

RELATIONSHIP BETWEEN FEMALE CAREGIVERS SELF-CARE KNOWLEDGE ON
PREVENTION OF MALARIA AND EPISODES OF MALARIA AMONG UNDER FIVES
AT HAUNA HOSPITAL.

BY

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ABSTRACT

According to the Zimbabwe National Health Strategy (2009) malaria ranked the highest cause of outpatient attendances accounting for all 11.5% of all attendances. Malaria was also the second cause of mortality in all age groups. The problem was the increasing number of malaria episodes in the under fives as seen from the Hospital records. In Hauna there were many children coming with repeated attacks of malaria within the same season, despite the National Malaria Control Programme in place particularly in Mutasa District. Thirty countries in Sub-Saharan Africa and Asia account for 98% of global malaria episodes and deaths (WHO, 2004). The purpose of the study was to examine the relationship between female care-givers self-care knowledge on prevention of malaria and episodes of malaria among the under fives. Orem's Conceptual framework was used to guide this study. A descriptive correlational study design was used. Face to face structured interviews were used to collect demographic data, data on self-care knowledge and episodes of malaria, from 80 subjects who met the inclusion criteria. Data were analysed using the descriptive and inferential statistics. Pearson Correlation test was used to analyse the relationship between malaria prevention self-care knowledge and episodes of malaria and r was ($r=.016$; $p>.01$) results showed a non-significant relationship between self-care knowledge on malaria prevention and episodes of malaria. The results, therefore, did not support the premise that when self-care knowledge on malaria prevention increases, the number of malaria episodes decreases as proposed in the study. Further research is needed to establish more factors that could be impacting on malaria episodes in children and explore relationship between self-care practices and episodes. Nursing practice should strengthen information dissemination to all communities on malaria.

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CHAPTER 1

BACKGROUND AND ORGANISING FRAMEWORK

Background to the Study

The chapter will cover background information, problem statement, purpose, theoretical framework, conceptual definitions, objectives, questions and significance of the study to nursing. Malaria is one of humanity's worst diseases and is frequently referred to as the disease of the poor (WHO, 2003). Malaria kills more than a million people worldwide, many of whom need not die. The majority of victims who die are children under the age five. These children die because they are not protected and are not treated quickly enough to prevent their death (WHO, 2003). Malaria episodes occur every year and result in these deaths. In 2004 Roll Back Malaria developed a Malaria Indicator Survey package for monitoring and estimated that 300-500 malaria episodes occur annually and with 18% of deaths in children under the age five year (WHO, 2003).

Approximately 12 million children younger than 5 years of age die every year, most of these children live in developing countries (WHO, 2010). More than 50% of these deaths are attributed to malaria, diarrhoea, respiratory infections, or measles, conditions that are either preventable or treatable with low cost interventions. Malaria episodes contribute to around 33% of all child deaths (WHO, 2000). A survey conducted in Malawi estimated that the relative risk (RR) of having episodes of malaria in children under the age of five years increased by 2.7 times (WHO, 2004).

Another survey conducted in Ghana showed that frequency of malaria episodes was highest in the paediatric population below five years than in other age groups

(WHO and UNICEF, 2003). The same survey showed higher frequency of malaria episodes in children with advanced HIV disease (WHO and UNICEF, 2003). Malaria which can be fatal, is transmitted to humans by mosquito vectors of the *Anopheles* species. In children malaria presents as a febrile illness with other key symptoms like vomiting, loss of appetite, restlessness and in severe forms with convulsions (Ministry of Health and Child Welfare, 2009). Even when it is not fatal malaria produces considerable impact on the health of the African children, mostly during their first five years, increasing the susceptibility to other infections and hampering their development (WHO and UNICEF, 2003).

Malaria is now a global crisis, with one - fifth of the world's population at risk and with more than 233 million cases of malaria episodes illness in 2000, 225 million in 2009 and 244 million in 2000 (WHO World Malaria Report, 2010). The disease continues to spread due to a combination of factors, for example weak health systems, social cultural and behavioral practices relating to treatment and prevention of malaria, large population movements, and climatic changes (WHO World Malaria Report,2010). In October 1998, the Roll Back Malaria Initiative was launched as a catalyst for a renewed global commitment to tackle the disease, that puts a brake to development in Africa (WHO , 2003). Roll Back Malaria is a partnership working world wide to halve the burden of malaria by 2015 (WHO, 2003). This is in line with the Millennium Development Goal number 6 which puts its emphasis on the need to fight HIV/AIDS ,Tuberculosis , Malaria and other diseases.

Maximum emphasis of the initiative is to ensure that malaria suffering and deaths are reduced. People especially children and pregnant women are at the

centre of RBM movement. This movement also seeks to link with interventions such as Integrated Management of Neonatal and Childhood Illnesses (IMNCI) to reduce children's deaths from malaria. Zimbabwe is one such country, where the RBM Initiative was launched and is being implemented in 12 districts that are burdened with malaria (MOHCW, 2009).

Problem Statement

Malaria episodes remain one of the most serious public health problems in the world despite the RBM interventions and information, education and communication activities. Malaria causes 300-500 million episodes globally each year (WHO World Malaria Report, 2010). In Zimbabwe, approximately 5.5 million people out of a population of 12.7 million live in malarious areas (MOHCW, 2009). In Zimbabwe, children under the age of five years suffer between three to four episodes of malaria every year in areas of stable transmission of malaria. Adults suffer less episodes of malaria than children because of their adequate immunity (MOHCW, 2009). Out of the 56 districts, malaria transmission occurs in 42 districts according to MOHCW and Mutasa district is one such district. Repeated episodes of malaria are witnessed year after year in the under fives despite the National Malaria Control Programme which is in place particularly in Mutasa district.

In Zimbabwe malaria is endemic in ten districts including Mutasa (MOHCW, 2009). The investigator noted an increase in malaria episodes in Mutasa district despite widespread health education on the prevention of this fatal disease annually. Mutasa district also distributed Insecticide Treated Nets (ITNS) to the under fives in 2009 to a total of 20 365 out of a total of 26 333 under fives translating to a coverage of 77.3 % (Mutasa DHT Report, 2009). The increase in malaria episodes in the under fives at

Hauna hospital is evidenced by outpatient repeat visits statistics for the years 2007 to 2009 as follows: 464 episodes of clinical malaria were recorded in 2007, 510 for 2008 and 598 for 2009 (Mutasa DHT Report, 2009). Admissions for all under five years' conditions for the years 2007 to 2009 for the district, records show 1548, 1175 and 1254 respectively.

Out of these admissions repeated attacks of malaria accounted for 288 (18.6%) for 2007, 372(31.6%) for 2008 and 513 (40.9%) for 2009 in the under fives (Mutasa DHT Report, 2009). This reflects an upward trend on percentage increase of malaria episodes and also reflects the disease burden. The disease is worse following excessive rains and floods (Zimbabwe National Health Strategy, 1997-2007). Zimbabwe has a distinct hot summer season between November and May, therefore, has conditions conducive to malaria transmission especially during the hot summer season (MOH & CW, 2002). Malaria transmission is however, more prevalent in the low lying areas of altitudes 600-900 metres above sea level and Mutasa district falls in this category. Mutasa district falls in stratum A classified as stable(endemic) malaria with perennial transmission and reaches peak transmission between October and May (MOHCW,2002). Over the past few years, including last year (2010) rainfall patterns in Zimbabwe have been erratic with limited rains due to changing weather patterns (<http://www.irinnews.org/Report> November 2010).

In Zimbabwe, malaria is perceived as a major public health problem, and it is the commonest cause of morbidity and mortality coming after HIV/AIDS and Tuberculosis across all age groups (MOHCW, 2010). Close to 1.5 million episodes of malaria are reported annually, whilst an average of 1000 people die from this disease in Zimbabwe (MOHCW, 2010). According to the Zimbabwe National Health Strategy

(2007), malaria was the second highest cause of outpatients attendances. It is also the second cause of mortality in all age groups after Pulmonary Tuberculosis (NHSZ, 2007).

Thirty countries in Sub-Saharan Africa and in Asia account for 98% of global malaria episodes and deaths (WHO, 2004). An estimated one million people in Africa die from malaria each year and most of these are children below the age of five years (WHO, 2004). Malaria is a major impediment to human and economic development in the region. An estimated 20 million malaria episodes and between 300 000 and 400 000 malaria deaths are recorded each year in SADC region (MOHCW, 2010). A survey in Malawi estimated that African children have between 1.6 and 9.7 episodes of malaria, whilst adults have on average 6.1 episodes per year (WHO, 2008). That survey also found that malaria accounts for 1 in 5 of all childhood deaths in Africa. According to WHO (2008) malaria causes 300-500 million episodes of malaria globally, and in 2008 malaria caused 190-300 million malaria episodes and between 708 000 and 1 003 000 deaths. One child dies of a malaria episode somewhere in Africa every 20 seconds, and there is one malaria death every 12 seconds somewhere in the world. Malaria kills in one year what AIDS kills in 15 years (WHO, 2008).

A study in Nigeria estimated that children under five years of age suffer 2-4 episodes every year causing complications like cerebral malaria, severe anaemia and death (Chirdan, 2008). Children who survive malaria episodes do not escape unharmed. Repeated episodes of malaria cause anaemia which leads to mental and physical, impairment (Chirdan, 2008). In areas where malaria is endemic, people may get the disease several times during their lives. Malaria is endemic in much of Sub-Saharan

Africa where often an average of 6 episodes of malaria per year is quoted per individual particularly among children (WHO, 2004).

Illness from repeated attacks of malaria becomes quite problematic since absenteeism from school will be inevitable. Child may miss up to about a week of classes following each malaria episode. In adults, a worker will lose an average of 10 working days per each episode of malaria (WHO, 2004). If the problem goes unsolved, malaria episodes contribute to a general decline in overall health status, making individuals more susceptible to other illnesses and diseases. In the absence of treatment, children progress to severe malaria in a matter of hours. A study in Kenya found that repeated untreated episodes of malaria in children can result in normocytic anaemia (UNICEF, 2008).

Lack of information on the part of the consumers in this case the caregivers, severely limits the demand for preventive and curative services for malaria. Nurses can, therefore, fulfill their roles as educators and counsellors to create demand for preventive services for the under five children against malaria, through health education thus facilitating self care knowledge on malaria prevention. Self care knowledge ensures that caregivers are knowledgeable on the prevention of malaria among children, thereby preventing episodes, and subsequently preventing mortality from malaria. A study conducted in Zimbabwe demonstrated that peoples' knowledge on malaria prevention was still not up to the standards expected by the National Malaria Control Programme. Use of plants was frequently mentioned as a self-care preventive measure for malaria (MOHCW, 2002).

The same study also found that a high percentage of people did not know any personal protection method such as repellent soap (91.2%), ITNS (90.2%) or domestic

aerosols (65.9%) while 75.6% had never used any method of protection. The study concluded that despite widespread availability of information on malaria prevention, the community's understanding of malaria prevention was generally low and this has negative implications on the prevention and control of malaria (MOHCW, 2002).

Self care knowledge, therefore, ensures that the caregivers possess the cognitive awareness essential for health promotion, thus enhancing the caregivers self care abilities. An assessment of a treatment guideline to improve home management of malaria in children carried out in Nigeria, showed that provision of health education on malaria can improve care givers' knowledge on malaria prevention (Ajayi, Falade, Bamgboye, Odola, and Kale, 2004).

Information on the prevention of malaria is always given continuously at health institutions, schools and at community gatherings. The investigator was concerned by the increase in repeated attacks of malaria in the under fives and was wondering whether caregivers possess adequate knowledge on malaria prevention. If caregivers possess self care knowledge, perhaps repeated attacks of malaria which may lead to readmission and putting a financial burden on the already weak health care delivery system may be alleviated. It is therefore, of paramount importance that nurses equip the caregivers with essential self care knowledge for effective self care. In Zimbabwe very little has been documented regarding relationship of self-care knowledge on malaria prevention and episodes of malaria.

Purpose of the study

The purpose of the study was to examine the relationship between caregivers' self-care knowledge on prevention of malaria and malaria episodes among under fives

accessing services at Hauna Hospital. Orem's self care model (1991) was used to guide the study.

Theoretical Framework

The organizing framework used to guide this study was Orem's Self care Conceptual model nursing of 1991 (see Figure 1). The rationale for selecting Orem's model is that it relates to self-care in the prevention of malaria among the under fives and examines the health outcome in the children with a focus on malaria episodes. The major concepts in Orem's Conceptual model used in this study are self care, self care deficit, and supportive -educative nursing system.

Self care exists when the client performs the activities that she or he initiates and performs on their own to maintain life, health or well being through meeting knowledge requisites. In this study such activities are represented through the level of knowledge regarding malaria prevention. The self -care knowledge dimensions to be established in this study specifically pertain to knowledge on signs and symptoms of severe malaria, and preventive measures relating to personal protection and environment. Self- care in this study therefore equates to one of the central concepts in nursing, that of health.

The investigator used the self care deficit concept to identify any knowledge gaps with regards to the prevention of malaria that would necessitate appropriate nursing actions. In this study any identified knowledge deficits with regards to prevention of malaria would symbolize self-care deficit and could, therefore, be interpreted or explained as such.

The person was the female caregiver who possessed self-care by performing activities to maintain health through acquisition of knowledge on malaria prevention.

The adult client, so called the person has the ability to learn about the prevention strategies and ultimately possess the requisite self-care knowledge for the prevention of malaria. The educative-supportive nursing system was chosen as the nurse assists client in decision making and facilitates the acquisition of knowledge and skills on the identified knowledge gaps so as to meet self care requirements. In this study clients with malaria prevention knowledge deficits will require the supportive-educative nursing system in which the nurse provides education and support to the client to meet self-care requirements. The proposed relationships among variables are indicated in Figure 1.

Self care agency refers to the individual's ability to perform self care activities. It consists of two agents that is the child and the other person other than the individual who provides care, such as a parent provides care for a child (Orem, 1991). Self care deficit refers to an imbalance between self care agency and self care demand (Orem, 1991). The nurses compensate for the individual's inability to perform some but not all self care activities (Orem, 1991). Nursing agency refers to the nursing profession and can use any one of the following basic nursing systems: wholly compensatory, partially compensatory, or educative -supportive. Orem refers to the concrete actions taken by the nurse for patients with limitations in self care (Brooker and Waugh, 2007). The wholly compensatory is used when the nurse compensates for the total inability to perform self care activities (Brooker and Waugh, 2007).

In the partially compensatory system the nurse compensates for the individual's inability to perform some but not all the self care activities (Hood and Leddy, 2003). In the supportive-educative system the nurse assists client in decision making, behavioural control and the acquisition of knowledge and skills (Brooker and Waugh, 2007).

In this study self care deficit is exhibited by an imbalance between self care demand and self care agency. In the study any identified knowledge deficit with regards to prevention of malaria will symbolize a self-care deficit which is equated to having malaria episode. Any identified deficits necessitate an appropriate nursing action which is similar to supportive-educative. It is this deficit that supportive-educative from the nursing systems in which case the nurse provides education and support to the caregivers, so that they successfully meet self care requirements. In this study self care deficit equated, malaria while self care was taken as similar to a reduction in malaria episodes. For this study the assumption was increasing malaria prevention self care knowledge decreases episodes of malaria, a client with more malaria prevention self care knowledge is likely to have less episodes of malaria.

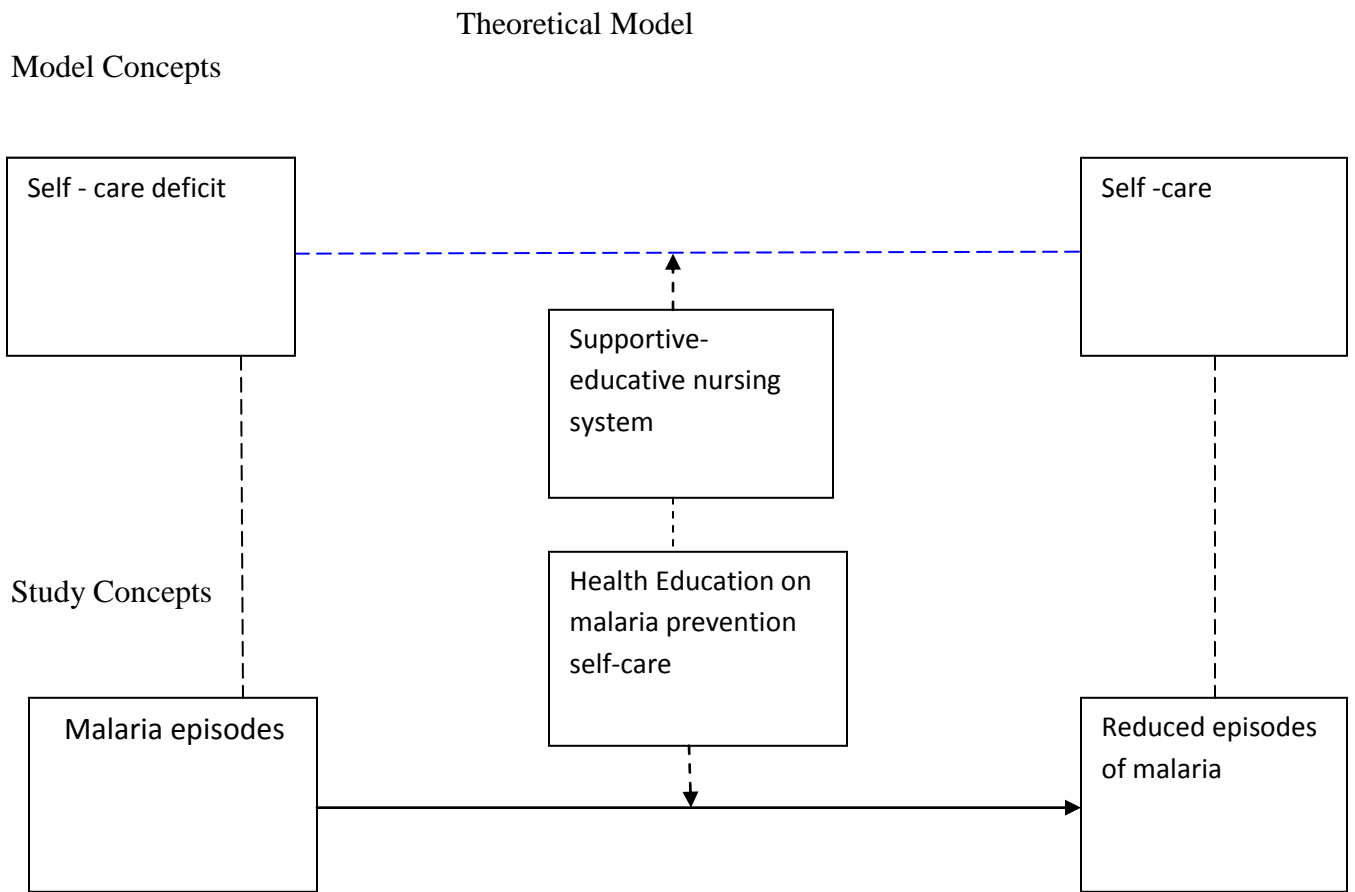


Figure 1: Orem's self – care model: Adapted from Orem's Self Care Model (1991)

Conceptual Definition of Terms

Malaria is a disease caused by the parasite Plasmodium. The infection is usually transmitted by the bite of an infected female anopheles mosquito. Malaria is characterized clinically by fever and in children, vomiting, poor feeding, and abdominal pains and in severe cases convulsions may occur. In Zimbabwe Plasmodium falciparum accounts for 97% of malaria cases whilst Plasmodium ovale and malariae account for the remaining 3% (MOHCW, 2006).

Episode. An occurrence of a usual recurrent pathological abnormal condition (Webster, 2002).

Episodes of malaria. The number of times that short illnesses due to malaria attack has recurred (WHO, 2006). There is a significant overlap in the clinical presentation of acute respiratory tract infections (pneumonia) and malaria in African children (WHO, 2006). Children with pneumonia could have malaria and the converse is also true (WHO, 2006). Thus in areas of high transmission using fever as an entry point in the syndromic approach, the diagnosis of malaria is made in spite of the presence of signs of other diseases, provided Rapid Diagnostic Test(RDT is positive (WHO, 2006).

Operationally in this study an episode of malaria was defined as fever (axillary temperature more than or equal to 37.5°C) and was measured by episodes questionnaire which addressed the number of episodes.

Fever. A patient has fever if he/she: has a history of hot body, feels hot or has axillary temperature of 37.5°C and above (WHO, 2006).

Rapid Diagnostic Test. The RDT kits are based on the detection of antigens derived from malaria parasites in lysed blood, using immunochromatographic methods.

Most frequently a dipstick or test strip is used bearing monoclonal anti-bodies directed against the target parasite antigens. The test can be performed in 15 minutes (WHO, 2006).

Self care knowledge on prevention of malaria. This is conceptually defined as the amount of information the individual possesses on how to look after self or other in the prevention of malaria. This knowledge helps the client to possess the cognitive awareness essential to for the client to participate in own care.

Self care. Is action taken by an individual to promote health, prevent disease and for disease detection and treatment of self (Orem, 1991). The individual takes the initiative in being responsible for her own or her child's health care for example in this case in the prevention of malaria.

Care giver. Mother or any other responsible female person who is looking after a child less than five years (Jain and Khan, 2006).

Under five. Those who have not reached their fifth birthday on the date of survey (Jain and Khan, 2006).

Prevention. Strategies employed to avoid the development of disease (Webster, 2002).

Supportive Educative Nursing System. A nursing approach in which the nurse provides education and support for the patient/client so that the patient/client will be able to successfully meet his/her self care requirements (Fitzpatrick and Whall, 1996).

Self care deficit. Refers to the imbalance between self care agency and self care demand (Orem, 1991). These limitations render the client/patient completely or partially unable to know existent and emerging requisites for regulatory care for themselves or their dependents (Orem, 1991).

Research Objectives

1. To identify the number of malaria episodes the under five children admitted and seeking care at Hauna hospital have had in the previous six months.
2. To establish the self care knowledge the female care givers of the under fives had on prevention of malaria at Hauna Hospital.
3. To examine the relationship between female caregivers self- care knowledge on prevention of malaria and episodes of malaria among under fives at Hauna Hospital.

Research Questions

1. What is the number of malaria episodes the under five children at Hauna Hospital have had in the previous six months?
2. What is the self- care knowledge the female care-givers have on the prevention of malaria among the under fives at Hauna Hospital?
3. What is the relationship between female care-givers self care knowledge on prevention of malaria and episodes of malaria among the under fives at Hauna Hospital?

Significance of the study

The ultimate goal of nursing practice is to improve the quality of services provided to the community, through continual development of a scientific body of knowledge, fundamental to its practice (Polit and Hungler, 1995). Therefore, results of the study could help to improve quality of care given to the community. The study findings could also help in designing preventive community programmes and exposing new areas for further research leading to new findings which may lead to improvement of services provided.

Self care knowledge empowers the client to possess the cognitive awareness essential for the client to participate in own care and also enhances client to make informed decisions. Malaria is an important public health disease which must be prevented because of its fatal consequences on the paediatric population and can indeed be a major hindrance to economic development (WHO World Malaria Report, 2010). The establishment of the level of self care knowledge among caregivers would enable Maternal and Child Health nurses to identify educational needs for this group of clients.

In nursing education the findings of the study could be used to enhance evidence based practice teaching in schools of nursing thus improving the quality of education. Nurse educators could refer to the results of the study as practical evidence based when teaching nurses.

CHAPTER 2

LITERATURE REVIEW

Introduction

Polit and Hungler (1995) state that good research does not exist in a vacuum. For research findings to be useful there should be an extension of previous knowledge and theory as well as a guide for future research activity. Literature review helps the researcher to build on existing work and it is essential to understand what is already known about the topic. The literature review focused on self care knowledge on malaria prevention in the under fives among care givers as the independent variable and episodes of malaria as the dependent variable. The literature review also focused on the relationship between self care knowledge and episodes of malaria. A review of research studies in which Orem's model has been used effectively was also included.

Episodes of malaria

Zimbabwe's National quarterly disease surveillance statistics show that close to 1.5 million episodes of malaria are reported annually, whilst an average of 1000 people die from these episodes (MOHCW, 2010). According to the Zimbabwe National Health Strategy (2009) malaria ranked the second highest cause of outpatients' attendance accounting for 11.5% of all attendances. Malaria is also the second cause of mortality in all age groups after Pulmonary Tuberculosis. In Zimbabwe, children under the age of five years suffer between three to four episodes of malaria every year in areas of stable transmission of malaria (MOHCW, 2009). Adults suffer less episodes of malaria than children because of their adequate immunity (MOHCW, 2009). Malaria episodes occur every year and result in a million deaths particularly in the under fives worldwide (WHO, 2003).

The investigator noted an increase in malaria episodes in Mutasa district despite widespread health education on the prevention of this fatal disease annually. Mutasa district also distributed ITNs to the under fives in 2009 to a total of 20 365 out of a total of 26 333 under fives translating to a coverage of 77.3 % (Mutasa DHT Report, 2009). The increase in malaria episodes in under five children at Hauna hospital is evidenced by outpatient repeat visits statistics for the years 2007,2008 and 2009 as follows: 464 episodes of malaria were recorded in 2007, 510 for 2008 and 598 for 2009 (Mutasa DHT Report, 2009).

Admissions for all under five years' conditions for the years 2007, 2008 and 2009 for the district, records show 1548, 1175 and 1254 respectively. Out of these admissions malaria accounted for 288(18.6%) for 2007, 372(31.6%) for 2008 and 513 (40.9%) for 2009 (Mutasa DHT Report, 2009). This reflects an upward trend on percentage increase of malaria episodes and also reflects a high disease burden.

A study done in Benin revealed that children below 5 years were found to have significantly more annual malaria episodes (1.93 vs.0.34) and illness episodes (2.05vs.0.40) than older children (Worrall, Basu, and Hanson, 2003).

Transmission of malaria in Africa remains intensive, with a high rate of re-infection and super-infection (WHO, 2003). The disease is worse following excessive rains and floods (ZNHS, 1997-2007). It is estimated that the number of infective bites per person per year ranges between 40 and 140, and the situation is unlike any other in the world (WHO, 2003). Crawley et al (2000) did studies measuring knowledge, attitude and practices in Zaire that showed an average of five episodes and a median of seven episodes of malaria (between 3-18 episodes) annually among children under five years. The same studies further showed that 10% of children, who came for

hospitalization, were anaemic and required blood transfusion (Crawley et al., 2000). In another related study Mwangi et al (2005) in Senegal found out that some children experienced a malaria episode every 4-6 weeks, however the authors were unable to identify factors associated with this increased susceptibility.

In endemic areas, malaria episodes are responsible for about 30-50% of fever cases, about 30% of all outpatients consultation and 10-15% of hospital admissions in Africa (WHO, 2000). A study carried out in the Kilifi district of Kenya, to estimate the burden of malaria episodes in the under fives showed that episodes of malaria were associated with 30-60% of all fevers (WHO, 2000). In Tanzania, Alilio et al (2004) carried out an assessment to determine the extent to which the primary health care services have contributed to the decrease in the burden of malaria episodes. The results showed an unchanged malaria episodes disease burden. The average number of malaria episodes per child less than five years old remained between 3 and 3.5 episodes per year. However, Lusingu et al (2004) found in a study in Burkina Faso that decreased malaria prevalence and malaria morbidity could be explained by an overall increase of malaria prevention and treatment activities.

There is some evidence to suggest that children, who as the most vulnerable group to malaria episodes, are not given priority access to malaria prevention and so suffer several episodes of malaria (Worrall et al., 2003). A study in Malawi revealed that insecticide treated bed nets (ITNS), used by adults are often newer, whilst children use older ones and so are exposed to frequent malaria episodes (Worrall et al., 2003). This is supported by a population based malaria survey done in Zimbabwe which revealed that there was inadequate protection of the most vulnerable groups, namely the under fives and the pregnant women as the reported use of ITNS was very low (MOH

&CW, 2002). Cohen and Dupas (2010) in Zambia did a study and results revealed that most of the respondents (84.8%) stated they liked ITNS because it ensures a good night sleep, free from nuisance mosquitoes. Scientific trials of ITNS have actually found that ITNS can reduce deaths in children by one fifth and episodes of malaria by half (Cohen and Dupas, 2010).

Chirdan, Zoakah and Ejembi (2008) carried out a community based study in Nigeria, which showed that children under five years suffer 2-4 attacks of malaria episodes every year, causing complications like cerebral malaria, severe anaemia and death. To some extent it impairs cognitive development, increases school absenteeism and is a major consumer of household funds (Chirdan et al., 2008). Given that in endemic areas of the continent, an average of 5 malaria episodes may be experienced per child, this expenditure constitutes a great burden on individuals and households (Chirdan et al., 2008). A multi- centre study in the African region found that, per capita expenditure on malaria illness at household level was still high with direct costs to caretakers ranging from \$14.50 -\$58.30 (Correira, Silva, Agyarko and Kamau, 2004).

Besides, constituting a burden on households, malaria episodes can also add more strain to the already financially burdened health care delivery system through the readmissions of the children with repeated attacks. In areas where the burden of malaria is high, malaria episodes may account for as much as 25-40% of outpatient visits and up to 50% inpatient admissions (Toddy, 2007). This generates costs that may amount to as much as 40% of public health expenditure (Toddy, 2007). In Ghana an episode of malaria in a holoendemic site produces 5 days of morbidity and costs \$8.67 and accounts for 40% of the public health expenditure (WHO, 2000).

According to WHO (2003), three ways in which malaria episodes contribute to death in children are: an over whelming acute infection ,which frequently presents as seizures or coma(cerebral malaria) may kill a child directly and instantly, repeated malaria infections contribute to the development of severe anaemia, which substantially increase the risk of death, and lastly low birth-weight, frequently the consequence of malaria infection in pregnant women is the major risk factor for death in the first months of life. In addition, episodes of malaria make young children more susceptible to other common childhood illnesses such as diarrhoea and respiratory infection, contributing indirectly to mortality (UNICEF, 2003). Children who survive malaria episodes may suffer long term consequences of the infection (UNICEF, 2003).

Repeated episodes of malaria reduce appetite and restrict play, social interaction and educational opportunities, thereby contributing to poor development (UNICEF, 2003). Chirdan et al., (2008) reported that an estimated 2% of children who recover from malaria episodes affecting the brain, suffer from learning impairments and disabilities due to brain damage, including epilepsy and spasticity. Chirdan et al., (2008) carried out a study in Kenya which found that the case fatality for cerebral malaria episodes among children was 10-30%. A study done in Ethiopia, showed that malaria episodes were the leading causes of morbidity and mortality among the under fives (Getahum, Deribe and Deribew, 2010). The same study estimated over 5 million episodes of malaria occurring annually, and malaria episodes were the top leading cause of outpatients and inpatients mortality (Getahum et. al., 2010).

A study conducted in Kenya, which assessed children who had been admitted to local hospitals several years before, with documented episodes of malaria showed significantly more children with cognitive impairment among cases 12 out of

87(13.7%) than among the controls 3 out of 87(3.4%) (Crawley et al., 2000). In endemic areas, patients experiencing episodes of malaria commonly have no symptoms but only fever that is readily controlled by acquired immunity or by prompt drug treatment (WHO, 2006).

But some repeated infections with *plasmodium falciparum*, especially in children, lead to life threatening complications such as severe anaemia, metabolic disorders or encephalopathy (UNICEF, 2008). Altered consciousness in malaria may result from convulsions, hypoglycaemia, or acidosis (UNICEF, 2008).

Crawley et al (2000) reported evidence of case fatality rates of 10-40% in hospital based studies in Kenya of cerebral malaria episodes in children. Further evidence revealed a full recovery from survivors, but 4-21% had neurological sequelae such as hemiparesis, ataxia, and cortical blindness or generalized spasticity (Crawley et. al., 2000). Although many children with this impairment seem to recover within 6 months, the burden of disability in the population is substantial since several million episodes of cerebral malaria occur every year (WHO, 2006).

Every year, more than one million children in Sub Saharan Africa die or are disabled as a result of malaria episodes (WHO, 2006). Seizures complicate a high proportion of cases and are associated with an increased risk of death and neurological sequelae (Crawley et al., 2000). In the U.K. Brewster, Kwiatkowski and White (2000) carried out an autopsy study to determine the impact of malaria episodes on the brain and its prevention, which showed moderate or severe brain swelling in more than 50% of children dying of cerebral malaria episodes, and brain swelling. This may explain death in a significant proportion of patients.

A study done in Kenya showed that malaria episodes caused suffering and anxiety to a household (WHO, 2006). Of the 55 deaths that were reported to have occurred over the one- year period, prior to the interview (10.9%) were thought to be due to malaria episodes (WHO, 2006). The same study also reported the cumulative effect of malaria episodes in terms of loss of human life as immense (WHO, 2006).

Malaria episodes contribute to a general decline in overall health status, making individuals more susceptible to other illness and disease (WHO and UNICEF, 2000). Every year 300-500 million episodes of malaria occur, resulting in 2 million deaths and vast majority take place in Sub-Saharan Africa and many involve children (UNICEF, 2008). In the absence of treatment children progress to severe malaria in a matter of hours (WHO, 2000). Most children experience their first malaria episode during their first year or two years of life, when they have not yet acquired adequate immunity ,which makes these years particularly dangerous (WHO, 2003).

Lusingu, Vestergaard, Mmbando, Drakeley, et al (2004) in their longitudinal study done in Tanzania showed that the burden of malaria episodes fell mainly on the youngest children, and was highest in the village with high transmission intensity. In another retrospective study carried out in Sudan, on estimating the burden of malaria episodes, results showed malaria incidence to be 9 million episodes in 2002(Abdalla, Maliki and Ali., 2007). The number of deaths due to malaria was about 44,000 and children under 5 years of age had the highest burden (Abdalla, Maliki and Ali. 2007).

In Zanzibar, Jaenisch et al (2010) followed up 536 children aged two -twenty three months for six months just before the start of a programme that used ITNs and indoor residual spraying (IRS). The results showed between 2.3 and 3.8 malaria episodes per year based on a diagnosis of fever. The results further revealed that an

acute fever episode with or without convulsions was the most frequent clinical feature leading to death and only 39% of children in this study were reported to sleep under a bed net at the time of enrollment. Young (2003) found out that episode of malaria cause stunting in children's physical and mental development. This in turn contributes to impaired cognitive development, lower completion of primary school and lower returns to education (Young, 2000).

The Economic Commission for Africa (2005) found that malaria episodes have a debilitating effect on adults with recurrent bouts of fever that induces increased absenteeism from work and lower labour productivity. Todd (2007) reported that an estimation of annual loss of economic growth is 1.3% in countries where malaria is endemic in Africa and losing approximately \$12 billion in productivity annually.

Ye, Kyobutungi, Louis and Saverton (2007) in their study in Kenya randomly selected 867 children (6-59) months from 4 sites. Interviewers visited the children weekly at home over a one year period and tested them for fever, and children with fever were also tested for malaria parasites. The results showed an overall 597 episodes of malaria giving an incidence rate of 79 per 1000 (Ye et al., 2007). In Senegal, Mwangi, Fegan, Thomas, Kinyanjui, Snow and Marsh (2008) followed up 373 children below 5 years, for between 3-5 years to investigate possible causes of increased susceptibility to malaria episodes. Children followed up for 5 years were found to experience between 0-40 episodes (Mwangi et al., 2008). In the same study, Mwangi et. al. (2008) reported an unexplained high susceptibility to malaria episodes, for a proportion of children with some experiencing an episode every 4-6 weeks over many years. The study concluded that children who experienced more episodes of malaria

appeared to be at greatest risk of developing disease severe enough, to require admission (Mwangi et al., 2008).

A related study done in Kenya, to investigate the pattern of susceptibility to episodes of malaria over time, showed that those children that were admitted had more episodes of malaria per year (median:1.4) than those children that were not admitted (median 0.6) and this difference was statistically significant ($p<0.001$) (Mwangi et al., 2006). Fifty-one children (13.7%) were admitted at least once in the course of this surveillance (6 children were admitted twice, 6 admitted 3 times, 2 admitted 4 times and one admitted 5 times).

Children who experienced more than 2 episodes of malaria above the total predicted were arbitrarily considered 'more susceptible' (Mwangi et al., 2006). A total of 78 (21%) children comprised this 'more susceptible' group. Out of a total of 1,173 malaria episodes experienced during the period of the study 55, 3% was experienced by this 'more susceptible' group and this same group was 4.9 times more likely to be admitted to hospital for malaria episodes than the others (Mwangi et. al., 2006).

Self Care knowledge on prevention of malaria

Knowledge is the fact or condition of knowing something with familiarity gained through experience or association (Merriam-Webster's Dictionary, 2002). Self care knowledge on prevention of malaria refers to the information the client has about, on the disease process and how to avoid getting the disease. Dauda, Waiswa and Batega (2004) carried out a survey and found out that the level of the community's knowledge about malaria had a bearing on the community's malaria preventive behaviours and practice. In Zimbabwe, Nyamandi, Zizhou, Chadambuka and Maradzika (2010) in their case control study on factors affecting non-use of ITNs in Uzumba Maramba Pfungwe

district with 110 cases and 110 controls, found out that despite the availability of ITNs among under fives, use was low because of lack of knowledge.

The Ministry of Health and Child Welfare (2002) reported the importance of health education to those at risk to enhance their knowledge on the prevention of malaria. Malaria control intervention strategies employed in Zimbabwe to reduce episodes of malaria include good case management, environmental management, personal protection e.g. use of ITNS, surveillance, research, social mobilization, advocacy and emergency preparedness and response (MOH and CW, 2002). Successful application of these measures chiefly relies on information, education and communication (IEC) activities. To maximize levels of awareness, risk perception and knowledge on malaria prevention, it is important that communication takes place on both the demand side (consumers) and supply side (providers) (WHO, 2006).

According to UNICEF (2008) most IEC activities have as their aim to upgrade the community's self care knowledge and change behaviours among a specific target group, since knowledge has a bearing on behaviour and practice. Lack of information on the part of the consumers severely limits the demand for malaria preventive and curative services. WHO (2006) reported that in many places there is demand for untreated mosquito nets, there is not yet demand for ITNS because of lack of knowledge about its effectiveness. Lack of information, means that the household members most in need are sometimes least protected (UNICEF, 2008). A study done in Tanzania demonstrated that individual knowledge of malaria was an important factor for ITN uptake. The use of such nets has been shown to reduce childhood mortality by 17% across different African settings (Marchant, Schellenberg, Nathan, Armstrong, Mponda, Jones, Sedekia, Bruce and Hanson, 2010).

Azimah, Radzniwan, Zuhra and Khairani (2010) in their pilot study found out that patient's empowerment and level of knowledge are essential parts of disease prevention and management. A community based survey conducted in Zimbabwe demonstrated that peoples' knowledge on malaria prevention was still not up to the standards expected by National Malaria Control Programme (MOH &CW, 2002). The same study revealed that a high percentage of people did not know any personal protection method such as a repellent soap or cream (91.2%), ITNS (90.2%) or domestic aerosols (65.9%), and 75.6% had never used any method for malaria prevention.

A study carried out in Zimbabwe indicate that up to 90% of the population perceive malaria as a community problem and only 45% knew that mosquitoes spread malaria (MOHCW ,2002). According to UNICEF (2008) lack of self care knowledge about malaria prevention in the under fives poses additional threat to child survival. As a result, many children die before reaching a health facility because caregivers are not informed or do not have easy access to health services. This is supported by a survey carried out in Zimbabwe, where out of 62 reported malaria deaths in children, the majority died at home (53.3%) (MOHCW, 2002).

WHO (2008) reported that health promotion through health education enhances self care knowledge leading to a positive impact on health and well being of clients. Worrall, Basu and Hanson (2003) in their qualitative study found out that educational attainment was related to the acquisition of malaria. In Nigeria, Fawole and Onadeko (2001) carried out a comparative study with 376 mothers and caregivers of under fives and found a statistically significant difference in the malaria (knowledge Score) based on a series of questions related to the cause, transmission, symptoms and prevention of

malaria episodes in mothers of different ages, education attainment and occupation. Further results revealed that knowledge on prevention was poor, only 179(46.8%) knew how malaria was transmitted. Of those who knew that malaria could be prevented, clearing of bushes and gutters was the commonly stated method by 78 (21.8%), followed by use of traditional herbs by 75 (20.9%). Okeke, Uzochukwu and Okafor (2000) in a study in Nigeria, found that there was poor knowledge and dispensing behaviours in mothers, in relation to childhood malaria episodes. Poor knowledge on prevention may lead to poor practices in the treatment of malaria. Deressa and Ali (2009) carried out a community based survey in Ethiopia and the results showed that the knowledge on prevention measures was very low. Most mothers were familiar with the main signs and symptoms of a mild attack of malaria. Asante et al (2010) in a cross sectional survey with a sample of 282 women with under five children, found that knowledge of fever as a symptom of malaria was high among the study population. Dauda et. al. (2004) carried out a survey in Uganda and revealed that (87.5%) of the community knew that malaria can be prevented while others thought otherwise.

Munthali (2005) in his ethnographic study in Malawi with caregivers of under five children found out that women mentioned a number of ways in which malaria can be prevented, such as the draining away of all stagnant water around the home cutting grass short and destroying tins and old broken pots as these may act as breeding places for mosquitoes. The same study revealed that only a few mothers said that they did not know how to prevent malaria, while a few others said it was not possible to prevent malaria. In a related study done in Swaziland by Hlongwana, Kunene, Govender, and Maharaj (2009) results showed that generally knowledge on prevention was high

(78%) and only a small portion (14.7%) said malaria cannot be prevented and the remaining (7.3%) of the respondents did not know whether malaria is preventable. The same study showed that another proportion mentioned hygiene avoiding stagnant water in the yard, proper disposal of tins, continuous education and a small proportion thought that closing windows could help prevent malaria. According to Hlongwana, Kunene, Govender and Maharaj (2009) with regard to personal protection measures some participants mentioned bed nets followed by mosquito coils and to a less extent the burning of cow dung or leaves, repellents and lotion. Regarding preventive measures most respondents (78.1%) believed that malaria is preventable and mentioned IRS and the use of bed nets as key malaria preventive measures.

Maslove et al [2009] reported evidence of the use of ineffective prevention practices in malaria episodes, such as eating a balanced diet, drinking herbal teas, wearing charms and vaccinating children. In another related study done in East Africa, results showed a number of unproven prevention practices that are potential consequences of the beliefs about causation. Nineteen percent (19%) of the mothers believed charms could prevent convulsions in their children (Maslove et. al., 2009).

Whilst some of these practices are not likely to be harmful, they pose a threat to successful malaria prevention by suppressing the use of more effective measures. Use of such methods may also foster a false sense of protection amongst those who apply them, thus undermining self care activities. In a qualitative community based study in Cote d' Ivoire, Koudov et al (2010) concerning knowledge on preventive measures against mosquito bites, the majority of respondents mentioned anti-mosquito measures such as ITNs, fumigating coils, modern and traditional insecticides. The same study revealed that with regard to malaria symptoms fever was clearly the most important

one, followed by loss of appetite, tiredness, abdominal discomfort and diarrhoea. Traditional medicine was primarily sought when a malaria episode occurs. Fischer and Bialek (2011) in Liberia found that environmental insecticides such as those released by slowly burning fumigating coils seem to decrease indoor mosquito population by 50-75 %. Wagbatsoma, Obomighie and Nwokike (2004) in Nigeria found out that the commonly mentioned method of malaria prevention was window/door mesh wire or gauze.

In another related survey on assessing knowledge on malaria prevention in Tanzania Mazigo et al (2010) found that knowledge on malaria transmission and prevention was reasonable, 56% of respondents associated the disease with mosquito bites, with a significant difference between education level and knowledge on transmission ($p < .001$), knowledge on mosquito breeding areas was also associated with education (illiterate: 22%; literate: 59%). Most respondents (86.3%) knew that indoor residual spraying (IRS) is a preventive measure against malaria. A study in Swaziland by Hlongwana, Mabaso, Kunene, Govender and Maharaj (2009) showed that 78.1% of their sample mentioned IRS and ITNS as key malaria preventive measures.

Relationship between Self-care knowledge on malaria prevention and episodes of malaria

There is limited literature regarding the relationship between self-care knowledge on prevention of malaria and episodes of malaria. Ajayi et al (2009) reported that about 20% of malaria episodes are treated in health care centres. Another study in Nigeria showed that more than 80% of malaria episodes received treatment outside the existing health care system (Getahum et al., 2010).

WHO (2006) described the practice of discontinuing malaria treatment in children by mothers, once symptoms were seen to resolve, often as a means of rationing medicines for future episodes . Poor knowledge may lead to poor practices in the home management of a malaria episode. This finding is particularly worrisome as poor adherence to treatment is a risk factor for effective self care activities. This could promote the emergence of drug resistant parasites and this could actually trigger an episode (WHO, 2006). The above results from different studies, reflect that the burden of the disease is greatest in the under fives, and that many people do not recognize that episodes of malaria, can develop into severe forms. Most mothers and other caregivers, still view convulsions and severe anaemia as being separate disease entities with no relationship to episodes of malaria (WHO, 2006). Without adequate resources for prevention programmes, morbidity and mortality may be difficult to curtail (Lusingu et al., 2004).

In another related study, that examined the relationship between self-care knowledge and prevention, Berwick (2004) found out that one important part of any solution is education. In a survey of 26 countries, on diabetes specific education with 55 respondents the study found out that education is required for diabetics to help them integrate new knowledge and transform old prevention practices. WHO (2004) reiterates that the context in which an individual lives is of great importance for one's quality of life and status. Sit, Yip, Ko, Gun and Lee (2007) carried out a quasi-experimental study on community based stroke prevention with 190 subjects. The aim was to determine the effectiveness of a community based stroke prevention programme in improving knowledge. The study concluded that educational intervention is of

paramount importance in equipping those at risk with relevant knowledge and self – care strategies for stroke prevention.

Theoretical Framework

Orem's Self-care model was used to guide the study and enabled the investigator to explain the study findings on self-care knowledge on prevention of malaria and episodes of malaria. Orem (1991) defined self-care as activities that a person initiates and performs on his own behalf to maintain life, health and well being. The self-care knowledge dimensions established in this study pertained to knowledge on personal protection measures to prevent mosquito bites, knowledge on how to reduce breeding places for mosquitoes on home surroundings and the knowledge of severe signs of malaria in a child.

Orem's conceptual model has been applied in several nursing studies. Nayi, Nikhbakht, Shaban and Saebena (2009) used the model in their study of self-care knowledge in heart failure patients. They showed that higher scores of self-care knowledge resulted in less referral and less hospitalization. Self-care model was also used by Slusher (2010) in an ethnographic study, to examine the relationship between health beliefs, self-care knowledge and basic conditioning factors in Appalachian women. The conclusion was that self-care framework helped in developing strategies to eliminate medical disparities. Wolfe (2001) utilized the self-care framework to provide information to health consumers. The main emphasis was on a new paradigm in health care that of empowering consumers through education on health matters, to inform their decision making. One of the strategies suggested by WHO to achieve health for all by the year 2000 included empowering people by providing information and decision making opportunities (WHO, 2004).

Summary

Literature review helps the researcher to build on existing work and it is essential to understand what is already known about the topic. Various works by different authors have been cited and their findings highlighted. Orem's model of Self-care has also been identified as ideal for the study because of its applicability. The theories of self-care, self-care deficit and supportive-educative nursing system were used to guide the study. Other authors who used the concept of self-care have been identified and their findings highlighted.

CHAPTER 3

METHODS

Introduction

This chapter addresses the research methods which were employed for this study. This section covers the research design, sampling plan, sample size, sampling procedure, the conceptual and operation definitions of the variables under study. The research instrument, reliability and validity of the instrument, data collection plan, and human rights consideration were described.

Research Design

A descriptive correlational design was utilized for the study. Descriptive designs aim at observing, describing and documenting aspects of a situation as it exists whilst correlational studies examine relationships between variables, as they naturally occur (Burns and Grove, 1995; Polit and Hungler, 1995). According to Polit and Hungler (1995) correlational research is often an efficient and effective means of collecting a large amount of data about a problem area in a relatively short time. An investigator who is engaged in a descriptive and correlational research study combines aspects of both descriptive and correlational research. The researcher has no control over the independent variable but aims to describe how one variable is related to another but not causality pathways. The descriptive correlational study was appropriate for examining the relationship between female care-givers self-care knowledge on prevention of malaria and episodes of malaria among under fives at Hauna Hospital. The study describes the knowledge on malaria prevention, episodes of malaria as well as the relationship between malaria prevention self-care knowledge and episodes of malaria.

Sampling Plan

A sampling plan defines the process of selecting a group of people, as a portion to represent that whole population from which it is selected (Burns and Grove, 1993: Polit & Hungler, 1995). A sampling plan is developed so that the whole population is selected without bias, and sampling error between the chosen group of people and the whole population with respect to key research variables (Polit and Hungler, 1995). This helps in specifying in advance how study participants are to be selected and how many to include. A population refers to the entire set of individuals (or subjects) having some common characteristics (Polit and Hungler, 1995).

In this study, the investigator used systematic random sampling a type of probability sampling to get the required number of subjects for the study. The systematic random sampling method used involved the selection of every k^{th} case from the accessible population.

In this study, the accessible population was 205 subjects derived from children daily attendance hospital registers for caregivers who had come for services at the Family Child Health Department with their under five children. To get the k^{th} case, the accessible population (N) was divided by the sample size (n) and was calculated as $205/80 = 2.56$ meaning that every 2nd subject who met the eligibility criteria was considered for the study till the required number of subjects was reached. The first element was randomly selected from the children daily attendance register of 205 subjects. The basic purpose for sampling in the quantitative research approach is to enable the investigator to use the sample's findings to generalize or extrapolate beyond the actual sampling units without having to study each element of the target population (Dempsey and Dempsey, 2000).

Study Site

Subjects were selected from Hauna District Hospital, maternal and child health services department as well as from the general wards. The hospital is a referral centre for all the surrounding clinics in the area and is situated near the Mozambican border. Surrounding this hospital are busy tea plantations. Services offered include, promotive, curative, preventive, maternal and child health services. A feasibility study revealed that an average of three hundred and fifty seven caregivers attend the Maternal and Child health and curative services on a monthly basis. This site represented a more accessible population to the investigator because of the high numbers of attendance of caregivers who bring their children for such services.

Target Population

According to Burns and Grove (2005), a target population refers to all elements (individuals, objects, or substances) that meet the sampling criteria for inclusion in a study. The target group was all caregivers with children below five years of age.

Accessible Population

The accessible population is the aggregate of cases that meet the sampling criteria and are accessible to the researcher as a pool of subjects for a study (Polit and Hungler, 1995). One can generalize findings from the accessible population to the target population. In this study, the accessible population were female caregivers who had brought their under five children for services at the hospital.

Sampling Criteria

Sampling criteria list the essential characteristics of the target population (Burns and Grove, 1993). Sampling criteria which refers to inclusion and exclusion criteria, helps to control extraneous variables, ensures a homogenous sample and provides a guideline for sample recruitment. Extraneous variables which could interfere with measurement of study variables were controlled so that findings would be credible. Inclusion criteria refer to the characteristics that the investigator wishes to include in the study and exclusion criteria refers to the characteristics the investigator wishes to exclude in the study.

Inclusion Criteria

To be included in the study, participants had to be female caregivers with a child below the age of five. The investigator performed a brief screening interview, and also verified with child health and treatment cards to determine eligibility of participants and children respectively.

For participants to be included in the study, the child had to be in the care of its caregiver permanently and stays in the area most of the time, or has been staying in the area for six months or so, be under five years of age, male or female, and caregiver had to be fluent in either English or Shona as the instruments were available in these two languages only. Both the ill who were admitted and the well children, attending the MCH clinic were considered. In cases where the caregiver had more than one child under the age of five years the youngest one was considered.

Exclusion Criteria

The exclusion criterion was also considered. All caregivers who did not reside in the area, acutely ill children who needed urgent nursing interventions, a child in pain and inability of the caregiver to speak and understand Shona or English language were not included.

Sample Size

Sample defines a subset of the population that is selected for a study (Burns and Grove, 2005). A sample should be large enough to achieve representativeness, the larger the number in the sample, the more likely it is to be representative of the population from which it was selected (Dempsey and Dempsey, 2000). A number of factors determine the size of the sample. These are power, effect size, significant level of the statistic used (Burns and Grove, 2005; Polit and Hungler, 1995).

As the sample size increases, the sampling error also becomes smaller (Burns and Grove, 2005). According to Burns and Grove (2005) the power is the capacity of the study to detect differences and relationships that exist in a given population. Power tries to control the likelihood of making a Type 11 error or beta, which arises when an investigator accepts the null hypothesis when it should be, rejected (Polit and Hungler, 1995). Power is a function of significance level, sample size and effect size (Burns and Grove, 1993). Therefore, a power of .80 was used in this study because it is the minimum acceptable power for a study (Burns and Grove, 2005). If power is high one is able to detect the smallest differences that exist through the statistical test. As the power increases the sample size increases as well.

The other factor which influences the sample size is the effect size. This is the degree to which a phenomena is present or absent in the population being studied and is

concerned with how strong a relationship is among research variables (Polit and Hungler, 1995). The effect size measures the degree to which the null hypothesis is false (Burns and Grove, 2005). It is an index of the strength of an independent on the dependent variable. For nursing studies the medium size effect of 0.5 is used which this study adopted.

The significance level (also known as the p value or alpha) is the probability that an observed relationship or the results are likely to be due to chance (Burns and Grove, 2005). It tries to control the likelihood of making a Type 1 error which occurs when an investigator rejects the null hypothesis when actually the results are credible. A significant level of 0.05 means that in 5 times out of 100 times results will not be reliable, hence in 95 times out of 100 times, the results will be correct (Burns and Grove, 2005). According to Burns and Grove (2005), the sample size needs to be larger than the calculated number because of attrition rate. Using the Lipsey power tables (Lipsey, 1990), basing on the power of .80, effect size 0.5 and significance level of 0.05 gives a sample size of 65. Because of the potential of attrition rate the investigator added (20% of 65) to make a total of 80 subjects. Therefore, fifteen additional subjects were included, making a total of eighty (80) subjects.

Sampling Procedure

A sampling procedure defines the process of selecting subjects for a study. The sampling procedure was done in order to control extraneous variables. Systematic random sampling was used in this study and is probability in nature meaning that every element has an equal chance of being selected to participate in the study. Systematic random sampling involved the selection of every k^{th} case from the accessible population. The sample was selected from the accessible population of 205 subjects

derived from children's hospital registers per month for the clients who had come for services with their under five children at Hauna Hospital in the past six months.

The selection was done from the target population who met the inclusion and exclusion criteria and those who had their children hospitalized. The selection was done over a period of 4 weeks in March and April 2011. Process of sampling was from 0800 hours to 1300 hours. The screening of clients was from 0800 hours to 0830hours in order for the investigator to get the target population. To get the k^{th} case, the accessible population (N) was divided by the sample size (n) and was calculated as $205/80 = 2.56$ meaning that every 2nd subject who met the eligibility criteria was considered for the study till the required number of subjects was reached. The first element was randomly selected from the registers by closing the eyes and letting the pen point at any number on the registers.

Variables

The variables in this study were self-care knowledge on prevention of malaria as the independent variable and episodes of malaria as the dependent variable. Demographic characteristics were also included in the study and these addressed the respondents' age, religion, marital status, whom they live with, occupation, where they stay, educational level attained, and how many children under the age of five years they have. Child demographic variables addressed age, sex and where the child was born.

Episodes of malaria as the dependent variable sought information on the time intervals in weeks between episodes, and how many times the child would have suffered from malaria. The independent variable looked at self-care knowledge on malaria prevention. The information asked from the respondents was how they could recognize severe malaria, measures that can be taken to prevent malaria. Variables can

be defined conceptually and operationally. A conceptual definition provides a variable or concept within a theoretical meaning through concept analysis or concept synthesis or theory definition (Polit and Hungler, 1995). Operational definition means defining a concept or variable in terms of the operation or procedure by which it is to be measured (Polit and Hungler, 1995).

Conceptual and Operational Definitions

Episodes of malaria: An episode of malaria was defined as the number of times that a short illness due to malaria has recurred. Operationally, the malaria episode was defined as fever (axillary temperature equal or higher than 37.5⁰c), chills, not able to feed and a history of convulsions. The episodes were measured by the episodes questionnaire that addressed the number of episode a child had had in the past six months.

Malaria prevention self- care knowledge: Conceptually defined as the possession of relevant facts or information about a disease. In this study the possession of facts about the prevention of malaria, by the respondents includes signs and symptoms of severe malaria and prevention of malaria. This knowledge was assessed by asking questions on malaria prevention to the subject and the investigator ticked the best possible answer according to the response.

Demographic variables are conceptualized as personal attributes of the study respondents. The study addressed respondents' age, religion and marital status, level of education, whom they live with, residence, occupation, number of under five children, sex of child, and where the child was born. These were measured using the Demographic Data Questionnaire.

Research Instrument

An instrument in research is a tool, device or technique used to collect data, namely questionnaires, interviews, tests and observation schedules (Polit and Beck, 2007). The purpose of the instrument is to measure the concept being studied. In this study a face to face interview based on a structured interview schedule was used to collect data. The instrument consisting of three sections, namely the demographic data questionnaire (Section A), the malaria episodes questionnaire (Section B) and the self-care knowledge questionnaire (Section C) was developed by the investigator. The instrument consisted of twenty -three items. The section on demographics consisted of twelve items, section B had two items and section C had ten items.

Caregiver and Child demographic variables.

Section A of the instrument was designed to address demographic variables such as age, marital status, educational level, area of residence, whom they live with and how many children under the age of five years they have. Child demographic variables included age, sex and place where child was born. Data from this section helped the investigator in understanding the client from a socio-economic perspective and the circumstances surrounding the client as these have an influence on health and may also affect individual's ability to engage in self care. The demographic variables were coded by assigning a number to each variable for example; male and female were coded as 1 and 2 respectively.

Episodes of malaria

Section B elicited information on the dependent variable. It had two questions. The questions which were: How many times did the child suffer from malaria during the previous six months? And: what was the interval in weeks between episodes? These

items elicited information on the number of attacks the child had had over a recall period of six months and the interval between attacks.

These items were based on the problem statement and literature review concerning the malaria burden on the under five children (Lusingu, Vestergaard, Mmbando, Drakeley, et.al, 2004).

Only item 1 was used for correlation with the independent variable. The total possible score for this item was 5. Scoring was based on a minimum of 1 and a maximum of 5. The highest score indicated client whose child had had no malaria attack in that recall period denoting a good health outcome.

Care givers self-care knowledge on prevention of malaria

Section C collected data about self-care knowledge on prevention of malaria from the respondents. There were 10 questions and the questions looked at knowledge on the signs and symptoms of severe malaria and the preventive measures against malaria. Items 1 to 5 were correlated against the number of malaria episodes. The total possible score was 14. The scoring range was from one (1) representing the least knowledge to three (3) representing more knowledge in that order. A zero was scored for a respondent who did not know. For knowledge on methods that help prevent malaria in children, the response (YES) was scored one (1) while; zero (0) was scored for a (NO).

Item 1 posed specific question relating to signs and symptoms of severe malaria, derived from literature (Asante et al, 2010; Dauda et al, 2004). The total score was 3 with a possible range of 0-3. A higher score indicated a high level of knowledge. Item 1 was an open ended question to elicit more information on signs and symptoms of severe malaria. Item 2 posed question on which services the respondents would consult

first in the event of a child's illness. This was derived from literature (Nuwaha, 2002; Koudov et al, 2010). Item 2 was a closed- ended question. The total score was 1 with a possible range of 0-1. A higher score indicated a positive response.

Item 3 posed specific question relating to whether malaria is a preventable disease, derived from literature (Hlongwana, Mabaso, Kunene, Govender and Maharaj, 2009; Munthali, 2005). The total score was 1 with a possible range of 0-1. A higher score indicated a positive response. Item 3 was a closed question. Item 4 (a) had specific question relating to malaria treatment as a preventive measure against malaria, derived from literature (Davis et al, 2011).

This item had 2 responses a (YES) scored one (1) and (NO) scored zero (0). The total score was 1 with a possible range of 0-1. A higher score indicated a positive response which was more knowledge. This item was a closed-ended question. Item 4 (b) posed a question relating to routine vaccination as a preventive measure against malaria, derived from literature (Maslove et al, 2009). This item had 2 responses a (YES) scored zero (0) and (NO) scored one (1). The total score was 1 with a possible range of 0-1. A higher score indicated more knowledge. This item was a closed- ended question.

Item 4 (c) posed a question relating the use of repellents and fumigating coils in the prevention of malaria, with literature derived from (Koudov et al, 2010; Fischer and Bialek, 2011). The item had 2 responses a (YES) scored one (1) and a (NO) scored zero (0). The total score was 1 with a possible range of 0-1. A higher score indicated more knowledge. This item was a closed-ended question. Item 4(d) had a question relating to use of herbal remedies in prevention of malaria with literature derived from (Wagbatsoma, Obomighie and Nwokike, 2004).

The item had 2 responses a (YES) scored zero (0) and a (NO) scored one (1). The total score was 1 with a possible range of 0-1. A higher score indicated more knowledge. The item was a closed-ended question.

Item 4 (e) had a question relating to the use of mosquito nets in the prevention of malaria, with literature based from (Cohen and Dupas, 2010). The item had 2 responses a (YES) scored one (1) and a (NO) scored zero (0). The total score was 1 with a possible range of 0-1. A higher score indicated more knowledge. The item was a closed-ended question. Item 4 (f) had a question relating to use of mesh wire or gauze on windows in preventing malaria, with literature based from (Wagbatsoma, Obomighie and Nwokike, 2004). The item had 2 responses a (YES) scored one (1) and a (NO) scored a zero (0). The total score was 1 with a possible range of 0-1. A higher score indicated more knowledge. The item was a closed-ended question.

Item 4 (g) posed a question relating to IRS as a preventive measure against malaria, derived from literature (Hlongwana, Mabaso, Kunene, Govender and Maharaj, 2009). The item had 2 responses a (YES) scored one (1) and a (NO) scored a zero (1). The total score was 1 with a possible range of 0-1. A high score indicated more knowledge. The item was a closed-ended question. Item 5 posed a question in relation to strategies employed at home to prevent malaria, derived from literature (Fawole and Onadeko, 2009). The item had 3 responses and a total score of 2 with a possible range of 0-2. A high score indicated the most knowledge. The item was an open-ended question.

Though items 6 -7 did not address self-care knowledge per se, they facilitated in understanding more views about what societies believe or say on traditional/spiritual aspects in the prevention of malaria. Item 8 elicited information on whether the child

was given a mosquito net or not and the information which was given. This helped to evaluate the information on the nets distributed to the caregivers for their under five children, and also helped to assess self-care activities.

Reliability of the instrument

The reliability of the instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring (Polit and Hungler, 1995). Reliability testing was done on the instrument prior to conducting the study by carrying out a pilot study. A pilot study was conducted utilizing clients with similar characteristics to the study sample to determine whether the instrument was measuring what it was supposed to measure. The pilot study was done at Hauna clinic.

Five female caregivers who had brought their children under the age of five years for various services were interviewed. These participants had the same characteristics as the target population. This was to evaluate the effectiveness, clarity, relevance of questions, length of time needed to answer the questions, and how to record the responses. The questions were moderated or omitted as required. Pretesting of the instrument provided the investigator with the opportunity to become familiar with the questions. A reliable instrument, if administered several times to the same subject under the same circumstances will provide the same results, (Burns and Grove, 1997).

Validity

Validity entails the extent to which an instrument measures what it is supposed to measure (Burns and Grove, 2005). The instrument was constructed using information from literature, and this gave it content validity. The investigator also carried out a pilot study to pre-test the instrument. Content validity was measured by giving the instrument to panel experts in the environmental health department. This enhanced

content validity. The questionnaire was given to the supervisor and experts working in the Malaria Control Programme at the Provincial Office. The item (zero) was added to section B and the deletion of the item on severity of attacks as suggestions from the supervisor. Item on 'Have you had information or instructions on how to prevent malaria' was also deleted and the item 'Do you believe malaria can be prevented' was added as suggested by the experts.

Pilot Study

A pilot study provides an opportunity to test the instrument, and practical details of carrying out the study (Pilot and Hungler, 1995). Before the study was conducted, permission from the institution was sought. These subjects were not included in the major study because they were sensitized during the pilot testing. In this study, the instrument was pilot tested at Hauna clinic and 5 participants who had the same characteristics as the target population were interviewed.

Data Collection Plan

Data collection plan details how a study will be implemented (Burns and Grove, 2005). There are two important components of data collection plan, namely ethical considerations and the data collection procedure.

Human Rights Consideration

The investigator requested for permission to carry out the study from the Zimbabwe Medical Research Council which was granted. This was facilitated through the chairperson in the Department of Nursing Science. Permission to carry out the study was obtained from the Provincial Medical Director of Manicaland Province (See appendix). Each questionnaire had a consent form which asked for permission from the client to participate in the study (See appendix).

The consent explained the reasons for carrying out the study and emphasized that participation in the study was voluntary and the client was free to withdraw from the study if need arose. The informed consent form, purpose and benefits of the study were also explained to the sisters in the MCH department to gain their cooperation. A request to use the same room was made at study site to ensure constancy of conditions so as to prevent introducing extraneous variables as well as the maintenance of privacy. Noise was controlled to prevent influence on the responses. Subjects were assured of safety against physical or psychological harm. Anonymity and confidentiality was assured by coding the forms and no names appeared on the forms and all completed questionnaires were kept under lock and key. And those with transient factors were not delayed.

Data Collection Procedure

Data was collected after obtaining permission from the Medical Research Council of Zimbabwe, the Provincial Medical Director of Manicaland, and from the District Medical Officer of Mutasa District. Data collection was carried out during March and April 2011. The investigator visited the study site every day from Monday to Friday from 0800-1300hours.

The investigator explained the purpose and procedures of the study to clients who were on the queue. Consent to participate in the study was sought privately on an individual basis in the private room. Face to face interviews based on structured interview schedule was used for data collection. A brief screening interview was also done to ensure that the clients met the inclusion criteria. The interview lasted between 20 and 25 minutes per client and no subject was rushed to complete the questions. The

investigator interviewed at least 7-8 clients per day. The same questions were asked for all the subjects to ensure for consistency.

Data Analysis

Data analysis is defined as the process of carefully scrutinizing data by placing it in categories and applying statistical procedures (Polit and Hungler, 1995). Raw data were coded and entered into the codebook which was developed by the investigator. The data were grouped and categorized after checking for completeness. Raw data were then entered into the computer to create a data set for analysis. After data were entered into the computer, it was cleaned to detect coding errors by checking the raw data on the data collection tools against the data entered into the computer.

The data were stored in a memory stick. Data were then analysed using the Statistical Package for the Social Sciences (SPSS.PC). Research questions were analysed using descriptive and inferential statistics. Descriptive statistics allow the researcher to organize the data in ways that give meaning and facilitate insight (Burns & Grove, 1995). Inferential statistics provides a means for drawing conclusions about a population given the data obtained from the sample (Polit and Hungler, 1995).

Demographic Variables: Twelve variables were analysed from this section. Variables such as age, marital status, residence, religion, level of education, occupation, number of children under the age of five years, with whom the client stayed. Child demographic variables which were age, sex and place of delivery were also analysed using descriptive statistics which yielded frequencies, percentages, measures of central tendency for example mean, mode and median. Demographic findings were presented in tables.

Episodes of malaria: Research question 1: what was the number of malaria episodes the under five children at Hauna Hospital had had in the previous 6 months? Descriptive statistics, frequencies, tables and means were used to describe and analyse the dependent variable to determine the percentage of children who had had episodes of malaria.

Malaria prevention self-care knowledge: Research question 2: what was the self-care knowledge level the care givers of the under fives have on malaria prevention, was answered by this variable to determine the levels of self-care knowledge the caregivers had. Knowledge on prevention of malaria was based on a score range of 0-14. Respondents were categorized into three groups thus 0-6 had poor knowledge, 7-10 had average knowledge whilst 11-14 had good knowledge.

Relationship between malaria self-care knowledge and episodes of malaria

Research question 3: what was the relationship between the caregivers' malaria prevention knowledge and the number of episodes of malaria was analysed using Pearson Correlation Coefficient to determine whether a relationship existed between the variables.

CHAPTER 4

RESULTS

SUMMARY

The purpose of this study was to determine the relationship between female care-givers self-care knowledge on prevention of malaria and episodes of malaria in the under fives at Hauna Hospital. Eighty clients participated in the study. The clients had their children admitted in the general ward whilst, some had come for services at the Maternal Child Health Department. The study attempted to answer the following questions:

- (1) What was the number of malaria episodes the under five children at Hauna Hospital had had in the previous six months?
- (2) What is the self care knowledge the female care-givers have on the prevention of malaria in the under fives?
- (3) What is the relationship between female care-givers self care knowledge on the prevention of malaria and episodes of malaria in the under fives at Hauna Hospital?

In pursuance to answer the above questions, structured interview schedule was used to collect data utilizing questionnaires from eighty caregivers of children under the age of five years. The data collected was entered into the SPSS programme and analysed using tables of frequencies and percentages. Descriptive and inferential statistics were used to analyse the data. Pearson (r) Coefficient Correlation Matrix was used to analyse the data, testing the relationship between self-care knowledge on

malaria prevention and malaria episodes. A significant level of $p < 0.05$ was used for all statistical analysis. The problem addressed in the study was the episodes of malaria as reflected by a high number of the repeat visits among under five children for the treatment of malaria at the District Hospital.

Sample Demographics

Table 1 shows the ages of the respondents who participated in the study. The age ranged from 18 to 55 years. Thirty –seven (46.2%) of the sample were between 18 and 24 years of age. Seventy-eight (97.5%) was between 18 and 40 years. The minimum age was 18 and the maximum was 55 years giving a range of 37 years. The mean age was 27.05 years with a median of 25 years. Table 2 is a continuation of sample demographics of the sample. An analysis of the educational level of the respondents showed that fifty-seven (71.3%) had received secondary education, twenty (25%) went to school up to primary level, two (2.4 %) had not received any formal education at all, whilst only one (1.3%) had received tertiary education.

In terms of marital status, there were sixty-nine (86.2 %) married respondents, four (5%) were single, six (7.5%) divorced and one (1.3%) was widowed. All the respondents (100%) did not consume alcohol. Apostolic Sect made up the 62.3 % (50) of the sample. Table 3 shows whom the respondents were staying with, the majority of respondents forty-eight (60%) stayed with their spouses and children, twelve (15%) stayed with their own parents, eleven (13.8%) stayed with their in- laws, seven (8.7%) stayed alone whilst, two (2.5%) with partners.

TABLE 1

Sample Demographic Data 1

(N=80)

Variable	Frequency	Percentage
<u>Age</u>		
Eighteen	2	2.5
Nineteen	7	8.7
Twenty	6	7.5
Twenty-one	4	5.0
Twenty-two	5	6.3
Twenty-three	9	11.2
Twenty-four	5	5.0
Twenty-five	5	6.3
Twenty-six	3	3.7
Twenty-seven	3	3.7
Twenty-eight	4	5.0
Twenty-nine	2	2.5
Thirty	5	6.3
Thirty-one	2	2.5
Thirty-two	3	3.7
Thirty-three	2	2.5
Thirty-four	3	3.7
Thirty-five	2	2.5
Thirty-seven	1	1.3
Thirty-eight	4	5.0
Forty	2	2.5
Fifty-four	1	1.3
Fifty-five	1	1.3

Table 3 is a continuation of demographic variables on employment status, area of residence and number of under five children the clients had. Seventy-five (93.6 %) of the respondents were not employed, one (1.3%) was a professional worker, one (1.3%) was self-employed, whilst three (3.8%) were skilled workers. In terms of area of residence, seventy-seven (96.2 %) resided in the rural area, two (2.5%) resided in urban areas, whilst one (1.3%) resided on a farm. Sixty -five (81.2 %) of the sample indicated having only one child under the age of five years, fourteen (17.5%) had two children below the age of five years, whilst one (1.3%) had three and above children under the age of five years.

Table 4 shows sex, age of the child and place where the child was born. Thirty –two (40%) of the sample had children below the age of twelve months, twenty-seven (33.7 %) had children between twelve and twenty-three months, twelve (15%) had children aged between twenty-three and thirty –six months, whilst nine (11.3%) had children aged thirty-six months and above. The mean age was 2.01 years, with a median age of 2 years, a modal age of 1 year. The minimum age was 1 year whilst the maximum was 4 years and giving a range of 3 years. Forty-eight (60%) of the sample their children were boys, whilst thirty-two (40%) were girls. Sixty-seven (83.7 %) of the sample had their children delivered at a health institution, whilst thirteen (16.3%) had their children delivered at home.

TABLE 2

Sample Demographic Data 2.

(N=80)

Variable	Frequency	Percentage
<u>Education</u>		
None	2	2.4
Primary	20	25.0
O-A level	57	71.3
Tertiary	1	1.3
<u>Marital Status</u>		
Married	69	86.2
Single	4	5.0
Divorced	6	7.5
Widowed	1	1.3
<u>Alcohol Consumption</u>		
No	80	100.0
Yes	0	0.0
<u>Religion</u>		
Roman Catholic	5	6.3
Jehovah Witness	3	3.8
Apostolic Sect	50	62.3
Anglican	8	10.0
United Methodist	8	10.0
Seventh Day Adventist	3	3.8
Guta Ra Jehovah(GRJ)	1	1.3
United Baptist Church	2	2.5

TABLE 3

Sample Demographic Data3.

(N=80)

Variable	Frequency	Percentage
<u>Whom do you live with</u>		
Husband and children	48	60.0
Husband/partner only	2	2.5
In laws	11	13.8
Own parents	12	15.0
Alone	7	8.7
<u>Occupation</u>		
Professional worker	1	1.3
Unemployed	75	93.6
Self employed	1	1.3
Skilled worker	3	3.8
<u>Residence</u>		
Urban	2	2.5
Rural	77	96.2
Farm	1	1.3
<u>Number of children below 5 years</u>		
One child	65	81.2
Two children	14	17.5
Three children and above	1	1.3

TABLE 4

Child Demographic Data 4

(N=80)

Variable	Frequency	Percentage
<u>Sex</u>		
Male	48	60.0
Female	32	40.0
<u>Age</u>		
Below 12months	32	40.0
12-23 months	27	33.7
23-36 months	9	11.3
36 months and above	12	15.0
Where child was born		
Hospital/clinic	67	83.7
Home	13	16.3

Table 5 shows the number of times a child had suffered from malaria in the past six months. Forty-four (55%) of the sample indicated that their children had not had any malaria attacks, fourteen (17.5%) indicated that their children had had two malaria attacks, thirteen (16.2 %) indicated that their children had had one attack, five (6.3%) indicated their children had had three malaria attacks, whilst four (5%) said their children had had more than four malaria attacks during the past six months. The possible total scores for the number of attacks was 5. The mean number of attacks was 1.9, minimum was 1, and maximum was 5 giving a range of 4 attacks.

The interval in weeks between malaria attacks also shows that fifty-seven (71.2%) indicated none, twelve (15%) indicated that the interval between attacks was four weeks, five (6.3%) indicated that the interval was eight weeks. Two (2.5%) reported that the interval was less than four weeks. Another two (2.5%) reported that the interval was twelve weeks, whilst the other two (2.5%) reported an interval of sixteen weeks between attacks. Table 6 shows the total scores for the episodes of malaria. The total possible score was 5. Four (5.0%) scored 1, five (6.3%) scored 2, fourteen (17.5%) scored 3, thirteen (16.2%) scored 4, whilst forty-four (55%) scored 5.

Table 5

Number of malaria episodes 1.

(N=80)

Variable	Frequency	Percentage
<u>Number of attacks</u>		
Zero	44	55.0
Once	13	16.2
Twice	14	17.5
Thrice	5	6.3
Four times and above	4	5.0
<u>Interval between episodes</u>		
Less than 4 wks	2	2.5
Four wks	12	15.0
Eight wks	5	6.3
Twelve wks	2	2.5
Sixteen wks	2	2.5
None	57	71.2

Table 6

Total Scores for the episodes of malaria.

(N=80)

Variable	Frequency	Percentage
<u>Total scores out of 5</u>		
One	4	5.0
Two	5	6.3
Three	14	17.5
Four	13	16.2
Five	44	55.0

Self Care Knowledge on Malaria Prevention

Table 7 shows self care knowledge responses on malaria prevention. Fifty (62.5%) respondents knew hot body or fever as the main sign of severe malaria. Eighteen (22.5%) mentioned vomiting, hot body, passing dark urine, convulsions and not able to feed as signs of severe malaria. Seven (8.7%) respondents of the sample indicated that the child will not play, whilst five (6.3%) did not know the severe signs of malaria.

Five (6.2%) respondents of the sample indicated that they would consult a Spiritual /Faith or Traditional healer in the event of their child's illness whilst seventy-five (93.8%) said they would consult a nurse or doctor at a local health institution. Seventy-three (91.2%) believed that malaria could be prevented, whilst seven (8.8%) did not believe that malaria could be prevented. Eleven (13.8%) said that treatment with anti-malarial drugs does not help prevent malaria, whilst sixty-nine (86.2%) said the treatment with anti-malarial drugs would help in the prevention of malaria.

Thirty-nine (48.7%) respondents indicated that the routine vaccination of children does help prevent malaria, whilst forty-one (51.3%) indicated that the routine vaccination did not have anything to do with the prevention of malaria. Table 8 shows that sixty-five (81.2%) respondents of the sample said that the use of repellents does help in the prevention, whilst fifteen (18.8%) said that the use of repellents does not help to prevent malaria. With regards to whether herbal remedies would help in the prevention of malaria, seventy-four (92.5%) reported that this would not help, whilst six (7.5%) said that taking herbal remedies does help to prevent malaria.

Seventy –five (93.8%) respondents reported that mosquito nets do help in the prevention of malaria whilst, five (6.2%) reported that mosquito nets do not help in the prevention of malaria. Forty-nine (61.2%) reported that the use of mesh wire on windows could help prevent malaria, whilst thirty –one (38.8%) felt that the use of mesh wire did not help in the prevention of malaria. Seventy-three (91.2%) of the respondents indicated that Indoor Residual Spraying (IRS) does help to prevent malaria, whilst seven (8.8%) felt that IRS does not help in the prevention of malaria.

Table 9 indicates the respondents’ responses on what they knew on environmental aspects pertaining to malaria prevention. Twenty-nine (36.2%) knew that they would fill in pools of water with sand ,discard containers that could collect water and cut grass and bushes around their homes. Twenty-seven (33.8%) knew grass cutting as the only environmental strategy to prevent malaria, whilst twenty-four (30%) did not know of any strategy. Tables 7 to 9 show self care knowledge responses on malaria prevention which were correlated against episodes of malaria.

Seventy-six (95%) of the respondents stated they were not aware or did not know of any traditional or spiritual methods that were used in the prevention of malaria. Four (5%) of the respondents mentioned that they were aware of traditional and spiritual methods used in the prevention of malaria.

Forty (50%) of the respondents mentioned they had received mosquito nets for their children, whilst the other forty (50%) did not receive any mosquito nets. Regarding receiving information pertaining to the mosquito nets given, thirty-one (38.8%) respondents received mosquito nets and were also given information about the nets.

Forty-nine (61.2%) of the respondents received the nets but no information was given to them.

Table 10 indicates the total scores for the self care knowledge on the prevention of malaria. Three (3.8%) of the sample scored below 7 points out of a possible 14 and this indicated poor knowledge. Thirty-four (42.6%) had a score of between 7 and 10 points and these scored averagely, whilst forty-three (53.8%) had a score of between 11 and 14 points which indicated good knowledge. The mean score was 10.45, minimum 4, range 10 and standard deviation was 2.006.

TABLE 7

Self Care Knowledge 1

(N=80)

Variable	Frequency	Percentage
<u>Recognize severe malaria</u>		
Don't know	5	6.3
Child wont play	7	8.7
Hot body and chills	50	62.5
Vomiting, convulsions, hot body, unable to	18	22.5
<u>Services consulted first</u>		
Spiritual/faith/traditional	5	6.2
Nurse/Doctor	75	93.8
<u>Belief on malaria prevention</u>		
Yes	73	91.2
No	7	8.8
<u>Treatment with anti-malaria</u>		
Yes	69	86.2
No	11	13.8
<u>Vaccination</u>		
Yes	39	48.7
No	41	51.3

TABLE 8

Self Care Knowledge 2.

(N=80)

Variable	Frequency	Percentage
<u>Repellents</u>		
Yes	65	81.2
No	15	18.8
<u>Herbal Remedies</u>		
Yes	6	7.5
No	74	92.5
<u>Mosquito nets</u>		
Yes	75	93.8
No	5	6.2
<u>Mesh wire</u>		
Yes	49	61.2
No	31	38.8
<u>IRS</u>		
Yes	73	91.2
No	7	8.8

TABLE 9

Self Care Knowledge 3

(N=80)

Variable	Frequency	Percentage
<u>Surroundings</u>		
Don't know	24	30.0
Cut grass	27	33.8
Fill in pools of water, discard tins that may collect water & cut grass	29	36.2
<u>Traditional/Spiritual methods</u>		
Yes	4	5.0
No	76	95.0
<u>Received ITN</u>		
Yes	40	50.0
No	40	50.0
<u>ITN information</u>		
Yes	31	38.8
No	49	61.2

TABLE 10

Self Care Knowledge 4

(n=81)

Variable	Frequency	Percentage
<u>Total Scores: Malaria prevention self</u>		
Four	1	1.3
Five	2	2.5
Seven	3	3.8
Eight	7	8.8
Nine	6	7.5
Ten	18	22.5
Eleven	18	22.5
Twelve	14	17.5
Thirteen	9	11.3
Fourteen	2	2.5
<u>Summary of Self care knowledge on</u>		
<u>malaria prevention</u>		
Poor (0-6 scores)	3	3.8
Average (7-10 scores)	34	42.4
Good (11-14 scores)	43	53.8

Relationship between self- care knowledge and episodes of malaria.

To establish whether there was a relationship between self –care knowledge among caregivers and episodes of malaria in under five children, a Pearson correlation analysis was carried out. Table 11 shows the correlation matrix, result of the statistical analysis and showed a non –significant correlation ($r=.016$; $p>.01$) of self–care knowledge on malaria prevention and episodes of malaria in under five children. The results showed that $r=.016$ and p value .886. The result was non- significant because p value was greater than .01. Regression analysis was not done because correlation was not significant.

TABLE 11

Pearson Correlation Matrix of self-care knowledge and episodes of malaria.

	Y
	1.000
X	.016
<hr/>	
*P <.05	** P<.01
	*** P<.001
<hr/>	
(n=80)	

Y = (Episodes of malaria)

X = (Self-care knowledge)

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

SUMMARY

This chapter presents the findings of the study and the recommendations coming from the study on caregivers' self-care knowledge on prevention of malaria and malaria episodes among the under fives. The implications of the study are discussed in relation to Maternal and Child Health nursing practice, nursing research and nursing education. The conclusion, recommendations, and limitations of the study will also be presented. The purpose of this study was to examine the relationship between female care-givers self-care knowledge and episodes of malaria among under fives.

The dependent variable in the study was the number of malaria episodes in the previous six months. The results of the dependent variable indicate that the majority forty-four (55%) of the children had not had any episodes of malaria, fourteen (17.5%) had had two malaria episodes in the last previous six months. Thirteen (16.3%) of the children had had one episode, five children (6.3%) had had three episodes, whilst four (5%) had had more than four episodes. The possible total scores for the number of attacks were 5. The mean was 1.9.

The independent variable was the caregivers' self-care knowledge on the prevention of malaria. The results showed that most of the caregivers forty-three (53.8%) had good knowledge on malaria prevention as they scored between 11-14 out of a possible 14. Thirty four (42.6%) of the caregivers scored averagely, they scored between 7-10 scores. Be that as it may, only three (3.8%) had poor knowledge as they scored between 0-6 scores. The results reported here clearly demonstrate that knowledge on malaria prevention strategies has been adequately transferred from the

health worker to the community. Malaria prevention efforts should, therefore, try to re-enforce the knowledge demonstrated.

The relationship between the caregivers' self-care knowledge on prevention of malaria and episodes of malaria among the under fives showed a non –significant correlation ($r = .016$; $p > .01$). The result was non-significant because the p value was greater than .01. This means that self-care knowledge on malaria prevention or lack of it may not be the sole reason for increase or decrease in episodes of malaria.

Discussions and Implications

Sample demographics

The sample studied had a mean age of 27.05 years and a range of 37 years as compared to Chirdan's (2008) sample which had a mean of 30 years and a range of 36 years. As in this study, Chirdan's (2008) sample came from a rural environment. The sample came from low socio -economic classes with the majority not employed 75 (93.6%) and were solely housewives. Fawole and Onadeko (2001) in Nigeria studied a sample of unemployed mothers of under five children with (94.8%) who were housewives. Worrall, Basu and Hanson (2003) reported that occupation was clearly a determinant of socio-economic status. The poor may be at a greater risk of morbidity and mortality due to obstacles preventing adequate access to malaria preventive services.

The educational level of the majority of the respondents 57(71.3%) was secondary school education and 2 (2.4%) had not received any formal education at all. The literacy level is adequate for one to understand simple malaria prevention self – care knowledge. A literate community is likely to have high malaria prevention

knowledge. According to Fawole and Onadeko (2001) knowledge scores on malaria prevention were significantly higher among the educated and skilled mothers.

The Multiple Indicator Survey (MIMS) (2009) done in Zimbabwe also showed that the prevalence of fever in malaria episodes decreased with the mother's education. According to MOH&CW (2002) literacy level among the female population was relatively lower with only (39.1%) having had completed secondary education. However, the Zimbabwe Demographic Health Survey (ZDHS) (2005-2006) revealed that the educational attainment for males and females was at 91% and 88% respectively. The majority of respondents fifty-seven (71.3%) had received secondary education, whilst two (2.4%) had not received any formal education. From this study finding one can safely assume that the respondents were literate enough to comprehend issues on malaria prevention.

The majority of respondents were married 69(86.3%) and 1 (1.3%) was widowed. This is in line with what the ZDHS (2005-2006) found that 56% of women and 43% of men were married. The married respondents are likely to get social support from their partners in the event of a child contracting malaria (Worrall, Basu and Hanson, 2003). All the respondents did not consume alcohol a finding which is commendable, as parental alcohol consumption can and do have a serious impact on a child's welfare and safety (Anderson, 2009). Alcohol consumption may impair one's judgemental ability and makes the individual to forget to take preventive measures against malaria.

Apostolic sect made up the 62.5% (50) of the sample, and the sect comprised several apostolic faith believers including the Johanne Marange sect which accounted for 12% (6). The Johanne Marange sect is well known for teaching its followers not to

accept health care services. This percentage which sought services at Hauna Hospital may indicate a relaxation of the tough anti-health care stance by this church. The majority of clients 48(60%) were staying with their spouses and children. According to WHO (2008) the family or social structure/organization plays a significant role in the prevention of malaria. This social network forms a basis for decision making in health related issues.

With regards to area of residence the majority of respondents 75(96.3%) lived in the rural area. Rural locations can be associated with increased malaria risk for both epidemiological and socio-economic reasons. A study in Benin revealed that rural children had significantly more annual malaria episodes (2.05vs.0.40) than urban children (Worrall, Basu, and Hanson, 2003). According to the National Health Strategy of Zimbabwe (2009-2013) there are some areas within the rural areas that do not have access to health services, and others have high incidence of specific diseases such as malaria, whilst others are hard to reach for reasons of geography and infrastructure. This translates that this group of clients will not be able to access health education messages on malaria prevention.

The majority of respondents 65 (81.3%) had only one child under the age of five years. The results of ZDHS (2005-2006) showed that the likelihood of sleeping under a bed net generally declined with child's age. The majority of children 12 (52.1%) who had malaria episodes were boys as compared to the girls, eleven (47.9%). This may explain the results of the Zimbabwe Multiple Indicator Monitoring Survey (2009) (MIMS) which revealed high child mortality in boys than girls of 92 and 80 respectively. The 12 to 23 months age group was the most affected with 8(34.7%). This is supported by WHO (2003) that most children experience their first malaria episode

during their first or two years of life, when they have not acquired adequate immunity which makes these years particularly dangerous.

Sixty-seven (83.8%) of the children were born at a health institution. This is in line with the Millennium Development Goals 4 and 5 that all deliveries take place in a health institution under professional care to improve maternal and child health. Delivering in a health institution will also mean that the mother will access information on malaria prevention. This finding differs from MIMS (2009) which revealed that home and institutional deliveries accounted for 50% and 48% respectively.

Episodes of Malaria

Malaria episodes formed the dependent variable. In this study it was proposed that an increase in self-care knowledge on malaria prevention would reduce the number of malaria episodes. In this study the maximum possible score was 5. Scores 3 to 5 indicated a good positive health outcome, whilst a score of 2 and below meant a poor health outcome. The present study revealed that the majority of the children forty-four (55%) had not had any malaria episodes, and a maximum score of 5 whilst, four (5.0%) had more than 4 malaria episodes and had a minimum score of 1. The mean number of attack was 1.90.

As the majority of the children did not experience any malaria episodes this may confirm that malaria is a preventable disease as supported by (World Health Organization, 2004; Zimbabwe Ministry of Health and Child Welfare, 2000). This finding is similar to what Lusingu et al (2004) found in a study in Burkina Faso that decreased malaria prevalence and malaria morbidity could be explained by an overall increase of malaria prevention and treatment activities.

The results of this study are different from what others have found. Mwangi, Fegan, Williams, Kinyanjui, Snow and Marsh (2005) in a study in Kenya found that children who experienced more than 2 malaria episodes were considered 'more susceptible' seventy-eight (21%). Out of a total of 1 173 malaria episodes experienced during the period of study 55.3% was experienced by this 'susceptible' group whilst, seventy-seven (21%) did not experience a single episode of malaria. In this group 49% slept under an intact bed net. In another related study in Senegal Mwangi et al (2005) found out that some children experienced a malaria episode every 4-6 weeks. These authors however were unable to identify factors associated with this increased susceptibility.

In this study, 4 (5.0%) of the children who experienced four and more attacks this may be attributed to the impact of HIV/AIDS (UNICEF, 2008). Many children could have their immunity against malaria compromised by HIV/AIDS. HIV/AIDS is on a dramatic increase in countries where malaria is already an uncontrollable problem (UNICEF, 2008). The present study revealed that most of the respondents' children had not had any malaria episodes within the previous 6 months. This differs with what Deressa, Ali and Enqusellassie (2003) in Ethiopia where malaria episodes were at least 3 in a six month period. The differences in this study finding from what other authors found could be attributed to the length of the study periods. Most of the studies reviewed were cross sectional studies and environmental factors could also have contributed to the differences in findings.

Self –Care Knowledge on Malaria Prevention

The independent variable was the caregivers' self-care knowledge on malaria prevention. The Ministry of Health and Child Welfare (2002) reported the importance

of health education to those at risk to enhance their knowledge on malaria prevention. Malaria prevention and control strategies employed in Zimbabwe to reduce episodes of malaria include good case management, environmental management, and personal protection, for example, use of ITNS. All these measures are achievable if individuals have adequate self-care knowledge. Knowledge of all these areas will help strengthen local participation in malaria prevention, as one of the key themes of Primary Health Care.

Fifty respondents 50(62.5%) knew hot body as the only sign of severe malaria whilst, eighteen (22.5%) knew all the signs. This limited knowledge on the signs of severe malaria indicates an area that requires strengthening largely through health education and communication. The finding compares favourably with results of other researchers who have reported the association of hot body with severe malaria in the samples they studied with only 20% mentioning convulsions and 81.4% mentioning hot body as severe signs respectively (Dauda et al,2004; Asante et al,2010).

On which services the respondents would consult first in the event of their child's illness, 75 (93.8%) correctly indicated that they would consult a nurse or doctor at a local clinic. This finding is quite commendable as it illustrates positive health seeking behaviour. However, this finding differs from Nuhawa's (2002) in Uganda, which revealed that 70% of caregivers did not consult health institutions for their children's illnesses but sought care from traditional or faith healers. Koudov et al (2010) in Cote d'Ivoire found that traditional medicine was primarily sought when a malaria episode occurred. Seeking care from traditional or faith healers may lead to no or delayed cure, and occurrence of malaria complications.

Regarding whether the caregivers knew malaria was a preventable disease or not, the majority 73 (91.3%) agreed that malaria could be prevented. This finding concurs with study findings by Hlongwana, Mabaso, Kunene, Govender and Maharaj (2009) in Swaziland found where 78% of their study sample was agreeable that malaria was a preventable disease. Munthali (2005) in his ethnographic study in Malawi also found that only a few mothers said it was not possible to prevent malaria. Such positive attitudes are essential opportunities for behaviour change campaigns.

On treatment with anti-malarial drugs as a strategy to prevent malaria, the majority 69 (86.3%) knew that this would help prevent malaria. This concurs with Ministry of Health and Child Welfare (2002) that good case management is crucial to the prevention and control of malaria. Davis et al (2011) in a cost-effective study in Papua New Guinea found out that the burden of malaria can be reduced through effective case management. The respondents knew fairly enough that the routine vaccination would not help prevent malaria, as alluded by 41 (51.3%) clients. This is an opportunity for the Maternal and Child Health nurses to reinforce information and give clear messages to the caregivers on child health related issues. This finding differs from Maslove et al (2009) who did a study in Niger Delta and found out revealing evidence of the use of ineffective prevention practices in malaria, such as wearing charms and vaccinating children. Such knowledge may pose a threat to successful malaria prevention by suppressing the use of more effective measures. There is strong evidence that the set of vaccines in the Expanded Programme on Immunisation schedule provide protective immunity against the targeted diseases (UNICEF, 2008). However, a blue print has been laid for the development of a malaria vaccine, with protective efficacy of

more than 80% and protection lasting for many years without a booster by 2025 (Guzman, Ropars and Moran, 2007).

Most of the respondents 65 (81.3%) knew that the use of repellents and fumigating coils would help prevent malaria. Koudov et al (2010) in their study found similar results with regards to knowledge on personal protective measures against mosquito bites, that fumigating coils and repellents were the mostly widely mentioned strategy (28%). Fischer and Bialek (2011) in Liberia found that environmental insecticides such as those released by slowly burning coils seem to decrease indoor mosquito population by 50-75%. Seventy-four (92.5%) of the respondents knew modern methods of preventing malaria. This observation is consistent with what Wagbatsoma, Obomighie and Nwokike (2004) found in their study in Benin. Most respondents in their sample (90.8%) mentioned orthodox drugs for the prevention of malaria whilst, (9.1%) preferred herbal remedies. Herbal remedies can have devastating side effects especially when used in children.

Knowledge on the issue of using ITNS in the prevention of malaria was also considered. Seventy-five (93.8%) correctly mentioned ITNS as key in malaria prevention. This finding corresponds with Cohen and Dupas's (2010) study in Zambia which revealed that (84.8%) stated they preferred ITNS in the prevention of malaria. The results further revealed that ITNS could reduce deaths in children by one fifth and episodes of malaria by half. Knowledge on use of mesh wire on windows was fairly adequate with 49 (61.3%) who knew use of mesh wire as a preventive measure against malaria. This observation is consistent with that of Wagbatsoma, Obomighie and Nwokike (2004) in Nigeria where the commonly mentioned method was the use of door/window gauze (35%) and insecticide and door/window gauze (30%).

Indoor Residual Spraying (IRS) as a strategy was correctly mentioned by 73 (91.2%), similarly Hlongwana, Mabaso, Kunene, Govender and Maharaj (2009) reported that 78.1% of their sample mentioned IRS and ITNS as key malaria preventive measures. On environmental strategies the majority, 29(36.3%) correctly mentioned all the strategies whilst 24(30%) did not know of any strategy. This may indicate the need to offer and reinforce comprehensive information on malaria prevention pertaining to environmental strategies where one lives as to foster more self care knowledge. WHO (2004) reiterates that the context in which an individual lives is of paramount importance on one's quality of life and status. This finding compares favourably with Fawole and Onadeko (2009) who found out that 21.8% of their sample correctly mentioned all the environmental strategies.

On the total the respondents' self –care knowledge on malaria prevention, 43(53.8%) respondents scored between 11 and 14 out of a possible 14 which was good knowledge. Thirty-four (42.4%) scored between 7-10 which was average knowledge and 3(3.8%) had scores between 0-6 which was poor knowledge. The scores ranged between 4 and 14 with a mean of 10.45 suggesting that the overall respondents' knowledge was good. The results reported here clearly demonstrate that knowledge on malaria prevention has been adequately transferred from the health worker to the community. Malaria prevention efforts should therefore try to re-enforce the knowledge demonstrated.

Relationship between caregivers' self- care knowledge on prevention of malaria and episodes of malaria among the under fives.

Pearson product moment correlation was done to examine the relationship between caregivers' self-care knowledge and episodes of malaria among the under

fives. The results revealed a non –significant correlation ($r=.016$; $p>.01$) between caregivers' self –care knowledge and episodes of malaria among the under five children. Therefore, caregivers' self-care knowledge had no effect on malaria episodes in the under fives. The results have proven that self-care knowledge on malaria prevention may not be responsible for the increase or decrease in malaria episodes. Be that as it may, the identified knowledge is high and it is still important to strengthen the malaria prevention self-care knowledge. With this high level of knowledge on malaria prevention, this may mean that what they know is not necessarily what they practice. This view supports De La Cruz et al (2006) finding that greater self-care knowledge on malaria prevention does not always translate into improved practice (ITNS use). Nganda et al (2004) in Tanzania found different results that individual knowledge on malaria prevention was an important factor for ITN uptake which was reliant on delivery of information by MCH systems. This finding corresponds with what Nyamande, Zizhou, Chadambuka and Maradzika (2010) in Zimbabwe found. The results showed that despite the availability of ITNS among under fives, use was low because of lack of knowledge. Further studies should be done to find out the relationship between self-care practice and episodes of malaria.

Theoretical Framework

Orem's Conceptual Framework (Orem, 1991) was used to direct and guide this study. The rationale for selecting Orem's model was to examine the health outcome among the under fives with a focus on malaria episodes. The focus of the model is based on the activities that a person initiates and performs on his own behalf to maintain life, health and well being. The concepts which were chosen from Orem's model were self care, self care deficit, and supportive –educative nursing system.

Orem (1991) proposed that self care capabilities enable the individual to initiate and perform activities on their own to maintain life, health or wellness through meeting knowledge requisites. The educative-supportive nursing system was chosen as the nurse assists client in decision making and facilitates the acquisition of knowledge and skills. Hence it was proposed in this study that increase in self care knowledge would reduce the number of malaria episodes in the under five children meaning that if one is able to look after self no malaria episodes will be reported. Orem's model gives the MCH nursing staff the structure on which to base education and support to the caregivers to meet their self-care requirements.

However, this premise was not proved in this study. There was non-significant relationship between self care knowledge on malaria prevention and episodes of malaria, meaning that self care knowledge on malaria prevention may not be responsible for the increase or decrease in malaria episodes. This view supports De La Cruz et al (2006) finding that greater self care knowledge on malaria prevention does not always translate into improved bed net use.

Implications to Maternal Child Health Nursing Practice

Though according to this study finding, the caregivers were knowledgeable on malaria prevention the study also revealed that only eighteen (22.5%) of the caregivers knew all the signs of severe malaria. This limited knowledge is an opportunity for the Maternal Child Health (MCH) nurses to strengthen through health education and send clear messages on malaria prevention. The study revealed that sixty-seven (83.8%) of the children were born at health institutions. While this is commendable the MCH nurses should make all frantic efforts, so that all deliveries take place in health

institutions under professional care in line with Millennium Development Goals 4, 5, and 6. There is also need for the MCH nurses to make services accessible to all caregivers and include those caregivers who scored below 6 in their education sessions.

Nursing Research

The ultimate goal of nursing practice is to improve the quality of services provided to the community. The study findings revealed that forty-three (53.8%) had very good knowledge as they scored between 11-14. Generally knowledge was good, but knowledge does not necessarily translate into practice therefore, this is an area for further research and may look at other factors that may contribute to the increase in malaria episodes.

Nursing Education

MCH nurses need to be equipped with adequate and current information pertaining to malaria prevention. In service education programmes for trained nurses is imperative so as to keep abreast with new developments in the area of malaria related issues. Basing on these results malaria issues should be incorporated in all in service trainings.

Nursing Administration

Nurse administrators should network with other agencies to garner more resources with a bias towards malaria prevention activities. Nurse administrators should advocate for better strategies in information dissemination to reach all communities. Nurse Managers should create conducive environment for nurses to educate communities on malaria prevention.

Recommendations

In view of the findings of this study, the investigator is making the following recommendations:

1. Maternal and Child Health nursing practice should explore the identified opportunities on knowledge gaps to improve child health and reduce malaria related mortality at community level.
2. Further research to be done to determine the relationship between self -care practices and episodes of malaria as this area has not been adequately addressed.
3. Strengthening of the malaria prevention and control programme largely through health education and communication.
4. Further researches should focus on investigating other variables that may increase malaria episodes in children.
5. MCH nurses should utilize Orem's self-care model in prevention programmes.

Limitations

The first limitation was the weakness of self-reporting which increases the likelihood of socially accepted responses and is therefore subject to reporting bias. The time frame for the study was governed by the requirements of the course. If more time was available more clients could have been included, as a result the sample size of 80 limits generalisability. The investigator developed the instrument and it was used for the first time in this study. However, the Environmental Health experts tested content validity. The idea of carrying out the research in a hospital situation other than in a community setting could also have brought in some bias.

Summary

According to the National Health Strategy (2009) malaria ranked the highest cause of outpatients attendance accounting for all 11.5% of all attendances. Malaria

was also the second cause of mortality in all age groups. The problem was the increasing number of malaria episodes in the under fives as seen from the MCH registers. In Hauna, there were many children coming with repeated attacks of malaria within the same season, and the investigator was concerned whether the information the caregivers were getting, was useful hence the need to investigate.

The purpose of the study was to determine whether a relationship existed between malaria prevention self-care knowledge and episodes of malaria in the under fives among caregivers aged 18 years and above. Orem's Conceptual framework was used to direct and guide this study. The self care agency refers to the individual's ability to perform self-care. The individuals are expected to take the initiative to prevent ill health. This study proposed to test the hypothesis that increased malaria prevention self-care knowledge leads to a reduction in malaria episodes.

A descriptive correlational design was used in this study. A sample of 80 subjects was selected by systematic random sampling. Structured interviews were used to collect demographic data, data on malaria prevention self-care knowledge and data on number of malaria episodes. The questionnaire was in three sections. Section A addressed demographic variables; section B the dependent variable which was the number of malaria episodes and Section C the independent variable which was malaria prevention self-care knowledge.

Data were analysed using descriptive and inferential statistics in the form of frequencies and tables. Pearson's Correlation Coefficient was used to examine the relationship between malaria prevention self-care knowledge and episodes of malaria. Pearson's correlation showed a non-significant ($r = .016$; $p > .01$) of self-care knowledge on malaria prevention and episodes of malaria in the under fives. Therefore, there was

no relationship between self-care knowledge on malaria prevention and episodes of malaria. The results therefore, did not support the hypothesis that when self-care knowledge increases, the number of episodes decrease as proposed in the study. There is however need to establish more factors that could be impacting on malaria episodes in children.

The dependent variable was episodes of malaria and results showed that the majority 44 (55%) had not had any malaria attacks. The independent variable was the malaria prevention self-care knowledge and results showed 18 (22.5%) clients scored 11, and 14(17.5%) scored 12 out of a possible 14. The scores ranged between 4 and 14 with a mean of 10.45 suggesting that the overall respondents knowledge was very good. The implications are that the identified knowledge gaps should be an opportunity for MCH nurses to strengthen information dissemination to all communities, and nurse educators can also refer to new information on malaria related issues for teaching nurses. However, further studies should be carried out to examine relationship between self -care practices and episodes of malaria as knowledge does not necessarily translate into practice.

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APPENDIX A

SECTION A-Demographic Data

In this section I will ask you questions about yourself .Please feel free to answer the questions to the best of your ability.

1. What is your age?
2. What is the highest level of education that you attended?

- | | |
|--------------|--|
| a. None | |
| b. Primary | |
| c. O—A level | |
| d. Tertiary | |

3. What is your marital status?

- | | |
|-------------|--|
| a. Married | |
| b. Single | |
| c. Divorced | |
| d. Widowed | |

Any other please specify

4. Do you drink alcohol?

- | | |
|--------|--|
| a. Yes | |
| b. No | |

5. Which church do you go to?

- | | |
|---------------------|--|
| a. Roman Catholic | |
| b .Jehovah Witness | |
| c. Apostolic Sect | |
| d .Anglican | |
| e .United Methodist | |

Any other please specify

6. Whom do you live with?

- | | |
|-------------------------|--|
| a. Husband and children | |
| b. Husband/partner only | |
| c. In laws | |
| d. Own parents | |
| e. Alone | |

Other relatives please specify

7. What is your occupation?

- | | |
|------------------------|--|
| a. Professional worker | |
| b. Unemployed | |
| c. Self employed | |
| d. Skilled worker | |

8. Where do you normally stay?
- | | |
|----------|--|
| a. Urban | |
| b. Rural | |
| c. Mine | |
| d. Farm | |
- e. Other please specify.....
9. How many children under the age of five do you have?
- | | |
|--------------------|--|
| a. One child | |
| b. Two children | |
| c. Three and above | |
10. How old is the child?
- | | |
|------------------------|--|
| a. Below 12 months | |
| b. 12 -23 months | |
| c. 23 -36 months | |
| d. 36 months and above | |
11. What is the sex of the child?
- | | |
|-----------|--|
| a. Male | |
| b. Female | |
12. Where was the child born?
- | | |
|--------------------|--|
| a. Hospital/clinic | |
| b. Home | |
- c. Other please specify-----

SECTION B- Malaria Episodes

In this section I am going to ask you questions about the malaria disease that your child has suffered. Please feel free to respond to the questions.

13. How many times did your child suffer from malaria during the past six months?
- | | |
|-------------------------|--|
| a. Zero | |
| b. Once | |
| c. Twice | |
| d. Thrice | |
| e. Four times and above | |
14. What was the interval in weeks between the malaria episodes?
- | | |
|----------------------------|--|
| a. Less than four weeks | |
| b. Four to eight weeks | |
| c. Eight to twelve weeks | |
| d. Twelve to sixteen weeks | |
| e. Sixteen weeks and above | |
| f. None | |

SECTION C- Self-Care Knowledge

In this section I am going to ask you questions about how you prevent malaria .Please answer to the best of your ability.

15. How would you recognize severe malaria in a young child?

- a. Don't know ☐
- b. Child won't play ☐
- c. Fever/hot body, chills. ☐
- d. Vomiting, diarrhoea, passing dark urine, convulsions, hot body, not able to feed. ☐

16. What services/healers do you consult first for treatment of illness in your child?

- a. Spiritual /Faith healer/ Traditional healer ☐
- b .Nurse at local clinic/Hospital/Doctor ☐

17. Do you believe malaria can be prevented?

- a. Yes ☐
- b. No ☐

18. How can you prevent malaria in children?

- | YES
(1) | NO
(0) |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
- a) Treatment with antimalarials
 - b) Vaccinating children
 - c) Use of repellents, coils, soap, lotion.
 - d) Taking herbal remedies
 - e) Use of treated mosquito nets
 - f) Use of mesh wire on windows
 - g) Indoor residual spraying of houses

19. What ways do you know of that can keep your home surroundings clean to prevent malaria?

- a. I don't know ☐
- b. Cut grass around home ☐
- c. Fill in the pools of water with sand; discard containers that might collect water and cut grass around home. ☐

20. Do you know of any traditional/spiritual methods used in the prevention of malaria?

- a. Yes ☐
- b. No ☐

20 a. If yes to question 20, which ones do you know?

21. Did you receive an ITN for your child?

- a. Yes ☐
- b. No ☐

21 a. Did you receive information regarding the ITN?

- a. No ☐
- b. Yes ☐

APPENDIX B

NHOROWONDO YEMURWERE

Muchikamu muno ndichakubvunzai pamusoro pehupenyu hwenyu. Muve makasununguka kupindura mibvunzo yese.

- | | | |
|----|---|---|
| 1. | Mune makore mangani ekuzvarwa? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| 2 | Makaenda kuchikoro kusvika padanho ripi? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Handina kupinda chikoro | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Primary | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Secondary | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | d. Tertiary | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| 3 | Makaroowa here? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Handina kuroowa | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Ndakaroowa | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Takaparadzana /Takasiyana | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | d. Ndave shirikadzi | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | e. Imwe tsananguro | |
| 4 | Munonwa doro here? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Hongu | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Kwete | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| 5. | Chitenderano chenyu ndechipi? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Roma | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Wachitawa | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Postori | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | d. Hingirandi | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | e. United Methodist | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | f. Imwe tsananguro..... | |
| 6. | Munogara naani? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Murume wangu nevana | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Murume kana shamwari chete | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Baba na Mai vemurume | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | d. Vabereki vangu | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | e. Ndogo | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | f. Dzimwe hama tsanangudzai | |
| 7. | Munoshanda basa rei? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Umhizha kana 'professional' | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Mushandi akadzidzira basa 'skilled worker' | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Mushandi asina kudzidzirazira basa | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | d. Handisevenzi | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | e. Ndinozvishandira | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| 8. | Munovanzo gara kupi ? | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | a. Mudhorobha | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | b. Kumusha | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |
| | c. Pamugodhi | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |

- d. Papurazi ☐
 f .Imwe tsananguro.....
9. Muna vana vangani vari pasi pemakore mashanu?
 a. Mumwe chete ☐
 b .Vaviri ☐
 c .Vatatu kana kudarika ☐
10. Mwana iyeyu ane makore mangani ?
 a. Pasi pemwedzi gumi nemiviri ☐
 b. Kubva pamwedzi gumi nemiviri ☐
 c. Kubva pamwedzi makumi maviri nemina kusvika makumi maviri nemitanhatu ☐
 d. Kubva pamwedzi makumi matatu neminomwe zvichikwira ☐
11. Mwana wenyu mwanai ?
 a. Mukomana ☐
 b. Musikana ☐
12. Akazvarirwa kupi?
 a .Chipatara/Kiriniki ☐
 b .Kumba ☐
 c .Imwe tsanangudzo.....

UWANDU HWEMAURIRO ECHIRWERE CHE MARARIYA

Ndichakubvunzai maererano nokurwara kwakaita mwana nechirwere che marariya

13. Mwana akarwara nemarariya rungani pamwedzi mitanhatu yapfuura?
 a .Haana ☐
 b .Kamwe ☐
 c .Kaviri ☐
 d .Katatu ☐
 e .Kana zvichienda mberi
14. Mwana paakarwara nemarariya pakanga papera nguva yakadini asati arwarazve nechirwere ichi?
 a .Pasi pemwedzi umwe ☐
 b .Mwedzi umwe kusvika pamiviri ☐
 c .Mwedzi miviri kusvika pamitatu ☐
 d .Mwedzi mitatu kusvika pamina ☐
 e. Mwedzi mina zvichikwira ☐
 f. Hapana

RUZIVO MAERERANO NEKUDZIVIRIRA MARARIYA

Ndichakubvunzai maererano nekudzivirira chirwere che marariya

15. Mungaone sei kuti mwana anorwara nemarariya yakasimba
 a .Handizivi ☐
 b. Mwana haatambi ☐
 c .Kupisa muviri/Kutonhorwa ☐
 d .Kurutsa ,manyoka,kuita weti yakatsvuka,kugwina,kupisa muviri nekusadya. ☐

16. Ndurupi rubatsiro rwamunotanga kutsvaga kana varapi kushanyira kana mwana wenyu achinge arwara ?

- a. Muporofita/Traditional healer ☐
- b. Mukoti pa clinic kana pachipatara/Chiremba ☐
- c. Imwe tsananguro..... ☐

17. Munofunga chirwere chemarariya chinogona kudzivirirwa here?

- a. Hongu ☐
- b. Kwete ☐

18. Ko ndedzipi nzira dzinotevera dzinogona kudzivirira chirwere chemarariya muvana

Kurapiwa nemapiritsi emarariya

Kubayisa vana

Kusevenzesa coils,mafuta ekuzora anodzinga umhutu

Kunwa mushonga wechivanhu

Kusevenzesa mosquito nets

Kushandisa mesh wire pamafafitera

Kupfapfaidzwa kwedzimba dzose

HONGU (1)	KWETE (2)
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

19. Ndezvipi zvamunoziva zvingaitwa pamba kudzivirira chirwere chemarariya?

- a. Handizivi ☐
- b. Kuchekera huswa pamba ☐
- c. Kuvhara makomba ane mvura,kurasa magaba,kucheka huswa nemasango akatenderedza pamusha . ☐

20. Kune dzimwe nzira dzamunoziva here dzinofungwa kana kudairwa nevanhu kuti dzinogona kudzivirira chirwere che marariya ?

- a. Hongu ☐
- b. Kwete ☐

20a. Kana muchiti hongu tsanangurai nzira dzacho.....

21. Makapiwa mosquito net here yemwana wenyu?

- a. Hongu ☐
- b. Kwete ☐

21a. Makapiwa dzidziso here pamusoro pe mosquito net iyi?

- a. Hongu ☐
- b. Kwete ☐

22. Tsanangurai ruzivo rwamakapiwa

Mazvita nenguva yenyu.

APPENDIX C
INFORMED CONSENT

Good morning/afternoon

My name is Winnie Ushamba I am a student with the University of Zimbabwe. I am carrying out a research to determine the relationship between female caregivers' self-care knowledge on prevention of malaria and the number of malaria episodes among the under fives.

I am requesting you to participate in this study. Whatever will be discussed here is between the two of us and no names will be mentioned. Codes will be used to ensure confidentiality. The interview will last approximately 20 minutes. You are free to withdraw from the interview at any point during the interview. Your decision will not affect the quality of the care given to your child in this department.

The information obtained will positively influence health education given to the community to prevent malaria. For any queries or information, contact me through the University of Zimbabwe, College of Health Sciences, Department of Nursing Science. Box A 178. Avondale, Harare. Phone 04-707707 extension 2221.

May you please sign this form to indicate your willingness to participate in the study.

Participant's name.....

Participant's signature.....Date.....

Investigator's name..... Date.....

Investigator's signature..... Date.....

APPENDIX D

FOMU ROKUTARIDZA KUBVUMA KUBATSIRA

Mangwanai/Masikati

Ini ndinonzi Winnie Ushamba. Ndiri mudzidzi pachikoro che University of Zimbabwe. Ndiri kuita ongororo pamusoro pechirongwa chekuongorora ruzivo rune madzimai rwekudziwirira chirwere chemarariya muvana vari pesi pamakore mashanu ekuzvara, uyezve nekuona kuti mwana umwe naumwe akambo rwara nemarariya zvakadini mumwedzi mitanhatu yapfuura.

Ndirikukumbira kuti muve muchirongwa cheongororo iyi. Ndinokuvimbisai kuti zvatichataura pano zviri pakati pedu tirivaviri. Hakuna mazita achonyorwa. Tichashandisa manhamba panzvimbo yemazita. Ndichakubvunzai mibvunzo kwenguva ingaita maminiti makumi maviri. Makasununguka kubuda kana kuramba kupa umbowo panguwa ipi zvayo uye hazvikanganisi marapirwo emwana wenyu pano. Umbowo huchawanikwa huchabatsira kuwandudza dzidziso pamusoro pekudziwirira chirwere chemarariya

Kana paine zvimwe zvamungada kunzwisisa kana kubvunza maererano neongororo iyi munokwanisa kundibata pakero inoti University of Zimbabwe. College of Health Science. Department of Nursing Science. Box A 178. Avondale. Harare kana panhamba dzerunhare dzinoti 04- 707707 extension 2221. Kana muchibvuma ndinokumbira kuti muratidze nekusayina apa:

Zita romutsvakiridzwa.....

Runyoro.....Date.....

Zita remutsvakiridzi rakazara.....

Runyoro.....Date.....