KAMUZU COLLEGE OF NURSING

QUALITY OF CARE PROVIDED TO HOSPITALIZED UNDER-FIVE CHILDREN SUFFERING FROM SEVERE MALARIA AT KAMUZU CENTRAL HOSPITAL, LILONGWE, MALAWI.

A Research Dissertation Submitted to the Faculty of Nursing in Partial Fulfillment of the Requirement for the Award of the Degree of Master Of Science in Child Health Nursing

By

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DECLARATION

I, Blessings Chimwemwe Chiluzi hereby declare that this thesis titled *"Quality of care provided to hospitalized under-five children suffering from severe malaria at Kamuzu Central Hospital, Lilongwe, Malawi"* is my original work and that I have not submitted it or any part of it for a degree at any other University within or outside Malawi. Work of other people used in this thesis has been acknowledged appropriately.

BLESSINGS CHIMWEMWE CHILUZI

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Signature

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Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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DEDICATION

This thesis is dedicated to my late father Dexter Mayingiso Hastings Nyirongo who always inspired me to achieve great things in life. Dad, you will always live in my heart.

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LIST OF ABBREVIATIONS

CHISU	Community Health Information Systems Unit.
COMREC	College of Medicine Research and Ethics Committee.
CW:	Children's Ward:
ETAT	Emergency Triage Assessment and Treatment
HCW	Health Care Worker(s)
HIMS	Health Information Management Systems
HDU	High Dependency Unit
KCH	Kamuzu Central Hospital
KCN	Kamuzu College of Nursing
MDG	Millennium Development Goal (s)
MHSSP	Malawi Health Sector Strategic Plan
MoH	Ministry of Health
MSP	Malaria Strategic Plan
NMCP	National Malaria Control Programme
NSO	National Statistics Office
SSA	Sub-Saharan Africa
QUECH	Queen Elizabeth Central Hospital
RN/M	Registered Nurse/ Midwife.
NMT	Nurse Midwife Technician
mRDT	malaria Rapid Diagnostic Tests/Testing
TCA	Thematic Content Analysis
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Malaria: It is an intermittent and remittent fever caused by a protozoan parasite that invades the red blood cells.

Severe malaria: This is a defined by clinical or laboratory evidence of vital organ dysfunction.

Cerebral Malaria: This is a clinical syndrome characterized by coma at least 1 hour after termination of a seizure or correction of hypoglycemia, asexual forms of plasmodium falciparum parasites on peripheral blood smears and no other cause to explain the coma.

Under-Five Child: A child who is below the age of five.

Presumptive diagnosis: Health care workers do not test to see if the patient has malaria parasites instead they assume that anyone with fever has malaria.

Quality of care: This is providing the patient with accurate evaluation and appropriate services with compassion in a technically competent and timely manner, with good communication and shared decision-making in a culturally sensitive manner.

ABSTRACT

Background: Severe malaria, the number one cause of morbidity and mortality in Africa and Asia causes imminent death in an under-five child if left unattended to. As such provision of timely, quality care to this age-group helps save lives and it also results in 46% reduction of all neurological impairments.

Aim: To explore and describe the quality of care that is provided to hospitalized under-five children suffering from severe malaria at Kamuzu Central Hospital, Children's' Special Care ward.

Methods: This was a descriptive, study that utilized qualitative approach. Purposive sampling was used to recruit participants. A semi-structured interview guide was used to collect data. Data was collected through face to face in-depth interviews by the researcher from 24th June 2014 to 25th July 2014. A digital tape recorder was used to record interviews with permission of the participants. A total of 25 Health Care Workers (HCWs') were interviewed. Thematic Content Analysis (TCA) was used to analyze data manually. Demographic data was collected using a questionnaire computed and analyzed using descriptive statistics.

Findings: Despite the fact that triage was implemented and that very sick children were priotized for urgent care, findings generally indicated that the quality of care that majority of hospitalized under-five children suffering from severe malaria received was poor and below standard. Major attributable reasons for poor quality care were severe shortage of Health Care Workers, poor and unfriendly infrastructures and shortage of essential medical supplies required for resuscitation.

Conclusion: Severe shortage of staff, poor infrastructures and shortage of essential medical supplies required for resuscitation resulted in delivery of poor quality care by

health care workers. It is therefore, recommended that more Health Care Workers should be deployed, there is need for infrastructure renovations and increased hospital funding by government to improve resource mobilization and availability.

Key words: Severe Malaria, Quality of Care, Under-five Children.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Combating malaria in under-five children continues to be a major challenge in most tropical areas as well as in resource constrained countries precisely Sub- Saharan Africa (SSA) and Asia. World statistics have shown that all regions have reduced their under-five mortality rate by more than half with exception of SSA and Southern Asia [Millennium Development Goal report, (MDG) 2014]. Even though, the annual rate reduction in under five mortality was more than three times faster in 2005 to 2012 than between 1990 and1995, still four out of every five deaths of under-five children continue to occur in these regions (MDG Report, 2014). Malaria is a significant cause of childhood morbidity and mortality in areas of stable malaria transmission [World Health Organization, (WHO), 2010]

Globally, despite having several interventions in combating malaria, in the year 2012 alone, malaria caused illness in 207 million people world-wide, with an estimated 627, 000 deaths of which about 480, 300 deaths (77%) were children under the age of five (WHO, 2012). This translated to about 1, 300 deaths of under-five children every day or that one child died almost every minute. Even though, Malawi is one of the six African countries, that is reported to be on track to meet MDG four (reduce the under-five mortality rate by two thirds between 1990 & 2015), the health indicators of children are still poor, as the country ranks number 15 amongst countries with the highest number of paediatric deaths world-wide (WHO, 2012).

Surveys conducted in Malawi have shown that malaria infection risk exists throughout the country. A cross sectional data on malaria, collected by the National Malaria Control Programme (NMCP) in a nationally representative Malaria Indicator Survey (MIS) in March and April 2010, revealed that that overall 43 % of children aged between six months and five years in the communities were infected with malaria parasites. It also showed that parasitaemia was more prevalent amongst rural children with 47% compared to children living in the urban areas who had a rate of 15% (NMCP, 2010). Further findings of the survey showed that there was an increase in the number of reported cases of malaria from 3.7 million in 2005 to about 6.1 million in 2009 [Health Information Management Systems (HIMS), 2010]. Likewise, HIMS statistics in the country also revealed that malaria accounts for 34% of all out-patient visits, 40 % of all hospitalizations of under fives and 40% of all hospital under five deaths (HIMS, 2010).

Malaria is caused by plasmodium falciparum which is transmitted via the bites of infected female anopheles mosquito (WHO, 2013). The disease, initially presents itself as simple malaria 10 to 15 days following a bite of an infected malaria parasite, then quickly progresses to cerebral malaria, a severe complication. In cases where treatment is delayed, the disease becomes life-threatening because it disrupts blood supply to the vital organs (WHO, 2013). Cerebral malaria, accounts for over 575,000 cases annually with 46% of survivors developing long-term neuro-cognitive sequelae (Idro, Marsh, John & Newton, 2010). Neuro-cognitive sequelae are defined as impairment of the neurological or cognitive function with the neurologic impairment comprising of loss of function in motor coordination, speech, vision, hearing domains and epilepsy (Mung'ala-Odera, Snow & Newton, 2004).

In Malawi, majority of sick under-five children who require hospitalization during the rainy season (October - April) suffer from severe malaria [Malawi Demographic Health Survey (MDGS), 2010], with most of them reporting to hospital with danger signs and complications (cerebral malaria, severe anemia, reduced level of consciousness, convulsions, respiratory distress and prostration (Malawi, Malaria Strategic Plan, 2011).

1.2 Background to the study

Providing quality paediatric care to sick children in hospitals is key to achieving Millennium Development Goal four. Quality of care is achieved through availability of adequate and skilled human resource, adequate material resources, availability of emergency care systems, availability of guidelines for common childhood illnesses like malaria and availability of good support systems. Globally, more than seven million children die annually due to preventable infectious diseases (WHO Global Health Observatory Report, 2012). SSA and Southern Asia are greatly affected with this burden, with more than 16 times the average for developed countries. In 2012 alone, about 6.6 million childhood deaths which had occurred in these regions resulted from malaria, pneumonia, diarrhea, malnutrition and HIV & AIDS (MDG Report, 2014).

Studies have shown that 50 % of children who get admitted in hospitals die in the first 24 hours of their admission as such, achieving favourable outcomes require early assessment, timely treatment and proper emergency care of sick children attending a health facility (Molyneux, Ahmad & Robertson, 2006; Molynuex, 2001). However, despite this scientific evidence, emergency and critical care tends to be the weakest parts of health systems in resource constrained setting such as Malawi, where falciparum

malaria is the major cause of the illnesses and deaths of under five children and remains a burden amongst this age – group (Malawi Health Sector Strategic Plan (MHSSP) 2011].

Despite the fact that World statistics reveal that expansion of malaria interventions led to 42% decline in malaria mortality (MDG Report, 2014), the disease still remains one of the leading causes of ill health and neuro-disability in children under the age of five (Bangirana, et al., 2011). According to MMSP (2011) Malawi, as a country is implementing preventive and treatment measures in order to control the high morbidity and mortality. These include free distribution of insecticide treated bed nets to under-five children and pregnant women and quality improvement in case management. However, despite this collective effort under-five children are still dying from severe malaria, with some recovering with neurological and cognitive impairments. Similarly, a local study found that managing malaria require availability of mothers and guardians who have adequate information on etiology treatment and prevention of malaria in order to have timely treatment for their sick children. In 2005, Munthali conducted a study on perceptions regarding etiology, treatment and prevention of malaria in under five children amongst the Tumbuka tribe of the Northern Malawi. Findings in the study revealed that there were delays in seeking the right malaria treatment and these delays were attributed to factors that included perceptions about the cause of malaria, distances to the health centers, unavailability of drugs in health centres and also the perceptions that antipyretics are the right treatment for the febrile illness.

Even though, infants (under six months of age) have been considered to be relatively immune against malaria due to factors which include age (since in the first six months of life the hemoglobin is less attractive to malarial parasites), breast milk diet

which is not particularly favourable for the multiplication of *plasmodium falciparum* parasites and antibodies which are inherited from the mother (Munthali, 2005), there is a substantial burden of the disease in Malawian infants during the first six months of life with about 10% of these infants hospitalized with malaria (Larru & Molyneux, 2009). This is evidenced in a study done in rural Malawi by Mangochi Malaria Research Project. Findings revealed that amongst 2, 649 (77.2%) infants, about 23.3% of them who were less than 3 months of age were infected with plasmodium falciparum. Further findings showed that the rate of infection increased by 30% during the high transmission rate (Slutsker, et al., 1996).

Therefore, considering the big numbers of under-five children who get infected with plasmodium falciparum in Malawi and get hospitalized in public hospitals during the rainy season (October to April), and considering the big HCW/patient ratio, chances that some hospitalized under-five children may suffer severe complications of malaria while in hospital are high. This could result from lack of adequate monitoring and provision of sub-optimal quality care following work overload which results mostly from shortage of staff. The [Nurses and Midwives Council of Malawi (NMCM) 2002)], recommends one nurse to ten patients for the general wards, one nurse to seven patients for the labor ward and one nurse to one patient for the intensive care unit. However, this is not the case in Malawian public hospitals where because of inadequate staffing, general wards such as paediatric wards have one nurse caring for about 100 or more patients (Maluwa, Andre, Ndebele & Chilemba, 2012). This practice negatively impact on the quality of care that under five children suffering from severe malaria receive. This is because health care workers fail to provide the recommended quality of care due to increased workload, exhaustion, stress, anxiety and burn out (Maluwa et al., 2012). It

is against this background, that the researcher aims at exploring and describing the quality of care that is provided to hospitalized under-five children suffering from severe malaria at Kamuzu Central Hospital (KCH), Children's' Special Care Ward in Lilongwe, Malawi.

1.3 Problem statement

In Malawi, falciparum malaria is endemic throughout the country [Malawi Demographic Health Survey (MDHS), 2010]. National statistics for malaria showed that the country experiences about 6 million malaria episodes every year with under-five children falling in the most vulnerable age-group due to their under-developed immune system (HMIS, 2010). In 2012 alone, Kamuzu Central Hospital Paediatric Department experienced about 17,105 hospital admissions, out of which 9,821 were malaria cases representing 57.4%. The Department also experienced 1,066 deaths out of which 413 representing 39% were due to severe malaria and its related complications (KCH, 2011). However, despite these alarming statistics no study has been conducted at this hospital to explore and describe the quality of care that is provided to under five children suffering from severe malaria, a gap that warrants a need to conduct the current study. The researcher therefore, aimed at exploring and describing the quality of care that is provided to hospitalized under-five children suffering from severe malaria at KCH, Children's' Special Care Ward, in Lilongwe, Malawi.

1.4 Broad Objective

This study aimed at exploring and describing the quality of care that is provided to hospitalized under five children suffering from severe malaria at Kamuzu Central Hospital, Children's' Special Care Ward in Lilongwe, Malawi.

1.4.1 Specific Objectives

- Assess Health Care Workers (Nurses and Clinicians) knowledge on severe malaria and provision of quality of care.
- Describe the availability, accessibility and utilization of malaria guidelines.
- Explore the management of severe malaria (diagnostic processes, medical treatment and nursing care).
- Explore factors that hinder the provision of quality care.

1.5 Significance of the Study

The expected study findings will unveil the key elements that are needed to improve the delivery of comprehensive quality of care to hospitalized under-five children, who suffer from severe malaria at KCH. The findings will also add to the body of knowledge in the Ministry of Health (MoH), and Community Health Services Unit (CHSU). This will aid in the development of strategies to improve delivery of quality care. Improving delivery of quality care will help reduce the morbidity and mortality from severe malaria illness in under–five children henceforth, contribute to meeting MDG four.

1.6 Conclusion

Malaria is a killer disease which causes significant disabilities in under-five children. About 39% hospital paediatric deaths in the year 2012, at KCH, resulted from severe malaria, and its related complications (KCH, 2011). As such, there is a need to explore and describe the quality of care that very sick children who present to the hospital with life threatening conditions receive on arrival and throughout hospitalization. Findings from this study will help policy makers in the development of strategies that would help

improve the delivery of quality care to under-five children suffering from severe malaria at KCH, Childrens' Special Care Ward.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines the existing literature relevant to the current study, "Quality of care provided to hospitalized under-five children suffering from severe malaria, at KCH, Children's' Special Care Ward, Lilongwe". A review of relevant literature was conducted to generate a picture of what is known about a particular situation (Burns & Grove, 2011). This literature review put together findings of studies done world-wide on quality of care and severe malaria. This was key in shaping the discussion, conclusion and recommendations of the study.

The literature review was guided by the study objectives; to assess nurses' and clinicians' knowledge on severe malaria and provision of quality care, to review availability, accessibility and utilization of malaria guidelines, to explore the management of severe malaria (diagnostic process, medical treatment and nursing care) and lastly to explore factors that hinder the provision of quality care. Quality of care framework by Donabedian (1966), father of quality which comprise of structure, process and outcome was also emphasized.

Qualitative researchers often avoid extensive literature search prior to collecting their own data (Polit & Beck, 2010). In this study, an upfront review of existing literature was conducted. This was beneficial as it provided the researcher with important background knowledge of the topic under study. The literature search was conducted using electronic databases for peer reviewed research articles published

between 1996and 2014. This took into consideration that malaria is an ancient, tropical disease and also that a lot of studies are being done on malaria in both developed and developing countries.

Findings of the search revealed that majority of the studies were conducted in developing countries specifically in Africa and Asia. A literature search strategy on HINARI, Pub Med, Cumulative index to Nursing and Allied Health Literature (CINAHL), EBSCOhost, Cochrane Library and Google Scholar databases was done starting from January 2014 (from the development of the proposal up to the writing of the discussion section). This was done with the purpose of locating published research data on quality of care that is provided to hospitalized under-five children suffering from severe malaria. Relevant related studies cited by the retrieved articles were hand searched again with an aim of increasing the chances of finding articles relevant to the study. The articles that were specific and relevant to the current study were included in the review. Manual searching of relevant malaria journals and sourcing of secondary references also extended the search. Literature review has covered the following areas; burden of severe malaria in the under-five children, health care workers knowledge on severe malaria management, health care workers knowledge on quality care, health care workers utilization of malaria guidelines management of severe malaria (quality triage and emergency care, quality diagnosis and quality treatment) and factors hindering delivery of quality care in severe malaria management.

2.2 Burden of severe malaria in the under-five children

Despite employing several strategies to prevent and treat malaria world-wide, the disease has refused to decline, especially in SSA. WHO (2012) describes severe malaria as a medical emergency that is characterized by clinical or laboratory evidence of vital organ dysfunction. Cerebral malaria, a major complication of severe malaria affects the neuro-cognitive functions of the infected under-five children. It mostly disrupts their cognitive abilities and behaviors. This age-group is also vulnerable to suffer permanent disabilities following severe malaria infection due to their under-developed immune system. This is supported by Idro, et al., (2010) who conducted a study which aimed at investigating the mechanisms of pathogenesis of neuro-cognitive sequelae. Findings revealed and described some specific severe complications of severe malaria. These included; coma, seizures, cognitive sequelae, speech and language impairment, epilepsy, behaviour and neurological psychiatric disorders.

Similarly, in Uganda, Bangirana et al., (2011) conducted a study that aimed at examining the effects of malaria with neurological involvement on cognitive ability, academic achievement and behaviour in the children three months after infection. Findings showed that children who had suffered severe malaria with neurological involvement had increased behavioural problems. This also concurred with findings of similar study by Idro, et al., (2007), who found that children who had suffered cerebral malaria portrayed behavioural problems. These included lack of attention, hyperactivity, impaired social development, destructive behaviour and impulsiveness. Cerebral malaria also distorts proper pronunciation of words and abilities to speak normally.

Consistent with these findings is a study conducted by Carter, et al., (2006). The study aimed at ascertaining the occurrence of acquired language disorders by assessing

at a late stage, the language outcome of children who have had one or two complications of severe malaria and comparing these groups with children who were unexposed to severe malaria. Findings showed that cerebral malaria was a leading cause of acquired language disorder in the tropics and that about 11.8% of surviving children had deficits in vocabulary, phonology, word finding, receptive and expressive speech. The author also found that some children had concurrent impairments in non-verbal functioning, memory or attention. Supporting these findings is a similar study conducted in Kenya by Carter, et al., (2005). Findings showed that 25% of children who had suffered cerebral malaria had long-term cognitive impairment.

It can be drawn from these study findings that severe malaria leaves physical, psychological and social burden on the under-five children as well as on countries where the disease is endemic. However, this information is scanty in Malawi, as such; there is a need to determine the magnitude by conducting studies on the same.

Failure in complete reduction of illnesses and deaths of under five children due to malaria has put a lot of strain on the economy of countries where the disease is endemic. This is felt through efforts made towards resource mobilization, in order to manage malaria preventive and treatment therapies (MDHS, 2010). Literature has shown that treating severe malaria appears to be expensive than treating simple malaria. This is due to many interventions and multiple investigations that are conducted for analysis due to the complexity of the disease. This is evident in a study conducted by Sicuri, et al., (2013). Findings revealed that it was very costly to treat severe malaria. Further findings in this study, showed that estimations for total annual costs (in millions) nation-wide were US$ 37.8 for Ghana, US$ 131.9 for Tanzania and US$ 109.0

for Kenya. This was then translated in US$ 11.99, cost per person for Ghana, US$ 6.79 for Tanzania and US$ 20.54 for Kenya.

2.3 Health Care Workers Knowledge on Severe Malaria Management

Health care workers adequate knowledge on severe malaria and its management is fundamental for delivery of quality care. Availability of Nurses, Medical Officers and Clinical Officers who have adequate knowledge in the disease and helps them to correctly manage the disease. This is evident in a qualitative study conducted in Tanzania by Nordblom (2010). The study objective was to explore on the experiences of malaria and attitudes to malaria prevention amongst Tanzanian nurses. Eleven nurses from three hospitals were interviewed. Findings showed that nurses had adequate knowledge on malaria and that this knowledge helped them to manage the disease easily. Similarly, a cross- sectional survey was conducted in Malawi by Kalilani-Phiri, Lungu and Coghlan (2011). Findings generally indicated that majority of the participants had knowledge about ACT and treatment guidelines for malaria.

Another study was conducted by Ahir and Bala (2012). The study aimed at assessing the perceptions and attitudes of resident doctors regarding use of ant malarial drugs for treatment of all types of malaria cases in accordance with the national policy on malaria -2010. Findings showed that only 18.8% of the resident's doctors were aware about the drug policy. They also found that drug dosage, duration and indication of primaquine was known only to 21(32.8%) of resident doctors. It was noticeable in this study, that knowledge and awareness regarding drug policy among resident doctors was unsatisfactory.

Despite use of different settings and methodologies in data collection, these studies revealed that availability of adequate knowledge on malaria by health care workers was a pre-requisite in the successful management of the disease. Lack of adequate knowledge would result in over or under diagnosis, over or under prescription of ant malarial and over or under treatment of the disease. However, these studies did not explore on health care workers knowledge regarding severe malaria diagnosis and treatment.

Likewise, in Ghana, Hoffman et al., (2011) conducted a study on healthcare providers' knowledge and practices relating to the prevention of malaria and insecticide-treated nets in Ghana. This study compared what is known about Insecticide Treated Nets (ITNs) to the related knowledge and practices of healthcare providers in four low- and middle-income countries. Findings showed that there was a 75% response rate across Ghana, Laos, Senegal and Tanzania on health care workers knowledge. It was therefore, concluded in this study that improving healthcare providers' knowledge and practices is an untapped opportunity for expanding ITN utilization and preventing malaria. Findings in this study showed that knowledge on malaria informed practice as well as prevention of the disease. As such health care workers require having adequate knowledge to be able to inform the public, in order to have compliance on the implementation of the malaria preventive measures.

2.4 Health Care Workers Utilization of Malaria Guidelines

Guidelines are essential tools in directing care in emergency settings where speed and accuracy are always a priority (Molynuex, 2010). Severe malaria is commonly treated as a medical emergency since it is usually accompanied with danger signs (coma, convulsions, severe aneamia, and reduced level of consciousness,

respiratory distress, and prostration etcetera). According to Donabedian (1988), care is expected to be of higher quality when there are strategies for monitoring adherence to recommended procedures and when clinical staff is clear about their roles and responsibilities. Most studies done in Africa have indicated that health care workers in most malaria endemic countries do not adhere to malaria guidelines and protocols when managing the disease (Bilal et al., 2013; Udoh et al., 2013; Chinkhumba et al., 2010; Ezenduka, Okonta & Esimone, 2014). An increasing trend in morbidity and mortality annually due to malaria is a clear understanding for health care workers inappropriate treatment or improper case management due to guidelines non adherence (Zoyah & Diedong, 2014). Health care workers who do not adhere to malaria guidelines do so for a variety reasons. Some do not follow the guidelines because of shortage of staff, low initial training coverage and pressure of work. Others fail to follow guidelines because of lack of regular supportive supervision, lack of essential drugs and supplies, lack of onsite mentoring and lack of refresher courses (Zoyah & Diedong, 2014).

In Sudan, Bilal et al., (2013) conducted a cross sectional hospital-based study on poor adherence to the malaria management protocol among health workers attending under-five year old febrile children at Omdurman Hospital. This study aimed at investigating health care workers adherence to malaria national protocol for the management of malaria among under five children. A structured questionnaire was used to collect information on febrile under five children. A total of 749 febrile children were enrolled. Findings in this study, indicated lack of malaria investigation in majority of the children. They also found that some children with negative malaria tests were treated with an anti-malarial. It can therefore, be concluded in this study that health care

workers were non-compliant with diagnosis, prescription of ant malarial and actual malaria treatment.

Similarly, in Nigeria, Udoh et al., (2013) conducted an audit to assess how well health care workers in public and private facilities comply with the current national treatment. Findings showed frequent use of light microscopy in confirming diagnosis of malaria other than rapid diagnostic tests. The study also found that about 58% of the cases in public hospitals and 47% of the cases in private hospitals had received incorrect doses of parenteral ant malarial drugs. It was therefore, concluded in this study that case management need to improve and that health care workers needed to be updated regularly on the amended guidelines on the management of severe malaria.

Similarly in Nigeria, Ezenduka, Okonta and Esimone (2014) conducted a study that found that about 51% (1105) of the prescriptions was based on presumptive treatment and that 58% of the slides with negative results received ant malarial drugs.

Although these studies were conducted in different care settings findings revealed similar results on health care workers poor adherence to current national and international malaria treatment guidelines. If health care workers do not have the goal of constantly adhering to malaria treatment guidelines then it is unlikely that quality in diagnosis, prescription of ant malarial and treatment of severe malaria will be met at all times. This has a negative implication on the patient outcomes, as it may result in over diagnosis and overtreatment. Furthermore, even though an extensive literature search has shown that there is information on use of malaria guidelines by health care workers; in Malawi this information is scanty.

In contrast, to findings in these studies is a study conducted in Ghana by Zoyah and Diedong (2014). The aim of the study was to improve quality care. Both qualitative

and quantitative data collection methods were employed. Findings showed that the level of compliance to the standard treatment guidelines by health professionals in the hospital was 85% to 95 % for diagnosis treatment and supportive care.

As observed in this study, findings generally indicated that health care workers constantly adhered to standard malaria treatment guidelines. This was good because it promoted delivery of quality care in the diagnosis, prescription of ant malarial and treatment of the disease.

2.5 Quality in the Management of Severe Malaria

Severe malaria is the major cause of the morbidity and mortality among young children under the age of five as such, delivery of prompt quality emergency care helps reduce severe complications and death occurring in the first 24 hours of hospital admission (Molyenuex, 2001). However, such being the case, studies indicate that quality of care in severe malaria case management is sub-optimal and remains a challenge in most malaria endemic care settings (Diep, Lien & Hoffman, 2009; Achan, et al., 2011; Idro & Aloyo, 2004).

In Malawi, Diep, Lien and Hoffman (2009) conducted a study that aimed at assessing the clinical care of children presenting with malaria in this low-income African country, in order to highlight potential areas of improvement in the quality of care. The study utilized both qualitative and quantitative data collection methods. A total of 132 case-notes were reviewed. Findings revealed poor malaria case management. A total of 28 children (21%) were admitted with severe malaria. Majority of the patients 88(68%) suspected to have malaria were not screened, blood slides were only checked in 41(32%) of the 129 patients. 104 (79%) patients received correct treatment while 27 (20.6%) patients got inappropriate doses. 5 (18.5%) patients were given more than the

recommended dosages and 22 (81.5%) patients received less than the recommended (too low or too short regime).

Similarly, in Uganda, Achan, et al., (2011) conducted a study on Case Management of Severe Malaria - A Forgotten Practice: Experiences from Health Facilities in Uganda". The aim was to evaluate the management practices for severe malaria in Ugandan health facilities. A total of 181 health care workers and 868 patients/caretakers were interviewed. Data triangulation was used. Findings revealed that there was poor and sub-standard quality care. None of the in-patient facilities had a consistent availability of all seven components of a basic care package for the management of severe malaria, referral practices were appropriate for only 10% of the patients. Prompt care at any health facility was reported by only 29% of patients. Only 27% of patients had correct diagnosis of severe malaria. Majority of patients had quinine rightly prescribed and it was correctly administered in correct volumes in only 18% of patients. Majority of the patients (80.1%) had several doses of quinine administered in one single bottle of 5% dextrose. In 385(44%) patients, medications were bought by patients and in 478 (70.6%) medical supplies were bought by patients.

From these studies it can be drawn that the care that was delivered to malaria patients by health care workers was sub-standard and of poor quality. If health care workers do not observe quality in the diagnosis, treatment and diagnosis of severe malaria then combating the disease to a level of no public health importance will not be achieved in the near future. In Malawi, however, there is limited information specifically on quality in severe malaria management of under five children regarding emergency care, diagnosis, prescription of ant malarial and treatment.

Furthermore, these findings are consistent with results of a study done in Uganda by Idro and Aloyo (2004). Findings showed adverse factors in severe malaria case management. These included inadequate assessment, inappropriate treatment and poor monitoring which was noted in 76% of in-patient children. They also found that there were delays in care in over 50% of the cases due to lack of essential drugs and supplies needed for resuscitation and that care givers bought at least one resuscitation item in over 50% of the cases.

2.5.1 Quality Triage and Emergency Care in severe malaria management

Having a well-organized emergency care set-up, coupled with adequate and skilled health care workers results in good patient outcomes and reduction in death rate. Under five children suspected to have severe malaria mostly present to the hospital with danger signs as such, require to be triaged in order to access prompt emergency care. Triage is defined as the process of rapidly examining all sick children when they first arrive in hospital in order to place them in emergency signs category, (requiring emergency treatment) priority signs category and non-urgent category (Malawi, ETAT Participant Manual, n d).

Despite the fact that severe malaria causes an imminent death of an under five child, emergency and critical care in resource constrained countries such as Malawi is said to be one of the weakest parts of health care systems (Razzak & Kellermann, 2002). Some of the contributing factors to poor emergency care could be lack of knowledge and skills usually acquired during in-service trainings. However, in Africa some studies have shown that when health care workers are equipped with knowledge and skills on emergency care it results in desirable patient outcomes. This is evident in one of the studies conducted in Malawi by Molyneux, Ahmad and Robertson (2006).

Findings showed that training of nurses in triage and emergency care had resulted in decrease in mortality from 10-18% per week before the opening of the emergency department, to 6 -8 % afterwards despite a rise in the number of admissions. The study also reported that an audit at the hospital had also shown that there had been a decrease in the proportion of deaths occurring within 24 hours of arrival from 36% before trainings to 12-6 % afterwards. Findings in this study indicate that on job training of nurses in triage and emergency care improved performance on the triaging process as well as adherence to ETAT guidelines. The resulted in desirable patient outcomes.

Similar findings were also reported by Robison, et al., (2012). Findings in this study showed that improved paediatric emergency care resulted in a decrease in early mortality, from 47.6 to 37.9 deaths per 1000 admissions and a decrease in total hospital mortality. It was therefore, concluded in this study, that employing simple and inexpensive interventions to improve paediatric emergency care was associated with decreased hospital mortality rate, at this under-resourced hospital.

2.5.2 Quality Severe Malaria Diagnosis

WHO Malaria Guidelines (2012) stipulate that quality severe malaria diagnosis in malaria endemic settings should be based on parasitological diagnosis, that any negative result should not be managed with ant malarial medication, but should warrant carrying out of further investigations to establish the probable cause. Having early and accurate diagnosis of severe malaria followed by prompt treatment reduces the risk of severe disease in these care settings (WHO, 2012). Furthermore, consistent implementation of these guidelines would be beneficial in saving resources and drugs which are mostly in short supply in these endemic areas.

However, despite these international recommendations and extensive trainings on parasitological diagnosis, literature has shown that health care workers in most malaria endemic settings still utilize presumptive diagnosis (Mubi et al., 2013; Kyabayinze et al., 2010; Msangeni et al., 2011; Steinhardt et al., 2014). This practice compromises quality in severe malaria case management.

In Tanzania, Mubi et al., (2013) conducted a survey. Twenty health care workers were interviewed to collect information on their knowledge, perceptions, and prescription behaviours in relation to malaria Rapid Diagnostic Tests (mRDTs). 195 exit interviews were also conducted with fever patients and in case of children, their caretakers were asked about their knowledge and attitudes towards malaria testing. Findings showed that of the 168 patients seen at the facilities with the available diagnostics, only 105 (63%) were tested for malaria, 31 (30%) of whom tested positive. Ant malarial drugs were prescribed to all patients with positive test results, 14% of patients with negative results and 28% of patients who were not tested for malaria.

Likewise in Uganda, Kyabayinze, et al., (2010) conducted a study on Use of mRDT to improve malaria diagnosis and fever case management at primary health care facilities in Uganda. The study aimed at evaluating the effectiveness of mRDT in public health setting in Uganda. The study employed a qualitative assessment using in-depth interviews, to collect data from health care workers and health centre attendees regarding their experiences and acceptance of mRDT. Findings showed that 30% of patients found to have negative mRDT results were prescribed ant malarial drugs. They also found that majority of health care workers (92%) believed that positive RDT results were always truly positive (sensitivity), but only half (51%) believed that negative RDT results were always truly negative (specificity), reasoning that the RDTs can miss a true

case of malaria. This kind of reasoning resulted in health care workers, non-adherence to malaria guidelines. It was therefore, concluded in this study that targeting treatment to patients with parasitological confirmed malaria helped in improving quality of care, reduction in over-consumption of ant malarial which in return, delayed development and spread of drug resistance. Findings in these studies generally indicate that that despite trainings being conducted prior to use of mRDT in malaria endemic settings, health care workers still hold on to their old ways of practice, that of utilizing presumptive or clinical diagnosis. This is in contrast to current WHO malaria treatment guidelines which recommend parasitological diagnosis. This non-adherence has resulted in poor quality delivery due to over or under diagnosis of severe malaria and over-consumption of ant malarial in these malaria endemic countries. Furthermore, a gap was identified to conduct further studies to extensively explore on health care workers perceptions and beliefs regarding presumptive and parasitological diagnosis.

Consistent with this is another country-wide geographically-stratified health facility survey conducted in Malawi by Steinhardt, et al., (2014). The survey aimed at assessing the quality of out-patient malaria diagnosis and treatment. Findings showed missed malaria diagnosis and that about 1.5 million of the 4.4 million malaria patients, who were seen in public facilities annually, received incorrect treatment. It was also found in this survey that about 2.7 million patients without clinical malaria were inappropriately treated with Artemisinin-based Combination Therapy (ACT), the first line ant-malarial treatment. Likewise, in Tanzania, Msangeni et al., (2011), conducted a prospective observational hospital-based study. Findings revealed that health care workers utilized presumptive diagnosis to diagnose severe malaria. They found that a

total of 494 patients were clinically diagnosed and admitted as cases of severe malaria, of which 55.3% were children below the age of five.

2.5.3 Quality Severe Malaria Treatment

Quality treatment in severe malaria demands timely administration of initial treatment. Prompt administration of ant malarial drugs within one hour of hospital arrival in under five children diagnosed with severe malaria, is necessary to control severe complications which arise with advancement of the illness (Molynuex, 2010). Molyneux, et al. (1989) found that malaria episode began with a febrile illness 1-3 days prior to admission and progressed rapidly to a severe disease with neurological manifestations within 12 hours of admission. This rapid progression allow a brief opportunity for therapeutic intervention to prevent plasmodium falciparum parasites from maturing to the more pathogenic sequestered stages, organ failure and high risk of death for hospitalized children (Newton, 2000).

However, despite this scientific evidence studies done in malaria endemic settings have shown that there are delays in initiation of severe malaria treatment (Achan, et al. 2011; Idro and Aloyo, 2004). This practice compromises quality in severe malaria case management. Supporting this is a study conducted in Uganda by Achan et al., (2011). Findings revealed that there were delays in receiving initial care, as the median waiting time at the facility was 3 hours (range 0-24 hours). About 33 patients (3.8%) reported that it took approximately 8 hours before they had received any care. A similar study was conducted in Uganda by Idro and Aloyo also revealed delays in initial care. Only about 23.4% (182/784) of the total number of sick children seen received the first dose of parenteral ant malarial within 1 hour of arrival. These studies revealed

delays in timely delivery of initial care. These delays compromised quality in the management of severe malaria.

Due to rapid progression of severe malaria, scientific evidence has shown that parenteral artesunate is the recommended drug to achieve rapid plasma therapeutic levels (Dondorp et al. 2005; Dondorp, et al., 2010; Sinclair, Donegan, Isba & Lalloo, 2012; Odey et al., 2013). WHO, (2012) also recommended that due to its effectiveness in preventing severe complications and death, the drug should be used in the treatment of severe malaria in malaria endemic settings. According to WHO (2012), Artesunate has faster parasite clearance rate than quinine since the drug kills young circulating ring-stage parasites and that the drug is well tolerated with no attributable local or systemic adverse effects. Furthermore, the drug can either be administered intravenously or intramuscularly as such, it is easily administered by health care workers compared to intravenous quinine which require a considerable amount of time to prepare and administer it. This is consistent with findings of a randomized trial study by Dondorp, et al., (2005), Findings in this study showed that artesunate caused a reduction in African children by 22.5% and in Asian patients by 38.6%. Further findings, also showed that parenteral artesunate was simple to administer, safe and reduced mortality substantially compared with quinine. This concurred with what majority of participants in this study had also reported that parenteral artesunate is effective than quinine, and that children treated with parenteral artesunate improves quickly, and spend few days in hospital before discharge.

Similarly Dondorp, et al. (2010), conducted an open–label randomized trial in African countries. The study aimed at comparing parenteral treatment with either

artesunate or quinine in African children with severe malaria. Findings showed that treatment with artesunate was far much better than treatment with quinine. This was because artesunate significantly reduced the risk of death, reduced parasite clearance time and hypoglycemia in African children with severe malaria than quinine. Even though these studies were done in Africa and across, findings in both studies indicate that parenteral artesunate was the most effective drug in the treatment of severe malaria. However, no studies have been conducted to determine its effectiveness on Malawian children. Similar with these findings, are results of a systematic review by Sinclair, Donegan, Isba, and Lalloo (2012). The review included eight trials which identified 1,664 adults and 5,765 children in Asia and Africa. The study aimed at comparing intravenous, intramuscular or rectal artesunate with intravenous or intramuscular quinine for the treatment of adults and children with severe malaria who were unable to take medication by mouth. Findings showed that treatment with artesunate significantly reduced the risk of death both in adults and children. Further findings also showed that treatment with artesunate increased the incidence of neurological sequelae at the time of hospital discharge. However, majority of these sequelae were transient and no significant difference between treatments was seen at the later follow-up.

2.5.4 Factors Hindering Delivery of Quality Care in Severe Malaria Management

Proving quality care to hospitalized under-five children suffering from severe malaria requires availability of adequate and skilled human resource, enough material resources coupled with good infrastructure. However, in resource constrained countries such as Malawi, majority of these patients do not receive the quality of care they deserve due to challenges of which include severe shortage of human resource, poor infrastructures and limited material resources required for the delivery of quality care.

2.5.5 Shortage of Human Resource

Availability of knowledgeable and skilled health care workers is key in quality care delivery to fewer than five children suffering from severe malaria. Having shortage of staff is a barrier to quality care. Molyneux and Dube (2013), agree that shortage of professional resource is a major barrier to quality care delivery. Children suspected to have severe malaria mostly report to hospitals in critical condition as such, require urgent care by adequate and skilled personnel. However, this is not always the case world-wide, especially in less developed countries such as Malawi, where shortage of staff is one of the major challenges being experienced on a daily basis. Supporting this is a study conducted in India by Sarkar, Shah and Murhekar (2012). The study aimed at assessing the quality of care. This was done through review of hospital records of severe malaria patients. Findings showed gross deficiencies in care, and these were attributed to shortage of HCWs' and big doctor /nurse patient ratio. The big ratio numbers resulted in increased workload which eventually gave rise to poor monitoring of essential parameters. These included vital signs such as temperature, fluid monitoring, lack of maintenance of intake and output balance charts, and lack of monitoring of hypoglycemia in patients with severe malaria illness. Likewise, a study conducted in Malawi by Muula (2003), found that inadequate staffing leads to delivery of poor quality of care, since the health care workers focus on managing quantity other than

quality. Similarly, a situational analysis study conducted in Malawi by Agyeman-Duah, et al., (2014), found that shortage of staff was a major barrier in the delivery of quality care.

Despite these studies being done in different care settings, observations indicate that shortage of staff came out as one of the major barriers to delivery of quality hospital care. Donabedian, the father of quality, also emphasized on the availability of adequate human resource for successful delivery of quality care.

This is evident in a cross-sectional retrospective observational study conducted in United Kingdom by West, et al., (2013). The study aimed at finding out if the size of the work force (nurses, medical doctors and support staff) had an impact on the survival chances of critically ill patients. Findings showed that availability of higher numbers of nurses per bed and availability of higher numbers of consultants was associated with higher survival rates. Findings in this study also supported claims that availability of adequate medical and nursing staff is associated with the survival of critically ill patients.

2.5.6 Inadequate Availability of Essential Medical Supplies and Equipment

Having enough medical supplies for provision of care in hospitals, is one of the basic necessities in successful implementation of quality health care delivery (Anand & Barnighausen, 2004). However, in malaria endemic regions, especially in SSA, including Malawi, during the rainy season months (October-April), Paediatric wards are fully congested with under-five children suffering from severe malaria and its complications. This puts a lot of strain on material resources which most of the time are insufficient or not available. Medical supplies and drugs required for resuscitation of patients in emergency care settings which include; glucometers and gluco-sticks, 50%

dextrose, ambu bags, end tracheal tubes, paraldehyde, diazepam, phenobarbitone, suctioning machines and oxygen therapy are key to quality care delivery.

Scarcity of these materials results in unnecessary delays, undesired outcomes and poor quality care delivery. This is supported by Bangdiwala, Sharon, Okoye & Tollman, (2011), who found that lack of resources is the problem that is mostly experienced in resource limited countries which mostly have poor economies and weak health care systems. Another study done in Tanzania, by Baker, et al. (2013) conducted a study that aimed at assessing the structure and availability of resources for emergency and critical care in Tanzania in order to identify the priorities for improving care in this neglected specialty. Findings showed that majority of equipment and drugs required for emergency and critical care in hospitals were available.

This is in contrast with Idro and Aloyo 2004 who found that essential supplies required in the emergency care in the management of severe malaria were lacking.

2.6 A Conceptual framework

A conceptual framework is an integrated model of care that is designed to meet the health care needs of patients, families and communities (Pindani, 2010). Utilizing a conceptual framework in scientific studies is very essential, as it helps in establishing a basis for developing priorities (Stanhope & Lancaster, 2004). Furthermore, a conceptual framework serves to explain why things are done in a particular way. The quality of care conceptual framework by Avedis Donabedian which has three types of measures; structure process and outcome (SPO) was used to guide the current study (Donabedian, 1980). This framework was chosen because it can determine the quality of life of hospitalized under five children suffering from severe malaria.

2.7 The concept of quality

Quality of life is determined by quality of care that is being provided by health care workers in health care settings. Donabedian (1988), the father of quality described quality care as the ability to achieve desirable objectives using legitimate means. The Structure-Process -Outcome (SPO) quality framework has been chosen to guide this current study. This framework has been chosen because it examines quality care extensively and relates very well to the aim of this study, which is to explore and describe the quality of care that is provided to hospitalized under-five children who are suffering from severe malaria.

2.8 An overview of Donabedian quality of care framework and its application to the current study

Donabedian defined SPO model as a three-part approach to quality assessment that gives the necessary information about quality care. The three categories of quality measures which are structure, process, and outcome are not independent but are linked in a linear manner (Donabedian, 2003). The three part approach to quality assessment is possible only because good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome (Donabedian, 1988). According to SPO model (Figure: 1) poor quality care results from poor process, likewise a bad outcome is associated with poor performance of an individual. Therefore, having adequate qualified staff, good skill mix and adequate equipment would yield good quality care.

Figure: 1 Diagram of Donabedian framework

2.8.1 Structure

Structure is concerned with the adequacy of facilities and equipment, human resources, qualifications of the staff and their organization, the administrative structure and operations of programs and institutions providing care (Donabedian (1980). Structure is concerned with the quality of care under the setting where care takes place (Pindani, 2010). For instance under five children suffering from severe malaria are cared for in hospital settings. Structure also addresses the availability of well structured systems, both human and material resources required for the provision of quality care (Peters & Sellick, 2006). Donabedian (1988) assumes that given proper settings and organizational structures, good patient care will tend to follow**.**

Structural assessment means assessing the setting in which care takes place and the means by which it is delivered (Donabedian, 1990). Structural attributes become indirect measures of the quality of care as well as indicators of where the quality of care is likely to be deficient (Donabedian, 1966). One would expect care to be of higher quality when all clinical staff are clear about their roles and responsibilities and when there are strategies for monitoring adherence to recommended procedures. Sick children and their families have attributes which can influence both the process and outcomes of health care. Donabedian (2003) explained that the context in which care is delivered

affects both the process and outcome, for instance if the place where care is being delivered is unpleasant people will opt not come for services as result patients will not receive the care, or those who opt to come for the services.

In this study, structure will encompass infrastructure, human resources material resources and availability of malaria guidelines. It proves difficult to provide the required quality care for severe malaria in resource constrained countries such as Malawi, because the disease depends on the availability of good infrastructure, adequate human resource, effective treatments, blood transfusion services, functional referral systems, and adequate organization of hospital services such as laboratory support (Achan et al., 2011).

2.8.1.1 Infrastructure

Infrastructure refers to the environment in which care is being delivered. Donabedian (1966) explained that having a good infrastructure aid in forming a basis for delivery of good quality care. This is supported by Pasquaele et al. (2013) who conducted a study in Sudan which aimed at evaluating the progress and the challenges of the national malaria control programme. Findings revealed that poor infrastructure was a draw back in the smooth implementation of the national malaria programme. In agreement to these findings is a study conducted in Tanzania, by Baker, et al. (2013). Findings revealed deficiencies in infrastructure conductive for delivery of quality care. Malawi, being a developing and a resource constrained country, has infrastructure in majority of its public hospitals outdated, very small and old, such that they are unfavourable, unfriendly and provide a work environment that is not conducive for delivery of quality care (Maluwa et al., 2012). According to Maluwa, et al. (2012) unfavourable infrastructure is a barrier to quality care delivery because it results in

increased bed capacity and congestion which eventually compromise and adversely affect the delivery of quality nursing care.

2.8.1.2 Adequate human resource

According to Donabedian the father of quality, delivery of quality care is depended on availability of adequate human resource. Children suspected to have severe malaria come in critical condition as such, require urgent care by adequate and skilled personnel as such require the availability of adequate health care workers who are knowledgeable and skilled in quality care delivery. Hence assessing staff attributes is an integral part of evaluating the structural quality of health care (Mndolo, 2015). Gardener Gardener and O'Coneal (2012) conducted a study that utilized Donabedian quality care framework to evaluate the Structure, Process and Outcome of nurse practitioner service. Findings showed that adequate and detailed preparation of Structure and Process is essential for the successful implementation of a nursing service innovation. It was therefore, recommended and concluded that. Understanding the structure process requirements of establishing nursing service innovation lays the foundation for safe effective and patient centered care, and it was therefore, concluded that the Donabedian framework of structure, process and outcome evaluation is the valuable and validated approach to examine the safety and quality of a nursing service innovation. Similarly health care workers who manage hospitalized children suffering from severe malaria require to be competent and skilled so that they are able to manage these children and obtain good outcomes.

2.8.1.3 Availability of malaria guidelines

Structure in this study also applied to the availability, accessibility and utilization of malaria guidelines and policies at KCH, Children's' Ward. Protocols and guidelines are essential tools in directing care in emergency settings where speed and accuracy are

always a priority. Studies have shown that care is expected to be of higher quality when there are strategies for monitoring adherence to recommended procedures and when clinical staff is clear about their roles and responsibilities (Donabedian, 2003). Molynuex (2010) explained that protocols required to be utilized in emergency care settings need to reflect on national guidelines. She further reported that having wall charts of drug dosages for different weights and ages, fluid calculations all help reduce errors. According to Cabana, et al. (1999), successful implementation of protocols and guidelines improve the quality of care by decreasing inappropriate variation in the delivery of the service. However, having inadequate health care workers compromise the successful implementation of policies which will result in negative outcomes of service delivery (Brynard, 2005).

2.8.1.4 Availability of material resources

Having enough material resources for provision of care in hospitals, is one of the basic necessities in successful implementation of quality health care delivery (Anand & Barnighausen, 2004). However in malaria endemic regions during the rainy season months (November-April, especially in sub-Saharan Africa, pediatric wards are fully congested with children suffering from severe malaria and its complications. This puts a lot of strain on material resources which are most of the time insufficient to manage these children. Medical supplies and drugs required for resuscitation of patients in emergency care settings such as glucometers and gluco-sticks, 50% dextrose, ambu bags, endotracheal tubes, paraldehyde, diazepam, phenobarbitone, suctioning machines and oxygen therapy are key to quality care delivery. Scarcity of such materials results in unnecessary delays, undesired outcomes and poor quality care delivery.

2.8.2 Process

Process is defined as the activities that constitute health care, such as diagnosis, rehabilitation, prevention, patient education and treatment (Donabedian, 1988). An examination into whether or not medicine and nursing are properly practiced speaks to the process of health care. Process is what is actually done in giving, receiving care, carrying it out and the practitioners' activities in making a diagnosis, recommending or implementing treatment (Donabedian, 1988).These are mainly carried out by professional personnel and by patients as well as families (Donabedian 2003). Process assesses whether a patient received what is known to be good care. Efforts to assess process often focus on the patient's exposure to medical interventions, thereby connecting the process of care to patient outcomes.

In this study, process applied to the triaging system, health care providers approach to emergency care, time management (speed and accuracy displayed in the course) of emergency conditions, clinical decisions made by clinicians and nurses on physical examination, laboratory investigations, and laboratory results, treatment and health education regarding care and prevention of severe malaria. At KCH, Paediatric ward, children are initially triaged on the queue upon arrival. Those children who have life threatening conditions are isolated and rushed to emergency room for urgent care.

2.8.3 Outcome

Outcomes are the effects of care on the health status of patients and populations. Outcome in an individual are desirable or undesirable changes which are attributable to the care they received (Donabedian, 1988). According to Mayhew (2004) outcomes are states of health or events that follow care, and may be expressed as, discomfort, disability, dissatisfaction disease or death. Donabedian quality care framework

contemplates that with good structure and good process the outcome will definitely be good.

In this study, outcome applied to desirable and expected results such as normal recovery without neuro-disabilities, reduction in high fever, and cessation of convulsions and regaining of level of consciousness. In addition, it was also applied to undesirable changes which included recovery with neuro-disabilitities and death.

2.9 Conclusion

This literature review has described the global overview of management of severe malaria highlighting challenges encountered by policy makers and care providers in striving to the deliver the best quality of care to under-five children suffering from severe malaria both in developed and developing countries. It has been reviewed in the literature that health care workers must be equipped with adequate knowledge and skills in severe malaria management for them to be able to deliver quality paediatric care to very ill under-five children.

Literature has also shown that health care workers non adherence to malaria guidelines is a hindrance to delivery of quality care. Furthermore, the literature has revealed that adequate staffing, availability of essential medical supplies enable delivery of quality care in severe malaria management.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter narrates the procedures which were followed in exploring the quality of care that was provided to hospitalized under-five children, who were suffering from severe malaria received at KCH, Children's Special Care Ward. It gives an overview on the study design, study setting study population, sample size and sampling method, the inclusion criteria, data collection methods, data management and analysis. It also covers ethical considerations, and conclusions.

3.2 Study Design

In this study, a descriptive design that utilized qualitative approach was used. This is a process of learning and constructing the meaning of human experience through intensive dialogue with persons who are living with the experience (Wood & Haber, 2010). The design was deemed appropriate for this study because there is limited information regarding quality of care that health care workers provide to under five children suffering from severe malaria, from Malawian perspective as such, it allowed the researcher to gain rich knowledge (Holloway & Wheeler, 2010). It also helped the researcher to contextualize how participants perceived their situation and their role within the context (Manhall, 2007). The context of this study was the way in which health care workers perceived the quality of care that was provided to hospitalized under-five children who were suffering from severe malaria. This was difficult to quantify because of its subjectivity in nature (Brink, 2006).

3.3 Study setting

This study was conducted at Kamuzu Central Hospital, Children's Special Care Ward. This hospital is one of the major referral centers in Malawi. It is located in Lilongwe district, found in the central region of Malawi. Lilongwe is a district with a population of 1,905, 282 (National Statistical Office, 2011). Children's' Special Care Ward is one of the wards located within the Paediatric Department. This ward accommodates very sick children with medical conditions such as those diagnosed with severe malaria. KCH, Children's Special Care ward was chosen because it is one of the busiest wards in Malawi, admitting an average of 50-120 children per day, with a daily bed state of 250-450 (KCH, 2013).

3.4 Study population

The study population comprised of all qualified health care workers (Medical Officers, Clinical Officers, Registered Nurse/Midwives and Nurse/Midwife Technicians) working in KCH, Paediatric department.

3.5 Sample size

The sample comprised of 25 participants (8 Clinical Officers, 8 Nurse/Midwife Technicians, 6 Registered Nurse/ Midwife and 2 Medical Officers). This group of health care workers was chosen because they were involved with provision of direct patient care. In this study, the initial sample size for the in-depth interviews was thirty (30) participants, 15 for Nurses (RN/M & NM/T) and 15 for Clinicians (Medical Doctors and Clinical Officers).

In qualitative studies sample size may vary from 10 to 30. Small sample sizes are usually used in qualitative studies due to the in-depth nature of the interviews. This is the reason why there was no generally agreed upon consensus on the number of informants required as this was determined by data saturation (Klenke, 2008). Data saturation refers to the point in the process of data collection when additional sampling provides no new information only redundancy of the previous collected data (Burns & Grove, 2011). In this study, data saturation was reached after interviewing 13 nurses and 12 clinicians adding up to 25 participants.

3.6 **Inclusion criteria**

For this study the inclusion criteria were:

- Registered Nurse Midwives (RNMs'), and Nurse /Midwife Technicians (NMT) who had worked in the Children's Special Care Ward for a minimum period of six months and above.
- Medical Doctors (MO) and Clinical Officers (CO) who have worked in the Children's Special Care ward for a minimum period of six months and above.

This group of health care workers was chosen because it was assumed that working for minimum period of six months and above had allowed adequate experience, that would aid them provide comprehensive information regarding quality of care that is provided to hospitalized under five children, suffering from severe malaria.

3.7 The exclusion criteria included:

- Medical Doctors (MO) and Clinical Officers (CO), Registered Nurse Midwives (RNMs'), and Nurse /Midwife Technicians (NMT) who had worked in the Children's Special Care ward for a period of less than six months.
- Medical Doctors (MO) and Clinical Officers (CO), Registered Nurse Midwives (RNMs'), and Nurse /Midwife Technicians (NMT) who worked on part time.
- Medical Doctors (MO) and Clinical Officers (CO), Registered Nurse Midwives (RNMs'), and Nurse /Midwife Technicians (NMT) who were on annual, maternity and sick leave.
- Student nurses and student doctors were excluded from participating in the study.

3.8 Sampling method

In this study, purposive sampling a form of non-probability sampling was used to recruit participants. This method was chosen because according to Schmidt and Brown (2012) it provides information which is rich where one can learn a lot about issues of central importance to the purpose of the study. The researcher deliberately selected the subjects who were likely to produce the most valuable data. Henceforth, respondents were chosen because they had work experience of six months & above. This enabled detailed exploration of the phenomenon under study.

3.9 Accessibility to sample and Recruitment method

Prior to data collection, in order to gain access to the study participants, the researcher introduced herself to the Hospital Director, who gave a go ahead on the data

collection. Then she proceeded to introduce herself again to the Head of Paediatric Department and the Unit Matron. This is where she was told to do a brief presentation on the current study at the Paediatric morning report. This was done in order to have a good reception, considering that the study participants would be Nurses, Medical Officers and Clinical Officers who converge at the morning report every day for patient handover.

3.10 **Data collection procedure**

The researcher chose In-depth interviews participants (IDI) who met the inclusion criteria from a list that was made available by the Unit matron, the Head of department and the ward In-charge. Then with the help of the Unit Matron, the researcher accessed keys for a library room which was located within the department. The library was nonfunctional at the time of data collection because there was no library technician. Individual nurses, Clinical Officers and Medical Officers who obliged to take part in the study were taken to the library for a face to face in-depth interview. The researcher conducted two in-depth interviews in a day (one during morning hours and the second one during the afternoon hours). All in-depth interviews lasted from 40 to 43 minutes.

During the interview, the library door was kept closed. Furthermore, a paper written “do not disturb” in bold with a bright color pen was pasted outside the door to avoid disturbances. This was done to promote confidentiality. The researcher explained all the details of the study. These included purpose of the study, which was to explore and describe the quality of care that is provided to hospitalized under-five children suffering from severe malaria. The researcher made it clear to the participants that the

questions that were to be asked would only concern quality of care and severe malaria. All the questions from participants were answered at this stage. An emphasis that participation in the study was voluntary was also made at this stage.

Health care workers who were not willing were not forced to participate. On the other hand, those willing to participate were given the detailed information concerning the study (Appendix A: Participant Information Sheet). The reason of giving detailed information to participants was to ensure that they had understood the purpose of the study and its implications. This helped participants to make an informed choice about their participation. Furthermore, the availability and utilization of the Participants' Information Sheet enabled the researcher to give same information to all participants.

3.11 **Data collection**

For accuracy purposes in this study, data was collected by the researcher herself from 24th June to 25th July, 2014. Data collection is the precise systematic gathering of information relevant to the research purpose or the specific objective questions or hypothesis of the study (Burns and Grove, 2011). The Head of Pediatric Department, the Unit Matron and the Ward In-Charge were the key informants in the data collection process. An informed written consent was obtained before data collection was started. (Appendix B; Consent Form). After obtaining the written informed consent from individual participants through signatures and before the actual data collection process began, the researcher explained on the presence of the digital tape recorder, its importance and requested for permission from every participant to audio tape the interviews. Then data collection was started, and with permission from participants the interviews were audio taped using a digital tape recorder. An interview guide containing

open ended questions with some probes was used to collect data orally. Furthermore, the researcher used a notepad to record field notes on each interview. The researcher made sure that all questions were asked in order for the tool to measure what it intended to measure. The interviews were then transcribed verbatim.

Findings in this study are structured according to five themes that emerged from Thematic Content Analysis (TCA) of participants responses in relation to the semi-structured interview questions. Some verbatim quotes from participants' responses have been used. At the completion of each in depth interview each participant was thanked and appreciated for taking part in the study.

3.12 **Development of data collection instruments**

The interview guide was developed from literature guided by Donabedian quality framework. This data collection instrument was written in English as this is an official language used at work places.

3.13 **Pre- testing of the data collection instrument**

The interview guide was tested on 1 Clinical Officer and 2 Nurses working at Queen Elizabeth Central Hospital (QECH) Accidents and Emergencies Paediatric Section. QECH is one of the major Central hospitals in Malawi, offering tertially care. This setting was similar to KCH, where actual data collection was conducted. Pre-test of an instrument refers to the trial done to examine if the instrument is reliable to gather the expected information (Polit & Beck, 2010). A pre-test helps gives an interviewer an insight during the in-depth interviews to questions which are misunderstood. Similarly, in this study, pre-testing of the instrument was done with an aim of refining the

interview guide to test if the tool was reliable and accurate. The responses that were generated from the pilot study informed the researcher. After pre-testing the data collection tool, modification of some questions which were not clear was done (Appendix C) illustrates the amended Interview guide.

3.14 **Data management**

Data management is the process which the researcher follows to ensure that all data resources and documents are handled properly, for safe keeping and easy identification when retrieval thereof is needed (Streubert, Speziale & Carpenter, 2007). Consent documents were checked for correct signatures and date and filed together with the demographic questionnaires in a lockable cabinet accessed by the researcher only. Audio-taped interviews from all participants, including the pilot study participants, were transcribed verbatim to ensure accuracy of recording of the participants' responses. The transcriptions were labeled with pseudonyms and filed in order of research participation and date. For instance, participant 1 and date. These were saved as Microsoft Word documents on both hard drive and flash disk for backup purposes.

3.15 **Data analysis**

In this study, Thematic Content Analysis (TCA) method which has six phases was used to analyze data qualitatively as proposed by Anderson (2007). Data analysis is said to be the reduction of an enormous amount of information from thematic summaries to categories and themes until the description thereof in the interpretation of the findings (Streubert, Speziale & Carpenter, 2007). The researcher used an inductive approach (data driven) whereby the themes developed had a strong link with the data

collected. The data was read and re-read and then searched for codes as it emerged direct from the data using inductive coding (Braun & Clarke (2006). Data analysis in this study was done simultaneously with data collection. Each interview was recorded and transcribed word for word. Words and sentences containing relevant information to the study objectives were highlighted. The text was then analyzed as single words or in relation to a particular content. Line by line coding which led to the development of categories was done.

These categories were then defined from the codes as data analysis proceeded. Themes and sub-themes were generated with reference to relevant interview questions and study objectives. These were then reported as results throughout the study. Descriptive statistics was computed for the demographic data. Described below is a detailed articulation of the phases which the researcher followed during data analysis.

3.15.1 Phases of Thematic Data Analysis

Thematic Content Analysis (TCA) which has six phases; familiarizing yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report as narrated by Braun and Clarke (2006), were followed during data analysis.

3.15.1.1 Familiarizing Yourself with the Data

According to literature, the researcher may be the one who interactively collects and transcribes all the verbal data into written form in order to conduct a Thematic Analysis. Bird, (2005), emphasizes that transcribing one's own data should be seen as a "key phase in qualitative data analysis within interpretive methodology. In this study, the researcher collected and transcribed all the data from verbal interviews and familiarized herself with what was interesting in terms of the phenomena under study.

Then the transcript from each participant was read and reviewed several times to verify that it was representative of the experience.

3.15.1.2 Generating Initial Codes

This phase involved the production of initial codes across the entire set of raw data. Codes are tags or labels which are assigned to words, paragraphs or sentences from the verbatim transcriptions (Bird, 2005). At this point, the researcher read through the data set line by line with full attention given to each code. The initial coding was done manually by the researcher. Coloured marker pens were used to group the identified statements or phrases. All information relating to a particular code was highlighted in the transcript in a particular colour as a means of organizing the data. Each colour was given a label to ensure that a strategy existed for identifying which colour belonged to which statement or phrase within each participant's transcript. Then the different colours were used to identify and organize statements with similar meanings in order to group them and later to develop themes from them.

3.15.1.3 Searching for Themes

Themes are described as recurring, unifying statements about the subject of enquiry (Braun & Clarke, 2006). The researcher collated all the coded data from phase two and named the selected text within each data item according to colours and giving each meaning by describing. The researcher once again met with her supervisor and together they reviewed the emerging themes for further refinement. The researcher ended this phase with a collection of the emerging themes and sub-themes and all extracts of data coded in relation to emerging themes.

3.15.1.4 Reviewing Themes

This phase involved two levels. The first level involved reading the coded data extracts for each theme and considering whether they formed a logical pattern. This was done by checking back and forth across the codes and categories in search of emerging themes. Once the researcher was sure that the emerging themes formed a clear pattern to fit the data, she moved onto the second level, which involved a similar process, except that this time the researcher applied it to the data set as a whole. The entire data set was again read and the researcher remained focused on the aim of the study while trying not to get overwhelmed by the volume of text. Some recording of data occurred at this stage which had been missed at the beginning of coding.

At this stage it became apparent which themes were the emerging ones, which moved the researcher on to the next phase of thematic analysis (Braun &Clarke, 2006). By the time this phase was completed it had become evident that some of the so called themes were not really themes, since there was not enough supportive data, and these were discarded.

3.15.1.5 Defining and Naming Themes

Phase five was the ongoing analysis or further reduction of the themes into final emerging themes to capture the phenomena. Each theme was then further refined by the researcher under guidance of the supervisor to search for any sub-themes which were also useful in illustrating complex themes.

3.15.1.6 Producing the report

Phase six begins when you have a set of fully worked out themes, it involves the final analysis and writing up of the report (Braun & Wilkinson, 2003). In this final analysis phase the following five final themes emerged from the participants' central statements in response to the semi-structured In-depth interviews. These were; Health care workers'

knowledge on severe malaria management, Health care workers' experiences on caring for children suffering from severe malaria; Usage of guidelines to guide care; Mother / care giver's participatory role and Factors hindering provision of quality care in severe malaria management

3.16 Trustworthiness of qualitative data

Trustworthiness of data means quality, authenticity and truthfulness of findings from qualitative research (Schimidt & Brown, 2012). Qualitative research needs to be both reliable and valid in order to be trustworthy and this needs to be clearly demonstrated throughout the study (Holloway & Wheeler, 2010). Guba and Lincoln (1989) suggested that the concept of trustworthiness be utilized in qualitative research to guide the aim for quality. To ensure trustworthiness in this study, the scientific rigor criteria identified by Lincoln and Guba (1985) being utilized in qualitative methodology was employed. This assessed credibility, dependability, confirmability and transferability of the findings (Polit & Beck, 2010).

3.16.1 Credibility

Credibility or degree of confidence in the truth of the findings of the inquiry is achieved by ensuring that a rich, thick description of the phenomena under study is provided. The researcher needs to convince the reader that there is enough evidence to support the claims made from the findings and thus allow the readers to form their own assessment (Munhall, 2007). To ensure credibility in this study, the researcher engaged the research supervisor who went through the emerging themes and the entire set of raw data together with the researcher throughout the process of data analysis and peer debriefing. Peer debriefing concerns the presentation of analyzed data and conclusions drawn for peer evaluation by an experienced designated qualitative researcher. In this

case, the research supervisor, who is an experienced qualitative researcher, was the designated person for peer evaluation (Holloway & Wheeler, 2010).

Peer debriefing was ensured by the researcher having kept constant engagement with the research supervisor during all stages of the study, from the proposal writing, data collection and data analysis. (This was done though emailing and scheduled face-to-face meetings for guidance in interpretation of data and refinement of themes). Only once both were satisfied with the themes was data analysis considered to be in the completion phase.

3.16.2 Transferability

Transferability indicates whether particular findings from a qualitative study can be transferred to a similar setting and still maintain the particularized meanings, interpretations and inferences from the completed study (Holloway & Wheeler, 2010). Due to the fact that qualitative research is not meant to produce generalizations, but rather thick descriptions about a particular phenomenon, the transferability criterion emphasizes general similarities of findings under similar contexts or situations. “Thick description” is a concept widely used among qualitative researchers to refer to the rich and thorough descriptions of the research setting and processes observed by the researcher during the inquiry. To ensure transferability, a detailed description of all the steps taken during the research process (sampling process, data collection and analysis) was provided in this report. This was to allow anyone repeating the study in a similar context to come up with similar findings or to transfer such findings to a similar situation (Polit & Beck, 2010).

3.16.3 Dependability

Dependability is the third alternative for maintaining the trustworthiness of qualitative research. This is reliant on credibility. A dependable study is said to have reached credibility once an expert qualitative researcher has examined the verbatim transcripts and field notes (Holloway & Wheeler, 2010). Transcripts and emerging themes were shared with the research supervisor and her opinion was sought throughout the data analysis process to ensure that the findings of this study were accurate and consistent.

3.16.4 Confirmability

In this study, confirmability was achieved through an audit trail (collection of materials, descriptions of raw data before and after analysis). This was consistently shared with the research supervisor throughout the research process. Data analysis processes conducted by the researcher were also shared and confirmed by the supervisor. This was to determine how well the findings of the research supported the data collected by the researcher. Furthermore, data was translated in the actual words from participants.

3.17 Ethical Considerations

To ensure that human beings were protected in these study ethical principles; informed consent, respect for autonomy, confidentiality and anonymity, avoiding harm and justice guided the study.

3.17.1 Informed consent

For informed consent, the research proposal was submitted for ethical review and approval at College of Medicine Research and Ethical Committee (COMREC) through Kamuzu College of Nursing Research Publications Committee (Appendix: F). Consent to conduct the study was obtained from the Hospital Director of KCH, before commencement of the study (Appendix G). The researcher explained information

about the study to participants. A written Information sheet was read to all participants to enable them understand the study. The Information sheet included the purpose of the study, duration, methods and procedures for collecting data, any risks or discomforts arising from the study and possibilities of withdrawing from the study. These were thoroughly discussed with participants (Appendix A) with the purpose of obtaining a written Informed consent (Appendix B).

3.17.2 Respect for Autonomy

Participants were also informed of their right to refuse to participate or withdraw at any stage of data collection and that no penalty will be granted upon such a decision. Finally, participants were asked to sign a written Informed consent prior to participation in agreement to their willingness to participate (Appendix B).

3.17.3 Confidentiality and Anonymity

Participants were informed that the information they had given was strictly confidential. The information was to be kept in a lockable cupboard which was to be accessed by the researcher only. The participants' right to privacy was ensured by complete anonymity. No names were used to identify the participants. Instead, code numbers were used. (Appendix A and B) participants Information sheet and Consent form).

3.17.4 Avoiding Harm

The study did not have any obvious physical harm to participants.

3.17.5 Justice

Participants were fully informed that participating in the study was not going to yield any monetary and other benefits. However, they were informed that the information that

would be provided by them would help improve quality Paediatric care for hospitalized under-five children suffering from severe malaria in future.

3.18 Conclusion

This chapter has described step by step, the methodology, as utilized in the study. The study design, inclusion criteria, the sampling process, the data management, data analysis and finally the ethical considerations have been clearly outlined in this chapter.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

This section presents results of a descriptive qualitative study. Quality of care framework by Donabedian which has structure, process and outcome concepts guided the thinking in the formulation of the major themes and sub- themes. In this study with regard to management of severe malaria the structural standards refer to the knowledge health care workers had for effective delivery of care. This includes the diagnosis and treatment of severe malaria. henceforth themes on Knowledge on management of severe malaria in under five children suffering from severe malaria and theme two on Knowledge on importance of using malaria guidelines in directing care fall under the structural attribute. Similarly process standards refer to all activities that health care workers carry out in the delivery of care to sick children suffering from severe malaria starting from receiving patients, carrying out of laboratory investigations to aid in diagnosis and prescription of severe malaria treatment. As such, theme three on Challenges encountered by Health Care Workers when on duty and theme four on Mother or guardian participatory role fall under process attribute. This is because they explain on the experiences of shortage of staff during delivery of the actual care to severe malaria patients. Furthermore outcome attributes refer to the expected or unexpected results following delivery of the care to patients. as such, theme number five on Factors hindering provision of quality care in severe malaria management falls under outcomes the reason being that because it describes the factors that result in poor delivery of quality care to under-five children suffering from severe malaria.

Quality of care in severe malaria management denotes availability of adequate, spacious and well ventilated infrastructures with adequate number of beds, enough health care workers, availability and organization of triage and emergency care, timely treatment, that is within one hour of arrival, being reviewed by a Paediatric consultant, availability of emergency drugs and supplies such as 50% dextrose, gluco-sticks and anticonvulsants as well as availability of adequate supportive care (oxygen therapy administration, vital signs monitoring, blood sugar monitoring, fever and fluid management).

Although observations indicated that health care workers offered initial severe malaria treatment within the first hour of hospital arrival, the overall quality of care that hospitalized children suffering from severe malaria received was poor and below standard. This poor quality delivery was attributed to severe shortage of health care workers, who also lacked specialty qualifications in either Paediatric or Child Health Nursing, poor and unfriendly infrastructures which caused increased bed capacity and congestion and inadequate supply of essential medical supplies.

Kamuzu Central Hospital was built in 1977. The Children's' Special Care Ward was built as a 35 bedded ward and was meant to accommodate only 35 hospitalized children. Apparently with the increased growth in population, the ward has become very small and unfriendly to quality care delivery. Furthermore, the Paediatric Department did not have an established emergency unit. Instead, it had an improvised section within the Children's' Special Care Ward where children requiring emergency care were being managed. This section was very small, has16 beds, (4 resuscitation beds and 12 recovery beds), but surprisingly, during data collection the ward was

accommodating more than 100 patients with three or four children having different disease conditions being nursed on a single bed. This approach resulted in over-congestion and increased risk for cross infections amongst hospitalized patients.
In this qualitative study “almost all /all” refers` to more than ¾ of the participants, “majority/most/ many” refers to ¾ of the participants, “less than/few/some” refers to ¼ of the participants and below.

4.2 Demographic characteristics

The total number of participants in this study was 25. The variables which were studied included; age, gender, professional qualifications and work experience. Majority of participants amongst nurses were females likewise males dominated the medical profession. All participants who participated in this study did not have specialty qualifications in either Paediatrics or Child Health Nursing.

4.2.1 Demographic data

Table 1: Demographic characteristics of participants (n=25)

Characteristics	**Number of participants(n)**
Age group of participants (years)	(n)
20 to 35	23
36 to 45	1
46 to 65	1
Sex of participation	(n)
Male (Clinicians)	7
Female (Clinicians)	4
Male (Nurses)	6
Female (Nurses)	8
Highest professional qualification	(n)
College Diploma in Clinical Medicine	9
MBBS	2
BSCN/M	8
College Diploma in Nursing and Midwifery	6
Years of paediatric work experience	(n)
6 months to 1 year	3
1 year to 4 years	17
5 years to 10 years	5

4.3 Qualitative findings

4.4 Emerging Themes

Five major themes emerged from the findings through TCA.

1) Knowledge on management of severe malaria.

2) Knowledge on importance of using malaria guidelines in directing care.

3) Challenges encountered by Health Care Workers when on duty

4) Mother or guardian participatory role

5) Factors hindering provision of quality care in severe malaria management

4.4.1 Theme 1: Knowledge on management of severe malaria

4.4.1.2 Description of severe malaria

One of the study objectives was to assess nurses' and clinicians' knowledge on severe malaria. Participants were asked to describe severe malaria illness. Findings indicate that participants were knowledgeable about the description of severe malaria illness as well as danger signs associated with the disease. Almost all participants said that severe malaria is an illness that is caused by plasmodium falciparum and that it is characterized by clinical or laboratory evidence of vital organ dysfunction. Majority of participants stated that severe malaria is a medical emergency which requires hospitalization because it is a life threatening condition which presents itself with danger signs and complications. The danger signs mentioned included impaired level of consciousness (cerebral malaria), prostration, multiple convulsions, respiratory distress (acidotic breathing), clinical jaundice, pulmonary oedema and extreme pallor. A Clinical Officer (Participant # 9) described the disease as follows "Severe malaria is an illness

that requires emergency care because it carries itself with life threatening signs and symptoms such as convulsions, which if delayed a child can die within seconds".

4.4.1.3 Identification of danger signs associated with severe malaria by Health Care Workers.

Knowledge on severe malaria included identification of very ill under five children who presented at the hospital with danger signs. Findings showed that almost all participants were knowledgeable about the danger signs and common complications of severe malaria. Participants reported that children who presented with either convulsions, reduced level of consciousness, respiratory distress, prostration or severe anemia were quickly identified, they were then isolated from the queue and rushed to emergency room for urgent care. This was congruent with findings from the observation checklist where same participants were observed identifying and isolating children with danger signs from the queue and rushing with them to emergency section for urgent care. Participant # 2: RNM had this to say; "Children who are seen convulsing on the queue or those who come here with reduced level of consciousness or severe anemia, they are identified and isolated on the queue and are rushed right away to the emergency room for urgent

Care" Supporting the same another participant also stated;

> Majority of these children suffering from severe malaria come to the hospital very sick; most of them present here with danger signs such as convulsions, reduced level of consciousness, severe anemia, and severe respiratory distress. Those with such danger signs do not wait on the queue; they are isolated and rushed to emergency room where management is initiated immediately (Participant # 4 Registered Nurse Midwife).

4.4.1.4 Diagnosis of severe malaria

Participants were also asked to describe how the diagnosis of severe malaria was made in the under-five children. Participants came up with a very important point on diagnosis of severe malaria which was use of laboratory results. Findings showed that participants in the study relied fully on parasitological diagnosis. Majority of participants reported that apart from using history or presence of a danger sign and physical examination findings they confirmed severe malaria diagnosis with malaria Rapid Diagnostic Test (mRDT) or microscopy. This was done in order for them to prescribe and start the child on severe malaria treatment. This was congruent with findings on the observation check-list where the same participants were observed at the bed side carrying out mRDT on new patients' before initiation of severe malaria treatment. This was done as part of the emergency admission process. A Clinical Officer (Participant # 18) had this to say; "Severe malaria is diagnosed with a positive blood smear, or a positive malaria Rapid Diagnostic Test (mRDT) result plus general body weakness, that's prostration, reduced level of consciousness, respiratory compromise or convulsions". Another Clinical Officer had this to say;

> Sometimes when I look at the patient I find that he has a good level of consciousness, so if he is fully awake then I also look at other features like presence of severe anemia, if he is feverish, has severe anemia and the mRDT is positive I also diagnose the child as having severe malaria (participant # 22).

However, some participants also reported that some under five children would present to the hospital with full physical signs of severe malaria such as presence or history of a

danger sign, but they would have a negative mRDT result. Participants said severe malaria treatment was still initiated in these children, followed with a repeat of the malaria test after 24 hours. If it happened that the results were still negative then a blood firm was collected and sent to the laboratory for microscopy, if the result were still negative then severe malaria treatment was stopped, and further investigations were employed to find the definite diagnosis. Use of laboratory results was also an important issue that participants debated on. One registered nurse /midwife expressed her views on the same as follows:

> Laboratory results are important in the treatment of severe malaria. Guidelines stipulate that if malaria results are negative do not prescribe severe malaria treatment, so mRDT is done at the bedside and when the results are positive the child is started on intravenous artesunate but in cases when the results are negative and clinically the child has all the signs and symptoms of severe malaria, then the child is initiated on severe malaria treatment followed by a repeat of the mRDT after 24 hours.

4.4.1.5 Treatment of severe malaria

Participants were asked to describe treatment for severe malaria in under-five children. Findings showed that participants had adequate knowledge regarding treatment of severe malaria. Almost all participants reported that they treated under-five children diagnosed with severe malaria with parenteral artesunate. This is the recommended definitive ant malarial treatment for severe malaria in the in-patient setting. This is also in line with the current national

Treatment guidelines for treatment of severe malaria. In addition, participants also narrated that broad antibiotics were also prescribed for children suffering from severe

malaria. Almost all participants explained that with the limited resources it was a challenge to carry out blood culture on every child having severe malaria in order to diagnose sepsis. As such sepsis was being treated prophylactically with Ceftriaxone. This was a drug of choice in the Children's' Special Care Ward. This was also observed by the researcher that all under five children suffering from severe malaria were being treated with parenteral artesunate and intravenous Ceftriaxone. One of the possible reasons for this current practice could be that studies have shown that most children with severe malaria also have septicemia. In support of this participant #12 said; "Children who are diagnosed with severe malaria are treated with intravenous artesunate and Ceftriaxone. The dosage for artesunate is 2.4 mgs per kg body weight, administered at 0 hour, 12 hours and 24 hours". A Medical Officer had this to say; "When treating severe malaria, I use parenteral artesunate and I also prescribe broad spectrum antibiotics which is Ceftriaxone because I want to cover for sepsis". A Registered Nurse Midwife also narrated;

> If a child is diagnosed to have severe malaria he/she is started on parenteral artesunate which is administered once daily for seven days. In addition, Ceftriaxone is also prescribed as a prophylaxis treatment for sepsis due to high rate of sepsis in severe malaria. (Participant # 4).

4.4.2 Theme 2: Knowledge on importance of using malaria guidelines in directing care.

Knowledge on use of guidelines was also assessed. Participants were asked to explain on the availability, accessibility and utilization of malaria guidelines. Findings showed that participants based malaria management on the current national and international guidelines. In 2013Malawi, Ministry of Health through National malaria

Control Programme (NMCP) introduced new guidelines, which contain information on the introduction of parenteral artesunate as the new ant malarial drug in the management of severe malaria. Therefore, findings indicate that participants at the KCH special care ward complied with the current malaria guidelines when managing under five children suffering from severe malaria. Almost all participants stated that guidelines are important as they help in directing patient care. Participant: #17 (Clinical Officer) said; "Guidelines would always guide me where I don't know. When I use guidelines they lead me to giving the right diagnosis and treatment". Supporting the same another participant said;

> The guidelines are there to guide a health care worker on how to manage patients. For example a case of severe malaria, when a child has come with severe anemia or respiratory distress guidelines actually guide you on what to do on any presentation of your patients that you meet at that time (Participant #11 Clinical Officer).

Narrations from some of the participants also showed that guidelines helped them in providing care that was accurate and uniform. Participant # 18 (Clinical Officer) said "It is important to be using guidelines in order to have uniformity in the treatment of severe malaria" When participants were asked to state if guidelines were available in the wards, majority of the participants complained that guidelines were available but not easily accessible. This was because people tend to personalize them and use them as personal booklets. This was congruent with findings on the observation check-list where the researcher did not access the malaria guidelines in the ward. In support of this one participant reported;

> Guidelines are very useful in the department but the problem is that they are in a form of small booklets. So when the guidelines are made available in the ward those who come in contact with them tend to personalize the guidelines. Other HCWs' take them as personal items as a result others have no access to them (a (participant # 9: Clinical Officer)

Furthermore, it was recommended by some participants that guidelines should be made as posters so that they should be pasted on wall in the clinical area for everybody to access them. This is stated in a statement made by one of the participants;

> Accessibility is not as great, because guidelines are not pasted on the walls, the only thing which is readily pasted on the walls are the dosages for the artesunate. I can say guidelines are available but you cannot access them easily Participant # 10: Medical Officer).

4.4.3 Theme 3: Challenges encountered by Health Care Workers when on duty

Participants were asked to describe their experiences on caring for under-five children suffering from severe malaria. Findings showed that generally, participants in this study were not happy with their work. Almost all of them reported on being overwhelmed, extremely busy and very exhausted due to work overload. This was due to severe shortage of human resource, which was a major hindrance to provision of quality care. Majority of participants mentioned that shortage of staff resulted in big ratio numbers and work overload which compromised delivery of quality care. A registered Nurse/ Midwife lamented;

> "In this department there is shortage of staff. There are very few nurses and doctors. Sometimes there could be 3 nurses and 2 doctors in a shift against 500

> patients. The department does not have enough permanent nurses and doctors as such quality of care is compromised because we are very few compared to number of very ill patients who come here" (Participant #: 2).

Findings further showed that increasing number of nurses, doctors and clinical officers can also improve quality care that is provided to children suffering from severe malaria. Majority of participants narrated that with increased HCWs' the quality of care would also improve because medical consultations, patients subsequent review, monitoring of patient conditions, nursing care would be done thoroughly and comprehensively due to small nurse/ clinician /patient ratio. A registered/ nurse midwife narrated that if the nursing personnel can be increased so that nurse /patient ratio is 1:10, nurses would be able to do monitoring of patients conditions, they will be able to provide the required and desired quality nursing care as reported by one Registered Nurse/Midwife "If they can increase the number of nurses working per shift from 8 to 15 at least we can have time to carry out monitoring on these children".

When participants were asked why their experiences were like this, they attributed the reasons to shortage of staff and work overload due to the increased number of very sick children who seek care at the facility during the rainy season months (October- April), this is the period when malaria is at peak. Participants narrated that during the rainy season a lot of children with severe malaria came to seek care at the referral hospital. They also said that majority of patients who came to the hospital were not referred by Health Centres as it should have been the case. In addition, there was a departmental policy that stipulated that no child should be sent back without consultation. This directive resulted in congestion of children. Further findings showed that increased numbers of patients and shortage of staff resulted in work overload which gave rise to

lack of proper monitoring of under five children with severe malaria. When asked on lack of monitoring of patients' conditions, majority of participants narrated that due to shortage of staff the focus and attention were to new hospital admissions' who mostly presented at the hospital with life threatening and fatal conditions. Supporting this one participant stated that:

> With the shortage of staff and the big nurse/ patient ratio numbers, what I manage to do is to take care of new patients who present here with life threatening conditions. As a team we resuscitate them, do investigations and giving the prescribed treatment. All this is done at the bedside. It happens that more than 2 under five children come in while convulsing so it requires at least 3 HCWs' to manage one child. In this case you find that I spend the whole day managing only new admissions as a result I do not carry out monitoring as one of my nursing roles, I cannot manage to be monitoring every child because if I do that, it means a lot of children requiring urgent care will suffer (Participant # 12 RN/M).

Another participant said;

> What I can say is that monitoring of patients' on severe malaria treatment is not done as required. I know that children suffering from severe malaria are at risk of developing complications such as hypoglycemia; as such they need to be monitored regularly. But because of shortage of staff, it becomes a challenge to do regular monitoring (Participant # 14 Nurse/Midwife technician).

Findings also indicate that participants failed to provide quality care to under five children suffering from severe malaria due to exhaustion. Majority of participants said that with exhaustion they were not able to work to the best of their abilities, and this

affected the quality care delivered to children suffering from severe malaria. A NMT had this to share “With the big nurse-patient ratio honestly, I am always exhausted. Sometimes I continue working on the next shift to help cover the shortage of staff but I just do what I can manage at that particular time” (Participant # 20). Another nurse /midwife technician lamented ” What I can say to you is that for me and my fellow HCWs’ to be working in this busy paediatric ward is just a sacrifice, I am always working under stress and I get very exhausted every day ”. Another participant narrated her views on the same as follows:

> With the increased ratio numbers, I manage to see more than 100 patients in a day as a result by the time I am knocking off, I am extremely tired. Coming back to work the next day is just by the grace of God honestly, it’s not health for me (participant # 24: Medical Officer).

4.4.4 Theme 4: Mother or guardian’s participatory role

Mothers/ guardians and HCWs’ are partners in the care of sick children. Findings in this study showed that participants involved the mothers or guardians in the care of their hospitalized under-five children suffering from severe malaria. Participants worked hand in hand with mothers or guardians. Majority of the participants said that they could not isolate the mothers/ guardians in the care of their sick children. This was due to shortage of HCWs’ and increased nurse/clinician/patient ratio. They said mothers/guardians were empowered with information on danger signs of severe malaria. Mothers/guardians were advised to be alert and to be very observant when caring for their sick children. Involving mothers/ guardians was an important experience for them to continue with

caring for sick children at home. The following are some of the quotes from participants:

> I rely a lot on the guardians. I advise mothers to be alert and to observe danger signs such as convulsions, coma, vomiting everything and becoming very weak in the sick child. Guardians are told that with few nurses and doctors present in this ward the role of monitoring by health care workers is not done adequately, as such, they should also help in the observations and if they notice something strange on their child, they should notify any nurse or clinician. So sharing of information is important in the management of severe malaria cases especially in this ward, where shortage of staff is a major problem. Participant # 10 (Medical Officer).

Another participant shared her experience of working with guardians as follows:

> I make sure I work hand in hand with the moms. I empower moms and guardians to participate in the care of their sick child by giving them information concerning danger signs. To be honest with you I concentrate much on the new patients who come in with life threatening conditions such as convulsions. When a child is stable after resuscitation it becomes very difficult to observe that child as required because of the shortage of staff and many new admissions that come in with danger signs. So I advise the mothers/guardians to be observing the child for danger signs and to report any strange activity noted. It's a challenge but with the shortage of staff that is the only way to go in order to save lives, because previously you would just be called by a mother to go and see her child, who in most of the cases had already died (Participant # 4: RNM).

4.4.5 Theme 5: Factors hindering provision of quality care in severe malaria management

Participants were asked to describe factors which they feel hinder provision of quality care to under five children suffering from severe malaria. Findings showed that majority of the participants mentioned shortage of staff, poor infrastructures and lack of adequate essential medical supplies and lack of equipment as factors that hindered provision of quality care to under-five children suffering from severe malaria.

4.4.5.1 Poor Infrastructure

Poor infrastructure was a barrier to quality care delivery. Findings in the study showed that the environment where care was provided was very small, poorly ventilated, hot, and congested. Majority of the participants narrated that such an environment was very demotivating and demoralizing to work in. One of the contributing factors was poor organization of work, since children with different disease conditions were admitted on a single bed. This resulted in congestion. This approach made it very difficult for health care workers to reach out to sick children who have developed complications, such as convulsions or cardiac arrest and were lying at the far end of the bed. One participant lamented as follows;

> If there are five children on one bed, and one child at the far end starts convulsing, it's really difficult to get to that child and manage the convulsion. Care is not really up to standard because as a health care worker I cannot really manage complications properly because I don't have enough access to some patients, and also if the ward is very full sometimes it's very difficult for me to notice children with complications (Participant # 10: Medical Officer).

High Risk for cross infection was another problem mentioned by participants. They attributed the reasons to increased bed capacity (more than one child on a bed with

different diagnosis), congestion and poor ventilation. Majority of the participants were able to explain that those children immune system is immature as such they are at high risk of catching noso-nomial infections very easily as reported by one Clinical Officer;

> Our patients sleep in a congested, and a poorly ventilated ward. The way this building was built is that there is no free circulation of air and with having five patients with different disease conditions lying on a single bed increases the risk for cross infections amongst admitted patients (Participant # 18).

A Nurse /Midwife technician expressed his views on the same as follows:

> The facility is really small; it is a 35 bedded room. We admit more than 200 patients with one bed being shared by four or five patients, some patients are admitted on the floor, I tell you this poor environment predisposes sick children to catching nosocomial infections because their immune system is not yet mature (Participant # 20).

4.4.5.2 Lack of essential medical supplies

Having adequate medical supplies and equipment is necessary for delivery of quality care. Findings show that limited funding was the basis for the lack and erratic supply of essential medical supplies such as drugs, gluco-sticks, and 50% dextrose. Majority of the participants attributed the shortage of the essential medical supplies to limited funding from the government which makes the pharmacy not to buy all the required essential supplies needed in the management of severe malaria. One participant lamented on the limited funding as follows:

> The government reduced the funding which it gives to the hospital as a result it has also affected the availability of the essential medical supplies such as the gluco-sticks, 50% dextrose and antibiotics. This is because the pharmacy is not

given enough funds for procuring these materials so it just procures small amounts and waits for the next funding (participant #12: RNM).

One participant also narrated her views as follows:

> Availability of gluco-sticks was a problem, gluco-sticks were not in constant supply as such I would just administer dextrose in children who I suspected to have hypoglycemia, for example children who came in unconscious, very weak or those who were vomiting everything without checking blood sugar levels(Participant # 4 Registered Nurse/Midwife).

A Medical Officer also shared her views on lack of essential antibiotics as follows: "Sometimes I would notice that an antibiotic such as Ceftriaxone was not available" Participant # 24. Having effectively working equipment enables quality care delivery. Findings showed that there was only one electrical suctioning machine which was not working at the time of data collection and had been sent for repair instead HCWs were using a manual suctioning machine when performing suctioning. Below is a quote made by one of the participants;

> The suctioning machine that is available now in this ward is manually operated and requires a lot of energy, if I want to do suctioning on a child, it means I have to be pressing on the machine with my foot like a treadle pump, by the time I finish it means I am sweating and I am also exhausted, it is very tiresome (Participant # 22; A Clinical Officer).

4.5 Conclusion

This chapter has presented the findings according to study objectives and the themes that emerged from the study objectives. It has revealed factors which hinder provision of quality care for children suffering from severe malaria like shortage of

staff, inadequate supply of medical supplies and equipment and poor working environment. It has also revealed that HCWs' were knowledgeable about management of severe malaria. Further findings also showed that even though children requiring urgent care were seen without avoidable delay the quality of care that majority of the children received was sub-standard, such as monitoring of patients was not done as required.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

This chapter discusses the findings of the current study in line with the study objectives. The aim of the study was to explore and describe the quality of care that hospitalized under five children suffering from severe malaria received at Kamuzu Central hospital, Children's Special Care Ward. The conceptual framework of Donabedian quality of care has been used to conceptualize the study findings. The discussion will base on the following areas: Demographic characteristics, themes and sub-themes identified from the statements of participants and conclusion.

5.2 Demographic data

5.2.1 Sex of participants

In this study, findings revealed that there were more female participants than males amongst nurses. Likewise, males dominated the medical profession. This is a common scenario in Nursing and Medicine. In agreement to this finding is a study by France and Ferrari (2012), who also found that nursing is mostly dominated by females. Mkhize and Nzimande (2007) also reported on nursing as being a female dominated profession. This finding indicates that nursing is an essentially female dominated profession as it has been shown in the course of history.

Having many female health care workers meant that the care that was being provided was motherly. This is good for under-five children who are in dire need of love and security. Furthermore, from the beginning, nursing in Malawi has been dominated by females as such this gender has a great experience in caring for sick people, of which the under fives forms part of the group of patients..

5.2.2 Professional qualifications

The study findings indicate that although all participants were qualified HCWs' none of the participants had a specialty qualification in either Paediatric or Child Health Nursing. All participants had general nursing and medical qualifications. This meant that they were general practitioners. The fact that participants had no specialty training and yet they were working in a children's' ward of a tertially hospital was a major deficiency in the delivery of quality care. According to Molynuex and Dube (2013), lack of specialty in Paediatric is a barrier to quality because specialists have a good understanding of high standards of child care as such they contribute greatly to delivery of quality care. Furthermore, having such specialties is important since children and their diseases require attention of those who are specifically skilled in their care.

The fact that KCH, Paediatric department is a tertially centre, where children with complex disease conditions such as severe malaria are managed, the researcher expected that all health care workers working in this particular department should have specialty qualifications. These included Master of Science in Child Health Nursing, Master of Science in Paediatric and Bachelor of Science in Child Health Nursing. These are essentially required in the delivery of quality paediatric care. This is also acknowledged in MHSSP (2011-2016) that strengthening the Human Resource for Health (HRH) requires scaling up specialists training. Furthermore, it was disappointing to note that despite the fact that Kamuzu College of Nursing and College of Medicine offer these specialty qualifications locally, none of the participants had either of them.

Possible reasons for lack of attaining specialty qualifications could be lack of sponsorship for career progression, and lack of career ladder progression especially for the cadre of Clinical Officers. Other reasons could be that when people get qualified

with these specific qualifications either they are not deployed to Paediatric Departments such as KCH, Children's special care ward or they move out of the clinical setting and secure non clinical jobs. The reasons of quitting clinical jobs could be work overload, low pay and poor working conditions. According to MHSSP (2011-2016) low motivation for HCWs' is one of the challenges resulting in critical shortage of human resource in public hospitals. This finding indicates that lack of specialized trainings in either nursing or medicine hinder delivery of quality pediatric care.

5.3 Qualitative findings

5.3.1 Knowledge on management of severe malaria

5.3.1.1. Recognition of danger signs associated with severe malaria by health care workers

Findings from both the observation check-list and in-depth interviews indicate that healthcare workers had adequate knowledge on danger signs associated with severe malaria. This was noted to be an important element in the delivery of quality care in severe malaria management. This was because the knowledge on danger signs enabled health care workers to priotize those children at high risk of death by initiating severe malaria management with urgency. Supporting this finding is a study conducted in Uganda by Idro and Aloyo (2004) who also found that health care workers correctly identified danger signs associated with severe malaria. In addition, this knowledge was important in facilitating severe malaria treatment. Supporting this is Idro, et al. (2007), who found that a delay in treatment of severe malaria increases parasietemia as a result increasing the risk for seizures. This finding therefore, indicate that health care workers knowledge on the danger signs associated with severe malaria was important in facilitating early identification of high risk children and prompt initiation of severe malaria treatment, an important element in the delivery of quality severe malaria management.

5.3.1.2. Treatment of severe malaria

Observations in this study, showed that majority of under five children diagnosed with severe malaria were treated with parenteral artesunate within one hour of the hospital arrival. This was noted to be a good practice as reported by Pasvol (2006) that children who presents to the hospital with danger signs and are diagnosed to have severe malaria require to be treated with parenteral ant-malarial. Also in agreement are Dondorp et al., (2010) and Dondorp et al., (2005), who also found that treating severe malaria with parenteral artesunate significantly reduced the risk of death in children. These studies provided sufficient evidence of the superiority of artesunate over quinine in both children and adults.

Furthermore, use of parenteral artesunate in severe malaria treatment revealed that health care workers were following the current WHO (2012), severe malaria treatment recommendations. These stipulate that parenteral artesunate should be used as the first line treatment for severe malaria. The reasons were that the drug was found to be well tolerated, had no local or systemic side effects and when administered intramuscularly it got absorbed very rapidly. Therefore, this finding indicate that health care workers followed national and international malaria guidelines and that they were very determined and focused in the treatment of severe malaria.

The current study findings revealed that broad spectrum antibiotics were routinely administered to under- five children suffering from severe malaria. This was noted to be a good practice. Supporting this finding is a study conducted in Malawi by Bronzan, et al., (2007), who found that children suffering from severe malaria have high chances of having bacteremia as such require prescription of antibiotics. Furthermore,

WHO (2012) malaria guidelines also recommend administration of antibiotics in severe malaria treatment. These guidelines stipulate that with the considerable clinical overlap between severe malaria, septicemia and pneumonia, and that these conditions may co-exist, broad spectrum antibiotics should be started immediately in malaria endemic areas. Therefore, it can be concluded in this finding that prophylactic treatment of septicemia with use of broad-spectrum antibiotics helped treat underlying co-existing infections in this resource constrained malaria endemic setting. However, there is need to conduct further studies to explore the impact of prophylactic antibiotics on severe malaria outcomes.

5.3.2 Knowledge on importance of using malaria guidelines in directing care

Findings on both in-depth interviews and the observation checklist revealed that participants utilized ETAT guidelines to sort and priotize under-five children requiring urgent care. This was noted to be a good practice since under-five is a highly vulnerable group of patients who have the potential to deteoriate rapidly due to their under-developed immune system. In addition, severe malaria presents itself with danger signs or life threatening conditions which can cause an imminent death of an under-five child, if urgent care is delayed. This finding is in line with Molyneux, Ahmad and Robertson (2006), who found that early assessment, priotization for treatment and management of sick children attending a health service is important since it saves paediatric lives. Also in agreement is Robison et al. (2012) who found that institution of a formal triage process helped decrease early mortality. Sidik, et al. (2013), who conducted a study in Indonesia also, found that having a well-organized triaging system is a priority in saving lives of very sick children. It can therefore, be drawn from this finding that following ETAT guidelines at KCH, Children's' Special Care Ward helped to priotize care to

those under-five children who urgently needed it, a practice which helped in reducing chances for occurrence of severe complications and deaths in those under-five children diagnosed with severe malaria.

The current study revealed that participants routinely conducted mRDT on every under-five child suspected to have severe malaria. This was done to confirm the diagnosis. This was noted to be a good practice since health care workers were able to have a definite diagnosis which necessitated early severe malaria treatment. Consistent use of mRDT indicates that participants adhered to both national and international malaria treatment guidelines. The malaria Rapid Diagnostic Tests guidelines for Malawi (2011) states that mRDT should be used on every child suspected to have malaria because they are more accurate, simple and fast than the presumptive diagnosis. WHO (2012) also recommends that mRDT should be used extensively in fever case management in all malaria endemic settings to exclude malaria infections as well as to establish a definite diagnosis. Implementing mRDT guidelines quickens delivery of quality care (GoM, 2011). This is because it necessitates prompt right treatment. Furthermore, KCH Children's' Special Care ward is located within a malaria endemic region as such, utilization of mRDT in this care setting was crucial since it helped rule out severe malaria which mimics other disease conditions such as meningitis.

Treating severe malaria basing on parasitological result limits unnecessary use of anti-malarial drugs, an approach which could also potentially reduce the programme costs in resource limited settings (Government of Malawi, 2013). Supporting this is a study conducted in Uganda by Kyabayinze, et al. (2010) who found that treating severe malaria following positive parasitological result, results in direct cost benefit through reduction in overconsumption of ant-malarial drugs. Msellem, et al. (2009), also agree

that treating severe malaria following a positive parasitological result in direct cost benefit. Therefore, this finding showed that use of mRDT in confirming malaria diagnosis saved resources which were mostly inadequate and scarce at KCH, Children's Special Care ward, where many children suffer from severe malaria.

5.3.3 Mother or Caregiver's participatory role

The study findings from both in-depth interviews and observation check-list revealed that mothers were fully involved with the care of their sick children. This was deemed a good practice since it gave the mothers or care givers autonomy and responsibility over their children's illness, in an environment where they had fear, anxiety and felt powerless. It was also significant to note that even though the current study was conducted in a developing country, participants perceived their role of involving the mother or caregiver in the care of sick children. This is in line with the family-centered approach. Family centered approach is when families and significant others (mothers, fathers and other care givers) are involved in the care of the hospitalized child (Cruickshank, et al., 2005). Entrusting mothers or caregivers with responsibility of caring for their sick children was an important element in facilitating the healing process. This was so because mothers are the best informant of their children. In addition, children have a sense of belonging and a sense of security towards their mothers and guardians which helps them to interact and to feel secure when hospitalized.

In support of these findings is a study by Cruickshank, et al. (2005) who found that involving the mother or caregiver in care of their children helped to alleviate fear and anxiety. For instance, explaining the disease condition and the danger signs

associated with severe malaria to the mother in the current study not only provided support and comfort to the mother or caregiver but also protected the mother from a stressful experience and further prepared them for continuity of care at home after discharge. Consistent with this finding is a study by Ward (2001) who found that mothers want to be informed about the condition of their sick children. Information giving alleviated fear and anxiety of mothers or caregivers during their child's illness, as a result encouraging cooperation by mothers and guardians in assisting with the care of the child. A similar study by Shields, Kristensson-Hallstrom and O"Callaghan (2003) also reported that nurses who do not spend time communicating, motivating and building a relationship with the mother or caregiver in the care of the ill child do not experience cooperation from such mothers or caregivers. This finding therefore, indicates that it is important for health care workers to ensure that mothers or guardians are involved in the care of their hospitalized children for cooperation and continuity of care at home.

5.3.4 Factors hindering provision of quality care in the management of severe malaria.

5.3.4.1 Shortage of Human Resources

The findings of the study from both in-depth interviews and observation check-list indicate that shortage of staff was a major factor that hindered delivery of quality care. The researcher observed that the total number of children admitted in the emergency zone was 122 of whom majority were suffering from severe malaria and its related complications. This means that with 3 nurses and one clinical officer and one medical consultant working on a shift the ratio for nurses was 1:40 and 1:122 for Medical Officer/ Clinical Officer respectively. The Nurses and Midwives Council of Malawi (2002), recommends one nurse to ten patients for the general wards, such as the

paediatric wards, one nurse to seven patients for the labor ward and one nurse to one patient for the intensive care unit. These smaller ratio balances would allow delivery of quality care since health care workers would be able to care for the allocated number of patients comprehensively. While on the other hand increased health care worker/patient ratio numbers results in poor delivery of quality care because of increased workload, exhaustion, stress, anxiety and burn out in health care workers (Maluwa et al., 2012). Donabedian (1966), the father of quality, describes shortage of human resource as an element that greatly hinders quality care delivery. He emphasized that with shortage of staff there is no quality care. This is also acknowledged by Maluwa, et al. (2012), that health care workers from resource constrained countries such as Malawi, struggle on a daily basis with shortage of human resource. Similar findings were also reported by some studies (Diep, Lien and Hofman, 2009; Safari, 2012) who found that shortage of staff in the nursing and medical divisions resulted in delivery of poor quality care. Molynuex and Dube (2013) also agree in their study that shortage of staff is a barrier to quality care. Shortage of staff has a significant implication on quality in the management of severe malaria. Participants in the current study complained that because of shortage of staff, they were not able to monitor patient disease conditions as well as the essential parameters in severe malaria management. These included regular random blood sugar checks, onset of danger signs, regular vital signs monitoring, fluid balance which also include intake and output monitoring.

Majority of participants also stated that experience of heavy workloads at the children's special care ward also worsened the already existing problem of shortage of staff. This is because a good number of health care workers left the paediatric department for other lighter departments at the hospital. This resulted in big health care

worker /patient ratio. The unbalanced health care worker/patient ratios put more pressure on the remaining medical and nursing staff forcing them to work over-time. This give rise to exhaustion hence poor quality of services. Malliarou, Zyga, Evangelos and Paulo's (2015), also agreed that shortage of human resources makes health care workers to experience anxiety, stress, low morale and burn out. Health care workers who experience such stressful situations are emotionally affected and unproductive. For instance, they report for duties when their minds are no longer there, this is a hindrance to quality care delivery because such health care workers render care following routines instead of their critical thinking abilities. This is a dangerous approach since it mostly results in negligence and malpractices.

Most of participants in this current study reported that increasing number of HCWs' can improve quality care delivery and minimize work related anxiety and stress in health care workers. The attributed reasons to this were smaller nurse /doctor/ patient ratios. This would allow health care workers to give adequate care through monitoring of essential parameters which include intake and output, vital signs, blood glucose as well as delivery of individualized quality care. Consistent with this finding is a study conducted in United Kingdom by West et al. (2014),who found that availability of higher number of nurses and consultants per bed was associated with higher survival rates amongst hospitalized patients. From this finding, it can be concluded that shortage of health care workers gave rise to poor quality care provided to under five children suffering from severe malaria at this referral hospital, as such, increasing the number staff working per shift can tremendously improve the quality of care that is rendered to this age- group suffering from severe malaria.

5.3.4.2 Poor infrastructure

In this study, findings from both in-depth interviews and observation check-list indicate that under-five children suffering from severe malaria were hospitalized and cared for, in poor and unfriendly infrastructures which made care to be generally poor and sub-optimal. Findings further revealed that the Children's Special Care ward was small, poorly ventilated and was highly congested accommodating three to four patients on a single bed. This was due to availability of very few beds which did not tarry with the number of hospitalized children. Lack of enough beds forced health care workers to be admitting four to five children on a single bed, for close monitoring as the emergency zone was located close to the nurses' station. This took into consideration of the severity of the disease condition. This resulted in children with different disease condition to be admitted on a sing le bed. Although this approach was convenient to health care workers it was hazardous to patients. The clinical implication for improper infrastructure in this case, was that it increased the risk for cross infections amongst hospitalized children. According to Maluwa, et al. (2012) hospital infrastructures, in most Malawian public hospitals are outdated and provide work conditions that are not conducive to delivery of quality patient care. Similar findings were also reported in Tanzania by Baker, et al. (2013), who found that poor physical infrastructure which contains lack of adequate space, congestion, lack of well circulated air and lack of enough beds compromise delivery of quality care. Curry (2008) also agreed that having inadequate care systems create major barriers to improved survival of patients.

In Malawi, Molynuex (2010), reported on the importance of availability of paediatric emergency department with a separate resuscitation room and short stay ward in larger hospitals like KCH. These are required for stabilization of all acute cases before

transfer to wards. Unfortunately KCH, Paediatric department which was built in 1977 as a 35 bedded room does not have such unit. Much as a16 bedded (4 resuscitation beds and 12 stabilization beds) emergency section was improvised within the Children's' Special Care Ward, it was small and not enough to accommodate large numbers of under-five children who came with danger signs or life threatening conditions and required urgent resuscitation.

Similar observations were also reported by journalist Chimjeka in a Weekend Newspaper article dated 4th April, 2015.The article titled "Babies piled up at KCH" reported on the congestion that had overwhelmed the Children's Special Care ward. It was narrated in the article that with the rapid population growth in Lilongwe and the surrounding districts KCH, Children's Special Care ward had turned into a death trap having up to five children sharing a bed. Having a built in emergency department and short stay ward at KCH which are 24 hour operational, can be beneficial in reducing congestion which arise due to increased number of admissions. Molynuex, Ahmad and Robertson (2006) reported that availability of the emergency department allow children to be observed in a room or short stay ward for a few hours while waiting for decisions whether an admission is necessary or not resulting in reduction in unnecessary admissions. Daly, Campbell & Cameron (2003), also agreed that availability of short stay ward can be used to manage and treat children for the 1st 24 hours or more of their hospital stay. This approach is beneficial since it allows many under-five children with malaria to be discharged home directly from the emergency unit hence minimizing congestion. Therefore, it can be concluded from this finding that poor and unfriendly infrastructure was a major barrier to delivery of quality care in severe malaria management.

5.3.4.3 Shortage of essential medical supplies

Findings from both In-depth interviews and observation check-list showed that there was shortage and erratic supply of essential medical supplies. These included 50% dextrose and gluco-sticks. Majority of the participants reported that gluco-sticks and 50% dextrose were not in constant supply and that most of the times the pharmacy did not have them in stock. Similar findings were reported in Uganda by Achan, et al. (2011), who agreed that regular stock-outs of essential items such as 50% dextrose, gluco-sticks and medications were major challenges for quality care delivery in the management of severe malaria. Similarly, Njama-Meya, et al. (2007), also found that shortage of essential medical supplies impact negatively on the delivery of effective treatment and further undermines malaria control. According to Steinhardt, et al. (2014), quality of care is adversely affected by the increased demand for services with fewer available resources.

Lack of these essential medical supplies compromised delivery of quality care in this group of patients because hypoglycemia being one of the major complications of severe malaria and a silent killer was not regularly monitored and treated basing on the actual blood sugar level results. Likewise, Tsiperau, Vince and Tefuarani (2010), also found that lack of supplies compromise delivery of quality care because health care workers have no resources to use when delivering care to patients. This finding indicate that increased availability and accessibility of essential medical supplies are required in the management of severe malaria to enable delivery of quality care in malaria endemic care settings such as at KCH, Children's' Special Care ward.

5.4 Study Limitations

- The study was conducted at one central hospital as such the findings cannot be generalized to other settings. Having multiple sites could have enriched the study findings.
- Time was another limiting factor, since this thesis being an academic requirement for the fulfillment of the Master of Science in Child Health Nursing it was required to be completed within a specified period of time.
- Another limitation was on data collection period. In Malawi, malaria is at its peak during the rainy season which runs from the month of October to April. In this study, however, data collection was done in the month of June and July when the heavy rains had stopped. As such, the researcher could not get more under-five children suffering from severe malaria.
- Finally, as a student, the financial and material resources were limited henceforth, the study involved few participants from a single central hospital, and this made findings not be generalized to other settings.

5.5 Recommendations of the study

Based on the findings of the current study, recommendations have been made for different stakeholders to help improve quality of care delivery for under-five children suffering from severe malaria. These recommendations have implications for practice, management, education and research.

5.5.1 **Clinical practice**

- Findings in the study showed that shortage of staff significantly contributed to poor quality care delivery, therefore to improve the care; there is need for Ministry of Health (MoH), and Kamuzu Central Hospital management to deploy and allocate more nurses, doctors and clinical officers to the paediatric department.
- Findings in the study showed that the environment where care was delivered was poor, vey congested and unsafe. This was because the ward is small with few beds. This resulted in increased risk of cross infections following increased number of hospitalized patients. There is need, therefore for MoH to improve the work environment. This could be done through extension of the children's' ward A or construction of new wards which would accommodate one patient on a single bed.

5.5.2 **Management**

- Findings in this study showed that guidelines were available but not easily accessible to Health Care Workers as such, there is need for KCH management to consider having malaria guidelines on posters to improve accessibility.

5.5.3 **Nursing /Medical education**

- Findings in the study showed that all participants did not have specialty qualifications in paediatrics, Paediatric specialty is an important element in the

delivery of quality paediatric care. As such, MoH, in collaboration with the management of KCH need to identify its medical and nursing staff for specialty training in Child Health Nursing and Paediatrics. These specialty programmes are currently being offered locally by Kamuzu College of Nursing and College of Medicine.

- Emergency care in severe malaria management should be included in the curriculum of nursing and medical programmes at both undergraduate and post graduate levels, to ensure that all nurses and clinicians have all the required knowledge and skills that would improve outcome in under five children suffering from severe malaria.

5.5.4 Research

- Majority of the participants were trained on ETAT guidelines however, there is need for conducting in- service trainings for short courses on life support skills and emergency care on a regular basis for nurses and clinicians as part of Continuous Professional Development (CPD). This will improve the disease outcomes for under-five children suffering from severe malaria.
- Findings in the current study showed that there was an increased risk for cross infections amongst hospitalized children. This was due to increased bed capacity, congestion and poor ventilation. As such, there is need to conduct cross-sectional studies to determine the magnitude and prevalence of nosocomial infections amongst the hospitalized children.
- Findings in the current study showed that antibiotics were routinely prescribed to prophylactically treat septicemia. As such, there is need to conduct studies to

determine the impact of the prophylactic antibiotic treatment on severe malaria outcomes.

5.6 Conclusion

This chapter has described the significant findings of the study, the conclusions which were drawn from the findings and the recommendations made in order to improve quality of care for hospitalized under-five children suffering from severe malaria at KCH, Children's' Special Care ward. This current study has discussed quality of care in the context of severe malaria at KCH, Children's' special care ward. Generally the study found that quality of care provided to hospitalized children suffering from severe malaria was poor and sub-optimal. .The reasons attributed to poor quality delivery were severe shortage of staff, poor infrastructures and erratic supply of essential medical supplies such as 50% dextrose and gluco-sticks etcetera. This contributed to lack regular monitoring of essential parameters which included vital signs and blood sugar. Furthermore, a hospital bed is meant to accommodate a single patient, this is done in order to minimize chances for cross infections, however, at KCH, Children's' Special Care Ward, where a bed is shared by 4 or more patients with different disease conditions. This practice is not safe, since it risks children to cross infections. Children's' immune system is not yet mature, as such may easily catch on other infections. Catching of noso-nomial infections would prolong hospital stay and increased treatment cost on government. Other reasons were shortage and poor working environment which was congested with patients and increased workload.

Quality of care is determined with availability of infrastructure which is well ventilated, specious rooms occupying adequate beds, enough medical supplies, adequate

staff, availability of emergency care protocols ad guidelines. Most of these elements were not lacking or were not in constant supply at KCH. However, patients who reported with danger signs were priotized and given urgent care once they were stabilized the responsibility was left in the hands of mothers/guardians.

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APPENDICES OUTLINE

Appendix A: Participants Information Sheet

Appendix B: Consent form

Appendix C: Interview guide

Appendix E: Letter seeking permission from KCH

Appendix F: Letter seeking permission from QUECH

Appendix G: Ethical approval letter from COMREC

APPENDIX A: Participants' Information Sheet

STUDY TITLE: Quality of care provided to hospitalized under-five children suffering from malaria at Kamuzu Central Hospital, Lilongwe, Malawi

My name is Blessings Chimwemwe Chiluzi, Currently, I am a student at Kamuzu college of nursing (one of the constituents of the University of Malawi), pursuing a Master's Degree in Child Health Nursing. As part of course requirement, I am carrying out a study Quality of care provided to hospitalized under-five children suffering from malaria at Kamuzu central hospital, Lilongwe, Malawi. The study will be conducted at Kamuzu Central hospital paediatric ward. The study aims to explore the quality of care provided to hospitalized under five children who are suffering from severe malaria. The findings of this study will help to identify gaps in delivery of paediatric care that need improvement to promote the health status of under-five children.

You are being invited to participate in a qualitative research study that is conducted by the researcher as a Master of Science student. The study has been approved by the Research & Ethics Committee of Kamuzu College of Nursing and College of Medicine. The study will be conducted according to the strict Ethical guidelines and principles.

Please read this carefully and feel free to ask any questions.

DO I HAVE TO TAKE PART?

Participation in this study is voluntary and you may withdraw at any time. Your refusal to take part in the study will not risk your job in anyway. If you agree to take part in the study, you will be asked to sign a consent form. Information about you will be confidential and no one will identify who answered which questions as no names will be

linked to the discussions. Code numbers will be used instead of names. The recorded interviews will be destroyed at the end of the study. Study findings will be published or presented as group findings not individual information.

WHAT DO I EXPECT AS A PARTICIPANT?

The interview questions will focus on your role as regards the quality of care that you provide to sick under-five children who are suffering from severe malaria and are admitted in children's' ward" The in-depth interview will take 30 to 45 minutes. The interview will be audio-recorded to but your name will not be recorded anywhere, instead it will be replaced by a specific number. Audio-tapes will not be shared by anybody other than the supervisor of the study.

WHAT ARE THE RISKS, BENEFIT OF THE STUDY

There are no physical risks associated with the study. The probable risk may include the psychosocial risks in terms of long time of attending to the interview and about your practice regarding paediatric care. There are also no direct financial benefits from the study but you will have a soft drink during the discussion / interview. This study will provide hospital management with clinicians and nurses views as regards the quality of care provided to under-five children suffering from malaria. The results of this study will be made available to all participants in the form of a report and you will be contacted via telephone as soon as this is available. Please feel free to ask any questions and the researcher will try as best to answer these. If you are happy with this information and you agree to participate, please read and sign the attached informed consent

IF SOMETHING GOES WRONG, WHAT WILL HAPPEN?

Complaints concerning how you have been treated during the course of the study can be forwarded to Blessings Chiluzi Kamuzu College of Nursing, Post Office Box 415, and Blantyre. / The supervisor Dr. Mercy Pindani (0888896970). Kamuzu College of nursing, P/Bag 1 Lilongwe

OR

The Secretariat, COMREC, Private Bag 360, Blantyre.

Tel: 01871911

APPENDIX B: Consent Form for In-depth Interview

Please read the information sheet and sign this form if you are taking part in this study

1. I have read the attached information sheet for this study and have understood the purpose of the study and the problems involved.

2. I agree to voluntarily participate in the study, be interviewed and respond to the best of my knowledge. I understand that I am free to withdraw at any time without giving reasons and this will not influence the health care, I provide to sick under-five children who are suffering from severe malaria in anyway.

3. I know that I do not have to suffer any injuries or harm during the research process. The information that I will give to the researcher should not be used against me in future.

4. I understand that my information will be kept confidential and will only be accessed by the researcher or those people directly concerned with this study.

5. I understand that I will not benefit financially or be given gifts and materials for my participation in this study.

6. I know how to contact the researcher if I need to:

Participant's Name Signature

Date

…… …….

……

Researcher's Name Signature

Date

…… ……

……

THANK YOU FOR TAKING PART IN THIS STUDY

APPENDIX: C Interview Guide for Nurses and Clinicians Working at Kamuzu Central Hospital Paediatric unit

Quality of care provided to hospitalized under-five children suffering from severe malaria at Kamuzu Central Hospital, Lilongwe, Malawi

Participant's Identification number…….. Date of interview

……

Place of interview ----------

time of interview ……

Part A: Demographic characteristics

In this section you will be asked about your personal information

	QUESTION	ANSWER AND CODE	COMMENT
A1	Age What is your age	 20-35 years……1 36-45 years……2	

		46-65 years…….3 0ther specify……4	
A2	Sex	Male…….1 Female……..2	
A3	What are your highest professional qualifications?	Diploma in Clinical Medicine…….1 MBBS……2 Masters in Pediatrics ……...3 Certificate in Nursing……....4 Diploma in Nursing……..5 Degree in Nursing……7 Masters in Nursing…….....8 Other (specify)…….8	
A4	For how long have you worked in Paediatric unit	>6 months< 1 year……..1 2 years……..2 3 years……...3 4 years …….....4 Other (specify)…….5	

SECTION B

Now I want to ask your experience about caring for children suffering from severe malaria

B1. Knowledge of participants on severe malaria

What is your experience regarding severe malaria illnesses at this referral hospital?

Probes

Number of admissions

Severity of the illnesses

How do you describe severe malaria?

B.2 Use of malaria guidelines in the management of under five children diagnosed with severe malaria

What is your experience on the use of malaria guidelines when managing children suffering from severe malaria in this paediatric unit?

Probes: Availability

Utilization

Accessibility

B 3. Quality of care in the management of severe malaria (diagnostic process, medical treatment and nursing care

What do you understand by quality of care in severe malaria management?

Probes: Infrastructures

Staffing levels

Availability of material resources

Can you describe the pathway that is followed for an under-five child suspected to have severe malaria?

What is the protocol in the diagnosis and treatment of severe malaria?

How can you describe the outcome of children who have been hospitalized due to severe malaria illness?

Provision of care to children with severe malaria

Explain the care that you give to children suffering from severe malaria in this unit?

Probes: Nursing care

Medical treatment

What health information do you give to parents whose children have been hospitalized due to severe malaria when they are in the hospital and on discharge?

As a health care worker, what challenges do you face in the course of providing the care?

B.4 Factors perceived to hinder quality care provision

What factors prevent provision of high quality care in this unit?

What kind of support would you need from?

Government

Hospital Management &paediatric Department

Ward

Is there anything else you would like to share or ask regarding severe malaria management and quality of care?

APPENDIX: E Letter of permission from Kamuzu Central Hospital

REF. No.KCH/O/1.04
TELEPHONE No.: (265) 1 753 555/
TELE FAX o.: (265) 1 756 380
PLEASE ADDRESS ALL COMMUNICATION :
THE HOSPITAL DIRECTOR
E-MAIL:

MINISTRY OF HEALTH
KAMUZU CENTRAL HOSPITAL
P. O. BOX 149
LILONGWE
7 March , 2014

REF. NO. KCH/GA/0/0.01

The Chairman
College of Medicine Research and Ethics Committee
P/bag 360
Blantyre 3

RE: Support Letter for study entitled "Quality of care provided to hospitalized under- five children suffering from malaria at Kamuzu Central Hospital"

Reference is made to the above mentioned study which is going to be run by BLESSINGS CHIMWEMWE CHILUZI at Kamuzu Central Hospital. Her proposed study is "**Quality of care provided to hospitalized under-five children suffering from malaria at Kamuzu Central hospital".**

I fully support the implementation of the above protocol and look forward to the start of the study.

Thanks for your favourable review.

Dr. G.M. Chiudzu
HOSPITAL DIRECTOR

KAMUZU CENTRAL HOSPITAL DIRECTOR
12 MAR 2014
P.O. BOX 149 LILONGWE

APPENDIX: F Permission Letter for Pretest from Queen Elizabeth Central Hospital

Telephone: (265) 01 874 333 / 677 333
Facsimile: (265) 01 876928
Email: queenshosp@globemw.net

All communications should be addressed to:
The Hospital Director

In reply please quote **No.**

QUEEN ELIZABETH CENTRAL HOSPITAL
P.O. BOX 95
BLANTYRE
MALAWI

Ref No. QE/10

24th February, 2014

Blessings Chimwemwe Chiluzi
Kamuzu College of Nursing
Blantyre Campus
P.O. BOX 415
BLANTYRE 3

Dear Blessings,

PERMISSION TO CONDUCT A PRETEST OF THE INTERVIEW GUIDE

This is to inform you that permission has been granted to conduct a pretest of the interview guide on **"Quality of care provided to hospitalized under-five children suffering from malaria"** at Queens Elizabeth Central Hospital.

We will appreciate if a copy of your findings is shared with the hospital.

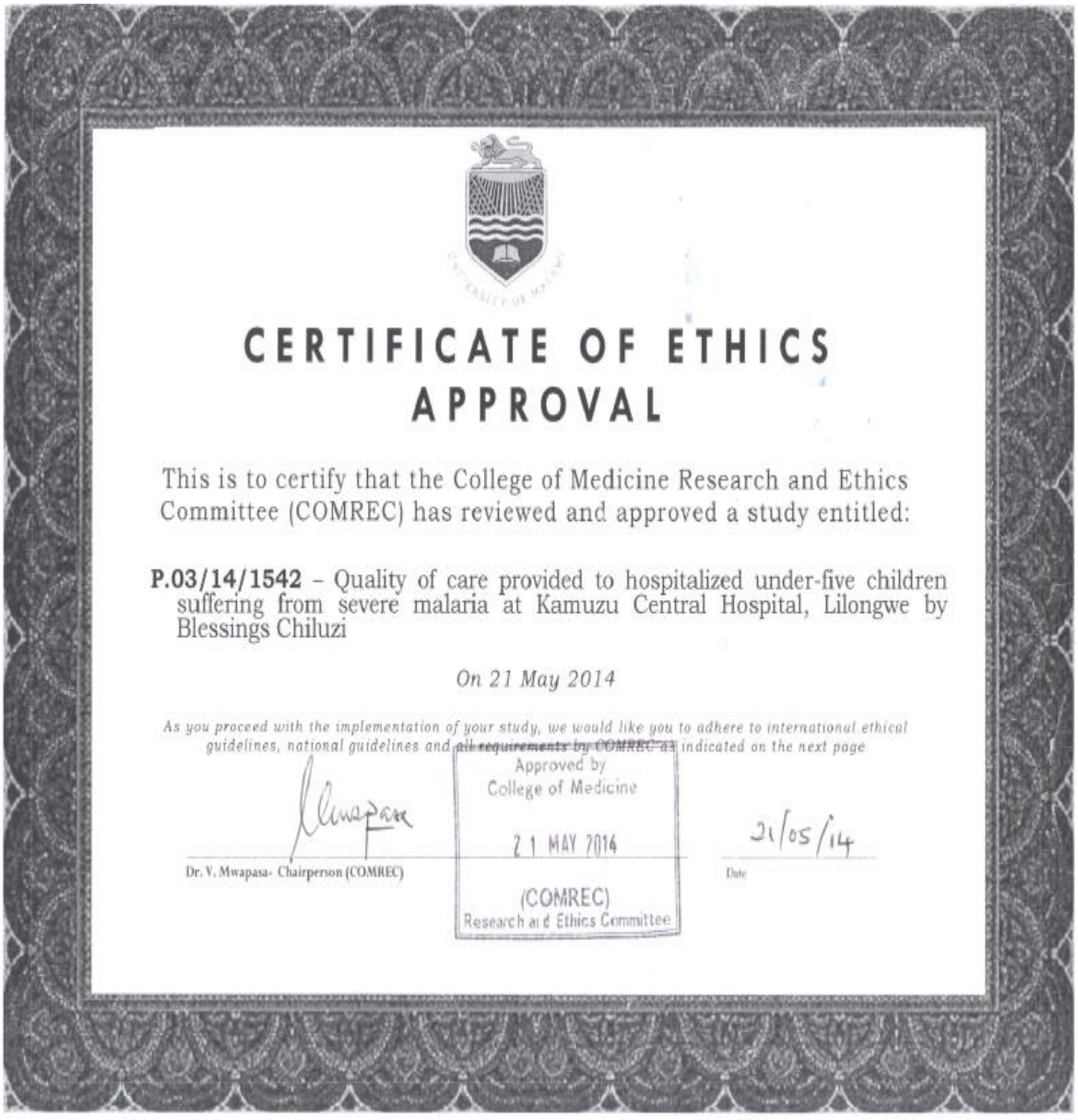
All the best in your studies.

Yours faithfully,

QUEEN ELIZABETH CENTRAL HOSPITAL
24 FEB 2014
P.O. BOX 95, BLANTYRE

T.N. Soko (Mrs.)
DEPUTY HOSPITAL DIRECTOR -NURSING

APPENDIX: G Certificate of Approval from College of Medicine Research and Ethics Committee



CERTIFICATE OF ETHICS APPROVAL

This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:

P.03/14/1542 – Quality of care provided to hospitalized under-five children suffering from severe malaria at Kamuzu Central Hospital, Lilongwe by Blessings Chiluzi

On 21 May 2014

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC as indicated on the next page

Approved by
College of Medicine
21 MAY 2014
(COMREC)
Research and Ethics Committee

Dr. V. Mwapasa- Chairperson (COMREC)

21/05/14
Date