

**KNOWLEDGE, ATTITUDE AND UTILIZATION OF INSECTICIDE TREATED NETS AMONG
CARETAKERS IN MALARIA PREVENTION IN UNDERFIVE CHILDREN (MANSA)**

BY

CHIZUNI CALLEN

THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF NURSING SCIENCES

**KNOWLEDGE, ATTITUDE AND UTILIZATION OF INSECTICIDE TREATED NETS AMONG
CARETAKERS IN MALARIA PREVENTION IN UNDERFIVE CHILDREN (MANSA)**

BY

CHIZUNI CALLEN

RN (Kitwe, 1993), ROTN (Lusaka, 1997), RM (Lusaka, 2002)

**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF NURSING SCIENCES, SCHOOL OF
MEDICINE, UNIVERSITY OF ZAMBIA IN PARTIAL FULFILMENT FOR THE BACHELOR OF SCIENCE
IN NURSING DEGREE**

April 2010

ACKNOWLEDGEMENT

I wish to convey my heartfelt gratitude to my supervisor, Mrs. M. Makoleka for her tireless effort, patience, tolerance, guidance and for sparing much of her precious time looking at my research project to ensure that it is a success.

I would also like to thank Ministry of Health for the sponsorship that I enjoyed including all staff in government departments and non-governmental organizations that made it possible for me to access data for my research project.

Thanks also go to Dr. Mweemba, my research coordinator for the knowledge and direction that she gave me on research. Not forgetting my study group members; Esther, Masozi, Levi, Mondiwa and Mama Zulu.

I would also like to thank the management of Mansa District Health Office and Mansa Central Clinic staff for their support and my respondents for their cooperation.

Many thanks go to my husband Mr. Wamundila and the children for their continued support and patience even when I seemed to have a very busy schedule as I tried to meet my deadline.

Lastly, but not the list the Almighty God for the good health and guidance I enjoyed through out the period of writing this research project.

TABLE OF CONTENTS

CONTENT	PAGE
Acknowledgement.....	i
Table of contents.....	ii
List of tables.....	vi
List of figures.....	vii
Acronyms.....	viii
Declaration.....	ix
Statement.....	x
Dedication.....	xi
Abstract.....	xii

CHAPTER 1

1.0 Introduction.....	1
1.1 Background.....	1
1.2 Statement of the Problem.....	6
1.3 Factors Contributing / Influencing Problem.....	9
1.3.1 Service Related Factors.....	9
1.3.2 Disease Related Factors.....	11
1.3.3 Socio-Cultural and Economic Factors.....	11
1.4 Problem Analysis Diagram.....	13
1.5 Justification.....	14
1.6 Research Objectives.....	14
1.6.1 General Objective.....	14
1.6.2 Specific Ojective.....	14
1.7 Hypothesis.....	15
1.8 Conceptual and Operational Definitions.....	15
1.8.1 Conceptual Definitions.....	15
1.8.2 Operational Definitions.....	15
1.9 Variables and the cut-off Points.....	16

CONTENT	PAGE
1.9.1 Dependant Variables.....	16
1.9.2 Independent Variables.....	16
CHAPTER 2	
2.0 Literature Review.....	18
2.1 Introduction.....	18
2.2 Knowledge.....	18
2.3 Attitude.....	21
2.4 Utiltization.....	22
2.5 Conclusion.....	29
CHAPTER 3	
3.0 Research Methodology.....	30
3.1 Introduction.....	30
3.2 Research Design.....	30
3.3 Research Setting.....	30
3.4 Study Population.....	31
3.5 Sample Selection.....	31
3.5.1 Inclusion Criteria.....	31
3.5.2 Exclusion Criteria.....	32
3.5.3 Method of Sample Selection.....	32
3.6 Sample Size.....	32
3.7 Data Collection Tool.....	33
3.8 Data Collection Technique.....	33
3.9 Validity.....	34
3.10 Reliability.....	34
3.11 Pilot Study.....	34
3.12 Ethical and Cultural Considerations.....	35

CONTENT	PAGE
CHAPTER 4	
4.0 Data Analysis and Presentation of Findings.....	37
4.1 Introduction.....	37
4.2 Data Analysis.....	37
4.3 Presentation of Findings.....	38
4.3.1 Demographic data.....	39
4.3.2 Knowledge on ITNs.....	41
4.3.3 Attitudes of Caretakers towards Utilization of ITNs.....	46
4.3.4 Utilization of ITNs.....	47
4.3.5 Service Related Factors.....	50
4.3.6 Cross Tabulations.....	52
4.3.7 Conclusion.....	56
CHAPTER 5	
5.0 Discussion of Findings and Implications for the Health Care System....	57
5.1 Introduction.....	57
5.2 Characteristics of the Sample.....	57
5.3 Discussion of Variables.....	59
5.3.1 Knowledge on ITNs.....	59
5.3.2 Attitude of Respondents towards Utilization of ITNs.....	60
5.3.3 Utilization of ITNs.....	61
5.4 Implications for the Health Care System.....	64
5.4.1 Nursing Practice.....	64
5.4.2 Nursing Administration.....	65
5.4.3 Nursing Education.....	66
5.4.4 Nursing Research.....	66
5.5 Recommendations.....	67
5.6 Dissemination of Results.....	69
5.7 Limitation of the Study.....	69

CONTENT	PAGE
5.8 Conclusion.....	70
References.....	72
 Appendices	
Appendix I: Interview Schedule.....	78
Appendix II: Work Plan.....	84
Appendix III: Gantt Chart.....	85
Appendix IV: Budget.....	86
Appendix V: Consent Form.....	89
Appendix VI: Letter of request for Permission.....	90

LIST OF TABLES	Page
Table 1.2.1: Malaria statistics for Mansa Central Clinic.....	7
Table 1.2.2: Malaria statistics for Mansa General Hospital.....	8
Table 1.9.1: Variables and the cut-off Points.....	17
Table 4.3.1 Demographic Data.....	39
Table 4.3.2 Ownership of ITNs per Household.....	43
Table 4.3.3 Health Education Received on Malaria Prevention.....	45
Table 4.3.4 Sources of Health Education.....	45
Table 4.3.5 Overall Knowledge on ITN.....	45
Table 4.3.6 Respondents in Favour of Using ITNs.....	46
Table 4.3.7 Respondents whose Underfive Children Slept under ITN Night before the Interview.....	47
Table 4.3.8 Reasons for not Sleeping under ITN on Daily basis.....	48
Table 4.3.9 Availability of ITNs at Central Clinic.....	50
Table 4.3.10 Re-treatment Service Provision at Central Clinic.....	51
Table 4.3.11 Knowledge of ITN in Relation to Age.....	52
Table 4.3.12 Knowledge of ITN in Relation to Education level.....	52
Table 4.3.13 Attitude in Relation to Age.....	52
Table 4.3.14 Attitude of ITN in Relation to Education level.....	53
Table 4.3.15 Utilization of ITNs in Relation to Age.....	53
Table 4.3.16 Utilization of ITNs in Relation to Education level.....	53
Table 4.3.17 Utilization of ITNs in Relation to Income.....	54
Table 4.3.18 Utilization of ITNs in Relation to Time taken to walk to The Health Centre.....	54
Table 4.3.19 Utilization of ITNs in Relation to level of Knowledge.....	55
Table 4.3.20 Utilization of ITNs in Relation to level of Knowledge.....	55
Table 4.3.21 Utilization of ITNs in Relation to Sleeping Rooms.....	56
Table 4.3.22 Ownership of ITNs in Relation to Family Income.....	56

LIST OF FIGURES	Page
Figure 1: Problem Analysis Diagram.....	13
Figure 4.3.1 Knowledge on Definition of ITN.....	41
Figure 4.3.2 Sources of ITNs.....	42
Figure 4.3.3 Ownership of ITNs.....	42
Figure 4.3.4 Importance of Re-treating ITNs.....	43
Figure 4.3.5 Last Time Respondent Re-treated her ITN.....	44
Figure 4.3.6 Respondent’s Knowledge on whether ITN can prevent Malaria.....	44
Figure4.3.7 Respondents who would recommend others to Use ITNs.....	46
Figure 4.3.8 Attitude towards Utilization of ITNs.....	47
Figure 4.3.9 Frequency of ITN Use by Underfive Children.....	48
Figure 4.3.10 Overall level of Utilization of ITNs.....	49
Figure 4.3.11 Time taken to walk to Central Clinic.....	50
Figure 4.3.12 Frequency of Re-treatment Services at Central Clinic.....	51

ACRONYMS

ACT	-	Artemisinin Combined Therapy
AIDS	-	Acquired Immune Deficiency Syndrome
BCC	-	Behaviour Change Communication
CBMPCP	-	Community Based Malaria Prevention and Control Programme
CBoH	-	Central Board of Health
CSO	-	Central Statistics Office
HIMS	-	Health Information Management System
HIV	-	Human Immune-deficiency Virus
IEC	-	Information Education Communication
IRS	-	Indoor Residue Spraying
ITNs	-	Insecticide Treated Nets
ITMs	-	Insecticide Treated Materials
LLITN	-	Long Lasting Insecticide Treated Nets
MOH	-	Ministry of Health
NGO	-	Non Governmental Organization
NHC	-	Neighborhood Health Committee
PHO	-	Provincial Health Office
PMI	-	President's Malaria Initiative
RBM	-	Roll Back Malaria
RDTs	-	Rapid Diagnostic Tests
SFH	-	Society for Family Health
UNDP	-	United Nations Development Programme
UNICEF	-	United Nations International Children's Fund
WBCs	-	White Blood Cells
WHO	-	World Health Organization
ZDHS	-	Zambia Demographic and Health Survey

DECLARATION

I, Callen Chizuni hereby declare that the work presented in this study for a Bachelor of Science Degree in Nursing has not been presented either wholly or in part, for any other degree and is not being currently submitted to any other degree.

Signed
.....

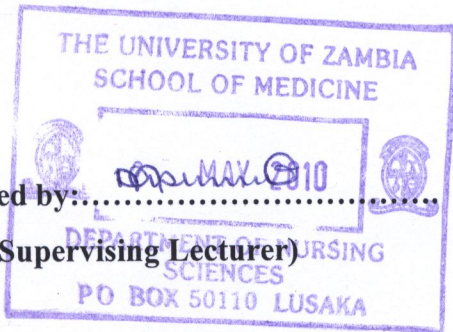
(Candidate)

Date 27.05.2010

Approved by.....
.....

(Supervising Lecturer)

Date 28.05.2010



DEDICATION

STATEMENT

This research is specially dedicated to my late father who passed on in 1994 on 30th April

I Callen Chizuni hereby certify that this study is entirely the result of my own independent investigations. The various sources to which I am indebted are clearly indicated in the text references.

Elizabeth Nantsoanga Nshoheryi, my husband Mr. Wamandila and our children who stood by my side the time I was carrying out this study.

Signed 

Date 27. 05. 2010

DEDICATION

This research is especially dedicated to my late father who passed on in 1994 on 20th April, may his soul rest in peace.

My mother Elizabeth Namoonga Nchobezyi, my husband Mr. Wamundila and our children who stood by my side the time I was carrying out this study.

ABSTRACT

Malaria is endemic in all the nine provinces of Zambia with 90-100% of the population being at risk and approximately 4.3 million clinically diagnosed cases of malaria were reported through the Health Management Information System (HMIS) in 2007 with 10% representing children under-five years of age (MOH, 2009). Luapula Province had the highest percentage of children under five with malaria parasites (30%), followed by Northern Province (17%) and Eastern Province (16%), while Lusaka, Western and Southern provinces had the lowest (2%, 3%, and 7%, respectively). Malaria still accounts for 45% of outpatient visits and 45% of hospital admissions of which 50% of the disease burden is among children under-five years of age (MOH, 2009). In Mansa district malaria has continued to be a major public health problem affecting all age groups but more cases are seen in children underfive years of age as reported by Mansa General Hospital where 51% of malaria cases were seen in 2008.

The main aim of the study was to determine knowledge, attitude and utilization of Insecticide Treated Nets among caretakers in malaria prevention in underfive children. The major hypothesis of the study was “There is an association between level of knowledge on ITNs and utilization of ITNs”.

Extensive literature search from studies conducted on knowledge, attitude and utilization of ITNs was done to ascertain what was already known on the study topic to avoid duplication. A descriptive non-interventional cross-sectional research design was used in the study. The study was conducted at Mansa Central Clinic, in Mansa District of Luapula province of Zambia which was purposefully selected. The sample population was made up of caretakers with underfive children attending underfive clinic at Mansa Central Clinic. The study sample comprised of 50 respondents and simple random sampling method was used for selection of respondents. Data was collected using an interview schedule in order to accommodate subjects that could not read and write. Data collected was analyzed manually with the help of a calculator and findings were presented in frequency tables, pie charts, bar charts and cross tabulations.

The study results showed that almost all (94%) of the respondents had high knowledge on ITNs, 98% had a positive attitude towards their use and most (64%) of the respondent's underfive children had a high level of utilization of ITNs. The study also revealed that ITNs were not always available at Central Clinic and more than half (60%) of the respondents did not know how often Central Clinic provide re-treatment services for ITNs. Additionally almost half (49%) of the respondents who own ITNs said that they had never had their ITNs retreated. The study revealed that there is an association between number of rooms used for sleeping and utilization of ITNs as 83% of the respondents who had 3 and more rooms used for sleeping had high level of utilization. The study further revealed that the respondents with a negative attitude (100%) were less likely to utilize ITNs. The study also established that there is a relationship between knowledge and utilization of ITNs in that more than half (67%) of the respondents who had low level of knowledge on ITNs also had low level of utilization of ITNs.

From the study findings, it can be concluded that the majority of caretakers with underfive children in Mansa urban district have high knowledge on ITNs and their attitudes towards utilization of ITNs is good. Despite the above it can also be concluded that most of the caretakers who own ITNs do not re-treat their ITNs because they do not know how often the health centres provide re-treatment services for ITNs. This could be the reason for high malaria incidences since untreated mosquito nets are less effective in preventing malaria.

CHAPTER 1

1.0 INTRODUCTION

1.1 BACKGROUND

World Health Organization (WHO, 2005) estimates that 40% of the world's population is at risk of malaria and that it is one of the most common infectious diseases and an enormous public health problem. Each year, there are approximately 350–500 million cases of malaria, killing between one and three million people, the majority of whom are young children (Yoshida *et al.* 2007). WHO, (2006) estimated that malaria causes about 10% of all deaths in children under five years in malaria infected areas. Malaria is commonly associated with poverty, but is also a cause of poverty and a major hindrance to economic development. Since the poor are unable to buy insecticide treated nets or employ other measures to prevent malaria, the prevalence of malaria is significantly high among them (Sachs and Malaney, 2002). According to the report on status and impact of Human Immune-deficiency Virus/Acquired Immune Deficiency Syndrome, Tuberculosis and Malaria by WHO (2005), 58% of malaria deaths occur in the poorest 20% of the world's population – a higher percentage than for any other disease of major public health importance. WHO further reported that currently malaria is endemic in 107 countries across the globe.

Malaria is caused by protozoan parasites of the genus *Plasmodium*. The most serious forms of the disease are caused by *Plasmodium falciparum* which accounts for malaria deaths. Other species include *Plasmodium vivax*, *ovale* and *malariae* which causes milder disease in humans that is not generally fatal (Trampuz A et al. 2003).

Around 60% of the cases of clinical malaria are found in WHO's African region and over 90% of the malaria deaths occur in sub Saharan Africa (Greenwood and Mutabingwa, 2002). The malaria burden is greatest among young children under five years, who have not yet developed any resistance to the disease and may not be able to take individual preventive measures like the use of Insecticide Treated Nets (ITNs) and pregnant women who have reduced immunity to infections including malaria (WHO, 2005). During pregnancy, there is increased blood volume

resulting in haemo-dilution. As a result there is a reduction in white blood cells (WBCs) which lowers the woman's immunity against infections (Lewis, 2009). An African child dies of malaria every thirty seconds and at least one million infants and children under five in sub-Saharan Africa die each year from the mosquito-borne disease (Lewis, 2009). Malaria also contributes significantly to anaemia in children under five. This results from rapid break down of red blood cells that are infected with malaria parasites.

There is considerable difficulty in estimating numbers of malaria cases, as the majority of people are treated in the community either by community health workers or self treated and as such a number of cases are not reported. Despite this, malaria is estimated to account for 25-40% of all outpatient visits and 20-50% of hospital admissions in sub-Saharan Africa (Yoshida *et al.* 2007).

In order to try and control the malaria situation, the Roll Back Malaria (RBM) initiative was launched by the Director-General of the World Health Organization, along with United Nations International Children's Fund (UNICEF), United Nations Development Programme (UNDP) and the World Bank, in October 1998 in Geneva (UNICEF 2000). The overarching goal of RBM is to achieve a 50% reduction in malaria related mortality and morbidity by the year 2010 and it recommends the following three primary interventions for effective malaria control, which include prompt diagnosis and treatment of all malaria cases, the utilization of insecticide treated nets (ITNs) and indoor residue spraying which must be scaled up if countries are to move towards achieving the United Nations Millennium Development Goal number 6 (To combat HIV/AIDS, Malaria and other diseases by 2015). Zambia among other African countries adopted the Roll Back Malaria initiative during the African Roll Back Malaria meeting in Abuja, Nigeria in April 2000 (WHO, 2005). Since then, the following measures have been implemented.

1.1.1 Diagnosis of malaria cases and treatment with effective medicines;

World Health Organization (WHO) recommends that a laboratory test should be performed before treating any case of suspected malaria (WHO, 2006). Since rapid diagnostic tests

(RDTs) generally cost less than a full course of Artemisinin Combined Therapy (ACT) (currently being used as first line of treatment for uncomplicated malaria), their introduction has not only improved malaria management but will also limit malaria treatment costs. The widespread introduction of RDTs for malaria allows diagnosis to be made even in health settings lacking any laboratory facility. Intermittent presumptive treatment is also recommended to prevent episodes of malaria among pregnant women (WHO, 2006). It involves the provision of at least two preventive treatments with an effective anti-malarial drug during antenatal clinic visits. Zambia is using sulphadoxine-pyrimethamine (Fansidar) for this purpose. This approach has been shown to be safe, inexpensive and effective. Intermittent presumptive treatment reduces the presence of malaria parasites in the placenta that tend to predispose the neonate to congenital malaria. Placental parasitaemia also results in impairment of fetal nutrition contributing to low birth weight and is a leading cause of poor infant development and survival (WHO, 2004).

1.1.2 Indoor residual spraying (IRS) to reduce and eliminate malaria transmission.

Indoor residual spraying (IRS) is a malaria vector control strategy countries in malaria endemic areas have embarked on to reduce morbidity and mortality resulting from malaria. Zambia has a well-established IRS program with 657,695 of 700,000 targeted households in 15 of the country's 72 districts in 2007, being sprayed using funds from the President's Malaria Initiative (PMI) (94% coverage), protecting about 30% of the total population from malaria (Ministry of Health (MOH), 2009). The government through PMI went on to expand IRS to 36 more districts in 2008. In Mansa urban, this program was implemented in 2008 in Senama, Buntungwa and Mansa central but so far only 11,000 out of the targeted 15,000 houses representing 73% have been sprayed (Provincial Health Office, Luapula, 2009).

1.1.3 Distribution of insecticide-treated nets (ITNs), more specifically long-lasting insecticidal nets (LLINs), to achieve full coverage of populations at risk of malaria;

The use of insecticide treated nets is effective in reducing malaria mortality and morbidity between 17 and 43% in children underfive years and provides protection to pregnant women

who are also susceptible to malaria (Binka and Akweongo, 2006). Binka and Akweongo further indicated that ITNs are easy to use and require less technical and capital outlay to implement compared with other vector control methods. They are cost-effective, which has led to widespread implementation of ITNs by countries on a large scale. The use of ITNs varies among various socio-economic groups with the poorest being the least to benefit from ITNs even where they are highly subsidized (Binka and Akweongo, 2006). The low utilization of ITNs among children underfive and pregnant women, who are the prime targets for the programme has also been hypothesized as due to individual attitudes and cultural aspects where husbands are considered as heads of households and therefore given priority as far as usage of ITNs is concerned (Ministry of Health, 2006).

The Zambian National Malaria Control Program has developed a Five-Year Strategic Plan for 2006 - 2010 for Malaria Control. The Plan shows considerable commitment to rapid scale-up of malaria interventions and has the overarching goal of reducing malaria incidence by 75% by the end of 2011, ultimately contributing to the reduction of all-cause mortality by 20% in children under five (MOH, 2009). The specific targets outlined in the National Malaria Control Program Action Plan for 2008 included that 100% of households in all eligible areas should have at least three ITNs with 85% utilization rates and 85% of children under five would have slept under an ITN the previous night (MOH, 2009). This program is being supported by the President's Malaria Initiative (PMI) Global fund whose budget for the year 2009 was \$14.7 million. Out of this 24% supported the procurement and distribution of ITNs. PMI has also continued to support national and community based Information, Education and Communication/ Behaviour Change Communication (IEC/BCC) campaigns to increase demand for and correct usage of Long Lasting Insecticide Treated Nets (LLITNs). Despite the above, the supply of ITNs to health facilities has continued to be erratic making it difficult for the mothers to access it (MOH, 2009).

Since 2007, Ministry of Health through the Zambia National Malaria Control Program initiative has been distributing free ITNs to members of the public through the District Health Office (MOH, 2009). Members of the Neighbourhood Health Committee (NHC) are actively involved in this activity. The NHC members come up with a list of all the households as well

as the number of ITNs owned by each household in their respective zones. Once this is done, the District Health Office in conjunction with the NHC distributes these free ITNs to registered households from a central place for example a school within the community. Those households that own at least one net are given one or two nets more while those that have none are given two or three nets depending on the number available. The remaining nets are taken to health centres and are given to patients, pregnant women and children under five years whose clinic records show that they have been having frequent attacks of malaria. The subsidized ITNs are sold at government health centres at a cost of K3, 000.00 in most clinics. Some Community Health Workers are also engaged in the sell of these nets (PHO, Luapula, 2009).

Community Based Malaria Prevention and Control Programme (CBMPCP) was began as a pilot project in Samfya District, Luapula Province, in 1994 with support from United Nations International Children's Fund (UNICEF) and included the communities of Kasanka, Mushili and Matongo. In 1998 – 1999 implementation was expanded to the rest of the communities in Samfya and to communities in three more districts in Luapula Province – Mansa, Mwense and Nchelenge (UNICEF, 2000). Under this programme Community Based Malaria Agents are trained on prevention of malaria using ITNs and the re-treatment of mosquito nets. Thereafter these Malaria agents are provided with free ITNs which they distribute to community members giving first priority to pregnant mothers and children under five years. Every six months, the Community Based Malaria Agents call all community members with ITNs for a re-treatment exercise which is usually done at the headman's village or at a nearby school. The Community Based Malaria Agents also monitor the use of ITNs to ensure that they are not misused for example for fishing. A report is then written and submitted to the District Health Office who in turn report to UNICEF country representative.

Mansa Urban District benefited from Zambian National Malaria Control Program initiative of free distribution of ITNs in 2008 though it did not reach the planned target of distributing at least three nets per household (Provincial Health Office (PHO), Luapula 2009). According to MOH, (2009) in the malaria report, Zambian situation, 81% of the targeted nets have been distributed to Mansa district which is among the top beneficiaries. Non Governmental Organizations (NGOs) have also made significant contributions towards the distribution of free

ITNs in Mansa district and these include the Anglican Church which distributed free ITNs as well as Society for Family Health (SFH) selling subsidized ITNs and are targeting 80% of children under five years and pregnant women (PHO, Luapula, 2009). A total of 7,000 nets have so far been distributed by SFH though it is not clear how many the NGO intends to distribute. A SFH representative however, indicated in the same report that the distribution programme of subsidized ITNs is on going (PHO, Luapula, 2009).

PHO Luapula, (2009) reported that a number of people in Mansa are still ignorant about malaria because some people do not know why they should use the mosquito nets “some people get malaria because of ignorance. Some people don’t sleep under mosquito nets not because they cannot afford them per se, but because they do not know why they should do so.” This is why it is important to carryout a research to find out how much knowledge caretakers with underfive children have on the use of ITNs in malaria prevention.

Despite the use of ITNs being able to reduce malaria incidence by 43% in children under five years (Binka and Akweongo, 2006), Mansa General Hospital is still reporting a high incidence of 59% (Mansa General Hospital, 2008). This calls for more efforts in implementation of the primary preventive measures already in place.

1.2 STATEMENT OF THE PROBLEM

Malaria transmission in Zambia occurs throughout the year with the peak during the rainy season, which occurs between November and April (Central Statistics Office (CSO), 2007). Malaria remains Zambia’s number one killer and a catalyst for poverty, as household struggle to support family members afflicted with the disease (Ministry of Health (MOH) 2009). Malaria is said to be a catalyst for poverty in the sense that a patient with malaria is unproductive and yet the illness demands for expensive drugs and good nutritious food to ensure a quick and disability free recovery. This is a cost. Female *Anopheles gambiae* mosquito is the major vector that transmits malaria parasites and *Plasmodium falciparum* accounts for more than 90% of all malaria infections (MOH, 2009). All nine provinces of Zambia are endemic for malaria with 90-100% of the population being at risk and approximately 4.3 million clinically diagnosed cases of malaria were reported through the

Health Management Information System (HMIS) in 2007 with 10% representing children underfive (MOH, 2009). Luapula Province had the highest percentage of children underfive with malaria parasites (30%), followed by Northern Province (17%) and Eastern Province (16%), while Lusaka, Western and Southern provinces had the lowest (2%, 3%, and 7%, respectively). Malaria still accounts for 45% of outpatient visits and 45% of hospital admissions of which 50% of the disease burden is among children under five years of age (MOH, 2009).

Table 1.2.1: Total Malaria Cases at Mansa Central Clinic 2006-2008 (study site)

Category	2006	%	2007	%	2008	%
Children under five	7161	53%	6348	52%	5801	51%
Five years and above	6329	47%	5930	48%	5467	49%
Total number of cases	13,490	100%	12,278	100%	11,268	100%

Source: (Mansa Central Clinic HIMS, 2009).

Mansa Central clinic has been leading in the number of malaria cases in Mansa urban district with more cases seen in children under the age of fives (Mansa District HIMS, 2009). Children under five years represent 20% of the total population. In 2006, 53% of the total number of malaria cases that reported to Mansa Central Clinic were children under the age of five years against 47% of those aged five years and above (Mansa Central Clinic HIMS, 2009). Although the incidences of malaria have continued to reduce, the number of children infected by the malaria parasite has remained high. In 2008 the total number of cases reduced from 12,278 in 2007 to 11,268. Nevertheless 51% of these were children under the age of five years. Mansa Central Clinic like any other clinic in Mansa urban does not have a provision for admission of patients and all critically ill patients are referred to Mansa General Hospital and as such Mansa Central Clinic does not report any deaths. The table on the next page shows malaria incidences at Mansa General Hospital.

Table 1.2.2: Total Malaria Cases and Deaths at Mansa General Hospital 2006-2008

Category	2006	%	2007	%	2008	%
Children under five (cases)	3813	56%	3161	48%	3011	51%
Five years and above (cases)	3029	44%	3406	52%	2890	49%
Total number of cases	6842	100%	6567	100%	5901	100%
Children under five (deaths)	109	55%	77	60%	85	59%
Five years and above (cases)	89	45%	52	40%	60	41%
Total number of deaths	198	100%	129	100%	145	100%

Source: Mansa General Hospital HIMS 2008

In Mansa district malaria has continued to be a major public health problem affecting all age groups but more cases are seen in children underfive years as shown in table 1.2.1. Out of 5,901cases of malaria (confirmed and unconfirmed) that were reported from Mansa General Hospital in 2008, 3,011(51%) were children under the age of five against 2,890 (49%) cases seen in those five years and above which is a larger population (Mansa General Hospital HIMS, 2008). The mortality resulting from malaria in this age group has also remained high (59%). In 2008, the total mortality resulting from malaria was 145 out of which 85(59%) were children under the age of five against 41% in those five years and above (Mansa General Hospital HIMS, 2008). Mansa General Hospital is a second level hospital but also acts as the first level referral hospital for Mansa District.

Knowledge, attitude and utilization of ITNs are of prime importance in malaria prevention since the use of ITNs is currently considered the most cost-effective method of malaria prevention in high endemic areas. Children under the age five are primarily targeted for this method (CSO, 2007).

Despite Luapula Province having the highest percentage (81%) of net ownership (treated or untreated) by 2007 (MOH, 2009), malaria incidence has remained high and the mortality in children under five for Mansa General Hospital has also remained high (60%) in 2007 and (59%) in 2008 respectively. This makes it necessary to investigate the knowledge and attitude of caretakers on use of ITNs in malaria prevention in children under the age of five years.

Central Statistics Office (CSO, 2007) also reported that only 29% of the children under five years had been reported to have slept under a bed net a night before the survey. 56% of these were children in Luapula Province against 68 % of all women and 73 % of pregnant women who slept under a net the night before the survey in the same province. This means that despite the province owning more nets, the majority of children under five years were not currently sleeping under ITNs and this calls for investigations to find out why this is the case.

1.3 FACTORS CONTRIBUTING/INFLUENCING THE PROBLEM

1.3.1 SERVICE RELATED FACTORS

1.3.1.1 Information Education and Communication on ITNs

Knowledge about the cause of malaria and assistance of ITNs in its prevention seems to be low among many communities and this influence the utilization of ITNs (Rhee et al, 2005). According to a research done in Mali on knowledge assessments, it was reviewed that 49% of households who received some education on malaria and its prevention were using their ITNs compared to only 35% who did not receive any form of education (Rhee et al, 2005).

1.3.1.2 Work load

As a result of the brain drain, most health facilities are operating with less than 50% of the established skilled workforce (MOH, 2006). This has led to programmes such as information dissemination to suffer as staff are concentrating on other activities for example during children's clinic, they may concentrate on giving vaccines which they may feel have a greater impact on the health of under five children and may not give any form of IEC. Work load also has a greater influence on the attitude of staff that may become arrogant making it difficulty for caretakers to ask any questions pertaining to ITNs and as such caretakers may remain ignorant in malaria prevention using ITNs. Work load may also interfere with the sell of ITNs which could be viewed as a share waste of time. Additionally, increased work load, may result in health centre staff failing to adequately supervise the Community Health Workers who are also engaged in selling and re-treatment of ITNs.

1.3.1.3 Supply of Insecticide Treated Nets at health facilities

If supply of ITNs at the health centres is constant, then caretakers may be encouraged to walk to the centre at any time and purchase these nets. If the supply is erratic, caretakers will have a negative attitude towards ITNs because they will not access them at their convenient time. The majorities of caretakers in urban areas do some form of income generating ventures and may not tolerate the idea of leaving their businesses and walking to the health centre in view of purchasing an ITN, just to find that they are not available. If the supply of ITNs is erratic, it may not even be adequate when it is received because of the increased demand.

1.3.1.4 Distance from the health facility

Long distance from the health facility influences the accessibility of ITNs. Caretakers who stay near the three urban clinics namely Mansa Central, Buntungwa and Senama are likely to access ITNs more easily than those who stay far away from these health centres. The message about the availability of ITNs may also reach them faster and the nets may finish before those that are from far away places receive the information. Sometimes caretakers from distance places may have the desire to go and purchase ITNs but are discouraged by the distance.

1.3.1.5 Availability of re-treatment kits

Availability of re-treatment kits for mosquito nets will influence the utilization of ITNs because if the re-treatment drugs are not available the net may not be very effective in killing mosquitoes that come in contact with it and as such the caretakers may eventually stop using it. Repeated stock outs of re-treatment drugs may also discourage the caretakers from walking to re-treatment points even when the drugs are available. This will influence their attitude towards re-treatment programme.

1.3.1.6 Staffing levels

The number of skilled staff available will influence the dissemination of information on the use of ITNs. The current economic situation that is prevailing in the country has resulted in a number of skilled health staff leaving government health institutions and the country for greener pastures in search of better conditions of service (brain drain). As such the remaining skeleton of skilled health workers may have very little or no time at all to give Information

Education Communication (IEC) on ITNs. This may deprive the caretakers of the knowledge on malaria and its prevention.

1.3.2 DISEASE RELATED FACTORS

1.3.2.1 Sensitivity to ITNs

Some people including children under five years may be hypersensitive to the insecticide used to treat mosquito nets. This may influence the utilization of ITNs.

1.3.2.2 Seasonality associated with malaria

Since more cases of malaria are seen during the rain season (November to April) the caretakers may stop using their ITNs once this season is over. Rainy season also tends to be very hot making it uncomfortable for the caretakers and their under five children to sleep under ITNs. This may also influence the utilization of ITNs.

1.3.3 SOCIAL-CULTURAL AND ECONOMIC FACTORS

1.3.3.1 Education level

Caretakers of underfive children who have higher education level are more likely to acquire knowledge on ITNs compared to those with low education level. Caretakers who have gone to school are more likely to understand the relationship between the incidence of malaria and the use of ITNs and as such, they may buy and use ITNs in order to prevent malaria in their under five children. Households' inability to associate the effectiveness of the net with the insecticide leads to low re-treatment rates and eventually to under utilization of ITNs.

1.3.3.2 Age of caretaker

Age will influence the knowledge, attitude and utilization of ITNs. Caretakers in the younger age-group are more likely to buy and utilize ITNs than those in the older age-group. For example, elderly women are less likely to buy and utilize ITNs because their level of understanding of causes and prevention of malaria differs from that of the young age groups since they could not have been educated on use of ITNs in malaria prevention. The elderly women may also feel that buying an ITN is luxury.

1.3.3.3 Poverty

ITN use has been limited due to the cost outlay households require to make towards the purchase of nets, in most settings. Caretakers in the low social economic group may not consider buying an ITN as a priority. They would rather buy mealie meal at K3, 000 (Pamela) than buying a subsidized ITN at the same price. Sometimes the Caretaker would have benefited from the free distribution of ITNs but the net could have gotten torn because of the laps in time. The low economic status will then prevent this Caretaker from replacing the torn net. Poverty may also force these Caretakers to sell their nets for cash which is valued most. Poverty may also influence the level of education. Caretakers from poor families are more unlikely to attain a high level of education. Poverty may also determine the type of house these caretakers with underfive children are likely to occupy. Those caretakers who sleep in very small houses may have difficulties hanging the ITNs especially for children under five who have stopped breastfeeding and may be sleeping on the floor.

1.3.3.4 Commitment

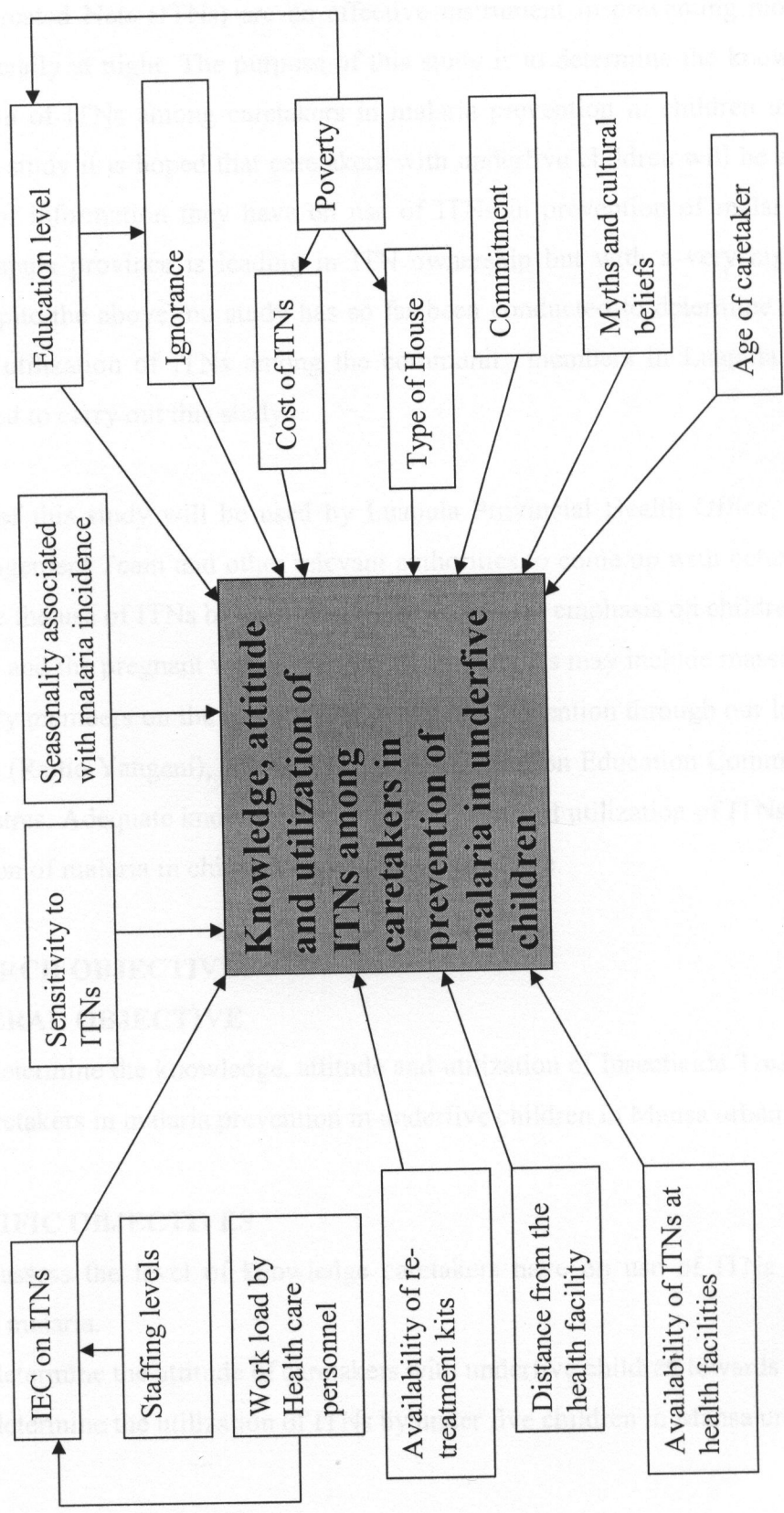
Some caretakers may not be committed towards the use of ITNs and may only use them if they have been reminded by the health care providers to do so. This attitude will influence the utilization of ITNs.

1.3.3.5 Cultural beliefs / Myths

Some caretakers have misconceptions about ITNs. Some people believe that sleeping under a mosquito net may result in breathing difficulties and suffocation. This results in low utilization of ITNs. On the other hand husbands are considered to be the head of the household in almost all Zambian communities and as such they are given first priority when it comes to the use of ITNs. This deprives the children under five years a chance to sleep under an ITN.

1.4: PROBLEM ANALYSIS DIAGRAM

Service Related Factors Disease Related Factors Social-cultural and Economic factors



1.5 JUSTIFICATION

Insecticide Treated Nets (ITNs) are an effective instrument in preventing mosquito bites in humans especially at night. The purpose of this study is to determine the knowledge, attitude and utilization of ITNs among caretakers in malaria prevention in children underfive years. Through this study it is hoped that caretakers with underfive children will be able to disclose the amount of information they have on use of ITNs in prevention of malaria in underfive children. Luapula province is leading in ITN ownership but with a very high incidence of malaria. Despite the above, no study has so far been conducted to determine the knowledge, attitude and utilization of ITNs among the community members in Luapula province. This raises the need to carry out this study.

The results of this study will be used by Luapula Provincial Health Office, Mansa District Health Management Team and other relevant authorities to come up with better strategies that may promote the use of ITNs by community members with emphasis on children under the age of five years and the pregnant women. Specific programmes may include massive sensitization of community members on the use of ITNs in malaria prevention through our local community radio station (Radio Yangeni), drama, as well as Information Education Communication (IEC) at health centres. Adequate knowledge, positive attitude and utilization of ITNs are essential in the prevention of malaria in children under five years of age.

1.6 RESEARCH OBJECTIVES

1.6.1 GENERAL OBJECTIVE

1.6.1.1 To determine the knowledge, attitude and utilization of Insecticide Treated Nets (ITNs) among caretakers in malaria prevention in underfive children in Mansa urban district.

1.6.2 SPECIFIC OBJECTIVES

1.6.2.1 To assess the level of knowledge caretakers have on use of ITNs as a preventive measure for malaria.

1.6.2.2 To determine the attitude of caretakers with underfive children towards the use of ITNs.

1.6.2.3 To determine the utilization of ITNs by under five children in Mansa urban.

1.7 HYPOTHESIS

1.7.1 There is an association between level of knowledge on ITNs and utilization of ITNs.

1.7.2 Having a positive attitude towards the use of ITNs contributes to high level of utilization.

1.8 CONCEPTUAL AND OPERATIONAL DEFINITIONS

1.8.1 CONCEPTUAL DEFINITIONS

According to Mayor M. et al. (2006), the following are the conceptual definitions of key words in the study.

1.8.1.1 Knowledge

This is what someone knows about a particular subject.

1.8.1.2 Insecticide Treated Nets (ITNs)

These are nets that have been treated with chemicals that kill insects.

1.8.1.3 Caretakers

A caretaker is someone who looks after old people, young children or people with serious illnesses.

1.8.1.4 Under five children

These are children less than five years of age.

1.8.1.5 Utilization

To utilize is to use something.

1.8.1.6 Attitude

This refers to someone's opinions or feelings about something, especially as shown by the behaviour.

1.8.2 OPERATIONAL DEFINITIONS

1.8.2.1 Knowledge

This is the information or facts that caretakers have on ITNs. It includes information on what an ITN is, where it can be obtained, re-treatment of ITNs, and advantages of using of ITNs in prevention of malaria and health education received on prevention of malaria.

1.8.2.2 Insecticide Treated Nets (ITNs)

This is a mosquito net that has been impregnated with chemicals that kill mosquitoes and other insects when they come in contact with the net.

1.8.2.3 Caretakers

This refers to anybody who takes care of children under five years which includes mothers and other relatives.

1.8.2.4 Under five children

These are children who are less than five years of age.

1.8.2.5 Utilization

This is when children less than five years sleep under an ITN.

1.8.2.6 Attitude

This is the way caretakers feel towards the use of ITNs and if they would encourage others to use them.

1.9 VARIABLES AND CUT-OFF POINTS

A variable is the characteristic of the person or object observed that varies. For example age, weight, height (Polit and Beck, 2008).

In this study there are both dependent and independent variables.

1.9.1 Dependent variable

A dependent variable is one which is thought to be influenced by independent variables (Polit and Beck, 2008). It is also referred to as the presumed effect. The dependant variable in this study is utilization of ITNs.

1.9.2 Independent variable

An independent variable is one that is thought to influence the dependent variable (Polit and Beck, 2008). In other words it is the presumed cause. In this study the independent variables are knowledge and attitude.

Table 1.9.1: Variables and the cut-off points

VARIABLE	CUT-OFF POINT	INDICATOR	QUESTION NUMBER
Dependent variables			
Utilization of ITNs	High	Child sleeps under an ITN every night.	22
	Moderate	Child sleeps under an ITN sometimes	
	Low	Child has never slept under an ITN	
Independent variables			
Knowledge of ITNs	High	Correct scores of 3-5 out of 5 questions	9, 10, 13,15 and 16
	Low	Correct scores of 1-2 out of 5 questions	9, 10, 13,15 and 16
Attitude	Positive	Correct scores of 2 out of 2 questions	18 and 20
	Negative	Correct scores of below 2	18 and 20

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

Literature review is an organized written presentation of what has been published on a topic by scholars (Burns and Grove, 2005). Literature review helps the researcher to get acquainted with what has been done on a study before, thereby minimizing the possibilities of unintentional duplication and increasing the probability that the new study will make a distinctive contribution to knowledge. Literature review also helps the investigator to have relevant knowledge on the research strategies and specific procedures and instruments that might be of use during the study. The investigator looked at the studies conducted according to Knowledge, Attitude and Utilization of ITNs. Much of the published data that the investigator reviewed was accessed from internet and journals while unpublished articles were sourced from the University of Zambia Medical Library.

2.2 KNOWLEDGE

This is what someone knows about a particular subject (Mayor et al. 2006). In this study, knowledge is defined as the information or facts that caretakers have on ITNs. It includes information on what an ITN is, where it can be obtained, re-treatment of ITNs, and prevention of malaria using ITNs and whether they received health education on malaria prevention.

A number of studies world wide have shown that the use of ITNs is effective in reducing malaria related morbidity and mortality among underfive children and the pregnant women. It is evident that ITN use by these vulnerable groups reduced malaria cases and deaths especially in most African countries (WHO, 2004). This was due to adequate information on knowledge of ITNs that these countries were disseminating to community members through the media. From the above comment from WHO it has shown that adequate knowledge have a greater influence on utilization of ITNs.

More malaria cases are seen in the tropical regions of Africa and Asia. This is where a number of developing countries are found and the people found in these areas are mostly from the low socio-economic status group with low educational levels and are mostly unable to access sustained malaria control strategies such as the use of ITNs (WHO, 2005). In addition to that, most of these people live far away from the health facilities and commercial shops which further prevent them from accessing these ITNs. From this study it is clear that knowledge and poverty have an influence on utilization of ITNs as well as distance from health facilities and commercial shops. These factors could also play a major part as far as knowledge and utilization of ITNs are concerned in Mansa district.

In a household survey that was conducted in 2000 by Rhee and others in four villages of Mapti region in Mali which was aimed at identifying the barriers to effective use of ITNs, it was documented that although the government media campaign about ITNs reached all villages, knowledge about malaria and the benefits of ITN use was highly variable among the four villages. Households treating their mosquito nets with insecticides had significantly higher levels of knowledge about malaria and its prevention compared to those who were not treating their nets. The study also revealed that the most common reasons given by all households not using ITNs were cost (59%), availability (23%), and lack of knowledge regarding the effectiveness of ITNs in prevention of malaria (11%) (Rhee et al. 2005). From the study it can be concluded that having knowledge on the effectiveness of ITNs in prevention of malaria was closely related to households using ITNs.

Netmark conducted a formative research in Uganda in July 2000. The study was aimed at finding out how much knowledge the population had on malaria and findings were that general knowledge about malaria was good but knowledge that children 0-5 years are vulnerable to malaria was limited. The concept of re-treating mosquito nets was largely unknown and no one had ever done so (Netmark, 2000). This may be attributed to the knowledge that the population have on re-treatment of mosquito nets. The limited knowledge on the fact that underfive children are vulnerable to malaria could be due to lack of Information Education and Communication (IEC) from health care providers on the relationship between malaria and under five children.

Another study done by Ndugga and others in Uganda in 2001 to determine religious affiliation influencing prevention and treatment of malaria among children revealed that 92% of caretakers know that malaria is transmitted by mosquitoes, 8% had misconceptions about the causes of malaria. Some respondents reported that malaria was caused by eating mangoes and others mentioned eating maize as the cause, the reason being that malaria is more common during the season when these crops are also abundant.

Netmark also conducted a formative qualitative study in Zambia in July 2000 in urban Lusaka, and in urban and rural sites of Mansa, Kitwe, Choma and Kaoma. The aim of the study was to identify the factors that encourage acquisition of nets, retreatment of nets with insecticides and use of nets by children under five and pregnant women. The study findings were that general knowledge about malaria was good. Respondents considered malaria serious and had good general knowledge on who is vulnerable to serious case of illness. Almost everyone knew mosquitoes cause malaria but some thought there were other causes as well. Most respondents named several benefits of using a net: protection from mosquitoes and other insects; protection from illness, especially malaria; and allowing a good night's sleep.

The concept of treating nets with insecticide was familiar to most urban respondents and to rural respondents in areas with Insecticide Treated Materials (ITM) projects, but only a few net owners had treated their nets. A few of these were dissatisfied, saying that they expected that the treated net would kill mosquitoes but that it did not. Traders and consumers generally liked the idea of ITMs, but parents were also concerned about the potential danger of insecticides, especially to children and pregnant women. However, consumers said they would feel better if assured by the Ministry of Health and other credible sources that the treatment product was safe. Insecticide treatments appeared to be virtually unavailable in the commercial sector, but traders of nets and insect control products were eager to sell them.

From the above study it is evident that the majority of the Zambian population has adequate knowledge on malaria and its prevention but there is need to sensitize the community on re-treatment of mosquito nets to increase the effectiveness.

In a study done by Siame in 1999 in Mwinilunga district of North-western province on knowledge and utilization of ITNs, it was reviewed that 97% of his respondents had knowledge about ITN, 72% knew how to use them and 28% had no knowledge. In another study done by Mutale in Mpika district in 2007 on knowledge, attitude and utilization of ITNs, it was reviewed that the majority (82%) of respondents were knowledgeable about ITNs. From these results it is clear that a good number of populations are knowledgeable about ITNs hence there is need to explore the other factors that tend to hinder utilization of ITNs such as attitude.

2.3 ATTITUDE

This refers to someone's opinions or feelings about something, especially as shown by the behavior (Mayor et al. 2006). In this study attitude is defined as the way caretakers feel towards the use of ITNs and if they would encourage others to use ITNs.

Studies have shown that insecticide treated materials are generally accepted even where they are not commonly used, and are able to repel mosquitoes even in areas where there is insecticide resistance (International Development Research Centre, 2000).

Netmark conducted a formative research in Uganda in July 2000 aimed at finding out how much knowledge the population had on malaria and their attitude towards utilization of ITNs. The findings were that respondents had relatively negative perceptions about mosquito control methods including ITNs. They viewed ITNs as luxury items reserved for the rich and educated. Some perceived them as hot, restrictive, expensive, and unable to protect entire family, ineffective, inconvenience to get out or even to hang. While others said nets were difficult to use with children as children could become trapped or suffocate, were hard to keep under the net and might even damage the net. Nets were not used all year round but only in rain season (Netmark, 2000). The above misconceptions may influence the attitude of respondents towards utilization of ITNs.

In a study conducted by Netmark in Lusaka, Mansa, Choma and Kaoma in July 2000, aimed at identifying the factors that encourage acquisition of nets, retreatment of nets with insecticides and use of nets by children under five and pregnant women, indicated that respondents viewed

net owners as being in a positive light, described as “health conscious,” “caring,” and also “well to-do” and “high class.” The few respondents who cited negative features of nets mentioned discomfort from heat; feeling restricted, and fears of a child becoming trapped. Respondents considered nets expensive, and most non-owners said they did not own a net because of the expense. Fathers, either alone or with mothers, made the decision to obtain a net, with fathers tending to buy nets in the commercial sector and mothers obtaining them from projects or clinics. Despite most respondents being in favour of owning and using ITNs a few had negative attitudes towards their use. This may influence the utilization of ITNs.

In another study done by Mutale in Mpika district in 2007, it was revealed that the majority (82%) of respondents were knowledgeable about ITNs. However, 59% had negative attitude towards ITNs despite them being knowledgeable on ITNs. It was further reviewed that 32% of the women aged between 21 and 35 years old who had a negative attitude towards utilization of ITNs did not use ITNs with their under five children. This meant that a lot of sensitization was necessary if this community has to use these ITNs. It can therefore be concluded that attitude of mothers towards ITNs and not necessarily knowledge of ITNs influences utilization of ITNs.

2.4 UTILIZATION

To utilize is to use something (Mayor et al. 2006). In this study utilization is when children less than five years sleep under an ITN.

During the 20th century, human efforts to control malaria, and general socioeconomic development (changes in agricultural practices and house construction), including access to health care, have markedly reduced the spread of malaria. These gains are most evident in areas where transmission previously occurred only at low intensity, in the Americas, Asia, Europe and Transcaucasia (WHO, 2005). It was further noted that during the Global Malaria Eradication Programme between 1957 and 1972, vector control - mainly through dichlorodiphenyl-trichloroethane (DDT) spraying combined with improved access to treatment reduced or eliminated malaria transmission in considerable parts of these regions. In contrast, most of Africa south of the Sahara and some foci elsewhere continued to suffer malaria transmission at

high intensity. In some areas malaria has resurged after interruption of eradication efforts that were not sustainable (WHO, 2005).

Globally, the Roll Back Malaria initiative emphasizes on the use of ITNs by populations at risk that is children under five years and the pregnant women (WHO, 2005). ITN use have been shown to avert around 50% of malaria cases, making protective efficacy significantly higher than that of untreated nets which, under ideal conditions (such as those found in research settings), usually provide about half the protection of nets treated with an effective insecticide (Clarke SE et al. 2001). In “real life” situations, the protective efficacy of untreated nets is significantly compromised by their poor physical condition.

Community randomized trials done in the Amazon region and in Cambodia confirmed that provision of personal protection against malaria is an important mode of action of ITNs in prevention of forest malaria. Forest malaria is a complex phenomenon characterized by frequent population movements and lack of permanent structures, which makes vector control interventions difficult. Nevertheless, the biggest challenge was how to apply the use of ITNs among children under five years who are among the vulnerable group but are unable to protect themselves (Fraser et al. 1999). Use of ITNs is a challenge to every community that have no permanent structure because the members especially those that tend to move from one place to another may not buy beds for themselves worse still for their children making it difficult to hang ITNs (Fraser et al. 1999). A number of people in Mansa are peasant farmers and happen to shift to their farming areas during the rain season (Ku Nkutu) where they stay during periods of cultivation and when they are harvesting. There, they make small structures for sleeping which in most cases are not permanent houses and they do not carry beds. This makes it difficult for them to hang the ITNs. If a place to hang is found, it may not be easy to keep children under five inside these nets because the net is not tacked and may just hang loosely.

All countries in Africa south of the Sahara, have adopted ITNs as a key malaria control strategy. To promote the usage of ITNs, the National Malaria Control Programmes use various implementation methods including: stimulating the growth of commercial markets, reducing taxes and tariffs, cost-sharing, social marketing subsidies, and ITN distribution free of charge

among vulnerable groups such as children under 5 years of age, pregnant women and the poorest or most marginalized populations (Lewis, 2009). Lewis, (2009) has also indicated that services for re-treatment of existing untreated nets are another powerful means of increasing ITN coverage.

In a number of African countries, more nets have been delivered through the commercial market than by other mechanisms. In Sahelian countries, which have a strong tradition of using nets, there is even evidence that commercial availability can produce equitable distribution (Binka and Akweongo, 2006).

On the basis of community randomized trials on effects of ITN use done by Kumai et al. in 2006, Cochrane study review concluded that, when full coverage is achieved, ITN use reduce all causes of child mortality by an average of 18% in sub-saharan Africa. It was also concluded that ITNs reduce clinical episodes of malaria (WHO, 2005). A 25% reduction in all – cause of mortality for children 1 – 9 years of age was also detected during the first year of Gambia National Bednet Programme in Kilifi district. Kenya reported a 33% reduction in all – cause of mortality for children under five and 44% reduction in hospital admissions for severe malaria was also found during the same study (Rhee et al. 2005). In Mansa no study has been conducted to show the impact of ITN use on child mortality but statistics from Mansa District Health Management Information System (HMIS) shows a reduction of 61% between 2007 and 2008 in all – cause of mortality for children under five years though malaria has continued to be the leading cause (Mansa District HMIS, 2009). This reduction could be associated with the government's massive distribution of free ITNs during this period.

According to Kenya Demographic and Health Survey (KDHS) (2003), results showed that despite the fact that two thirds of Kenyans live in malaria-endemic areas, only 22 % of households in Kenya have at least one mosquito net (treated or untreated), while only 6% have at least one ITN. Only 10 % have more than one net (treated or untreated), while 3 % have more than one ITN, despite the fact that an average Kenyan household size is 4.4 persons (Central Bureau of Statistics, 2004). This means that a large part of the population is unable to utilize ITNs. The cost of ITNs has been implicated as one of the major reasons for non-

ownership of nets. The populations most at risk are often among the poorest who may not always afford the cost of purchasing ITNs. According to KDHS (2003), the situation of net ownership in Kenya was reported to be worse for households in the lowest wealth quintile; only 11 % have at least one net and worse still, only 2.5 % have at least one ITN (Central Bureau of Statistics, 2004).

Cost is not the only factor that hinders ownership and use of nets; there are other factors that have been associated with ownership and/or use of nets which include size of houses, type and availability of sleeping facility and sleeping arrangements especially in refugee camps and other needy communities. Research has found that sleeping space determines whether it would be possible to hang a net. When the house is too small, it may not be feasible to use a net (Central Bureau of Statistics, 2004). The majority of the houses in the shanty compounds of Mansa are small mostly two bedroomed houses. This means that a number of children including underfive children have very little space if any to put a bed and as such they may not have anywhere to hang the net. Most of the households live as extended families and their small rooms tend to be congested making it difficult to use a bed and worse still hang an ITN.

Central Bureau of Statistics, (2004) also indicated that houses in refugee camps and Dadaab in particular are mainly makeshift houses and are small. Being located in a semi-arid area, temperatures in Dadaab are very high even at night. This sometimes makes the heat in the small house unbearable. Given the small size of the house, the number of people in one household (an average of six), and the heat in the house, some members of a household opt to sleep outside the house. Sleeping outside the house makes it rather difficult to use bed nets despite the fact that it puts the victims at high risk of mosquito bites (Central Bureau of Statistics, 2004)

Like in many refugee camps and other poor communities, many of the households in the Dadaab refugee camps do not have beds and most of the few that have, mostly they have one bed which in many cases is improvised in that it is an elevation from the ground using earth. Therefore, most of the members who sleep inside the house sleep on the floor. Some studies have shown that if a person does not have a bed, the household puts more effort and higher

priority on purchasing a bed than a bed net (Mac Cormack et al. 1986). Another factor affecting use of nets is sleeping patterns; in most instances, only the parents use bed nets where they are available thus only the young children who sleep with the parents on the same bed are protected while the older children are not protected (Aikins et al. 1994). In most African communities, children sleep on the floor partly because parents can not afford to buy beds for their children and the other reason being that most of the houses can only accommodate one bed which is used by the parents and maybe the youngest child. This same situation is found even in Mansa district making it difficult for the children to use an ITN.

Tropika, (2007) reported in a systematic review of randomized studies done in Africa that, it had been found that women who slept under ITNs had lower numbers of parasites in their blood, abortions were reduced and overall proportion of babies who had low birth weight went down. These trials strongly suggested that it is a good idea for pregnant woman to sleep under a net.

The government of Zambia has been in partnership with the international community particularly UNICEF and the President's Malaria Initiative (PMI) as well as the private sector and church organizations to control the malaria situation in the country under the Roll Back Malaria Programme since 1999. The goals of the initiative was to ensure that by the end of 2005, at least 60% of those at risk of malaria, in particular children under five years and the pregnant women benefited from the most suitable combination of personal and community protective measures such as use of ITNs and other interventions which are accessible and affordable to prevent malaria (CBoH, MOH and RBM, 2001)

The use of ITNs is currently considered the most cost-effective method of malaria prevention in high endemic areas. While children under age five are primarily targeted for this method, other vulnerable groups (e.g. pregnant women, internally displaced persons, etc.) are encouraged to acquire and use ITNs (CSO, 2007). ITNs are easy to use and re-treat and they can provide all year – round protection against mosquito bites. When used effectively and consistently, ITNs can reduce child deaths due to malaria by 63%. ITNs also reduce exposure

to mosquito bites for the whole community because of the reduction in the mosquito population and the proportion of people infected with parasites (CBoH, 2002).

A number of studies have been conducted in Zambia on ITNs most of them focusing on ownership and utilization of ITNs. The ownership and utilization of mosquito nets both treated and untreated is the Primary Health Care intervention for reducing malaria transmission in communities especially those with high incidence of malaria but with greater emphasis on use of ITNs. Everyone should sleep under an ITN but priority should be given to children under five years who have not yet developed immunity against malaria as well as pregnant women whose immunity against malaria is reduced (National Malaria Control Centre, Bulletin, 2004).

According to CSO (2007) in the Zambia Demographic and Health Survey (ZDHS) report, 64 % of households in Zambia own a mosquito net (treated or untreated) and 31 % of households own more than one mosquito net. More than half (53 %) of households own at least one ITN and 25 % own more than one ITN. By residence, there is almost no difference in the percentage of households using the different types of mosquito nets; however, net ownership does vary by province. Luapula has the highest percentage of households with an ITN (81 %), while Southern has the lowest percentage (40 %). Despite Luapula province having the highest percentage of households with an ITN (81%), malaria has continued to be the leading cause of morbidity and mortality in all age groups (PHO, Luapula, 2009). This raises a question on whether or not the majority of the people who own ITNs use them properly and consistently.

CSO (2007) report also indicated that the use of mosquito nets by vulnerable groups in high endemic communities is one of the major malaria control and prevention strategies espoused by the Abuja Declaration and the Plan of Action. More than a quarter of children under age five slept under an ITN the night before the survey (30 % in urban areas and 28% in rural areas). Luapula province had the highest percentage of children under age five sleeping under an ITN (56 %), while Southern had the lowest percentage (16%). More children in households in the highest wealth quintile (38%) slept under a net, compared with children in households in the lowest wealth quintile (24%). It was therefore concluded that Children in households in the

highest wealth quintiles (33 %) were more likely than children in households in the lowest wealth quintiles (19 %) to sleep under an ITN (CSO, 2007).

In a study conducted by Netmark in 2000 in Lusaka, Mansa, Choma and Kaoma aimed at identifying the factors that encourage acquisition of nets, retreatment of nets with insecticides and use of nets by children under five and pregnant women, results indicated that nets were not always used all year-round; many net-owning households used nets only in the rainy season. Vulnerable groups were not necessarily given priority for sleeping under a net. Only about half of the children under five in net-owning households had slept under a net the prior night. However, all four pregnant women in net-owning households had slept under a net the prior night. More sensitization still need to be done to ensure consistent utilization of ITNs especially by underfive children, who are also vulnerable to the disease. From the above results it is clear that a lot has been done in community awareness as far as prevention of malaria in pregnant women is concerned but very little has been done on malaria prevention in underfive children.

A study conducted by Siame in 1999 in Mwinilunga district of North-western province on knowledge and utilization of ITNs revealed that only 16% of caretakers interviewed were using ITNs correctly (Siame, 1999). This is in spit of the fact that 97% of his respondents had knowledge about ITNs. The inadequate community involvement in planning of malaria programmes, low household income levels in the informal sector and non availability of bed nets at health centres contributed to low utilization of ITNs. From this study it can be concluded that despite having knowledge about ITN, very few mothers knew how to use ITNs correctly. This means that having knowledge alone is not enough to achieve proper utilization of ITNs and as such other factors such as attitude may also play a part.

In another study conducted by Mutale in Mpika district in 2007 which was aimed at determining knowledge, attitude and utilization of ITNs, it was revealed that the majority (82%) of respondents were knowledgeable about ITNs. Nevertheless, 32% of the women aged between 21 and 35 years old did not use ITNs with their under five children. This meant that a lot of sensitization was necessary if this community has to use these ITNs.

Although a number of studies have been conducted on ITNs in Zambia, very few studies have been done to show the relationship between utilization of ITNs and knowledge and attitude of care takers with underfive children on ITNs. The majority of studies were done to determine ownership of ITNs.

2.5 CONCLUSION

Literature review indicated that quite a number of studies have been done on ITNs especially in the sub-Saharan region and most of them have revealed that ITNs are an effective method of malaria prevention and are capable of reducing both the morbidity and mortality caused by malaria in children under five years. They are cost effective and easy to use than other methods such as indoor residue spraying.

Completed studies have shown that ITNs are generally acceptable although the cost and re-treatment procedures are a hindrance on their use. With the coming of long lasting insecticide nets, the problem of re-treatment will eventually be overcome. The other observation is that most of the studies that have been done focused more on the ownership of ITNs as opposed to knowledge, attitude and utilization of ITNs by the people who own them.

Apart from cost, there are a number of other factors that have been associated with non utilization of ITNs such as housing facilities, sleeping patterns, and misconceptions just to mention but a few and all these factors still need to be explored to find out the exact cause. Therefore more studies on the above aspects still need to be done.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a description of the research methodology that was used in the study. The purpose of the study was to determine the knowledge, attitude and utilization of ITNs among caretakers in malaria prevention in underfive children in Mansa.

3.2 Research Design

A research design is the blueprint for conducting the study that maximizes control over factors that could interfere with the validity of the findings (Burns and Grove, 2005).

In this study a descriptive non-interventional cross-sectional research design was used to determine the level of knowledge, attitude and utilization of ITNs among caregivers in malaria prevention in under five children in Mansa urban district. A descriptive research is one whose main aim is to accurately portray the characteristics of persons, situations, or groups and the frequency with which it occurs (Polit and Beck, 2008). A cross-sectional design is a study that is used to exam groups of subjects in various stages of development simultaneously with the intent of inferring trends over time (Burns and Grove, 2005). The assumption is that the stages are part of the process that will progress over time. The reasons for selecting this type of study design were that the study was to be done at one given point in time and findings would be described according to the variables in the study.

3.3 Research Setting

A research setting is a physical location and conditions in which data collection takes place in a study (Polit and Beck, 2008). This study was conducted at Mansa Central Clinic in Mansa District of Luapula Province of Zambia. Mansa Central Clinic has a catchment population of 31,163 people from the surrounding villages. Children under five years are 6,233 representing 20% of the population (Mansa Central Clinic Action Plan 2009-2011). Mansa Central Clinic is centrally located in Mansa district with a distance of about 1km from the District Health Management Office. Within the catchment area are two streams, namely Muchinka and

Namwandwe streams that are seasonal and during the hot dry season collections of water remain stagnant becoming good breeding sites for mosquitoes. About 50% of the population in the catchment area are in formal employment. The remaining 50% are in informal employment of which some people are employed as shopkeepers in the shops owned by the locals while a number of them from the surrounding shanty compounds are employed as house servants. Others are peasant farmers. Some people have makeshift shops (Tuntemba); salaula and some do rare chickens (Mansa District Health Management System, 2009).

Mansa Central Clinic was purposefully selected for the study because it reported the highest incidence of malaria in 2008.

3.4 Study Population

The study population is defined as the entire number of units under study (Burns and Grove, 2005). The study population in this study were caretakers.

3.4.1 Target population

A target population is a group of individuals who meet the sampling criteria and to which the study findings will be generalized (Burns and Grove, 2005). The target population in this study were caretakers with underfive children.

3.4.2 Accessible population

The accessible population can be defined as the aggregate of cases that conforms to designated criteria and that are accessible as subjects for a study (Burns and Grove, 2005). The accessible population in this study were caretakers aged between 18 and 49 years, attending underfive clinics at Mansa Central Clinic's Maternal Neonatal and Child Health (MNCH) department.

3.5 Sample Selection

Sample selection is a process of selecting a number of individuals from the delineated target population in such a way that individuals in a sample represent as nearly as possible the characteristics of the entire target population (Polit and Beck, 2008). This is a critical part of

the research process because the selected sample must be representative of the entire population under study.

3.5.1 Inclusion Criteria

The inclusion criterion which is also known as eligibility criteria is defined as the criterion that specifies the characteristics of the population (Burns and Grove, 2005). The investigator established a sampling frame which included all female caretakers aged 18 to 49 years with underfive children who attended under five clinics during the time of the study.

3.5.2 Exclusion Criteria

Exclusion criteria is defined as a population that do not possess the required characteristics (Burns and Grove, 2005). In this study, the sample excluded all health workers that had brought under five children for underfive clinic to avoid biasness of responses since they have a lot of information on ITNs. It also excluded all male caretakers who brought under five children for under five clinic because most often female caretakers and not males prepare the place where children under five years sleep and would be in a better position to know if these children sleep under an ITN.

3.5.3 Method of Sample Selection

The investigator used simple random sampling because it is simple and easy to use. A sampling frame was established by listing all female caretakers who attended underfive clinic. Thereafter fishbowl method of random selection with replacement was used to select the study units. In this method, each number from the sampling frame is written on a piece of paper. Then all the pieces of paper are put in a fishbowl or hat and the container is shaken vigorously. A piece of paper is selected, the number is noted and then it is replaced into the container. The bowl is shaken again, second number is selected and the procedure is repeated until the calculated sample size is reached. If a number is selected twice the duplicate is ignored. This ensured that every caretaker had an equal chance of being selected. The selection was entirely objective and free from personal prejudice.

3.6 Sample Size

A sample size is the total number of elements of the population being studied (Polit and Beck, 2008). In this study a total of fifty (50) respondents were included in the sample. The reasons for selecting this sample size include limited time (4 weeks) as well as inadequate material and financial resources.

3.7 Data Collection Tool

A data collection tool is an instrument used to collect data (Polit and Beck, 2008). In this study, data was collected by the investigator using an interview schedule. This tool was chosen because it is user friendly and it was applicable to both illiterate and literate caretakers with underfive children. The advantages of using an interview schedule are that it gives room for a respondent to ask questions and clarifications, there is standardization of questions and a higher proportion of response. While the disadvantages are that some respondents may not feel free to answer questions in the presence of the interviewer, respondents may give false information, subjects may become nervous about the fact that their responses are being recorded, the presence of the interviewer may influence the respondent's answers and it is also expensive to train research assistants that may be required to assist with data collection. The data collection tool had four sections: Section A: Demographic data, Section B: Knowledge of ITNs, Section C: Attitude towards use of ITNs, Section D: Utilization of ITNs and Section E contained questions on service related factors affecting Utilization of ITNs.

3.8 Data Collection Techniques

Data collection technique is the actual method on how the data is going to be collected (Polit and Beck, 2008). It allows for systematic collection of information from respondents. In this study, data was collected by using an interview schedule in a private place where caretakers were made to sit comfortably, permission was sought, consent obtained and confidentiality was assured. An interview schedule is a structured or unstructured verbal communication between the researcher and subject during which information is obtained for a study (Burns and Grove, 2005). In this type of interview, complete sets of well-defined questions were used. The interviewer conducted at least eight to ten interviews every Wednesday and Thursday when caretakers went for children's clinic at Mansa Central clinic and another ten interviews were

conducted on a Friday when Central clinic Maternal Neonatal and Child Health department carried out an outreach session at one of their health posts located 3 kilometres away from the centre. Each interview lasted not more than 40 minutes. The respondents were approached with confidence and courtesy with a warm welcome into the interview room.

3.9 Validity

Validity is the degree to which an instrument measures what it is supposed to be measuring (Polit and Beck, 2008). Validity constitutes the external and internal validity. Internal validity concerns the extent to which conclusions can be drawn about the effects of one variable on another. External validity is concerned with generalization beyond the study, relating to the use of the findings. To ensure validity of instruments in this study, questions were made simple, concise and brief. The investigator measured the instrument that was used to see if it would be able to bring out the desired information by conducting a pilot study. This helped to eliminate unnecessary questions and make necessary amendments to the questions as needed.

3.10 Reliability

Reliability is the degree of consistency or accuracy with which an instrument measures the attributes it is designed to measure (Polit and Beck, 2008). The results from the pilot study were used as base line data to test reliability. By administering the same questions to all the five respondents in the pilot study, biases were eliminated because the same questions were asked. Amendments to the instrument were made where necessary and this helped to eliminate biases and minimise errors during data collection.

3.11 Pilot Study

A pilot study is a small-scale version of a proposed study conducted to develop or refine the methodology, such as the treatment, instrument, or data collection process (Burns and Grove, 2005).

The reasons for the pilot study are to acquaint the investigator with the data collection instrument, respondents and analysis of data, to identify any extraneous variables so that they could be eliminated and to provide a miniature trial run of the methodology planned for major

project and an opportunity to refine or adjust methods and techniques. It also allows the investigator to find out how feasible the study would be and how valid and reliable the interview schedule would be. The pilot study was carried out in the children's ward at Mansa General Hospital from caretakers with under five children who could have had the same characteristics as those in the main study such as; they were female caretakers aged 18-49 years. The pilot study comprised 5 respondents representing 10% of the 50 sampled respondents. The five respondents in the pilot study were sampled randomly. The investigator established a sampling frame by listing care takers with underfive children who were admitted to this ward. Thereafter fishbowl method of random selection with replacement was used to select the study units. In this method, each number from the sampling frame was written on a piece of paper. Then all the pieces of paper were put in a small box and the box was shaken vigorously. A piece of paper was selected, the number was noted and then it was replaced into the container. The bowl was shaken again, second number was selected and the procedure was repeated until the calculated sample size was reached. If a number was selected twice the duplicate was ignored. This ensured that every caretaker had an equal chance of being selected. The selection was entirely objective. After analyzing the pilot study a few changes were made to questions 22 and 28 to include other options that respondents brought out.

3.12 Ethical and Cultural Considerations

Ethical considerations involve a system of moral values that is concerned with the degree to which research adhere to professional, legal, and social obligations to the study participants (Polit and Beck, 2008).

When using human beings as research subjects great care should be exercised to ensure that their rights are protected. This entails that confidentiality, anonymity and privacy will be maintained at all costs. To ensure confidentiality, study participants were interviewed in a private room and one participant was interviewed at a time. The researcher maintained anonymity by making sure that only serial numbers were used on the questionnaires and not the respondent's names. Before conducting the study, the researcher got permission in writing from Mansa District Health Office and permission was also sought from the Executive Director and the Ward Manager of Paediatric Ward, Mansa General Hospital for conducting a pilot

study and all the respondents were requested to sign a consent form before they could be included in the study. The respondent's opinions were respected and they were not forced to participate in the study. Getting permission is important because it facilitates cooperation from authorities and respondents for a smooth data collection process.

CHAPTER 4

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 INTRODUCTION

In this chapter, the investigator discusses the analysis and presentation of the findings of the study. The aim of the study was to determine knowledge, attitude and utilization of Insecticide Treated Nets among Caretakers in Malaria Prevention in underfive children in Mansa Urban District. Data was collected from 50 respondents that were randomly selected from Central clinic during children's clinic. The data was collected by the use of an interview schedule.

4.2 DATA ANALYSIS

Data analysis is the systematic organization and synthesis of research data, and the testing of research hypothesis using those data (Polit and Beck, 2008). Data can only be useful when arranged in a meaningful manner, in order to be able to derive patterns of relationships.

Data was collected using an interview schedule. Then data was edited for completeness and recorded on the data master sheet. Editing is a process of checking to detect and correct errors and omissions (Basavanthappa, 2007). No omissions were found. Each response to open ended questions was transcribed, read and reread to get the concepts in the responses. The concepts were derived from the characteristics of the responses, and then developed into themes that were used to categorize the content into meaningful groupings. Responses to closed and open-ended questions were coded using numbers. Coding is a process of assigning numeral or other symbols to answers so that responses can be put into a limited number of categories or classes which are appropriate to the research problem under consideration (Basavanthappa, 2007). Data was processed manually and a scientific calculator was used for data analysis. Frequency counts, percentages and comparison of variables and cross tabulations of variables were done to show relationships among variables in numerical terms.

4.3 PRESENTATION OF FINDINGS

The findings of the study have been presented in frequency tables, figures (pie charts and bar charts) and cross tabulations. The frequency tables summarise the results of the study to ensure that the readers understand the findings of the research study. The use of pie charts and graphs in the presentation of findings makes it easy for the reader to read, interpret and draw meaning from. Cross tabulations of the variables help to show clearly the relationship between variables and enable the researcher to draw meaningful inferences. The tables and figures have been clearly numbered and carefully labeled with self – explanatory headings under sections A, B, C, D and E. section “A” presents findings on demographic data, section “B” under knowledge, section “C” under attitude, section “D” under utilization, section “E” under service related factors and section “F” under cross tabulations.

SECTION A

4.3.1 DEMOGRAPHIC DATA

Table 4.3.1: Demographic Data (n=50)

Age	FREQUENCY	PERCENTAGE
18 - 24	24	48%
25 - 31	15	30%
32 - 38	10	20%
39 - 45	1	2%
Total	50	100%
Level of Education		
Primary	16	32%
Secondary	26	52%
College	8	16%
Total	50	100%
Marital Status		
Single	4	8%
Married	43	86%
Divorced	1	2%
Widowed	1	2%
Separated	1	2%
Total	50	100%
Monthly Income		
K50,000 - 100,000	2	4%
Above K100,000 - 250,000	8	16%
Above K250,000 - 500,000	13	26%
Above K500,000 -1,000,000	3	6%
Above K1,000,000	24	48%
Total	50	100%
Age of Youngest		
< 1year	39	78%
1-2years	10	20%
3-4years	1	2%
5years	0	0%
Total	50	100%

Demographic Data continued

Family Size	FREQUENCY	PERCENTAGE
2-4	19	38%
5-8	27	54%
9 and above	4	8%
Total	50	100%
No. of Rooms in the House		
1	1	2%
2	5	10%
3 and above	44	88%
Total	50	100%
No. of Rooms used for Sleeping		
1	10	20%
2	22	44%
3 and above	18	36%
Total	50	100%

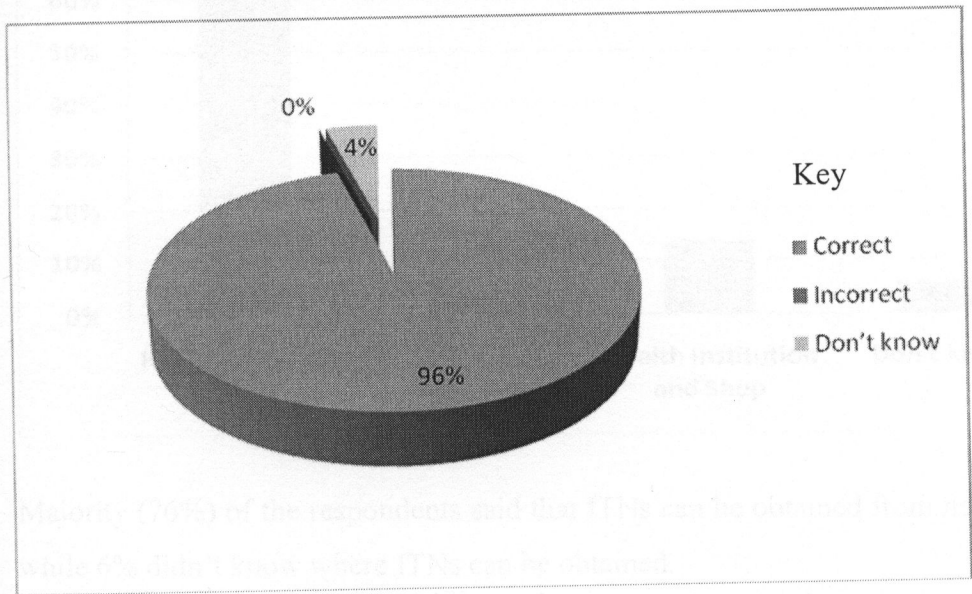
Almost half (48%) of respondents were aged 18-24 years, and the least 2% were aged 39-45 years. More than half (52%) of the respondents attained secondary level of education while 16% attained college level. The majority (86%) of respondents were married and almost half (48%) of the respondents and their families earn above K1, 000,000 per month and only 4% earn K50, 000 -100,000 per month respectively.

The majority (78%) of the respondents' youngest children were below the age of 1 year while 2% of the respondents' youngest children were aged 3-4 years. More than half (54%) of the respondents live in a family of 5-8 members with the majority (88%) of respondents living in houses with 3 and more rooms and only 2% live in a 1 roomed house. Additionally, majority (80%) of the respondents uses 2 rooms and above for sleeping while 20% use one room.

SECTION B

4.3.2 KNOWLEDGE ON ITNs

Figure 4.3.1: Respondents' Knowledge on Definition of ITN (n=50)



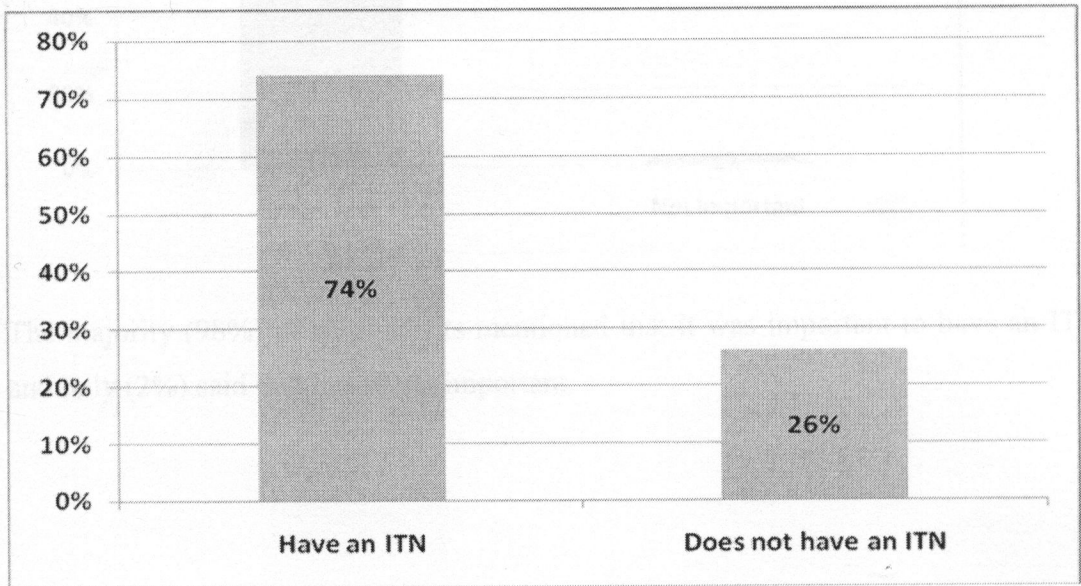
The majority (96%) of respondents were able to define the term Insecticide Treated Net correctly and only 4% did not know the definition.

Figure 4.3.2: Sources of ITNs (n=50)



Majority (76%) of the respondents said that ITNs can be obtained from health institutions only while 6% didn't know where ITNs can be obtained.

Figure 4.3.3: Ownership of ITNs (n=50)



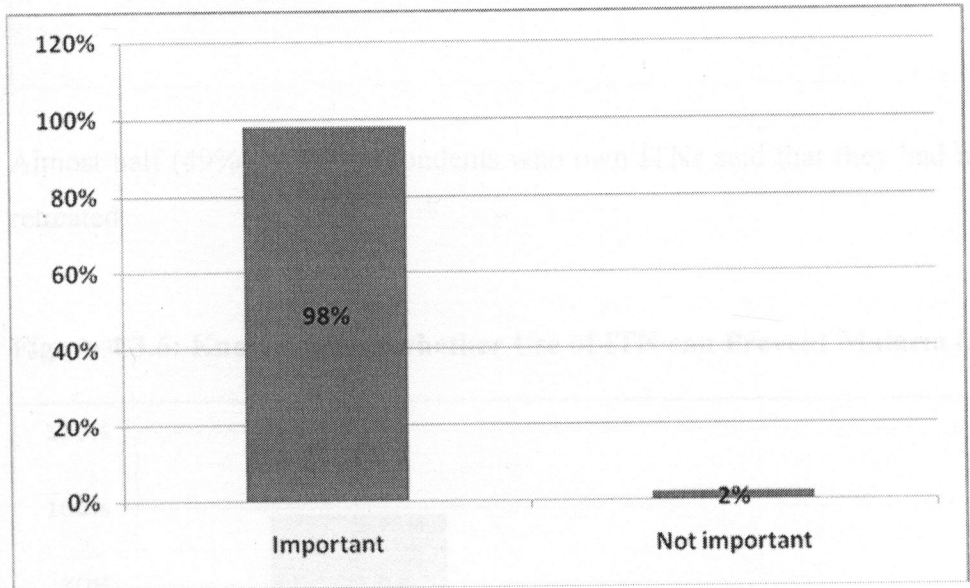
Most (74%) of respondents own at least one ITN while 26% did not.

Table 4.3.2: Ownership of ITNs per Household (n=50)

NO. OF ITNs	FREQUENCY	PERCENTAGE
1	12	24%
2	13	26%
3 and above	12	24%
None	13	26%
TOTAL	50	100%

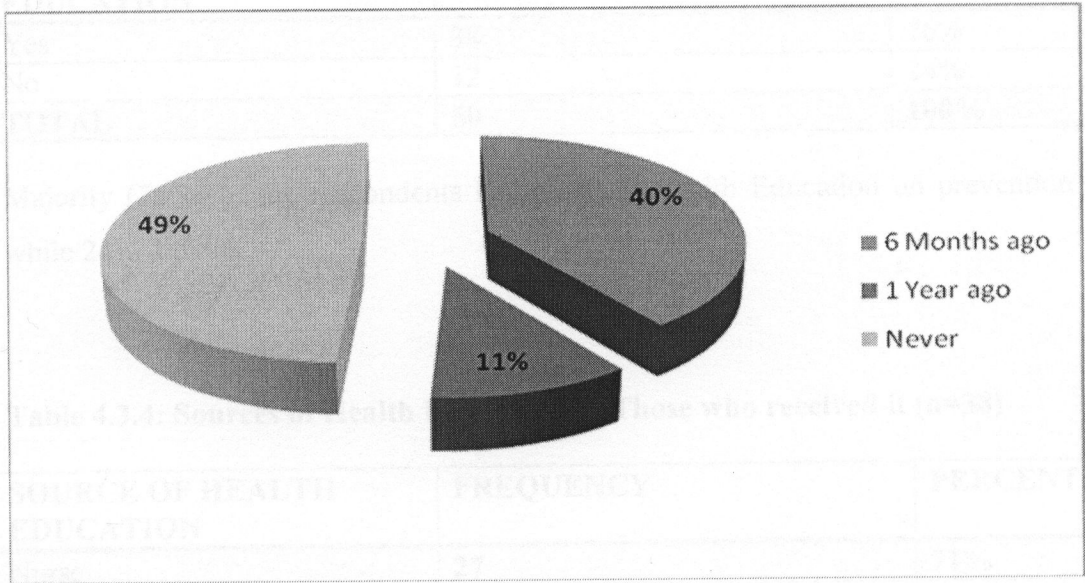
Less than half (26%) of respondents own 2 ITNs and another 26% had none, while 24% own 1 ITN and another 24% own 3 ITNs and above.

Figure 4.3.4: Importance of Retreating ITNs (n=50)



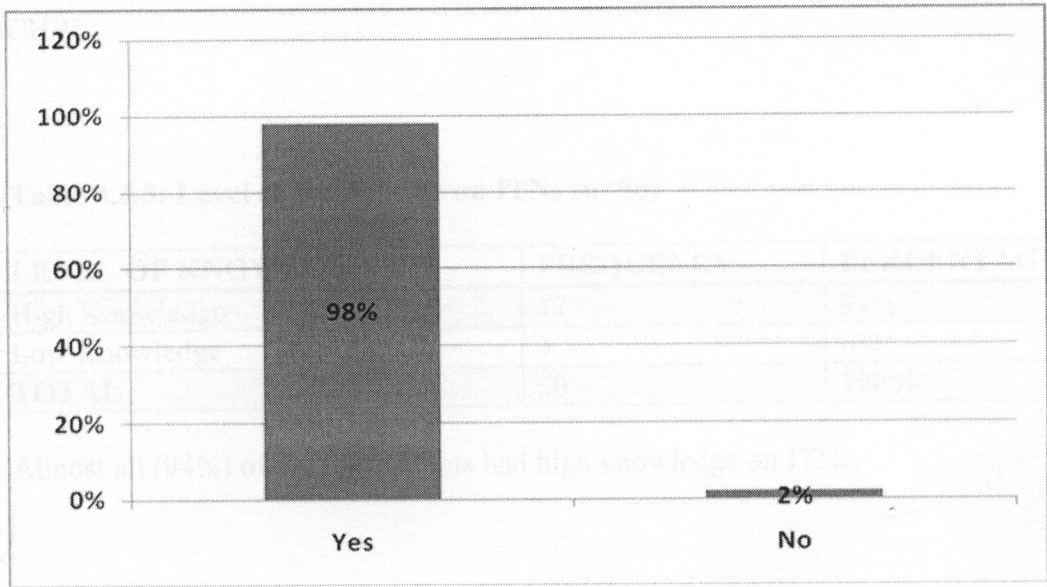
The majority (98%) of respondents mentioned that it was important to have an ITN retreated and only (2%) said that it was not important.

Figure 4.3.5: Last Time Respondents had their ITNs Retreated by those who own them (n=37)



Almost half (49%) of the respondents who own ITNs said that they had never had their ITNs retreated.

Figure 4.3.6: Knowledge on whether Use of ITN can Prevent Malaria (n=50)



The majority (98%) of the respondents reported that malaria can be prevented by use of ITNs.

Table 4.3.3: Health Education received on Prevention of Malaria (n=50)

RECEIVED HEALTH EDUCATION	FREQUENCY	PERCENTAGE
Yes	38	76%
No	12	24%
TOTAL	50	100%

Majority (76%) of the respondents had received Health Education on prevention of malaria while 24% did not.

Table 4.3.4: Sources of Health Education by Those who received it (n=38)

SOURCE OF HEALTH EDUCATION	FREQUENCY	PERCENTAGE
Nurse	27	71%
CHW	1	2.6%
Other Health Workers	5	13.2
Media (TV, Radio)	5	13.2%
TOTAL	38	100%

Most (71%) of the respondents who received Health Education on malaria prevention mentioned the nurse as the source of information while 2.6% received health education from a CHW.

Table 4.3.5: Level of Knowledge on ITNs (n=50)

LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
High Knowledge	47	94%
Low Knowledge	3	6%
TOTAL	50	100%

Almost all (94%) of the respondents had high knowledge on ITNs.

SECTION C

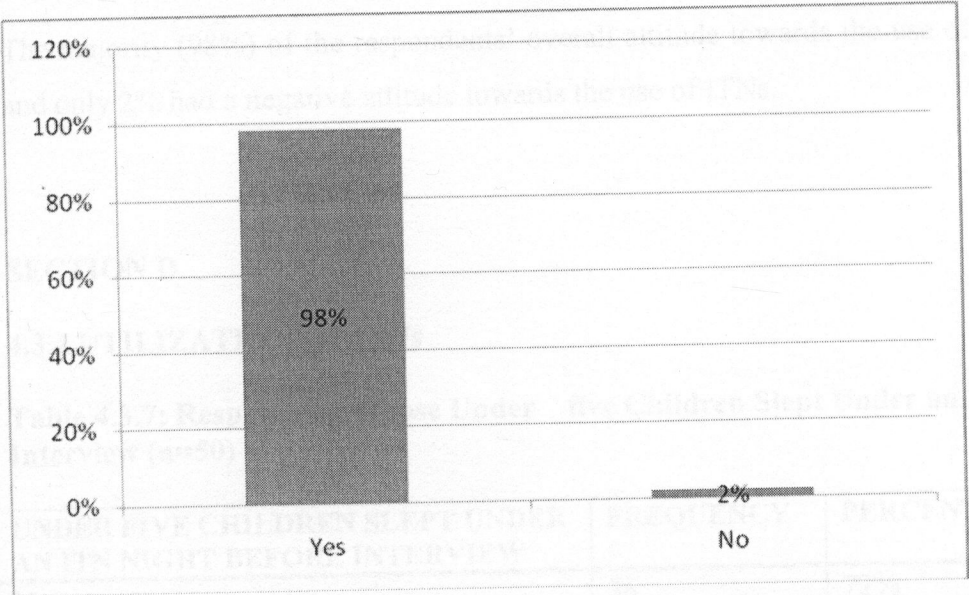
4.3.3 ATTITUDES OF CARE GIVERS TOWARDS UTILIZATION OF ITNs

Table 4.3.6: Respondents in Favour of using ITNs (n=50)

IN FAVOUR OF USING ITNS	FREQUENCY	PERCENTAGE
Yes	50	100%
No	0	0%
TOTAL	50	100%

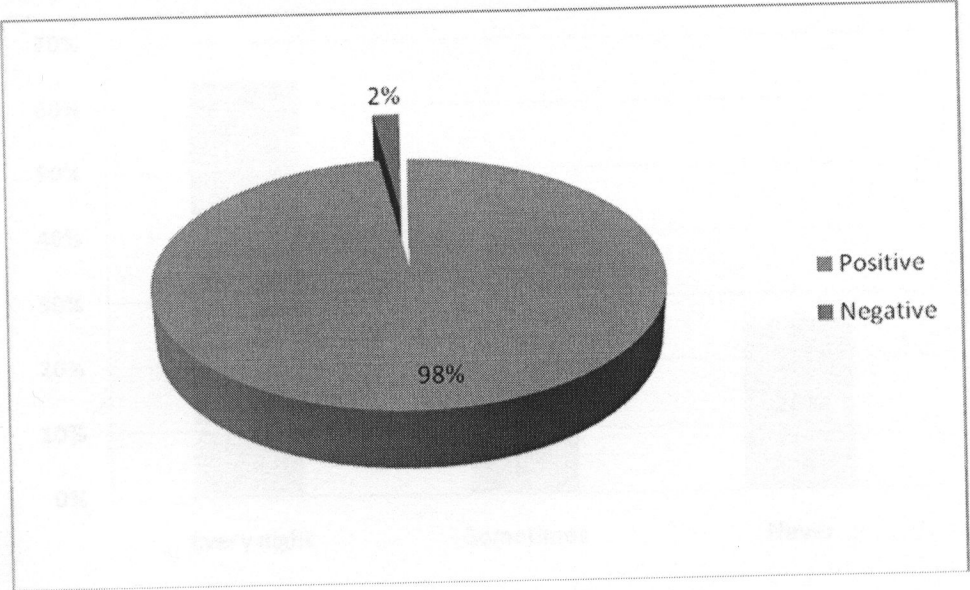
All (100%) of the respondents were in favour of using ITNs.

Figure 4.3.7: Respondents who would recommend others to use ITNs (n=50)



Majority (98%) of respondents would recommend others to use ITNs and only 2% would not.

Figure 4.3.8: Attitude towards utilization of ITNs (n=50)



The majority (98%) of the respondents’ overall attitude towards the use of ITNs was positive and only 2% had a negative attitude towards the use of ITNs.

SECTION D

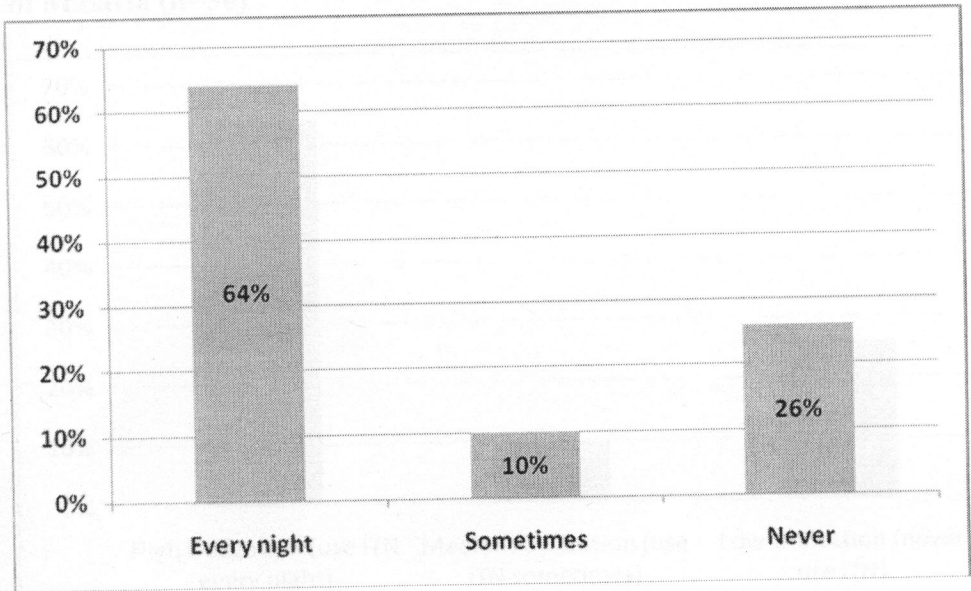
4.3.4 UTILIZATION OF ITNs

Table 4.3.7: Respondents whose Under five Children Slept Under an ITN Night Before Interview (n=50)

UNDER FIVE CHILDREN SLEPT UNDER AN ITN NIGHT BEFORE INTERVIEW	FREQUENCY	PERCENTAGE
Yes	36	72%
No	14	28%
TOTAL	50	100%

Most (72%) of the respondents’ under five children slept under an ITN the night before the interview.

Figure 4.3.9: Frequency of ITN use by under five Children (n=50)



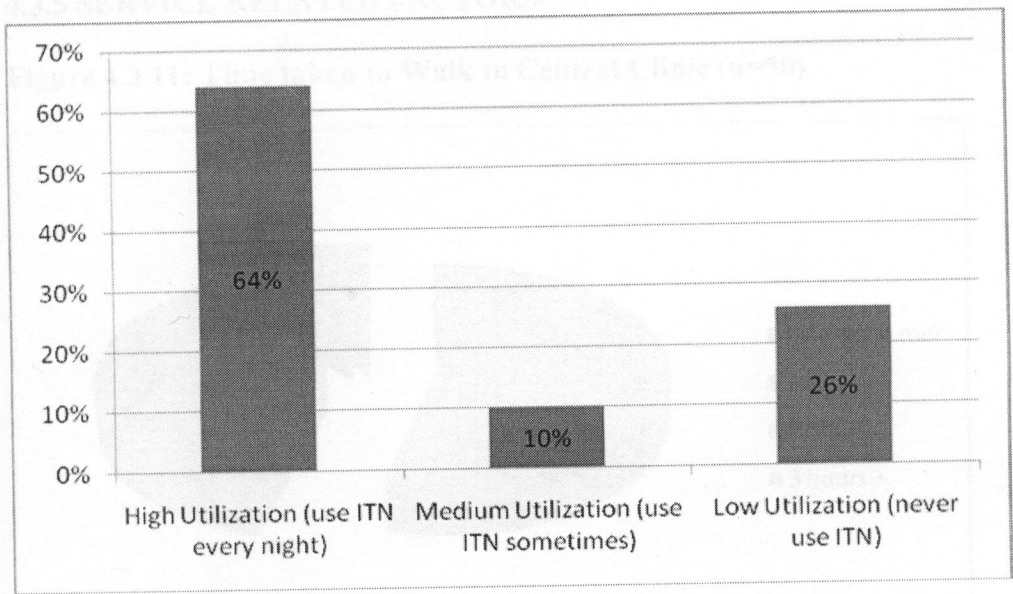
Most (64%) of the respondents’ under five children were reported to have been sleeping under an ITN every night while 26% have never done so.

Table 4.3.8: Reasons for not Sleeping under an ITN on Daily Basis (n=18)

REASON	FREQUENCY	PERCENTAGE
No Mosquitoes	1	6%
Hot weather	2	11%
ITN is torn	2	11%
Didn’t have an ITN	13	72%
TOTAL	18	100%

Majority (72%) of the respondents who did not sleep under an ITN on daily basis reported that they did not have an ITN while 11% said that their ITNs were torn.

Figure 4.3.10: Overall Level of Utilization of ITNs by under five Children in Prevention of Malaria (n=50)



Most (64%) of the respondents’ underfive children had high level of utilization of ITNs while 26% had low utilization.

More than half (54%) of respondents were able to walk to Central Clinic within 30 minutes while 5% took 3 hours and above.

Table 4.3.9: Availability of ITNs at Central Clinic (n=50)

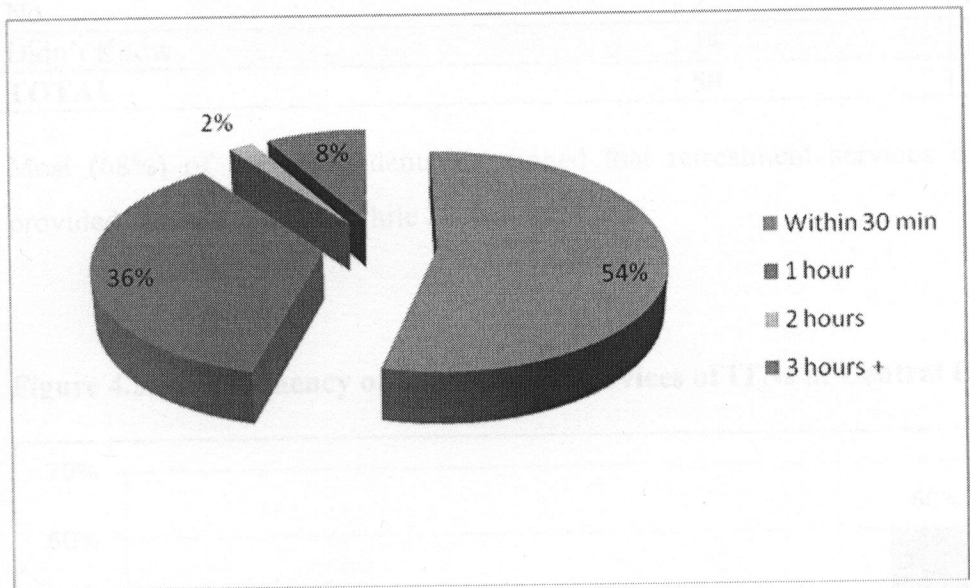
ITNS ALWAYS AVAILABLE AT CENTRAL CLINIC	FREQUENCY	PERCENTAGE
Yes	17	34%
No	23	46%
Don't know	10	20%
TOTAL	50	100%

Almost half (46%) of the respondents reported that ITNs were not always available at Central Clinic while 20% didn't know.

SECTION E

4.3.5 SERVICE RELATED FACTORS

Figure 4.3.11: Time taken to Walk to Central Clinic (n=50)



More than half (54%) of respondents were able to walk to Central Clinic within 30 minutes while 8% took 3 hours and above.

Table 4.3.9: Availability of ITNs at Central Clinic (n=50)

ITNS ALWAYS AVAILABLE AT CENTRAL CLINIC	FREQUENCY	PERCENTAGE
Yes	15	30%
No	24	48%%
Didn't Know	11	22%
TOTAL	50	100%

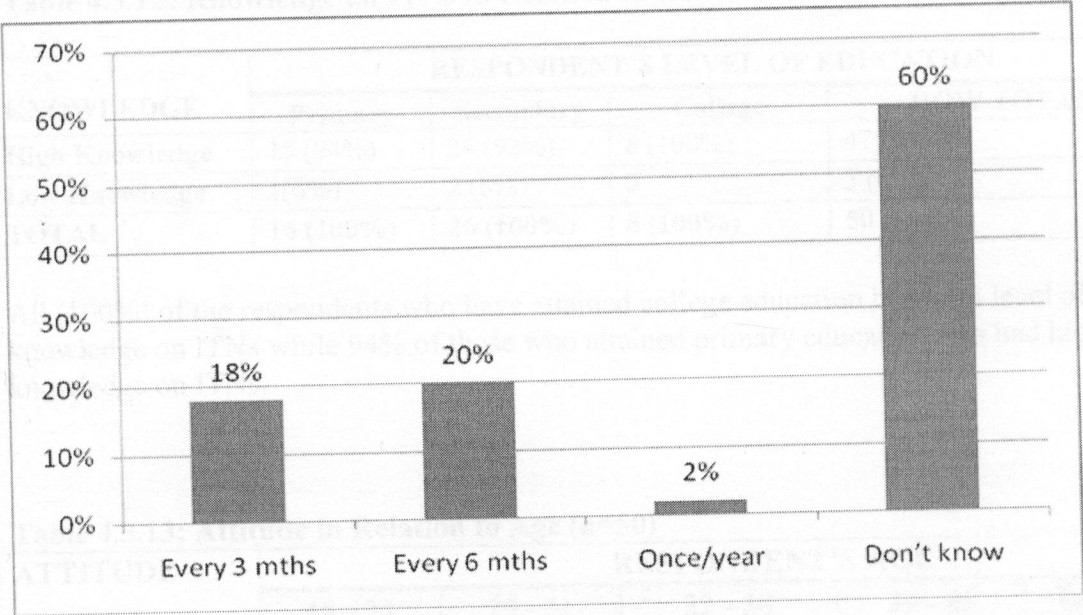
Almost half (48%) of the respondents reported that ITNs were not always available at Central Clinic while 22% didn't know.

Table 4.3.10: Provision of Retreatment Services of ITNs at Central Clinic (n=50)

RETREATMENT SERVICES OF ITNS PROVIDED AT CENTRAL CLINIC	FREQUENCY	PERCENTAGE
Yes	34	68%
No	2	4%
Didn't Know	14	28%
TOTAL	50	100%

Most (68%) of the respondents mentioned that retreatment services of ITNs were being provided at Central Clinic while 28% didn't know.

Figure 4.3.12: Frequency of Retreatment Services of ITNs at Central Clinic (n=48)



More than half (60%) of the respondents did not know how frequently Central Clinic provide re-treatment services for ITNs and only 20% gave the correct answer (every 6 months).

SECTION F

4.3.6 CROSS TABULATIONS

Table 4.3.11: Knowledge on ITNs in Relation to Age (n=50)

KNOWLEDGE	RESPONDENT'S AGE				ROW TOTAL
	18 - 24	25 - 31	32 - 38	39 - 45	
High Knowledge	22 (92%)	14 (93%)	10 (100%)	1 (100%)	47 (94%)
Low Knowledge	2 (8%)	1 (7%)	0	0	3 (6%)
TOTAL	24 (100%)	15 (100%)	10 (100%)	1 (100%)	50 (100%)

All (100%) of the respondents aged 32-38 and 39-45 years had high level knowledge on ITNs.

Table 4.3.12: Knowledge on ITNs in Relation to Education level (n=50)

Table 4.3.12: Knowledge on ITNs in Relation to Education level (n=50)

KNOWLEDGE	RESPONDENT'S LEVEL OF EDUCATION				ROW TOTAL
	Primary	Secondary	College		
High Knowledge	15 (94%)	24 (92%)	8 (100%)		47 (94%)
Low Knowledge	1(6%)	2 (8%)	0		3 (6%)
TOTAL	16 (100%)	26 (100%)	8 (100%)		50 (100%)

All (100%) of the respondents who have attained college education had high level of knowledge on ITNs while 94% of those who attained primary education also had high knowledge on ITNs.

Table 4.3.13: Attitude in Relation to Age (n=50)

ATTITUDE	RESPONDENT'S AGE				ROW TOTAL
	18 - 24	25 - 31	32 - 38	39 - 45	
Positive	23 (96%)	15 (100%)	10 (100%)	1 (100%)	49 (98%)
Negative	1 (4%)	0	0	0	1 (2%)
TOTAL	24 (100%)	15 (100%)	10 (100%)	1 (100%)	50 (100%)

All (100%) of the respondents aged 25-31, 32-38 and 39-45 had a positive attitude towards utilization of ITNs while 4% of those aged 18-24 had a negative attitude.

Table 4.3.14: Attitude in Relation to Education level (n=50)

ATTITUDE	RESPONDENT'S LEVEL OF EDUCATION			
	Primary	Secondary	College	ROW TOTAL
Positive	15 (94%)	26 (100%)	8 (100%)	49 (98%)
Negative	1(6%)	0	0	1 (2%)
TOTAL	16 (100%)	26 (100%)	8 (100%)	50 (100%)

All (100%) of the respondents who attained secondary and those who attained college education had a positive attitude towards utilization of ITNs while 6% of those who attained primary education had a negative attitude.

Table 4.3.15: Utilization of ITNs in Relation to Age (n=50)

UTILIZATION	RESPONDENT'S AGE				
	18 - 24	25 - 31	32 - 38	39 - 45	ROW TOTAL
High Utilization	14 (52%)	9 (75%)	8 (80%)	1 (100%)	32(64%)
Medium Utilization	3 (11%)	1 (8%)	1 (10%)	0	5 (10%)
Low Utilization	10 (37%)	2 (17%)	1 (10%)	0	13(26%)
TOTAL	27 (100%)	12 (100%)	10 (100%)	1 (100%)	50 (100%)

All (100) of the respondents aged 39-45 had high level of utilization of ITNs while 37% of those aged 18-24 years had low utilization of ITNs.

Table 4.3.16: Utilization of ITNs in Relation to Level of Education (n=50)

UTILIZATION	RESPONDENT'S LEVEL OF EDUCATION			
	Primary	Secondary	College	ROW TOTAL
High Utilization	6 (38%)	22 (85%)	4 (50%)	32(64%)
Medium Utilization	1 (6%)	1 (4%)	3 (37%)	5 (10%)
Low Utilization	9 (56%)	3 (11%)	1 (13%)	13(26%)
TOTAL	16 (100%)	26 (100%)	8 (100%)	50 (100%)

The majority (85%) of the respondents who attained secondary education had high level of utilization of ITNs while more than half (56%) of those who attained primary education had low level of utilization of ITNs.

Table 4.3.17: Level of Utilization of ITNs in Relation to Income (n=50)

UTILIZATION	RESPONDENT'S INCOME/MONTH					ROW TOTAL
	50 - 100,000	Above K100,000 - 250,000	Above K250,000 - 500,000	Above K500,000 - 1,000,000	Above K1,000,000	
High Utilization	1 (50%)	3 (37%)	8 (62%)	2 (67%)	18 (75%)	32(64%)
Medium Utilization	0	1 (13%)	0	0	4 (17%)	5 (10%)
Low Utilization	1 (50%)	4 (50%)	5 (38%)	1 (33%)	2 (8%)	13(26%)
TOTAL	2 (100%)	8 (100%)	13 (100%)	3 (100%)	24 (100%)	50 (100%)

The majority (75%) of the respondents who earn a family income of above K1, 000,000 per month had high levels of utilization of ITNs while 50% of those who earn K50- 100,000 per month had low level of utilization of ITNs.

Table 4.3.18: Utilization of ITNs in Relation to Time Taken to Walk from Home to the Health Centre (n=50)

UTILIZATION OF ITNs	TIME TAKEN TO WALK TO CENTRAL CLINIC				ROW TOTAL
	Within 30 minutes	1 hour	2 hours	3 hours	
High	21 (75%)	10(56%)	0	1 (33%)	32(64%)
Medium	4 (14%)	1 (5%)	0	0	5 (10%)
Low	3 (11%)	7 (39%)	1 (100%)	2 (67%)	13(26%)
TOTAL	28 (100%)	18 (100%)	1 (100%)	3 (100%)	50 (100%)

The majority (75%) of the respondents who were able to walk from home to the health centre within 30 minutes had high level of utilization of ITNs while (67%) of the respondents who spent 3 hours and above to walk from home to the health centre had low level of utilization of ITNs.

Table 4.3.19: Level of Utilization of ITNs in Relation to Level of Knowledge (n=50)

UTILIZATION OF ITNs	LEVEL OF KNOWLEDGE ON ITNs		
	High	Low	ROW TOTAL
High	31 (66%)	1 (33%)	32(64%)
Medium	5 (11%)	0	5 (10%)
Low	11 (23%)	2 (67%)	13(26%)
TOTAL	47 (100%)	3 (100%)	50 (100%)

Two thirds (67%) of the respondents who had low level of knowledge on ITNs had low level of utilization of ITNs as well.

Table 4.3.20: Level of Utilization of ITNs in Relation to Attitude (n=50)

UTILIZATION OF ITNs	ATTITUDE		
	Positive	Negative	ROW TOTAL
High	32 (66%)	0	32(64%)
Medium	5 (10%)	0	5 (10%)
Low	12 (24%)	1 (100%)	13(26%)
TOTAL	49 (100%)	1 (100%)	50 (100%)

All (100%) of the respondents who had a negative attitude towards utilization of ITNs had a low level of utilization of ITNs while more than half (66%) of those who had a positive attitude had a high level of utilization.

4.3.5 CONCLUSION

Table 4.3.21: Utilization of ITNs in Relation to Number of Rooms Used for sleeping (n=50)

UTILIZATION	NUMBER OF ROOMS USED FOR SLEEPING			
	1	2	3 and above	ROW TOTAL
High Utilization	0	17 (77%)	15 (83%)	32(64%)
Medium Utilization	0	3 (14%)	2 (11%)	5 (10%)
Low Utilization	10 (100%)	3 (9%)	1 (6%)	13(26%)
TOTAL	10 (100%)	22 (100%)	18 (100%)	50 (100%)

All (100%) of the respondents who use 1 room for sleeping had low level utilization of ITNs while 83% of those who use 3 rooms and above for sleeping had high level of utilization of ITNs.

Table 4.3.22: Ownership of ITN in Relation to Family Income (n=50)

OWNERSHIP OF ITN	RESPONDENT'S INCOME/MONTH					ROW TOTAL
	50 - 100,000	Above K100,000 - 250,000	Above K250,000 - 500,000	Above K500,000 - 1,000,000	Above K1,000,000	
Own at least 1 ITN	1 (50%)	4 (50%)	9 (69%)	3 (100%)	20 (83%)	32(64%)
Did not Own an ITN	1 (50%)	4 (50%)	4 (31%)	0	4 (17%)	5 (10%)
TOTAL	2 (100%)	8 (100%)	13 (100%)	3 (100%)	24 (100%)	50 (100%)

Majority (83%) of the respondents who earned a family income of K1, 000,000 and above, owned at least 1 ITN while 50% of those who earned K50-100,000 and K100-250,000 respectively did not own an ITN.

4.3.6 CONCLUSION

The study yielded a lot of valuable information and it is hoped that the information will be utilized by relevant authorities to promote ITN use by community members especially underfive children and the pregnant women who are most vulnerable to malaria. This will help reduce malaria morbidity and mortality in the district.

CHAPTER 5

5.0 DISCUSSION OF FINDINGS AND IMPLICATIONS FOR THE HEALTH CARE SYSTEM

5.1 Introduction

The discussion of the study is based on analysis of data collected from a sample of fifty (50) respondents using an interview schedule. The study was aimed at determining knowledge, attitude and utilization of Insecticide Treated Nets among caretakers in malaria Prevention in underfive children in Mansa. The discussion is presented under headings which are in line with the variables.

5.2 Characteristics of the sample

This study was carried out on fifty (50) female caretakers with underfive children who were attending children's clinic. The key background characteristics included age, educational level, and marital status, number of rooms used for sleeping and family income. The findings of the study showed that 48% of the respondents were aged 18 - 24 years. This indicated that most of the respondents were young. Therefore, it is important for health care providers to target this age group as they educate the community on topics such as importance of ITNs in prevention of malaria in underfive children. Less than half (30%) were aged 25 - 31 years and 20% were aged 32 - 38 years while 2% of the respondents were aged 39 to 45 years (Table 4.1, page 38). The proportion in each age group tends to decrease with increasing age. This can be attributed to the fact that as women grow older their interest towards caring for young children decreases (Mutale, 2007).

Figure 4.1, page 38 shows that more than half (52%) of the respondents attained secondary education, 32% attained primary education, and 16% attained college education. This result can be attributed to the introduction of basic schools that the Ministry of Education has embarked on thus increasing the number of places for grades 8 and 9 (CSO 2007). This result is similar to the findings of CSO (2007) which showed that the proportion of those who have attained primary and secondary education is increasing steadily. Nevertheless, the number of people attaining college education level is still low.

The findings of this study show that majority (86%) of the respondents were married (Figure 4.2, page 39). This is because Mansa is a rural town and in a rural setting there are early marriages which are acceptable and considered to be normal in the Zambian culture (Lennox-Sing, 2009). Marriage is also viewed as social security. Therefore, it is important for the health care providers to give health education on the importance of girl child education so that girls are empowered. This will prevent them from getting married early since they will be able to support themselves (Lennox-Sing, 2009). Empowering women is one of the Millennium Development Goals (MDG) number 3 (To Promote Gender equality and Empower women) to be attained by 2015 (United Nations Country Team, Zambia, 2005).

The findings also show that almost half (48%) of the respondents' families earned above K1, 000,000 every month, while 26% earned above K250, 000 - K500, 000 and 16% earned above K100, 000 - K250, 000, 6% earned above K500, 000 - K1, 000,000. Only 4% earned K50, 000 - K100, 000 (Table 4.2, page 39). This means that the income of the respondents is quite high. This is attributed to the fact that 50% of the population in Mansa district is in formal employment (Mansa District HIMS, 2009). The total monthly income a family earns will determine their ability to purchase an ITN.

According to a study conducted by Kapungwe, (2007) looking at the direction and magnitude in the incidence of poverty between 1998 - 2000 in Zambia it was revealed that 73% of households in Luapula Province were poor with those in fishing areas recording the highest incidence of poverty. Poverty was associated with gender (Females were more affected than males), education level with those with low education levels being more affected, employment status- those who were self employed were more affected and household head where female headed households tended to be poorer than male headed households. In this study no significant results were obtain to determine the relationship between level of education and family income.

According to table 4.4 on page 40, more than half (54%) of the respondents live in a family of 5-8 members while 38% live in a family of 2-4 members and the least (8%) live in a family of 9 and above members. The study also revealed that the majority (80%) of the respondents uses

2 rooms and above for sleeping while 20% use one room (Table 4.6, page 41). The number of rooms available for sleeping will determine whether it would be possible for the family members to utilize ITNs. According to the results obtained in this study, all (100%) of the respondents who use 1 room for sleeping had low utilization of ITNs while 83% of those who use 3 rooms and above for sleeping had high level of utilization of ITNs (Table 4.26, page 56). The results are similar to those obtained by Central Bureau of Statistics, (2004) in the Kenya Demographic and Health Survey which indicated that research had found that sleeping space determines whether it would be possible to hang a net. When the house is too small, it may not be feasible to use a net.

5.3 Discussion of Variables

5.3.1 Knowledge on Insecticide Treated Nets (ITNs)

Knowledge is what someone knows about a particular subject (Mayor et al. 2006). The findings in table 4.10, page 45 shows that almost all (94%) of the respondents had high level of knowledge on ITNs and only 6% had low level of knowledge. This may be attributed to the high level of education that most respondents had attained since more than half (52%) of them had attained secondary education which increases their access to information. The level of knowledge recorded in this study was higher than that obtained in a study done by Mutale, (2007) in Mpika district aimed at determining knowledge, attitude and utilization of ITNs in which only 82% of the respondents had high knowledge on ITNs. Another study by Siame, (1999) revealed that 97% of the respondents were knowledgeable on ITNs and that 72% knew how to use them, only 28% had no knowledge because of long distance to the health centre.

The increase in the number of respondents with high level of knowledge on ITNs can also be attributed to the health education the caretakers are receiving through the media and from health facilities since results have indicated that respondents received health education on malaria prevention from nurses (71%) and from the media and other health workers (13.2% respectively) (Table 4.9, page 45). The least source of health education was from CHWs (2.6%).

The findings also show that 98% of the respondents knew the importance of retreating ITNs (Figure 4.6, page 43). This could be as a result of the health education the health care providers and the Community Malaria Agents give to community members during Child Health Week campaigns when retreatment of ITNs is usually done (UNICEF, 2009). The level of knowledge on importance of retreating mosquito nets was high in this study compared with results obtained in a survey carried out by Netmark in Uganda in which the concept of retreating mosquito nets was largely unknown and no one had ever done so (Netmark, 2000).

Although the majority (98%) of respondents knew the importance of retreating ITNs, almost half (49%) of respondents have never had their ITNs retreated, 40% had their ITNs retreated 6 months ago and the remaining 11% had their ITNs retreated a year ago (Figure 4.7, page 44). This could be attributed to lack of information on how often Central clinic provide re-treatment services for ITNs as revealed in this study in which 60% of the respondents did not know how often Central Clinic provided retreatment services for mosquito nets (Figure 4.15, page 51). Therefore, there is need for health care providers to give health education to the community on how often the health centres provide retreatment services for mosquito nets.

In this study, all (100%) of those respondents aged 32 – 38 and 39 - 45 years also had high levels of knowledge on ITNs (Table 4.16, page 52). This could be due to that this age group has had several encounters with health care providers increasing their access to health information.

The above results answered the first objective “To assess the level of knowledge caretakers have on use of ITNs as a preventive measure for malaria.”

5.3.2 Attitude of respondents towards utilization of ITNs

Attitude refers to someone’s opinions or feelings about something, especially as shown by the behavior (Mayor et al. 2006). Data in table 4.11, page 46 has shown that all (100%) of the respondents were in favour of using ITNs. In addition 98% would recommend their use to others and only 2% would not (Figure 4.9, page 46). This could be due to the fact that those that were using ITNs constantly observed a reduction in the frequency of malaria attacks

among their family members. With the distribution of free ITNs, the incidence of malaria had also reduced in the district (Mansa District HIMS, 2009). These results are similar to those obtained by Netmark, (2000) in the study conducted in Lusaka, Mansa, Choma and Kaoma which indicated that majority of respondents viewed net users as having a positive attitude, and caring although a few had a negative attitude towards their use and cited nets as causing discomfort, restrictive and that they brought fears of children being trapped.

The study also revealed that 98% of the respondents had a positive attitude towards utilization of ITNs, and only 2% had a negative attitude (Figure 4.10, page 47). The positive attitude could be due to the high level of education as seen in the study where all (100%) of those who attained secondary and those who attained college education had a positive attitude towards utilization of ITNs (Table 4.19, page 53). The negative attitude could be due to low educational levels some respondents had acquired because 6% of those who attained primary education had a negative attitude or it could be due to misconceptions of feelings of increased heat when one sleeps under an ITN especially during the hot season. The results were almost similar to those obtained by Mutale in Mpika in 2007 in which majority (96%) of respondents had a positive attitude towards ITN use. The results on attitude of respondents towards utilization of ITNs answered the second objective “To determine the attitude of caretakers with underfive children towards the use of ITNs.”

5.3.3 Utilization of ITNs

The following results on utilization of ITNs answered the third objective “To determine the utilization of ITNs by underfive children.” To utilize is to use something (Mayor et al. 2006). The study revealed that majority (74%) of the respondents owned ITNs and only 26% did not have (Figure 4.5, page 42). The majority had ITNs because they had once received free and /or bought subsidized ITNs at K3, 000 from Ministry of Health and Society for Family Health respectively. The increased ownership could also be attributed to the fact that more than half (54%) of respondents lived near the health centre (were able to walk from home to the health centre within 30 minutes) and easily accessed ITNs when they heard that there was free distribution. Those that did not have ITNs could be due to poor economic status, long distance to the health centre or negative attitude towards them. This situation is better than that in

Kenya where according to Central Bureau of Statistics in the Kenya Demographic and Health Survey (2004) report, the situation of net ownership in Kenya was reported to be poor especially for households in the lowest wealth quintile; only 11 % had at least one net and worse still, only 2.5 % had at least one ITN.

In a study that was conducted by Onwujekwe et.al. (2004) in Nigeria it was revealed that the respondents with low social economic status were less likely to purchase ITNs. That was due to lower educational level they had acquired and could not be employed formally in order to become economically empowered. In this study 83% of the respondents who earned a monthly family income of K1, 000,000 and above own at least 1 ITN while 50% of those who earned an income of K50-100,000 and K100-250,000 respectively did not own an ITN (Table 4.27, page 56). This could also be attributed to the low social economic status. The results are similar to those obtained by CSO, (2007) in which it was reported that households in the highest wealth quintile were more likely to purchase an ITN compared to those in the lowest wealth quintile.

Majority (72%) of the respondents' children were reported to have slept under an ITN the night before the interview and 28% did not (Table 4.12, page 47). In addition to that, 64% slept under an ITN every night (Figure 4.11, Page 48). The reason for using the ITNs could be due to positive attitude that the caretakers had towards utilization of ITNs as shown in the study where 66% of those with a positive attitude towards utilization of ITNs had high level of utilization (Table 4.25, page 55). The reasons given for non utilization of ITNs were; 72% reported that they did not have ITNs, 11% said the weather was too hot to sleep under an ITN, another 11% said that their ITNs were torn while 6% said that there were no mosquitoes (Table 4.13, page 48). The health centre staff should therefore find a strategy of supplying free ITNs to those who didn't have so as to improve the utilization of ITNs especially that all the respondents were in favour of using ITNs.

Data has also shown that majority (85%) of respondents who attained secondary education had high level of utilization of ITNs while more than half (56%) of those who attained primary education had low utilization of ITNs (Table 4.21, page 53). This can be attributed to the knowledge on malaria and its prevention that the group who attained secondary level of

education received in school. The low level of utilization observed in those who attained primary education could be due to poor understanding of health matters. The other reason could be that because of their low level of education, they may not have a good reading culture which prevents them from accessing information on how effective ITNs are in preventing malaria.

The study further revealed that 75% of those who earned a family income of above K1,000,000 per month had high level of utilization of ITNs while 50% of those who earn K50 – 100,000 per month had low level of utilization of ITNs (Table 4.22, Page 54). This is because households with high income are more likely to purchase ITNs. This result is similar to results obtained by CSO in 2007 during ZDHS in which more children in households in the highest wealth quintile (38%) slept under a net, compared with children in households in the lowest wealth quintile (24%). It was therefore concluded that Children in households in the highest wealth quintiles (33 %) were more likely than children in households in the lowest wealth quintiles (19 %) to sleep under an ITN (CSO, 2007).

According to Table 4.24 page 55, most (67%) of respondents who had low level of knowledge on ITNs also had low utilization of ITNs and as such the researcher failed to reject the hypothesis number 1 “There is an association between knowledge and utilization of ITNs”. The reason for the above results could be due to the fact that respondents who have better understanding and perception of ITNs as important means of preventing malaria are more likely to utilize ITNs compared to those who do not.

All (100%) of the respondents who had a negative attitude towards utilization of ITNs had a low level of utilization of ITNs while more than half (66%) of those who had a positive attitude towards utilization of ITNs had a high level of utilization (Table 4.25, Page 55). The way the caretakers perceive the use of ITNs will determine the level of utilization. Those who perceive them as good are more likely to utilize them than those who do not. This result made the researcher fail to reject the 2nd hypothesis “Having a positive attitude towards the use of ITNs contributes to high level of utilization.”

The study further revealed that all (100%) of the respondents who use 1 room for sleeping had low level of utilization of ITNs while 83% of those who use 3 rooms and above for sleeping had high level of utilization of ITNs (Table 4.26 page 56). This could be due to the limited number of beds in a single room making it difficult to hang the net especially if the family size is big. Having enough rooms used for sleeping in the house creates enough space to put beds and makes it easy for the family members to hang ITNs which increases the level of utilization. This result is similar to results obtained by Central Bureau of Statistics, (2004) in Kenya which indicated that research had found that sleeping space determines whether it would be possible to hang a net. When the house is too small, it may not be feasible to use a net.

5.4 Implications to the Health Care System

The health care system has an important and leading role in the dissemination of information on malaria and its prevention including the use of ITNs. Children under five years are targeted for this method. According to PATH, (2008) in her report on malaria indicator survey conducted in Zambia, results provided conclusive evidence that effective use of ITNs in children under five can reduce the mortality rate resulting from malaria by 30% and reduce number of children infected with malaria parasites by half.

5.4.1 Nursing practice

According to the results of the study, majority (94%) of the caretakers have adequate knowledge on ITNs. However there are still a minority of women who have inadequate knowledge and there are still some who have misconceptions towards the use of ITNs, who feel that they can not use ITNs during the hot season because they believe that ITNs increase the heat during this season. This means that ITNs are not used all year round. This puts a challenge to health care providers, nurses in particular to continue sensitizing community members on the importance of sleeping under an ITN every night. Nurses should also consider changing the way I.E.C is being conducted for example they should involve drama groups during the sensitization period. This can help nurses and other health care providers to reduce the incidence of malaria in underfive children who are amongst the vulnerable groups.

The study also revealed that majority of caretakers who had high levels of knowledge on ITNs, had a positive attitude towards ITNs and also had high levels of utilization of ITNs. It is therefore necessary for nurses to continue giving IEC and sensitizing community members on malaria prevention and the use of ITNs to increase people's knowledge thereby increasing the utilization of ITNs. Once people's knowledge is increased their attitude towards ITNs will also be positive. The IEC should aim at educating both caretakers with underfive children and the general public on the effects of malaria on underfive children and the importance of using ITNs.

One other notable factor that may affect the utilization of ITNs in Mansa district is distance from the health centre. The study has reviewed that majority of respondents that took hours to walk to the health centre had low knowledge and low level of utilization of ITNs. It is therefore very important for the nursing staff at Mansa Central clinic to increase the number of outreach services as this may increase contact with community members in far away places and increase access to information on malaria prevention and the use of ITNs. This will increase utilization of ITNs.

Additionally almost half (49%) of the respondents who own ITNs said that they had never had their ITNs retreated and more than half (60%) of the respondents reported that they did not know how frequently Central Clinic provide re-treatment services for ITNs and only 20% gave the correct answer (every 6 months). This implies that there is need for nurses and other health care providers to sensitize the community members on the availability of such services and why it is important for them to have their ITNs re-treated.

5.4.2 Administration

The study revealed that majority (67%) of the respondents who spent 3 hours and above to walk to central clinic had low levels of utilization of ITNs. The Nursing administration should therefore allocate more nurses to Maternal Neonatal and Child Health (MNCH) Department so that it becomes easy for them to increase sites for

outreach services. This will increase the number of caretakers who will have access to health information messages on ITNs. During outreach services the nurses will be able to carry ITNs for either free distribution or for sell at subsidized prices to the hardest to reach areas. This will increase the caretakers' access to ITNs and also improve the utilization of ITNs by the community members. More Malaria Control Agents should also be trained in the hardest to reach areas so that they can sensitize the community on malaria prevention and the use of ITNs especially by the vulnerable groups. The study further revealed that 48% of the respondents reported that ITNs are not always available at Central Clinic and as such the nurse in-charge of the clinic should ensure that ITNs are always available at the centre so that caretakers will be able to access them whenever they need them. This will increase utilization of ITNs.

5.4.3 Nursing Education

According to this study, majority of the respondents indicated that they get the knowledge about malaria and its prevention from the nurse though a few reported having received health education from other health care providers, the media and CHWs. This therefore means that nursing education curriculum should continuously be updated in order to impart the adequate knowledge to the trainee nurses, so that as they go out to practice they will be able to deliver adequate knowledge on malaria prevention that is cost effective and easy to use such as the use of ITNs.

5.4.4 Nursing Research

The study revealed that majority of the caretakers had high levels of knowledge on ITNs. Despite these results, the incidence of malaria in underfive children has remained high (51%) in 2008 as reported by Mansa Central Clinic HMIS. Malaria has continued to be among the top five causes of morbidity and mortality in this age group. This entails that more studies need to be conducted to further explore this subject and this can help develop new strategies on how best utilization of ITNs can be improved among children underfive. Studies can also be done to determine the effectiveness of ITN use in prevention of malaria in underfive children.

5.5 Recommendations

The fight against malaria is one of the biggest challenges of public health today. This calls for concerted efforts by all stakeholders to come up with strategies to improve the use of preventive measures that have been put in place, with emphasis on the use of ITNs which are currently being advocated for by most countries where malaria is endemic. Based on the research findings, the researcher is therefore making the following recommendations;

5.5.1 To Ministry of Health

Ministry of Health (MoH) through the medical stores should regularly supply ITNs and ITN insecticide re-treatment kits to the health centres and other health institutions for purchase and re-treatment of ITNs respectively.

MoH in conjunction with National Malaria Control Centre should come up with better strategies of distributing free ITNs to ensure that all households own at least one ITN. This is because despite massive distribution of ITNs that took place in 2007-2008 a number of households did not benefit.

MoH should also consider employing more nurses and midwives to increase information dissemination on ITNs especially at Community level. This is because the study reviewed that majority of respondents received health education from nurses. The increase in nurses and midwives will increase their contact with community members.

MoH through the Health Education unit should also increase the dissemination of information through the media like Radio and Television to sensitize people on malaria prevention with emphasis on the proper use of ITNs. The Health Education unit should also consider using community radio stations since majority of the community members are able to access these radio stations in most of our rural communities where the malaria burden is more. The health education messages should emphasize the use of ITNs especially by the most vulnerable groups (children under five years and the pregnant women).

It was observed that most of the printed materials on ITNs from Ministry of Health were in English language; it is therefore recommended that such more brochures be printed in local languages (e.g. Bemba) for the local people to read and understand especially those who do not understand English.

5.5.2 To District Health Office

The District Health Office should increase the supply of IEC materials to health institutions to necessitate the programme of educating the community on use of ITNs in preventing malaria in underfive children.

The District Health Office should train more Community Malaria Agents to enhance the dissemination of information on use of ITNs in prevention of malaria.

There is also need to carry out a similar study in the District at a larger scale in order to obtain more information on knowledge, attitude and utilization of ITNs and be able to generalize the findings to the whole District.

5.5.3 To Central Clinic (The Study site)

The clinic management should consider allocating more than two Nurse/Midwives to the MNCH department in order to improve and increase IEC to caretakers with underfive children on malaria prevention and the use of ITNs.

Central Clinic should stock ITNs and re-treatment kits always for its clients to purchase and retreat their ITNs when need arises and information should also be given to community members about their availability. There is also need for Central Clinic management to advocate and encourage more cooperating partners such CARE to supply and promote the use of ITNs by underfive children. The health care workers should recommend those whose children sleep under an ITN every night and encourage those that do not. If possible they could be giving free ITNs once the clinic receives free ITNs.

Since some women still have some misconceptions on the use of ITNs, the clinic management should consider involving the community based agents within the community (e.g. Community Malaria Agents, TBAs, CHWs, NHCs) to educate people on the importance of malaria prevention in under five children so that they are able to change the way people perceive ITNs. In addition health workers allocated to the MNCH department should be able to identify caretakers with underfive children who are unable to purchase ITNs and be able to provide them with free ITNs whenever available.

5.6 Dissemination of Findings

To disseminate is to spread information and knowledge so that it reaches many people (Mayor et. al., 2006). The researcher intends to disseminate the study findings by making copies of the report and giving a copy to each of the following;

University of Zambia (UNZA) Department of Nursing Sciences, UNZA medical library, Ministry of Health (sponsors), Mansa District Health Office and Central Clinic.

Due to limited resources, the researcher intends to take advantage of clinical meetings that take place at Mansa General Hospital involving other health care providers from the district to bring to light the findings of the study results to all members of staff especially those that are directly involved in caring for the underfive children.

5.7 Limitations of the Study

The study had the following limitations;

5.7.1 The available time for data collection was limited. To overcome this limitation, the researcher also collected data from caretakers who attended children's clinics during outreach sessions conducted by staff from Central clinic.

5.7.2 The sample size was small (50 respondents) and the study was conducted only on caretakers who attended children's clinic. This can create biasness of results in that the people that were interviewed could have the same characteristics which could be different from those of the caretakers who do not take their underfive children to

children's clinics. Additionally, most of the caretakers reside in town and their characteristics could be different from those in a rural setting. Nevertheless this was minimized by random sampling of study units.

5.7.3 The use of self reporting during data collection could have created some degree of biasness because people will usually report what they think the health care provider would want to hear. This was overcome by explaining the purpose of the study and conducting the interview in privacy. Anonymity was also adhered to in that no names appeared on the interview schedule and the consent forms were kept in a separate envelope away from completed interview schedules.

5.8 Conclusion

Once the proposal was done, the researcher went ahead and sought permission from the then Executive Director Mansa General Hospital to carry out a pilot study in paediatric ward. After the pilot study, a few changes were made to the interview schedule and permission was sought from the then District Director of Health (Mansa DHO). Data was collected from Central Clinic during children's clinic from fifty (50) caretakers who attended underfive clinic using an interview schedule. Respondents were randomly selected and a written consent was obtained from each respondent before the interview.

From the study findings, it can be concluded that the majority of caretakers with underfive children in Mansa urban district have high knowledge on ITNs and their attitudes towards utilization of ITNs is good. The study revealed that all (100%) of the respondents who had a negative attitude towards utilization of ITNs had a low level of utilization of ITNs while more than half (66%) of those who had a positive attitude towards utilization of ITNs had a high level of utilization. It can therefore be concluded that there is a relationship between respondents' attitude and utilization of ITNs.

It can also be concluded that most of the caretakers who own ITNs do not re-treat their ITNs because they do not know how often the health centres provide re-treatment services for ITNs.

The study further revealed that 83% of respondents who use 3 rooms and above for sleeping had high level of utilization of ITNs. This means that having more rooms used for sleeping in the house creates enough space to put beds and makes it easy for the family members to hang ITNs which increases the level of utilization. The cost of ITNs can also be a hindrance to utilization of ITNs as revealed in the study where 50% of respondents who earned a family income of K50 – 100, 000 per month had low level of utilization of ITNs

The caretakers with underfive children raised a number of reasons for low utilization of ITNs ranging from non ownership of ITNs to misconceptions. Most of the respondents whose children did not sleep under an ITN on daily basis reported that they did not have an ITN while a few sited that ITNs increase the heat especially if used during the hot weather.

It has been therefore, established that the aim of the study which was to determine knowledge, attitude and utilization of ITNs among caretakers in malaria prevention in underfive children in Mansa urban district was achieved and recommendations to relevant officials were made in relation to the study findings.

REFERENCES

- Aikins MK, Fox-Rushby J, D'Alessandro U, Langerock P and Chan K, (1994). **Attitudes to malaria traditional practices and bed nets as vector control measures: a comparative study in five West African countries.** Journal of Tropical Medicine International Health, 97:81-86.
- Basavanthappa BT, (2007). **Nursing Research**, 2nd edition, Jaypee Brothers Medical Publishers (P) LTD, New Delhi.
- Bhattarai A, Ali AS, Kachur SP, Martenson A, Abbas AK, (2007). **Impact of Artemisinin-Based Combination Therapy and ITNs on Malaria Burden**, PLoS Med Zanzibar 4(11).
- Binka F, Indone F, Smith T, (1998). **Impact of spatial distribution of impregnated bed nets on child mortality in rural northern Ghana.** American Journal of Tropical Medicine and Hygiene. 59: 80- 85.
- Binka F. and Akweongo P, (2006). **Prevention of malaria using ITNs**, Current Molecular Medicine, 6(2) 261-7.
- Burns N. and Grove SK, (2005). **The Practice of Nursing Research Conduct, Critique, and Utilization**, 5th edition, Elsevier Saunders, St. Louise Missouri.
- Central Board of Health, (2002). **Integrated Technical Guidelines for Frontline Health Workers**, 2nd edition, Central Board of Health, Lusaka.
- Central Board of Health, MoH and Roll Back Malaria, (2001). News Bulletin, Lusaka.
- Central Bureau of Statistics, (2004). **Kenya Demographic and Health Survey 2003**, Calverton, Maryland.

Central Statistics Office, (2007). **Zambia Demographic and Health Survey**, Central Statistics Office, Lusaka.

Chanda E, Masaninga F, Coleman M, Sikaala C, Katebe C, MacDonald M, Baboo KS, Govere J and Manga L, (2008). **Integrated Vector Management: The Zambian experience**, Malaria Journal: 7: 164. available at <http://creativecommons.org/licenses/by/2.0>. Accessed on 13.07.09.

Clerke SE, (2001). **Do untreated bed nets protect against malaria?** Transactions of the Royal Society of Tropical Medicine and Hygiene, 95:457 – 462.

Fraser HN, Felger I, Edoh D, Streiger S, Mashaka M and Masanga H, (1999). **Effects of Insecticide Treated Bed Nets on Haemoglobin Values, Prevalence and Multilicity of Infection with Plasmodium Falciparum in a randomized controlled trial in Tanzania** Transactions of the Royal Society of Tropical Medicine and Hygiene, 93, Suppl. 1:47-51.

Gamble C, Kwaru JP and Kuile FO, (2005). **Insecticide treated nets for preventing malaria in pregnancy**. Available at <http://www.cochrane.org/>. Accessed on 13.07.09.

Greenwood B. and Mutabingwa T, (2002). **Introduction to Malaria**, Nature, 415: 670-672.

International Development Research Centre, (2000). **Use of Insecticide Treated Nets in prevention of Malaria**, World Health Organization, Geneva.

Kapungwe A, (2006). **Africa-Regional Development, Africa and Third World Politics, Development Studies**. Development Southern Africa, 21(3):483-507.

Kumai E, Vulule JM, Kuria IW and Mugisha F, (2006). **Use of Insecticide Treated Clothes for Personal Protection against Malaria: a community trial**: Malaria Journal, 5:63. Available at <http://www.malariajournal.com/content>. accessed on 07.06.09.

Lengeler C, (2005). **Insecticide treated bed nets and curtains for malaria control (Cochrane Review)**. Oxford: the Cochrane Library. Available at <http://www.cochrane.org/> . Accessed on 19.06.09.

Lennox-Sing A, (2009). **African Women worst Affected by Global Economic Crisis**. Available at <http://www.huffingtonpost.com/2009/05/06/africa-women-hit-hardest.n>. accessed on 18.02.2010.

Lewis K, (2009). **Malaria Discription and Prevention with ITNs**. Available on <http://www.cdc.gov/travel/diseases/malaria/index.htm> Accessed on 9th October, 2009.

MacCormack CP, Kolaczinski J, and Kara H, (1986). **Gambia cultural preferences in use of Insecticide-impregnated bed nets**. Journal of Tropical Medicine International Health 1: 273-276.

Mansa Central Clinic Health Information Management System, (2008). **Action Plan 2009-2011**, Mansa District Office, Mansa.

Mansa District Health Information Management System, (2009). **Action Plan 2009-2011**, Mansa District Office, Mansa.

Mansa General Hospital Health Information Management System, (2006-2008). **Annual Reports**, Mansa General Hospital, Mansa.

Mayor M, Rundell M, and Fox A, (2006). **Mac Millan English Dictionary for Advanced Learners**, International Student Edition, Mac Millan Publishers LTD, Malaysia.

Ministry of Health, (2004). **Zambia Roll Back Malaria Country Consultative Mission, Final Report**, Ministry of Health, Lusaka.

Ministry of Health, (2006). **Health Sector Joint Annual Review Report**, Ministry of Health, Lusaka.

Ministry of Health, (2006). **National Malaria Strategic Plan 2006-2011. A road map for RBM Impact in Zambia**, Ministry of Health, Lusaka.

Ministry of Health, (2009). **Malaria Report** **Zambian situation, President's Malaria Initiative, Malaria Operational Plan Zambia**, Ministry of Health, Lusaka.

Mutale B, (2007). **Knowledge, Attitude and Utilization of Insecticide Treated Nets among mothers with underfive children in Chilonga**, Mpika.

National Malaria Control Centre, (2004). News Bulletin, Lusaka.

Ndugga P, Ntozi J, and Rutaremwa G, (2008). **Is Religious Affiliation Influencing Prevention and Treatment of Malaria among children in Uganda**, Makerere University, Makerere.

Netmark, (2000). **Netmark Formative Qualitative Research in Uganda**, Kampala. Available at <http://www.netmark.com> accessed on 22.06.09.

Netmark, (2000). **Netmark Regional Africa Programme Briefing Book – Insecticide Treated materials in Zambia**. Available at <http://www.worldbank.org>. Accessed on 18.06.09.

Onwujekwe O, Chima R, Shu E, Nwabo D, Okonkwo P, (2004). **Hypothetical and actual willingness to pay for Insecticide Treated Nets**. Lagos.

PATH, (2008). **Zambia Malaria Indicator Survey**, Lusaka. Available at <http://www.path.org/emerging-and-epidemic-disease> accessed on 24.06.2009.

Polit DF and Beck CT, (2008). **Nursing Research**, 8th edition, Wolters Kluwer Pvt. Ltd., New Delhi.

Provincial Health Office Luapula, (2009). **Luapula Malaria Fight Gains Ground But, Mansa**. Available at <http://allAfrica.comMobile>. Accessed on 19.006.09.

Rhee M, Sissoko M, Perry S, McFarland W, Parsonnet J, and Doumbo O, (2005). **Use of ITNs following a malaria education intervention in Piron Mali, a control trial with systematic allocation of households**, Malaria Journal, July 25:4:35.

Sachs J and Malaney P, (2002). **The economic and social burden of malaria**. Nature 415:680-685 Macmillan Publishers Limited, Kampala.

Siame D, (1999). **Factors Contributing to the low Utilization Rates of Insecticide Treated Nets in Mwinilunga**, Mwinilunga.

Trampuz A, Jereb M, Muzloric I, Prablu R, (2003). **Clinical review: Severe malaria** Critical care 7(4): 315-23. Available at <http://en.wikipedia.org-malaria>. Accessed on 18.06.09.

TroPIKA, (2007). **Insecticide Treated Nets for prevention of malaria in pregnancy. A systematic review of randomized trials**. PLoS Med 4(3):107.

United Nations Country Team, (2005). **Millennium Development Goals**, United Nations Country Office, Lusaka.

United National International Children's Fund, (2000). **Zambia and Malaria Consortium, Final Report**, PATH, Ottawa.

United National International Children's Fund, (2009). **Raising Awareness of Child Health Week via mobile phones**, United National International Children's Fund Country Office, Lusaka.

United National International Children's Fund, (2000). **Review of UNICEF support to Malaria Control in Zambia**. Available at <http://www.unicef.org/evaldatabase/index.html>. accessed on 22.06.09.

World Health Organization, (2000). **Insecticide Treated Mosquito Nets – a WHO Position statement**. Available at <http://www.un.org/millenniumgoals>. Accessed on 18.06.09.

World Health Organization, (2005). **Status and Impact of HIV/AIDS, Tuberculosis and Malaria Report**, World Health Organization, Geneva.

World Health Organization, (2005). **World Malaria Report**. Available at <http://www.who.int/globodatlasc/autologic>. Accessed on 18.06.09.

World Health Organization, (2006), **Global Strategic Framework for Integrated Vector Management**, World Health Organization, Geneva.

World Health Organization /United Nations International Children's Fund, (2005). **World Malaria Report 2005**, World Health Organization, Geneva.

World Health Organization, (2004). **Fifth update on long lasting insecticidal nets: current status and programmatic issues**, World Health Organization, Geneva.

Yoshida S, Shimada Y and Kondoh D, (2007). **Malaria: Disease Impacts and long run Income differences**, Institute for study of labour. PLoS Pathog. 3(12):192.

APPENDIX I

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF NURSING SCIENCES**

INTERVIEW SCHEDULE

**TOPIC: KNOWLEDGE, ATTITUDE AND UTILIZATION OF ITNs AMONG CARE
TAKERS IN MALARIA PREVENTION IN UNDER FIVE CHILDREN IN MANSA**

INSTRUCTIONS TO THE INTERVIEWER

Serial No.

Date of Interview.....Place of interview.....

1. Introduce your self to the respondents
2. Establish rapport and explain purpose of interview
3. Explain to respondents that privacy, confidentiality and anonymity will be strictly maintained.
4. Get consent from the respondent but do not force them to participate.
5. Do not write the respondent's name
6. Tick responses in the brackets besides the responses provided
7. Fill in the response in blank spaces provided where applicable.
8. Thank the respondent at the end of each interview.

SECTION A: DEMOGRAPHIC DATA

For official use

1. How old were you at your last birthday?

2. What is your highest level of education?

a) Primary school []

b) Secondary school []

c) College []

d) University []

e) Never been to school []

3. What is your marital status?

a) Single []

b) Married []

c) Widowed []

d) Separated []

e) Divorced []

4. What is your family income per month?

a) K 50, 000 - K 100, 000 []

b) K 100,000 - K 250,000 []

c) K 250, 000 - K 500, 000 []

d) K 500,000 - K 1,000, 000 []

e) K 1,000,000 and above. []

5. How many are you in the house?

a) 2-4 []

b) 5-8 []

c) More than 8 []

6. How many rooms does your house have?

- a) 1 room []
- b) 2 rooms []
- c) 3 and above []

7. How many rooms are used for sleeping?

- a) 1 []
- b) 2 []
- c) 3 and above []

SECTION B: KNOWLEDGE ON ITNs

8. What is an ITN?

- a) A mosquito net that has not been treated []
- b) A mosquito net that has been treated []
- c) I do not know []

9. Where can you obtain an ITN?

- a) Health institutions []
- b) Shops []
- c) I do not know []

10. Do you have an ITN?

- a) Yes []
- b) No []

If answer is No, Go to 12

11. How many ITNs do you have?

- a) 1 []
- b) 2 []
- c) 3 and above []

For official use

12. Do you think it is important to have your ITNs retreated?

a) Yes []

b) No []

If the answer to question 13 is 'No' go to 14.

If answer is 'Yes' go to question 14.

13. When did you last have your ITN retreated?

a) Never []

b) 6 months ago []

c) 1 year ago []

d) I do not know []

14. Do you think malaria can be prevented by use of ITNs?

a) Yes []

b) No []

15. Have you ever received any health education on prevention of malaria?

a) Yes []

b) No []

c) I do not know []

If the answer to question 15 is 'Yes' Go to 16

If answer is 'No' Go to question 17

16. From whom did you receive health education?

a) Nurse []

b) CHW []

c) Other health workers []

d) Media (radio, TV) []

For official use

☐☐☐☐☐

SECTION C: ATTITUDE

17. Are you in favour of using ITNs?

- a) Yes []
- b) No []

18. If answer is No above give reasons.....
.....

19. In your opinion would you recommend use of ITNs to others in your community:

- a) Yes []
- b) No []

SECTION D: UTILISATION

20. Did your underfive children sleep under an ITN last night?

- a) Yes []
- b) No []

21. How often do your under five children sleep under an ITN?

- a) Every night []
- b) Sometimes []
- c) Never []

22. Do you and your youngest child sleep under an ITN every night?

- a) Yes []
- b) No []

For official use

☐☐☐☐☐☐

23. If answer is no question 22 give reasons.....
.....

SECTION E: SERVICE RELATED FACTORS

24. How long do you take to walk to the health centre?

- a) Within 30 minutes []
- b) 1 hour []
- c) 2 hours []
- d) Over 3 hours []

25. Are ITNs always available at Central Clinic?

- a) Yes []
- b) No []

26. Does the health centre staff or your CHW provide re-treatment services for mosquito nets?

- a) Yes []
- b) No []
- c) I don't know []

27. How often does the health centre staff retreat mosquito nets?

- a) Every 3 months []
- b) Every six months []
- c) Once per year []
- d) I don't know []

Thank you for your cooperation end of interview

For official use

APPENDIX II

WORK PLAN

TASK TO BE PERFORMED	RESPONSIBLE PERSON	DATES	DAYS REQUIRED
Literature review	Researcher	continuous	Continuous
Finalizing research proposal	Researcher	June to September, 2009	91 days
Clearance from Authority	Researcher	September, 2009	3 days
Pilot study	Researcher	7 th - 9 TH October, 2009	3 days
Data collection(actual study)	Researcher	12 th to 31 st October, 2009	21 days
Data analysis	Researcher	1 st to 30 th November, 2009	30 days
Report writing	Researcher	1 st Dec, 2009 to 15 th Jan 2010	45 days
Submission of draft research report to PBN	Researcher	16 th to 31 st January, 2010	15days
Finalizing of report	Researcher	1 st to 28th February, 2010	28days
Monitoring and Evaluation	Researcher	Continuous	Continuous
Dissemination of results	Researcher	April, 2010	30 days

GANTT CHART

TASK PERFORMED	RESPONSIBLE PERSON	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR
Literature review	Researcher									→		
Finalizing research proposal	Researcher					→						
Clearance from Authority	Researcher				→							
Pilot study	Researcher											
Data collection (actual study)	Researcher					→						
Data analysis	Researcher				→		↕					
Report writing	Researcher							↕	→			
Submission of draft research report to PBN	Researcher										→	
Finalizing of report	Researcher									→		
Dissemination of results	Researcher											→
Monitoring and Evaluation	Researcher									→		

APPENDIX IV

RESEARCH BUDGET

ITEM	UNIT	UNIT COST	TOTAL COST
STATIONARY			
Reams of Paper	5	35,000	175,000
Pens (box)	1	20,000	20,000
Rubber	4	1,000	4,000
Note books(Each)	4	5,000	20,000
Tipex (Box)	3	10,000	30,000
Stapler	1	80,000	80,000
Perforator	1	150,000	150,000
Scientific calculator	1	150,000	150,000
Flip charts	3	50,000	150,000
Markers	12	5,000	60,000
Steeple(Box)	1	10,000	10,000
Box Files(Each)	2	30,000	60,000
Small Folders	10	2,000	20,000
Field Bag	1	250,000	250,000
Folder Clips	10	1,500	15,000
Paper Glue	1	15,000	15,000
Bostick	2	15,000	30,000
Disks(CD-ROM)	10	3,000	30,000
Memory Stick 2G	1	250,000	250,000
Diary	1	80,000	80,000
Manila Paper	5	1,000	5,000
		SUBTOTAL:	K1,454,000
SECRETARIAL SERVICES			
Questionnaire Typing	10 pages	3,000	30,000
Research Proposal Typing and Binding	1	350,000	350,000
Research Report Writing	1 x 60 pages (60)	3,000	180,000
Questionnaire printing	10 x 50(500)pages	3,000	1, 500,000
Binding of Research Reports	6 copies	50,000	300,000
Research Report Photocopying	6 x 60 pages (360)	3,000	1, 080, 000
		SUBTOTAL:	K 3, 260, 000

PERSONNEL			
Transport Allowance during Research Activities	21 days	10,000 x 2	420,000
Transport to and from Research Areas	2	150,000	300,000
Lunch Allowance for the researcher	21	50,000	1,050,000
Snacks for Respondents	55	5,000	275,000
INFORMATION DISSEMINATION			
Hall Hire for Dissemination	1	250,000	250,000
LCD Hire for Dissemination	1	150,000	150,000
Refreshments	20	20,000	400,000
		SUBTOTAL	K 2, 825,000
		TOTAL	K 7, 539, 000
		CONTINGENCY 10%	K 753, 900
GRANDTOTAL:			K8, 292, 900. 00

BUDGET JUSTIFICATION

The budget for this research proposal had been divided into four parts namely; stationary, personnel costs, secretarial services and transport costs. The budget I was intended to facilitate a smooth conducting of the study. For this to be possible, a number of costs were be incurred as administrative and technical costs.

Stationary

Stationery is needed in this project for research proposal writing, preparation of questionnaires, data processing and analysis which will be done manually. Finally, stationery will be required for the final research report.

Personnel

The research project will also incur some personnel related costs such as payment of lunch and transport allowances to the researcher as she will be required to work outside normal working hours especially during data collection and will be required to travel to and from the data collection point. Other costs include refreshments for respondents.

Secretarial services

Secretarial services such as typing, photocopying, editing and printing are inevitable and these will be an added cost to the research project.

Contingency

This is an amount of money equivalent to 10% of the total budget which is included to the total amount to cover for shortfalls. It is also used to cushion the effects of inflation.

APPENDIX V
INFORMED CONSENT

Dear participant,

My name is Callen Chizuni; I am a student at the University of Zambia School Of Medicine in the Department of Nursing Sciences. I am pursuing a Bachelor of Science Degree in Nursing.

In partial fulfillment of degree program, I am required to undertake a research project. My study topic is **“Knowledge, Attitude and Utilization of Insecticide Treated Nets (ITNs) among Caretakers in Malaria Prevention in Under five Children in Mansa”**.

You have been randomly selected to participate in this study and I wish to inform you that participation in this study is voluntary and you are free to withdraw at any stage of the study if you wish to do so. You will be asked some questions about the use of ITNs. The information you will give me will be kept confidential and no name will be written on the interview schedule.

You will not receive direct benefits from the study or monetary gain but the information that you will provide will help Mansa District Health Office and other relevant authorities in the fight against malaria especially in under five children.

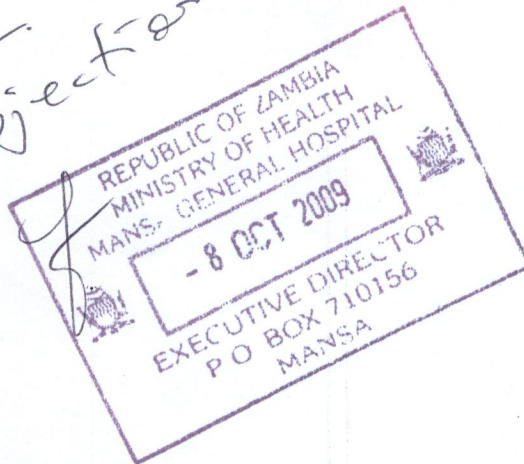
I (name)onOctober declared that I understand the purpose of this study and I am willing to participate.

Signature/ thumb print of respondent.....

Signature of interviewer.....

Witness.....

SND
No objection



University of Zambia,
School of Medicine,
Dept of Nursing Sciences,
P.O Box 50110,
LUSAKA.

7th September, 2009.

The Executive Director of Health,
Mansa General Hospital,
Mansa.

UFS: The Head - Department of Nursing Sciences.

Dear Sir / Madam,

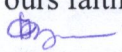
RE: PERMISSION TO CONDUCT A PILOT STUDY

I am a fourth year student pursuing a Bachelor of Science Degree in Nursing. In partial fulfillment of the requirements of this program, I am required to carry out a research project.

I am therefore, requesting for permission to carry out a pilot study at Mansa General Hospital, Paediatric ward. I intend to interview female care takers with under five children admitted to Paediatric ward between 7th and 9th October, 2009. The topic of my study is **"knowledge, attitude and utilization of insecticide treated nets among caretakers in prevention of malaria in under five children"**. It is hoped that the results of this study will help the District Health Office and other relevant authorities in the continued fight against malaria in under five children.

I will be very grateful if my request will be considered.

Yours faithfully,


Chizuni Callen
4th year BSc NRS student



University of Zambia,
School of Medicine,
Dept of Nursing Sciences
P.O Box 50110,
LUSAKA.

7th September, 2009.

The District Director of Health,
Mansa DHMT,
MANSA.

UFS: The Head - Department of Nursing Sciences.

Dear Sir / Madam,

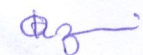
RE: PERMISSION TO CONDUCT A RESEARCH

I am a fourth year student pursuing a Bachelor of Science Degree in Nursing. In partial fulfilment of the requirements of this program, I am required to carry out a research project.

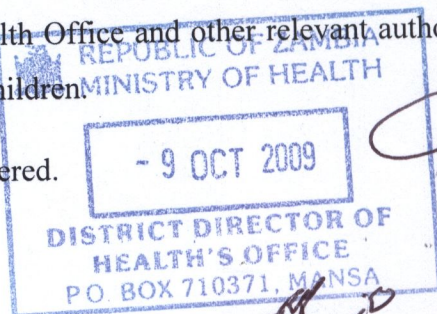
I am therefore, requesting for permission to carry out the study at Mansa Central Clinic. I intend to interview female care takers attending under five clinic from 12th to 31st October, 2009. The topic of my study is **"knowledge, attitude and utilization of insecticide treated nets among caretakers in prevention of malaria in under five children"**. It is hoped that the results of this study will help the District Health Office and other relevant authorities in the continued fight against malaria in under five children.

I will be very grateful if my request will be considered.

Yours faithfully,



Chizuni Callen
4th year BSc NRS student



*Three in Clinic
Central Clinic
Approved the officer
to conduct
this research*