

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI**

**COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF POPULATION, FAMILY AND REPRODUCTIVE
HEALTH**

**EFFECTIVENESS OF REVISED IMCI STRATEGY IN MALARIA
MANAGEMENT AMONG CAREGIVERS IN AMANSIE WEST DISTRICT,
GHANA**

BY

DR. VIDA OBESE (BSC HUMAN BIOLOGY, MB, CHB)

JUNE, 2016

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**A THESIS SUBMITTED TO THE DEPARTMENT OF POPULATION,
FAMILY AND REPRODUCTIVE HEALTH, SCHOOL OF PUBLIC
HEALTH,
COLLEGE OF HEALTH SCIENCES IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH
IN POPULATION AND REPRODUCTIVE HEALTH**

JUNE, 2016

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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(HEAD OF DEPARTMENT)

DEDICATION

This thesis is dedicated to my parents Mr and Mrs Obese for their encouragement and prayers, my husband Benjamin Nsiah-Yamoah for his patience and support and son Justin Paa Kwesi Nsiah-Yamoah.



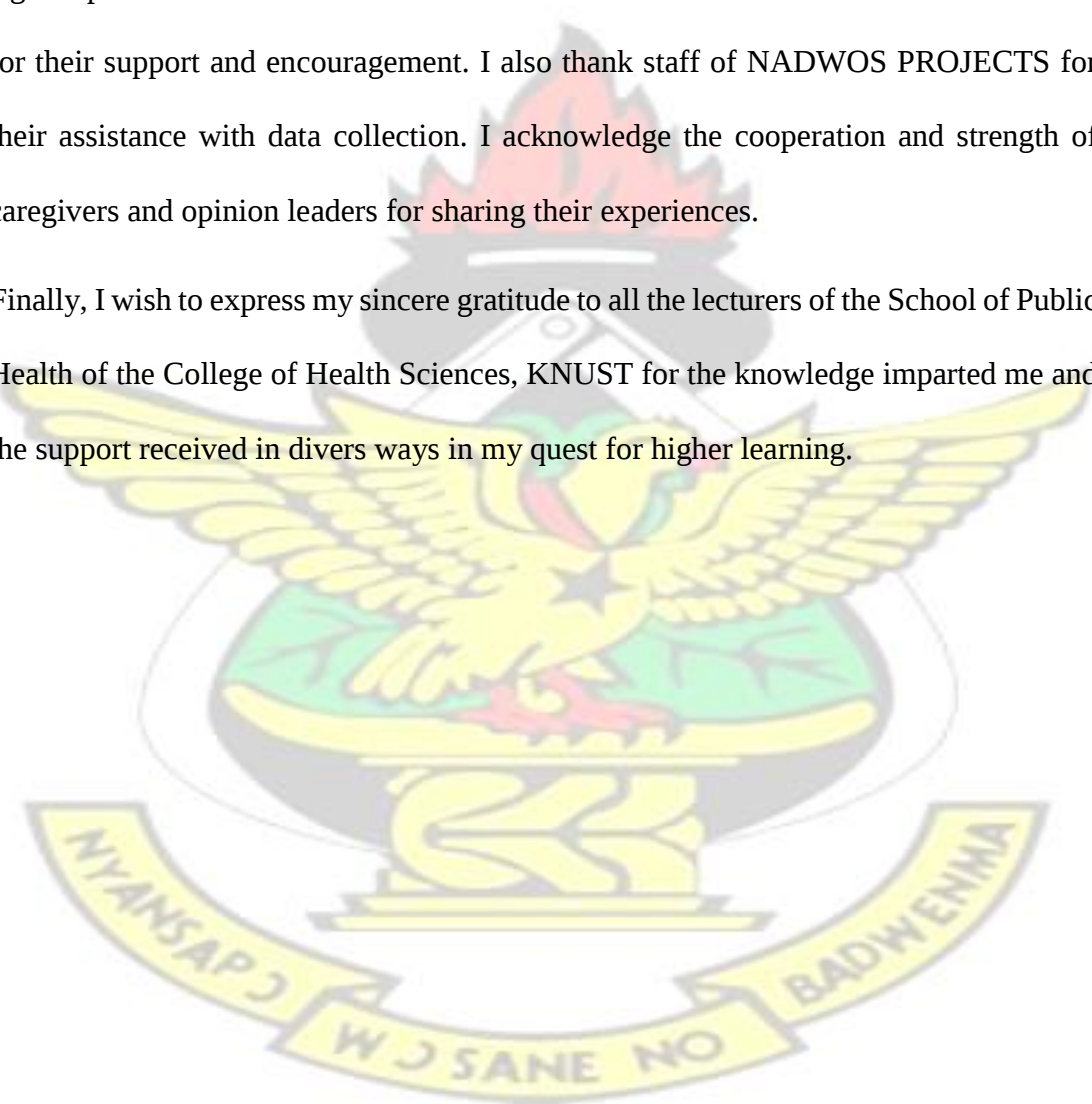
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I am immensely grateful to my academic supervisor, Madam Rose Adjei, for her contribution in the form of inputs, suggestions, criticisms, revisions and edits throughout the entire project.

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KNUST

ABSTRACT

Introduction: The revised IMCI strategy combines community, nutritional and diagnostic measures to effectively manage malaria and other illnesses among children under five years of age. The objective of the study was to assess the awareness level of caregivers on presumptive approaches in malaria management, perception and acceptability of malaria management strategies under revised IMCI and the challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI.

Methodology: This was a cross sectional study for which 379 respondents were conveniently sampled. A multi-stage sampling procedure was used to sample 120 household heads, whereas 240 community members and 19 community health workers were purposively sampled for focus group discussions. Questionnaire and focus group discussion guides were used to gather data from the respondents. Descriptive statistics were used to analyse quantitative data. Content analysis was used to analyse responses from the focus group discussion.

Results: The study found that caregivers were highly aware of the use of treated nets and good community sanitation to reduce the incidence of malaria whereas 60% were aware that balance diet helps to improve the immune system of children against malaria. 58.3% of the respondents strongly agreed that poor understanding on the recommended vitamin-rich foods for children is a challenge they encounter in managing malaria among their children, whereas 41.7% disagreed. Poor participation by the household heads, who are dominantly males, influenced the acceptability of the nutritional and some preventive aspects of the revised IMCI strategy. 52.5% of the respondents indicated that they seek first treatment for their children on malaria from health facilities, 31.7% use chemical shops, while 15.8% resort to herbal treatment.

Room congestion, no proper beds, and frequent power outages prevented some caregivers from sleeping under treated nets with their children. The NHIS encouraged attendance of health facilities; however the occasional suspension of the system discouraged caregivers in accessing healthcare for their children. All caregivers admitted that health personnel conduct malaria test on children before giving them drugs. The implication is that Rapid Diagnostic Testing is effectively being implemented in the district.

Conclusion and recommendation: The study recommends that health education programmes should encourage more male attendance to improve the acceptability of improved practices to enhance malaria management. Community leaders should organise communal labour to effectively address community sanitation issues. Community health nurses should intensify public education on the suggested vitaminrich foods for children and the need for seeking proper healthcare early.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xii
CHAPTER ONE	1
INTRODUCTION	1
1.0 Background to the study	1
1.1 Problem statement	6
1.2 Purpose of the study	8
1.3 Research questions	8
1.4 Objectives of the work	9
1.5 Conceptual framework for the study	9
1.6 Scope of the work	11
1.7 Relevance of the work	12
1.8 Organisation of the work	12
CHAPTER TWO	13
LITERATURE REVIEW	13
2.0 Introduction	13
2.1 Theory of rational expectations	13
2.2 Concept of IMCI	14
2.2.1 Improving case management skills of health workers	15
2.2.2 Improving the health system	15
2.2.3 Improving the household and community practice.....	16
2.3 Malaria in Ghana	21
2.4 History of IMCI	23

2.5 Arguments on the RDT-based IMCI	26
2.5.1 <i>Justification for the RDT-based IMCI</i>	26
2.5.2 <i>Justification against the RDT-based IMCI</i>	27
2.6 Awareness level of caregivers on presumptive approaches in malaria management	28
2.7 Perception and acceptability levels of caregivers with IMCI	31
2.7.1 <i>Factors influencing perception and acceptability of revised IMCI guidelines</i>	32
2.8 Challenges caregivers encounter in IMCI	34
2.8.1 <i>Supply of services</i>	34
2.8.2 <i>Demand for care</i>	38
2.8.3 <i>Linking community care and health facility care</i>	40
2.8.4 <i>Funding and procurement issues</i>	41
CHAPTER THREE	42
METHODOLOGY	42
3.0 Introduction	42
3.1 Study area	42
3.2 Study design	46
3.3 Study population	47
3.4 Pre-testing	48
3.5 Ethical consideration	48
3.6 Sampling	48
3.7 Data collection tools	50
3.8 Data collection techniques	51
3.9 Limitations	52
3.10 Data analysis	52
CHAPTER FOUR	54
RESULTS	54
4.0 Introduction	54

4.1 Background characteristics of respondents	54
4.2 Awareness level of caregivers on presumptive approaches in malaria management	57
4.3 Level of perception and acceptability of malaria management strategies under the revised IMCI	66
4.5 Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI	73
CHAPTER FIVE	78
DISCUSSION	78
5.0 Introduction	78
5.1 Awareness level of caregivers on presumptive approaches in malaria management	78
5.2 Level of perception and acceptability of malaria management strategies under the revised IMCI	82
5.3 Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI	84
CHAPTER SIX	86
SUMMARY, CONCLUSION AND RECOMMENDATIONS	86
6.0 Introduction	86
6.1 Summary	86
6.1.1 Major findings	87
6.2 Conclusion	89
6.3 Recommendations.....	91
REFERENCES	94
APPENDICES	99
APPENDIX A	99
APPENDIX B	103

APPENDIX C	105
APPENDIX D	106

LIST OF TABLES

Table	Page
3.1: Distribution of health facilities by sub-districts	43
3.2: OPD malaria cases in the District	44
4.1: Age cohorts of respondents.....	54
4.2: Level of education of respondents	55
4.3: Gender and awareness that balance diet helps to improve immune system against malaria	62
4.4: Level of education and awareness that given fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria	63
4.5: Reasons for not having ITN for wards.....	68
4.6: Times caregivers send their wards to hospital when sick	72

LIST OF FIGURES

Figure	Page
3.1: Top 20 OPD diseases in the District	43
3.2: Top 10 causes of hospital admission in the District	44
3.3: Map of Amansie West District	45
4.1: Marital status of respondents	56
4.2: Place caregivers first seek treatment for their wards who are suspected to have contracted malaria	65
4.3: High cost of seeking treatment from hospitals being a challenge encountered by the caregivers in accessing healthcare for wards	73
4.4: Long distance to a health facility being a challenge encountered by the caregivers in accessing healthcare for wards	75

4.5: High cost of buying ITNs being a challenge encountered by the caregivers in preventing malaria among wards	76
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LIST OF ABBREVIATIONS

ACTs	Artemisinin-based Combination Therapies
ARI	Acute Respiratory Infections
CDD	Control of Diarrheal Diseases
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Service
IMCI	Integrated Management of Childhood Illnesses
IPT	Intermittent Preventive Treatment
IRS	Indoor Residual Spraying
ITNs	Insecticide Treated Nets
MOH	Ministry of Health
NHIS	National Health Insurance Scheme
OPD	Out Patient Department
ORT	Oral Rehydration Therapy
PMI	President's Malaria Initiative
RDTs	Rapid Diagnostic Tests
SP	Sulphadoxine-pyrimethamine
SPSS	Statistical Product and Service Solutions
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

1.0 Background to the study

Malaria is a major global health problem as it is one of the leading causes of mortality and morbidity in the world, particularly in resource-poor regions. SubSaharan Africa is the hardest hit region in the world, and parts of Asia and Latin America also face significant malaria epidemics. Although the prevalence of malaria within any geographical area is primarily determined by environmental factors such as mean temperature and rainfall, Azabre (2012) argues that its high incidence in developing countries is largely attributed to poor environmental conditions and socioeconomic factors such as low standard of living and management of the disease shrouded in political, economic and social structures.

All age groups are at risk of developing severe malaria illness, although children and pregnant women are biologically the most vulnerable. Children are at risk because they lack developed immune systems to protect against the disease. The World Health Organisation (WHO) (2011) reported that an estimated 216 million cases and 655,000 deaths of malaria occurred worldwide in 2010, of which about 81% and 91%, respectively were in the African Region, and with most of the cases and deaths reported in children under five years. The Report also stated that there were an estimated 219 million cases of malaria and 660,000 deaths, mostly among children under the age of five, in 2010.

The provision of quick quality care to children under five years is, therefore, a matter of great concern. However, WHO (2005) indicates that early and appropriate treatment of childhood illness is influenced by several factors, especially in rural areas where treatment seeking behaviour is related to cultural beliefs about the cause and cure

of illness. According to WHO (2012), the choice of treatment source has been found to be influenced by accessibility, disease type and severity, patient's gender and parent's educational level.

Attitude towards providers of treatment is, thus, an important factor in treating malaria (McCombie, 2002; Erhun et al., 2005). Parents mostly take children with potentially fatal illnesses such as malaria to first-level health facilities like clinics, health centres and outpatient departments of hospitals. However, Azabre et al. (2013) contend that such parents are more likely to give first treatment to their children at home before taking them to health facilities if the condition worsens since it helps them to minimise their health-related expenditure. This implies that existing interventions could prevent many deaths among children under age five if they are presented for appropriate and timely care. Thus, improving families' care seeking behaviour could contribute significantly to reducing child mortality from malaria.

As part of efforts to solve the above issues, widespread regional and international efforts to address malaria began in the 1940s and 1950s, and strategies have evolved over time. From the early 1950s until 1978, malaria was eliminated in parts of the Americas, Europe, and Asia (WHO, 2012). However, such efforts did not reach or were unsuccessful in many of the hardest hit areas, particularly sub-Saharan Africa. More recent attention to these regions by the United States, other donor governments, multilateral institutions, and affected countries, has helped to increase access to prevention and treatment as well as reduce cases and deaths.

Traditionally, two approaches have been adopted in the management of malaria – presumptive and test-based [rapid diagnostic tests (RDTs)]. The presumptive approach which relies solely on clinical symptoms and signs to establish diagnosis and initiate treatment was practiced for many years in low-income countries because of the

lack of laboratory facilities, the availability of cheap anti-malarials and the need to avert deaths through early initiation of treatment (Amexo et al., 2004). Alternatively, the test-based approach requires confirmation, either parasitological or antigen-antibody test, before the diagnosis of malaria can be made, and treatment initiated.

For years, WHO recommended the presumptive approach and this was implemented across countries in malaria-endemic, sub-Saharan Africa. In early 2010, however, WHO issued revised treatment guidelines that call for a shift from presumptive to test-based approach. The revised management of malaria incorporated the presumptive approach to disease into syndromic guidelines such as the Integrated Management of Childhood Illnesses (IMCI). This suggests that in all suspected malaria cases, the diagnosis of uncomplicated malaria should be confirmed using RDTs before treatment is initiated.

The IMCI strategy uses an approach that addresses not only individual diseases, but also the sick child as a whole. It combines improved case management of childhood illness with aspects of nutrition, immunisation, disease prevention, and promotion of growth and development. Besides improving providers' skills in managing childhood illness, the IMCI initiative also aims to improve families' care seeking behaviour at home. According to the Centre for Health and Population Research (2001), the household and community component of IMCI was formulated to reach the numerous sick children who are ill and often die at home without ever being treated by a trained healthcare practitioner.

Although the IMCI clinical guidelines are adapted in each implementing country, WHO/UNICEF (2005) state that the strategy includes methods for checking a child's immunisation and nutrition status; teaching parents how to give treatments at

home; assessing a child's feeding and counselling to solve feeding problems; and advising parents about when to return to a health facility. Consequently, health workers are trained to teach the mothers about danger signs and counsel them about the need to seek care promptly if these signs occur. The IMCI process can be used by doctors, nurses and other health professionals who see sick infants and children aged from one week up to five years. It is a case management process for a first-level facility such as a clinic, a health centre or an outpatient department of a hospital.

Ghana is classified as being high malaria-transmission on the background that malaria is endemic and perennial in all regions of the country, with seasonal variations that are more pronounced in northern Ghana (Ghana Statistical Service (GSS), 2012). Malaria transmission is all-year round, but particularly high during the rainy seasons. Ghana, in collaboration with its development partners, adopted a number of strategies in order to fight the malaria prevalence. The strategies include indoor residual spraying with appropriate insecticides (1950s), accelerated malaria control through better case management with prompt treatment (1990s), and "Roll Back Malaria Programme" in the year 2000. In 2004, the country joined many countries across sub-Saharan Africa in changing its first-line drug for the treatment of uncomplicated malaria from chloroquine to Artemisinin-based Combination Treatments (ACT). Ghana also benefitted from the "President's Malaria Initiative" by the government of the United States of America in 2005 (Azabre, 2012).

In June 2008, officials of the National Malaria Control Programme in Ghana designed a new National Strategic Plan, which calls for a 75% reduction in malaria morbidity and mortality cases by the year 2015. The primary strategies outlined in the National Strategic Plan are universal coverage with ITNs; rapid scale up of indoor residual spraying (IRS) to cover one-third of the country; universal coverage of

pregnant women receiving intermittent preventive treatment (IPT) using the drug sulphadoxine-pyrimethamine (SP); early diagnosis of malaria using microscopy or rapid diagnostic test (RDT); and prompt and effective treatment with artemisinin-based combination therapies (ACTs) (GSS, 2012).

Despite these efforts, Azabre *et al.* (2013) point out that malaria continues to be a very serious public health problem in Ghana. Infant mortality and under-five mortality rates are estimated at 50 and 111 deaths per 1000 live births, respectively (WHO, 2011). GSS (2012) also indicated that malaria remains the number one cause of Out Patient Department (OPD) attendance with a general OPD attendance rate of 38% in 2010. According to facility-based data from the Ghana Health Service (GHS) in 2009, malaria is the leading cause of morbidity in the country.

The revised IMCI guidelines that incorporate RDT-based diagnosis and management of malaria have been introduced for the clinical care of under-five children in health centres and other clinical care settings that similarly lack laboratory facilities. The guidelines also replaced the presumptive approach. However, a critical factor in the success of this strategy is how caregivers of under-five children perceive test-based management of malaria which represents a change in how their feverish children are diagnosed, and whether they consider it acceptable (Pagnoni, 2009).

During the period of presumptive treatment of malaria, IMCI required that all under-five children with fever in high-transmission settings should be prescribed an anti-malarial, and caregivers were encouraged to initiate presumptive treatment for malaria at home before sending sick children to the health facility. The prescription of anti-malarial was a key expectation of caregivers attending primary care facilities in malaria endemic areas. However, in this test-based management of malaria period, only febrile children that are tested positive to malaria will be given anti-malarials (ACT).

This act is likely to be interpreted differently by caregivers and influence their behaviours and actions (Chandler et al., 2010) such as accessing ACT from other sources like pharmaceutical and chemical shops.

Meanwhile, McMorrow et al. (2008) indicate that households and caregivers of children under five years face many challenges in accessing treatment for malaria. These include inadequate healthcare infrastructure, existing health facilities often under resourced and limited access to care by distance, fees, inadequate staffing, and lack of essential medicines. This suggests that febrile illnesses are treated at home frequently with drugs purchased from shops (Chandler *et al.*, 2010). McCombie (2002) estimated that fewer than 20% of children with malaria in endemic areas are treated in formal health-care settings.

1.1 Problem statement

Malaria has been a long life-threatening parasitic disease transmitted by female anopheles mosquitoes. Malaria vectors have become more resistant to insecticides and the parasites that cause the disease are becoming resistant to chloroquine and other anti-malarial drugs, making prevention and treatment increasingly more difficult and costly. Malaria has contributed to child morbidity and mortality in the world and sub-Saharan Africa.

The malaria situation in Ghana is of great concern since good health is not only a basic human need, but also a fundamental human right and a prerequisite for economic growth. Malaria contributes to morbidity and mortality which directly cause poverty, low productivity and reduced school attendance among children. Azabre (2012) indicates that children and pregnant women bear the brunt of the malaria disease. The Ministry of Health (MOH) (2009) records that between 3 and 3.5 million cases of

malaria are reported each year, over 900,000 of which are children under five years. Azabre (2012) also reports that malaria accounts for 61% of under-five hospital admissions in the Ghana.

Ghana has, therefore, implemented several malaria treatment strategies, including the IMCI programmes in its regions and districts. With the expansion of the RDT IMCI, it is a departure from what caregivers in most rural communities in the country have been used to for many years where all fever-causing illnesses are managed with prescribed anti-malarials. This initiative sets the understanding and awareness of caregivers of children under five years in rural Ghana in doubts. Most caregivers whose febrile children are tested negative to malaria are likely to obtain drugs from pharmaceutical and chemical shops, if they are not prescribed antimalarials.

The awareness and acceptability of caregivers of under-five children play an important role in the effective implementation of the revised IMCI guidelines. Malaria in children under five years requires caregiver's early recognition and classification of fever. Caregivers are expected to seek, obtain, and use medication appropriately. This is closely linked to timely decision, accessibility, correct use of the drugs and followup after prescription. Chandler *et al.* (2010) argue that test-based IMCI in under-five children is likely to be acceptable to caregivers, if the quality of caregiver-health worker interaction is improved. The health of children is closely linked to the health and care of their mothers. As the new-born grows into a child, healthy home behaviours and care of illnesses are crucial to save lives. Lack of care or poor quality care has effects for new-borns and children (Azabre *et al.*, 2013).

In all these efforts to manage malaria, many challenges continue to complicate malaria control efforts. These include poverty, poor sanitation, weak health systems, limited disease surveillance capabilities, drugs and insecticide resistance, natural

disasters and climate change. Accordingly, this study is set to assess the effectiveness of the revised IMCI strategy in malaria management among caregivers in the Amansie West District which is one of the 26 districts in the Ashanti Region of Ghana. With the District lying in the rainforest belt with temperature ranges from 22°C to 30°C, the District is a target for most vector diseases such as malaria. The *Anopheles* mosquito which transmits malaria parasites to humans thrives in warm, tropical and subtropical climates.

1.2 Purpose of the study

In Ghana, the district is the operational unit of the health system. The highest referral facility at the district level is the district hospital. Health centres exist at subdistrict level and are the lowest level of institutional care. Located in the southwestern part of the Ashanti Region, the Amansie West District can boast of one hospital, four health centres, six clinics and five maternity homes. Considering the mean monthly temperature of 26°C and rainfall between 1600 and 1800mm which aid in the breeding of mosquitoes, the District is one of the malaria endemic areas in Ghana. This is because climatic factors, particularly rainfall, temperature and relative humidity have a strong influence on the biology of mosquitoes.

1.3 Research questions

The study sought to answer the following research questions:

1. What is the awareness level of caregivers on presumptive approaches in malaria management in the Amansie West District?
2. What is the perception and level of acceptability of caregivers with the malaria management strategies under the revised IMCI?

3. What challenges do caregivers face in adopting the malaria management strategies under the revised IMCI?

1.4 Objectives of the work

The main objective of the work was to assess the effectiveness of the revised IMCI strategy in malaria management among caregivers in the Amansie West District. Specifically, the work sought to:

1. Assess the awareness level of caregivers on presumptive approaches in malaria management.
2. Examine the perception and acceptability of malaria management strategies under IMCI by care givers under the revised IMCI.
3. Assess the challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI.

1.5 Conceptual framework for the study

The Ghana Demographic and Health Survey (GDHS) (2008) by the GSS, GHS and ICF Macro (2009) reports on how the IMCI guidelines have been conceptualised in Ghana. Ghana's adoption of the IMCI strategy stresses more on the use of ITNs among pregnant women and children under five years. Currently, RDTs has been used as the basis for treating malaria cases. Early reporting of malaria cases of children under five years at health facilities is also encouraged as children are more vulnerable to such diseases. Improved environmental sanitation in communities in general and areas where malaria is endemic is being embarked on to curtail the breeding of mosquitoes. In addition, GHS provides SP to pregnant women as IPT free of charge and as directly observed therapy at both public and private antenatal services delivery

points across the country. The components of the IMCI strategy form the conceptual framework of this study. This is presented in Figure 1.1.

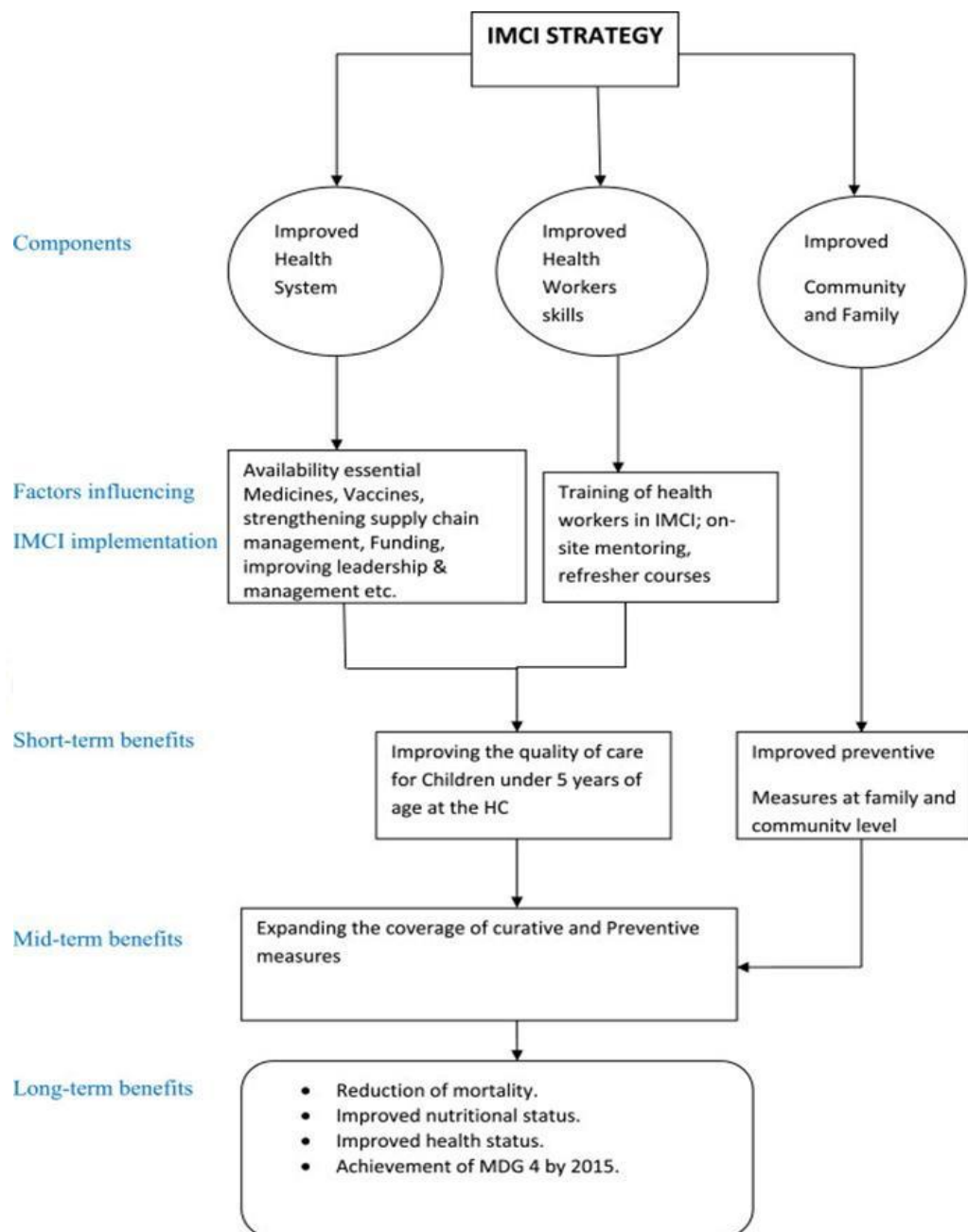


Figure 1.1: A framework showing components of the IMCI strategy

Source: WHO (2012)

The IMCI strategy includes a range of other preventive and curative interventions, which aim to improve practices both in the health facilities and at home. There are three components to IMCI (WHO, 2010). These are improving the skills of

health workers, improving the health system, and improving the household and community practices. These components must be implemented simultaneously for effective results of the IMCI guidelines.

A critical issue about the framework is that people's compliance about the IMCI strategy largely depends on their past experiences with the health system in terms of the various components of the strategy as shown in Figure 2.1. Such experiences inform their expectations about the kinds of benefit they could generate from the programme. As a result, positive experiences about the IMCI could help increase the compliance of the stakeholders to the various tenets under the programme due to positive expectations and vice versa when the experience with the programme is negative. It is therefore very crucial for the implementers of IMCI to manage the expectations of stakeholders from the onset to achieve the needed results.

1.6 Scope of the work

The study is delimited to the management of malaria by caregivers of children under five years. It looked at the awareness and acceptability levels of caregivers of under five children on the malaria management strategies under the revised IMCI. Geographically, the study covered communities in the Amansie West District of the Ashanti Region.

1.7 Relevance of the work

The study aims to assess the effectiveness of the revised IMCI strategy in malaria management among caregivers in the Amansie West District. Findings of the study would be useful in reducing mortality and morbidity associated with malaria in children aged less than five and contribute to children's healthy growth and development,

particularly in the Amansie West District. It would bring to the fore the awareness and acceptability levels of caregivers of under five children as well as challenges caregivers face in adopting the malaria management strategies under the revised IMCI. It would help in ensuring better quality of care for the health problems (infant malaria issues) that constitute the main causes for concern and consultation on the part of parents. The study would also serve as a reference material to studies on revised IMCI strategy in malaria management among caregivers, and guide further study on the topic.

1.8 Organisation of the work

The study was organised into six chapters. The first chapter, Introduction, focuses on the background to the study, problem statement, research questions, objectives, significance and scope of the work. The second chapter, Literature review, presents related works on the conceptual and theoretical issues on malaria and the IMCI strategy. Chapter three describes the methodology used in the study and chapter four presents the results and analysis of the work. The fifth chapter looks at the discussion, while chapter six presents the conclusions, summary and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the review of literature related to works on the theory of rational expectation, concept and history of IMCI, malaria in Ghana, awareness level of caregivers on presumptive approaches in malaria management, perception and acceptability levels of caregivers with IMCI, and challenges caregivers encounter in IMCI.

2.1 Theory of rational expectations

The theory of rational expectations was first propounded by John F. Muth of Indiana University in 1961. John used the term to describe the many economic situations in which the outcome depends partly on what people expect to happen. Rational expectations theory which is based on rational choice theory is used in game theory and many macroeconomic models.

The theory defines the kind of expectations as being identical to the best guess of the future (the optimal forecast) that uses all available information. The concept of rational expectations asserts that outcomes do not differ systematically (i.e., regularly or predictably) from what people expected them to be (Sheffrin, 1996). In essence, the theory indicates that individual expectations of specific events in the future may be in error, but on average they are correct. It assumes that individual expectations are not systematically biased and that individuals use all relevant information in reaching a decision on the best course for their economic future without bias. In other words, people will make the right decision more often and only make a wrong decision infrequently and randomly.

The study used the theory of rational expectations to explain caregivers' acceptability and adoption of the revised IMCI for malaria in under age five children. The theory was used to describe how caregivers of children under age five base their acceptability of the revised IMCI on their rational deductions about the available information and past experiences with the presumptive approach to malaria treatment. This implies that the rational expectations of caregivers concerning the revised IMCI guidelines will affect the implementation of the guidelines now and in the future.

2.2 Concept of IMCI

The IMCI strategy has been developed since 1992 by UNICEF and WHO as an integrated approach to the assessment, classification, treatment, and counselling of sick children and their caretakers (WHO/UNICEF, 2005). It combines improved case management of childhood illnesses in first-level health facilities with aspects of nutrition, immunisation, disease prevention and promotion of growth and development. As an integrated approach to the assessment, classification, treatment and counselling of sick children and their caretakers, Tulloch (1999) specifies that IMCI aims to significantly reduce mortality and morbidity associated with five major causes of disease in children under five, namely diarrhoea, acute respiratory infections (ARI), measles, malaria, and malnutrition.

WHO (2011) points out that the objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development. The WHO report also indicates that IMCI is addressed to reduce mortality and morbidity associated with five major causes, namely diarrhoea, acute respiratory infections, measles, malaria, and malnutrition. WHO (2012) cites that the need to reduce the gap between countries with respect to health conditions in children is one of the fundamental motivations sustaining the design and elaboration of the IMCI strategy. This is particularly so in the knowledge that many of these deaths could have been averted with appropriate and cost-effective intervention measures.

2.2.1 Improving case management skills of health workers

This component of IMCI covers a set of guidelines for the integrated case management of diarrhoea, pneumonia (ARI), malaria, measles and malnutrition, as well as the promotion of immunisation in health facilities. The improvement in the case-

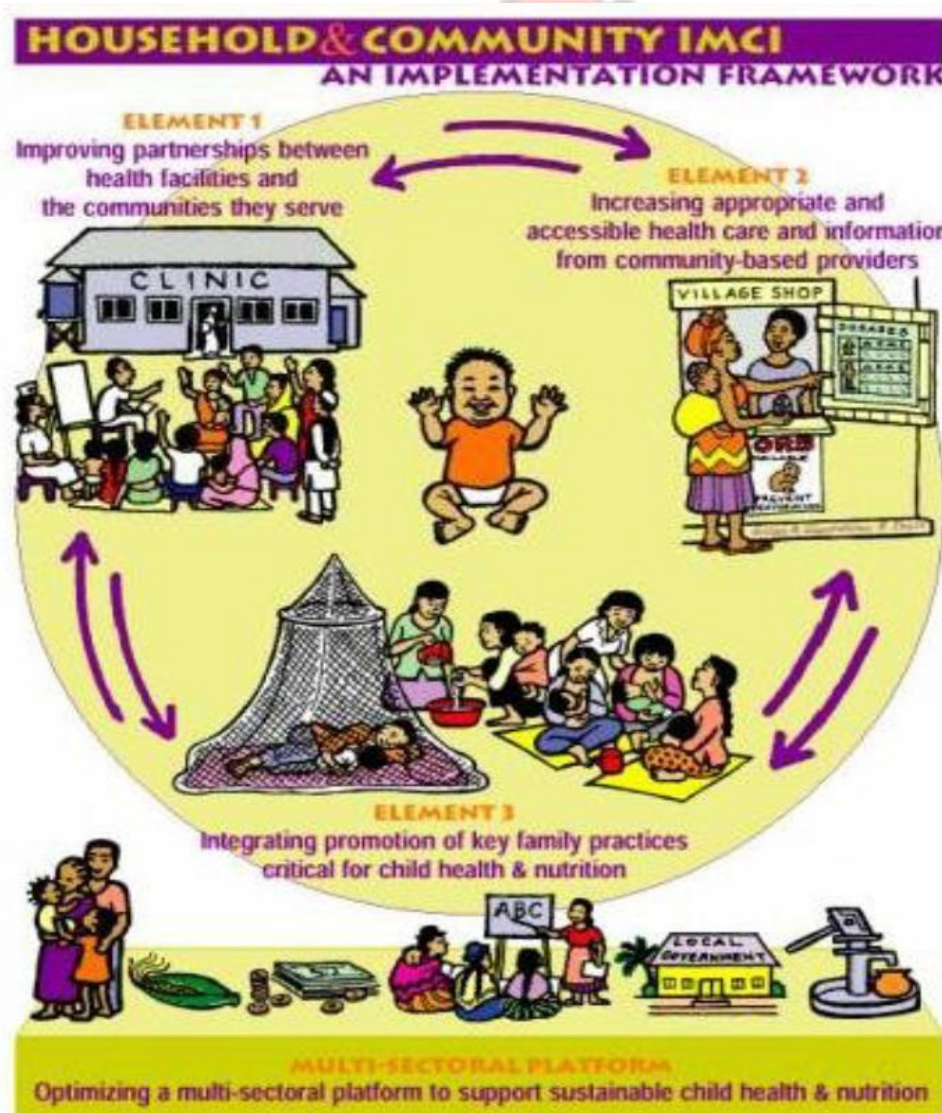
management skills of health staff is ensured through the provision of locally adapted guidelines on IMCI and through activities to promote their use. WHO (2005) mentions that health workers are trained to assess, classify and treat children with each of the major signs and symptoms in health facilities. IMCI also looks at approaches for maintaining the performance of health workers. The strategy helps health personnel to evaluate how the parents or caretakers are feeding and caring for the child at home. It gives them tools to strengthen positive habits and point out those which may be harmful to the child's health. Community level health worker training materials have been developed to complement the IMCI approach.

2.2.2 Improving the health system

It is believed that healthcare infrastructure must be improved to provide equitable and sustainable solutions to the problems of childhood illnesses. IMCI focuses on essential elements of the health system that must be in place to ensure the effectiveness of child health interventions. The implementation of the IMCI strategy requires drug availability, IMCI planning and management, organisation of work at health facility level, health information systems, and health sector reform. Thus, many aspects of health sector reform are relevant to, and consistent with, IMCI strategies and activities. WHO (1999) suggests that the IMCI strategy can play an important role in most aspects of health sector reform, in particular through (1) improving the costeffectiveness of essential child health care services, (2) strengthening the capacity for decentralised management at district level, (3) improving the quality of child health care, (4) supporting the new role of the Ministry of Health, (5) improving private health care provision for young children, (6) cost saving, and (7) strengthening drug supply and management.

2.2.3 Improving the household and community practice

This was introduced on the backdrop that improving the quality of care at health facilities alone would not be effective in realising significant reductions in childhood mortality and morbidity, because numerous caregivers do not seek care at facilities. In order to improve country capacity to implement IMCI, it is believed that caretaker demand for quality services and compliance with counselling are integral elements which must be given high priority.



Malaria case management can only be effective to the extent that families bring their sick children to a trained health worker for care in a timely way. Tulloch (1999) emphasises that if a family waits to bring a child to a clinic until the child is extremely sick, or takes the child to an untrained provider, the child is more likely to die from the illness. Therefore, teaching families when to seek care for a sick child is an important part of the case management process of the IMCI strategy. Pagnoni (2009) specifies that caretakers need to know when and where to seek care; and what care should be provided at home. In addition, caretakers need to comply with instructions given to them by health providers as part of the IMCI protocol, which provides a number of key health messages about danger signs and home care.

According to WHO/UNICEF (2005), 16 key practices were identified to be essential in providing the necessary care to improve child survival, growth and development in families and communities. The practices relate to the provision of adequate home care to support healthy growth and development, appropriate responses to illness, seeking appropriate and timely care, and giving recommended treatments. They include the following:

2.2.3.1 Growth promotion and development

1. Breastfeeding infants exclusively for at least four months or up to six months.
2. Starting at about six months of age, feed children freshly-prepared, energy- and nutrient-rich complementary foods, while breastfeeding up to two years or beyond.
3. Ensuring that children receive adequate amount of micronutrients, particularly vitamin A and iron.
4. Promoting mental and social development by responding to a child's needs for care and through talking and playing.

2.2.3.2 Disease prevention

5. Disposing of faeces, including children's faeces, safely and wash hands after defecation before preparing meals or feeding children.
6. Protecting children in malaria-endemic areas by ensuring that they sleep under ITNs.
7. Taking action to prevent child abuse, recognise it has occurred and take appropriate action.
8. Adopting and sustaining appropriate behaviours regarding prevention of HIV/AIDS and care for the sick and orphans.

2.2.3.3 Home management

9. Continue to feed and offer more fluids, including breastmilk, to children when they are sick.
10. Giving sick children appropriate home treatment for infections.
11. Preventing and providing appropriate treatment for child injuries.

2.2.3.4 Care seeking and compliance to treatment and advice

12. Taking children as scheduled to complete a full course of immunisation before their first birthday.
13. Recognising when sick children need treatment outside the home and seek care from appropriate healthcare providers.
14. Following advice of health workers about treatment, follow-up and referral.
15. Ensuring that every pregnant woman makes the recommended four antenatal visits and receives tetanus toxoid vaccination.
16. Ensuring that men actively participate in providing children and are involved in reproductive health initiatives.

The objectives of IMCI are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development (WHO, 1999) with the final impact of IMCI ensuring the decline of mortality and morbidity to child illnesses. WHO (2005) suggests four categories of evaluation of effectiveness indicators which are provision, utilisation, coverage, and impact. That is, adequate provision means that the services must be available and accessible to the target population, and that the quality of services must be appropriate. Once services are available, the population may make use of them, in this case by bringing their children to the health services. Utilisation will then result in a given population coverage. Finally, the achieved coverage may lead to an impact on health or behaviour. Any important shortcomings at the early stages of this chain will result in failures to achieve comprehensive goals.

According to the Ghana Demographic and Health Survey (GDHS) (2008) by the GSS, GHS and ICF Macro (2009), Ghana's implementation of the IMCI strategy involves access to suitable and affordable combinations of personal and community protective and curative measures such as ITNs and prompt, effective treatment for malaria. The GHS distributes subsidised ITNs through the child welfare and antenatal clinics of the public health facilities. Occasionally, the Ministry of Health (MOH) distributes free bed nets to pregnant women and children under five as part of immunisation campaigns and other health programmes. GHS also provides SP to pregnant women as IPT free of charge and as directly observed therapy at both public and private antenatal services delivery points across the country.

Following the emergence of chloroquine-resistant strains of the malaria parasite, *Plasmodium falciparum*, in Ghana, the GDHS reports that Ghana adopted Artesunate-Amodiaquine, an ACT, as the drug of choice for the treatment of uncomplicated malaria

across the country. Implementation of the new treatment policy began in the last quarter of 2005 with countrywide training of health care providers in both private and public sectors. Unlike chloroquine, the use of Artesunate-Amodiaquine for the home management of malaria in children less than five years of age was not recommended because of the complexity of the dosage/weight calculations and the limited data available on its safety. The GHS strongly advised caregivers of young children with the signs and symptoms of malaria to access treatment at the nearest health facility.

Unfortunately, after introduction of the new drug, adverse reactions of varying degrees of severity were reported across the country, and the situation impaired confidence of the population in the new treatment policy. The MOH and GHS have since addressed the identified lapses and revised the policy to include two alternative ACT drugs, namely Artemether-Lumefantrine and Dihydroartemisinin-Piperaquine for those who remain hypersensitive to Artesunate-Amodiaquine. The implementation of the revised policy began in 2009 with training of health workers on the revised treatment guidelines. The GHS conducts information, education, and communication (IEC).

2.3 Malaria in Ghana

Malaria is a vector-borne disease. It is caused by a parasite called Plasmodium, which is transmitted through the bites of infected female anopheles mosquitoes. In the human body, the parasites multiply in the liver, and then infect red blood cells. WHO (2010) states that four species cause the human malaria disease – Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale and Plasmodium malaria.

The history of malaria and its terrible effects is as ancient as the history of civilisation. Malaria is believed to have originated from Africa. Fossils of mosquitoes ranging 30 millions of years old show that the vector for malaria was present well before the earliest history of man. Early travellers might have likely brought strains of *Plasmodium* from Africa to the other parts of the world, a phenomenon that continues to this day as tourists bring malaria home from areas in which the disease is endemic (Newton & White, 1999).

In Ghana, malaria is the number one cause of morbidity accounting for 4060% of out-patient reports and an estimated 22% of children under-five mortality (Asante & Asenso-Okyere, 2003). Reported malaria cases represent only a small proportion of the actual number of episodes as majority of people with symptomatic infections are treated at home and are, therefore, not reported (WHO, 2005). A study by Akazili, Aikins and Binka (2007) found that the cost of malaria care is just 1% of the income of the rich households, and 34% of the income of the poor in Northern Ghana.

It is generally acknowledged that climatic variables, especially temperature and rainfall patterns, are the main factors that determine the prevalence of malaria in any geographical area (Muller *et al.*, 2006). However, GSS (2012) contends that in the highlands of Kenya, there was no evidence to suggest that the high incidence of malaria was caused by increased temperature and rainfall. GSS (2012), therefore, believes that malaria attacks are usually associated with poor social, economic and environmental conditions.

The main victims are the poor who are often forced to live on marginal lands. Malaria endemic communities are therefore caught in a vicious circle of disease and poverty (Akazili, 2002). In Ghana the vulnerability of the disease is about 50% making Ghanaians to spend considerable amount of money on mosquito control products such

as fly proof nets and mosquito repellent (GHS, 2009). The continuous increase in malaria cases is of great concern because many man-hours are lost to malaria, lowering productivity and economic livelihood. It affects the national Gross Domestic Product (GDP) in Ghana which UNICEF (2007) estimated it to be 1 to 2 percent. This worsens the poverty situation in the country since Ghana has to commit a chunk of its national budget for the eradication of malaria.

There have been several efforts by government of Ghana and other development partners in the health sector to eradicate malaria in the country.

According to the Ghana Demographic and Health Survey (GDHS) (2008) by the GSS, GHS, and ICF Macro (2009), Ghana's efforts to control malaria date back to the preindependence era. In 1999, the country adopted the Roll Back Malaria initiative and has since been implementing a combination of curative and preventive interventions.

2.4 History of IMCI

In the past decades, major progress has been made to reduce and contain childhood mortality and morbidity through several strategies. The strategies started with the Alma Ata Declaration in 1978 which was the primary health care approach that promoted community participation and inter-sectoral collaboration as key strategies towards the attainment of "Health for All" by the year 2000. UNICEF (1999) reported that the implementation of the Growth monitoring, Oral Rehydration Therapy (ORT), Breastfeeding, Immunisation, Food, Female Education, and Family Planning (GOBI-FFF) strategy was a major factor in the "Child Survival Revolution" resulting in improved immunisation status to 80% in 1990, improved use of ORT and nutrition promotion world-wide. Added to these, was the organisation of the World

Summit for Children where world leaders committed to the improvement of the health and nutrition status of children, and the implementation of the Bamako Initiative, community based care, community based nutrition intervention, the Baby Friendly Hospital Initiative in the 1990's.

Despite the efforts to improve child health, mortality rates were still unacceptably high. At least, three out of four of children who were taken to health facilities were suffering from one of five conditions: malaria, malnutrition, measles, ARI and diarrhoea (WHO, 1999). A lot was again learnt from the introduction of disease-specific control programmes such as the Control of Diarrheal Diseases (CDD), ARI programmes, and the Expanded Programme on Immunisation (EPI) (UNICEF, 1999; WHO, 1999). However, there still existed a considerable overlap in the signs and symptoms of several of the major childhood diseases, and a single diagnosis for a sick child was often inappropriate.

Tulloch (1999) noted that surveys of the management of sick children revealed that many were not properly assessed and treated and that their parents were poorly advised. Additionally, technical limitation of diagnosis and treatments based on disease-specific control programmes, the presence of multiple disease-specific programmes contributed to a number of administrative, political and technical difficulties in the delivery of health services. In response to the progress and problems in child survival and nutrition strategies, WHO and UNICEF started developing the IMCI strategy in 1992 and launched it in 1996.

Implementation of the IMCI strategy began in 1995 when a small number of countries expressed interest in trying out the approach. IMCI was first field-tested in Tanzania in 1995 and later introduced to six other countries. By the end of June 1999, 63 countries had started to implement the strategy. Twenty countries (first phase) were

just starting to explore the process while 31(second phase) were already adapting the generic materials to their needs or had completed this step and were training health workers in selected districts. Twelve countries (third phase) had moved into a phase of expansion with the aim of achieving broad coverage with training and of introducing the other components of the strategy (Tulloch, 1999). WHO (2005) indicates that the IMCI initiative was expanded to 79 countries as of June, 2000. By

December 2002, IMCI had been introduced in 109 developing countries.

For many years, presumptive management of malaria was practiced in lowincome countries because of the lack of laboratory facilities, the availability of cheap anti-malarials and the need to avert deaths through early initiation of treatment (Amexo *et al.*, 2004). The presumptive diagnosis of malaria to manage malaria was premised on (1) The high levels of transmission and associated morbidity and mortality; (2) The availability of affordable, yet effective anti-malarials; and (3) The lack of appropriate diagnostic tools.

However, Bell and Peeling (2006) stipulate that the approach led to the overdiagnosis of malaria and the overuse of anti-malarials, with attendant development of strains of the parasites that are resistant to previously-used anti-malarials IMCI is continually refined through research. In 2010, WHO issued revised malaria treatment guidelines that recommend test-based management of malaria in all transmission settings and across all age-groups. The guidelines were revised to include better clinical signs to improve the sensitivity of diagnosis for severe illness and better signs to identify children who require hospital referral. The revised IMCI relies on case detection using simple clinical signs and empirical treatment. McCombie (2002) cites that as few clinical signs as possible are used. Thus, all suspected cases of malaria are to be

diagnosed using microscopy or RDTs and that treatment should be guided by that diagnosis.

In support of this paradigm shift, in 2012, the United States (US) President's Malaria Initiative (PMI) initiated MalariaCare, a five-year partnership led by PATH and supported by Medical Care Development International, Population Services International, and Save the Children in US. MalariaCare is funded by the US Agency for International Development (USAID) under PMI. The overall goal of MalariaCare is to scale up high-quality diagnosis and case management services for malaria and other fever-causing illnesses (USAID, 2014). A key element of Malaria Care's strategy is to reduce barriers to improved case management through policy adjustments and behaviour change interventions among decision-makers, health care providers, the community, and patients and caregivers, known as Applied Behavioural Communication.

2.5 Arguments on the RDT-based IMCI

In early 2010, WHO issued revised treatment guidelines that called for a shift from the presumptive to the test-based approach. Basically, all suspected cases of malaria were to be confirmed with rapid test before treatment was initiated. This revision effectively brings to an end an era of clinical practice that span several years. The shift has attracted several debates around the globe.

2.5.1 Justification for the RDT-based IMCI

Arguments in favour of the shift to test-based management of malaria include the fact that malaria transmission has been declining in areas previously considered to be very high; due to emergence of resistance cheap anti-malarials have been replaced with the relatively more expensive ACT; smear microscopy is no longer the only means

of confirming the diagnosis of malaria since accurate and reliable rapid diagnostic tests (RDTs) are available; a policy of test-based management of malaria will lead to improvement in the management of non-malaria febrile illnesses within the context of IMCI (Bell & Peeling, 2006).

Proponents of RDT-based IMCI believe that the factors that justified the presumptive approach were no longer valid. Malaria transmission, originally high, has been declining and affordable anti-malarials were no longer effective and had been replaced with the more expensive ACT. They also argued that smear microscopy was no longer the only practical means of confirming the diagnosis of malaria at the point of care due to the availability of malaria RDTs (Gosling, Drakeley, Mwitwa & Chandramohan, 2008). They further argued that test-based approach would lead to improvement in the management of non-malaria febrile illnesses (Graz *et al.*, 2011).

2.5.2 Justification against the RDT-based IMCI

Arguments opposing the shift to test-based management of malaria have included the fact that there is insufficient evidence that malaria transmission is declining and will remain on the decline; the inadequacy of the health systems in malaria-endemic countries to ensure continuous availability of quality-assured RDTs; there is insufficient evidence on the safety of restricting ACT to test-positive cases; and that a policy of test-based management of malaria will not necessarily lead to improvement in the management of non-malarial febrile illnesses (Graz *et al.*, 2011).

Those who opposed the shift to test based management argued that there was insufficient evidence that malaria was on a sustainable decline. They questioned the capacity of malaria-endemic country health systems to sustain stock of qualityassured RDTs. They further believed that there was insufficient evidence on the safety of

restricting ACT to test-positive cases and that a policy of test-based management of malaria would not necessarily lead to improvement in the management of non-malarial febrile illnesses.

With such high levels of malaria-related morbidity and mortality, it was considered neither cost-effective nor safe to routinely distinguish malaria from nonmalaria cases, and restrict anti-malarial drugs to only confirmed cases, particularly where the attempt to do so could lead to rapid clinical deterioration and possibly death.

The lack of easy-to-use, accurate and reliable malaria diagnostic tools was another important justification for acceptability of the presumptive approach (Gething, Kirui, Alegana, Okiro, Noor & Snow, 2010). Blood smear microscopy using Giemsa stain techniques which had been the mainstay of parasitological confirmation of malaria for many years, was too elaborate, technical, and expensive to set-up and maintain in all primary care facilities and was time-consuming. Gething *et al.* (2010) assert that electricity or an alternate source of power, and clean water is needed, neither of which are reliably available in most parts of sub-Saharan Africa where primary care facilities are situated. The availability of skilled microscopists to prepare and read slides accurately and reliably is an added challenge in low and middle-income countries. A diagnostic tool that could be easily and rapidly applied to many patients within a short time was needed. Such a diagnostic test needed to be one that both professional and non-professional health workers could perform.

2.6 Awareness level of caregivers on presumptive approaches in malaria management

Household responses to illness are influenced by socio-economic and cultural factors and ease of access to treatment. In sub-Saharan Africa, rural and urban

population differ demographically, in socio-economic and cultural composition, and in proximity to formal and informal treatment sources. The strategies for combating malaria focus on reducing mortality and morbidity through early diagnosis and prompt treatment. Uncomplicated malaria has fever as a key symptom, but can rapidly develop into a life-threatening condition if not managed quickly.

Early recognition of suspected cases and prompt treatment is initiated at the home. However, Ahorlu et al. (2011) observed that the current ACT for malaria treatment is not widely available for home management with the concerns that it could give rise to abuse, which may lead to the emergence of *Plasmodium falciparum* resistance as with chloroquine and SP. Prompt and appropriate treatment will, however, be influenced by factors related to cost, availability and cultural beliefs about the causes and effective cures (Graz et al., 2011).

Fawole and Onadeko (2001) documented the knowledge and home management practices of 376 mothers and care givers of under five children on malaria fever. The results revealed that both the knowledge and case management practices were poor as only 46.8% knew how malaria was transmitted. Of those who knew malaria could be prevented, clearing of bushes and gutters was the commonly stated method (21.8%), followed by the use of traditional herbs. The elders and friends were stated to be the major source of knowledge about malaria by mothers (37.5%). Knowledge scores was significantly higher in older mothers, among the educated, and skilled mothers.

As regards practices, self-medication with modern drugs were common, these drugs had been given in the home by mothers (70.5%), while “Agbo”, had been used by mothers (25.5%) before presenting at the clinic. Paracetamol was the modern drug often used (81.8%), followed by chloroquine (21.5%). However, drug treatment practices were often incorrect. Chloroquine was prescribed correctly by mothers

(26.3%), while 50.2% gave the correct dose of paracetamol. Only 4.3% of the children received anti-malarial on the day the illness began.

Mangeni (2003) carried out a study in 2002 in Uganda and indicated that caretakers' knowledge regarding the presumptive approach to malaria treatment is very low with only 29% of the surveyed respondents knowing the correct dose of antimalarial. Most respondents were aware of the anti-malarial, but did not know of the correct dosage to treat malaria.

Batega (2003) found that there is high level of preference for home treatment outside of the formal health system, as first level of treatment. Ordinary provisional stores and drug shops are favourite sources of drugs for home treatment of malaria of under five years children (Batega, 2004). The studies revealed that communities still adopt the presumptive approach to managing malaria in under five years children because the approach was generic and stocked in almost all neighbourhoods, provisional stores and shops. This was also due to the fact that caregivers, especially women lacked knowledge on the new recommended anti-malarial drug therapy.

A study by Oreagbe et al. (2004) in Nigeria found that there were nearly twice as many female caregivers as male caregivers. Majority of the respondents were found to be aware that the main cause of malaria in the communities was mosquito bites and dirty environment. It showed that the most frequently mentioned means of malaria vector control were insecticide sprays and coils, ITNs as well as clearing of bushes. Chloroquine was also the most commonly mentioned drug used to treat malaria, but the correct dosage was not known by most of the respondents. The study found that caregivers of children in the communities have poor knowledge of the cause and treatment of malaria, with those in the urban areas having better healthseeking behaviour than those in the rural areas.

Daboer et al. (2010)'s study revealed a low level of knowledge of malaria with 248 (49.6%) being able to recognise the disease and only 124 (24.9%) attributing it to the mosquito bite. The attitude of most respondents towards malaria as an illness was, however, good as 55% viewed it as a very serious illness and most (65.6%) of them would use hospitals/clinics for treatment. Majority (92.4%) of them had not heard of ACT and only 50% of those who had heard of ACT had ever used it for the treatment of malaria. Generally, respondents' knowledge of malaria and treatment seeking practices were influenced by cost of treatment, perceived safety and level of their education. Among mothers and caregivers living in slums in Jos, their ability to recognise malaria is poor. So also was their awareness and use of ACT. An improvement in their level of education and their economic power could improve their knowledge and treatment practices.

2.7 Perception and acceptability levels of caregivers with IMCI

A study by Baiden et al. (2012) revealed that 98% of the studied caregivers (3047) of under five children in the Brong Ahafo Region indicated a preference for RDT-based management of malaria over presumptive treatment. The remaining two percent either wanted the diagnosis of malaria to be based on clinical judgement or were unsure of their preference. Compared with caregivers in traditional marriages, caregivers who were single were more likely to consider RDT-based management of malaria acceptable (OR 2.12, 95% CI 1.04–4.33). About 97% of caregivers who preferred RDT-based management of malaria still preferred this approach even after attention had been drawn to the fact that it implied blood draw from their children whenever they visited the health centre with their febrile child.

Although 64% of caregivers who preferred RDT-based management indicated they would be worried if they thought their child had malaria and yet were denied ACT (on account of negative RDT results), Baiden *et al.* (2012) state that a greater proportion (76%) of those who rejected the RDT-based case management approach indicated they would be similarly worried (adjusted O.R. 0.57, 95% CI 0.33–0.98). Compared with caregivers who had never secured health insurance, caregivers who had valid (adjusted O.R. 1.30, 95% CI 1.07–1.61) or expired (adjusted O.R. 1.38, 95% CI 1.12–1.73) health insurance were more likely to be worried about their children being denied ACT in the event of an RDT-negative result. The major factor that promoted acceptability included the perception that a blood test at the health centre level represented improvement in the quality of care, and was likely to lead to improved treatment out-comes.

Lawani and Lawani (2015) showed that 54% of parents irrespective of their majority of educational qualification and age suspected malaria as the most likely cause of fever which made them act within 24 hours by administering antimalarial drugs at home without medical diagnosis. Based on the outcome of this study, there is a need for appropriate education to prevent the abuse of anti-malarial drug.

2.7.1 Factors influencing perception and acceptability of revised IMCI guidelines

The factors that positively influenced caregivers to prefer RDT-based management of malaria were the perception that it represented improvement in the quality of care at the health centre level; the belief that it provided objective assessment of what was wrong with the child; led to favourable clinical outcomes; and afforded opportunity for interaction between the health workers and caregivers. Baiden *et al.* (2012) indicated that most caregivers were highly enthusiastic about the availability of

a test for malaria at the health centres. Caregivers frequently referred to the RDT kit as a “machine” that was not available previously, but is now available.

RDT-based IMCI’s availability was perceived to represent improvement in the quality of services delivered at the health centres in terms of both accurate diagnosis and treatment.

Favourable clinical outcome was perceived by many caregivers to be an outcome of use of the “machine” to guide prescriptions. Most caregivers agreed with the notion that the blood test result provided objective evidence on the condition of the child. It was felt that this relieved caregivers of the burden of responsibility when reporting the symptoms of the child at the facility.

The authors revealed that the lucidity and enthusiasm with which caregivers described the procedures of the test suggested a high level of interest. The enthusiasm extended to the blood test that was used to determine haemoglobin levels. It also pointed to an appreciation of the level of interaction between caregivers and the fieldworkers who conducted the test. The awareness among some caregivers that fever could be due to causes other than malaria, and how RDT made such distinction clearer, also promoted a positive appreciation of RDT-based management of malaria. The few caregivers who had misgivings about RDT-based management of malaria raised issues related to the effect of blood draw and apprehension that the test could rather be a test for HIV/AIDS. The study found that rejection of RDT-based management of malaria was also influenced by caregivers’ pre-conceived notions of what could be the cause of a child’s illness. The dominant notion was that the presence of fever was necessarily indicative of malaria and therefore warranted malaria treatment. In addition, caregivers’ prior knowledge that a child had been bitten by a mosquito in the days leading to the illnesses led them to hold to the notion that the

child's illness ought to be malaria. A negative RDT result in such instances made caregivers to believe that the result was probably false.

Drugs' retailers play an important role in the perception levels of caregivers in the management of childhood fevers under the IMCI guidelines. Foster (1995) points out that the extent of self-medication with proprietary drugs from retailers varies across the continent and has been reported to be as low as 19% in Guinea to as high as 94% in some parts of rural Ghana. Reasons for reported use of the retail sector for fever management are diverse, ranging from ease of geographical access to economic accessibility and perceived failures of the formal health sector (Noor, Zurovac, Hay, Ochola & Snow, 2003).

On the acceptance of ACT denial based on an RDT-negative also raised the comments. Most caregivers did not consider the denial of ACT on account of a negative RDT result a problem. The major factors that enhanced acceptance of the revised IMCI strategy were caregiver confidence in the "infallibility" of RDTs, the perception of favourable outcome of treatments that are based on the RDT results, and the knowledge that fever could have other causes.

2.8 Challenges caregivers encounter in IMCI

The IMCI guidelines help in reducing child morbidity and mortality, but there are challenges to rolling out IMCI effectively.

2.8.1 Supply of services

2.8.1.1 Adaptation of materials and training/retraining of health workers:

Adaptation of materials is an intensive process requiring time, resources, and coordination as well as involving all the various stakeholders at country level (Bell & Peeling, 2006). Microscopy services may not be used strategically and may become

overwhelmed. Where microscopy services are in short supply, Bell and Peeling suggest that they should be reserved for investigation of treatment failure and for diagnosis and monitoring of severe malaria. Retraining IMCI-trained health workers according to newly adapted materials has resource implications in terms of direct costs and also opportunity costs for workers taking time away from service provision.

2.8.1.2 Inadequate human resource:

According to USAID (2014), one of the challenges of IMCI is reaching a large number of health workers through use of a time-intensive and costly course. For this reason, some of the IMCI courses are done on short term basis to reach many health workers. McMorrow *et al.* (2008) contend that at least three days are needed to train health personnel on the young infant guidelines. They advise that the quality of care cannot be assured until evaluation is carried out. There can also be a disconnection between staff who run diagnostic tests and those who prescribe treatment. Due to heavy workloads and crowded clinics, sometimes clinicians do not wait for the diagnostic result (this is especially a problem with microscopy, but can be with RDTs as well). So, while the clinician may order the test, he or she may simultaneously prescribe ACT presumptively because of pressure to see more patients and patient demand for therapy. This, especially is a challenge in private pharmacies and drug shops.

2.8.1.3 Attitude of health workers

Caregivers mostly complain about the attitude of health workers and how actions such as shouting and blaming caregivers for the ailments of their children sometimes compels them to speaking up during consultation.

2.8.1.4 Inadequate financial resources:

There may also be challenges in finding adequate numbers of children under age five, especially sick ones, for demonstration in some health facilities, which limits the choice of training sites. Gosling *et al.* (2008) specify that the very nature of illness in such babies may also prevent close observation and handling. Hence additional creative methods, such as videos, may need to be employed. Additionally, taxes and tariffs on malaria diagnostics and drugs increase costs for consumers and caregivers.

This may affect the private sector more than the public sector.

2.8.1.5 Multiple policy and regulatory barriers to availability of RDTs and ACT: In some countries, community health workers, other frontline health workers, and drug dispensers are not allowed to draw blood and therefore cannot use RDTs. Some providers may be allowed to distribute ACT, but not to use RDTs, so the universal diagnosis and treatment strategy breaks down (Gosling *et al.*, 2008). Some governments do not allow private-sector sales of RDTs and ACT, even though a significant proportion of health care is provided by the private sector.

2.8.1.6 Inadequate quality of care at community level:

Pagnoni (2009) states that the implementation of IMCI strategies is likely to face hurdles whereby government policies and professional bodies do not allow community health workers to be responsible for the treatment of sick babies, even where access to care at facilities is low. Some governments still do not actively promote universal diagnosis and treatment at all levels, and especially at the community level, where a high proportion of malaria cases occur. Updated diagnostic policies at the national level may not be implemented at regional/local levels. Sometimes governments choose to phase in new approaches; that can take time and lead to confusion. This suggests that children are constrained by this policy to receive care at the community level.

Consequently, tools for building capacity for home visits and community activities by community health workers and other community health care providers are under development.

In most situations, Muller, Traoré, Kouyaté, Yé, Frey, Coulibaly and Becher (2006) argue that IMCI has been implemented to include infants and children in health facilities, but is not proactive in reaching children in the community, which is especially detrimental to under age five children health. Complementary strategies such as home visits by facility-based or community-based health workers to provide routine healthcare may be necessary.

2.8.1.7 Failure to fully transition from presumptive diagnosis of malaria:

USAID (2014) found that a key barrier of IMCI strategy continues to be failure to fully transition from presumptive diagnosis of malaria to a system of universal testing of suspected malaria cases, followed by diagnosis-guided treatment of disease and subsequent tracking of malaria patients. The study recommends that it is imperative to refresh malaria control strategies at all levels of the health care system and to move beyond presumptive diagnosis. This is crucial in both public- and private-sector programmes; the private sector is even less likely to use RDTs than the public sector. McMorro *et al.* (2008) also found that for decades, the malaria community has told parents and providers that fever is malaria, so it is not surprising that there is inertia against changing the paradigm.

2.8.1.8 Regulation of drugs:

According to Gething *et al.* (2010), regulation of drugs may be insufficient. Ineffective or inappropriate drugs still appear on essential medicines lists and are prescribed (e.g., chloroquine in countries without *Plasmodium vivax*). Regulation of pharmacies and

drug sellers may be insufficient in many countries. USAID (2014) also reports that there is proliferation of fake malaria drugs. USAID, the American Society of Tropical Medicine and Hygiene, and others are focusing on monitoring the problem and working with producer countries.

2.8.2 Demand for care

2.8.2.1 Insufficient knowledge on revised IMCI guidelines:

Most caregivers lack adequate knowledge about symptoms of severe malaria. This, according to Alex-Hart and Frank-Briggs (2011), is one of the challenges to promoting case management of severe malaria fevers. This is also blamed on lack of adequate training in IMCI and detection and treatment of severe malaria. Families usually have insufficient knowledge about seeking care for sick children (Pagnoni, 2009). This is further complicated by traditional practices that keep mothers and babies secluded in their homes for varying periods of time. In addition, they often stay in dark or poorly lit rooms which make it difficult to detect any problems, especially in the baby. Caregivers often do not request or demand malaria diagnosis since they may not be aware that they should request it. USAID (2014) recommends that there is a need to increase awareness and improve care-seeking behaviour for sick under age five children among the community.

2.8.2.2 Complexity of the revised IMCI guidelines:

Another challenge of IMCI, according to Muller *et al.* (2006), is to combine these lessons into a single more efficient and effective approach to managing childhood illness. Alex-Hart and Frank-Briggs (2011) also state that caregivers may not comply with malaria treatment, not understand how to comply, not know what to ask for, be afraid of malaria drugs, and/or discontinue treatment early. Sometimes, rather than

completing all doses, patients or caregivers save ACT for future use, or for use by other people with fever (Oreagbe *et al.*, 2004). This is also a clear indication of under dosing. Mostly, caregivers do not take patients to the hospital when danger signs are present. This results in treatment-seeking at the community level, where some complications cannot be properly managed.

2.8.2.3 Low confidence or distrust in RDT results:

Sometimes caregivers distrust RDT results. Batega (2004) mentions that caregivers are concerned that malaria may still be present following a negative RDT result. Some assessors compare the RDTs with substandard microscopy and perfectly good RDTs have been discredited. This contributes to lack of trust in the tests. Even with good microscopy, because RDTs pick up antigens not detectable through microscopy, there can be dissonance between the two diagnostic results.

Caregivers routinely pressure health workers for ACT, even after a negative RDT as they may not feel satisfied leaving the clinic without medications after their febrile child is diagnosed with a cold or viral infection (Oreagbe *et al.*, 2004). It can be difficult for providers to resist pressure from caregivers to provide anti-malarials even after a negative diagnosis. This especially may be a problem when providers are motivated by profit. Lack of availability of alternate treatments for other infectious/febrile conditions likely contributes to this problem, since ACT may be all that is available to the health worker who feels pressured to give something.

Like caregivers, sometimes health workers distrust RDT results and are concerned that malaria may still be present following a negative result. Some health workers feel threatened to use RDTs to manage malaria in children under five years. They are concerned that using RDTs will cause them to miss malaria cases. Without

continuing quality assurance for RDTs, especially in the products themselves and the way they are used, quality could slip and confidence in the tests could erode.

2.8.3 Linking community care and health facility care

Another problem that faces the implementation of the revised IMCI strategy is that connections between communities and health facilities are often weak. There is neither adequate supportive supervision from facilities to communities, nor an effective referral system from the community health workers to the first-level health facility (Pagnoni, 2009). The IMCI algorithm involves the referral of young infants with severe problems to a higher level facility. However, considerable effort is needed to achieve timely referral and ensuring that referral centres can care for ill under age five children. Given that severely ill children under age five identified at the community or first-level health facilities have a high risk of death within hours, it is extremely important to develop and strengthen connections between the community and the facility. Health facilities and communities must work together to improve the quality of health services and increase their use. Selected community members can take part in the non-technical components of supervision.

Although there are often a number of different organisations working at the community level, they usually work in a fragmented manner. For maximum impact, all efforts towards reducing children under age five deaths should be coordinated and approaches harmonised. There should be an open line of communication between the various players in the community and other levels. Governments should also coordinate community-based interventions undertaken by the various partners.

2.8.4 Funding and procurement issues

The implementation of the revised IMCI strategy faces funding problems. This is because more funding, and more stable funding, is needed for malaria diagnosis, treatment, and tracking. External funding for training and scale-up often is erratic or not sustainable.

The implementation also faces procurement problems. As RDTs in a given country may be provided by different sources, and because there is little standardisation across RDTs, health workers may receive different RDT brands and formats and this can be confusing. Sometimes old or inappropriate formats are procured. Training programs may not cover all the types of RDTs a health worker may encounter. It is crucial to build coordination mechanisms to deal with this challenge. It also is crucial to encourage manufacturers to harmonise RDT formats. Some countries may prioritise buying ACT over RDTs due to limited funding, leading to a breakdown of the universal diagnosis and treatment approach.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the processes by which the study data were gathered and the findings were obtained. It includes the research design, study population, sample and sampling procedure, research instrument, method of data collection, field challenges, and data analysis. The chapter also gives a brief introduction of the study area.

3.1 Study area

The Amansie West District is located in the south-western part of the Ashanti Region. It shares boundaries with Bekwai Municipality and Atwima Kwanhoma Districts to the east, Atwima Nwabiagya to the south, all in the Ashanti Region. It also shares boundaries to the north with Upper Denkyira in the Central Region and Bibiani-Anwiaso-Bekwai in the Western Region of Ghana. It is situated between latitudes 6° 00 N and 6° 45 N and longitudes 1° 30 W and 2° 15 W. The District covers an area of 1364sq km which represents about 5.4 percent of the total land area of Ashanti Region. The population of the district is estimated to be 134,331 with an average household size of 5.2.

Manso Nkwanta is the District capital. The District has one Hospital at Agroyesum; seven Health Centers, two maternity homes, and 12 CHPS compounds. Table 3.1 presents the distribution of health facilities by sub-districts.

Table 3.1: Distribution of health facilities by sub-districts

Sub district	Hospital	Health centre	Maternity home	CHPS	Total
Agroyesum	1	-	-	2	3
Antoakrom	-	1	1	1	3
Adubia	-	1	1	1	3
Essuowin	-	2	1	-	3
Keniago	-	-	-	3	3
Manso Nkwanta	-	2	-	-	2
Tontokrom	-	1	-	4	5
Total	1	7	2	12	22

Source: District Health Directorate, 2014

The District is organised under 12 area councils. Malaria is the highest number of cases reported at the OPD section, with more than 50,000 cases annually. Malaria also causes the highest number admissions in the district with an average annual report of 3000. Figure 3.1 presents the top 20 OPD diseases in the district.

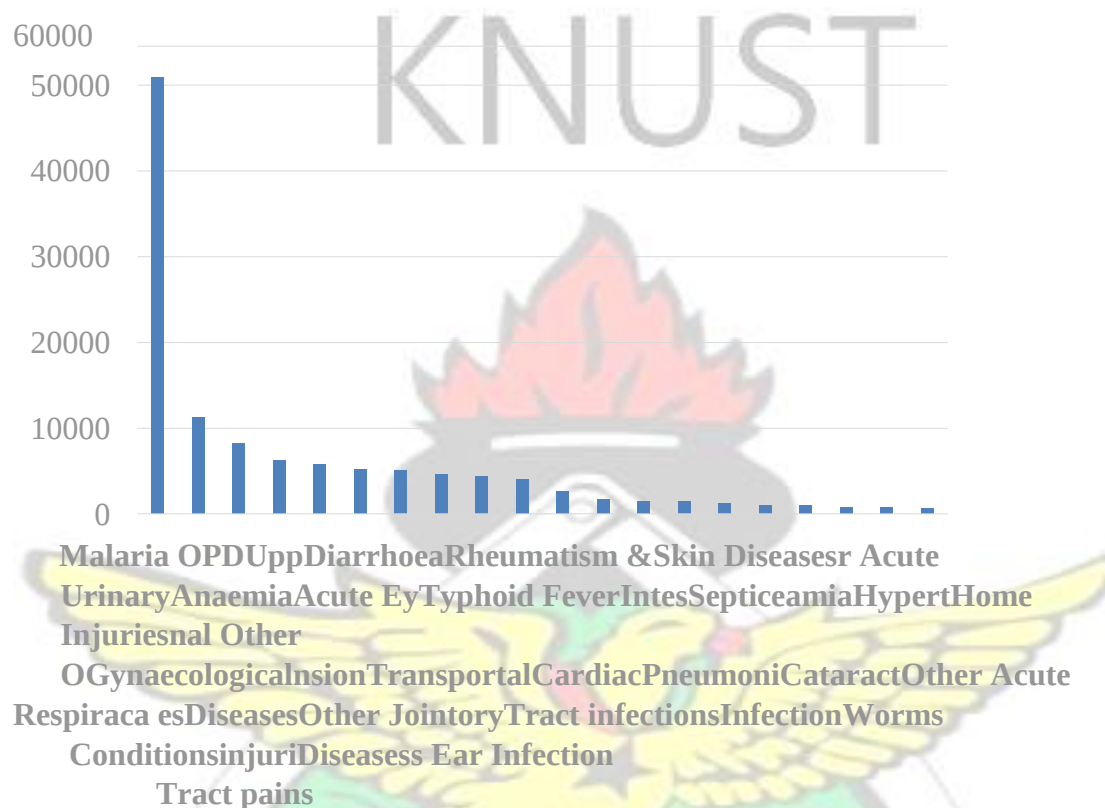


Figure 3.1: Top 20 OPD diseases in the District

Source: District Health Directorate, 2014

Figure 3.2 presents top 10 causes of hospital admission in the District.

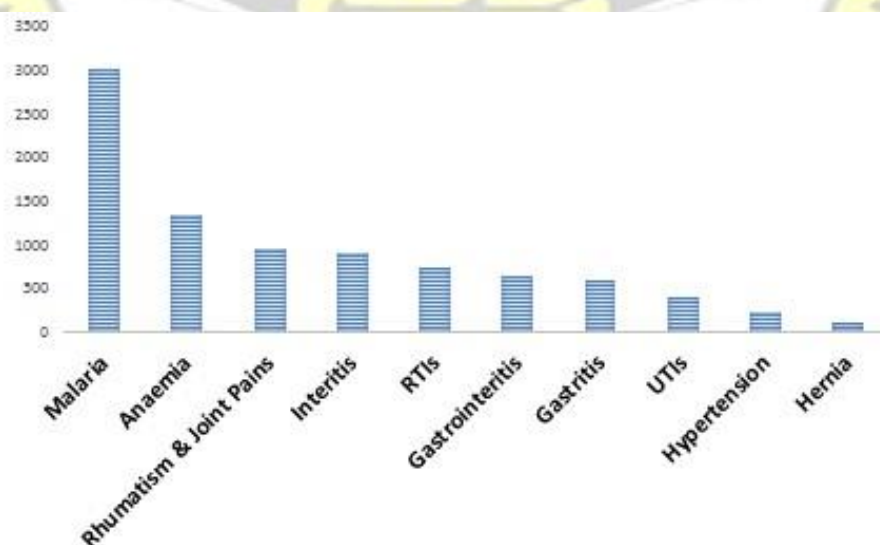


Figure 3.2: Top 10 causes of hospital admission in the District

Source: District Health Directorate, 2014

Table 3.2 presents OPD malaria cases in the District

Table 3.2: OPD malaria cases in the District

Indicator	2010	2011	2012	2013	2014
Total malaria cases	48,728	69,510	59,733	59,936	50,943
Confirmed only	10,814	26,418	14,373	26,241	30,709
Malaria < 5yrs	11,999	24,428	22,178	24,176	21,437
Confirmed only	2,560	10,622	6,377	11,440	14,941
Malaria > yrs	22,608	38,665	37,555	35,760	29,506
Confirmed only	10,814	26,418	7,996	24,320	15,768
Malaria in pregnancy	1,676	1,843	2,208	2,708	2,690

Source: District Health Directorate, 2014

Figures 3.1, 3.2 and Table 3.2 show the seriousness of malaria in the District.

Agriculture is the mainstay of the people in the district in terms of output, employment and income. Food crops such as Yam, Plantain, Cocoyam, Cassava, Maize, Legumes and Vegetable are widely grown in the District. Plantation crops such as Cocoa, Coffee, Citrus and Pear are also produced in the District. It is estimated that about 70% of the population are farmers, while 22% are engaged in mining.

Geography of the District

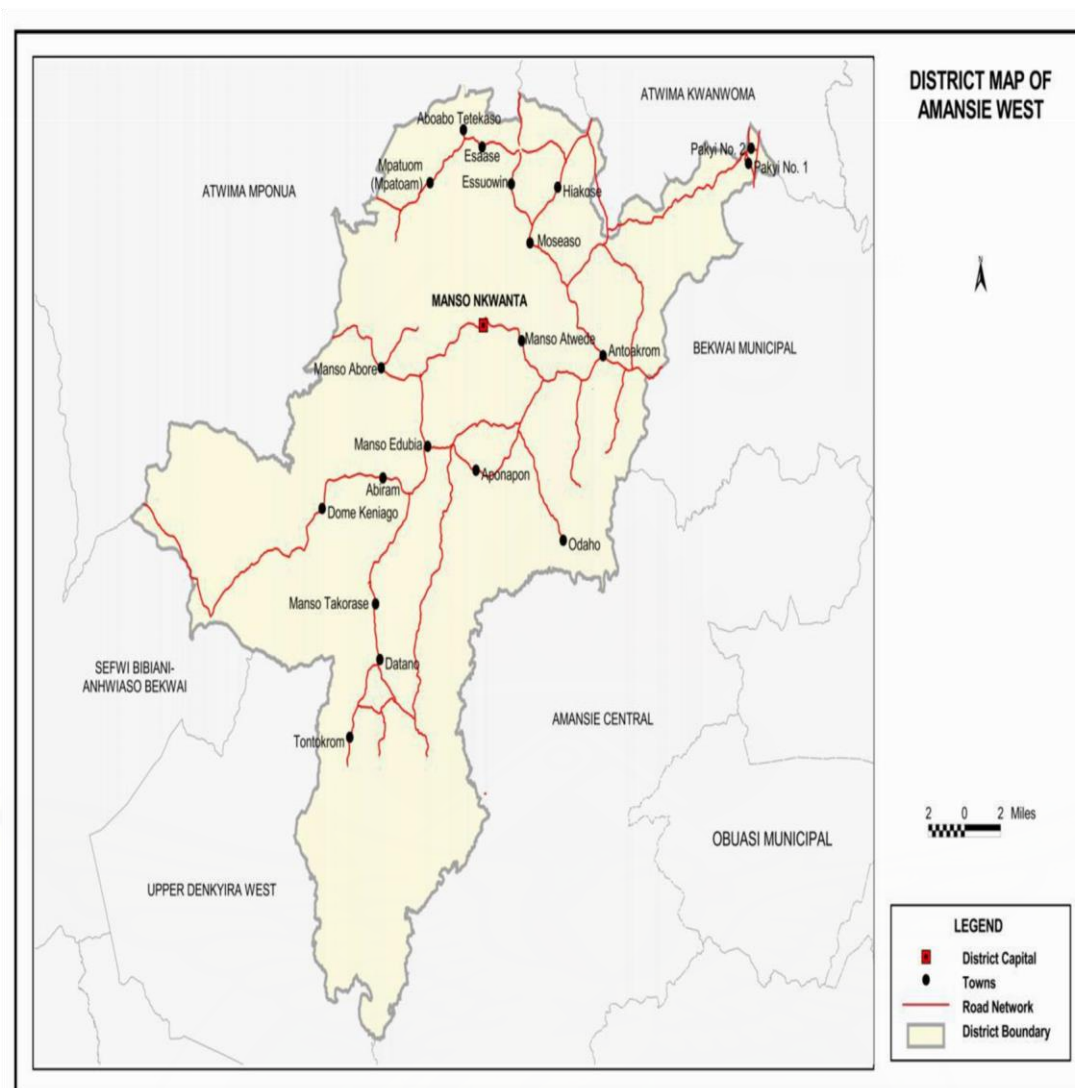


Figure 3.3: Map of Amansie West District

Source: Ghana Statistical Service, Geographic Information System (GIS)

The District has two rainy seasons, which makes all year round farming possible. The major season is between March and July, whilst the minor season is between September and November. The mean monthly temperature is 26°C and the mean annual rainfall ranges between 1600 - 1800mm. This creates an atmosphere conducive for the breeding and growth of the anopheles mosquito, making malaria one of the highest reported illnesses in the district.

The district lies entirely in the rainforest belt. It exhibits most semi-deciduous characteristics. There are four main forest reserves in the district. These are Oda River Forest Reserve, Apamprama Forest Reserve, Gyeni River Forest Reserve and Jimira Forest Reserve. The topography of the district is generally undulating with an elevation of 210m above sea level. The most prominent feature is the range of hills, which stretches across the north-western part of the district, especially around MansoNkwanta and Abore. These hills have an elevation of between 560m and 630m. The district is drained in the north by the Offin and Oda rivers and their tributaries such as Jeni, Pumpin and Emuna.

3.2 Study design

The study adopted the descriptive cross-sectional survey design. A descriptive cross sectional study design is a scientific method which involves describing, recording analysing and interpreting conditions that exists (Creswell, 2012). It involves observing and describing the behaviour of a subject without influencing it in any way. Plano (2010) added that descriptive study design is used to describe systematically the facts and characteristics of a given population or area of interest. It also attempts to discover relationships between existing variables. The study adopted the descriptive study design to describe the level of awareness and acceptability of the tenets of the revised IMCI to ensure effective malaria management among caregivers.

A cross-sectional study design is one in which the prevalence of an exposure and/or an outcome are measured in a given population at a specified point in time. The data may be analysed to look for an association between the exposure and the outcome. It describes the current nature and conditions that exists without tracking changes in the behaviour of a phenomenon as time changes. This design was, therefore, adopted to

assess the effectiveness of the revised IMCI strategy in malaria management among caregivers at a single point in time. In other words, the study did not track changes in the level of awareness or acceptability among caregivers over time. Accordingly, the findings of the study represented a snapshot assessment of the effectiveness of the revised IMCI strategy in malaria management in the Amansie West District.

3.3 Study population

The population of the study comprised household heads and community health workers in the Amansie West District. Per the 2010 Population and Housing Census Report, there are a total of 25,833 household heads and 84 community health workers in the District. The total population for the study was, therefore, 25,917. The sampling frame for the study, therefore, comprised a list of household heads in the District. Household heads were used as the sampling units because they possess the economic power of the households and take final decisions on health care seeking avenues for household members.

3.4 Pre-testing

In the month preceding the start of the study, questionnaires that have been developed were pre-tested at Semanhyiakrom in the Amansie West District. Fifteen (15) respondents were made to complete questionnaires and were asked if they had any problems understanding them. Some wording in the instructions and questions were subsequently modified to improve clarity before the actual study. A cronbach alpha test was run for the questionnaire to analyse the extent of the validity of the questions. From the test, a cronbach alpha value of 0.776 shows that about 77.6% of the issues

in the study were adequately and reliably captured or addressed by the research questions.

3.5 Ethical consideration

An approval for the conduct of this study was first obtained from the Committee on Human Research Publications and Ethics (CHRPE) of the School of Medical Sciences, Kwame Nkrumah University of Science and Technology.

Following approval, letters of introduction from the Department of Population, Family and Reproductive Health was sent to the Health Directorate of Amansie West District. Furthermore, written informed consent was obtained from each selected caregiver before questionnaires were administered.

3.6 Sampling

According to Krejcie and Morgan (1970), a population of 25,917 requires a sample size of 379 to ensure representativeness. Both random and purposive sampling procedures were employed to sample respondents for the study. Multi-stage random sampling procedure was used to sample the 120 household heads, while purposive sampling was used to sample 240 community members and 19 community health workers for focus group discussion. With the multi-stage sampling technique, the communities were first organised under the 12 area councils of the District.

Second, the capital for each Area council was purposively sampled for the study. The aim was to obtain a fair and spatial representative view about the effectiveness of the revised IMCI strategy in malaria management in the district. The sampled communities were Manso Nkwanta, Atwere, Antoakrom, Adubia, Ahwerewa, Aboe, Mpatuam, Esuowin, Datano, Mim, Keniako, and Watreso. Thirdly, 10 household heads were randomly sampled from each of the selected communities. The

list of household heads for the various communities was obtained from District Statistical Office. The list was entered into Microsoft Excel 2010 Professional Edition. The Rand function in Excel was used to shuffle the names of a particular community to make sure that they were not in any pre-determined position. The first 13 names were sampled for the study. Thirteen names were sampled from each community to cater for non-response. However, the actual number of household respondents interviewed from each community was 10. The process was repeated for the other 11 communities until all the 120 household respondents were sampled. Thus, 120 household questionnaires were administered.

Two focus group discussions, one for males and the other for females, were held in each community. The aim was to obtain views on the two gender groups about the revised IMCI strategies in malaria management. The focus group discussions were also used to ascertain the effectiveness of the revised IMCI strategies in improving community health practices. Each focus group comprised 10 individuals. Membership of the focus group discussion comprised two church leaders, two opinion leader, two traditional leaders, two people with extensive knowledge in herbal medicine, and two Unit Committee members.

Two focus group discussions were also organised for community health workers in the district. The focus group discussions for community health workers were held at Agroyesum (where the district office is located) and Manso Nkwanta (the district capital). Ten community health workers were organised for the Agroyesum focus group discussion, while nine members were organised for the Manso Nkwanta's discussion. Thus, a total of 26 focus group discussions were held for the study.

3.7 Data collection tools

Questionnaire and focus group discussion guides were used as instruments to gather data from the respondents. Questionnaire was used to enhance the response rate of the study. The questionnaire was organised into four sections. The first section was on the background characteristics of the respondents. Some of the issues considered under the section were gender, age and level of education. The second section was on the awareness level of caregivers on presumptive approaches in malaria management. Issues that were captured under the section included knowledge on malaria symptoms, level of acceptability of the presumptive activities in malaria management, and knowledge on household strategies to reduce the incidence of malaria in ward(s).

The third section was on the level of acceptability of malaria management strategies under the revised IMCI. It considered issues such as sleeping under ITN, maintaining good environmental sanitation, having basic drugs like paracetamol to manage sick ward's temperature before going to hospital, mode of keeping basic drugs, most preferred avenue for seeking malaria treatment, and factors considered before taken sick wards to a health facility. Section four was on the challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI. Some of the issues considered under the section were cost of seeking treatment in health facility, distance to health facility, and poor community organisation to maintain good environmental sanitation. Both closed and open-ended questions were employed for the study.

3.8 Data collection techniques

Five research assistants were trained for the data collection exercise. The aim was to ensure uniform interpretation of the questions and good conduct of interviewers.

The research team was divided into two, one per a community, to speed up the data collection process. The researcher first conducted a reconnaissance survey to sensitise the community leadership about the intended exercise. This helped to improve the acceptability of the research team by community members during the data collection exercise. The research team first reported to the Assembly persons for introduction. The Assembly persons sometimes supported the research team in identifying the respondents as well helped to organise members for the focus group discussion.

The research team also sought the consent of the respondents before carrying out the data collection exercise. Thus, the respondents were made to sign a consent form to demonstrate their willingness to participate in the study based on the information provided for them. The aim was to ensure that the respondents participated from their free will to improve the validity and reliability of their responses. After securing their consent, the research team asked the questions and recorded their responses accordingly. The focus group discussions were organised after the household interviews. One member of the research team was responsible for asking the questions and moderating the group, while another one was recording the answers.

3.9 Limitations

Some of the limitations were disruptions from rains, difficulty in accessing some communities due to bad road network, reluctance of some of the respondents to participate in the study, and busy working schedule of some of the respondents. Thus, the study had to be postponed on some occasions because of continuous rains. The rains also made some of the communities difficult to access. Some of the focus group discussions were shortened because of rains. This affected the quantity and quality of responses generated from some of the focus group sessions from the District. In other words, the researcher did not obtain information from issues that were not dealt with

under such focus group discussion. This could affect the quantity of information to be generated from some of the communities and to be discussed in the study.

3.10 Data analysis

The field data were first edited to check for consistency and accuracy of recordings. Each tool was given an identification number to avoid any double entry or data loss. The gathered data from the questionnaire was processed using quantitative techniques with the use of Statistical Product and Service Solutions (SPSS) version 21. Descriptive statistics such as frequencies, percentages, means and standard deviations were used to analyse the data. Chi square test of independence was used to examine statistical significance of relationships between background variables and other variables. An error margin of five percent (0.05) was used to draw conclusions on all inferential analyses. Frequency tables and charts were used to present findings of the study. Transcription was done for data from the focus group discussion guide. Content analysis was used to analyse responses from the focus group discussion. This was done by relating the responses from the focus group discussion with issues in the literature and further providing the implications of the results.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the results of the data gathered from the field. The chapter is organised under the background characteristics of respondents, awareness level of caregivers on presumptive approaches in malaria management, level of acceptability of malaria management strategies under the revised IMCI, and challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI.

4.1 Background characteristics of respondents

This section presents the background characteristics of the respondents. It includes gender, age, level of education and type of occupation. From the study, the majority (69.2%) of the respondents were males, while 30.8 percent were females. This is in consonance with the socio-cultural roles of the gender groups, with males mostly considered as the heads of household. Table 4.1 presents the age cohorts of the respondents.

Table 4.1: Age cohorts of respondents

Age cohorts (years)	Frequency	Percent (%)
21 – 30	17	14.2
31 – 40	32	26.6
41 – 50	39	32.5
51 – 60	21	17.5
Above 60	11	9.2
Total	120	100.0

Source: Field survey, 2015

Table 4.1 shows that 32.5 percent of the respondents were aged between 41 and 50 years, 26.6 percent were within 31 and 40 years of age, while 17.5 percent were within 51 and 60 years of age. The results show that the respondents were from varied age cohorts, which implies that the study could ascertain the levels of awareness and acceptability of caregivers in different age cohorts on the revised IMCI strategy on malaria management. The mean age of the respondents was 42.7 years with a standard deviation of 7.2. The age distribution as shown in the Table indicates that the majority of the respondents were within the active age cohorts of 31 – 50 years.

The level of education of the respondents was also examined by the study. According to Azabre (2012), caregivers with different levels of education possess different levels of understanding on health-related issues which go further to influence their mode of health practices. Results on the level of education of the respondents are presented in Table 4.2.

Table 4.2: Level of education of respondents

Level	Frequency	Percent (%)
None	19	15.8
Basic	46	38.4
SHS	31	25.8
Tertiary	24	20.0
Total	120	100.0

Source: Field survey, 2015

From Table 4.2, 38.4 percent of the respondents had basic education as their highest level of educational attainment, 25.8 percent had completed Senior High

School education, whereas 20 percent had attained tertiary educational qualifications. The attainment of the majority of the respondents on various formal educational systems is likely to improve their level of understanding and acceptability of improved practices under the revised IMCI strategy to enhance malaria management in the district. Azabre (2012) posited that caregivers with some levels of formal education easily accept modern and improved health practices compared to those without any formal educational attainment.

The study further examined the marital status of the respondents. This was necessary because Erhunet *al.* (2005) reported that caregivers with varied marital status have different psychological and economic levels to learn, accept and adopt modern health practices. The results are presented in Figure 4.1.

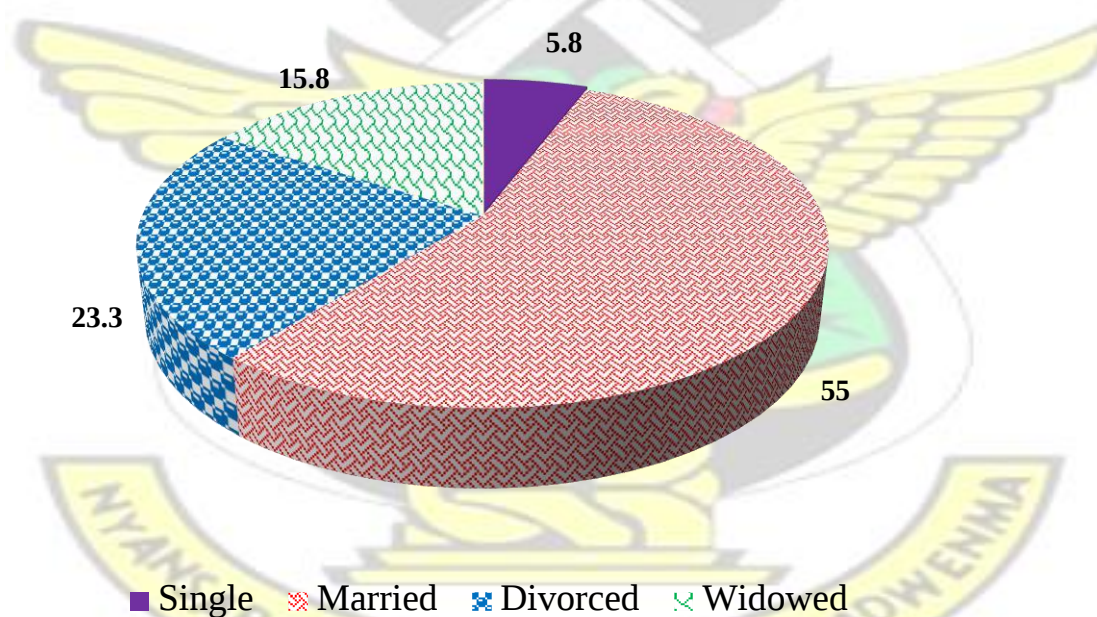


Figure 4.1: Marital status of respondents

Source: Field survey, 2015

Figure 4.1 shows that a little over half (55%) of the respondents were married, 23.3 percent were divorced, while 15.8 percent and 5.8 percent respectively were widowed and single.

The respondents were further requested to indicate their type of occupation. From the study, 33.3 percent of the respondents were farmers, 19.2 percent were artisans, 16.7 percent were civil servants, 13.3 percent were traders, 7.5 percent were unemployed, whereas 10 percent were engaged in other occupation such as driving, satellite dish installation and mining. The household size of the respondents ranges from two to 11 with a mean of 5.3 and a standard deviation of 0.71.

4.2 Awareness level of caregivers on presumptive approaches in malaria management

The first research objective sought to assess the level of awareness of caregivers on the presumptive approaches in malaria management. This was necessary because caregivers mostly try to use their experiences and local knowledge to manage malaria before sending their wards to health facilities. Some of the issues considered under the section were mode of detecting malaria among children, and awareness levels in the use of ITNs, fruits and vitamin-rich foods as well as maintaining good environmental conditions.

The focus group discussion for community health workers revealed that caregivers in the communities are educated on personal hygiene, community or environmental hygiene, family planning, pregnancy related issues, and family food nutritional issues. Others were education on accessing healthcare through formal health facilities instead of resorting to various traditional practices, effective use of contraceptives, and importance in the use of treated bed nets. However, it was admitted from the discussion that some of the caregivers use traditional medicines for child illnesses.

The community health nurses also indicated that children under five years of age rarely die in the area. Nevertheless, the major causes of death among such children were malaria, cholera, and pneumonia. One community health nurse stated that most of such cases are reported late. This shows that some of the caregivers try to use non-formal means to seek treatment for their sick wards, which result into delays in reporting at the health facilities.

From the community focus groups discussion, the main health problems in the communities were malaria, diarrhoea, cholera, coughing, skin rushes, and typhoid fever. An opinion leader stated that,

“Galamsey activities in the community have created dangerous pits, which serve as breeding grounds for mosquitoes, and other serious environmental consequences on our health”.

Thus, the lack of proper control over certain community activities has serious consequences on the effectiveness of the revised IMCI strategies on malaria management.

From the study, some of the symptoms caregivers used to detect malaria among children were increased temperature, loss of appetite, less activeness, vomiting, and loss of weight. Others were yellow eyes, diarrhoea, headache, fever, weakness of the joints and stomach upset. The implication is that caregivers first suspect malaria for every illness children are infected with.

The respondents were requested to indicate what they do when they suspect their wards have malaria. This is important to assess the seriousness the caregivers attached to the treatment of malaria among children. From the females’ focus group discussion, it emerged that the handling of malaria among children depended on the age. Children below two years are mostly bathed with warm water, and giving drugs like paracetamol,

teething mixtures, oral rehydration salt, and blood tonics to monitor the illness before taking them to health facilities, when the symptoms persist. However, some caregivers acquired drugs from local chemical shops for children above two years when they suspected malaria, while others prepare oral herbal medicine for the children, and others douche the children with herbal medicine. It is after these treatments that caregivers feel alarmed to take children to formal health facilities, when the symptoms still persist.

From some of the males' focus group discussions, it was realised that caregivers use the drug packages from the health facilities to purchase some of the drugs from local chemical shops when they suspected malaria among children. Thus, a member from the Watreso male focus group discussion stated,

“We use the packages and bottles of drugs given to us from the hospitals to procure similar drugs from our chemical sellers to treat malaria. This helps us to reduce the distance and cost to the hospital”.

The implication is that other diseases which bear similar characteristics like malaria are more likely to be reported late at the health facilities. In addition, malaria sick children are likely to be given same dosage they were given based on their weight and age when they visited the health facility, even though their age and weight may have changed significantly in subsequent illnesses. This approach from the caregivers in malaria management could cause increased resistance to malaria drugs.

All the community focus groups discussion admitted that they were satisfied with the quality of services provided by the health facilities. However, some of them indicated that they need more Medical Doctors and Midwives in the health facilities to handle complicated illnesses. A Unit committee member at Antoakrom indicated that *“Vehicle should be made available at the health facility to enable them transport*

complicated cases to the hospital". The results show that higher order health services are required to effectively handle health issues in the district.

From the study, all the respondents admitted that they received education on malaria management in their communities. It was indicated from the focus group discussions that information vans come around to educate community members on health-related issues. Similarly, community health nurses visited the communities to educate them on malaria and other health issues. However, the study found that the males perceived the health education from the community health nurses as belonging to the women. As a result, they did not attend such gatherings to learn from the community health nurses. Thus, a member in the male focus group discussion at Keniango stated,

"We thought the nurses that visit our communities come for pregnant and lactating women as well as toddlers. So we mostly send our wives, sisters and daughters in that category to meet them".

This was confirmed in the females' focus group discussion at Datano that, *"Our husbands do not understand why we should sleep under insecticide treated nets when we are pregnant or sleeping with babies. They always complain of heat and fold the nets. Some also do not provide the rightful beds to enable us hang the nets"*.

Another woman complained that, *"My husband does not understand why fruits and vegetables should be part of our daily meals. He says such diet lifestyle belongs to the affluent"*. The results show that health education programmes on the revised IMCI strategies should encourage more male attendance to improve the acceptability of the improved practices to enhance malaria management.

Respondents for the focus groups discussion were requested to indicate the role caregivers should play to prevent children from getting malaria in their communities. Some of the roles identified were improving personal and environmental hygiene, providing proper accommodation for children, sleeping under treated bed nets, ensuring proper management of refuse dumps, and spraying rooms with insecticides or using mosquito coils to drive away mosquitoes. The results show that the caregivers were aware of their roles to prevent the spread of malaria among children.

Another issue was the role caregivers should play to ensure children get quick and easy access to treatment for malaria. Some of the responses from the focus groups discussion were quick organisation of the means to send sick children to hospital, secure the services of a chemical seller to get some relief before sending children to health facilities, and sending children to hospital immediately sickness is suspected. However, a traditional leader at Datano reiterated that, *Sometimes we could be ready but may not get vehicle on time to send children to the hospital*. Another female participant at Watreso indicated that *“It is sometimes difficult organising ourselves for the hospital when we hear that health insurance has been suspended or doctors are on strike”*. The results show that certain factors restrained the ability of caregivers to access quick and easy treatment for their wards in the district.

The study further examined the awareness level of the respondents on how balance diet could improve the immune system of wards against malaria. The results are presented in Table 4.3.

Table 4.3: Gender and awareness that balance diet helps to improve immune system against malaria

Level of awareness	Gender(Percent)		Total Percent (%)
	Male (%)	Female (%)	

Very much aware	15 (18.1)	8 (21.6)	23 (19.2)
Aware	25 (30.1)	24 (64.9)	49 (40.8)
Less aware	25 (30.1)	4 (10.8)	29 (24.2)
Not aware at all	18 (21.7)	1 (2.7)	19 (15.8)
Total	83 (100.0)	37 (100.0)	120 (100.0)

$\chi^2 = 83.6$ p-value = 0.001 df = 7

Source: Field survey, 2015

Table 4.3 shows that the majority (60%) of the respondents were very much aware and aware that balance diet helps to improve the immune system of children against malaria, while 40 percent were less aware and not aware at all. Table 4.3 further shows that while a little over half (51.8%) of the male respondents were less aware and not aware all that balance diet to children helps to improve their immune system against malaria, majority (86.5%) of the female respondents were very much aware and aware of the issue.

A chi-square test of independence was used to explore the relationship between males and females on the level of awareness that balance diet to children improves their immune system against malaria. From Table 3, a p-value of 0.001 ($\chi^2 = 83.6$, df = 7) shows that there was statistically significant association between the awareness levels of males and females on the issue that balance diet to children improves their immune system against malaria. This was because the p-value of 0.001 was within the acceptable error margin of 0.05. The results show that the females were more aware than the males that balance diet to children helps to improve their immune system against malaria.

The household respondents were also requested to indicate their level of awareness that given fruits and vitamin-rich foods to sick wards help them to recover quickly from malaria. The results are presented in Table 4.4.

Table 4.4: Level of education and awareness that given fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria

Level of awareness	Level of education(Percent)				Total Percent (%)
	None (%)	Basic (%)	SHS (%)	Tertiary (%)	
Very much aware	1 (5.3)	4 (8.7)	7 (22.6)	9 (37.5)	21 (17.5)
Aware	4 (21.1)	8 (17.4)	11 (35.5)	9 (37.5)	32 (26.7)
Less aware	9 (47.3)	22 (47.8)	8 (25.8)	6 (25.0)	45 (37.5)
Not aware at all	5 (26.3)	12 (26.1)	5 (16.1)	-	22 (18.3)
Total	19 (100.0)	46 (100.0)	31 (100.0)	24 (100.0)	120 (100.0)

$$\chi^2 = 61.3 \quad p\text{-value} = 0.022 \quad df = 15$$

Source: Field survey, 2015

Table 4.4 shows that the majority (73.6%) of the respondents with no formal educational qualification were less aware and not aware at all that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria, while 26.4 percent were very much aware and aware. Similarly, the majority (73.9%) of the respondents with basic level of education were less aware and not aware at all that given of fruits and vitamin-rich foods to sick wards help them to recover quickly from malaria, whereas 26.1 percent were very much aware and aware. Nevertheless, the majority (58.1%) of the respondents with Senior High School education were very aware and aware that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria, while 41.9 percent were less aware and not aware at all. In addition, the majority (75%) of the respondents with tertiary educational qualification were very much aware and aware that given of fruits and vitamin-rich foods to sick

wards helps them to recover quickly from malaria, whereas one-quarter (25%) were less aware.

A chi-square test of independence was used to explore the relationship among caregivers with different levels of education on the level of awareness that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria. From Table 4.4, a p-value of 0.022 ($\chi^2 = 61.3$, $df = 15$) shows that there was statistically significant association among caregivers with different levels of education and their awareness level on the issue that that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria. This was because the pvalue of 0.22 was within the acceptable error margin of 0.05. The implication is that caregivers with high levels of education were more aware that that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria.

The study examined the level of awareness of the respondents on the importance of sleeping under ITN as a strategy for controlling malaria among children. The study found that all the respondents were very much aware and aware that sleeping under ITNs helps to prevent malaria. Similarly, all the respondents were very much aware and aware that maintaining good environmental conditions helps to reduce the incidence of malaria.

From the focus group discussion, participants were requested to indicate the cause of malaria. Some of the responses were mosquito bites, playing in filthy environment, poor personal hygiene, and eating cold or contaminated food. Others were drinking unwholesome water, standing in the sun for too long, and not washing of hands before eating.

The respondents were asked to indicate where they first seek treatment for their wards when they suspect malaria. The results are presented in Figure 4.2. From Figure

4.2, a little over half (52.5%) of the respondents indicated that they seek first treatment for their wards on malaria from health facilities, 31.7 percent use chemical shops, while 15.8 resort to herbal treatment. The use of other sources for healthcare treatment apart from health facilities among 41.5 percent of the respondents is high. This is likely to increase drug resistance among wards in malaria treatment as well as increase under five mortality through malaria in the district. Some of the reasons for using health facilities were getting treatment from qualified health personnel, using national health insurance scheme makes healthcare cheaper, and received education to always send ward to a health facility when sick.

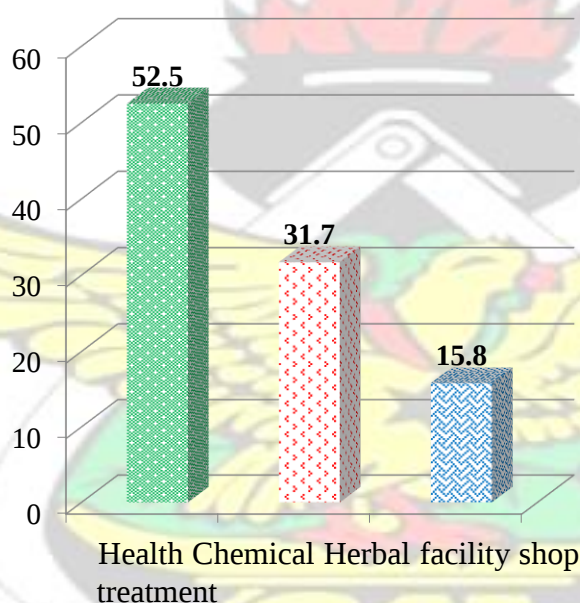


Figure 4.2: Place caregivers first seek treatment for their wards who are suspected to have contracted malaria Source: Field survey, 2015

Some of the reasons for using chemical shops were closer than a health facility, having experienced chemical seller who prescribes drugs for us, long distance to health facilities, and occasional suspension of the national health insurance scheme. Similarly, reasons for using herbal medicine to treat malaria included having extensive knowledge in herbal medicine, cheap source of treatment, having no side effect, long distance to a

health facility, and unable to renew national health insurance card for wards. The implication is that long distance to health facilities is a major factor for caregivers resorting to other forms of healthcare instead of a hospital.

It was agreed among the community health nurses that continuous community education is required to improve the knowledge of caregivers about malaria management. One community health nurse, however, recommended that the sale of traditional medicines should be banned. This was because they wrongly educate the communities to lure them to patronise their products.

4.3 Level of perception and acceptability of malaria management strategies under the revised IMCI

The second research objective sought to examine the level of perception and acceptability of malaria management strategies under the revised IMCI. The aim is to assess the extent to which caregivers have accepted and practiced the strategies. Some of the issues considered under the section were sleeping under ITNs, given fruits to wards, and administering drugs to sick wards before taken them to hospitals.

As part of the revised IMCI strategies in malaria management, people are educated to maintain good environmental conditions in their communities to help reduce the breeding of mosquitoes. From the focus group discussions, all the communities indicated that they organise communal labour to maintain good environmental conditions. Some of the activities performed during such communal labour meetings were weeding surroundings, maintaining refuse dumps, scrubbing borehole sites, cleaning community gutters, and cleaning toilet facilities. However, some of the communities requested for skip containers to ensure proper solid waste management system. This was because the refuse dumps were becoming far from some

houses due to community expansion. As a result, some households dump refuse at the back of their houses and bushes around them. The creation of individual refuse dumps is likely to compromise the efforts during communal labour to breed more mosquitoes in the communities.

However, a major environmental issue identified through the focus group discussions was liquid waste (especially water from bathrooms) management. A male participant from Esuowin community stated that,

“We do not have proper drainage systems in our communities. So, water from our bathrooms runs uncontrollably. Some houses have dug pits where the water gathers, but such pits turn to be breeding grounds for mosquitoes during the raining season”.

The result shows that proper methods are required at the communities to properly manage their liquid waste. Such methods could help reduce the breeding of mosquitoes in the communities as well as contribute to reduce the incidence of the malaria in the communities.

The focus group participants were asked whether community leadership has the power to summon community members who does not maintain good environmental condition and activities posing threat to other in a neighbourhood. The general response was that the community leadership has such powers but they all have common practices. As a result, they are unable to invoke such powers on community members. A traditional leader at Adubia indicated that maintenance of good community conditions goes beyond the powers of the traditional leaders because they do not have resources to execute projects to address them, even when they see them. The results show that for communities to effectively maintain good community conditions to address malaria-related issues as enshrined in the revised IMCI strategies, community

leadership has to be empowered on how to raise local resources to embark on basic communal activities.

The study examined the extent to which caregivers used ITNs to prevent malaria among children in the communities. This was imperative because the use of ITNs is a major tool in the revised IMCI strategies for malaria management. From the study, the majority (59.2%) of the respondents did not have ITNs for their wards, whereas 40.8 percent had. The implication is that the majority of the children under five in the district did not sleep under ITNs. Table 4.5 presents results on the reasons why some of the caregivers did not have ITNs for their wards.

Table 4.5: Reasons for not having ITN for wards

Reasons	Frequency	Percent (%)
Use mosquito coils to turn away mosquitoes from room	7	5.2
Net destroyed	29	21.5
Cannot afford net	13	9.6
Don't know where to buy from	6	4.4
Small sleeping space	58	43.0
Children sleeping on the floor	22	16.3
Total	135*	100.0

*n = Multiple response

Source: Field survey, 2015

Table 4.5 shows that 43 percent of the respondents, who did not have ITN for their wards, attributed it to the small sleeping space for the family, 21.5 indicated that their nets are destroyed, while 16.3 percent, 9.6 percent and 5.2 percent respectively indicated that children sleep on the floor, cannot afford the net, and use mosquito coils to turn away mosquitoes from room. The results show that some of the respondents did not understand or underestimated the protection provided by the ITNs against malaria

among children. Comparing the results with the other results that all the respondents were aware that sleeping under ITNs protected wards from contracting malaria shows that the majority of the respondents who have knowledge on the importance of the use of ITNs in preventing malaria are not using it.

It was found from the focus group discussions that some of the caregivers sold their ITNs to others given to them by the health facilities during pregnancy, while others cut them, when no longer in use, to pieces for various house chores like sieving food, sieving herbs for douching, preventing flies from food, fencing backyard farming, and fishing. A woman stated in a focus group discussion at Ahwerewa that,

“Our children play with the net when they are hanged which causes excessive damage to the nets, and when we are unable to mend them we use them for various house activities”.

From the study, out of the 49 (40.8%) respondents who had ITNs for their wards, about three-quarters (75.5%) had their wards sleeping under the nets the night to the data collection exercise, while about one quarter (24.5%) did not use them. Some of the reasons for not sleeping under the treated nets were preparing to hang the nets, room too congested for using the net, feeling too warm sleeping with child under the net, spraying room with insecticides, using mosquito coils to turn away mosquitoes from rooms, and difficult sleeping under the net during nights of power outages. The results show that housing conditions prevent caregivers from using the ITNs to manage malaria under the revised IMCI strategies.

The study further examined the number of times the caregivers gave fruits to their wards within the past seven days. From the study, the number of times of given fruits to wards within the past seven days ranged from zero to 13 with a mean of 2.8

and a standard deviation of 0.35. The implication is that the majority of the respondents did not give fruits daily to their wards. Some of the reasons for the failure of caregivers to give more fruits to their wards were fruits are not part of our diet as a people, we are out of the season of the major fruits in our area, perceive it as additional cost to the family, considered it as not necessary, eating more fruits makes them sick by getting diarrhoea, and more interested in foods to satisfy our hunger over a long period.

The study further found that the majority (64.2%) of the respondents admitted to administering some drugs to their wards, when sick, before taken them to hospitals, while 35.8 percent denied doing that. Some of the drugs caregivers administered to sick wards were paracetamol, Oral Rehydration Salt (ORS), Efpac, anti-malaria drugs, blood tonics, dewormers, douching and herbal drugs. Reasons for administering such drugs to sick wards before visiting the hospitals included trying to avoid the hustle in getting to the hospital, herbal drugs have no side effects on the children, ability to use such drugs to treat illnesses among children, and receiving those drugs from the previous visit to the hospital when child complained on similar symptoms. Others were receiving education from postnatal education to administer the drugs when detect such symptoms, reducing the pain and effects on children before taken them to the hospital, and trying to treat the illnesses ourselves.

The respondents were requested to indicate how such drugs are stored in the homes. This was essential because mode of handling drugs at homes is a public health safety concern. Thus, failure to keep drugs in the rightful conditions could create serious health concerns among the populace. From the study, some of the modes of storing drugs in the homes were in polythene bags, under beds, drug containers, clothing bags, baskets, on tables, and on the head positions of beds.

Another issue considered under the section was checking expiry dates of the drugs before administering them to children. This was important since some of the caregivers indicated that they used uncompleted drug dosage from previous ailments to treat other subsequent suspected malaria symptoms. From the study, the majority (74%) of the caregivers who administered drugs to the children before taken them to hospitals denied checking the expiry dates on the drugs before administering them, while 26 percent indicated they checked before administering them to children. The implication is that some of the caregivers could be given unwholesome drugs to their sick children. The delays caused when such drugs are taken before sending children to the hospitals could create many health complicated issues among children.

The study further requested the caregivers to indicate the point to which they send their wards to the hospital when they are sick. The results are presented in Table 4.6. From Table 4.6, 28.1 percent of the respondents indicated that they send their wards to the hospital when personal treatment fails, 23.1 percent send their wards to the hospital when they detect increased temperature, whereas 17.9 percent and 12.7 percent send theirs to hospital when wards have diarrhoea and vomiting, respectively. However, 6.2 percent admitted sending their wards to the hospital immediately they suspected sicknesses.

Table 4.6: Times caregivers send their wards to hospital when sick

Responses	Frequency	Percent (%)
Immediately detected	20	6.2
When child refuses to eat	39	12.0
When temperature increases	75	23.1
When vomiting	41	12.7
When personal treatment fails	91	28.1
When child has diarrhoea	58	17.9

Total	324*	100.0
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*n = Multiple response

Source: Field survey, 2015

From the focus group discussions, some of the factors considered in selecting where sick children should be treated and when they should be send to hospitals for treatment were availability of money, status of NHIS registration, acceptability of NHIS cards in hospitals, time the sickness was detected, season, knowledge and experiences in herbal medicine, distance to hospital, and access to experienced chemical seller. From a focus group discussion at Mpatuam, a female participant stated that,

“The road becomes unmotorable during the raining season, so it becomes very difficult to get car to go to the hospital. We, therefore, resort to some local practices to try to cure the illnesses”.

The results show that road conditions also affect caregivers’ adherence to the revised IMCI strategies for malaria management.

4.5 Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI

The third research objective sought to assess challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI. This was necessary because such challenges may reduce the effective acceptability of the revised IMCI strategies as well as reduce the effectiveness of the strategies on malaria management in the district. Some of the issues considered were high cost of seeking treatment from a health facility, long distance to health facilities, and poor community organisation to maintain good environmental conditions.

The respondents were asked to indicate if high cost of seeking treatment from hospitals is a challenge they encounter in their acceptability of the revised IMCI strategies for malaria management. The results are presented in Figure 4.3.

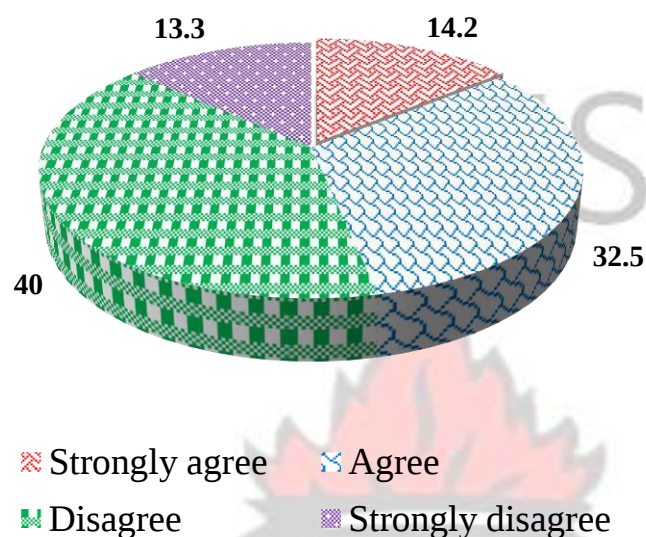


Figure 4.3: High cost of seeking treatment from hospitals being a challenge encountered by the caregivers in accessing healthcare for wards Source: Field survey, 2015

Figure 4.3 shows that a little over half (53.3%) of the respondents disagreed and strongly disagreed that high cost of seeking treatment from hospitals is a challenge they encounter in the revised IMCI strategies in malaria management, whereas 46.7 percent agreed and strongly agreed. The results show that the majority of the respondents were able to conveniently bear the cost of seeking healthcare from hospitals. This was largely attributed to the national health insurance system. However, the about 46.7 percent of the respondents encountering the problem is quite significant which could mar the effectiveness of using the revised IMCI strategies to manage malaria in the district. A female participant from the focus group discussion at Abore stated that,

“We are made to buy most of the drugs with our own monies from pharmacy shops which makes cost of accessing treatment from hospitals too much for us. Some of the drugs have also been taken out from the

NHIS".

Another issue considered under the section was long distance to a health facility as a challenge encountered by the caregivers in visiting the hospitals when their wards are sick. The results are presented in Figure 4.4.

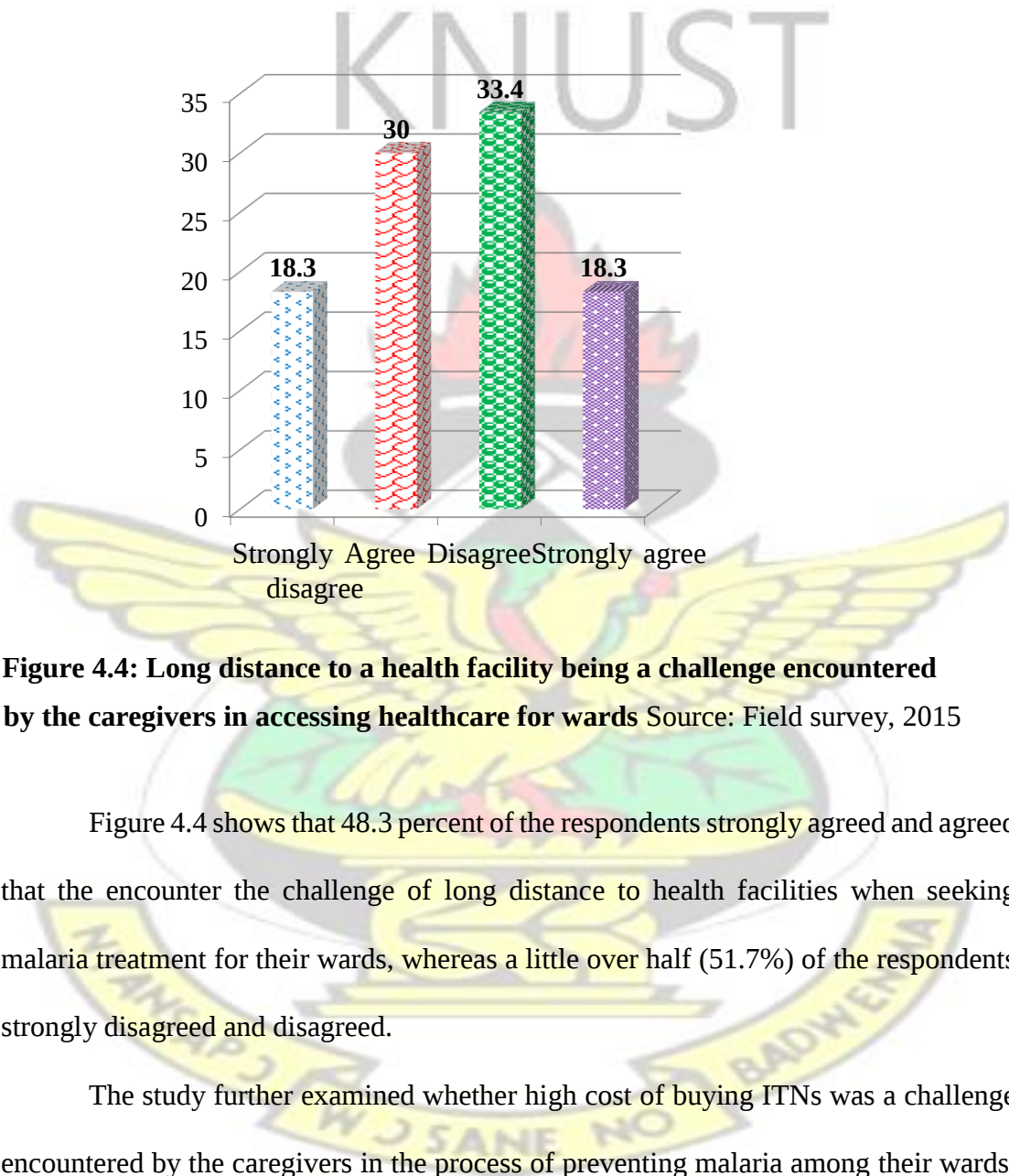


Figure 4.4: Long distance to a health facility being a challenge encountered by the caregivers in accessing healthcare for wards Source: Field survey, 2015

Figure 4.4 shows that 48.3 percent of the respondents strongly agreed and agreed that the encounter the challenge of long distance to health facilities when seeking malaria treatment for their wards, whereas a little over half (51.7%) of the respondents strongly disagreed and disagreed.

The study further examined whether high cost of buying ITNs was a challenge encountered by the caregivers in the process of preventing malaria among their wards. The results are presented in Figure 4.5. From Figure 4.5, 32.5 percent of the respondents strongly agreed and agreed that high cost of buying ITNs was a challenge they

encounter in preventing malaria among children, 31.7 percent did not know, while 35.8 percent disagreed and strongly disagreed.

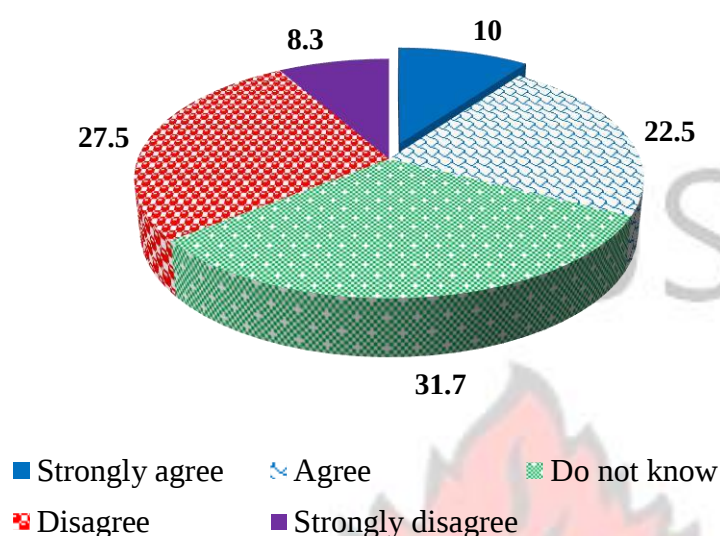


Figure 4.5: High cost of buying ITNs being a challenge encountered by the caregivers in preventing malaria among wards Source: Field survey, 2015

The respondents who did not know about the cost of ITNs were those who have not made attempt to acquire the nets for their families. The results show that some of the respondents could afford the ITNs but they are not acquiring them for their wards. A male participant at the focus group discussion at Antoakrom indicated he prefers using mosquito coil to drive away the mosquitoes more than sleeping under the treated net with the family. He attributed it to the uncomfortable warmth they encounter when sleeping under the nets especially during power outages. The implication is that access to electrical power also determines the acquisition and use of the ITNs to prevent malaria among children.

The respondents were requested to indicate whether poor community organisation to maintain good environmental conditions was a challenge they encounter in their bid to prevent malaria from their wards. The study found that a little over half (54.2%) of the respondents agreed that poor community organisation to maintain good

environmental conditions was a challenge they encountered in their bid to protect their wards against malaria, whereas 45.8 percent disagreed and strongly disagreed. Some of the respondents indicated that communal labour is not frequently organised to maintain constant good environmental conditions, while others complained that community leaders were unable to punish people who do not keep their surroundings clean.

Another issue considered under the section was poor understanding on recommended vitamin-rich foods to be given to children. From the study, the majority (58.3%) of the respondents strongly agreed and agreed that poor understanding on the recommended vitamin-rich foods for children is a challenge they encounter in managing malaria among their wards, whereas 41.7 percent disagreed and strongly disagreed.

Some of the challenges confronting the activities of health workers in community education were false education from people who sell traditional medicines, occasional shortage of materials and cold chain facilities for community services, lack of funds to finance community health activities, and poor attitude from elite members of the communities towards community health activities.

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter presents the discussions on the results in the previous chapter. The chapter is organised under the awareness level of caregivers on presumptive approaches in malaria management, level of acceptability of caregivers with the malaria management strategies under the revised IMCI, and the challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI.

5.1 Awareness level of caregivers on presumptive approaches in malaria management

From the study, educating community members on their responsibilities over their health and that of their families is expected to reduce the incidence of diseases as well as reduce complicated cases of diseases in the communities. Thus, Chandler *et al.* (2010) posited that health education empowers people to adopt good health practices to avoid or reduce the incidence of some basic environmental related diseases.

The continuous use of traditional medicines by some of the caregivers for child illnesses implies that some of the caregivers have not accepted the issue to seek medical attention for their wards only from health facilities. This could be attributed to the fact that the use of traditional medicine is a cultural practice and may take quite some time before they could change totally and resort to health facilities. The discussion is in consonance with the theory of rational expectation as explained by Sheffrin (1996) that current caregivers' actions are based on past positive experiences with the use of traditional medicine to treat diseases of similar symptoms. Thus, the cultural acceptability of traditional medicine as an alternative to unorthodox medicine in the formal healthcare system inform the perceptions and expectations caregivers that conventional medicine could equally be used to handle malaria.

The results show that the communities were largely affected by environmental related diseases. The implication is that the communities have either not properly understood the communal and personal sanitation aspects of the revised IMCI or are unable to adopt such environmental strategies to prevent the spread of those diseases. According to Pagnoni (2009), people's response to environmental health issues is largely influenced by their level of understanding of the threat poor sanitation poses to family health and safety.

The study found that the caregivers first suspect malaria for every illness children are infected with. Such suspicions are likely to cloud their responses and judgments towards the handling or management of other diseases children may be infected with. In other words, the suspicion that every sickness among children is malaria may influence the timeliness of accessing formal healthcare, and the type of health treatment administered to children. Amexo *et al.* (2004) explain that indigenous societies in the tropics are so much associated with malaria cases that they underestimate the seriousness of the disease. Such suspicions could be explained through the perspective of the rational expectations theory by Muth (1961) that the frequent contraction of malaria among the people makes them suspect or associate every symptom to malaria.

It was also indicated from another males' focus group discussion that caregivers used uncompleted drug dosage from previous malaria treatments to treat subsequent malaria cases among wards. This was very serious because members of the focus group discussion denied checking the expiry dates on such drugs before given them to their wards. The above results show that the caregivers in the district have not understood the rapid diagnosis test principle under the revised IMCI strategy for malaria management. Some of the reasons stated for the treatment of malaria outside the formal health system were long distance to health facilities, long queues and time wasting at the health facilities, and occasional withdrawal of national health insurance health services by the health facilities. The results show that past negative experiences with the formal health system are discouraging parents from accessing healthcare for their wards from hospitals. This agrees with the assertion of Noor *et al.* (2003) that the posture; in terms of cost, and receptiveness of health officials; of formal health facilities in a health care system influence the level of patronage of people in formal health care.

The non-availability of the males in the education programmes from the community health nurses is likely to affect the effectiveness of effectiveness of the revised IMCI strategy in malaria management among caregivers in the district. This is because the males are mostly the household heads who determine actions to be taken when children had malaria. Their non-availability would affect their level of awareness on the revised IMCI strategies on malaria management, which could also affect their approval and acceptability of the revised practices in malaria management at the households. The greater involvement of males in the health education programme is critical in ensuring effective management of malaria at the household level based on the revised IMCI strategies.

The awareness of the majority of the respondents about the importance of balance diet, as indicated in Table 4.3, is likely to help increase the taken of balance diet among the sampled households to protect children against malaria. Thus, Tulloch (1999) indicated that people's level of acceptability of a particular health practice significantly depends on their levels of awareness and acceptance of the phenomenon. Table 4.3 further shows that the females were more aware than the males that balance diet to children helps to improve their immune system against malaria. This could be attributed to the more participation of females in health education programmes than the males. The results corroborate the assertion of Tulloch (1999) as mentioned earlier.

Results from Table 4.4 show that the respondents with higher levels of education were more aware that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria. The results disagree with the finding of Bell and Peeling (2006) that health education bridges the knowledge gap in health practices between the more educated and less educated. The implication is that the less educated

caregivers in the district have not clearly understood the fact that given of fruits and vitamin-rich foods to sick wards helps them to recover quickly from malaria. The results, however, agree with the assertion of Pagnoni (2009) that caregivers with high levels of education are more aware of modern and improve health practices than those with less levels of education. This could be attributed to the exposure and improved level of appreciation towards modern health practices mostly associated with higher learning.

Results from the focus group discussion revealed that parents associated everything with the cause of malaria. This could be due to the fact that the respondents may be too familiar with malaria cases than other illnesses. The implication is that the caregivers in the district are unable to differentiate among the causes of various environmental diseases. However, this is good since it could empower them to prevent various environmental diseases.

5.2 Level of perception and acceptability of malaria management strategies under the revised IMCI

It was found from the focus group discussion that the communities organised communal labour to maintain good environmental sanitation. The implication is that the communities have understood and accepted the communal contribution in the revised IMCI in controlling malaria. The result agrees with the finding of Centre for Health and Population Research (2001) that community acceptance of IMCI is critical to check and maintain good environmental sanitation. However, the lack or limited access to finance and logistics is frustrating the capacity of the communities to effectively maintain good sanitation. This is in line with the finding of Erhun et al. (2005) that access to finance and logistics is the major challenge to communal effort to address common issues that affect the health, growth and development of communities.

It was found from Table 4.5 that the majority of the respondents who have knowledge on the importance of the use of ITNs in preventing malaria were not using it. The implication is that there was a gap between awareness level on health practices and level of acceptability among caregivers in the district. This was attributed to factors such as room congestion, high cost of mosquito nets, feeling too warm sleeping with child under the net, and children sleeping on the floor. Thus, certain socioeconomic factors and housing conditions prevent caregivers in practicing their knowledge on revised methods to prevent malaria among children. According to Azabre et al. (2013), differences in socio-economic conditions of people explain differences in their use of ITNs.

The results show that the caregivers have not clearly understood the quantity of fruits to be given to children in a day. In addition, economic factors frustrate the ability of caregivers in giving fruits to their wards to improve their immune system against malaria. The implication is that there was a gap between caregivers' acceptability of the revised strategies under the IMCI and their level of adoption. Thus, Azabre et al. (2013) explain that socio-economic factors largely determined the extent to which caregivers adopt the strategies under the revised IMCI.

The results show that the majority of the caregivers in the district have not understood the Rapid Diagnosis Test (RDT) approach under the revised IMCI strategies for malaria treatment. The implication is that the caregivers still practiced the presumptive approaches introduced to them under the old IMCI strategies, where caregivers were required to undertake certain activities as first aid to reduce the intensity of diseases before sending them to the hospitals. This is likely to increase resistance to malaria drugs as well as increase malaria-related mortality among children in the

district. In other words, the USAID (2014) reported that delayed report to hospitals is a major cause of malaria-related deaths among infants.

The results show that the majority of the caregivers did not use appropriate modes in storing drugs. This could cause easily deterioration of drugs and cause harmful health effects on children. The implication is that intensive education is required for caregivers on appropriate modes of storing drugs for children to avoid any health issues in the future. Thus, Alex-Hart and Frank-Briggs (2011) suggested that intensive health education is required to change people's poor attitudes towards the handling and usage of drugs.

The results from Table 4.6 show that the majority of the caregivers have not understood RDT strategy under the revised IMCI for malaria management, where suspected malaria cases have to be confirmed through testing and followed by drug prescriptions. Some of the caregivers, however, administer some drugs to sick wards before sending them to the hospitals.

From the study, all the caregivers admitted that health officials conduct malaria test on children before given them drugs. The implication is that RDT is effectively being implemented in health facilities in the district. The problem, rather, is that caregivers sometimes delay in seeking proper healthcare or use traditional methods to manage malaria cases in the communities.

5.3 Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI

The results from Figure 4.3 show that the national health insurance scheme (NHIS) plays a critical role in promoting prompt visiting to hospitals when wards are suspected to have contracted malaria. However, the loss of confidence of many of the

respondents in the NHIS is likely to discourage them from accessing formal health care for their wards in terms of illness. As a result, hospital pharmacies should frequently be stocked to ensure reliable supply of drugs to patients. This would help to maintain the confidence of caregivers in health insurance and formal healthcare system and contributes to promote the use of hospitals to seek treatment of malaria among children. This is imperative because bad experiences by parents in formal health care system could force them to seek medical treatment from orthodox health care facilities as indicated by Noor et al. (2003) that the posture of formal health facilities in a health care system influences the level of patronage of people in formal health care.

From Figure 4.4, the majority of the respondents encountered a challenge with long distance to health facilities when seeking malaria treatment for their wards. This partly explains the reason why some of the caregivers resort to traditional methods to manage malaria cases in children. The results agree with the finding of WHO (2005) that the level of access to hospital is important in guaranteeing the effectiveness of the use of IMCI strategies in managing malaria in rural areas.

The results show that the majority of the respondents have not properly understood the diet-related aspects of malaria management among children. This could be due to the fact that the males do not avail themselves for health education from community health nurses.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter presents a summary of the major findings of the study, and the overall conclusion of the study. The chapter also recommends ways to improve the effectiveness of using the revised IMCI strategies for malaria management.

6.1 Summary

The study sought to assess the effectiveness of the revised IMCI strategy in malaria management in the Amansie West District. It aimed at assessing the awareness level of caregivers on presumptive approaches in malaria management, , and the challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI. Descriptive and cross-sectional survey designs were adopted for the study. A total of 379 respondents were sampled from a population of 25,917. Multi-stage random sampling procedure was used to sample the 120 household heads, while purposive sampling was used to sample 240 community members, and 19 community health workers for focus group discussions.

Questionnaire and focus group discussion guides were used as instruments to gather data from the respondents. The gathered data was processed using quantitative techniques with the use of Statistical Product and Service Solutions (SPSS) version 21. Descriptive statistics such as frequencies, percentages, means and standard deviations were used to analyse the data. Chi square test of independence was used to examine statistical significance of relationships between background variables and other variables. An error margin of five percent (0.05) was used to draw conclusions on all inferential analyses.

6.1.1 Major findings

This section presents the major findings of the study. The section is organised under the research objectives.

Awareness level of caregivers on presumptive approaches in malaria management

Caregivers perceived every childhood illness to be malaria. Such suspicions are likely to cloud their responses and judgments towards the handling or management of other diseases children may be infected with.

Many of the caregivers in the district have not properly understood the rapid diagnosis test principle under the revised IMCI strategy for malaria management.

Males, who are traditionally household heads and determine the mode of treatment of sick children, were not attending public education from community health nurses. This was making it difficult for the females to implement adequately the revised IMCI strategies for malaria management.

Level of acceptability of malaria management strategies under the revised IMCI

All the communities indicated that they organise communal labour to maintain good environmental conditions. Some of the activities performed during such communal labour meetings were weeding surroundings, maintaining refuse dumps, scrubbing borehole sites, cleaning community gutters, and cleaning toilet facilities. However, some of the communities requested for skip containers to ensure proper solid waste management system.

The study found that inadequate resources available to community leaders make it difficult for the communities to maintain good community conditions. Thus, the

communities are unable to execute certain projects to address sanitation problems to control the breeding of mosquitoes.

The majority (59.2%) of the respondents did not have ITNs for their wards. The implication is that the majority of the children under five in the district did not sleep under ITNs.

From the study, economic factors frustrate the ability of caregivers in giving fruits to their wards to improve their immune system against malaria as well as securing them ITNs.

The majority of the caregivers did not use appropriate modes in storing drugs. Some of the modes of storing drugs in the homes were in polythene bags, under beds, drug containers, clothing bags, baskets, on tables, and on the head positions of beds. This could cause easily deterioration of drugs and cause harmful health effects on children.

The majority (64.2%) of the respondents admitted to administering some drugs to their wards, when sick, before taken them to hospitals. Some of the drugs caregivers administered to sick wards were paracetamol, Oral Rehydration Salt (ORS), efpac, anti-malaria drugs, blood tonics, dewormers, douching and herbal drugs.

Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI

From the study, frequent shortages of drugs at the health facilities compelled caregivers to procure the prescribed drugs from pharmacy shops. This makes seeking malaria treatment from health facilities expensive, and sometimes compels caregivers to resort to tradition modes of treatment.

Long distance to health facilities was a challenge compelling caregivers to resort to other forms of healthcare instead of a hospital. The study found that some of the caregivers used packages and bottles of drugs supplied to them from hospitals to buy drugs from chemical shops for their sick children. Others also used douching, and oral herbal medicine to treat malaria to avoid travelling long distances to hospitals.

Some of the caregivers complained of the uncomfortable heat they feel when sleeping under the ITNs, especially during power outages. Other challenges with the use of the treated nets were room congestion, small room space, and not having beds to properly use the nets.

The majority (58.3%) of the respondents admitted that poor understanding on the recommended vitamin-rich foods for children is a challenge they encounter in managing malaria among their wards. The implication is that the majority of the respondents have not properly understood the diet-related aspects of malaria management among children.

6.2 Conclusion

The revised IMCI strategy combines community, nutritional and diagnostic measures to effectively manage malaria among children of under five years of age. It empowers caregivers to be aware of some communal and nutritional practices they can perform to prevent the incidence of malaria among children. The revised IMCI is a holistic strategy that aims at tackling the spread and treatment of malaria from various angles. The implication is that the acceptability of the IMCI should also be holistic to guarantee maximum protection from the disease.

The study found that the caregivers were highly aware of some of the principles under the revised IMCI strategy for malaria management such as the use of

ITNs and good community sanitation. They have, however, not properly understood the nutritional aspects of the strategy. This, therefore, defeated the holistic acceptability of the IMCI strategies on malaria management. From the study, poor participation by the household heads, who are dominantly males, affected the effective acceptability of the nutritional and some of the preventive aspects of the revised IMCI strategy. The study also found that there was a gap between the level of awareness and level of acceptability of the revised IMCI strategies on malaria management. Thus, caregivers were not practicing some of the preventive and nutritional aspects of the revised IMCI strategies on malaria management they were aware of. It was found that socio-economic factors such as room congestion, no proper beds, and frequent power outages prevented some caregivers to sleep under treated nets with their children.

Similarly, the status of the NHIS played a critical role for caregivers to seek diagnostic test before treatment. The NHIS encouraged attendance of health facilities and enabled economic access to proper healthcare treatment for malaria. However, the occasional suspension of the system was reducing the confidence of caregivers in accessing healthcare for their children through the system. Further, the occasional shortage of drugs at the health facilities was compelling caregivers to buy drugs from pharmacy shops which made access to healthcare expensive. As a result, some of the caregivers resorted to douching and herbal treatment.

The study concludes that proper system should be put in place to promote the holistic acceptability of the strategies of the revised IMCI strategies on malaria management. This would effectively help to reduce malaria cases in the district. As part of the system of implementing the holistic acceptability of the revised IMCI strategies on malaria management, community leadership should be educated and empowered to effectively handle the community sanitation aspect of the strategies.

This would help to improve the effectiveness of the revised IMCI strategies in reducing malaria cases in the district.

6.3 Recommendations

Based on the findings, the following recommendations were made to enhance the effectiveness of the revised IMCI strategy on malaria management.

1. The study suggests that the District Assembly should supply to the communities skip containers to promote proper management of solid waste. Thus, the provision of skip containers could help stem the creation of backyard refuse dumps, and helps to maintain good community sanitation to reduce the incidence of malaria in the district.
2. The study further suggests that more CHPS compounds should be opened in the area councils by the Amansie West District Assembly to reduce the distance caregivers have to travel to access healthcare from health facilities. This will help to improve interactions of caregivers with health facilities to improve the effectiveness in managing malaria in the district. The opening of more CHPS compounds will also enable caregivers to gain easy access to health facilities during the raining season when the roads have become unmotorable.
3. The study recommends that hospital pharmacies should frequently be stocked by the District Health Management Team to ensure reliable supply of drugs to patients. This would help to maintain the confidence of caregivers in health insurance and formal healthcare systems, and contributes to promote the use of hospitals to seek treatment of malaria among children. Thus, reliable supply of drugs to the hospital pharmacies would help reduce the number of drugs caregivers have to procure

during health visits with their wards. This will help to reduce the cost of accessing healthcare from health facilities for the treatment of malaria.

4. The study further suggests that the community health nurses should intensify education on the importance to seek early formal medical attention for their children to avoid complications. This would enable such children to receive proper care and health treatment to ensure effective management of diseases. Thus, such education should focus on changing the perception of caregivers that every disease symptom is malaria. This would also help to reduce the application of various traditional or herbal medicines to treat diseases among children. The education could be done in the form of community meetings and interactions with effective participation from community leaders. Participation from community leaders would help encourage more males to participate in such exercises.
5. It is recommended that the community and public health nurses should educate caregivers on the importance of using the test-based system to detect and treat diseases. This would help to reduce some of the archaic presumptive activities they perform on children before sending them to the health facilities. It would also help to reduce the delays caused by parents before sending their wards to health facilities for treatment of diseases.
6. Community Health Nurses should encourage more male attendance in the implementation of the health education programmes on the revised IMCI strategies to improve the acceptability of the improved practices to enhance malaria management. Thus, new public education on malaria management should encourage the attendance of couples. This would help to improve the levels of family awareness on malaria management issues and increase their levels of acceptability.

7. Intensive education is required for caregivers on appropriate modes of storing drugs for children to avoid any health issues in the future. The study recommends that the public and community health nurses should educate caregivers on proper storage of drugs to protect their efficacy in use. This could be done by devising a proper container for storing drugs and make them available for purchase at the community and health facility levels.
8. The study recommends that public and community health nurses should intensify public education on the suggested vitamin-rich foods for children. Such education programme would help to improve the acceptability of the nutritional strategy under the revised IMCI for effective malaria management.
9. The study suggests that community leaders should be encouraged to organise more communal labour to effectively address community sanitation issues. This could be done by involving community leaders in the implementation of the revised IMCI strategies. Such exercises could be done bi-weekly or monthly to avoid the creation of breeding grounds for mosquitoes.

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KNUST



APPENDICES

APPENDIX A

QUESTIONNAIRE FOR HOUSEHOLD HEADS

Dear Sir/Madam,

This questionnaire is designed to assess the effectiveness of revised IMCI strategy in malaria management among caregivers in Amansie West District. It is structured into the background characteristics of respondents, awareness level of caregivers on presumptive approaches in malaria management, level of acceptability of malaria management strategies under the revised IMCI, and challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI. This is in partial fulfilment for the award of a Master of Public Health degree at the Kwame Nkrumah University of Science and Technology. As a result, any information given would be treated with utmost confidentiality.

Thank you

Section A: Background characteristics of respondents

1. Gender: [1] Male [2] Female
2. Age:
3. Level of education: [1] None [2] Basic [3] SHS [4] Tertiary
4. Marital status: [1] Single [2] Married [3] Divorced [4] Widowed
[5] Others
5. Type occupation: [1] Unemployed [2] Artisanry [3] Trading [4]
Farming [5] Civil service [6] Others
6. Household size:

Section B: Awareness level of caregivers on presumptive approaches in malaria

management

7. How do you know your ward has malaria?

.....
.....

8. What do you do when you suspect your ward has malaria?

.....
.....

9. How much are you aware that given balance diet to wards help to improve their immune system against malaria?

- [1] Very much aware [2] Aware [3] Less aware
[4] Not aware at all

10. How much are you aware that given fruits and vitamin-rich foods to sick wards help them to recover quickly from malaria?

- [1] Very much aware [2] Aware [3] Less aware
[4] Not aware at all

11. How much are you aware that sleeping under ITN helps to prevent malaria?

- [1] Very much aware [2] Aware [3] Less aware
[4] Not aware at all

12. How much are you aware that maintaining good environmental conditions helps to reduce the incidence of malaria?

- [1] Very much aware [2] Aware [3] Less aware
[4] Not aware at all

13. Where do you first seek treatment for wards who are suspected to have malaria?

- [1] Health facility [2] Chemical shop [3] Herbal treatment
[4] Others (specify)

14. Reason(s) for the above answer:

.....

Section C: Level of acceptability of malaria management strategies under the revised IMCI

15. Do you have ITN for ward(s)? [1] Yes [2] No

16. If no, why? [1] Not necessary [2] Destroyed [3] Cannot afford [4]

Don't know where to buy from [5] Small sleeping space

[6] Others (specify)

17. Did your ward(s) sleep under ITN last night? [1] Yes [2] No

18. If no, why? [1] Not necessary [2] Not having it [3] Small sleeping space

[4] Others (specify)

19. How often did you given fruits to your ward(s) in the past seven days?

.....

20. If less than three times, why?

.....

21. Do you administer some basic drugs to your ward(s), when sick, before taken them

to health facility? [1] Yes [2] No

22. If yes, which drugs do you administer?

.....

23. Reason(s) for administering such drugs:

.....

.....

24. How do you store such drugs?

.....

25. Do you check for the expiry date before administering such drugs to your ward(s)? [1] Yes [2] No

26. At what point do you send your ward(s) to the hospital when sick?

[1] Immediately detected [2] When child refuses to eat [3] When temperature increases [4] When vomiting [5] When personal treatment fails

[6] When child has diarrhoea

[7] Others (specify)

27. Do health officials conduct malaria test before given you drugs? [1] Yes [2] No

Section D: Challenges caregivers encounter in adopting the malaria management strategies under the revised IMCI

28. How do you agree to any of the following as challenge you encounter in adopting the malaria management strategies under the revised IMCI? Using 1= strongly agree, 2 = agree, 3 = don't know, 4 = disagree, 5= strongly disagree

Issues	1	2	3	4	5
High cost of seeking treatment from a health facility					
Long distance to a health facility					
High cost of buying ITNs					
Poor community organisation to maintain good environmental conditions					
Poor understanding on recommended vitamin-rich foods for children					

29. Any additional information:

.....

Thank you

APPENDIX B

FOCUS GROUP DISCUSSION GUIDE FOR COMMUNITY MEMBERS

Dear Sir/Madam,

This focus group discussion guide is designed to assess the effectiveness of revised IMCI strategy in malaria management among caregivers in Amansie West District.

This is in partial fulfilment for the award of a Master of Public Health degree at the Kwame Nkrumah University of Science and Technology. As a result, any information given would be treated with utmost confidentiality.

Thank you

1. What are the main health problems in the community?
2. How do you know your ward has malaria?
3. What do you do when you suspect your ward has malaria?
4. Do you receive education on malaria management in this community?
5. In what form does the health education take place in the community?
6. How do you perceive such education?
7. Do you avail yourself for such education?
8. What causes malaria?
9. How do people treat malaria in this community?
10. What is your opinion about the quality of the services provided by the health facilities?
11. What role should caregivers play to prevent children from getting malaria?
12. What role should caregivers play to ensure children access treatment quickly and easily?
13. What role should caregivers play to create awareness about childhood illnesses?
14. Do you organise communal labour to maintain good environmental conditions?

15. How would you describe the level of participation in such communal actions?
16. What factors are considered in deciding how sick children should be treated and when such they should be send to a health facility for treatment?
17. How is solid waste managed in this community?
18. Does the community leadership has the power to summon any individual who does not maintain good environmental condition posing threat to others in a neighbourhood?
19. Any additional information:

Thank you



APPENDIX C

**FOCUS GROUP DISCUSSION GUIDE FOR COMMUNITY HEALTH
WORKERS**

Dear Sir/Madam,

This focus group discussion guide is designed to assess the effectiveness of revised IMCI strategy in malaria management among caregivers in Amansie West District. This is in partial fulfilment for the award of a Master of Public Health degree at the Kwame Nkrumah University of Science and Technology. As a result, any information given would be treated with utmost confidentiality.

Thank you

1. What are the main child health problems in the communities?
2. Do many children (under 5) die in this area?
3. What do they die from?
4. What forms of education do you provide to caregivers?
5. Do some caregivers use traditional medicine for child illnesses?
6. What is your opinion about the quality of services provided by the health facilities?
7. What measures should be taken to improve the community's knowledge about malaria management?
8. What challenges do health workers face doing their work in the communities?
9. What are the main challenges families in the communities face in accessing treatment for child illnesses?

APPENDIX D

CONSENT FORM

Background to the study

Malaria is a major global health problem as it is one of the leading causes of mortality and morbidity in the world, particularly in resource-poor regions. All age groups are at risk of developing severe malaria illness, although children and pregnant women are biologically the most vulnerable. Children are at risk because they lack developed immune systems to protect against the disease. As a result, WHO, in collaboration with the health ministries of member countries, adopted the revised IMCI strategy for malaria management.

Objective of the work

The objective of the study is to assess the effectiveness of the revised IMCI strategy in malaria management among caregivers in the Amansie West District. I am interested in:

1. Your awareness level on the presumptive approaches in malaria management
2. Your level of perception and acceptability with the malaria management strategies under the revised IMCI
3. Challenges you encounter in adopting the malaria management strategies under the revised IMCI

Interview

For this purpose, I would like to talk to you about matters relating to malaria in children under five years. The interview will last for approximately 30 minutes. You have the right to withdraw from the discussion at any time without reason. I would ensure that your information, opinions and experiences are kept confidential and will only be used for the purpose of the study outlined. I will not use your name. In regard to collecting information for this study, I would greatly appreciate your help and

tail about the purpose and nature of this study.
 my answers to all my questions relating to

.....

Signature

.....

Signature

have ensured that the above information is true and correct to the best of my knowledge and belief. I also ensured that the respondent understood the information given to them fully.

.....

Name of witness **Signature** **Date**

.....		
Name of participant	Signature	Date
.....		
Name of witness	Signature	Date

As a witness of this letter, I have ensured that the above information has been accurately conveyed to the participant. I also ensured that the respondent decided to participate in this study freely and willingly.