

**AN ASSESSMENT OF COMPLIANCE TO INTEGRATED MANAGEMENT OF
CHILDHOOD ILLNESS GUIDELINES AND MANAGEMENT SYSTEMS
IN LANGATA, NAIROBI COUNTY**

BY

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SPH/PGH/NC/1033/11

**A THESIS SUBMITTED
IN PARTIAL FULLFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE
DEGREE OF MASTER OF PUBLIC HEALTH, SCHOOL OF PUBLIC HEALTH MOI
UNIVERSITY**

NOVEMEBR 2015,

DECLARATION

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DEDICATION

This thesis is dedicated to my family for their encouragement and support.

ABSTRACT

Title: An assessment of compliance to IMCI guidelines and management systems

Background World Health Organization estimates about 10 million children die annually mostly in developing countries. In Kenya, Demographic Survey of 2008 reported infant and child mortality of 74 and 52 deaths per 1,000 respectively. Targets of 25 and 33 deaths per 1000, has not been achieved despite implementing Integrated Management of Childhood Illnesses (IMCI) strategy since 1997. Management systems like trainings, availability of drugs and management meetings need to be well understood so that they can support implementation of IMCI

Objectives: To assess the compliance of health care workers with IMCI guidelines and management systems in three Amref supported facilities by; Assessing the compliance of health care workers with IMCI guidelines, describing the IMCI management systems available according to IMCI strategy and explaining factors that promote or hinder IMCI implementation

Methodology: Cross sectional descriptive facility based survey. Both quantitative and qualitative data was collected using questionnaires and key informant interview guide. The study was conducted at three health centers in Nairobi County. Care giver sample size was arrived at through proportionate sampling in the facilities and selection done using systemic interval sampling. Exit interviews on 351 caregivers and 3 key informant interviews were conducted about compliance of health care workers to IMCI and management systems. Inclusion criteria entailed caregivers of children aged between 2 and 59 months who had been brought to the Outpatient departments. Data was entered and analysed using SPSS software

Results: Overall, 351 caregivers interviewed. Three key informant interviews conducted with facility in charges a nurse and two clinicians. Majority of the caregivers were 97.7% female with 78 % being married. About 75.2% were below 30 years and 96% were mothers of the children. All (100 %) of the health centers held no IMCI specific meetings. Management meetings were irregular with no documented proceedings. Support supervision was irregular with no facility having the support supervision visit schedule. All facilities had basic medicines and equipment recommended by IMCI. Health care worker compliance to IMCI guidelines on pre assessment and danger signs stood at less than 51 % and less than 41% respectively and 22% on major symptoms. Partner collaboration and facility set up change promoted IMCI implementation while lack of commitment, high work load and lack of forms hindered IMCI implementation.

Conclusions: Despite the trainings done, health care workers' compliance to the IMCI guidelines was poor and this was attributed to weak management systems. Management systems in relation to IMCI implementation especially management meetings were weak. Support supervision was not institutionalized. Donor and partners support and also change of facility set up had promoted IMCI implementation while lack of commitment and high work load hindered IMCI implementation in the three facilities.

Recommendations: The study recommends that, at policy level, institutionalization of effective supportive supervision for health care workers. At program implementation level, Amref to come up with a strategy to motivate health care workers to comply with IMCI guidelines and further research recommended on barriers to effective supportive supervision among the District Management teams (DHMTs) and also one to find out if compliance to IMCI protocols has better outcomes in management of childhood diseases in these facilities

TABLE OF CONTENTS

DECLARATION	i
DEDICATION	ii
ABSTRACT	iii
LIST OF TABLES	vii
LIST OF FIGURES	viii
ABBREVIATIONS AND ACRONYMS	ix
ACKNOWLEDGEMENT	x
DEFINITION OF TERMS	xi
CHAPTER ONE	1
INTRODUCTION	1
1.0 Background information	1
1.1 Statement of the problem	2
1.2 Justification	3
1.3 Objectives	3
1.3.1 Broad objective	3
1.3.2 Specific objectives	3
1.4 Research questions	4
CHAPTER TWO	5
LITERATURE REVIEW	5
2.0 Introduction	5
2.1 Rationale for Integrated Management of Childhood Illness strategy	5
2.2 Implementation of Integrated Management of Childhood Illness strategy	6
2.2.1 The Integrated Management of Childhood Illness management standards	7
2.2.2 Implementation of Integrated Management of Childhood Illness strategy globally	10
2.2.3 Implementation of Integrated Management of Childhood Illness strategy in Kenya	10
2.3 Management systems in Integrated Management of Childhood Illness strategy	14
2.4 Factors which promote or hinder Integrated Management of Childhood Illness strategy	14
2.5 Conceptual framework	15
CHAPTER THREE	18
STUDY DESIGN AND METHODOLOGY	18
3.0 Introduction	18
3.1 Study design	18

3.2 Study area	18
3.3 Study population	19
3.4 Sampling procedure.....	19
3.5 Sample size determination.....	19
3.5.1 Care givers / guardian	19
3.5.2 Healthcare givers	21
3.6 Inclusion and exclusion criteria	21
3.6.1 Inclusion Criteria	21
3.6.2 Exclusion Criteria	21
3.7 Data collection and management	21
3.7.1 Selection, training and supervision of research assistants	22
3.7.2 Research assistant training	22
3.7.3 Collection of data.....	22
3.7.4 Supervision.....	22
3.7.5 Data quality assurance	23
3.7.6 Data analysis.....	23
3.7.7 Study limitation	23
3.8 Ethical considerations.....	24
CHAPTER FOUR.....	25
RESULTS.....	25
4.0 Introduction.....	25
4.1 Study participants.....	25
4.2 Health care worker compliance to IMCI guidelines	27
4.2.1 Compliance to Pre- assessment	27
4.2.2 Compliance to assessing danger signs and major symptoms	28
4.2.3 Compliance to child examination and nutritional assessment	31
4.2.4 Compliance to child management	33
4.3 Management systems	35
4.3.1. Management meetings	35
4.3.2 Trainings and support supervision.....	36
4.3.3 Availability of drugs and equipment	37
4.4 Factors which promote or hinder IMCI implementation.....	38
4.4.1 Factors which promote IMCI implementation	39
4.4.2 Donor and partner support	39

4.4.3 Change of systems	39
4.4.4 Factors which hinder IMCI implementation	40
4.4.5 Lack of commitment	40
4.4.6 Lack of IMCI tools (Chart booklet, recording forms and wall charts)	42
4.4.7 High work load	43
4.4.8 Facility set up and infrastructure	44
CHAPTER FIVE	46
DISCUSSION.....	46
5.0 Introduction.....	46
5.1 Discussion.....	46
CHAPTER SIX.....	57
CONCLUSIONS AND RECOMMENDATIONS	57
6.0 Introduction.....	57
6.1 Summary of key findings	57
6.2 Conclusions.....	58
6.3 Recommendations	59
REFERENCES	60
APPENDICES	68
Appendix 1: Key Informant Interview Guide.....	69
APPENDIX 2: ASSESMENT MANAGEMENT SYSTEM FORM	70
IREC APPROVAL	73

LIST OF TABLES

Table 2.1: Integrated Management of Childhood Illness strategy components	7
Table 2.2: Trend of infant, child and under five mortality in Kenya 1983 to 2008.....	13
Table 2.3: Trend of infant, child and under five mortality in Nairobi 1983 to 2008.....	13
Table 3.1: Sample size for care givers based on the children who had been attended in the health facilities	20
Table 4.1: Distribution of study respondents by demographic characteristics.....	26
Table 4.2: Observance of pre assessment procedures during sick child consultations.....	28
Table 4.3: Assessment of children for danger signs and major symptoms as recommended by IMCI.....	30
Table 4.5: Communication and treatment of sick children	34

LIST OF FIGURES

Figure 2: IMCI Assess and classify chart: Source: WHO and UNICEF, 2001.....	9
Figure 2.2: Levels of care as defined in Kenya Health policy; Source: Kenya Health Policy 2014 - 2030.....	12
Figure 2.3: Conceptual framework	17
Figure 4:1 Proportion of caregivers interviewed from the three facilities	25
Figure 4.2: Pre assessment examination of the sick children	27
Figure 4.3: Percentage of children assessed for danger signs and major symptoms as recommended by IMCI	29
Figure 4.4: Clinical examination and nutritional assessment of sick children	31
Figure 4.5: Communication and treatment of sick children	33

ABBREVIATIONS AND ACRONYMS

CDC	-Centers for Disease Control and Prevention
CHAI	-Clinton Health Access Initiative
FBO	-Faith Based Organisation
IMCI	-Integrated Management of Childhood Illness
KDHS	-Kenya Demographic and Health survey
KEMRI	-Kenya Medical Research Institute
KEPH	-Kenya Essential Package for Health
KNBS	-Kenya National Bureau of Statistics
KSPA	- Kenya Service Provision Assessment
MCE	- Multi - County Evaluation
KPA	- Kenya Paediatric Association
MDG	-Millennium Development Goal
MOMs	-Ministry of Medical Services
MOPHS	-Ministry of Public Health and Sanitation
MPH	-Master of Public Health
NHSSP	-National Health Sector Strategic Plan
OPD	-Out Patient Department
ORS	-Oral Rehydration Salts
ORT	-Oral Rehydration Therapy
PMTCT	- Prevention of Mother to Child Transmission
PR	-Principal Researcher
RAs	-Research Assistants
SC	- Simulated Clients
SPSS	- Social Package for Social Scientists
SSA	- Sub Saharan Africa
KSPA	-Service Provision Assessment
UNICEF	-United Nations Children’s Fund
USA	-United States of America
WHO	-World Health Organization

ACKNOWLEDGEMENT

My deep gratitude goes to the Almighty God for granting me the grace to undertake this course. My sincere appreciation goes to my supervisors Professor Paul Omondi and Dr. Peter Ngatia for their flexibility, input and guidance during the research period. Special thanks to my parents, Wilfred, Doricah, James and Grace and my siblings, Wilma, Gillian, Erick, Anne, Dennis and Nicholas whose encouragement has brought me this far. I am also greatly indebted to all those who helped me in one way or the other in this study, Dr. S. Owouche, Dr H. Nyamagoba, Dr. J. Nyagero, Dr.M. Nangami, Dr.A. Mwangi, Dr. S. Wangila, S. Muhula and Dr. P. Masibo for their valuable guidance. Lastly with love many thanks to my wife Christine Mobegi and our son Ethan Mobegi for their patience, understanding, prayers and support.

God bless you all

DEFINITION OF TERMS

1. Compliance

Compliance has been defined as, conforming to set rules and guidelines (Silveira, 2012). This could be policy documents or specific standards operation procedures. It is acting according to certain accepted standards. In this study, compliance was used to determine if health care workers are following the IMCI guidelines as required

2. Danger signs

These are three signs that the clinician should assess if the child has any of them. The presence of any of the three signs indicates serious disease. They include; inability to eat/drink, vomiting everything and febrile convulsions.

3. Integrated management of Childhood Illness

The IMCI has been defined by WHO as an integrated approach to child health that focuses on the overall wellbeing of a child (WHO, 2007). This strategy is applied in the treatment of children who are under the age of five years.

4. Major symptoms

These are four symptoms that the clinician should ask the caregiver of the sick child. They are: Cough/difficulty in breathing, diarrhoea, ear problem and fever.

5. Management system

A management system can defined as that framework of how things are done and how they should be done so that an organization achieves its goals (Anderson, 2005). For example a health management system will entail processes like support supervision, meetings, enforcing use of guidelines and providing the necessary equipment and drugs

CHAPTER ONE

INTRODUCTION

1.0 Background information

Every year it is estimated by World Health Organization (WHO) that more than 10 million children die (WHO, 2007). Most of these deaths occur in the developing countries like Kenya where there are high infant and child mortality rates. Under five and infant mortality rates are indicators used to monitor child health under the Millennium Development Goal (MDG) four. According to the Kenya Demographic Survey (KDHS) of 2008, the country reported under five mortality of 74 deaths and infant mortality of 52 deaths per 1,000 respectively (KDHS,2008). The major causes of these deaths are malaria, pneumonia, diarrhoea, measles and malnutrition (Bryce, 2005).

To respond to these high mortality rates, which characterise the developing world, WHO and United Nations Children's Fund (UNICEF) developed the IMCI strategy in the 1990s (Gove, 1997). This strategy was adopted in Kenya in 1997 and made a national policy in 2005 (MOH, 2005). The policy was also incorporated as a priority area in the first National Health Sector Strategic Plan (NHSSP) of 1994 to 2004 (NHSSP, 1994). The IMCI strategy has guidelines and protocols to ensure optimal care for childhood diseases.

The MDG 4 aims at reducing child mortality by two thirds between 1990 and 2015. Children belong to the second cohort of early childhood as per the Kenya Essential Package for Health (KEPH) (NHSSP II, 2005). According to the UNICEF report of 2011, overall substantial progress has been made towards achieving this MDG (UNICEF, 2011). The report estimated that under - five deaths worldwide declined from more than 12 million in 1990 to 7.6 million in 2010.

The strategy provides an opportunity for health care workers to ensure optimal care for the sick children who are under the age of five years. It trains health care workers to comprehensively assess, classify symptoms, treat and counsel parents and caretakers of sick children about common childhood diseases. It has been confirmed that proper assessment and management of sick children using the IMCI strategy reduces child mortality significantly (Kerry, 2000). Since the strategy was launched, it is estimated that

more than 110 countries, including Kenya have adopted and are implementing the IMCI strategy (Naimoli, 2006).

The IMCI strategy was officially launched in the year 2000 and by end of 2007 almost two – thirds of districts were implementing the strategy (KSPA, 2010). According to a Kenya Medical Research Institute (KEMRI) policy paper of 2008, the implementation of IMCI remains highly inadequate because of three major challenges: low training coverage; trained health care workers not following the guidelines and barriers to access by community members (Mullei, 2008). This study looked at the management systems that support the implementation of IMCI strategy in Kenya. The study starts by describing child health services in relation to compliance with IMCI guidelines and protocols. It describes the management systems available and finally looks at the management factors that either promote or hinder IMCI implementation in three Amref supported health centers.

1.1 Statement of the problem

In Sub Saharan Africa (SSA) childhood illnesses continue to contribute substantially to the global burden of disease (Black *et al.*, 2003). Infant and child mortality rates still remain high in many SSA countries including Kenya. Progress towards targets of 25 and 33 deaths per 1000 in Kenya is still slow (NHSSP II, 2005). In Nairobi the statistics show that infant mortality is increasing from 46 in 1988 to 60 in 2008 (KDHS, 2008). Despite the adoption of IMCI strategy significant proportion of children do not receive care as per IMCI guidelines (KDHS, 2007). This may indicate that there is lack of compliance to the IMCI guidelines. It is not clear why this is happening since there is no documented evidence to show reasons for the non – compliance. There could be lapses in the adherence of management systems that support IMCI implementation. Gaps in knowledge of the management systems that either promote or hinder IMCI implementation also exist hence the need for this study to answer some of these questions.

1.2 Justification

Implementation of IMCI and health care worker compliance to IMCI guidelines is mandatory if sick children are to receive the best care. This is not universally appreciated despite the resources that have been invested in IMCI by WHO and UNICEF globally. Management systems are crucial in enforcing IMCI implementation but there also seems to be gaps in the management processes. It was important therefore to undertake this study to understand and describe the factors that hinder or promote the full implementation of IMCI guidelines and management systems. The focus of the study is compliance of health care workers to IMCI guidelines and management systems. The findings are relevant strengthen management systems and also to broader issues of increasing health workers compliance to any other clinical guidelines. Knowledge gained from the findings of this study can be used by policy makers to strengthen management systems and help in resource allocation for health care workers in IMCI implementation. In addition, the results may provide baseline information for future studies.

1.3 Objectives

1.3.1 Broad objective

To assess the compliance of health care workers with IMCI guidelines and management systems in three health centers supported by Amref

1.3.2 Specific objectives

1. To assess the compliance of health care workers with IMCI Guidelines and management systems
2. To describe the IMCI management systems available in the three facilities in accordance to IMCI strategy
3. To explain factors that promote or hinder implementation of IMCI guidelines and management systems

1.4 Research questions

1. To what extent do health care workers comply with the IMCI guidelines in the three Amref supported health centers?
2. What are the management systems available related to IMCI implementation at the three Amref supported health centers?
3. What are the factors that promote or hinder IMCI implementation at the three Amref supported health centers?

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Literature review has been defined as a systematic identification, location, scrutiny and summary of related published works to gain information about the research topic (Burns & Grove 2007:33, Polit & Hungler 1995). Literature for this study was reviewed to obtain relevant information that is available on IMCI implementation. The review provided valuable background knowledge about similarities and differences between this study and prior research studies done on this topic. This chapter shows literature reviewed on IMCI implementation globally, in SSA and in Kenya. It also highlights on the management systems in relation to IMCI implementation, health care worker compliance to IMCI and factors that promote or hinder IMCI implementation.

2.1 Rationale for Integrated Management of Childhood Illness strategy

The UNICEF and WHO have estimated that about 10 million of children less than five years die each year some as a result of not receiving adequate and comprehensive assessment (WHO, 1999). High infant and child mortality in Africa can be attributed to weak health care systems. The service provision Assessment (KSPA) reported that at least three out of the four incidences of childhood illness in developing countries like Kenya are as a result of the five conditions targeted by IMCI strategy (KSPA, 2010). It has been projected that these five conditions will still be a major contributor to child mortality and morbidity all through to 2020 (Murray and Lopez, 1996). It is further estimated that seven out of ten deaths among children under five are as a result of one or a combination of these conditions. The IMCI strategy was developed in 1995 by WHO and UNICEF to address this challenge of high infant and child mortality. After the IMCI was launched in 1995, a few countries showed interest and started implementing it and by December 2001, more than 40 countries were implementing the strategy (WHO, 2001). This strategy is therefore important in these African countries where infant and child mortality is high.

Health care workers should comply fully with IMCI strategy because it has been proven to save lives by advocating for a comprehensive approach in management of sick children.

About 60% of global deaths can be prevented if health care workers complied with and followed IMCI protocols and guidelines (Jones, 2003). In Kenya, KDHS indicated a decline in under five mortality from 115 to 74 deaths per 1,000 live births as reported in 2003 and 2008 respectively (KDHS, 2008). Infant mortality stood at 52, down from 77 deaths per 1,000 live births. Kenya has however not achieved the target of 25 and 33 deaths per 1,000 in infant and child mortality rates respectively (NHSSP II, 2005). This can be attributed to health care workers lack of compliance with IMCI protocols which management systems have failed to enforce or are weak to enforce.

2.2 Implementation of Integrated Management of Childhood Illness strategy

Implementation of the IMCI strategy occurs in three phases namely; introduction; early implementation and expansion. In the introduction phase, ministries of health familiarise themselves with the documents and try to align them into the country specific strategies. The early implementation phase entails activity implementation and trainings of health care workers. Lastly the expansion phase entails scale up of IMCI activities in the country. This is where the health facilities are expected to fully implement the strategy. According to WHO, the IMCI strategy is anchored on the following principles; all sick children should be assessed for major symptoms, and nutritional and immunization status and potential health problems should be checked; all sick children should be assessed for general danger signs; (WHO, 2001)

Through this strategy communities can be empowered so they are able to recognise the danger signs and health care workers can refer appropriately and in a timely manner to more specialised health facilities (WHO, 2007). Quality of life has been found to be improved through this strategy too (Arifeen et al., 2009). Studies have shown too that IMCI improves the quality of child management (Amaral *et al.*, 2004). This strategy has been found to reduce child mortality, as revealed in a study conducted in Tanzania under the Multi – Country Evaluation (MCE), where child mortality was found to have been reduced by 13% (Armstrong et al. 2004). In Brazil the MCE study revealed that health care workers trained in IMCI provided significantly better care than those not trained (Armstrong et al. 2004). Table 2.1 below summarises the three components and how they are achieved (WHO, 2007).

Table 2.1: Integrated Management of Childhood Illness strategy components

	Components	Ways through which the components are achieved
1	Improvement on health care workers skills on IMCI	Training and support supervision
2	Improvement in health systems for management of childhood illnesses	Improving health systems, including equipment, supplies, organization of work, and referral systems
3	Empowering families and community members on health issues	Improving child care at the community and household levels in line with key family practices

Source: WHO and UNICEF, 2001.

2.2.1 The Integrated Management of Childhood Illness management standards

The three components of IMCI need to be adhered to fully in order for IMCI to be effective and to ensure that standards are met. The IMCI process starts at the moment when the patient walks into the facility until the time the patient exits from the facility. The standards also entail the minimum management and administrative support requirements that the facility needs to have in order to provide IMCI services.

In the pre-assessment stage the child's weight and temperature should be taken and a detailed immunization history recorded in the child health card. Taking the vital signs is helpful in the case management of the child as they can give an indication of the underlying problem. This stage can be done at the triage area or inside the consultation room. From the pre-assessment the child enters into the consultation room.

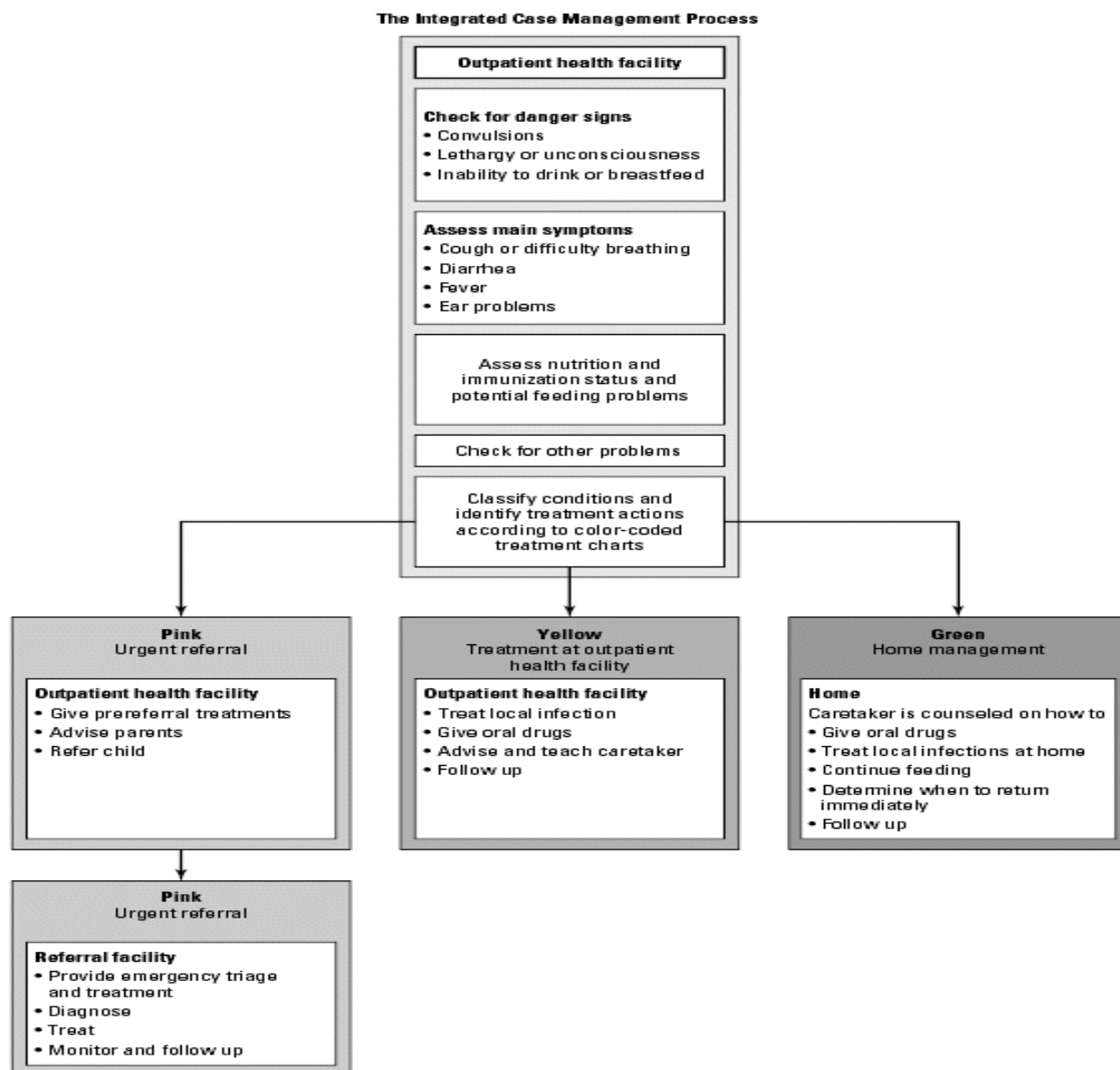
In the consultation room the health care worker welcomes the mother or caregiver to the room. After greetings and introductions the caretaker is asked about what the child's problems are. After history taking the child is then assessed for general danger signs (Buse, 2005). After assessing the danger signs the health care worker then asks for the four major symptoms. If there is any major symptom the clinician asks further questions to help in classifying the child while in the presence of any danger sign the child is referred.

Nutrition status then follows where by the child is assessed for weight and examination like oedema and anaemia.

While the child is being examined the health care worker should be able to determine if the child's condition needs referral or the child can be managed at the facility. After the assessment stage the child is classified as per the condition and proper communication is given to the care taker. If the child does not need referral the health care worker prescribes and gives the first dose of medicine at the facility after explaining to the mother how to give drugs. The care taker should also be informed about giving more fluids and the conditions under which the child should be returned to the facility. If the child needs referral the health care worker administers the first doses of medicine and refers the child.

The facilities should also be able to have a regular supply and stocks of basic medicines for effective child service delivery (KSPA, 1999). The IMCI guidelines have defined first line; pre-referral and other important medications for treating the sick child. The first line treatments include Oral Rehydration Salts (ORS), at least one oral antibiotic and first line antimalarial drugs (KSPA, 2010). The pre-referral medicines include emergency injectable antibiotics (first line such as penicillin or ampicillin and second line such as ceftriaxone, gentamycin, or chloramphenicol. Intravenous solutions (normal saline, ringers lactate or dextrose) with a perfusion set and other essential medicines like paracetamol, vitamin A, Iron supplements and mebendazole should be available.

Adequate and comprehensive assessment is important so as to make an accurate diagnosis. Some health care providers fail to comply with IMCI guidelines and protocols and as reported by WHO many sick children who go the health care providers do not receive an adequate assessment and treatment (WHO, 1999). If health care workers complied with IMCI guidelines then the 10 million plus children who die annually can be saved. The chart below outlines how a child should be assessed, classified and managed as per the IMCI guidelines (WHO and UNICEF 2001).



Source: WHO and UNICEF 2001.

Figure 2: IMCI Assess and classify chart: Source: WHO and UNICEF, 2001.

2.2.2 Implementation of Integrated Management of Childhood Illness strategy globally

The WHO recommends that 60 % of health workers attending to children under five in health facilities be trained on IMCI case management to ensure a critical mass for quality management of sick children's health (Bryce *et al.*, 2004). The IMCI strategy has been shown to be a success in many countries. An evaluation done by Howard in South Africa concluded that health workers are implementing IMCI but assessments were incomplete, and children requiring urgent referral were missed (Horwood *et al.*, 2009). Studies have shown that training health workers on IMCI guidelines can improve the quality of care at health facilities (Rowe, 2009). Rowe also argued that in as far as training offers an opportunity to implement clinical guidelines, training alone is insufficient for achieving high levels of compliance (Rowe, 2009). These studies also revealed substantial room for improvement in adherence to the guidelines (Alexander, 2009).

2.2.3 Implementation of Integrated Management of Childhood Illness strategy in Kenya

Kenya adopted the IMCI strategy with the aim of reducing infant and child mortality and morbidity. Implementation followed the three phases of introduction, implementation and expansion as recommended by WHO. The IMCI was first introduced to Kenya in 1997 under the US Centers for Disease Control and Prevention (CDC) programme with 80 health workers in Bungoma and Vihiga Districts receiving the first case management training on IMCI. The IMCI strategy was later adopted as a national policy to improve health care services (MOH, 2005). It was also incorporated as one of the priority areas in the first NHSSP (NHSSP, 1999).

In the year 2000, the IMCI strategy was officially launched and one year later WHO reported that Kenya was in the early implementation phase (WHO/AFRO, 2001). The IMCI is currently being implemented in 56 of the 75 old districts. This strategy seemed and continues to be an ideal approach to manage childhood illnesses. According to KSPA 2010 the IMCI protocols for assessing a sick child provide valid guidelines for quality of care regardless of whether a provider has been trained in IMCI case management or not (KSPA, 2010).

The 1999 KSPA provided a baseline survey through which the IMCI progress can be judged because the assessment was done shortly after the strategy was adopted (KSPA, 1999). Based on the findings of the KSPA report only one pilot IMCI training had been done with few facilities complying with IMCI standards (KSPA, 1999). This was also confirmed by WHO that many sick children who were brought to health care workers received adequate assessment and treatment (WHO, 1999). The KSPA of 2010 can therefore be used to judge progress made between 1999 and 2010 (KSPA, 2010).

Findings from the KSPA of 2004 indicated a downward trend in sick children assessment. The findings confirmed a decline in health care quality offered to the sick child. The assessment revealed that only 36 % of the children were assessed on whether they were able to drink or breast feed (compared with 44 % in 1999) with 12 % assessed for convulsions compared with 24 % in 1999. Shockingly it was reported that only 6 % were assessed for all three danger signs (KSPA, 2010). The report further indicated that only 5 % of caretakers received all of the three IMCI-recommended counsels. Only 14 % of the children received first dose of medication at the facility. Some opportunities to offer preventive and promotive services are also being missed.

The use of visual aid stood at 2 % with only 29 % of the facilities having visual aids (KSPA, 2004). In follow up of the KSPA of 2004 that sought to explore the extent to which health facilities providing outpatient care for sick children complied with IMCI guidelines and to other standards for quality service provision, this study will strive to reveal why compliance with IMCI guidelines is still low. The study also seeks to determine compliance levels currently and try to identify the gaps in compliance with IMCI standards in the Amref supported health centers

The IMCI strategy is implemented within a health care system. Kenya's health care system has both the community and static health facilities that are managed by different players (MOH, 1999). This means therefore that some facilities are managed by Faith Based Organizations (FBO), private facilities and municipal councils. The majority of these facilities are managed and run by the government (KSPA, 1999). The KSPA of 2010 reported an increase of health facilities from 6,190 to 6,696 in the year 2009 (KSPA, 2010).

Under the NHSSP – II, KEPH was introduced to promote healthy lifestyles in the six phases of human development. The six life phases are pregnancy and new born, early childhood, late childhood, youth and adolescence, adulthood and the elderly (NHSSP II, 2005). The NHSSP-II also introduced six different levels of service delivery but these levels were changed to four levels as shown in figure 1 below (MOH, 2014). The IMCI strategy should be implemented at all levels but it is mostly implemented at the primary and secondary level.

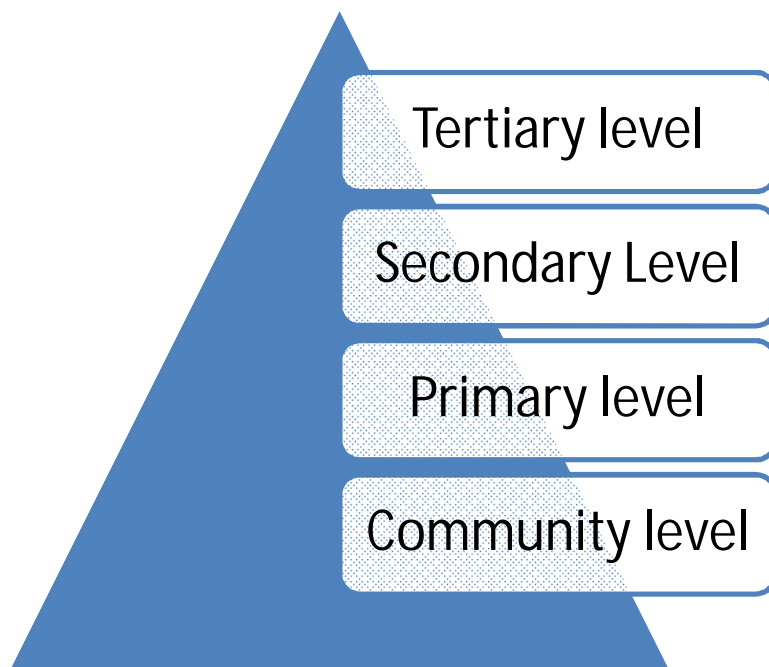


Figure 2.2: Levels of care as defined in Kenya Health policy; Source: Kenya Health Policy 2014 - 2030

Child health services are offered at different levels in Kenya. There have also been many developments in the delivery of child health services in Kenya. In the 1990s there was a deterioration of the care that was being offered to children in the 1990s (KDHS, 1998). However according to analysis done by Ministry of Medical Services (MOMs) and Ministry of Public Health and Sanitation (MOPHS) in 2010 it was found that the health

status in Kenya had improved only marginally in the past decade with some indicators worsening (MOMS, MOPHS, 2010). Services like immunization and nutritional programmes have shown to contribute greatly in the reduction on both infant and child mortality in any country. It was reported that that about one third of children in Kenya were malnourished or had stunted growth (KDHS, 1998). Tables 2.1 and 2.3 below show the mortality rates for Kenya and Nairobi respectively as summarised from the KDHS reports in Kenya

Table 2.2: Trend of infant, child and under five mortality in Kenya 1983 to 2008

Infant, Child and Under-five mortality trends for Kenya since 1983 to 2008							
Year/	1983	1989	1993	1998	2003	2008	2014
Infant mortality/ 1000	69	63	62	73.7	67	52	39
Child mortality / 1000	35	28	37	112	77	23	14
Under - five / 1000	102	90	96	111.5	115	74	52

Source: KDHS (1983, 1989, 1993, 1998, 2003 2008and 2015)

Table 2.3: Trend of infant, child and under five mortality in Nairobi 1983 to 2008

Infant, Child and Under-five mortality trends for Nairobi province since 1989 to 2008					
	1989	1993	1998	2003	2008
Infant mortality/ 1000	46	44	41	67	60
Child mortality	36	40	26	30	4
Under - five	80	82	66	95	64

Source: KDHS (1983, 1989, 1993, 1998, 2003 and 2008)

2.3 Management systems in Integrated Management of Childhood Illness strategy

Management systems are important to ensure that the quality of services offered meet certain agreed standards. High quality health care can only be achieved through a well-managed health work force (NHRH, 2009). For quality to be maintained there is need to have established standard operating procedures that must be adhered to. Management systems have been defined as a framework of processes and procedures used to ensure that an organization can fulfil all tasks required to achieve its objectives (Anderson, 2005). The system may include meetings to review IMCI activities, trainings, provision of basic medicines and equipment and regular support supervision, among others.

Support supervision has been found to help improve quality. In the IMCI implementation there are two types of support supervision. The first one occurs 4 – 6 weeks after training; and the second is the regular support supervision from the district health teams. The first support visit occurs to determine if the IMCI activities have started after the training while that done by the district team is to help maintain the standards or improve on the standards. Support supervision helps in improving service delivery by motivating the staff and ensuring that standards and protocols are complied with at the facility level, and it also promotes an organizational culture that expects implementation of these standards (KSPA, 2010). The KSPA reported a decline in the support supervision of facilities from 87 % to 84 % in 2004 and 2010 respectively with Nairobi reporting 79%. Other studies have argued that in order for one to improve compliance with IMCI algorithm, health care workers need some support supervision after the IMCI training (Pariyo, 2005).

2.4 Factors which promote or hinder Integrated Management of Childhood Illness strategy

Factors promoting or hindering health service provider's compliance to protocols have been classified differently by different researchers. Barriers can be at different levels too like the patient, organizational context and the health care worker level (Foy, 2001). Among general practitioners at least six areas have been identified in a past studies. These areas include guideline content, format, and experience of the health care provider, doctor patient relationship, professional responsibility and practical issues (Foy, 2001).

The other classification that has been used is that of internal and external factors. Internal factors are those that are in the practitioner, like knowledge of the protocol and motivation while external are factors like work environment and organizational structure (Goossens *et al.*, 2008). If a health care provider has knowledge of a particular algorithm they there will be high levels of compliance as compared to those who do not have knowledge. The organizational structures can also either promote or hinder compliance to the IMCI algorithm. One of the key organizational factors is the management system.

2.5 Conceptual framework

A management support system is an outline of how activities are implemented so as to attain the desired outcomes. It is a process rather than a one off activity that is used in managing and improving organizations in terms of policies, procedures and processes. Management system in health therefore implies the leadership and general management policies applied to improve health. In this study, IMCI management systems comprise of three elements; management meetings, provision of basic medicines and equipment and also training and support supervision of health care workers. The IMCI implementation includes a combination of these three elements. In management meetings review of IMCI activities are done and action plans developed on what needs to be improved. Matters of health care compliance to IMCI guidelines are also discussed in these meetings. Provision of the basic needed equipment and drugs is also crucial in IMCI implementation. Training supports IMCI implementation and once health care workers have been trained they need to be followed up for supportive supervision. During these visits patient care and records review is done and discussion on IMCI implementation done.

During IMCI implementation it is important for different evaluations to be done. These evaluations have employed different methodologies. These methods include simulated clients (SCs) surveys which has been used in decades (madden, 1996 and Watson, 2007). This method has been used to determine health care workers practices including compliance to guidelines and protocols. In this method researchers pose as clients and observe the clinicians as they take history and carry out clinical examination. The other method that has been used is that of observation by researchers. This method is widely

used in developing countries (Rowe 2002). Both these methods have advantages and disadvantages.

The SCs method has some advantages because the health care workers are unaware that they are being observed thus gives a true picture of the health care workers practices. This is crucial as compared with observation method that can alter health care worker practices (Hawthorne effect) because they are aware that they are being observed (Rowe, 2006). Some scholars have recommended that SCs be taken as the gold standard for evaluating health care worker performance because it removes biasness (Peabody, 2000). This study modified the approach and interviewed the caretakers by designing the questionnaire to have the direct questions that the clinicians could have asked as recommended by IMCI strategy. By proxy therefore, measurement of health care worker compliance to IMCI guidelines was done through exit interviews of the care givers.

Donabedian described a flexible framework for assessing the quality of care (Donabedian, 1966; Burns, 1995). He proposed three related key areas i.e. structures, processes and the outcomes of health care. The structure is the environment through which care is delivered and the processes as the interaction of patients and care givers while the outcome is the product of the two. Structures could be composed of, facilities, equipment, personnel, operational and financial processes supporting medical care. The processes include interaction process while delivering services. This may include compliance to guidelines and protocols while providing care. The IMCI strategy is complex, incorporating numerous interventions that affect child health through a variety of pathways. The model here shows how IMCI is expected to lead to changes in child morbidity and mortality.

Figure 2.3 below shows a modified version of the Donabedian conceptual framework model. The conceptual framework indicates how these management support systems lead to improved health outcomes in relation to IMCI implementation. It also brings forth the issue of processes like compliance to guidelines and provision of basic medicines and equipment. The model presented here indicates that IMCI implementation depends on the management systems described above. It indicates that to have good outcomes, trained

health care workers must comply with IMCI guidelines while attending to sick children. If this is done there will be improved quality of care in the facilities. The outcome will be reduced child morbidity and mortality.

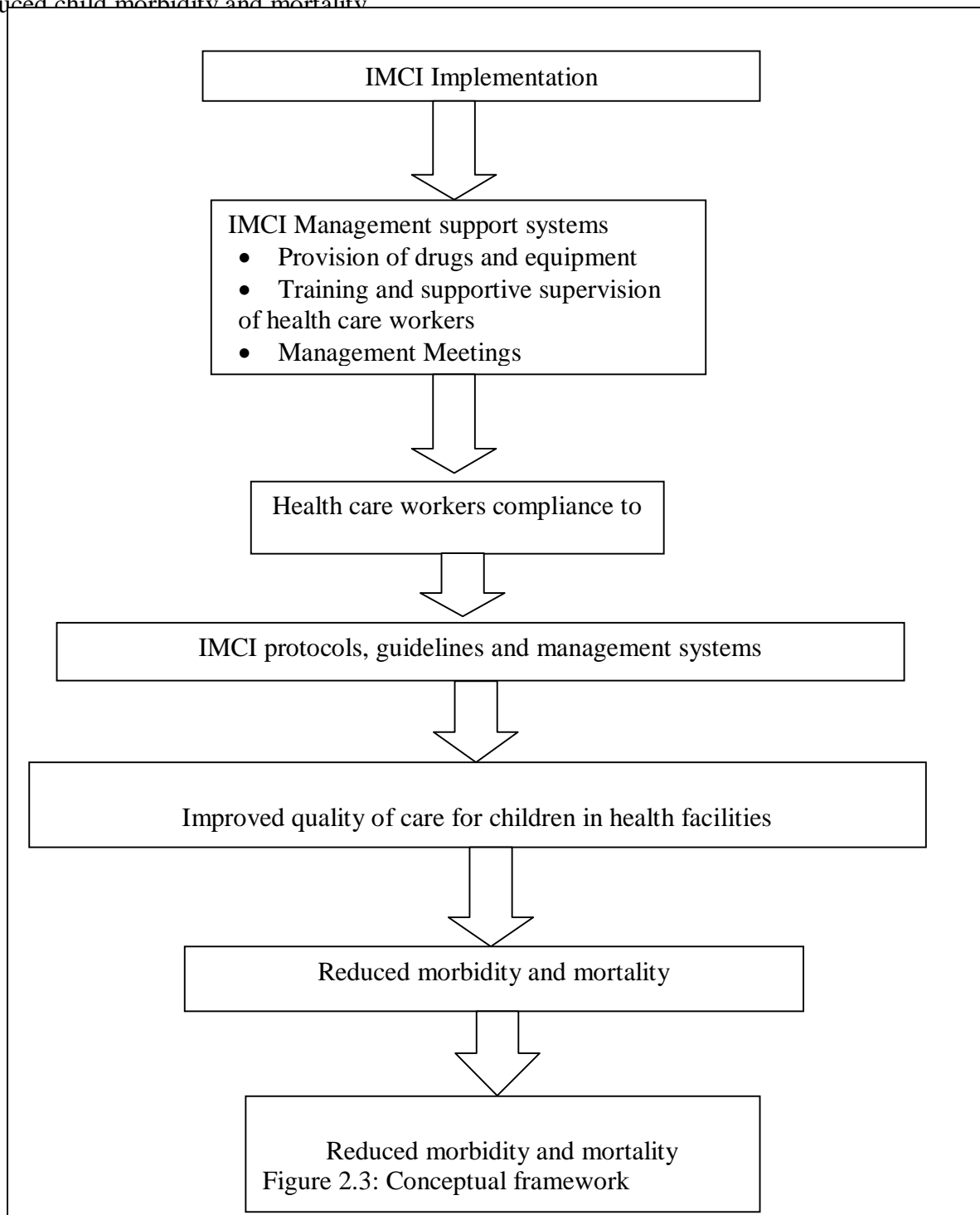


Figure 2.3: Conceptual framework

CHAPTER THREE

STUDY DESIGN AND METHODOLOGY

3.0 Introduction

Chapter 3 describes the research design and methods that were used in this study to assess the management systems supporting IMCI implementation at the three Amref Health Africa supported health centers. In this chapter, the research design, study population and sample, data collection and instrument, data analysis and the ethical considerations observed are discussed.

3.1 Study design

This was a cross-sectional facility – based survey where both quantitative and qualitative methods were used. Qualitative data was collected using questionnaires while qualitative data was collected through KI interviews where the facilities in charges were the key informants. The study was conducted over five months from September 2013 to January 2014 at the three Amref supported health centers.

3.2 Study area

The study was conducted in Langata Sub County at Kibera, Langata and Ushirika health Centers in Nairobi County, formerly Nairobi province. Nairobi County borders Kajiado County to the west, Kiambu County to the north, and Machakos County to the south. Nairobi City is 1795 m above sea-level and has cool moderate climatic conditions. Nairobi County is comprised of many different administrative units from districts, divisions, locations and sub-locations; politically it is divided into 17 constituencies. Infrastructure is well developed as compared to other parts of the country with an education system that includes both private and public institutions. The 2009 National Census estimated the population of Nairobi to be 3.2 million people, with males constituting 51.1% and females 48.9% (KNBS, 2009). It is demographically a cosmopolitan area where almost all the 42 Kenyan tribes can be found. It also has many expatriates since most of the foreign missions and corporate have offices and reside in Nairobi. The area was selected because Amref supports the facilities selected for this study.

3.3 Study population

The study population consisted of all the health care givers of children below five years seeking health services at the health centers at the time of the study. The health care workers were the facility in-charges, a nurse and two clinical officers who were working in these facilities.

3.4 Sampling procedure

The facilities were purposefully sampled because of the support they were getting from Amref. The same method was used for the facility in charges for qualitative data. For quantitative data systematic interval sampling for care givers was used where by every 4th, 3rd and 7th client was picked for the interview in Langata, Kibera and Ushirika respectively. This was based on the proportionate sample size that each facility was to contribute

3.5 Sample size determination

3.5.1 Care givers / guardian

A sample size of 384 participants, care givers of children below the age of five years seeking medical services for their children in the three health centers. The sample size was appropriate to determine health care workers compliance with IMCI guidelines in offering IMCI services. For the key informant interviews all the three health centers in charges were interviewed to determine the management systems that supported IMCI implementation. Table 3.1 below shows the total number of under five children (patients) seen in 2012 and an average number of under five patients attending health care services in the three supported health centers.

Table 3.1: Sample size for care givers based on the children who had been attended in the health facilities

Facility	Total < 5 patients seen in 2012 new visits only	Average < 5 patients per month new visits only in 2012	Average < 5 patients per 3 month new visits only in 2012	Proportionate samples (x/390 X384 = y)	Sampling interval (384/y)
Langata	510	43	129	109	4
Kibera	780	65	195	163	3
Ushirika	255	22	66	56	7
Uhuru camp	260	22	66	56	7
Total	1,805	152	456	384	-

Source: Kibera, Ushirika, Langata and Uhuru camp reports.

There were no data available to determine the health care workers practices on the level of adherence to IMCI guidelines and protocols in offering health care services to children in Kenya. Assuming 50% of the children receive health care as per the IMCI guidelines, and using this as a reference for a single proportion calculation with an error of 5% at 95% power, and employing Cochran's formula, the required sample N was thus:

$$N = \frac{z^2 pq}{\delta^2} = \frac{(1.96)^2 0.5 \times 0.5}{(0.05)^2} = 384$$

Where:

$$\begin{aligned} N &= \text{sample size} \\ z &= \text{standard normal deviate} &&= 1.96 \\ p &= \text{prevalence proportion} &&= 0.5 \\ q &= 1-p &&= 0.5 \end{aligned}$$

3.5.2 Healthcare givers

As indicated in section 3.4 above (Census purposeful sampling), all health centers in charges of the study facilities were interviewed in this study.

3.6 Inclusion and exclusion criteria

3.6.1 Inclusion Criteria

All health centers in charges of the three facilities present and were willing to participate in the study, and the care givers of the children between two months and 59 months on initial visit.

3.6.2 Exclusion Criteria

The care givers of those children who needed referral and the care givers of those whose children had been brought for normal child clinic and also caregivers of those children who had conditions as a result of trauma were excluded.

3.7 Data collection and management

Two methods were used in data collection in this study i.e. qualitative as well as quantitative method. Face to face researcher administered key informant interview and exit interviews were conducted using key informant guide and questionnaire tools respectively. A structured interview guide was used to interview the health care facility in charges. This was a face to face interviews administered by one research assistants (RA). The RAs voice recorded the response as per the information provided by the respondents. The data collected from the KIIs included discussion on the management aspects of the study that included; trainings and support supervision, meetings, medical supplies and quality assurance issues. As for the care givers of children below five years questionnaires were administered by four RAs. The data collected was about compliance of health care workers to IMCI guidelines and protocols. The questions focused on how the clinician took history, examined and managed the child. The research assistant asked by paraphrasing the kind of questions that the clinician would have asked the caregiver. The exit interviews with caretakers were all conducted as the care giver left the facility.

3.7.1 Selection, training and supervision of research assistants

In this study, four research assistants were recruited from the pool of Amref interns. The criteria included knowledge of English and Kiswahili, familiarity with the area, served at least three months within the organization and must have completed their first degree.

3.7.2 Research assistant training

The research assistants were taken through a one day training led by the principal researcher (PR) which was held in Amref TB board room. The training was divided into two parts with the morning part entailing theory and research basics. The afternoon entailed practices first amongst themselves and later in the field. In the first part participants were briefly introduced to IMCI strategy and what was expected on them in field data collection. They were also taken through the objectives of the study and completing the survey questionnaire. In the practice session the participant's role played caretakers and interviewers roles interchangeably. After the class practices the team went to pilot the tools at Kibera DO health center. After piloting the tools the team held a debrief on the data collected and challenges encountered after which some changes were made on the tools and then the team started data collection the following day.

3.7.3 Collection of data

The data was collected from the three Amref supported health centers i.e. Langata, Ushirika and Kibera all in Nairobi County. The research assistants were officially introduced to the facility in charges by the principal researcher before they started collecting data. Data collection took place over a five month span between September 2013 and January 2014. The data collection was interrupted in some days for the research assistants to carry out other organizational activities.

3.7.4 Supervision

One research assistant was selected to be the supervisor of the other three because he had more experience in research as compared with the other research assistants. His role entailed collection of the filled questionnaires and checking for completeness and consistency and keeping in touch with the PR through the whole process.

3.7.5 Data quality assurance

The RAs attended one day training conducted by the PR on all aspects of questionnaire administration. The questionnaire was translated into Kiswahili and then back to English to help understand and avoid misinterpretation. Before data collection, pre-testing was done at Kibera DO health center. The questionnaire was then revised and adjustments made accordingly. The PR supervised the overall data collection activity to ensure that all protocols are observed. Upon reception of all questionnaires at the end of each day they were reviewed by the supervisor and the PR by going through the questionnaires to verify completion patterns, and check for trends in responses that may indicate bias coming from the research assistants.

3.7.6 Data analysis

After completing data collection every day the questionnaires were handed over to the PR who checked for completeness and consistency. He then assigned a unique code to each questionnaire and then entered the data into a pre-established database. Data was then transferred to SPSS version 16 and discrepancies checked against the raw data. Analysis was done using descriptive statistics. Descriptive statistics of percentage and frequencies were used for description of the study population in relation to socio-demographic and other relevant variables (age, sex, education, marital status.) All qualitative data (i.e. key informant interviews) were voice recorded, transcribed and cleaned. All transcripts were checked against the voice recorder by the PR. Data was then hand coded by the PR after which content analysis was used to identify major themes, differences and patterns. Exemplary and instructive quotations are used throughout the presentation of results to highlight major findings.

3.7.7 Study limitation

In assessing gaps to compliance with IMCI guidelines it would have been important to observe of sick child consultations. However for the purposes of this study observations were not carried out because that could have brought biases. In addition the study did not focus on client satisfaction. The study did not look at the management systems supporting IMCI on community involvement

3.8 Ethical considerations

Before the study commenced, approval to conduct the study was obtained from Moi University Institutional Research and Ethics Committee. Permission to conduct the study was also obtained from the department of health Nairobi County and the department of Health City Council of Nairobi. Permission was granted by the management of the district where the three facilities are based through the District Medical Officer of health who then wrote a letter to the three facilities. The in charges of Ushirika, Langata and Kibera were also approached and gave oral consent to collect data from the care givers at their facilities. Confidentiality was maintained all through this study and this was achieved by allowing the participants to be interviewed privately and individually. The participants were assured of confidentiality before, during and after the interview. A fully informed verbal consent was obtained from all the respondents in this study. The respondents were informed about the purpose and objectives of the study and were given an option of participating or declining to participate. Those who were not willing to participate were allowed to go home without participating in the study. At the end of the interview participants were thanked.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings of the study. Both qualitative and quantitative findings are based on data collected from 351 caregivers and three key informant interviews among the facility in-charges a nurse and two clinical officers in the three Amref supported health centers. Descriptive statistics are presented in percentages and frequencies in form of tables, figures and bar charts while chi-square has been used for inferential statistics. The study findings are presented in four sections namely; Descriptions of the study participants; Health care worker compliance to IMCI guidelines and management systems; and systems that either support or hinder IMCI implementation.

4.1 Study participants

Overall a total of 360 caregivers who brought children below five years were interviewed and three key informant interviews were conducted. A total of 9 questionnaires were disqualified from the data set because seven children had been brought for normal immunization at the clinic and two had soft tissue injuries as a result to trauma and thus as a result 351 (113 in Langata, 60 in Ushirika and 178 in Kibera) questionnaires were included in the analysis. The number interviewed per facility was proportionate based on the work load. This is summarised by the figure below.

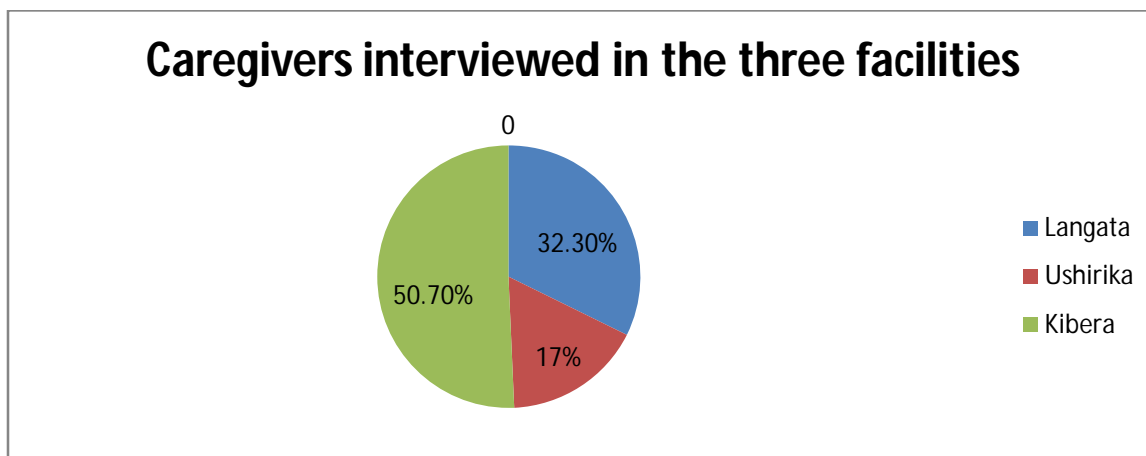


Figure 4:1 Proportion of caregivers interviewed from the three facilities

The table below summarises the socio – Demographic characteristics of the respondents in the three health centers.

Table 4.1: Distribution of study respondents by demographic characteristics

Socio – Demographic characteristics of the respondents n = 351		Frequency	Proportion %
Marital status	Married	274	78.1
	Single	64	18.2
	Separated/Divorced	4	1.1
	Widowed	7	2.0
	Other	2	0.6
Age	< 30	264	75.2
	≥31	87	24.8
Sex	Male	8	2.3
	Female	343	97.7
Religion	Islam	39	11.1
	Christian	312	88.9
Education Level	None	13	3.7
	Grade 1 – 4	24	6.8
	Grade 5 – 8	136	38.7
	Grade 9 – 12	149	42.5
	Post-secondary	29	8.3
Relationship with the child	Mother	337	96.0
	Father	4	1.1
	Other	10	2.8

The majority of the caregivers were female 343 (97.7%) with many of them 274 (78.1 %) being married. Most of the caregivers who were interviewed were below 30 years of age 264 (75.2%) with most of them (88.9%) being Christians. As shown in table 4.1 above many of the respondent's education level was between grade 9 – 12 and 5 – 8 at 42 % and 38.7 % respectively. Of all the respondents 96% were the mothers of the children who were attended to at the three health centers and the others were fathers and relatives.

4.2 Health care worker compliance to IMCI guidelines

To assess health care workers compliance to IMCI guidelines in the provision of health care services, exit interviews were conducted on the care givers of the children who were attended to at the health centers. The exit interviews were conducted after the mother had been attended to at the pharmacy and was just about to leave the facility. Information collected from the exit interviews therefore formed the basis through which we assessed the extent to which the health care workers complied with IMCI guidelines in treating the children. Compliance was assessed in pre assessment, assessment of danger signs and major symptoms, clinical examination and management of the sick child.

4.2.1 Compliance to Pre- assessment

Pre- assessment entailed that the child undergo the three general pre assessment procedures; weighing, taking of body temperature, looking at the health card and checking immunization status of the child. The bar charts below shows the children examination results in the pre assessment stage. It indicates that about 92% of the children had temperature and weight taken. About 66% of the care givers had the well-baby card at the clinic but only 51 % of the cards were looked at by the health care workers to determine nutrition status of the child. In summary about 51 % of the children received the full pre assessment package.

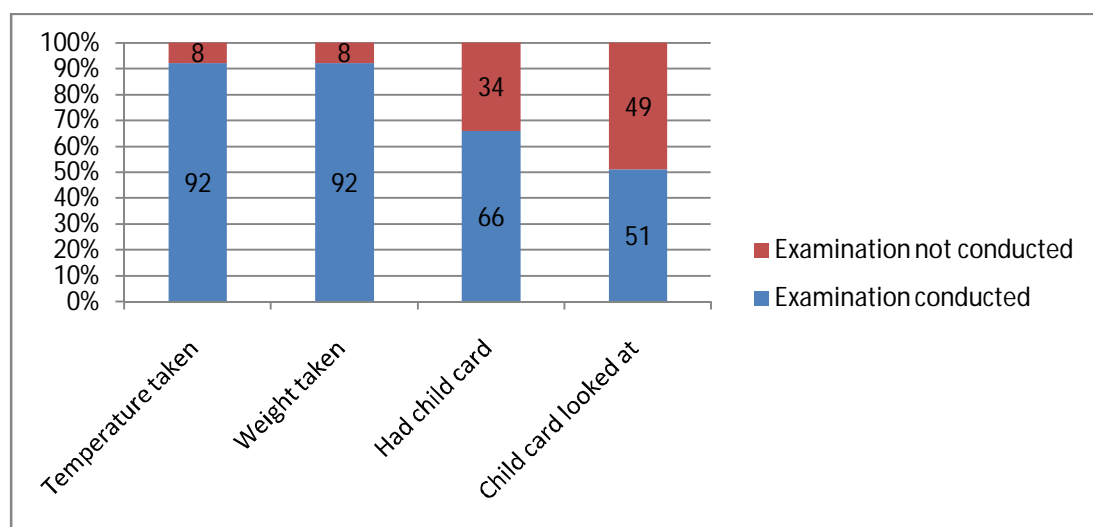


Figure 4.2: Pre assessment examination of the sick children

In comparison between the three facilities, the table below shows findings of the pre assessment procedures. Overall, Caregivers who were attended to at Ushirika were least likely to be asked for the child health cards as compared to Kibera and Langata. There seemed to be significant differences in assessment of the three procedures in the three facilities.

Table 4.2: Observance of pre assessment procedures during sick child consultations

Facility	Yes	No	Test
Temperature taken			
Langata n = 113	95(84.1%)	18(15.9%)	$\chi^2 = 17.536$ 2df P = 0.00
Ushirika n = 60	57(96.6%)	3(3.4%)	
Kibera n = 178	172(96.6%)	6(3.4%)	
Weight taken			
Langata n = 113	95(84.1%)	18(15.9%)	$\chi^2 = 17.536$ 2df P = 0.00
Ushirika n = 60	57(96.6%)	3(3.4%)	
Kibera n = 178	172(96.6%)	6(3.4%)	
Had examination card in the clinic			
Langata n = 113	86 (76.1%)	27 (23.9%)	$\chi^2 = 7.926$ 2df P = 0.019
Ushirika n = 60	40 (66.7%)	20 (33.3%)	
Kibera n = 178	107(60.1%)	71 (39.9%)	
Examination card looked at and immunization status checked			
Langata n = 113	84 (74.3 %)	29 (25.7 %)	$\chi^2 = 44.736$ 2df P = 0.000
Ushirika n = 60	14 (23.3 %)	46 (76.7 %)	
Kibera n = 178	82 (46.1 %)	96 (53.9 %)	

4.2.2 Compliance to assessing danger signs and major symptoms

From pre-assessment stage the health care worker follow the IMCI protocol by assessing general danger signs. Respondents reported that about (41%) of the children were examined for all the three danger signs: ability to eat or drink anything 182 (52 %); with only 145 (41%) and 63 (18%) being assessed for vomiting everything and convulsions respectively. After assessment of the three danger signs the clinicians then moves to ask

the caregiver if the child had any of the four major symptoms. About 75% were clinically assessed if they had fever, 66% on cough, 57% on diarrhoea and only 22% if they had ear discharge. In summary about 41 % and about 22 % of the children were assessed for the three danger signs and the four major symptoms as recommended by IMCI. Figure 4.2 below summarises the findings of how the children were assessed for the danger signs and the four major symptoms.

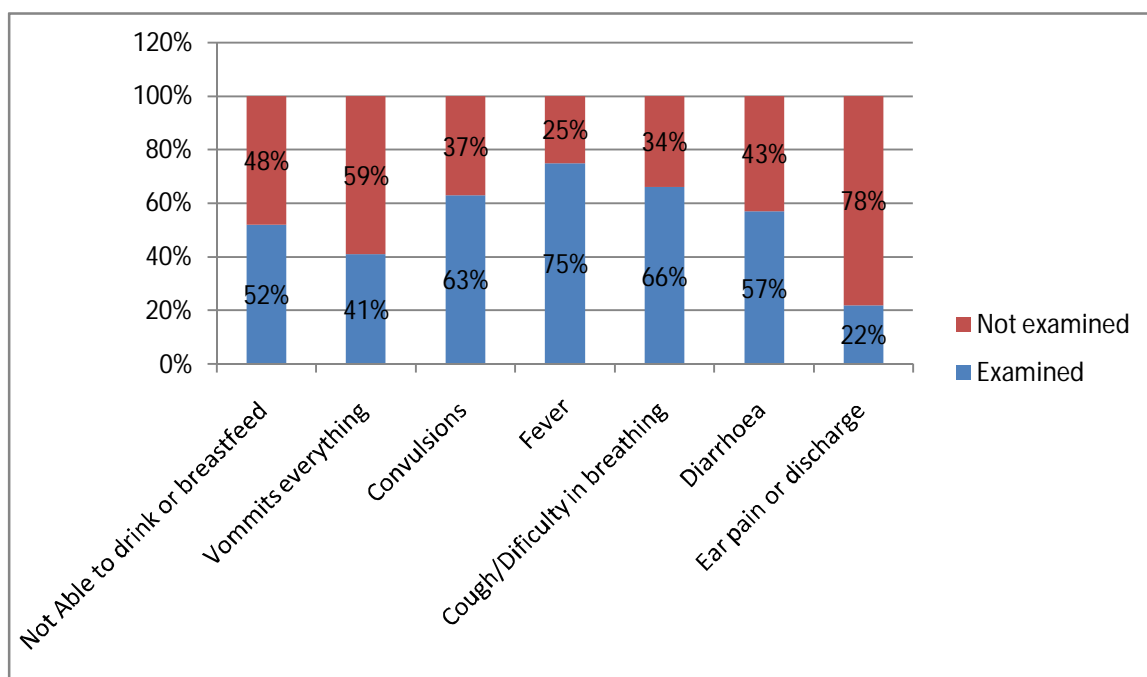


Figure 4.3: Percentage of children assessed for danger signs and major symptoms as recommended by IMCI

In comparison between the three facilities, table 4.3 below shows findings of how children were assessed for danger signs and major symptoms. Overall, in the danger signs all the three health centers mostly checked for not able to drink or breastfeed and checked for convulsions least. In regard to assessing for danger signs only inability to drink had a P value of > 0.005 showing no statistical significance while the other two danger signs were significant. In regard to the four major symptoms there was statistical significance in three symptoms except diarrhoea.

Table 4.3: Assessment of children for danger signs and major symptoms as recommended by IMCI

Facility	Yes	No	Test
Vomiting everything			
Langata n = 113	22 (19.5 %)	91 (80.5%)	$\chi^2 = 48.304$ 2df P = 0.0
Ushirika n = 60	44 (73.3 %)	16 (26.7 %)	
Kibera n = 178	79 (44.4 %)	99 (55.6 %)	
Inability to breast feed or drink			
Langata n = 113	60 (53.1%)	53 (46.9 %)	$\chi^2 = 0.553$ 2df P = 0.758
Ushirika n = 60	33 (55 %)	27 (45 %)	
Kibera n = 178	89 (50 %)	89 (50 %)	
Convulsions			
Langata n = 113	16 (14.2 %)	97 (85.8 %)	$\chi^2 = 11.679$ 2df P = 0.003
Ushirika n = 60	20 (33.3 %)	40 (66.7 %)	
Kibera n = 178	27 (15.2 %)	151 (84.8 %)	
Cough or difficulty in breathing			
Langata n = 113	69 (61.1 %)	44 (38.9 %)	$\chi^2 = 2.685$ 2df P = 0.261
Ushirika n = 60	41 (68.3 %)	19 (31.7 %)	
Kibera n = 178	125 (70.2 %)	53 (29.8 %)	
Fever			
Langata n = 113	83 (74.8 %)	28 (25.2 %)	$\chi^2 = 2.024$ 2df P = 0.363
Ushirika n = 60	50 (83.3 %)	10 (16.7 %)	
Kibera n = 178	133 (74.7 %)	45 (25.3 %)	
Diarrhoea			
Langata n = 113	59 (52.2 %)	54 (47.8 %)	$\chi^2 = 5.102$ 2df P = 0.078
Ushirika n = 60	42 (70 %)	18 (30 %)	
Kibera n = 178	102 (58 %)	74 (42 %)	
Earache or discharge			
Langata n = 113	14 (12.4 %)	99 (87.6 %)	$\chi^2 = 8.498$ 2df P = 0.014
Ushirika n = 60	17 (28.3 %)	43 (71.7 %)	
Kibera n = 178	44 (25 %)	132 (75 %)	

4.2.3 Compliance to child examination and nutritional assessment

Clinical examination is important as it will help in the classification of the sick child. It also helps detect any other medical conditions or complications that the caregiver did not report. Clinical examination is always guided by the history that the caregiver provided. In addition to the general clinical examination, IMCI recommends that all children must be examined for dehydration, oedema of the lower limbs, neck stiffness, Ear discharge or redness, anaemia and chest examination for stridor or wheeze. Figure 4.4 below shows a summary of the general examination findings of the examination. Chest examination was the most frequently done examination done by health care workers where by about 40% of the children were examined. On the other hand, ear examination was the least examination conducted, with only about 11% (11 %) of the children examined. Dehydration was conducted on 13% (13 %) of the children and 130 (37 %) children were examined for anaemia.

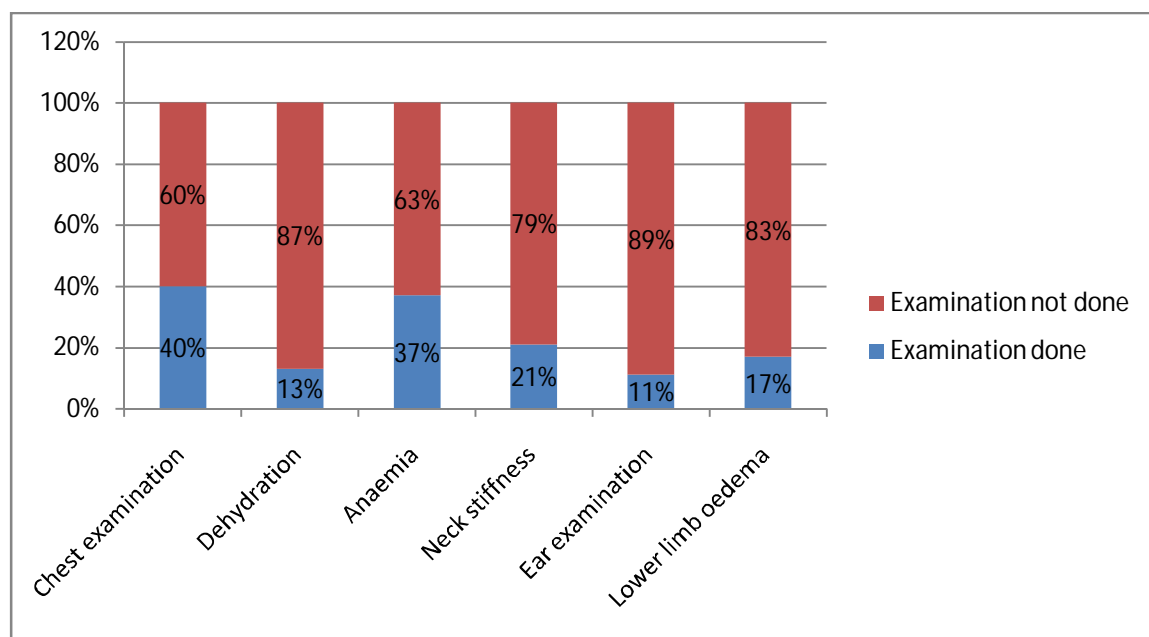


Figure 4.4: Clinical examination and nutritional assessment of sick children

In comparison between the three facilities, table 4.4 below shows findings of how children were assessed for danger signs and major symptoms. Overall, only neck stiffness and ear examinations showed no statistical significance in the three facilities.

Table 4.4: Child examination and nutritional assessment as recommended by IMCI

Facility	Yes	No	Test
Chest examination			
Langata n = 113	28 (24.8 %)	85 (75.2 %)	$\chi^2 = 15.398$ 2df P = 0.000
Ushirika n = 60	27 (45 %)	33 (55 %)	
Kibera n = 178	84 (47.2 %)	94 (52.8 %)	
Dehydration			
Langata n = 113	22 (19.5 %)	91 (80.5 %)	$\chi^2 = 21.949$ 2df P = 0.000
Ushirika n = 60	24 (40 %)	36 (60 %)	
Kibera n = 178	22 (12.4 %)	156 (87.6 %)	
Anaemia			
Langata n = 113	12 (10.6 %)	101 (89.4 %)	$\chi^2 = 59.237$ 2df P = 0.000
Ushirika n = 60	39 (66.1 %)	20 (44.4 %)	
Kibera n = 178	79 (44.4 %)	99 (55.6 %)	
Neck stiffness			
Langata n = 113	24 (21.2 %)	89 (21.2%)	$\chi^2 = 0.028$ 2df P = 0.986
Ushirika n = 60	12 (20.3 %)	47 (20.3 %)	
Kibera n = 178	38 (21.3 %)	140 (21.3 %)	
Ear examination			
Langata n = 113	11 (9.7 %)	102 (90.3%)	$\chi^2 = 3.164$ 2df P = 0.206
Ushirika n = 60	11 (18.3 %)	49 (81.7%)	
Kibera n = 178	19 (10.7 %)	159 (89.3 %)	
Oedema of the lower limbs			
Langata n = 113	20 (17.7 %)	93 (82.3 %)	$\chi^2 = 10.727$ 2df P = 0.005
Ushirika n = 60	18 (30 %)	42 (70 %)	
Kibera n = 178	21 (11.8 %)	157 (88.2 %)	
Ushirika n = 60			
Kibera n = 178			

4.2.4 Compliance to child management

Right management and communication and advice given to the care giver is important to ensure continuity of care at home. According to IMCI, the first dose of drugs should be administered at the facility and then the care giver given advice on how to administer the drugs at home. The caregivers are then asked to repeat the instructions to ascertain whether they understood the instructions well. The IMCI recommends that the caregiver be given information about giving more fluids to the child, watching for danger signs that will indicate when the child will be taken back to the clinic. Figure 4.5 below summarises the communication and child management findings. A total of 178 (51%) of the care givers received advice on general feeding. As recommended that the first dose be given at the facility, 111 (32%) received the first dose at the facility. Less than 50 % (150) were coached on the signs to watch in case the child's condition was getting worse so that they can return to the health center. All the children (100 %) were given drugs to go home with but only 122 (34.8%) of the care givers were asked to repeat the instructions as recommended by IMCI.

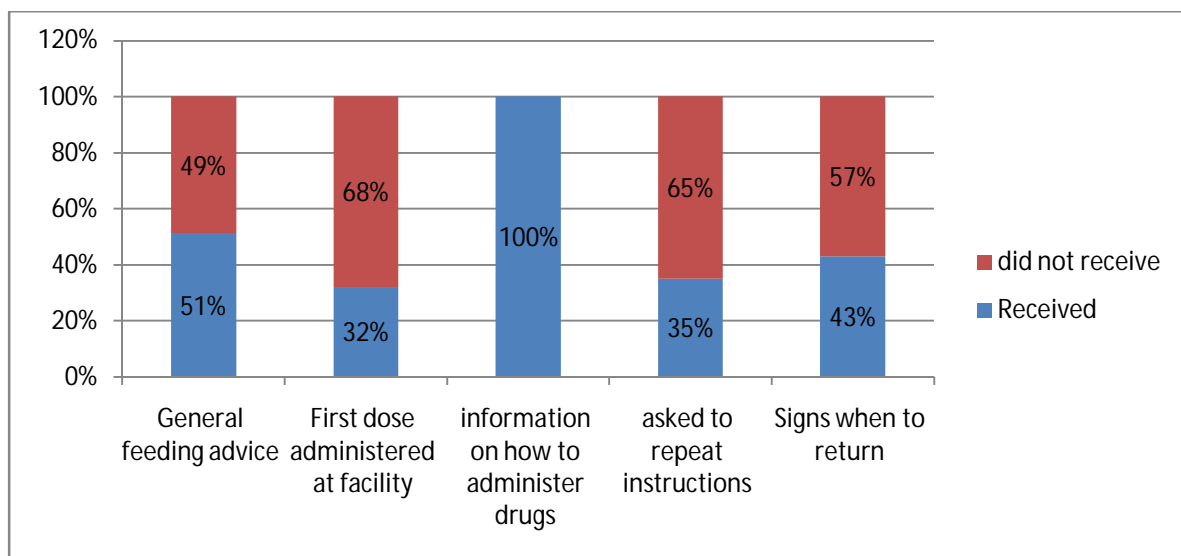


Figure 4.5: Communication and treatment of sick children

In comparison between the three facilities, table 4.5 below shows findings of how children were assessed for danger signs and major symptoms. Only information on breastfeeding and extra fluids given to the caregivers showed statistical significance.

Table 4.5: Communication and treatment of sick children

Facility	Yes	No	Test
Breast and general feeding			
Langata n = 113	77 (69.4 %)	34 (30.6 %)	$\chi^2 = 23.8$ 2df P = 0.00
Ushirika n = 60	30 (50 %)	30 (50 %)	
Kibera n = 178	71 (39.9 %)	107 (60.1 %)	
Extra fluids			
Langata n = 113	50 (44.2 %)	63 (55.8 %)	$\chi^2 = 3.329$ 2df P = 0.1189
Ushirika n = 60	32 (53.3 %)	28 (46.7 %)	
Kibera n = 178	71 (39.9 %)	107 (60.1 %)	
First dose administered at the facility			
Langata n = 113	37 (32.7 %)	76 (67.3 %)	$\chi^2 = 2.330$ 2df P = 0.312
Ushirika n = 60	14 (23.3 %)	46 (76.7 %)	
Kibera n = 178	60 (33.7 %)	118 (66.3 %)	
Asked to repeat instructions			
Langata n = 113	67 (59.3 %)	46 (40.7 %)	$\chi^2 = 47.617$ 2df P = 0.000
Ushirika n = 60	8 (13.3 %)	52 (86.7 %)	
Kibera n = 178	47 (26.4 %)	131 (73.6 %)	
Signs when to return			
Langata n = 113	57 (51.4 %)	54 (48.6 %)	$\chi^2 = 4.673$ 2df P = 0.097
Ushirika n = 60	23 (38.3 %)	37 (61.7 %)	
Kibera n = 178	70 (39.3 %)	108 (60.7 %)	

4.3 Management systems

Management systems of health facilities are key determinants on service delivery and the quality of services that the facility can provide. To function well, health facilities must have a system to address and respond to management and administrative issues (KSPA, 2010). The study obtained information on key elements on the management systems in the three health centers supported by Amref. This was done through key informant interviews of the facility in charges in the study facilities. The key informants were a nurse in Langata and Clinical Officers in Kibera and Ushirika. The study focused on Management meetings, trainings and support supervision and availability of basic equipment and medicines.

4.3.1. Management meetings

Meetings are important in ensuring efficient and effective delivery of services in health facilities (KSPA, 1999). The system will be termed functioning if there are regular quarterly meetings and even to an extent of having documented proceedings of these meetings. Overall all the three health centers held meetings but none held IMCI specific meetings. The meetings that were reported were administrative meetings where all health center issues were discussed. It was also reported that these meetings were not regular but were on need basis. It is during these meetings that IMCI was discussed as one of the agenda and not all the time when the meetings are held.

Kibera reported that although they do not have regular IMCI meetings they held Continuous Medical Education (CME) secessions that also focused on IMCI issues. When asked about the regular meetings she said that,

“So far no, we haven’t had any meetings specifically for IMCI but what we have had in the recent past is CME’s within the facility”.

Ushirika in charge said,

“Meetings should occur monthly, on recurring challenging cases, we also convene brief in- house meetings amongst the available staff members to discuss these cases. In these meetings, we forge way forward, and also discuss administrative issues including staff welfare as well”.

The Langata in charge said,

“Meetings are there, but not necessarily on IMCI, but it’s mostly on management of patients generally”.

Despite all these meetings being reported no facility had held quarterly meetings and none had documented minutes for these meetings. All the facilities lacked proper systems of documenting and capturing the deliberations of these meetings. To summarise this it came out clearly that this system is very weak in all the facilities.

4.3.2 Trainings and support supervision

Training on IMCI and regular support supervision has been proven to be one of the means that ensures compliance with guidelines (KSPA, 1999). The study assessed whether the health care providers who were offering child services had been trained on IMCI and were being supervised by external supervisors. The study findings revealed that more than 90% (10/11) of the clinicians had been trained on IMCI except one in Ushirika with Kibera reporting that one clinician was an IMCI trainer. It was also reported that Kenya Paediatric Association (KPA) was training health care workers on IMCI during the time of the study and most of other health care providers including nurses had attended the training.

The IMCI strategy has two types of support supervision; supervision that occurs four to six weeks after the training and normal support supervision from the high level authorities which is also called external supervision. Support supervision by external managers has many benefits including ensuring that standards and protocols are implemented (KSPA, 2010). The study revealed that support supervision from the district is not regular and no facility had received support supervision specifically on IMCI. During the supervisory visits IMCI was a small component in the check list and only asked if the facility followed the IMCI guidelines but did not focus on the specifics. All the three facilities did not have any support supervision schedules from the district team.

In Langata, the health facility in-charge reported that,

“Follow up supervision after the training took place once among the first batch of clinicians who were trained. As for follow up supervision from IMCI trainers, it has never taken place”.

The in-charge further said,

“It’s supposed to be quarterly, but unfortunately it doesn’t happen always”.

In Kibera, follow up supervision of IMCI trained health workers has not been done since the facility has a trained IMCI trainer who is expected to mentor other clinicians. The Kibera in- charge said,

“I can’t say that there is any regular support supervision in relation to IMCI. I normally see the district team at our facility but nobody has ever come to ask me anything about IMCI”.

In Ushirika no follow up support supervision has taken place after the training. The in-charge reported that,

“Since we were trained, we have never been followed up for support. But for the normal routine follow up support supervision it occurs sporadically and IMCI is a small component of the visits”.

The three facilities reported that support supervision should be carried out by the District Health Management Team (DHMT). The district IMCI focal person for Langata district is also part of the DHMT and therefore he is responsible for the IMCI component. Generally it came out strongly that support supervision was not regular.

4.3.3 Availability of drugs and equipment

For quality of care and continuity it was important that the facilities have the basic recommended medicines and equipment. The study collected information about the key equipment and medical supplies that is needed in delivering IMCI services at the facilities. The aim was to establish if the medical equipment were present and working. The study focused on thermometers, weighing scales, height meter, flash lights and on the basic medicines I looked at the first line and the pre - referral injection drugs. All facilities had the required equipment which were all functional and well maintained. This aspect of management system was found to be available and facilities had an efficient way of maintaining the minimum requirements i.e. drugs and equipment.

The Kenya government drug policy provides for essential drugs that are supplied to the health facilities. All the facilities reported to get these essential drugs regularly from the district pharmacy. The facilities operated a well-established system for ordering and

receiving of drugs the “Pull” system. Interviews with the facility in charges indicated that first-line oral drugs are available in all the three health centres. Second line drugs and pre-referral drugs were also available in the three health centers. Drugs were managed by pharmacists in Langata and Kibera while in ushirika the drugs were managed by a pharmaceutical technologist. They were the people responsible for dispensing drugs at the health centres.

The in charges reported that they do regular forecasting and timely ordering of the all the drugs including IMCI ones to avoid stock-outs. Kibera in charge said,

“Health care workers will follow the IMCI guidelines when they know that the facility has got all the drugs needed to implement IMCI”.

Although this was reported it also came out that at times the facilities lacked some drugs and this forced them to prescribe the drugs for patients to buy from the chemists. However drug stock outs was not reported as a chronic issue but as something that occurs occasionally. For example in Ushirika which is self-supported at times the health center experienced some stock outs. The in-charge reported that,

“At times we run stock outs of some drugs but not always, the facility is run by a community based organization and at times we do not get enough supplies from the district pharmacy”.

In terms of equipment, the three health centres have basic equipment needed for IMCI implementation. The in charges felt that the facilities were well supplied with the equipment, such as weighing scales and thermometers. All the equipment that were available were functional and in good working condition. The facilities reported to have a good system in place to monitor use of equipment. Any equipment that gets damaged it is replaced or repaired to ensure continuity of services.

4.4 Factors which promote or hinder IMCI implementation

The facilities in charges were asked to give their opinions on the factors that they thought were hindering or promoting implementation to IMCI strategy at their facilities. In this section therefore, the factors are grouped in terms of those that they said promoted IMCI implementation and those that hindered IMCI implementation. The section indicates that the three facilities have almost similar factors that promote or hinder IMCI

implementation. The study looked at the health worker level factors and system factors that either promote or hinder IMCI implementation.

4.4.1 Factors which promote IMCI implementation

Two factors came out strongly as those that are promoting implementation of IMCI in the three facilities by the in-charges of the three health centers. The key factors that are discussed here include donor and partner support and change of system.

4.4.2 Donor and partner support

According to the facilities in charges, the first element that promotes the implementation of IMCI in the three health centers is the donor support that the facilities receive. This is both technical and financial support. The Clinton Health Access Initiative (CHAI) and Kenya Paediatric Association (KPA) were reported to have supported the three facilities in terms of training the health care workers.

The Langata in-charge said,

“CHAI in collaboration with KPA have trained our clinicians including nurses. For those who have the will after the training they try to implement IMCI activities”.

Kibera in-charge reported that,

“Trainings’ are crucial for IMCI implementation. Once one has been trained then s/he can provide care to children as recommended by IMCI”.

Training of health care workers has therefore tried to promote IMCI implementation. The CHAI and KPA also supported the facilities in the distribution of job aids and reporting tools to the health centers. The two organizations were closely working with the government officials to carry out the trainings. Health care workers from all the three facilities had their health care workers trained by the two organizations for a period of one week.

4.4.3 Change of systems

The system may affect service delivery positively or negatively. In Kibera after the IMCI training the facility separated the consultation of sick children from adults. It was reported that the separation of consultation of children from adults during service delivery had promoted IMCI implementation. The in-charge said,

“After separation of the consultation rooms to attend to children and adults aside, the clinician is able to focus more on children issues as compared when they are attended in the same area”. This was supported further by appointing one clinician to be the head of children service delivery including IMCI. The appointed clinician had been trained on IMCI and was tasked on spearheading IMCI activities at the facility. The clinician gave monthly reports on IMCI activities at the facility

The separation of consultation for sick children and adults by having separate consultation rooms in Kibera emerged as one of the factors promoting IMCI implementation. Kibera in charge reported that,

“We arrived at the decision to separate child adult consultationrooms based on the need to integrate HIV/AIDS care with general paediatrics care. This was to ensure that our children were well examined and early identification of HIV done. Those who were found to be HIV exposed or positive were then enrolled to care”.

The in charge further said that:

“IMCI has enabled us to identify many HIV exposed and positive babies whom we have enrolled in our HIV program. The desire to diagnose children with HIV early has really supported and motivated the team to implement IMCI at our facility”.

4.4.4 Factors which hinder IMCI implementation

Three management factors came out strongly as those that are hindering implementation of IMCI in the three health centers by the in charge of the three health centers. The key factors that are discussed here include lack of commitment; lack of recording tools and high workload.

4.4.5 Lack of commitment

Lack of commitment was reported to be from two levels. The first level is lack of commitment from the clinicians who were attending to the children who were sick. The second level was lack of commitment from the district management team. In supporting IMCI implementation interviews with all three health centers in-charges revealed that after the training most clinicians had interest, enthusiasm and motivation to implement the strategy but this had almost died. The three reported that IMCI practice is badly affected because of lack of commitment from the clinicians. In most cases the clinicians were not

willing to follow the whole IMCI protocol because it confined their thinking. The Langata in-charge reported that,

“Most of the clinicians are not fully committed to follow the IMCI guidelines. The commitment has gone down as compared with the first days after the training”.

The second level of lack of commitment was from the district in enforcing IMCI standards. Lack of support supervision was seen as lack of commitment from the district team. Despite being a critical component of IMCI implementation support supervision schedule or system for supporting IMCI activities was not reported by the three respondents. It was reported that IMCI was only part of the routine support visits to the facilities. Moreover the support supervision was not regular and whenever it took place there was no follow up of action points. The Ushirika in-charge reported that,

“The district team does not supervise implementation of IMCI as it does with other programs like Tuberculosis, HIV or immunization programs”.

The Kibera in-charge said;

“There should be support supervision so that somebody helps to know if we are doing the right thing after the training and to help us to improve on our case management than assuming that all is well.”

All the in-charges responded by stating that IMCI supervision of the facilities was wanting because there was no schedule shared by the district IMCI focal person. No in charge could remember when the last IMCI facility support supervision was done. The IMCI guidelines recommends regular support supervision to ensure that drugs, supplies, infrastructure that support IMCI are present, records are well maintained, assess health care worker skills and the community aspects of IMCI. It came out that, in most cases only post training supervision took place for a few of the staff who had been trained earlier but routine supervision was not done. In Kibera and Ushirika the in-charges also reported that they were the lead clinicians and thus could not supervise themselves, and because of other compelling tasks, they could not give much attention to IMCI.

4.4.6 Lack of IMCI tools (Chart booklet, recording forms and wall charts)

Job aids are important quality assurance tools that should be available in the facilities implementing IMCI. Information on whether the facilities had IMCI guidelines and protocols was collected. Facilities are either supplied directly from the district through the district IMCI focal person or after the training participants are given some to go back with to their facilities. There are three 3 types of tools that are critical in IMCI implementation. These tools include; wall charts, chart booklets and recording forms. These tools are meant to act as quick reference to help health care workers to easily manage children according to IMCI guidelines. The wall chart should be pinned in the consultation room wall for easy of reference as it has the whole IMCI algorithm in summery. It summarizes on how a health care worker is supposed to assess classify, treat and advice the caregiver. None of the three facilities had this wall chart hanged in the walls except Kibera. The in charges reported that they hang many guidelines on the walls until you can never tell the color of the wall. This makes the office look untidy and therefore they were not encouraging that.

The chart booklet is a detailed version of the wall chart but smaller and portable. It should be placed on top of the consultation desk. At the back of the chart book let the recording form is printed. All the three facilities reported to have received the chart booklets which were being used at the facility. Also participants returning from the IMCI training brought some more copies to the facility. It was however reported that at times the chart booklet is not placed on top of the desk and rarely is it used. The chart booklet is supposed to be used during consultation of all the sick children.

In contrast to the chart booklet the recording form is a single form that should be used one for each patient. It is detailed from patient particulars, examination, classification and treatment and has all the aspect that should be covered during IMCI service delivery. All consultation proceedings should be recorded in this form and kept by the health care worker. All the three facilities in charges reported that they had not been supplied with the recording forms from the district. It was further reported that after the training the participants were told that they can photocopy the forms to use them at their facilities. All the three facilities did not have recording forms. Only Kibera had the laminated recording

form that was used as a guide. It was therefore difficult for the clinicians to take history and examine the children as per the IMCI guidelines. Normally during the training one form is used per child but at the facilities the clinicians are expected to use a laminated form and then record on a blank form. No facility had even attempted to make photocopies to use instead of using the card.

4.4.7 High work load

The study sort information to establish if the staffs were adequate to offer quality IMCI services as recommended. The study revealed that all the children were being attended to by Clinicians who had been trained on IMCI. On average, Langata attended to about twenty five under-fives while Kibera and Ushirika attended to about fifty and fifteen under-fives respectively per day. However it was noted that on Mondays and Friday more under-fives were attended to than the other days of the week.

Work load was also reported to be one of the hindering factors in IMCI implementation. If one followed the whole IMCI assessment it will take him or her at least 20 to 30 minutes with the client in the consultation room hence few patients would be attended to in a day. This is because the health care worker is expected to complete the IMCI recording form, classify the patient and then give health education to the mother. The health care worker is also supposed to give the first dose of medicine at the facility. The facilities' in-charges reported that it was not possible to complete the recording form in full with each child because it took too long to do so.

Interviews with all the facility in charges revealed their IMCI implementation is negatively impacted due to high out-patient numbers that are attended to at these facilities. The Respondents also indicated that sick child consultation and management if it were to be implemented fully as per IMCI standards too much time will be lost for doing other facility tasks. According to the Ushirika in charge, "The biggest challenge in implementation of IMCI is that it takes longer to examine a child". Because IMCI consultation takes longer this translates to longer waiting times for the other patients waiting to be served too. To address this IMCI was implemented fully in very sick children who needed more clinical attention in terms of examination.

In Langata, it was reported that, in most cases there is only one clinician who is based in the OPD to attend to both children and adults. This therefore meant that there was a high work load making it not possible to take about 20 to 30 minutes with one client. The high work load was as a result of few staff posted to the facility and the few who were there took the shortest time possible with the clients to avoid burn out. The clinicians therefore will concentrate more on the severely sick children and only ask important question as guided by the caregivers history. It was also reported that the same clinicians who attend to the children are the same ones who attend to emergencies and also had other duties in the facility.

In Kibera, it was reported that, in as much as they try to implement IMCI at times it is not possible because of the long patient queues at the facility. The queues were more common on Fridays and Mondays since the facility does not operate on weekends. At any given point there is only one clinician allocated to attend to the children under five and the children who are on HIV care. If a clinician took a long time with the patient other care givers will complain. The clinician therefore has to see the clients very fast to ensure that he/she has attended to all patients. In Kibera the in charge said that the communities around there preferred fast services so as to allow them go and look for food. If the patients were kept at the health center for long the caregivers will not be happy with the service. The facility had therefore understood the needs of the community and was rendering services as per the expectations of the community.

4.4.8 Facility set up and infrastructure

The IMCI implementation can also be affected by the facility set up and the presence or absence of adequate Infrastructure, equipment and supplies needed. Beginning with the infrastructure, sick children consultations in Langata and Ushirika were being conducted in the same room where the sick adults are being attended to. It was only Kibera that had separate consultation rooms for paediatrics and adults. The three health centers had a triage area where weight and temperature of the children are taken. The pharmacies and laboratories are in separate rooms in all the three facilities.

The patient flow in all the three facilities entailed a client being first attended at the triage area then moves to the consultation room. From the consultation room the patient was either referred to the laboratory or the pharmacy. Those who went to the laboratory brought the results back to the clinician for the clinician to write the prescription. It was reported that this kind of set up is not what IMCI recommends but it is the most appropriate in their set up. IMCI recommends that the first dose of medicine should be administered by the health care worker meaning that the health care worker should have these drugs in the consultation room.

All the three facilities did not have the medicines in the consultation room but instead they were in the pharmacy. As a result it will be difficult to have the clinicians have the drugs in the consultation room and at the same time the pharmacy to have other drugs. The caregivers therefore collected all their drugs from the pharmacy where they also had to queue with other patients. From our quantitative data it clearly come out that the caregivers received medicine to go home with 100% being told how to give medication but only 34.8 % told to repeat instructions to see if the caregivers had understood.

The IMCI recommends that all facilities offering IMCI services must have an oral rehydration Therapy (ORT) corner which is functional. Only Kibera had an area designated to an ORT while both Langata and Ushirika did not have an ORT corners. Lack of functional ORT corner therefore meant that the children who were dehydrated were not being effectively monitored for the length of time recommended by IMCI. The in-charge from Ushirika said that, “We do not have a designated area for ORT, what we do is that we prepare the oral rehydration salt solution and we tell the mother to give at the waiting area as we monitor the child”. In Langata the in charge said that; “At times it is even difficult to set an ORT corner because at times we do not even have clean water. Our water is not regular you understand how the council works”.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

In this chapter the study findings are discussed in relation to the set objectives. The discussion has looked at the similarities and differences from other studies. Gaps have also been identified based on the comparisons.

5.1 Discussion

The findings indicate that implementation of IMCI strategy in the three Amref supported health centers is supported by some management systems. There are some factors promoting and others hindering IMCI implementation. The three facilities are located in Nairobi County and have similar socio-demographic characteristics and serve almost the same profile of people and offer the same IMCI services. All the clinicians working in these facilities had been trained on IMCI except one clinician in Ushirika who has not attended the training. The majority of patients served in the three facilities had low socio – demographic characteristics. Compliance to and following of IMCI protocols is key in IMCI implementation since it gives a step by step guide in sick child management. This study showed that less than 51 % of children received full pre assessment, less than 18% were assessed for all the danger signs and less than 4% were assessed for the major symptoms. The study findings were consistent with Pariyo's study that found out that despite the trainings of health care workers in IMCI, the assessing, classifying and treatment of sick children remained low, as only half of the children receive complete assessment and correct treatment (Pariyo, Gouws, Bryce and Burnham 2005: 58-61).

Compliance with IMCI guidelines was poor in our findings. These findings concur with those of Mullei and Wafula that in most cases health care workers do not comply with IMCI guidelines. This can be attributed to the length of the protocol and lack of enforcement by management. (Mullei, *et. all*, 2010). In Tanzania, Mwajuma also found out in an assessment of health care worker compliance to IMCI guidelines that most HCW's

feel that the IMCI protocol is time-consuming, and prefer to use the traditional approach of child care (Mwajuma, 2010). This study also almost agrees with some follow up studies like the one conducted by Masanja that indicated that 13 – 45 % of the children were checked for danger signs (Masanja, 2007). Low HCW compliance has also been reported in several other countries like in South Africa where a follow up study conducted 32 months after an IMCI training evaluating health care workers adherence to IMCI guidelines found out that less than 2% of the health care workers referred to IMCI guidelines during pediatric visits (Horwood, 2009). Also, only 12% of IMCI-trained HCW's were found to check general danger signs in every child, and only 18% assessed all the main symptoms in every child in a study conducted by Arefeen (Arifeen, 2005). From these studies it can be argued that management in health facilities are not enforcing compliance with the IMCI guidelines.

With this study showing that only less than 22% of the children were assessed on all the four major symptoms, my observations in this study therefore are largely consistent with what Walter in his study on why health care workers don't adhere to IMCI guidelines found out. He found out that most health care workers including IMCI trained would diagnose a single condition and treat it without following the IMCI protocol (Walter, 2007). Walter further noted that health care workers rarely assessed children for the other conditions as recommended by IMCI. This will pose a danger of misdiagnosis and also missed opportunities for comprehensive assessment of the sick children. This simply means that the health care workers are not optimally adhering to the IMCI recommended practices in delivering of sick children services. This has a implication of worsening child indicators.

As compared with the service provision Assessment of 2010, the results indicated low levels of implementation at the facility level. For example, only 13% of the children were assessed for all the three danger signs. Only 49 % were assessed for ability to drink, eat or breastfeed with 56% and 19% assessed for vomiting and convulsions respectively (KSPA, 2010). From the findings of this study there was minimal change upwards in the percentages between 3% and 20 % in comparison with the service provision assessment.

These negative results have also been reported by Arifeen *et al.* (2005) when he reported that in Bangladesh the health providers who were trained in IMCI, skills-uptake was not guaranteed; this resulted in little or no application of IMCI case management in practice. Similarly, in Brazil Amaral *et al.* (2005) did a comparative study between IMCI trained doctors and nurses and those not trained to determine IMCI impact. The study revealed that there was no significant difference in the quality of care provided to sick children by those trained as compared to the untrained doctors and nurses.

The study findings however did not agree with some studies which have shown that implementation of IMCI is going on well in some parts. For example, a health facility survey held in Tanzania in 2003 indicated that about 73% of the children were assessed and classified correctly as per the IMCI protocol with some districts having 100% compliance (MOH, Tanzania, 2003). The reason for this can be analysed from the way IMCI was introduced in Tanzania and when the study was done after introduction of IMCI. Tanzania had a good political will and support from the government agencies. This picture although had changed as found out by Walter in 2009. Walter's study on the use of IMCI guidelines in the assessment of children with severe diseases findings revealed that the majority of the HCWs did not adhere to IMCI protocols. They did not assess the sick children using the IMCI holistic approach and ended up treating the sick child for one classification only (Walter, *et al.*, 2009)

In comparison with a study that was carried out in 5 countries (Bangladesh, Brazil, Peru, Tanzania and Uganda) on IMCI effectiveness starting 1998 to 2004 showed that IMCI was efficient and effective (Schellenberg *et al.*, 2004). The same study revealed that health care workers trained on IMCI in Tanzania provided a better quality of care. The same was also confirmed by Pariyo *et al.* (2005) in a study conducted in Uganda that IMCI trained health care workers improved their skills in classification, treatment and counseling of care givers of sick children attended to in health facilities. From these studies it can be argued that since the health care workers in the study sites are delivering sick child services without adhering to the IMCI protocols then, the quality of care given to the sick children may be wanting.

Overall, treatment practices of health care workers in the provision of IMCI services are low. Compliance to IMCI protocols in the three facilities is wanting with all the health centers having weak management systems. Despite the fact that all the clinicians are trained on IMCI and the presence of job aids (especially wall charts and chart booklets) at the three facilities, clinicians are not adhering to IMCI protocols as expected. The poor adherence to protocols can be attributed to lack of commitment from the health care workers as reported by the Key informants. It can also be argued that the health care workers are not motivated enough to follow the protocol. Health workers therefore need to be well motivated and shown the importance of adhering to IMCI protocols. In Benin and Kenya Mathauer and Imhoff (2006) found out in their study that non-financial motivation is equally important. Ways need to be looked at on how to motivate the health care workers to obtain quality adherence to IMCI protocols.

The second component of IMCI focuses on health system strengthening to help in implementing IMCI activities. Management systems fall in this second IMCI category. These management systems include management meetings, support supervision, medicines, equipment and Quality assurance. For effective IMCI implementation management systems must be available and functional to support all the other IMCI components. It has been recommended by WHO that the health systems must be strengthened to support IMCI activities (Lambrechts. T et al. 1999: 588). Generally management systems for the delivery of quality IMCI services are available but the systems are weak. This is in regard to management meetings, quality assurance, training and support supervision. Medical supplies and equipment were available in the three facilities.

On the side of medical supplies and equipment, the three facilities are doing remarkably well. All the three facilities reported availability of medicines and equipment. The facilities reported not to have run out of first – line medicines and the pre-referral injectable drugs (ampicillin and gentamicin) and zinc sulphate which are essential in IMCI implementation. For about a decade this was the biggest challenge that seems to have been solved. Lack of medicine has been one of the reasons why children have not been receiving their first dose at the facility. As reported by (KSPA of 2010). The report further argued that adequate and

regular supply of medicine, equipment and supplies are necessary for effective and efficient child health services. These study findings are consistent with the KSPA of 2010 that availability of medicines promotes IMCI implementation. However, despite the availability of basic medicines and equipment, health clinicians are not complying with IMCI guidelines

Meetings are crucial in not only the health sector but also other organizations. This is because it is mostly in meetings that people are able to come up with collective important decisions. It can be argued therefore that meetings are one of the management processes for decision – making. Meetings are forums where people working together and having the same purpose come together for deliberations. According to Oppenheim, meetings should be utilized well to help health facilities to be efficient but this can only happen if the right people attend these meetings. For IMCI implementation to improve in the Health facilities meetings should be institutionalized as part and parcel of service delivery (Oppenheim, 1989).

The study found out that meetings took place in all the three facilities but none of the three facilities held regular meetings. The meetings that were held were not specific to IMCI but it was reported that IMCI was part of the agenda but not always. It was also reported that these meetings were not regular but were on need basis. Kibera reported that in as far as they do not have regular IMCI meetings they held Continuous Medical Education sessions that also discussed IMCI issues. In Ushirika meetings were held to discuss challenging cases meaning if no challenging cases were identified in the month there will be no meeting. In Langata, meetings were there, but not necessarily on IMCI, but mostly on management of patients generally. Lack of these regular meetings could be the reason for lack of implementation of IMCI activities at the facilities. As reported by KSPA of 2010, Meetings must be regular and also staffs must have defined areas of responsibility (KSPA, 2010). If all the three facilities held regular IMCI related meetings then issues regarding IMCI at the facility could be addressed.

Donor and partner support was one of the factors that seemed to promote implementation of IMCI strategy. It was reported that donors had helped in training of the health care workers in the three facilities. The government has been in the fore front in training health care workers in IMCI. As reported by the Langata in-charge trainings on IMCI have not been given the weight they deserve. Fewer amounts of funds have been allocated for these training necessitating partners like KPA and CHAI to come in and train health care workers on IMCI. Partners have also become important in training of health care workers in other areas like rationale use of ARVs, Prevention of Mother to Child Transmission (PMTCT) and many more.

The need to integrate HIV/AIDS care with general pediatrics care also promoted IMCI at the facilities. This was to ensure that the children were well examined and early identification of HIV done. Those who were found to be HIV exposed or positive were then enrolled to care. The in charge said that, “This simple system change In Kibera by separating the consultation of sick children from adults has promoted greatly IMCI implementation”. The selection of one clinician to champion IMCI activities also was an extra mile to promote IMCI implementation. This enabled the clinician to focus more on children issues helping to upscale IMCI activities at the facility. Some studies have suggested the separate clinics would facilitate implementation of the IMCI strategy in a smooth way through allocation of adequate time, space, human resources, and required equipment and supplies.

Availability of medicine and equipment in the three facilities promoted IMCI implementation as reported by the three in charges. Medicines and necessary equipment are very important in IMCI implementation. Clinicians are likely to adhere to IMCI protocols especially on treatment when he/she knows the required equipment and drugs are available. All the three facilities had the IMCI recommended equipment and fist line and second line drugs. In Uganda Nsungwa reported that for health facilities to address the effects of lack and shortage of drugs at the facilities they had to change the system from the “push “ to the “pull” systems to enhance IMCI implementation (Nsungwa. *et al.* 2004). An impact study carried in Uganda also revealed that health facilities that had all the IMCI

equipment and drugs performed significantly better than health facilities that did not have these drugs and equipment (Pariyo, 2005). It is therefore important that health facilities maintain a proper logistic system for drugs and equipment. The sad note was that despite availability of drugs and equipment, clinicians were not complying to IMCI guidelines.

Other studies that have demonstrated that basic equipment and drug supplies help in promoting IMCI implementation is like the one conducted in China. The China intervention study that focused on equipment increased availability of children's scales from 28% to 91%, timing devices from 89% to 97%, and utilities for mixing oral rehydration salts from 37% to 100%. The same study also increased supply of all recommended drugs to the facilities. The study found out that IMCI implementation was significantly boosted by the introduction of these equipment and drugs (Zhang, 2007). In Nigeria a study focusing on drug rationale use as guided by IMCI guidelines found a reduced average drug prescriptions from 4.5 to 2.3 drugs per patient, thereby reducing drug utilization and increasing national availability (Wammanda, 2003). This indicates that IMCI helped to bring in rationale drug use and minimized drug stock out.

In Kenya, factors that have hindered IMCI implementation can be grouped into two broad categories. These categories are individual categories like lack of commitment, poor attitude and lack of motivation from the health care workers. The second category can be termed as the health system category where by factors like support supervision, availability of job aids and availability of equipment and medicines lie. Other factors that have been reported include low training coverage, high training costs and insufficient funding mechanisms for IMCI (MOH, 2006).

In IMCI, there are two kinds of support supervision: follow-up supervision that is normally conducted 4-6 weeks after IMCI training, and the routine supervision from the DHMT in the district. The aim of the follow-up support supervision is to emphasize on the IMCI skills obtained from the training and manage any problems that face the new trainee as he/she tries to start IMCI implementation. This support visit is normally conducted by a trained IMCI facilitator. Our study revealed that the follow up support supervision used to

take place but of late there is not conducted regularly. On the side of regular support supervision this is conducted by the DHMT where one of the members is the IMCI focal person. Our study revealed too that this one was irregular and IMCI was a very small component during the visits.

Previous studies have shown that programs like IMCI need close management and supervision of the health care workers for them to succeed (Victora *et al.*, 2004). Lack of commitment was reported to be one of the factors that were hindering IMCI implementation. Lack of commitment from health care workers and the district management team that was reported to conduct irregular support supervision affected IMCI implementation negatively. After training it is expected that the health care workers should adhere to IMCI protocols and that the district team should do support supervision. In this study it came out clearly that regular support supervision from the district management team is wanting since it does not occur regularly. The staff lacked regular external support supervision. It has been shown that regular support supervision by external managers helps to ensure that systems and protocols are followed at the facility level (KSPA, 2010). With lack of follow up then the health care workers may not even see the need to adhere to standards since they know that there is no follow up. Without any support supervision it will be difficult for one to know his/her strengths, weakness and therefore not possible to improve in service delivery.

It can be argued out that this trend of lack of support supervision has continued because a survey carried in 2006 reported the same lack of support supervision. The study found out that IMCI implementation at the facilities faced constraints because of lack of or inadequate support supervision, with only 22% of health facilities with trained health workers having been supervised at least once. This supervision included IMCI case management observations (MOH, 2006). Rowe on the other hand suggested that it is important to use these findings of non-support supervision to get insight on how supervision can be carried out in future (Rowe *et al.*, 2001). It may be difficult to pinpoint the cause(s) of lack of support supervision but it is important to try and find answers so as

to improve on the system. The MoH personnel should understand the importance of supportive supervision and the overall implication to program management.

From past studies, it has been noted that the district teams may be lacking finances to carry out support supervision because the system is centralized including that of centralizing funds making it difficult for districts to carry out activities (Victora *et al.*, 2004). Oyaya and Rifkin (2003) argue that even though the health sector is devolved the powers of the districts to make decisions are limited. This is because everything including finance and access to donor opportunities in Kenya are controlled from the central level. They further argue that this has led to limited district autonomy and decision-making power to plan, conduct and support IMCI activities. To improve support supervision, Kenya can learn from Tanzania where experiences suggest that decentralization of power and resources be done to district levels. I hope that with the devolution of health in Kenya to counties we are going to see better support supervision to the health facilities. Research findings from Tanzania conducted in Bunda and Tarime, indicate Bunda performed better than Tarime in terms of training because the former received funds earlier (Prosper *et al.*, 2008). Prosper also noted that the Tanzanian district managers have more powers to make decisions and allocate money in their districts as compared to Kenya.

According to interviews with the facilities In-charge, the facilities have not been well facilitated to implement IMCI activities. This is because they have not been supplied with the key minimal requirements like job aids needed to implement IMCI. Job aids are important quality assurance tools that should be available in the facilities implementing IMCI. All the three facilities had minimal job aids that had been supplied to them by the district IMCI focal person. The study revealed that in as much as the facilities in-charges reported to have these job aids they were inadequate and were not being used as recommended and therefore the conclusion that they did not exist. The findings confirmed a study done in 2006 that found out that IMCI implementation was affected by inadequate essential equipment and lack of sufficient IMCI job aids (MOH, 2006). None of the three health centers had or was using the IMCI recording forms. It can therefore be argued that the lack of recording forms could be one factor that has hindered IMCI

implementation. This is because even if one is trained and he/she has no tools to use it will be useless to follow a protocol without the recording forms. During the interviews all the in-charges said that they have never received any recording forms from the district. They further said that they were told that they can photocopy the recording forms and use at the facility. Lack of the recording forms makes it difficult for health care workers to correctly classify and record the findings according to IMCI protocol. It has been proofed that having a separate recording form for each sick child helps and has better outcomes in IMCI implementation (Lyimo, 2008)

One other major challenge to implementation of IMCI activities was the high work load coupled by staff shortage in the three health facilities. Kibera and Langata seemed not to have any challenges in retaining staff but Ushirika had challenges of high staff turnover. The in-charge said, ‘We are two clinicians and only one is trained, the other one who was trained left’. In Kibera there was one clinical officer specifically assigned to attend to sick children but in Langata and Ushirika only one clinician attended to all the OPD patients. High work load with staff shortage was reported to negatively impact on IMCI implementation. The study revealed that all the children were being attended to by one Clinical Officer on duty during the day. The clinical officer was the one who also attended to all other cases at the facility. It was only in Kibera that there was one clinical officer allocated to attend to the sick children alone. Studies done by Rowe in Benin on determinants of poor implementation of IMCI by health care workers revealed the same reasons. These reasons included high workloads, short-staffing, and no IMCI-specific supervision. In addition, studies that focused on observations on IMCI case management in Kenya reported that because of time needed to fill the recording form some health workers skip because it takes too long (Rowe *et al.*, 2001).

Time was critical especially where there were fewer health care workers who attend to children under the age of five years. If one took more time in the consultation room it meant he/she left the facility late. A study conducted in Ethiopia looking at the time it took an IMCI trained health care worker consultation of the sick child revealed that; At first one would take an average of 20 minutes and once the health care worker was conversant with

the protocol it took a short time of 5 – 7 minutes (Simoes, 1997). When asked about the level of implementation at the facility level, nearly all In-charges said that the facilities were implementing but not up to the expected standards. The In-charge of Ushirika said the implementation of IMCI usually depended on the work load. When he had few patients, he was able to follow the IMCI protocols, but when patients were many it was difficult to apply IMCI. This means that when they fully complied to IMCI guidelines they took more time than the conventional type.

The three health centers had almost a similar set up and client flow. It was only in Kibera where the sick children consultation took place in a separate room. However the client flow in all the facilities was the same. The client started from registration, moved to triage, consultation room and then to the pharmacy. There was no facility that had drugs in the consultation room since all the facilities had their drugs stored and dispensed from the pharmacy. This kind of set up may not allow full implementation of IMCI. It is recommended that the first dose of drugs be administered by the health care worker in the presence of the caregiver. According to Victoria *et al.* (2004), a good facility set up will improve health worker practices and will improve on IMCI uptake. In the current study facility set up also affected implementation of IMCI negatively in all the three facilities. This was especially in dispensing of drugs that was done at the pharmacy. With this kind of set up, the some IMCI roles were shared and not all departments were implementing IMCI as required. For example in the pharmacy patients were given drugs and told how to administer but were never told to repeat instructions. It was therefore difficult to tell whether the caregivers got the right information or not.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents conclusions derived from this research and presents recommendation to policy makers and IMCI implementers.

6.1 Summary of key findings

From the exit interviews the study was able to determine health care workers compliance to IMCI guidelines. The study revealed that health care workers compliance to IMCI guidelines was poor. Out of 351 of the sick children who were attended to at the three facilities less than 22% of the children were fully assessed as recommended by IMCI. Majority of them 326 (92.9 %) had their temperature taken and almost the same number 324 (92.6 %) had their weight taken during pr assessment. In relation to the general danger signs; Only 182 (52 %) of the children were assessed for not being able to drink or breast feed with only 145 (41%) and 63 (18%) being assessed for Vomiting everything and convulsions respectively. Less than 18 % of the children had all the three danger signs checked with Less than 75 % of the children assessed for all the four major symptoms. Health care worker compliance to IMCI guidelines was generally poor

Through the key informant interviews, the study obtained information on key elements on the management systems in the three facilities supported by Amref. Meetings, training, support supervision, availability of equipment and quality assurance tools were some of the management systems analysed. Overall all (100%) the three facilities held meetings but none held IMCI specific meetings. These were management meetings where all health centre issues were discussed. These meetings were not institutionalised or held on a quarterly basis but were on need basis. It is during these meetings that the IMCI agenda was discussed and not all the time when these meetings were held. The study revealed that more than 90% (10/11) of the clinicians had been trained on IMCI. Support supervision from the district is not regular and no facility had received support supervision specifically on IMCI. During the supervisory visits IMCI was a small component in the check list and

only asked if the facility followed the IMCI guidelines but did not focus on the specifics. Overall all the facilities had IMCI protocols and guidelines but only Kibera displayed the guidelines and protocols on the walls. All the three health centres did not have IMCI recording forms at the facility.

Three factors came out strongly as those that seem to support implementation of IMCI in the three facilities. These factors are donor and partner support, change of system and availability of the basic medicines. On the other hand lack of commitment, lack of recording tools and high workload were cited as factors hindering implementation of IMCI. Based on these findings the study conclusions are as follows;

6.2 Conclusions

Despite the trainings done, health care workers' compliance to the IMCI guidelines and protocols in terms of pre assessment, assessment of danger signs and major symptoms and post assessment of the sick children was poor.

Management systems in relation to IMCI implementation in the three facilities especially management meetings specific for IMCI and support supervision were weak. There was also no institutionalized regular support supervision to the trained health care workers on the implementation of IMCI to the three health centers.

Donor and partners support in regard to IMCI trainings, provision of some IMCI materials and also change of facility set up had promoted IMCI implementation. However, Lack of commitment from the health care workers and high work load hindered IMCI implementation in the three facilities.

6.3 Recommendations

The three facilities seemed to have management systems in place but they were generally weak. Compliance to IMCI guidelines among the health care workers was poor and therefore this study recommends the following.

Policy level

1. The government should develop a policy guide for facility in-charges on their role in IMCI and also train the facility in-charges on the same to strengthen management systems in the facilities.
2. Enforcement of effective and institutionalized support supervision for trained health care workers to improve sustain and maintain IMCI standards.

Programmatic level

1. Through on Job training the three facilities be supported by a regular plan when they can conduct quarterly meetings and ensure that that the discussions are documented
2. Amref needs to print, distribute and ensure that the IMCI standard recording forms are available and are being used during sick child consultations in the three facilities.
3. Management needs to come up with motivation strategies to motivate the health care workers to comply to IMCI guidelines by providing technical support to the health care workers attached at these facilities

Recommendations for further research

1. A study on barriers to effective supportive supervision among the District Management teams (DHMTs).
2. There is need to find out if compliance to IMCI protocols has better outcomes in management of childhood diseases in these facilities
3. A study to determine what are the effects of noncompliance to IMCI management systems

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APPENDICES

1. Key informant interview guide
2. Exit Interviews questionnaire for the care givers
3. IREC approval letter

Appendix 1:Key Informant Interview Guide

Instructions: Guide for facilitating discussions with facility in charges and lead clinicians

(Kindly record the date when discussion is taking place, time discussion began and ended, Name of interviewer, key informant and the facility where the interview is taking place)

Introduction:I would like to thank you for agreeing to participate in the interview. The information collected will be useful in helping Duke Mobegi to graduate and also improve child care services at the facility.

1. How is the situation of IMCI implementation in this facility?
 - Comment on the capacity and training of health care workers,
 - Comment on infrastructure
 - Comment on Protocols and job aids
 - Comment on the availability of drugs and equipment
 - Essential drugs (Vitamin A, Iron Supplements, Analgesics, Deworming tablets)
 - Pre referral medication (Penicillin, Ampicillin, Gentamycin, Chloramphenicol)
 - Anti-malarial drugs (Coartem, Quinine)
 - Oral Antibiotics (Amoxyl, Septrine, Other)
 - Intravenous fluids)
 - Equipment (Child weighing scale, Height board, Thermometer, Scalp vein, Stethoscope)
2. What management systems are in place to support implementation of IMCI at the facility?
 - Probe on the availability of training opportunities for staff on IMCI
 - Probe on any regular support supervisions both internal and external
 - Enquire if there are any regular meetings and what is discussed in these meetings
3. How are child care services delivered in this facility in relation to IMCI strategy
4. What are some of the gaps do you see in this facility in as far as IMCI implementation is concerned
 - Probe to see if children are assessed fully
 - Probe on the information given to the care takers on drug administration, Danger signs, Nutrition
5. In your opinion, what are the 3 challenges this site faces in the implementation of IMCI strategy
6. What are the 3 management practices that promote implementation of IMCI strategy in this facility?
 - a. How do they promote IMCI implementation?
7. In your opinion, what are the 3 management practices that hinder implementation of IMCI strategy in this facility?
 - How do they hinder IMCI implementation?
 - How does management respond to these challenges?
8. What do you think need to be done so that IMCI is implemented fully in this facility?

_____THANKYOU

APPENDIX 2: ASSESMENT MANAGEMENT SYSTEM FORM

**AN ASSESSMENT OF MANAGEMENT SYTEMS SUPPORTING INTEGRATED
MANAGEMENT OF CHILDHOOD ILLNESS STRATEGY IN KENYA: A STUDY OF
AFRICAN MEDICAL AND RESEARCH FOUNDATION SUPPORTED HEALTH
CENTERS**

CARE GIVER EXIT INTERVIEW QUESTIONNAIRE

Date: (dd/mm/yyyy) _____

Questionnaire No _____

Facility name 1) Langata _____ 2) Uhuru camp _____ 3) Ushirika _____
4) Kibera _____

Full name of Research Assistant _____

Name of respondent (Optional): _____

BACKGROUND INFORMATION OF THE INFORMANT

Sex: 1) Male _____ 2) Female _____

Age of the respondent: 1) < 30 2) 31 – 40 3) 41 – 50 4) 51 – 60 5) >61

Religion 1) Islam 2) Christian 3) Traditional/African 4)Hindu 5)Other

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

Cohabiting

Education: 1) None 2) Grade 1 - 4 3) Grade 5 - 8 4) Grade 9
- 12 5) Post-secondary college/University

Relationship to the child: 1) Mother 2) Father 3) brother 4) Sister
5) Other (Specify) _____

Did the doctor ask you whether the child has

	Major symptoms	yes	No	Can't remember
7a	Fever			
7b	Cough or difficulty in breathing			
7c	Diarrhea			
7d	Ear pain or discharge			

Did the doctor ask you whether the child has

	danger signs	yes	No	Can't remember
8a	If the child was able to drink or breastfeed			
8b	If the child vomits everything			
8c	If the child had had a convulsion			

Physical examination

9a	Was the child's temperature taken by thermometer			
9b	Was the child's temperature felt by hand			
9c	Was the child's weight taken			
9d	Was the child's chest listened to using a stethoscope			
9e	Was the child's skin pinched to check for dehydration			
9f	Did the clinician check for paleness			
9g	Was the neck of the child checked for stiffness			
9h	Were the ears of the child looked at			
9i	Was the child checked for swelling of the lower limbs			

Were you asked if anybody in the family has TB 1) Yes ___2) No___3) Can't Remember

Were you asked if anybody in the family has HIV 1) Yes __2) No___3) Can't Remember

Was the child examined for any swellings in the armpit, neck or abdomen 1) Yes ___2)

No___3) Can't Remember _____

Was the child's mouth examined 1) Yes _____ 2) No___3) Can't Remember _____

Was the child offered anything to drink or mother told to breast feed the child 1) Yes _____

2) No___3) Can't Remember _____

Did the health care worker look at the immunization card of the child 1) Yes ___2)

No___3) Can't Remember _____

Did you have the immunization card with you in the consultation room 1) Yes _____ 2)

No___3) Can't Remember _____

Did the healthcare worker ask you if the child had received vitamin A supplementation 1) Yes ____ 2) No__3) Can't Remember _____

Did the health care worker ask if the child had ever taken any drug for worms in the last six months 1) Yes ____ 2) No__3) Can't Remember _____

Were you given any general information about feeding or breast feeding of the child 1) Yes ____ 2) No__3) Can't Remember _____

Were you told to give extra fluids to the child during this sickness 1) Yes ____2) No__3) Can't Remember _____

Did the health care worker tell you the illness that he child has 1) Yes ____2) No__3) Can't Remember _____

Were you told the signs and symptoms in the child for which you should return the child to the hospital 1) Yes ____ 2) No__3) Can't Remember _____

What will you do if you see these signs would you return to this facility or go to a different facility 1) Yes ____ 2) No__3) Can't Remember _____

Were you given any medication to go home with 1) Yes ____2) No__3) Can't Remember _____

Was the child given any medication at the hospital 1) Yes _2) No__3) Can't Remember _____

Were you shown how to administer the oral medicine 1) Yes ____ 2) No__3) Can't Remember _____

Were you asked to repeat the instructions given by the health care provider1) Yes __2) No__3) Can't Remember _____

Thank you

IREC APPROVAL

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

Reference: IREC/2013/78
Approval Number: 0001022

Mr. Mobegi Duke Ontiro,
Moi University,
School of Public Health,
P.O. BOX 4606,
ELDORET KENYA.



MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET
Tel: 334711/2/3
25th July, 2013



Dear Mr. Mobegi,

RE: FORMAL APPROVAL

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

"An Assessment of Management Systems Supporting Integrated Management of Childhood Illness Strategy in Kenya: A Study of African Medical and Research Foundation Supported Health Centers".

Your proposal has been granted a Formal Approval Number: **FAN: IREC 1022** on 25th July, 2013. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 24th July, 2014. 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,

25/07/2013
DR. W. ARUASA
DEPUTY-CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

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