parents (74.3%).<sup>6</sup>

In Benin City, Nigeria Ayebo et al found that the proportion of newborns who attended the first visit within the recommended twenty four hours was 1.3% (2/153). The reasons for delay in initiation of well child care identified in this study were; that BCG was given only on a specific day, mothers who did not know that immunisation should commence at birth ( $P=0.0054$ ), those from low socioeconomic class ( $P=0.0056$ ), those with less than 12 years of schooling ( $P=0.0001$ ) and delivery outside of health facilities.<sup>7</sup>

Utilization of well child services in the developed world has been found to be associated with several factors. Delay in initiation of prenatal care and receipt in outpatient care among pregnant women was associated with non- completion of well child care with 77% of children having received at least 5 well child care visits by age of 2 years<sup>8</sup>. A study on the relationship between parental beliefs and their children`s receipt of preventive care found out that parents beliefs about timing of routine checkups were strongly associated with their children`s receipt of recommended routine care. Other factors were found to be parents` education level and if the child was sick in the past one year<sup>9</sup>. Immunizations have been found not to be an incentive to adherence by Hughart et al whose study demonstrated that there was no discernible difference in attendance between immunization and non immunization visits<sup>10</sup>.

Studies done in Africa have concentrated on factors affecting uptake of immunization services and not on general utilization of well child care services. However these factors differ in Africa as compared to the developed world. Reasons for partial immunization in Northern Nigeria included shortage of supplies and lack of knowledge on immunizations<sup>11</sup>.

This study concluded that to promote timely completion of immunization schedules, programmes will need to improve vaccine supply, strengthen provider`s capacity for quality service and increase community knowledge about immunization.

Factors affecting utilization of immunizations play at different levels. Determinants of uptake of the full dose of (Diphtheria, Pertusis, Tetanus) DPT3 in Northern Nigeria were studied using data from a 2004 household survey in three northern Nigeria states, Borno, Kano and Yobe. It examined the relative contribution of child`s characteristics, mothers attributes, household profiles and community factors on the probability that a child will receive the full series of DPT3 as a proxy for full immunizations. Significant community level variations in immunization uptake remained even after individual and household factors had been considered<sup>12</sup>.

Another study `Minding the immunization Gap: Family Characteristics associated with Completion Rates in Rural Ethiopia'<sup>13</sup> studied 924 children over one year of age; 79% had at least one vaccination of which 64% had DPT3/polio3. The following findings were observed;-

- a) Mothers` completing the recommended antenatal clinic (ANC) visits was strongly associated with the child receiving at least one vaccination and completing a vaccination series. Paternal characteristics may affect vaccination series.
- b) Maternal education was associated with a completed vaccination series.

In a study done in Kenya on `Factors influencing immunization coverage in Mathare valley, Nairobi'<sup>14</sup> access to immunization services was found to be excellent at 95.6% yet utilization of immunization services was suboptimal as evidenced by low percentage of

fully immunized child(69.2%) and high drop-out rate (12%). Immunization status of study subjects was found to be influenced by maternal age, ethnicity and presence of child welfare card at home. In this study, factors contributing to low immunization coverage included ignorance on the need for immunizations and on return dates. Others included, fear of adverse events following immunization, negative attitude of health care providers and missed opportunities. A similar study still in Mathare valley targeting mothers with children under five years focused on the level of immunization coverage among children and factors that contributed to the low immunization coverage. The findings were:

- a) Knowledge on immunization was high with 90% of the respondents able to define immunization.
- b) The attitude on immunization was positive (74.4%) and immunization coverage stood at 62.2%.
- c) Advanced mother's age, low level of education and relative lack of knowledge on immunization were responsible for the low coverage.<sup>15</sup>

A study in Western Kenya on training needs for mid-level managers and the immunization coverage in the region using rates of Pentavalent 1 and measles coverage found that the annual cumulative coverage for all the provinces by antigen was 80% for Pentavalent 1 and 2 and 60% for measles. A high pentavalent1- measles drop out existed.<sup>16</sup>

Findings from the Kenya Demographic and Health Survey (KDHS) 2008/2009 showed that 77 percent of children aged 12-23 months were fully vaccinated while 3 percent had not received any vaccines. Looking at coverage for specific vaccines, 96 percent of children had received the BCG vaccination, 96 percent the first pentavalent dose, and 96

percent the first polio dose (Polio 1). Coverage declined for subsequent doses, with 86 percent of children receiving the recommended three doses of pentavalent and 88 percent receiving all three doses of polio. The decline in coverage levels reflected dropout rates of 10 percent for Pentavalent and 9 percent for polio.<sup>2</sup>

Benefit from optimal utilization of well child services has been demonstrated in a study titled 'Effect of compliance with health supervision guidelines among US infants on Emergency department visits'.<sup>17</sup> Children with incomplete well child care in the first 6 months of life had increased risk of having emergency department visit for upper respiratory tract infections, gastroenteritis and asthma. Another study<sup>18</sup> on 'Effectiveness of compliance with pediatric preventive care' established that children who are up to date for age in their schedule of well child clinic visits were less likely to have an avoidable hospitalization. Series of well child visits maintained during first 2 years of life had a positive effect on health outcomes. Thus national efforts to improve quality of child health services for young children should focus on increasing compliance with preventive care for young children.

## **CHAPTER 3: RESEARCH QUESTIONS, OBJECTIVES**

### **RESEARCH QUESTION**

1. What is the level of adherence to well child care schedule and what are the contributing factors?

### **RESEARCH OBJECTIVES**

#### **Broad objective;**

To determine the level of adherence to well child care and the contributing factors.

#### **Specific objectives**

1. To determine the current level of adherence to well child care and clinic drop out patterns during the first year of life at MTRH.
2. To describe the socio-demographic, maternal and child factors associated with good and poor adherence to well child care amongst mothers and infants under study.



## **CHAPTER 4:0 METHODOLOGY**

### **4:1 Study Design:**

This was a prospective cohort study. This was found to be the best design to carry out this study since participants were to be followed up for one year.

### **4:2 Study Site**

The study was conducted at the Well Child Clinic of the Moi Teaching and Referral Hospital. The Hospital is located within Eldoret town in Uasin Gishu County in Kenya, 300 Kilometers Northwest of the Capital Nairobi. This is also the teaching hospital for the Moi University's School of Medicine and other medical training institutions. It is the referral hospital for the Western part of Kenya and has a catchment population of approximately 13 million people. The clinic serves children mainly from Eldoret municipality, which is an urban setting. The clinic serves about 150 new children every month most of whom come for one visit as they later move to their rural or other urban homes. It is situated at the outpatient department of the MTRH and has three sections; a registration section where mothers and infants are received, a payment counter where a charge of fifty shillings is paid per visit and the well baby room where children are served.

### **4:3 Study population**

Mothers bringing their children to MTRH's WCC for services during the period February 2012 to May 2013.

### **Inclusion criteria**

1. Mothers with children aged six weeks and below seeking well child care services for their children at MTRH.
2. Mothers who agreed to take part in the study.

**Exclusion criteria**

1. Mothers who had plans to change to other clinics after the initial visits at the MTRH clinic.

**4:4 sampling technique**

Consecutive sampling was used. Infants were assessed for eligibility for enrollment as they arrived at the clinic daily from Monday to Friday. Those who met the inclusion criteria and their mothers agreed were selected and enrolled into the study. This was carried out from February 2012 to May 2012 until the desired sample size was achieved.

**4:5 Sample size**

Sample size was determined from logistic feasibility with an aim to provide an idea of precision this trial/study is likely to provide for the effect of interest. Power analysis sample size software (PASS) 2005 was used to estimate the likely precision around the proportion of drop-outs (or proportion of those adhering to the schedule). Feasibly between 150 and 250 subjects can be recruited in two months based on daily attendance at the MTRH well baby clinic. Sensitivity analysis in PASS 2005 around what precision might be seen with this number of subjects was done. This generated precision estimates for both 90% and 95% confidence intervals.

**Formula:**

Precision is calculated as  $\sqrt{0.25/150} \times 1.96 = 0.08$

0.25 is a constant, 150 is the number of infants expected to enroll in the MTRH clinic over two months period as per clinic register, 1.96 is the value for 95% confidence interval.

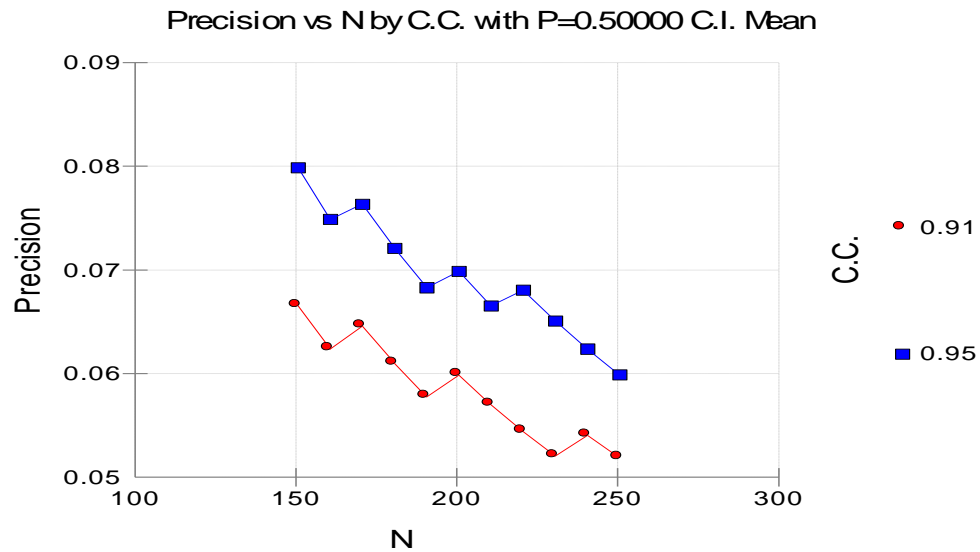
CI is  $\text{phat} \pm 1.96 \times \sqrt{((0.5) \times (0.5)/n)}$ ; where  $\text{phat} = 0.5$ .

The sample size was selected based on the required precision (0.08) around the estimated proportion (0.5).

**Numeric Results: Confidence Interval of A Proportion**

Precision	C.C. Confidence Coefficient	N Sample Size	P0 Baseline Proportion
0.06667	0.91393	150	0.50000
0.06250	0.90343	160	0.50000
0.06471	0.92258	170	0.50000
0.06111	0.91381	180	0.50000
0.05790	0.90506	190	0.50000
0.06000	0.92316	200	0.50000
0.05715	0.91575	210	0.50000
0.05455	0.90833	220	0.50000
0.05218	0.90095	230	0.50000
0.05417	0.91885	240	0.50000
0.05200	0.91250	250	0.50000
<b>0.08000</b>	<b>0.95913</b>	<b>150</b>	<b>0.50000</b>
0.07500	0.95223	160	0.50000
0.07647	0.96194	170	0.50000
0.07222	0.95613	180	0.50000
0.06842	0.95015	190	0.50000
0.07000	0.95996	200	0.50000
0.06667	0.95489	210	0.50000
0.06819	0.96362	220	0.50000
0.06522	0.95929	230	0.50000
0.06250	0.95484	240	0.50000
0.06000	0.95029	250	0.50000

## Chart



Precision is the plus and minus value used to create the confidence interval.

Confidence Coefficient is probability value associated with the confidence interval.

N is the size of the sample drawn from the population.

P0 is the estimated baseline proportion.

A sample size of 150 produces a 91% confidence interval equal to the sample proportion plus or minus 0.06667 when the estimated proportion is 0.50000.

A sample size of 150 produces a 95% confidence interval equal to the sample proportion +/- 0.08 when the estimated proportion is 0.5.

In this study 95% Confidence intervals was used. Thus a minimum sample size of 150 was used.

## **4:6 Study methods**

### **Data collection**

Recruitment of study subjects and data collection was done by the principal investigator and two research assistants who were nurses working at the well child clinic during the study period. Research assistants were trained on the study procedure after which the questionnaire was pre tested on mothers who came to the clinic for one day a week prior to start of recruitment. The pretest showed that being a referral hospital several mothers were coming for the first visit only with plans to move to other areas or towns and continue clinic there; these did not meet inclusion criteria and were excluded. Therefore recruitment which had been planned to take place over two month period took four months. The research assistants with the principal investigator identified eligible mothers and sought consent from them. Mothers of infants who met the inclusion criteria and agreed to take part in the study were recruited. Review of child health booklets for selected children to establish their current immunization and adherence/attendance status was done for children being recruited at the 1<sup>st</sup> pentavalent visit. Data collection forms were filled for each selected child and all forms filed in a folder for continuing data collection during subsequent visits. The questionnaire captured the various sociodemographic, child and maternal characteristics which were analyzed in relation to how the child adhered to care at the end of the study thus identifying factors contributing to adherence. Selected children were followed up on subsequent visits to ascertain their adherence. Each data collection form had a subsequent visits checklist that kept track of the next appointment and if the child attended. This was used to determine attendance. On each visit services given to the children were recorded in their data collection tool. Children who demonstrated poor

attendance (missed more than two visits) were followed up to establish the reasons as to why they dropped out. Follow up was initiated at the end of 12 months for each child. Mothers/caretakers were phoned and interviewed as to why they missed clinic. Where sufficient information was not obtained, a request to visit their homes was made though none of the mothers with poor adherence accepted the offer. Those with good attendance were interviewed at the end of the study (as they came for their 12<sup>th</sup> visit) to find out what motivated them. Where a child with good adherence was brought for the twelfth visit by a person who is not the parent, their mothers were phoned to respond to the question on factors contributing to good adherence. In cases of transfer-outs, the information was supposed to be clarified by communicating to the staff in the new clinic or checking the register in the new clinic if it is situated within Eldoret municipality. If transfer was to a far away clinic, efforts were made to reach a staff attending to the child using the mother's phone number during her visits to her new clinic to ascertain that the child is actually receiving the services.

Structured questionnaires were used to obtain information from mothers whose children were selected.

#### **4:7 Data analysis**

Collected data was entered into Microsoft office excel sheet 2007. This was imported to Statistical Analysis System Version 9.3 for analysis. Demographic characteristics of the study participants were summarized using parametric and non-parametric methods. For continuous variables, median with the inter-quartile range (IQR) were calculated while for categorical variables frequencies with their percentages were reported.

There were two outcome variables; good/poor attendance (binary outcome) and time to drop out from clinic (time-to-event outcome). We employed Logistic regression model for the binary outcome. In this approach, factors associated to poor and good adherence to well child care were assessed and odds ratios (95% confidence intervals) with their p-values reported. The potential factors influencing poor or good adherence were child's and mother's demographic and socio-economic characteristics, and mother's knowledge on scheduled visits. P value of less than 0.05 was considered statistically significant.

For the 'time-to-event' outcome, survival analysis approach was used. These methods permit the comparison of the entire survival experience during follow-up and may be used for the analysis of the time to any dichotomous response variable such as a nonfatal event or an adverse effect. It tries to answer how certain clinical and individual characteristics of interest (e.g., age, gender, medical history) affects survival. The hazard ratio in survival analysis is the effect of an explanatory variable on the hazard or risk of an event.

In this study, the following survival analysis methods were employed:

1. Cox proportional hazards model was used to model factors that influenced the length of seeking well child care among women bringing their children for services at MTRH. The potential factor's were child`s and mother`s socio-demographic characteristics and mother`s knowledge on scheduled visits. Hazards rates (95% CL) and p-values were reported. Hazard ratio of more than one meant that that group of subjects were likely to seek care for shorter periods as compared to a reference group while a P value of less than 0.05 or a confidence interval that did not include one was considered statistically significant.

2. Kaplan-Meier plots were used to estimate the median survival time. Outcome of analysis determined how many children who start the clinic drop out at each stage of care/visit in the first year of life.

The results were then presented in prose, tables, bar graphs, pie charts and Kaplan Meier plots.

#### **4:8 Study limitations**

Due to short duration of time for the study, subjects were not followed up for the entire duration of well child care (five years). However the results of this study are useful since they determine the adherence to WCC during the first year when more services are offered to the well child as compared to the rest of the years and clinic schedule is busier with monthly visits as compared to every two months thereafter.

#### **4: 9 ETHICAL CONSIDERATIONS**

- The study was carried out after approval by IREC.
- Informed consent was obtained from mothers included in this study.
- Those who refused to participate in the study were not discriminated against.
- All information obtained from the study was handled confidentially
- Participants received the same level of care and same services as other children attending the clinic.
- No form of coercion or inducement was applied in selecting participants.
- There were no anticipated risks to the participants attributable to this study.



- Mothers of children who had poor adherence were counseled on the importance of ensuring their children resume clinic and receive all the care needed up to five years of age.
- The results of this study shall be made available to the Moi Teaching and Referral Hospital for use.

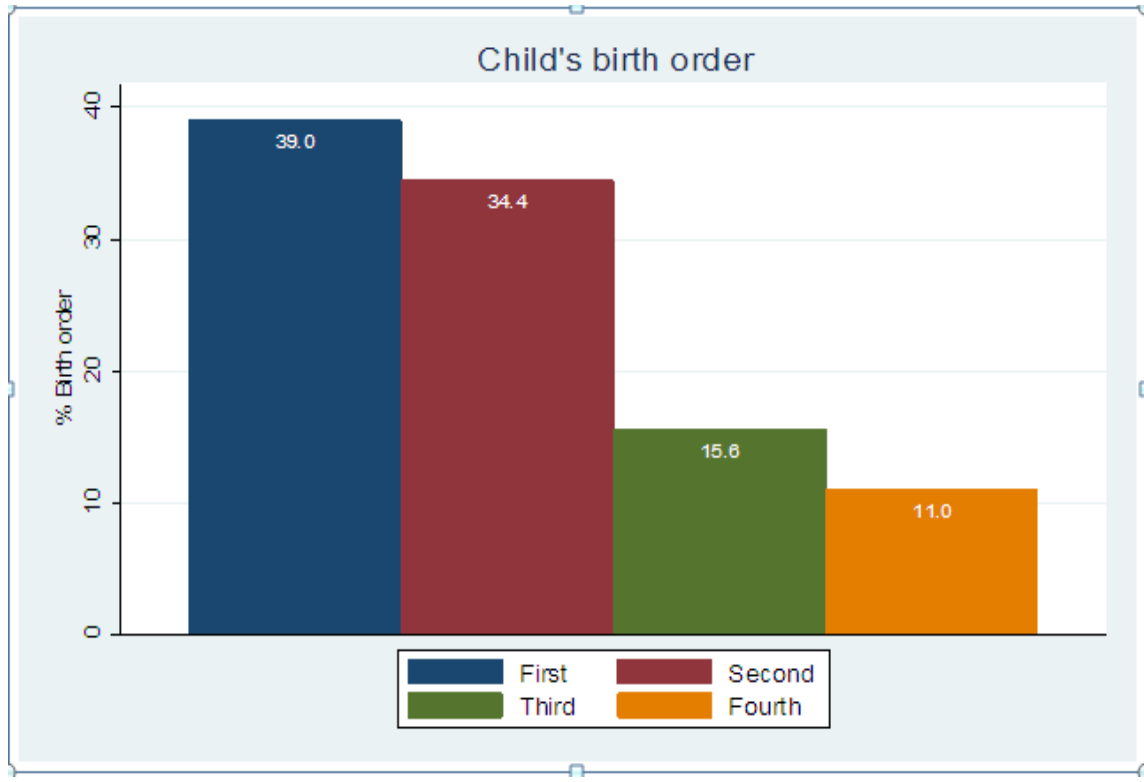
## **CHAPTER 5:0 RESULTS**

During the study period between February 2012 to May 2013 interviews were conducted among 154 respondents (mother infant pairs). By the end of the study 25(16.2%) had stated that they had transferred out to other clinics while 129(83.77%) were still utilizing the MTRH clinic.

### **5:1 Socio-demographic characteristics of the participants**

#### **5:1:1 Child particulars**

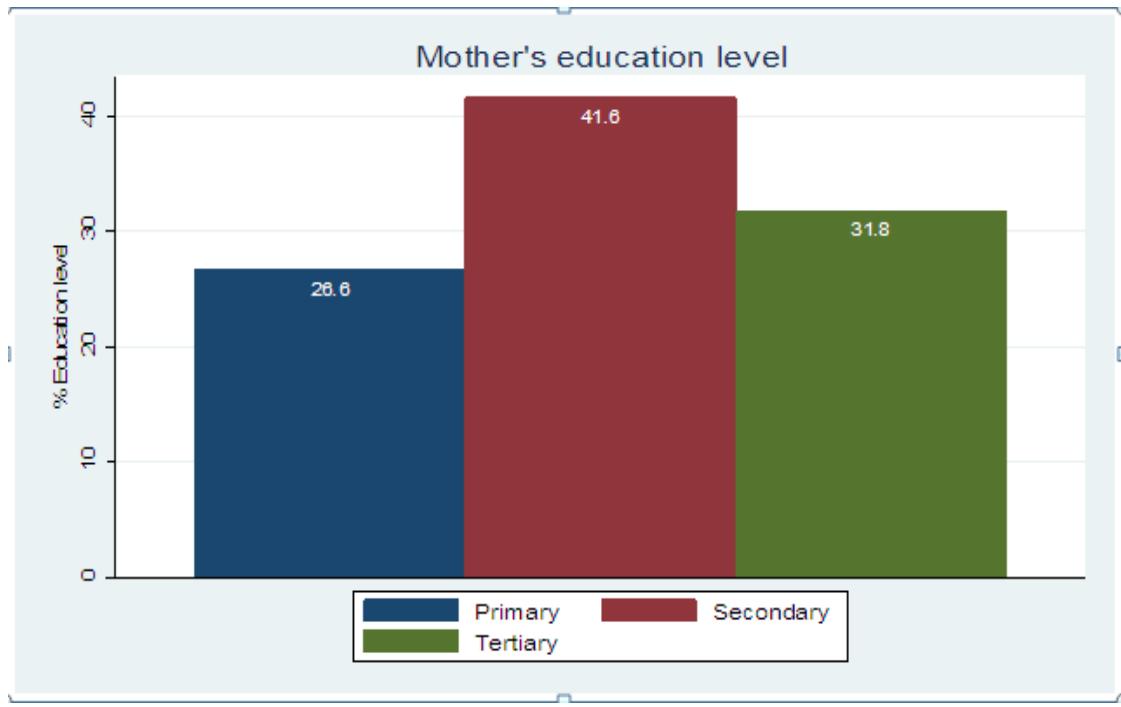
Sex distribution was 78 (50.6%) female and 76 (49.4%) male. The median age of the children at enrollment was 6 weeks (IQR of 6-6). Of the total 154 infants 133(86.4%) presented for their first visit for combined BCG and pentavalent 1, 17(11.1%) for BCG visit and 4(2.6%) for pentavalent 1 visit. Those presenting for pentavalent one at their first visit had had BCG and birth polio vaccines given at the health facilities they were born in. Regarding place of birth 149 infants (96.6%) had been born at a health facility while 5(3.4%) were born at home. Children with low birth weight (less than 2500 grams) were 10 (6.5%) compared to 144 (93.5%) with normal birth weight. (Table 1 below).



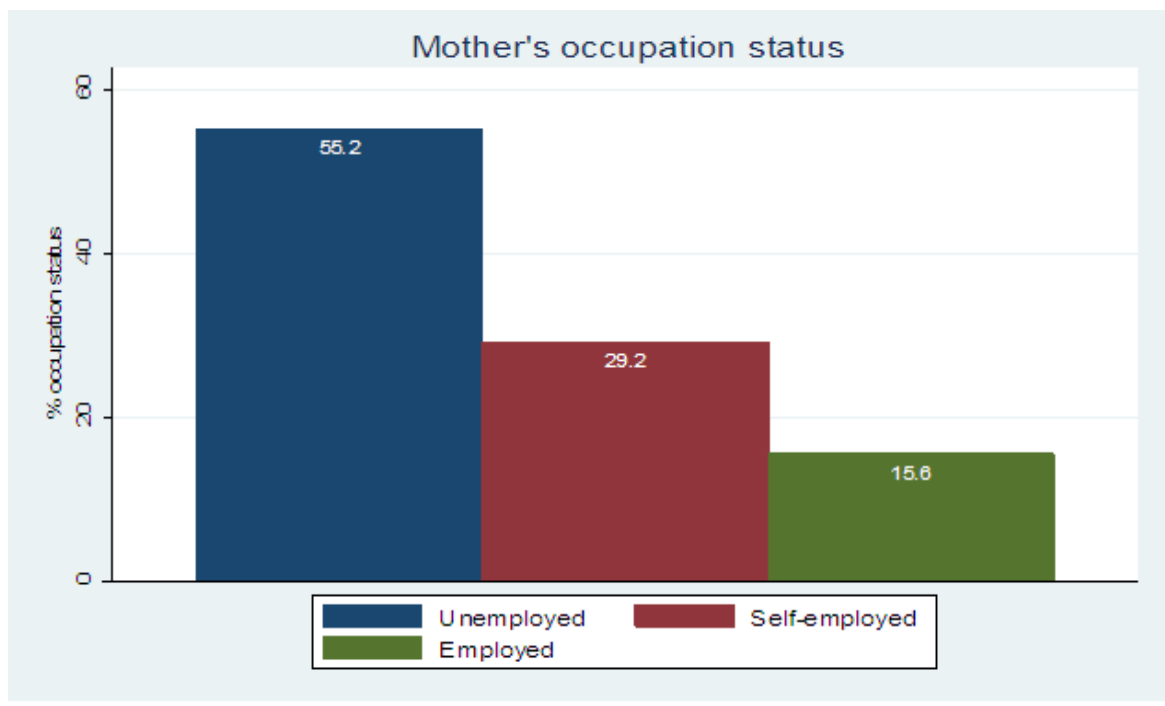
**Figure 1: Child's birth order.** 39.0% and 34.4% were first and second borns respectively. The remaining 26.6% were in a birth order of between three and seven

### 5:1:2 Mothers particulars

The median mother's age was 27 years (IQR of 25-30). Majority of the mothers, 90.9%, were married with the remaining 9.1% being single mothers. (table 1)



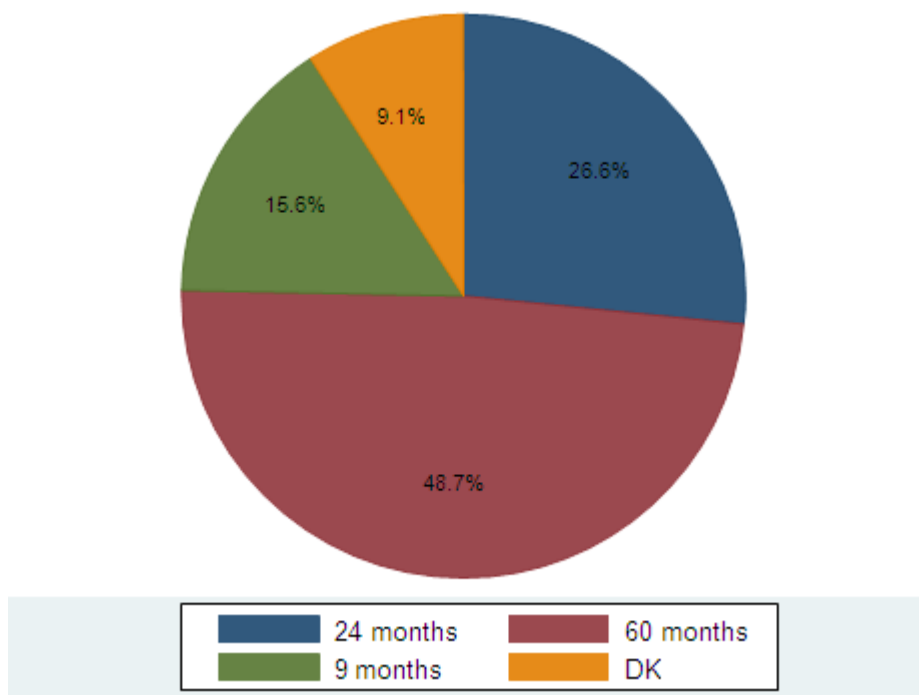
**Figure 2: Mothers' education level.** Majority of the mothers had attained secondary education



**Figure 3: Mothers' occupation status** More than half of the mothers were housewives

### 5: 2 Mothers' knowledge

Only 75 (48.7%) knew the required duration of well child care ie 60months.

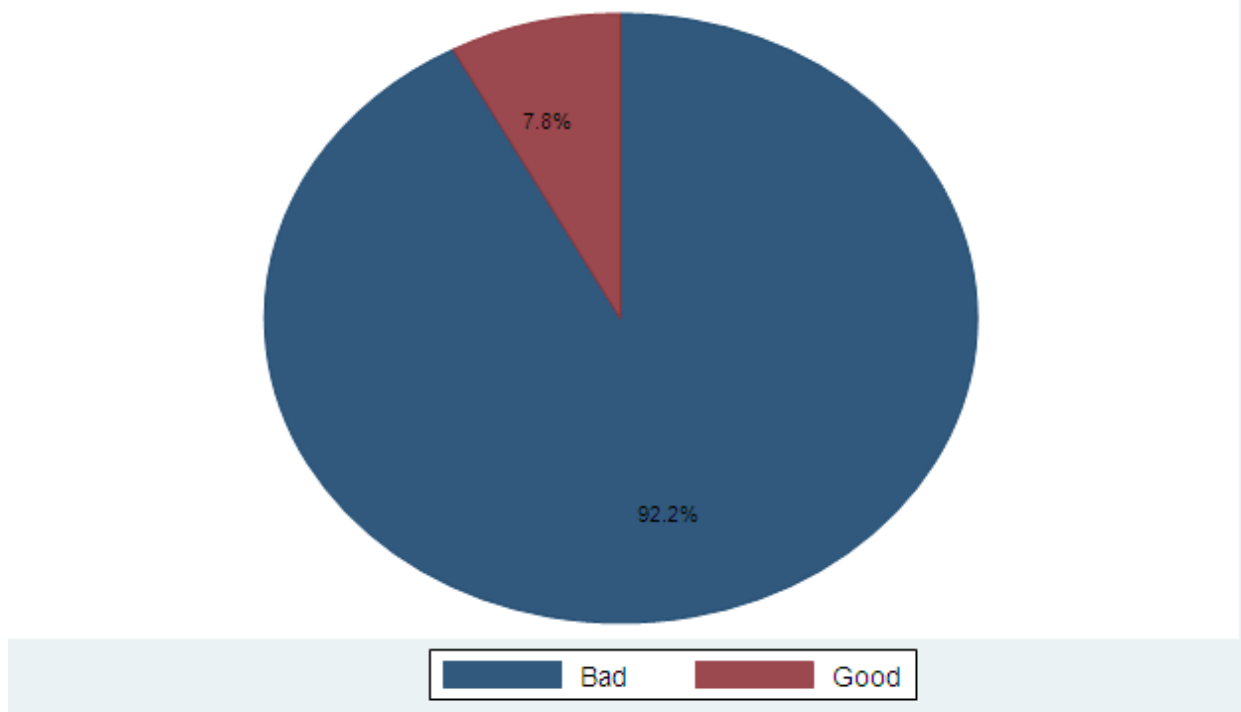


**Figure 4: Mothers' knowledge on duration of WCC**

Majority, 132 (88.3%) of the mothers were knowledgeable on services offered in WCC ie knew at least half of the services offered.

### 5:3 Clinic attendance and adherence

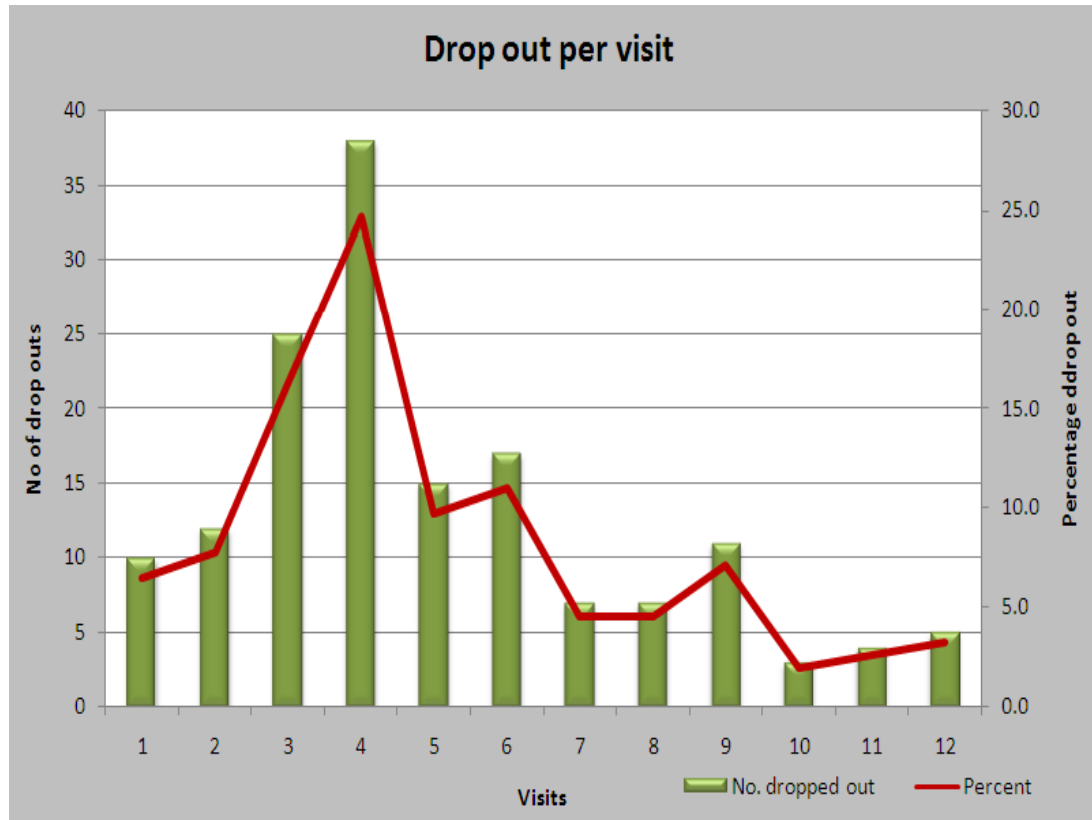
Good attendance to WCC during the first year of life was seen in 12(7.8%) of the infants studied. The rest 92.2% had 9 or less total visits at the end of the first year of life. All the transfer outs had poor attendance.



**Figure 5: Attendance to well child care.**

#### **5:4 Drop out times**

Approximately two-thirds of the children dropped from the study and seeking well child care between the third and sixth visits. The highest dropout was 24.7% of the children during the fourth visit. Only 5(3.3%) of the children attended well child care up to the end of the first year of life thus the adherence to well child care among infants at MTRH is 3.3 percent.



**Figure 6: Number and percentage drop outs per visit**

**Table 1: Socio-demographic characteristics of study population**

<b>Variables and categories</b>	<b>n</b>	<b>%</b>
Infant age (wks), median [IQR]	6	6-6
Gender		
Female	78	50.6
Male	76	49.4
Birth order		
1	60	39.0
2	53	34.4
3	24	15.6
≥ 4	17	11.0
Birth weight*		
Low	10	6.5
Normal	144	93.5
Illness 1 wk after birth		
Yes	19	12.3
No	135	87.7
Mother's age (yr), median [IQR]	27	25-30



Mothers education		
Primary	41	26.62
Secondary	64	41.56
Tertiary	49	31.82
Mother's marital status		
Married	139	90.3
Single	14	9.1
Widowed	1	0.7
Mother's occupation		
Employed	24	15.6
Self-employed	45	29.2
Unemployed	85	55.2
Mother`s Knowledge		
Not <u>knowledgable</u>	18	11.7
<u>Knowledgable</u>	136	88.3
Attendance		
Poor	142	92.2
Good	12	7.8

\* Birth weight (binary variable) defined as: Low birth weight= weight of baby < 2500g;

Normal= weight of baby  $\geq$  2500g

\*\* Knowledge (binary variable) defined as: knowledgable= knowledge score  $\geq$  50 %; Not knowledgable= knowledge score < 50 %.

\*\*\* Attendance binary outcome was defined as: Good= no of scheduled visits > 9 at the end of one year of follow-up; Poor=no of scheduled visits  $\leq$  9 at the end of one year of follow-up.

### **5:5 Factors contributing to poor or good attendance to well child care among women bringing their children for services at MTRH**

Factors associated to poor and good attendance to well child care were analyzed using Logistic regression model and results shown in table 2. Poor attendance to well child care was noted among women aged 25-29 yrs compared to women < 25 yrs (OR 0.443, 95% CI 0.12-1.641). This was noted also for women aged 30-34 yrs and those  $\geq 35$  compared to women <25 yrs old (respective ORs 0.238, 95% CI 0.026-2.172, and 0.413, 95% CI 0.044 – 3.858). Attendance to well child care did not vary significantly by child's gender. The odds for attendance among women with secondary education and those with tertiary education compared to those with primary education was 1.653 (95% CI 0.305-8.947) and 2.216 (95% CI 0.407-12.076) respectively. Good attendance to well child care was similar for married women compared to single women. The magnitudes of the attendance to well child care were dissimilar in self-employed and employed women compared with unemployed women, with ORs of 0.518 (95% CI 0.103-2.606) and 1.592(95% CI 0.379-6.69), respectively. Attendance to well child care was lower among 2<sup>nd</sup>, 3<sup>rd</sup>,  $\geq 4$  birth order children compared to first born children (respective ORs 0.255, 95% CI 0.052-1.259; 0.283, 95% CI 0.033-2.392 and 0.406, 95% CI 0.047-3.498). Children born underweight had relatively high odds of good attendance to well child care compared to children born with normal birth weight (OR 1.344, 95% CI 0.156-11.598). Despite reporting the odds ratios, it is worth noting that attendance to well child care did not vary significantly by mother's age, education level, marital status, occupation, child's gender, birth order nor birth weight.

**Table 2: Bivariate analyses of factors that contribute to good or poor clinic attendance**

Covariate	Odds Ratio	95% Confidence interval		p-value
		Lower	Upper	
Age				0.478
< 25 yrs (ref.)				
25-29 yrs	0.443	0.12	1.641	
30-34 yrs	0.238	0.026	2.172	
≥ 35 yrs	0.413	0.044	3.858	
Gender				0.5807
Female (ref)				
Male	0.714	0.216	2.357	
Mothers education				0.6523
Primary (ref.)				
Secondary	1.653	0.305	8.947	
Tertiary	2.216	0.407	12.076	
Mothers marital status				0.9243
Single (ref.)				
Married	1.109	0.132	9.282	

Mothers occupation				0.4984
Unemployed				
Self-employed	0.518	0.103	2.606	
Employed	1.592	0.379	6.69	
Birth order				0.2787
1 (ref.)				
2	0.255	0.052	1.259	
3	0.283	0.033	2.392	
≥ 4	0.406	0.047	3.498	
Birth weight				0.788
Normal (ref.)				
Low	1.344	0.156	11.598	

\* Logistic regression model used to model the attendance (good/bad) binary outcome (Hosmer, D.W. and Lemeshow, S., 1989; 2000). Adherence binary outcome was defined as: Good= no of scheduled visits > 9 at the end of one year of follow-up; Bad=no of scheduled visits ≤ 9 at the end of one year of follow-up.

\*\* Birth weight (binary variable) defined as: Low birth weight= weight of baby < 2500g; Normal= weight of baby ≥ 2500g.

### **5:6 Reasons for good and poor attendance to well child clinic**

Among the respondents with good attendance, majority (66.7%) cited their awareness of the required duration of care as the reason. Among the respondents with poor attendance, most dropped from care because they had finished immunization (33.6%). A big number (33.6 %) gave no response on why they dropped out.

All the women with good attendance were planning to continue attending WCC until their children were 5 years old. (Table 3 below)

**Table 3: Mothers reasons for good and poor attendance**

<b>Characteristics</b>	<b>n</b>	<b>%</b>
Reasons for poor attendance		
Finished immunization	43	33.6
Child healthy	4	3.1
Distance from home	16	12.5
Family pressure	7	5.5
No response	43	33.6
Lost to follow up	12	9.4
Staff attitude	1	0.8
Others	2	1.6
Reasons for good attendance		
Aware of required duration of care	8	66.7
Good service	4	33.3
Future plans for continuation of WCC care		
12 months	0	0.0
24 months	0	0.0
60 months	12	100.0

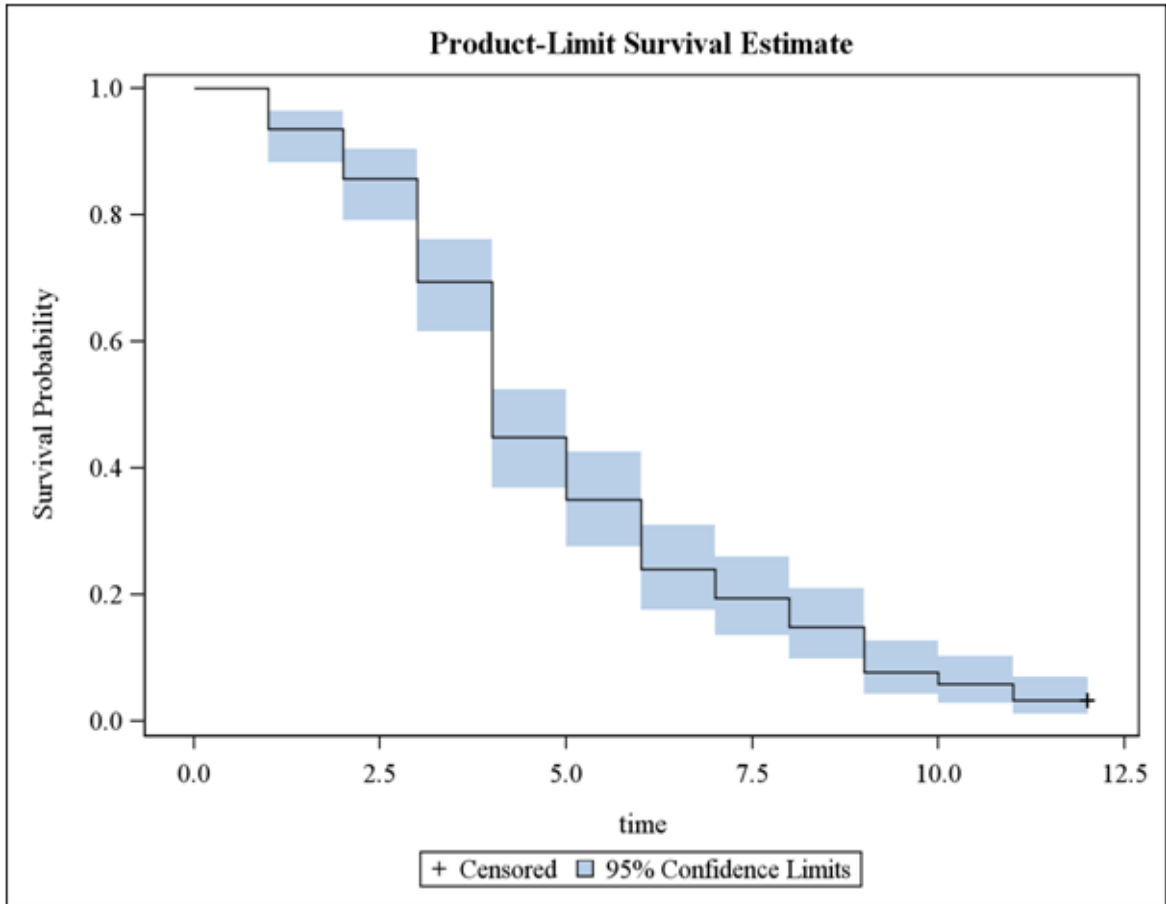
**5:7 Factors that influence the length of seeking well child care among women bringing their children for services at MTRH.**

The estimated survivor function and its 95% confidence interval for the data is shown in figure 7. From the Kaplan-Meier plot the estimated median survival time lies in the fourth visit. This implies that 50% of the participants had stopped seeking well child care by the fourth visit. Sex preference of the child did not have influence on the duration of seeking well child care (HR 1.098, 95% CI 0.772-1.762). Compared to women who are aged below 25, women who were 25-29, 30-34 and  $\geq 35$  years old had shorter time to drop out from

seeking well child care (respective HRs 1.166, 95% CI 0.772-1.762; 1.502, 95% CI 0.896-2.518 and 1.501, 95% CI 0.824-2.735).

Time to drop out from seeking well child care was longer for women who had secondary school (HR = 0.898, 95% CI 0.602-1.339) compared to those with primary school education. Drop out time for women with tertiary education was shorter (HR = 1.016, 95% CI 0.664-1.553) compared to those with primary education. Married women sought care for longer periods compared to single women (HR = 0.25, 95% CI 0.466-1.458). Self-employed and employed women dropped out earlier (HR = 1.071, 95% CI 0.741-1.549) and (HR = 1.042, 95% CI 0.650-1.671), respectively compared to unemployed women.

Compared to women with one child, women with 2, 3, 4+, had shorter time to drop out from seeking well child care (respective HRs 1.438, 95% CI 0.984-2.101; 1.396, 95% CI 0.857-2.274 and 1.149, 95% CI 0.667-1.979). Women whose child's weight at birth was low were associated with seeking well child care for shorter periods compared to women whose children at birth had normal weight (HR = 1.227, 95% CI 0.623-2.414). Women who were knowledgeable on WCC services were likely to seek care for longer periods (HR = 0.612, 95% CI 0.372-1.006). Similar to results obtained from fitting a logistic regression (table 2 above), time to drop out from seeking well child care did not vary significantly across all the covariates considered and assessed.



**Figure 7: Kaplan Meir estimated survival function for the length of seeking WCC**

**Table 4: Bivariate analyses of factors that influence the length of seeking WCC at MTRH**

Characteristics	Hazard Ratio*	95% Confidence Limits		P-value
		Lower CL	Upper CL	
Age				0.3608
< 25 yrs (ref.)				
25-29 yrs	1.166	0.772	1.762	
30-34 yrs	1.502	0.896	2.518	
≥ 35 yrs	1.501	0.824	2.735	
Gender				0.5675
Female (ref)				
Male	1.098	0.796	1.515	
Mothers education				0.7828
Primary (ref.)				
Secondary	0.898	0.602	1.339	
Tertiary	1.016	0.664	1.553	
Marital status				0.5074
Single (ref.)				
Married	0.825	0.466	1.458	
Mothers occupation				0.9324
Unemployed				
Self-employed	1.071	0.741	1.549	
Employed	1.042	0.65	1.671	
Birth order				0.2564
1 (ref.)				
2	1.438	0.984	2.101	
3	1.396	0.857	2.274	
≥ 4	1.149	0.667	1.979	
Birth weight				0.5543
Normal (ref.)				
Low	1.227	0.623	2.414	
Knowledge				
Not knowledgeable	Ref.			
Knowledgeable	0.612	0.372	1.006	0.0530



Cox proportional hazards model used to model time to drop out (Cox's 1972; Anderson et al., 1993). Events were censored if the child attended all the scheduled visits at the end of one year of follow-up.

Birth weight (binary variable) defined as: Low birth weight= weight of baby < 2500g;

Normal= weight of baby  $\geq$  2500g.

Knowledge (binary variable) defined as: knowledgeable= knowledge score  $\geq$  50 percent;

Not knowledgeable= knowledge score < 50 percent.

## **CHAPTER 6: DISCUSSION**

### **Socio - demographic characteristics**

The population studied had almost equal numbers of males and females. This compares well with findings by Ayebo et al in Nigeria where males were 52.9%. The median age at presentation in Nigerian infants was 9 days and mean age 14.3+ or – 15.6 days. In this study most infants presented at 6weeks (42days), therefore our infants presented late as compared to Nigerian infants despite the finding that majority had been born at a health facility. This could be attributed to frequent BCG stock outs during the study period while some could be missed opportunities.

### **Adherence**

Adherence to well child care among infants at MTRH is very low compared to adherence in the USA of 46% of privately insured and 35% of publicly funded children (Robert et al) . However it is higher than adherence to first clinic visit by Nigerian infants of 1.3%. The US studies studied children of all ages while the Nigerian study looked at one visit only and this could be responsible for the huge differences.

### **Drop out pattern**

Two-thirds of subjects dropped from WCC care between the third and sixth visits with the highest dropout occurring during the fourth visit which is the first non immunization visit in the schedule. This contrasts findings by Hughart et al where 73.3% of the 502 parents surveyed were classified as motivated to keep a well-child care appointment regardless of whether an immunization was scheduled. He found no discernible difference in attendance

between immunization and nonimmunization visits. This could be because this study was done in a population where WCC is better structured and monitored.

### **Factors affecting adherence**

Poor attendance was noted among mothers with the following characteristics; maternal age more than 25years, primary level of education and child`s birth order of more than one.

However there was no statistically significant association between these factors and adherence. Infants with low birth weight had good attendance. A study carried out in Mathare valley found that factors contributing to low immunization coverage included; advanced mother's age and low level of education among others though their stratification of education levels is not similar to that used in this study (Kamau N. and Esamai F O).

Another study in Mathare valley also found immunization status to be influenced by maternal age, ignorance on need for immunizations and return dates, negative attitude of health care providers and missed opportunities among others (Owino et al). However in our study staff attitude was not a main contributor to poor adherence with only one respondent citing this reason. A study in rural Ethiopia found that maternal education was associated with a completed vaccination series (Mary-Christine et al). One study in USA found high compliance rates to WCC among infants, children with special health care needs and children with college educated parents (Thomas MS) while in our study infants who were the ones studied had a low compliance/adherence of 3.3% and children with low birth weight who would be considered to have special health needs demonstrated good attendance but shorter length of seeking care though again this was not statistically significant.

Majority of the mothers were knowledgeable on the services offered at WCC clinics with 88.3% being able to mention more than half of these services which is similar to findings on knowledge on immunization of 90% in the study by Kamau and Esamai. Immunization is one of the services offered in WCC clinics. In our study women who were knowledgeable were likely to seek well child care for longer periods though it was not statistically significant. Studies in Kenya (Kamau N and Esamai FO) and Nigeria (Stella Babalola) both found out that lack of knowledge on immunization contributed to low immunization coverage. However, these studies assessed mothers' knowledge on what immunization means while in our study mothers were asked to name all the services offered in well child clinics. Thus though related fields of knowledge are compared questions asked were not exactly the same.

The findings in this study indicated that the main maternal reason for poor attendance was the child having finished immunizations which could be related to the finding that a significant proportion of mothers had stated that WCC is offered up to nine months of age or did not know the duration of care at all. We also found out that the main maternal reason for good attendance was being aware of the required duration of care yet more than half of the respondents did not know the required duration of WCC care.

This study was limited by a short duration thus subjects were not followed for the entire period of well child care (five years). Furthermore, there were no studies determining adherence to WCC in Africa apart from a Nigerian study by Ayebo et al which determined compliance to attending the first visit on time and found a low proportion of 1.3%.

## **CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS**

### **7:1 Conclusions**

Adherence to well child care among infants at MTRH is very low.

Majority of infants attending the MTRH WCC clinic drop out at the fourth visit.

All factors studied were not statistically significant in influencing adherence

The main maternal reason for poor attendance was the child having finished immunizations while the main reason for good attendance was being aware of the required duration of care. Majority of the respondents did not know the required duration of WCC care.

### **7:2 Recommendations**

We recommend the following:

- I. Parents should be sensitized on the stipulated duration of WCC.
- II. Further studies to determine adherence in various Kenyan settings and to evaluate more factors that significantly lead to the low attendance and adherence to WCC seen in this study.

# APPENDIX 1

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## APPENDIX 2

### CONSENT TO PARTICIPATE IN THE STUDY SERIAL NUMBER .....

**Background:** You are being asked to participate in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Read the following information carefully and ask us if there is anything that is not clear or if you would like more information. Please take time to decide whether you want you and your child to volunteer to take part in this study. The purpose of this study is to determine how services are offered and received in this clinic. The results will enable us plan better for these services to improve service provision and general care of our well children.

**Study Procedure:** The study involves filling out a questionnaire capturing you and your child's biodata and your family social background today. You will be briefly interviewed about your child's progress at each future visit until your child is one year old. A record will be kept of the filled questionnaire at this clinic to enable us continue filling in future visits. These records will be under key and lock and will not be assessed by unauthorized persons thus they will be anonymous and confidential.

**Risks:** There are no risks in this study. This study will be anonymous. **Benefits:** There are no direct medical benefits to your child for participating in this study. A potential benefit of the study will be improved preventive healthcare service delivery to children.

**Alternative Procedures:** You may choose your child not to participate in this study

#### **Confidentiality**

This research will be conducted in accordance with all the Kenyan laws and regulations that protect rights of human research subjects. All records and other information obtained will be kept strictly confidential and your child's protected health information will not be used without permission. All data collection tools will be identified by number or otherwise coded to protect any information that could be used to identify your child. Results of this study may be published, but no names or other identifying information will be released.

### Person to Contact

If you have questions, complaints or concerns about this study, you can contact the investigator from Moi University, School of Medicine, department of Child Health and Paediatrics, Postgraduate programme ; Dr. Catherine Kilonzo Phone No. 0725335139, email: [cathyndila@yahoo.co.uk](mailto:cathyndila@yahoo.co.uk)

### Institutional Review Board

This study has been approved by the Institutional Research and Ethics Committee (IREC) of Moi University/Moi Teaching and Referral Hospital. Contact IREC if you have questions regarding your child's right as a participant, and also if you have complaints or concerns which you do not feel you can discuss with the investigator.

Contact IREC using the address ; The Chairman IREC, Moi Teaching and Referral Hospital, PO BOX 3, Eldoret, Kenya. Tel. 33471/2/3

### Voluntary Participation

It is up to you to decide whether your child takes part in this study. Refusal to participate or the decision to withdraw from this research will involve no penalty or loss of benefits to which your child is otherwise entitled. This will not affect your relationship with the investigators. **Right of investigator to withdraw:** The investigator can withdraw your child from the research without your approval. **Costs and Compensation to participants:** There is no cost to you, and there is no compensation to subjects for participation in this study. **Number of Participants:** 150 children. Thank you for your child's participation in this research and we truly appreciate your help.

### CONSENT

By signing this consent form, I confirm I have read the information in this consent form and have had the opportunity to ask questions. I will be given a signed copy of this consent form.

I voluntarily agree to take part in this study.

Name of Caregiver .....Signature/Mark.....  
Date.....

Name of Investigator .....Signature.....  
Date.....



8. Duration in years since previous delivery. 1  2  >2

9. Did you attend ANC in previous pregnancy? Yes  No

10. If yes to 9 above, Gestational age in months at 1<sup>st</sup> visit: 0 to 3

3 to 6

6 to 9

10. Total No of ANC visits 1  2  3  4  >4

11. Receiving/Received PNC Yes  No

12. Are you using any FP method? Yes  No

### **CHILD'S PARTICULARS**

- i. OP/NO \_\_\_\_\_
- ii. Age in weeks at Enrollment \_\_\_\_\_
- iii. Sex \_\_\_\_\_
- iv. Birth order \_\_\_\_\_
- v. Maturity at delivery Term  Preterm
- vi. Place of Delivery Hospital  Home  Other
- vii. Birth weight in kilograms \_\_\_\_\_
- viii. Any health problems/illnesses within the first week of birth? Yes   
No
- ix. Time of care at enrollment (Check booklet/card) BCG visit  Penta1 visit
- x. What service has the child come for today? (tick)
  - a) Immunization \_\_\_\_\_
  - b) Growth monitoring \_\_\_\_\_
  - c) Vitamin A \_\_\_\_\_

d) Other (specify) \_\_\_\_\_

**FAMILY SOCIAL BACKGROUND**

- i. Fathers occupation \_\_\_\_\_
- ii. Lives with a) nuclear family  b) extended family
- iii. Housing a) Rental  B) family owned  c) homeless  
IDP/squatter/street
- iv. Type of housing a) permanent  b) semi permanent  c) temporary

**MOTHER'S KNOWLEDGE ON WCC SERVICES**

I. Why should children attend well child clinics? Tick.

- a) For immunizations \_\_\_\_\_
- b) Growth monitoring \_\_\_\_\_
- c) PMTCT \_\_\_\_\_
- d) Health education \_\_\_\_\_
- e) Vitamin A supplementation \_\_\_\_\_
- f) Nutrition services \_\_\_\_\_
- g) Treatment of sick children \_\_\_\_\_
- h) Checkups on their health status \_\_\_\_\_
- i) Other( specify) \_\_\_\_\_

(Each service identified correctly earns one point. A score of  $\geq 50$  percent is good knowledge and vice versa)

II. Is well child care beneficial to your child? Yes  No 

III. Up to what age should your child receive services in this clinic?



CODES (for filling table above)

- a. Services rendered: 1 = immunization, 2= growth monitoring & nutrition, 3= health education 4= Vitamin A 5= PMTCT 6= General examination 7= treatment
- b. Illnesses: 1= respiratory infection, 2= diarrheal disease, 3= malaria, 4= malnutrition, 5= other(specify)
- c. Milestones: 1= social smile, 2= head control, 3= sitting, 4= crawling, 5= stands with support, 6= walking

**FOR CHILDREN WITH POOR ATTENDANCE (attended  $\leq$  9 total visits)**

- i. No. of visits missed \_\_\_\_\_
- ii. Transferred out? Yes  No
- iii. Stage of care at dropping out \_\_\_\_\_
- iv. Reasons for dropping out;-
  - a) Finished immunizations \_\_\_\_
  - b) Child healthy \_\_\_\_\_
  - c) Cost of services \_\_\_\_\_
  - d) Distance from home \_\_\_\_\_
  - e) Staff attitude \_\_\_\_\_
  - f) Hospital issues \_\_\_\_\_
  - g) Family pressure \_\_\_\_\_
  - h) Others (specify) \_\_\_\_\_

**FOR THOSE WITH GOOD ATTENDANCE AT 12 MONTHS OF AGE( Attended more than 75% of visits ie more than 9visits)**

- i. Reasons for good adherence (tick one).
- a) Aware of required duration of care. \_\_\_\_\_
  - b) Good service. \_\_\_\_\_
  - c) Encouragement from staff \_\_\_\_\_
  - d) Affordability \_\_\_\_\_
  - e) Family support \_\_\_\_\_
  - f) Others (specify) \_\_\_\_\_
- ii. For how long do you plan to continue bringing your child for WCC care? \_\_\_\_\_





MOI TEACHING AND REFERRAL HOSPITAL  
P.O. BOX 3  
ELDORET  
Tel: 334711/2/3



MOI UNIVERSITY  
SCHOOL OF MEDICINE  
P.O. BOX 4606  
ELDORET  
Tel: 334711/2/3

**INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)**

Reference: IREC/2011/124  
**Approval Number: 000722**

29<sup>th</sup> September, 2011

Dr. Catherine Ndila,  
Moi University,  
School of Medicine,  
P. O. Box 4606-30100,  
**ELDORET, KENYA.**



Dear Dr. Ndila,

**RE: FORMAL APPROVAL**

The Institutional Research and Ethics Committee has reviewed your research proposal titled:

***"Adherence to Scheduled Well Child Clinic Care during the First Year of Life at Moi Teaching and Referral Hospital"***

Your proposal has been granted a Formal Approval Number: **FAN: IREC 000722** on 29<sup>th</sup> September, 2011. You are therefore permitted to start your study.

Note that this approval is for 1 year; it will thus expire on 28<sup>th</sup> September, 2012. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Yours Sincerely,

*DR. W. ARUASA 30/09/2011*  
**DR. W. ARUASA**  
**AG. CHAIRMAN**  
**INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE**

cc: Director - MTRH  
Dean - SOM  
Dean - SPH  
Dean - SOD



## MOI TEACHING AND REFERRAL HOSPITAL

Telephone: 2033471/2/3/4  
 Fax: 61749  
 Email: director@mtrh.or.ke

P. O. Box 3  
 ELDORET

Ref: ELD/MTRH/R.6/VOL.II/2007

30<sup>th</sup> September, 2011

Dr. Catherine Ndila,  
 Moi University,  
 School of Medicine,  
 P. O. Box 4606 - 30100  
ELDORET.

**RE: APPROVAL TO CONDUCT RESEARCH AT MTRH**

Upon obtaining approval from the Institutional Research and Ethics Committee (IREC) to conduct your research proposal titled:

*“Adherence to Scheduled Well Child Clinic Care during the First Year of Life at Moi Teaching and Referral Hospital”*

You are hereby permitted to commence your investigation at Moi Teaching and Referral Hospital.

  
**DR. OMAR ALY**  
**AG. DIRECTOR**  
**MOI TEACHING AND REFERRAL HOSPITAL**

CC - Deputy Director (CS)  
 - Chief Nurse  
 - HOD, HRISM





MOI TEACHING AND REFERRAL HOSPITAL  
P.O. BOX 3  
ELDORET  
Tel: 33471/2/3

Reference: IREC/2011/124  
**Approval Number: 000722**

Dr. Catherine Ndila,  
Moi University,  
School of Medicine,  
P. O. Box 4606-30100,  
**ELDORET, KENYA.**

Dear Dr. Ndila,

**RE: CONTINUING APPROVAL**

The Institutional Research and Ethics Committee has reviewed your request for continuing approval for your study titled:-

***"Adherence to Well Child Care Among Infants at the Moi Teaching and Referral Hospital".***

Your request has been granted Approval with effect from 30<sup>th</sup> September, 2012. You are therefore permitted to continue with your study.

Note that this approval is for 1 year; it will thus expire on 29<sup>th</sup> September, 2013. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

*Dr. W. Aruasa*  
**DR. W. ARUASA**  
**VICE-CHAIRMAN**  
**INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE**

cc: Director - MTRH  
Principal - CHS  
Dean - SOM  
Dean - SPH  
Dean - SOD  
Dean - SON



MOI UNIVERSITY  
SCHOOL OF MEDICINE  
P.O. BOX 4606  
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Tel: 33471/2/3  
30<sup>th</sup> September, 2013

